Minister for Energy and Resources

Our Ref: SU505109

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Dr John Tamblyn
Australian Energy Market Commission
PO Box A2249
SYDNEY SOUTH NSW 1235

Dear Dr Tamblyn,

NATIONAL ELECTRICITY RULES: RULE CHANGE PROPOSAL TO ALLOW USE OF TOTAL FACTOR PRODUCTIVITY METHODOLOGY IN DISTRIBUTION

Pursuant to section 91(1) of the National Electricity Law and Item 26J(a) of Schedule 1 to the National Electricity Law, I hereby request the making of a Rule to allow the use of the total factor productivity methodology as a regulatory economic methodology to be applied by the Australian Energy Regulator. Its purpose would be for making and amending a distribution determination and (to the extent that section 130 of the National Electricity Law requires that an access determination must give effect to a network revenue or pricing determination), for making an access determination.

Enclosed with this letter is the Victorian Department of Primary Industries' submission in support of this request which has been prepared on my instruction. Attachment A of the submission contains a detailed draft of the proposed Rule (including necessary consequential amendments).

The submission addresses the matters required to be addressed by the Commission's *Guidelines for Proponents: Preparing a Rule Change Proposal* dated January 2008, including a description of the proposed Rule, an explanation of how that Rule would, or would be likely to, contribute to the National Electricity Objective and the benefits and costs of the proposed change.

As is set out in more detail in Attachment B of the submission, the ability of the Commission to make the proposed Rule is based on the amendments made to the National Electricity Law by the *National Electricity (South Australia) (National Electricity Law – Miscellaneous Amendments) Amendment Act 2007*. The amendments provide for a Rule to be made to allow the use of the total factor productivity methodology as a regulatory economic methodology. The amendments reflected the April 2006 advice in the *Expert Panel on Energy Access Pricing: Report to the Ministerial Council on Energy*.

The submission also addresses the nature and scope of the issues that arise with existing rules insofar as they only allow the use of the building blocks approach, and then explains the benefits of having as an alternative the total factor productivity methodology. Whilst this is a necessary part of any application to the Commission, this application is atypical in that there have been express changes to the National Electricity Law, so as to allow the making of a Rule, to allow the use of the total factor productivity methodology as a regulatory economic methodology.

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Accordingly, some of the matters ordinarily considered in a rule change proposal, in particular why a different rule from the current should be made, do not apply or apply in a different manner. However, the submission seeks to demonstrate the advantages that can flow from the adoption of the total factor productivity methodology as a regulatory economic methodology when compared with the building blocks approach. These advantages are explained in detail in the submission. Of particular note is the advantage that arises in terms of the efficiency of the regulation process (and hence the reduction in cost) together with the potential to strengthen the incentive for the regulated distribution businesses to minimise cost.

The contact person for the purposes of this proposal, and the contact details to which any correspondence or other documents should be sent, are as follows:

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Yours sincerely,

Peter Batchelor MP
Minister for Energy and Resources

18 / 6 /2008

Encl.

PROPOSED RULE CHANGE TO THE AUSTRALIAN ENERGY MARKET COMMISSION TO PERMIT THE USE OF THE 'TFP APPROACH'

SUBMITTED BY THE VICTORIAN DEPARTMENT OF PRIMARY INDUSTRIES

May 2008

1. CONTENTS

2. INTRODUCTION

2.1 Purpose

This submission to the Australian Energy Market Commission ("AEMC") proposes a series of Rule changes to Chapter 6 of the National Electricity Rules to permit what has become known as the 'total factor productivity approach' ("**TFP approach**") to be used to set the price controls for 'standard control' electricity distribution services. As well as enabling the use of the 'TFP approach', the Rule changes proposed herein also set out the appropriate direction and guidance to the Australian Energy Regulator ("**AER**") when applying the TFP approach.

The TFP approach is a method for setting the level of the price control for 'standard control' electricity distribution services.[1] The alternative approach for setting the level of the price control that is currently in use 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:

- 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*, prices are set to increase by CPI-X, where X is set with reference to the estimated growth in total factor productivity over an appropriate historical period.

The discussion that follows provides a detailed description of the operational details of the 'TFP approach' and assesses the relative merits of the 'TFP approach' compared to the 'building block approach', including the circumstances that may affect whether one approach is superior to another.

Various aspects of the TFP approach for setting the level of price controls have been discussed in some detail in previous reports or work programs, including by the Expert Panel on Energy Access Pricing and the Victorian Essential Services Commission.

2.2 Expert Panel's Analysis

The Expert Panel on Energy Access Pricing considered in some detail the relative merits of the building block approach compared to the TFP approach, drawing in particular on the experience with the application of the TFP approach to regulated

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[1] The method for setting the level of the price control can be distinguished from the decision taken over the form of price control (e.g. whether a price cap or revenue cap is adopted). That said, however, this submission considers that the implementation of the TFP approach also requires the use of a price cap form of price control, which is discussed further below (section 4.1.2).

energy utilities in the United States. The Panel's key findings with respect to the TFP approach are summarised in the following excerpt:[2]

> It follows from the above discussion that the main potential advantage of a TFP-based approach is that it obviates the need for a 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. Rather, this process is substituted by the use of a long term estimate of industry-wide total factor productivity.
>
> The Panel observes that a significant proportion of a typical process for determining price controls in the Australian energy sector is currently pre-occupied with determining reasonable estimates of cost and demand forecasts. By way of illustration, nine out of the ten matters brought before the Appeal Panel following the recent determination of electricity distribution price controls by the Essential Services Commission of Victoria (ESC) involved grievances over the approach to forecasts of future costs, demand or service standards. The adoption of a regulatory approach that does not rely on forward-looking, firm-specific cost and demand forecasts would appear to have significant 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 does have the potential to bring about a significant reduction in the costs of regulation. However, this broad conclusion is subject to a number of important qualifications.

The Panel then proceeded to identify a number of qualifications to this conclusion, including that:[3]

- the derivation of an estimate of industry-wide total factor productivity is itself controversial, being something that is more an art than science;

- the development of total factor productivity estimates depends crucially on the availability of long term, reliable information on outturn costs of supply as well as a range of physical input and output parameters, and noted that the robustness of regulatory accounting information differs across jurisdictions;

- a question that may need to be addressed is whether it is valid to apply an industry-wide estimate of total factor productivity to all firms or whether there may be a need to differentiate the assumed growth in long term productivity (as distinct from the *level* of average cost) according to firms' environmental characteristics (such as climate, topography, customer density or the technology employed), which may be contentious; and

- there is a range of specific issues of detail that would need to be addressed in order to make operational the TFP approach, including the duration of the relevant controls (i.e. length of the regulatory period), how service incentive mechanisms may be brought into the mechanism, whether there may be 'triggers' for reopening prices and the character of a price review – including whether prices are to be realigned with cost at such a review.

The Panel also noted that the TFP approach offered the greatest benefit when the businesses or industry being regulated is in a relatively steady state, and at times when

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[2]   Expert Panel, p.103.

[3]   Expert Panel, pp.103-104.

the industry's or business's forward-looking capital expenditure has a relatively smooth profile.[4] As a consequence, it noted that:[5]

> the adoption of TFP-based approaches to access regulation for energy businesses is likely to be a worthwhile development for electricity and gas distribution businesses in particular. The case for TFP appears less compelling in electricity transmission, where significant lumpiness over future capital expenditure demands is an important part of the industry landscape. To the extent that lumpiness of capital expenditure is less a feature of existing gas transmission services, this too may represent an opportunity to develop this price control setting method.

The Panel concluded that the development of the TFP approach should be facilitated by the regulatory framework, by changing the National Electricity Law (to clarify that the TFP approach is permissible) and developing specific Rules that explicitly provide for the use of the TFP approach, but that the approach should not be mandated. The Panel also set out its views about the criteria that should apply prior to the TFP approach being adopted, reflecting the qualifications it expressed, as discussed above, and the situations in which it considered the TFP approach would be a superior method for setting the level of the price control. It also set out a number of best-practice elements that it considered should be reflected in the Rules that govern the application of the TFP approach.[6] The Panel's recommendations on these matters are set out in the discussion of the detailed proposal for the TFP approach in section 4.1 below.

There are several aspects of the Panel's discussion that it is relevant to emphasise.

The Panel's view of the principal benefit that would flow from introducing the TFP approach is that it increases the efficiency of the regulatory process (and hence reduces cost) by making greater use of 'known and measurable' information when setting the trajectory of prices during the regulatory period (i.e. measured productivity growth rather than company-specific forecasts of expenditure and demand). The Panel noted that inherent in the TFP approach is that prices will (or may) be reset with reference to cost at periodic intervals (and possibly if a 'trigger' is met), and hence that the TFP approach would:

- not reduce the level of disputation about the cost of capital associated with the regulated activities at the time that price controls are reviewed, as this would remain as a key input when price controls were reviewed; and

- not reduce the incentive for the businesses to misreport their costs in the period leading up to a price review, as these too would remain a key input into that price review.

The Panel's discussion also implied that the TFP approach would provide the potential to strengthen the incentive for regulated businesses to minimise cost, thus

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[4] Expert Panel, pp.104-105. The Panel also observed that the TFP approach could be designed to accommodate situations where there is significant uncertainty surrounding a business's future expenditure requirements through a combination of off-ramps and frequent cost-based price resets; however, it also observed that such measures would reduce the incentive properties of the regulatory regime (p.105).

[5] Expert Panel, pp.105.

[6] Expert Panel, pp105-106, 109.

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providing a second benefit of the TFP approach. While the Panel noted that the strength of these incentives depends on the detailed design of the scheme (including the length of time between predetermined price reviews and any 'triggers' specified for reopening the price cap),[7] it also noted that:[8]

> An important benefit of a TFP approach to control setting is the flexibility to extend regulatory periods from the current five year approach, perhaps through the use of off-ramps linked to actual rates of return within a prescribed band. It is therefore important to allow for a potentially open-ended regulatory period to be adopted.

That is, 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.

2.3 Victorian Essential Services Commission's TFP Work Program

As the AEMC would be aware, the Victorian Essential Services Commission ("ESC") has undertaken substantial work in recent years to develop the capability to implement the TFP approach for setting price controls and to analyse various issues surrounding the application of this approach.[9] The matters that have been considered to date in the ESC's work include the analysis of:

- whether there is sufficient and sufficiently reliable information to produce robust estimates of historical total factor productivity for electricity distribution services in Victoria and elsewhere in Australia;

- the appropriate methodology for estimating total factor productivity;

- the key drivers of measured total factor productivity for the Victorian electricity distributors;

- whether measured total factor productivity growth has differed across the five original Victorian distributors (which cover firms that are predominantly urban distributors and those that predominantly serve rural businesses and customers);

- the incentive properties of the TFP approach compared to other approaches (including the building block approach); and

- other incentive issues relevant to the choice between the TFP approach and other approaches, including the incentive to adopt efficient non-network options for meeting service obligations (such as distributed generation or demand side response) and the incentive to report truthfully the costs incurred in providing electricity distribution services.

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[7] Expert Panel, pp.102-103.

[8] Expert Panel, p.109.

[9] The output of the ESC work program is available at: www.esc.vic.gov.au/public/Energy/Regulation+and+Compliance/Reports+and+Investigations/Tot al+Factor+Productivity+(TFP)/Total+Factor+Productivity+-+TFP.htm.

The analysis the ESC undertook or commissioned has been made available publicly to all interested parties, and various aspects of the expert analysis that it has commissioned has been subject to comment from experts engaged by the Victorian electricity distributors. This Rule change proposal draws upon the analysis the ESC has undertaken or commissioned, as well as the comments received thereupon.

It is important to clarify at the outset that this Rule change proposal departs from some of the aspects of a TFP approach that would be implied by the ESC's work program. In particular, an implicit assumption in some of the ESC's own or commissioned analysis is that there may not be future cost-based reviews of price controls, albeit possibly subject to conditions that may trigger a reopening of the price control. This contrasts with the building block approach as currently applied, where price reviews occur at pre-determined intervals (normally every five years).

The model for the TFP approach that is proposed in this submission includes a requirement for price controls to be reset with reference to cost at pre-determined intervals (with the interval to be determined by the AER, having regard to specified criteria, as at present). While a regulatory approach whereby there was no pre-determined time at which prices are reset with reference to cost may be an optimal regulatory approach to consider over the longer term, requiring a pre-determined cost-based review in the initial version of the TFP approach would minimise the risk to regulated businesses and customers from unforeseen outcomes under the TFP approach as the technique is being refined. This matter is discussed further in section 4.1.6.

2.4 Consultation undertaken prior to submission

Prior to submitting this rule change proposal, the Department of Primary Industries undertook a number of one-on-one consultations with interested parties. Subsequent to these consultations, a draft rule change proposal was released and then presented and discussed at a public forum in Melbourne on 14 March 2008. Written submissions were invited from the meeting participants, and written submissions from SPAusNet, Alinta and Ergon Energy were received.

3. LEGAL FRAMEWORK FOR THE ASSESSMENT OF RULE CHANGES

3.1 Introduction

The National Electricity Law ("NEL") sets out the criteria the AEMC must apply when considering a proposal for a Rule change, as well as the various procedural requirements it must follow. Part 7 of the NEL contains the provisions dealing with Rule change proposals, and places three requirements on the AEMC when considering a proposed Rule change that are relevant to the proposal to permit the TFP approach:[10]

- *National electricity objective* – section 88 requires the AEMC to be satisfied that the objective is met:[11]

    (1) The AEMC may only make a Rule if it is satisfied that the Rule will or is likely to contribute to the achievement of the national electricity objective.

    (2) For the purposes of subsection (1), the AEMC may give such weight to any aspect of the national electricity objective as it considers appropriate in all the circumstances, having regard to any relevant MCE statement of policy principles.

- *Revenue and pricing principles* – in addition to being satisfied that the national electricity objective is met, section 88B of the NEL requires the AEMC also to take into account the revenue and pricing principles:[12]

    In addition to complying with sections 88 and 88A, the AEMC must take into account the revenue and pricing principles in making a Rule for or with respect to any matter or thing specified in items 15 to 24 and 25 to 26J of Schedule 1 to this Law.

- *Schedule 1* – of the NEL sets out a list of topics about which the AEMC is explicitly authorised to make Rules, and explicitly authorises the making of Rules permitting the use of the TFP approach:[13]

    Without limiting subsection (1), the AEMC, in accordance with this Law and the Regulations, may make Rules for or with respect to any matter or thing specified in Schedule 1 to this Law.

The implications of the national electricity objective, the revenue and pricing principles and the items specified in Schedule 1 of the NEL are discussed in turn below. A detailed discussion of the legal issues that are raised by the application of these provisions to the TFP approach is provided in Attachment B to this submission.

3.2 National electricity objective

The national electricity objective is set out in section 7 of the NEL and is as follows:

The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—

(a) price, quality, safety, reliability and security of supply of electricity; and

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[10] The TFP approach would only be applied if a prior decision had been made to specify services as direct control services, and so the requirements of section 88A of the NEL do not apply.

[11] NEL, section 88.

[12] NEL, section 88B.

[13] NEL, section 34(2).

(b) the reliability, safety and security of the national electricity system.

The requirement of the national electricity objective is to promote economic efficiency with respect to electricity services, with consumers the beneficiaries of that promotion of efficiency. Prior to the TFP approach being considered, prior decisions must have been made that the relevant services should be regulated and, furthermore, should be subject to direct control. It follows that the relevant question of the AEMC for the current proposal is how the different methods for setting the level of the price control may affect economic efficiency and the benefits to consumers.

Economic efficiency may be defined as the condition under which society's resources are used in such a manner that no one agent can be made better off without making another worse off. This overarching concept is typically expressed as requiring three different dimensions of efficiency to be met, namely allocative efficiency (ensuring that the right mix of products is produced and that these are consumed by the right people), productive efficiency (ensuring that goods and services are produced at lowest cost, for a given service level) and dynamic efficiency (ensuring that the previous 'static' dimensions of efficiency continue to be met in the face of changing tastes and technologies). Turning to the design of methods of price regulation, there are a number of outcomes that may promote the various dimensions of economic efficiency discussed above, the achievement of some of which may involve trade-offs, which include the following:

- *Efficient investment* – investors must have the incentive to invest in long-lived assets that will be required to ensure that the service continues to be provided at the desired service levels over the long term;

- *Efficient production* – the service delivered by the network is produced in the least cost manner. This requires the selection of the cost-minimising technology for providing the service given all of the available options, and the construction and ongoing operation and maintenance of the asset in a least-cost manner;

- *Efficient pricing* – prices should signal to customers the relative scarcity of 'resources' used to provide network services. This condition ensures customers' private decisions about whether to invest in a related activity, where to invest and whether to use the system at a particular point in time are also socially optimal decisions;

- *Efficient service levels* – where incentives are provided for regulated firms to minimise cost, an incentive may be created for regulated businesses to reduce their service levels (e.g. to reduce maintenance, thereby permitting the frequency or risk of outages to increase) to achieve this outcome, requiring financial incentives or other mechanisms to counteract this incentive (and, in preference, to encourage regulated businesses to seek to optimal level of service); and

- *Minimise the administrative cost of the regulatory process* – implementing regulation can involve substantial administrative costs, by both the regulator and regulated business, and economic efficiency would be advanced (all else constant) by minimising these costs.

A central feature of the outcomes set out above is that incentives be provided to encourage the regulated businesses to act in an efficient manner. This concern reflects

the fact that economic regulators seldom are in a good position to judge the efficiency of matters like production techniques, price structures or service levels as such decisions requires knowledge of information held by the regulated business. By providing financial incentives for efficiency, regulated firms are encouraged to make use of their private information.

However, it is important to bear in mind that the objective of providing firms with an incentive to minimise cost can conflict with the objective of providing firms with an incentive to spend on the network where it is efficient to do so. In particular, the incentive for firms to minimise cost is created by permitting only the partial recovery of any marginal increase in expenditure, whereas the incentives for investment are created by providing a degree of certainty that costs incurred will be reimbursed over time. The requirement simultaneously to meet the objective of incentives for cost reduction and for efficient investment places a limit on the strength of incentives that feasibly can be created for firms to minimise cost.

The requirement to ensure that regulated businesses have the incentive to continue to invest also creates a discipline for the level of certainty and predictability of the regulatory process itself, given that regulatory price determinations typically last for five years whereas the assets being constructed typically have economic lives of upwards of four decades. The conditions for efficient investment can be promoted by the relevant regulatory framework being cognisant of the risk that it may impose, as well as by reducing the scope of matters that remain the subject of regulatory discretion. The capacity for the Rules to be changed expeditiously by the AEMC (subject to the requirements of the NEL) provides a mechanism for important aspects of regulatory methodologies to be specified in advance, but able to be reviewed by an independent party if necessary.

An assessment of the TFP approach as proposed against the implications of economic efficiency as described above is presented in section 4.2.

In addition, the national electricity objective highlights that consumers should be beneficiaries of the promotion of economic efficiency, whether those benefits arise through lower prices or an improvement in the various dimensions of the quality of service provided. Accordingly, a natural interpretation of this qualification to the efficiency objective is that, while economic efficiency should not be compromised in order to direct benefits to consumers, where there are a set of possible outcomes that are equally efficient, the one that delivers maximum benefit to consumers should be selected. An assessment of the potential customer benefit under the TFP approach is also presented in section 4.2.

3.3 Revenue and pricing principles

The revenue and pricing principles are set out in section 7A of the NEL and are as follows:

(1) The revenue and pricing principles are the principles set out in subsections (2) to (7).

(2) A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in—

(a) providing direct control network services; and

(b) complying with a regulatory obligation or requirement or making a regulatory payment.

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(3) A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes—

    (a) efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and

    (b) the efficient provision of electricity network services; and

    (c) the efficient use of the distribution system or transmission system with which the operator provides direct control network services.

(4) Regard should be had to the regulatory asset base with respect to a distribution system or transmission system adopted—

    (a) in any previous—

        (i) as the case requires, distribution determination or transmission determination; or

        (ii) determination or decision under the National Electricity Code or jurisdictional electricity legislation regulating the revenue earned, or prices charged, by a person providing services by means of that distribution system or transmission system; or

    (b) in the Rules.

(5) A price or charge for the provision of a direct control network service should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates.

(6) Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated network service provider in, as the case requires, a distribution system or transmission system with which the operator provides direct control network services.

(7) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a distribution system or transmission system with which a regulated network service provider provides direct control network services.

These revenue and pricing principles make explicit a number of the implications for economic efficiency for the regulation of prices that were discussed above. In particular, the principles emphasise to importance of:

- providing the regulated businesses with incentives to operate and invest efficiently and to set efficient prices;

- providing a degree of certainty that regulated businesses can recover the cost of providing the regulated services, with specific provisions intended to provide certainty with respect to the value of past investments in regulated assets and for the return required on those investments; and

- having regard to the economic costs and risk of the regulator setting prices that are too high or too low.

As discussed above, the relative power of the incentives for efficiency that may exist (or have the potential to exist) under the building block and TFP approaches are a key matter to consider when assessing their relative merits. Likewise, the extent to which each approach provides certainty over cost recovery – and whether different measures may strengthen that certainty – are key issues to consider when selecting between the approaches and when designing the TFP approach. Lastly, again, the level of certainty created for regulated businesses will be a key matter when assessing the choice of methods and design of each.

An assessment of the proposed TFP approach against the specific requirements of the revenue and pricing rules is provided in section 4.2.

3.4 Schedule 1 items

Schedule 1 of the NEL sets out a broad list of matters about which the AEMC is authorised to make Rules, the most relevant of which for the current matter are as follows:

> 26I The regulatory economic methodologies (including the use of the methodology known as the "building block approach") to be applied by the AER in—
>
> > (a)   making a distribution determination or transmission determination; or
> >
> > (b)   amending a distribution determination or transmission determination; or
> >
> > (c)   making an access determination.
>
> 26J The methodology known as "total factor productivity"—
>
> > (a)   as a regulatory economic methodology to be applied by the AER for the purpose of—
> >
> > > (i)   making a distribution determination or transmission determination; or
> > >
> > > (ii)   amending a distribution determination or transmission determination; or
> > >
> > > (iii) making an access determination;
> >
> > (b)   as an economic regulatory tool to inform and assist the AER in applying, or analysing the application of the regulatory economic methodology known as the "building block approach" by the AER for the purpose of—
> >
> > > (i)   making a distribution determination or transmission determination; or
> > >
> > > (ii)   amending a distribution determination or transmission determination; or
> > >
> > > (iii) making an access determination.

These provisions were introduced in response to the Expert Panel on Energy Access Pricing's concern that the focus of the recovery of a *particular firm's* efficient cost in the previous section 35(3)(a) of the NEL may preclude the use of the TFP approach, given that the TFP approach is based on (changes in) *industry average cost* (albeit potentially adjusted where the expected change in cost may be affected by environmental factors).[14] Since that time, two changes have occurred to the NEL, which are that:

* section 35(3)(a) has been replaced by section 7A(2), with the change in drafting implying a reduction in the mandatory nature of the requirement; and

* items 26I and 26J have been included in Schedule 1 of the NEL.

Items 26I and 26J provide explicit authorisation for both the building block approach and the TFP approach as methods for setting the level of price controls, hence remove any concern that either approach necessarily is precluded by the objective and/or revenue and pricing principles in the NEL.

Apart from clarifying that both the building block and TFP approaches are permitted, however, these provisions do not have any further substantive operation regarding which approach is to be preferred.

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[14]   Expert Panel, pp.108-109.

4. PROPOSED TFP APPROACH AND ASSESSMENT AGAINST THE NEL REQUIREMENTS

4.1 Proposed TFP approach

4.1.1 Introduction

As discussed above, the key difference between the building block and the TFP approach that is proposed in this submission rests in how the trajectory of prices is determined for the regulatory period. That is:

- *under the building block approach* – after initially aligning prices at cost,[15] the trajectory of prices over the regulatory period is determined by forecasting firm specific expenditure (and derivatives, namely the regulatory asset base and regulatory depreciation) and demand, and setting the rate of change in prices to recover that cost; whereas

- *under the TFP approach* – after initially aligning prices with cost, the trajectory of prices over the regulatory period is determined as the change in (industry-wide) total factor productivity and inflation.

Thus, whereas the building block approach relies upon firm-specific forecasts of expenditure and demand to determine the trajectory of prices, the TFP approach relies instead uses a measure of industry-wide growth in productivity and inflation.

Importantly, businesses may recover a greater or lesser amount than the actual costs that they incur under both the building block and TFP approaches. This follows because both of the approaches deliver a price path for the regulatory period ahead that is fixed and therefore independent of the actual costs incurred over the regulatory period.

The important issue for whether the TFP approach is sustainable – and meets the requirements of the NEL[16] – is whether the TFP approach provides an individual firm with a reasonable opportunity to recover at least its efficient costs. This requirement clearly is met with the building block approach, as the price controls for each regulatory period are determined on the basis of forecasts of the firm's own costs. As explained further below, the basis for the TFP approach is a proposition that prices should track a firm's unit cost, which in turn will depend upon that firm's future total factor productivity growth and input-price inflation.

However, to make the TFP approach operational – and to achieve the reduction in the administrative costs of regulation as intended – it is necessary to use measured productivity growth for the industry as the proxy for the individual firm's forecast productivity growth. Whether historical, industry-wide productivity growth will provide a reasonable proxy for the future productivity growth of an individual firm will depend upon the circumstances of that firm, including its operating environment.

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[15] The initial alignment of prices with cost under the building block approach typically is implicit rather than explicit.

[16] NEL, section 7A(2).

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A central feature of the TFP approach, therefore, is how the model addresses the situation of firms for which this requirement is not met. The two potential responses to this issue are either to:

- 'tailor' the estimate of the future productivity growth for a particular firm to take account of the specific circumstances facing that firm; or

- to ensure that the NEL objective is met by limiting the application of the TFP approach, namely only to firms for which historical, industry-wide productivity growth is a reasonable proxy for the future productivity growth of an individual firm.

The second of these approaches has been adopted in the TFP approach that is proposed here. That is:

- the TFP approach is required to be applied using historical estimates of industry-wide productivity growth as a proxy for future productivity growth without adjustments for the specific circumstances of the regime (and hence minimising the administrative cost of the regime); but

- ensuring that the TFP approach is only applied to firms where historical estimates of industry-wide productivity growth will provide a reasonable forecast for future productivity growth so that the TFP approach will provide the firm with a reasonable opportunity to recover its efficient cost.

The purpose of this section is first to explain the theoretical basis for the TFP approach, that is, to demonstrate the link between prices, costs, total factor productivity and inflation, and hence to define the X factor, as discussed above. This section then explains the rationale for the key elements of the TFP approach as proposed, which are:

- the degree of guidance that it would be appropriate to provide the AER on the whether the TFP approach should be applied and how it should be applied;

- a requirement for specified criteria to be met before the TFP approach is permitted to be applied to ensure that it is applied only in circumstances where measured, industry-wide productivity growth is a reasonable proxy for an individual firm's future productivity growth, and a requirement for the regulated distributor to propose (and consent to) the initial use of the TFP approach;

- a specific 'calculation objective' that the AER is required to apply to ensure that technical issues arising with the application of the TFP approach are resolved in a manner that is consistent with the underlying basis of the TFP approach;

- a requirement for a future cost-based price review at a predetermined time with the AER to determine the length of the regulatory period as at present, but without earlier reviews being triggered by earnings falling outside of a prescribed band ('trigger events' or 'off-ramps');

- a requirement for the X factor to be set on the basis of industry-wide productivity growth (i.e. not to make adjustments to reflect firm-specific issues), but with the

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TFP approach not to be applied if a firm is expected to experience a lower or higher productivity growth than the industry average, as discussed above;

- two options for the derivation of the X factor, which are:

 — to use a 'rolling X factor' (i.e., one where the X factor is redetermined in each year based on an updated historical growth rate in measured productivity growth); or

 — to use a fixed X factor for the duration of a regulatory period;

- guidance for the selection of the group of firms that are used to estimate the 'industry-wide' productivity growth and the requirement for the AER to issue a guideline about how total factor productivity should be estimated;

- a discussion of the relevance of two incentive measures that have been applied to the building block approach, namely the service performance incentive scheme and the efficiency benefit sharing scheme;

- specific Rules dealing with the management of transitional issues when moving from the building block approach to the TFP approach, including the treatment of any carry-over of efficiency benefits that would have occurred under an efficiency benefit sharing scheme if the building block approach had continued; and

- the proposed procedural requirements for the TFP approach.

These matters are addressed in turn.

4.1.2 Relationship between prices, unit cost and total factor productivity

The TFP approach commences with the proposition that regulated revenue should be expected to align with cost (the rationale for which is discussed further in section 4.1.3).[17] If the initial prices are set at the unit cost of providing the regulated services (i.e. so that expected revenue is equal to cost), then revenue would be expected to continue to align with cost over time if prices are permitted to rise by the expected growth in unit cost. That is:

$$growth\ Regulated\ Prices = growth\ Unit\ Cost \tag{1}$$

The expected growth in unit cost, in turn, is simply the difference between the expected growth in total cost and the growth in output. As the expected growth in total cost, in turn, is simply the sum of the expected growth in physical inputs and the rise in input prices, equation (1) can be re-expressed as follows:

$$\begin{aligned} growth\ Unit\ Cost &= growth\ Cost - growth\ Output \\ &= growth\ Inputs + growth\ Input\ Prices - growth\ Output \\ &= \left(growth\ Inputs - growth\ Output\right) + growth\ Input\ Prices \end{aligned} \tag{2}$$

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[17] This explanation draws on the more technical derivation presented in: Pacific Economics Group, 2004, TFP Research for Victoria's Power Distribution Industry, December, Appendix One.

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The term in parentheses – the difference between the growth rate of physical inputs and outputs – is the growth rate in total factor productivity. Thus, if prices are initially set at the unit cost of providing the regulated service, then revenue would be expected to align with cost over the regulatory period if:

$$growth\ Regulated\ Prices = growth\ Input\ Prices - growth\ TFP \qquad (3)$$

If the convention is followed of escalating regulated prices by the growth in the consumer price index (CPI) less an X factor, then equation (3) becomes as follows:[18]

$$growth\ Regulated\ Prices = growth\ CPI - (growth\ TFP - (growth\ Input\ Prices - growth\ CPI)) \quad (4)$$

Thus, if regulated prices are permitted to rise by (CPI-X), then the X factor required to ensure that revenue is expected to align with cost over the regulatory period is given by:[19]

- the expected growth in total factor productivity, offset by

- the extent to which input prices are expected to grow at a higher rate to the price of outputs generally (i.e. CPI).[20]

The derivation above has two specific implications for the proposed Rules to give effect to the TFP approach.

First, the discussion above defines how the X factor should be derived. Consistent with this, the proposed Rules require the X factor to be determined as the difference between the measured growth in total factor productivity and the inflation differential described above. These proposals are set out in proposed Rule 6.6A.6.

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[18] An alternative would be to escalate prices by the growth in input prices over the period, using a specifically computed index for this purpose (which is undertaken in some US price cap plans). However, if prices were to be escalated by input prices over the regulatory period, then an adjustment to how the initial set of prices were determined would also be required – in particular, the real required rate of return that was used to determine the initial set of prices would need to be determined as the required nominal rate of return less forecast *input* price inflation rather than as the required nominal rate of return less forecast *CPI* inflation.

[19] An alternative version of equation 4 can be derived by noting that CPI is equal to the difference between the growth rate of economy-wide input prices and economy-wide productivity growth, which delivers the following formula:

$$growth\ Regulated\ Prices = growth\ CPI - (growth\ TFP^{firm} - growth\ TFP^{Economy} - (growth\ Input\ Prices^{firm} - growth\ Input\ Prices^{Economy}))$$

so that the X factor is taken as the productivity growth for the firm, *less* the productivity growth for the economy, *less* the difference between input price growth for the firm and the economy.

[20] It is an empirical question as to whether input prices would be expected to grow at a faster rate to outputs generally. Pacific Economics Group has found in its total factor productivity research in Victoria that input prices over the sample period had growth at approximately the same rate (indeed, slightly faster than) the CPI: Pacific Economics Group, 2005, Evaluation of Meyrick and Associates Review of the PEG TFP Report, February, pp.30-31. In terms of the formula set out in footnote 19, given that productivity growth for the economy was positive over the period measured, this finding means that the input price growth for the Victorian electricity distributors was much lower than the input price growth for the economy as a whole over the measurement period.

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Secondly, in deriving the relationship between prices, total factor productivity and inflation, an implicit assumption is that the control applies to prices rather than to revenue or average revenue. Accordingly, the proposed Rules require that, where the TFP approach is used, the form of control must be a price cap form of control, whether the precise control comprise a series of individual price caps on each service (i.e. no pricing flexibility permitted), the constraint applied to the change in the weighted average of all prices (i.e. pricing flexibility permitted) or a combination of the two. These proposals are set out in proposed Rule 6.2.5(ba) and the note to 6.6A.5.

4.1.3 Form of proposed Rule changes

Degree of guidance to the AER

A threshold issue for the proposed Rule changes to permit the TFP approach is the level of guidance – and constraints – to apply to the AER's decision making in relation to the TFP approach.

The current Rules that govern the application of the building block approach for electricity transmission (as determined by the AEMC) and distribution (as determined by Ministers) set out in some detail the calculations required and the relevant principles or criteria to be applied for constituent decisions. The effect of these Rules is to provide substantial certainty as to how the building block is to be applied in future reviews.

This proposed Rule change is intended to provide a similar level of guidance for the application of the TFP approach in order to provide a degree of certainty to parties as to how it would operate in practice. As with the building block approach, there are areas where the AER must be left to exercise its judgement, and clear criteria are specified to guide these decisions.

In addition, the proposed Rules will require the AER to publish a guideline that explains how it would apply the TFP approach if selected by a distributor. This guideline would be intended to cover how the AER would derive the initial set of prices in a manner that meets the calculation objective (discussed further in section 4.1.6) and the method it considers appropriate for estimating total factor productivity (discussed further in section 4.1.8). It is intended that these be quasi-binding guidelines, meaning that the guidelines would be required to be applied unless there was persuasive evidence to justify a departure having regard to the factual matrix that originally underpinned the guidelines. It is expected that these guidelines would provide distributors with sufficient certainty as to how the TFP approach would be applied to make an informed decision of whether to propose the TFP approach. These proposals are set out in a proposed amendment to Rule 6.2.8 and Rule 6.6A.2.[21]

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[21] The quasi-binding nature of the guidelines are created by proposed Rules 6.6A.2(c)-(e), which follows closely the model that applies in relation to the statement of regulatory intent in the Rules at present (see Rules 6.5.4(g)-(i)).

Representation of the TFP approach in the Rules

The proposed Rule change set out in this submission proposes that the mechanics of the TFP approach be included as a separate Part (see the new Part CA in Attachment A) in Chapter 6 of the Rules. The requirements for, and contents of, a determination when using the TFP approach would be sufficiently different to what is required when using the building block approach to warrant a separate treatment. That said, however, the drafting of the new part can be simplified considerably by requiring existing clauses to be applied to the extent relevant (for example, as the setting of the initial price level under the TFP approach is essentially an application of the building block approach for a single year the building block approach principles can be adopted for that purpose). In addition, a number of amendments or insertions would be required in relation to the current Chapter 6 to recognise the TFP approach.

Many of the existing clauses in Chapter 6 would apply equally to both the building block and TFP approaches, and hence require no change, including:

- Part F (cost allocation);

- Part G (distribution consultation procedures);

- Part H (ring fencing);

- Part I (distribution pricing rules);

- Part J (billing and settlements);

- Part K (prudential requirements, capital contributions and prepayments);

- Part L (dispute resolution);

- Part M (separate disclosure of transmission and distribution charges); and

- Schedule 6.2 (regulatory asset base).

4.1.4 Decision of whether the TFP approach should be applied

One of the most important aspects of the TFP approach is the decision making process and criteria for determining whether the TFP approach should be applied to a particular distributor. As the TFP approach has not as yet been applied to set the price controls for any Australian energy distributor, care must be taken to ensure that it is only applied where the inputs required (such as the growth in total factor productivity) can be reliably estimated. Equally, the change from the building block approach to the TFP approach could have substantial consequences for the relevant distributor (as well as providing substantial opportunities if applied in an appropriate case). Hence, appropriate measures to protect the legitimate interests of regulated distributors should be incorporated into the regime. In addition, as discussed in section 4.1.1 and addressed further below, the criteria for determining whether the TFP approach should be applied to a particular firm perform the important role of ensuring that the TFP approach is only to be applied in circumstances where it would provide a

distributor with a reasonable opportunity to recover its efficient costs, and thus meet the NEL requirements.

The Expert Panel discussed at some length the criteria that should be applied when deciding whether the TFP approach should be adopted, emphasising the need to ensure that the TFP approach would amount to a robust regime and be applied where the greatest benefits would be expected. Its specific proposals were as follows:[22]

> The Panel considers that the criteria that should be considered in developing guidance on whether to adopt a TFP-based control setting method or to maintain an existing, building block approach should include:
>
> - the availability of robust, consistent and relevant data over a sufficient period to allow the derivation of TFP estimates. The required data includes:
>
>   - price and output information for each of the services that is subject to price control;
>
>   - cost information, distinguishing between operating costs, capital costs, depreciation, regulatory asset values and return on capital; and
>
>   - ideally, various physical input/output measures, such as employee numbers, line length, transformer capacity, number of customers, maximum demand, etc;
>
> - 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 Po 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.

Clearly, a critical precondition for the TFP approach to be a robust economic regulatory approach is for the historical growth in total factor productivity to be reliably estimated over a sufficient sample of firms. Accordingly, the first of the Expert Panel's criteria in the quote above is adopted in this rule change proposal. As discussed in section 4.1.7, however, it would be open for the historical estimates of productivity from Australian data to be supplemented with estimates from US firms (for which a reliable data set over a much longer period of time is available), which should assist in demonstrating that this criterion is able to be met.

The remainder of the Expert Panel's criteria effectively require the question to be posed as to whether the application of the TFP approach using historical, industry-wide productivity growth would provide a reasonable estimate of:

- the productivity growth of an *industry* or alternatively whether flexibility can be built into the regime to address the potential 'non-steady state' nature of the industry; and

- the productivity growth of a *particular firm* or alternatively to consider the administrative cost of adjustments to address the circumstances of a particular firm relative to others in the industry.

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[22] Expert Panel, p.106.

Turning to the characteristics of the *industry*, the Expert Panel's recommendation has been adopted that the TFP approach not be applied where there is a substantial change to costs in the future relative to the past that cannot be accommodated within the regime. The rule change proposal provides three mechanisms for accommodating such changes in cost, which are:

- a cost pass through clause, which permits the cost-consequences of a specified class of events to be passed through immediately;

- the requirement for prices to be reviewed with respect to cost after a defined interval, so that any changes in cost are passed through into prices from that point forward (with a shorter regulatory period therefore reducing the exposure of the distributors to future changes in cost); and

- the opportunity to adopt a 'rolling X factor', under which any changes in measured industry-wide productivity growth would automatically flow through to the X factor (albeit with the full impact being passed through after a lag), which is discussed further in section 4.1.7.[23]

Turning to the characteristics of an *individual firm*, section 4.1.7 discusses this matter in more detail, and notes that if material arguments can be raised that the measured industry-wide productivity growth needs to be revised for a particular firm, then the TFP approach is less likely to lead to a reduction in the cost of regulation, and it may even be a more costly option. Accordingly, as discussed in section 4.1.1, it is proposed that the TFP approach:

- mandate the use of the industry-wide productivity growth and inflation when deriving the X factor, and hence preclude ad hoc adjustments to the X factor for non-steady state, environmental or other factors; but

- follow the suggestion of the Expert Panel and continue to apply the building block approach where the AER accepts that the expected long term productivity growth for a particular firm is likely to differ to the industry average.

The Expert Panel noted that differences in expected productivity growth across firms may arise due to variations across firms in climate, topography, density or technology. It may also occur after the occurrence of certain events that are unique to a subset of the firms in the industry, such as a recent privatisation (which may create an expectation that higher productivity growth would be achieved for a period) or the imposition of a new regulatory obligation (which may cause lower productivity growth for a period).

These proposals are set out in proposed Rule 6.6A.6 and 6.2.4A.

In addition, however, a further measure to protect the legitimate interests of regulated distributors is proposed. Given the fact that the TFP approach would be a new and as

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[23] In contrast, if a fixed X factor that was based on a long term trend in measured productivity growth was used – as the Expert Panel assumed – then it would be valid to not apply the TFP approach if a firm was expected to have a materially different future to its past.

yet untested regime for Australian energy businesses, it is proposed to require the distributor to have proposed (and hence to consent to) the application of the TFP approach before it is applied for the first time. The AER would need to accept that the TFP approach was appropriate – applying criteria of the type described above – but would not be permitted unilaterally to impose the TFP approach.

However, it is proposed that the AER's agreement would be required before a distributor could revert back to the building block approach, again applying criteria of the type described above. For the TFP approach to be applied, then it must be expected that measured (historical) industry-wide productivity growth will provide a reasonable estimate of a distributor's future productivity growth. However, it need not be the case that the firm would expect to achieve the long term average level of productivity growth in each regulatory period. Rather, it is plausible that the distributor may expect to achieve higher productivity growth than the long term average in some regulatory periods, but lower in others.

Accordingly, if the TFP approach is applied, then it is important that distributors not be free to switch from the TFP approach to the building block approach and back again without constraint. Otherwise the distributors may be encouraged to seek a change to the regulatory regime where that would deliver a short term financial benefit, potentially providing windfall returns but also increasing the administrative cost of the regime. Having said that, if the conditions underpinning the original justification for the TFP approach no longer hold, then the capacity for the AER to permit a reversion to the building block approach clearly should exist. These proposals are set out in proposed Rule 6.2.4A.

4.1.5 Criterion for the TFP approach

An implication of many of the proposed Rules for implementing the TFP approach is that the AER will be tasked for resolving a number of detailed implementation issues. Amongst other things, the AER will be required to determine the most appropriate method for estimating total factor productivity (addressing such matters as how the outputs of a distributor should be defined, the depreciation method for deriving the growth of capital inputs and the most appropriate price indices for converting expenditure information into estimates of physical inputs) and how certain transitional matters should be addressed (such as carry-overs of the benefits of past efficiency gains under an existing efficiency benefit sharing scheme). The AER would also need to ensure that there is consistency between how the initial set of prices and the X factor are determined.

These matters are likely to raise technical issues and be subject to dispute between opposing experts, as has indeed been the case in the consultation process the ESC has undertaken as part of its TFP work program. Accordingly, the AER's task of resolving technical matters (including deciding between the views of opposing experts) would be simplified by including in the Rules a simple calculation objective (or TFP criterion) to direct the application of the TFP approach.

The derivation of the TFP approach in section 4.1.2 above noted that the purpose of the TFP approach is to align revenue with costs. In turn this is achieved by:

- first, setting prices at the commencement of the regulatory period at cost; and

- secondly, noting the relationship between the change in unit cost and the growth in productivity and inflation, and requiring prices to change over the regulatory period by the expected change in unit cost.

It follows that the appropriate test of whether the set of inputs or methods adopted are consistent is whether the combination of the initial set of prices and the X factor are most likely to result in the revenue that is expected over the regulatory period tracks expected cost, at least if the assumptions adopted by the regulator prove to be correct. Some of the areas where consistency issues may arise include the following:

- *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 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.

- *Depreciation* – if a higher rate of regulatory depreciation (all else constant) is used to set the initial prices, then the unit cost of providing distribution services would be expected to fall at a faster rate (all else constant). Consistency between the initial prices and the determination of the X factor would only be achieved if either the faster rate of depreciation also is reflected in the measurement of capital inputs when estimating total factor productivity, or if the rate of regulatory depreciation is revised to reflect the rate that is assumed in the measurement of capital inputs when estimating total factor productivity.

- *Regulatory asset value / capital stock* – if a lower regulatory asset base is used to set the initial prices (all else constant), then the unit cost of providing distribution services would be expected to fall at a slower rate (all else constant). This follows because a lower regulatory asset base would be associated with a lower regulatory depreciation allowance (for a constant depreciation rate), making it more likely that the cost of asset renewals will exceed the depreciation allowance in the future. Consistency between the initial prices and the determination of the X factor would only be achieved if the lower starting regulatory asset base is reflected also in the measurement of capital inputs when estimating total factor productivity.

These proposals are set out in proposed Rule 6.6A.3.

It should be understood that the role of the TFP criterion that has been proposed is merely to require a test of the consistency of the calculation, so that the intended result – that prices track unit cost – is achieved if all of the inputs or assumptions (e.g., that the X factor accurately reflects expected future productivity growth) are correct. The reason for proposing such a consistency test is because the link between prices and cost under the TFP approach is much less direct than it is under the building block approach. Clearly, for the TFP approach to meet the requirements of the NEL – most notably section 7A(2) – the inputs and assumptions used in the calculation of the price controls must also be correct. Thus, while it is the case that Rule 6.6A.3 will lead to the distributors being provided with a reasonable opportunity to recover their efficient cost if those inputs and assumptions are correct, whether those inputs and assumptions are in fact correct is a different matter, which is the subject of other parts of this rule change proposal.

4.1.6 Reviews of the TFP approach price cap

Requirement for a periodic price review

As discussed in section 3.2, a key objective when setting regulated prices (and a requirement of the revenue and pricing principles discussed in section 3.3) is to ensure that revenue is expected to align with cost over time. Cost is a relevant marker for price regulation because owners of regulated businesses need a degree of assurance that they will recover at least their costs in order to have an incentive to invest, while on the other hand having revenues (and prices) substantially above cost would exacerbate the efficiency losses from monopoly pricing. While an outcome of incentive arrangements for cost-efficiency is that regulated businesses would recover more or less than their cost — as this is required to motivate efficient behaviour — the need for some assurance of cost recovery and the need to minimise the degree of monopoly pricing limit the 'power' that is optimal in such incentive arrangements.

The length of time between reviews of prices — as well as the extent to which prices are reset at cost at such reviews — are the key determinants of the 'power' of the distributors' incentives to minimise cost. Equally, the length of time between price reviews — and the extent to which such a review results in prices being reset to cost — determines both the degree of assurance that a regulated business will recover its cost (with a longer period between reviews or a lesser adjustment to cost decreasing the degree of assurance) and the share of efficiency benefits that flow through to customers. In order to provide for a degree of certainty as to how reviews of prices would operate under the TFP approach — but to preserve the scope for the power of incentives to be increase — the following two measures are planned.

- First, prices would be reset with reference to cost at each price review.

- Secondly, the AER would determine the length of the forthcoming regulatory period as part of its TFP determination, as it currently does for building block determinations, and be required to have regard to the degree of confidence that the trajectory of prices will align with the efficient cost of the distributor over the regulatory period when making this decision.

The requirement for AER to have regard to the degree of confidence that prices will track cost over the period will permit it to consider a number of matters including the following:

- *effect of using 'known and measurable information'* — whether the fact that the trajectory of prices is more reliant on 'known and measurable' information and less so on forecasts would justify accepting a longer regulatory period than the current widely accepted 5 years; and

- *rolling X factor vs. fixed X factor* — which of the two methods for determining the X factor is likely to create a closer correspondence between price and unit cost over the regulatory period, given such matters as the quality and depth of data available at any point in time (this matter is discussed further in section 4.1.7).

The resetting of prices with reference to cost at a price review is, effectively, an application of the building block approach to a single year, with the year being one

where the costs incurred either can be observed or can reasonably be estimated. Accordingly, the Rules that govern the setting of the initial level of prices under the TFP approach require the principles in the Rules that applicable to the building block approach to be applied to the extent relevant to this exercise.

Importantly, while the AER will be required to determine the required initial price adjustment by looking at revenue and costs for a known, historical year, it will not be required simply to accept the reported expenditures as efficient. The criteria that guide the AER's assessment of forecast expenditure under the building block approach require an administrative assessment of the prudence and efficiency of the proposed expenditure requirement, and the scope for the same administrative assessment will exist when measuring expenditure to set the initial set of prices. Accordingly, while scope for some regulatory judgement on these matters remains, the scope of the AER's discretion when setting the initial set of prices will be identical to what currently exists under the building block approach.[24]

However, the AER will need to meet one further constraint when deriving the initial set of prices under the TFP approach, which is to ensure that the initial set of prices have been determined in a manner that is consistent with the X factor that has been determined (including that the approaches taken to set the initial set of prices are consistent with how total factor productivity has been measured). Accordingly, the calculation objective described in section 4.1.5 is also proposed to guide the AER when determining the initial set of prices.

As discussed in section 4.1.3, the proposed Rule change would require the AER to publish a guideline on how it intends to apply the TFP approach, including how it would derive the initial set of prices at a review.

These proposals are set out in the proposed amendment to Rule 6.2.8 and the proposed Rules 6.6A.5 and 6.6A.4.

The fact that expenditure is no longer forecast means that consequent changes may be necessary to other elements of the regime. In particular, as there will no longer be forecasts of capital expenditure, there also will no longer be forecasts of regulatory depreciation. Accordingly, the roll-forward of the regulatory asset base can only practicably be undertaken on the basis of the depreciation on the actual capital expenditure rather than what has been termed the 'forecast depreciation'.

Lastly, for the avoidance of doubt, while the discussion above refers to the AER determining an 'initial set of prices', the actual decision of the AER would depend on the form of price control that was adopted. In particular:

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[24]   The TFP approach will substantially reduce the AER's discretion over expenditure requirements, however. Currently, the AER exercises a wide discretion over a distributor's expenditure requirements at the start of the regulatory period and how those expenditure requirements may be expected to change over the regulatory period. Under the TFP approach, the AER's discretion will be limited to establishing the expenditure requirements implied by the initial set of prices – the assumption about the change in cost over the regulatory period will be determined on the basis of measured productivity growth and inflation.

- if individual price caps were set for each service, then the output of the review would be an initial schedule of prices; however

- if a tariff basket form of price control was adopted (i.e., one permitting pricing flexibility subject to the weighted average price meeting a constraint) then the effect of the price review would be a required adjustment (normally specified as a percentage change) to the weighted average price between the last year of the previous regulatory period and the first year of the new regulatory period.

Earnings-based reopening of the price cap and cost pass throughs

In this discussion, two different triggers for a revision to a price cap can be identified, which are:

- *an earnings-based re-opening (often referred to as an 'off-ramp')* – which typically involves specifying a permitted range for the rate of return earned on the regulatory asset base, with a resetting of prices if the rate of return falls beyond this range; and

- *cost pass through* – under which the prices can be adjusted to allow the distributor pass through the costs associated with specified, exogenous events, such as a change in input taxes, with the effect being that prices are adjusted upward (or downward if there is a favourable change) by the estimated cost-effect of the event, but the underlying level of prices is not reviewed.

Turning first to earnings-based re-openers, while the Expert Panel noted that these were often a feature of TFP approaches in the United States, it is proposed that such a re-opener not be permitted in the version of the TFP approach proposed here. Earnings-based re-openers have the effect of reducing the power of incentives for the regulated business to be efficient (by capping the level of benefit or loss that may be suffered), but do so in order to increase the degree of assurance that regulated businesses will recover their costs as well as minimising the risk that regulated businesses may receive an excessive share of the benefit of efficiency gains. In the version of the TFP approach proposed in this submission, there are already appropriate mechanisms for minimising the risk of such inappropriate outcomes, which have been common features in applying incentive regulation in Australia,[25] including:

- the requirement for prices to be reset at cost at a pre-determined time in the future; and

- the continued ability for cost pass throughs to occur for specified, exogenous events (albeit in a modified form).

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[25] The TFP approach in the US has evolved from rate of return regulation – under which a right existed to have prices reviewed at any time if the earned rate of return differed to the cost of capital – which may explain the prevalence of earnings-based re-openers in the US. A TFP approach with earnings-based re-openers would have implied a large increase in the incentive power of price regulation, given the poor incentive properties of rate of return regulation, but it would be less likely that such a regime would imply an increase in incentive power compared to the building block approach.

Turning to cost pass throughs, these mechanisms have been a feature of the building block approach since the commencement of independent economic regulation in Australia. While comparatively few cost pass throughs have occurred, the ability to pass through costs associated with certain exogenous events nonetheless provides an important bound on the risks borne by the distributors. Accordingly, it is proposed that the cost pass through clauses should apply under the TFP approach as they do under the building block approach (subject to the adjustment to prevent double-counting discussed below).

In addition, it is also proposed to permit either the use of a rolling X factor or a fixed X factor. A rolling X factor implies that the X factor will change annually to reflect an updated estimate of historical total factor productivity (i.e. total factor productivity is estimated over a defined number of years, and the new estimate is obtained by dropping to most aged observation and replacing it with the new observation that has become available). Under the rolling X factor method, the industry-wide effect of any exogenous change would be reflected in the X factor from the time that the additional costs were incurred onwards.[26] The rationale for adopting a rolling X factor is discussed further in section 4.1.7.

However, if the 'rolling X factor' is used as proposed, then care must be taken to ensure that the application of the pass through does not result in double-counting (i.e., by compensating for the cost increase and also through the pass through). To address this potential, it is proposed that the measurement of total factor productivity exclude the effect on measured input growth from events that give rise to a cost pass-through so that all of the cost could be reflected in the cost pass through.[27] In contrast, as the fixed X factor is fixed throughout the regulatory period, then no potential for double counting during the regulatory period as a result of the pass through application would exist. These proposals are set out in proposed Rule 6.6A.6.

4.1.7 Applying the TFP approach – use of a historical, industry-wide total factor productivity trend

The formula derived for the X factor in section 4.1.2 above – which is based on aligning expected revenue with cost – relates the permitted growth in regulated prices to the expected growth in the particular firm's total factor productivity and input

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[26] More specifically, if the 'rolling X factor' was calculated with reference to the average productivity growth over the past 5 years, then the effect on annual cost of the exogenous event increase would affect the X factor for the subsequent 5 years, effectively resulting in a pass-through of 20 per cent of the cost increase each year.

[27] An alternative would be to preclude cost pass throughs altogether and rely on the rolling X factor (if adopted) and the next periodic price review to permit the distributors to recover the cost associated with the specified exogenous events. However, even if a rolling X factor is adopted, it does not provide full compensation for the cost of these events. First, prices would only be permitted to rise to the higher cost level over time and hence leave the distributor suffering an economic loss, whereas there is a strong case for permitting full cost recovery of exogenous (normally government-initiated) events. Secondly, the rolling X factor would only permit the pass through of the industry-average cost increase associated with the event, and it is conceivable that new regulatory requirements could have a materially different effect on the different businesses (e.g., new safety requirements for powerlines in high fire danger areas would have a disproportionate impact on the predominantly rural distributors).

prices. However, to make the economic regulatory approach operational, two refinements are required.

First, the measurement of trends in total factor productivity is subject to a degree of estimation error. Greater precision can be obtained for estimates of the growth in total factor productivity for the *industry* rather than for the *individual firms* within that industry. In addition, if the trajectory for a distributor's prices over the next regulatory period were based upon its productivity growth in the past period, then the incentive properties of the regime would be reduced (i.e., if a firm's higher past productivity gains led to a higher future X factor than otherwise, the benefits from making those past gains would reduce). Accordingly, an estimate of the growth in total factor productivity for the industry is proposed to be used as the best proxy for the expected growth in total factor productivity for each firm within that industry.

Secondly, the goal of the TFP approach is to increase the extent to which the setting of price controls is based on 'known and measurable' information rather than forecasts. Accordingly, a measurement of the historical growth rate in total factor productivity is used as the best proxy for the expected growth in total factor productivity.

The bases for these propositions are discussed in turn.

Use of industry-wide total factor productivity

The proposition that the growth in industry-wide total factor productivity is a reasonable proxy for the total factor productivity growth of each firm in that industry rests on the assumption that, while environmental factors (like customer density and topography) will have a material effect on the *level* of cost that a firm would incur, the specific environmental characteristics of individual firms are likely to have a much less significant effect on the growth in productivity (i.e. the *change* in cost). This is a plausible assumption in most circumstances given that, over the long term, the main factors that cause productivity growth (once any firm-specific inefficiency is removed) are technological change and the realisation of economies of scale and density, which are common to all firms in the industry. Indeed, the empirical work that Pacific Economics Group undertook for the ESC found that the differences in productivity growth across the five original Victorian electricity distributors was immaterial after the initial burst of productivity growth in the post-privatisation period,[28] notwithstanding that these businesses spanned those that served wholly or predominantly urban customer bases to those that served predominantly rural customer bases.

However, as discussed in section 4.1.4, notwithstanding these empirical results it is possible for an individual firm's expected productivity growth to differ to the industry average for a number of reasons, including because of climate, topography, density or technology, or the occurrence of certain events that are unique to a subset of the firms in the industry, such as a recent privatisation (which may create an expectation that higher productivity growth would be achieved for a period) or the imposition of a new

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[28] Pacific Economics Group, 2004, TFP Research for Victoria's Power Distribution Industry, December, p.3.

regulatory obligation (which may cause lower productivity growth for a period). Thus, it is plausible that an individual firm may consider that its prospects for future productivity growth may differ materially to the industry average, and present empirical evidence to support this contention. Similarly, the AER may have reasonable grounds to believe that productivity growth for a particular distributor or distributors that are higher than the industry average may be expected in the future.[29]

One response to a finding that an individual firm's prospects for productivity growth differ to the industry average would be to adjust the productivity assumption to reflect the circumstances of that individual firm. Such an adjustment, however, would require an analysis of evidence of the individual firm's future expenditure needs and demand growth. If an analysis of firm-specific issues is required, then much of the benefit associated with applying the TFP approach – which was to avoid having to consider firm-specific matters when deriving the trajectory for prices – would be lost. Indeed, the TFP approach may be more controversial and administratively costly than the building block approach if firm specific issues must be considered, given that the latter is specifically directed towards considering firm-specific issues.

Accordingly, it is proposed that the Rules mandate that the X factor under the TFP approach be determined solely with reference to measured productivity growth and inflation, and hence preclude adjustments from being made to take account of firm-specific issues. Rather, if a firm or the AER believes and can substantiate a case that the expected long term productivity growth is likely to differ to the industry average,[30] as discussed in section 4.1.4 it is proposed that the TFP approach should not be applied, but the building block approach should continue to be used instead.[31]

It is also clear that care must be taken when estimating the industry average growth in total factor productivity to ensure that the resulting estimate is appropriate for the business or businesses to which the TFP approach is being applied. A key finding of the Pacific Economics Group research for the ESC is that the Victorian electricity distributors experienced an initial (one-off) burst of productivity growth post-privatisation, with a lower growth rate being observed subsequently. It would be inappropriate to draw on estimates of total factor productivity that is affected by these those post-privatisation one-off gains and to apply those gains to future periods. Equally, where the certain businesses experience a substantial change in regulatory obligations that does not apply generally to all firms – for example, where there have been material changes to jurisdiction-specific service performance obligations – the

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[29] The Victorian experience would suggest that this may be a reasonable assumption if other government-owned distributors were privatised.

[30] The TFP approach that is proposed in this submission requires the distributor initially to propose using the TFP approach (which the AER must accept if certain criteria are met). Accordingly, if a distributor considered that its productivity growth would not exceed the industry average growth rate then it presumably would not propose the TFP approach and hence not be required to provide any argument on the matter.

[31] This is given effect through a requirement for the X factor to comprise the relevant estimate of total factor productivity less the difference between input and CPI inflation. As a consequence, 'stretch factors' and 'consumer dividends' – which have been a feature of TFP approaches in the US – would be precluded.

productivity growth (or decline) experienced by the subset of firms may not be applicable to the whole.

These considerations suggest the need for a judicious choice of the firms that are to be included in the estimate of the industry-wide long term growth in total factor productivity, and also a judicious choice of the period over which productivity growth is measured. This matter is discussed further in section 4.1.8.

These proposals are set out in proposed Rules 6.2.4A and 6.6A.6.

Use of historical growth in total factor productivity – long term estimate vs. rolling X factor

As noted above, a key benefit of the TFP approach compared to the building block approach flows from the use of 'known and measurable information' rather than forecasts. It follows that these benefits will only flow if the *expected* growth in total factor productivity is assumed to equate to measured productivity over a historical period.

There are, however, two different assumptions that may be made about long term total factor productivity growth, which have different implications for the historical period that forms the basis of the X factor.

First, it is widely held that an underlying long term growth rate of total factor productivity exists (i.e. caused by technological change and the realisation of economies of scale and density), which can be assumed not to change materially over time. Accepting this proposition would mean that it would be appropriate to measure the growth in total factor productivity over the longest (or a sufficiently long) period and apply that estimate when setting the X factor for the next regulatory period (i.e., so that the X factor would be fixed for the regulatory period).[32] Moreover, if TFP growth is dependent on the technology that is employed, then there is no reason to confine the measurement of historical productivity growth to local firms, but rather the sample set of local firms could be supplemented with firms from overseas (i.e., from the US) to improve the precision of the estimate of long term productivity growth. While the X factor may differ from regulatory period to regulatory period, this would merely reflect the fact that the best estimate of the long term growth rate of total factor productivity had changed over time (as the available data changes).[33]

The use of a fixed X factor (set with reference to the long term trend in measured productivity growth) has been the conventional means of applying the TFP approach in the US. The Expert Panel assumed that the TFP approach would be implemented along these lines.

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[32] This is putting aside arguments that inefficient firms may be expected to improve their productivity at a faster rate than the underlying level – this is discussed further below.

[33] Again, this is a direct parallel to the estimation of equity betas (an input into estimating the required rate of return) for regulated electricity distributors, where there is substantial agreement that the true beta has not changed, but estimates have varied as the quality and quantity of date have changed.

The alternative approach is to allow for the possibility that productivity growth may change over time as random technological changes occur and as the legislative requirements placed on the regulated businesses also change.[34] In order to allow for changing productivity growth over time, the estimated trend in total factor productivity (and hence the X factor) need to be updated as frequently as possible, and rely as little as possible on measured productivity growth prior to the relevant regulatory period (or application of the TFP approach). A method that has been used for allowing for the possibility that productivity growth may change over time – and so maximising the extent of up-to-date information on productivity growth – is through using what is known as a 'rolling X factor', which can be summarised as follows:

- the X factor for the first year of the regulatory period (i.e. to derive prices for the first year of the regulatory period)[35] would be based on measured productivity growth over a period that ends with the most recent year of observations and that is sufficiently long to ensure a sufficiently stable productivity growth estimate;

- the X factor for the second year of the regulatory period would be calculated from a new estimate of productivity growth that is derived by dropping off the most dated observation that was used in the estimate referred to above and replacing it with the new year of data that had since become available; and

- repeating the procedure above for the remaining years of the regulatory period and, absent strong justification for a change, into the next regulatory period.

A rolling X factor approach has been used to apply the TFP approach to railroads in the US.

There are a number of positive and negative elements to the two approaches for setting the X factor, which include the following.

- *Dealing with changes in industry-wide cost* – a rolling TFP approach will lead to the X factor that applies during a regulatory period adjusting automatically to industry-wide changes in cost (albeit with a lag). In contrast, if a fixed X factor is adopted, then changes in industry-wide cost will not affect prices until the next regulatory period (unless the event is one that may permit a pass through).

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[34] A regulatory obligation that raised costs – for example, a requirement to raise the height of service lines for safety reasons – would imply a reduction in future productivity growth (all else constant) as a greater number of inputs would be required to supply each physical output (this is assuming that the 'outputs' are conventionally defined and hence the level of safety is not included an output).

[35] To be clear, it would be envisaged that the AER would conduct a cost-based review of prices for the penultimate year of the previous regulatory period (i.e. the latest known year at the time of the review), the output of which would be the percentage change in prices (the Po change) that would be have been required in that year to equate revenue with cost. The AER would then derive the X factor for the first year of the regulatory period that reflects the assumed change in unit cost between the last year of the previous regulatory period and the first year of the new regulatory period. The price change that would be required when transitioning from the previous regulatory period to the new regulatory period is the sum of the Po change and the X factor, with the X factor just applying thereafter until the commencement of the next regulatory period.

Accordingly, where there is a belief that changes in industry-wide cost are likely over the regulatory period, then a rolling X factor may provide a greater confidence that prices will track unit cost during the regulatory period.

- *Breadth and depth of the data set* – it is implicit in the use of a rolling X factor that productivity growth should be measured for an industry that comprises only firms that are subject to the set of events that may cause cost (e.g., legislative obligations, demand etc), given that the intention is for the X factor to adjust automatically to reflect the cost associated with these events. This would imply limiting the sample set of firms when measuring productivity growth to Australian firms only (and possibly be restricted to a particular jurisdiction) and to limit the period over which the rolling average is taken (i.e., because a longer averaging period delays the automatic adjustment of the X factor to changes in industry-wide cost. The potential result is a volatile X factor, with that volatility caused by the imprecision of the estimates of productivity growth rather than from changes in unit cost.

  In contrast, if a fixed X factor is to be used, then the longest possible set of reliable data could be employed, which could also be supplemented with information on measured productivity growth for foreign firms. Given that there is over 30 years of data available for estimating productivity growth for US firms, and a broad cross-section of US firms, there is significant potential for measured productivity growth for US firms to improve the precision of the estimates obtained using local firms.

- *Administrative costs* – a rolling X factor requires productivity growth to be re-estimated annually. While much of the calculation could be reduced to mechanical formulae, rules (and ultimately judgements) would be needed for matters like dealing with changes to the composition of the sample set over time. Given that the new productivity growth measure would have a material effect of the distributor's revenue, this process may involve material administrative cost within the regulatory period. In contrast, the fixed X factor model does not entail any administrative cost within a regulatory period.

Accordingly, whether a rolling or fixed X factor is likely to create greater confidence that the price controls will track unit cost over the regulatory period requires a consideration of the relative importance of:

- the potential for material changes to industry-wide cost in the future;

- the additional precision of estimates of historical productivity growth that would be possible using the fixed X factor model compared to the rolling X factor model; and

- the relative administrative costs of each method.

This submission proposes that the relevant distributor be permitted to choose whether the TFP approach should be applied with a fixed X factor or a rolling X factor. It is also proposed that the method for setting the X factor as part of its consideration of how confident the AER could be that prices will track unit cost over the regulatory period when determining the appropriate length of the regulatory period. It would be

expected that the AER 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.

These proposals are set out in proposed Rule 6.6A.6.

4.1.8 *Guidance on the method for estimating total factor productivity*

A number of methodological and like decisions need to be made when estimating the growth in industry-wide total factor productivity over the relevant historical period, including the firms to be included in the industry, how the outputs of the firm should be defined and the weights to be applied, the price indices to be used to convert expenditure into physical inputs, how capital inputs should be converted into an annual flow of capital services (that is, the gross required return on investment to be assumed), the appropriate weights for the different streams of cost and the form of indices to be used.

Some of the methodological choices are obvious – for example, the use of a Tornqvist index appears to be supported by the different experts who have contributed to the ESC's consultation on the TFP approach. However, different views may exist in relation to a number of the other decisions, with such matters as how the outputs of the industry should be defined and the appropriate weights for those outputs having been matters of controversy.

These are technical matters that ultimately the AER will need to resolve, after having received expert advice. However, the calculation objective discussed in section 4.1.5 will guide the totality of the AER's decisions regarding the initial set of prices and X factor, and hence will provide guidance for the method used to measure total factor productivity growth. As discussed in section 4.1.5, the ESC's expert demonstrated that applying such an objective resolved the question of how outputs should be measured and the applicable weights, as well as the appropriate starting point for measuring the quantity of capital inputs.

One methodological matter where further guidance to the AER is appropriate relates the firms to be included in the industry-wide measure of productivity growth. As discussed in section 4.1.7, it is essential that the 'industry' that is used to set the X factor for a particular firm includes only firms whose scope for productivity growth over the relevant measurement period is representative of the firm in question. If the fixed X factor is used and a long term data set is adopted, then modest one-off events are unlikely to have a material impact on measured productivity growth given that the use of a larger data would imply that only a small weight is placed on such events. However, if a rolling X factor is adopted – and thus relying upon fewer observations from fewer firms – then substantial care with how historical productivity growth is measured is required. It is therefore proposed that the AER be directed to ensure that the set of firms for which historical productivity growth is measured, and the period over which it is measured, exclude to the extent practicable the effects of one-off events, which may include:

- firms or data from firms that includes the initial years after being privatised (when strong, one-off productivity growth may be expected); and

- firms or data from firms from other jurisdictions that include a period when there have been material changes to the jurisdiction-specific regulatory requirements in those other jurisdictions.

In addition, as discussed in section 4.1.3, it is proposed that the Rules require the AER to publish a guideline about how it would apply the TFP approach. It would be expected that the AER would set out in these guidelines the methodological choices that it would consider appropriate when estimating historical productivity growth.

These proposals are set out in proposed Rule 6.2.8, 6.6A.4 and 6.6A.6.

4.1.9 Service performance incentive arrangements and efficiency benefit sharing schemes

The current Rules for distribution revenue and pricing permit the AER to design and require incentive arrangements for service performance and an efficiency benefit sharing scheme. The purpose of these schemes is as follows:

- *service performance incentive scheme* – the purpose of such schemes reward a distributor for improvements service performance and provide a financial penalty for reductions in performance in order to provide the distributors with a financial incentive to take account of the value that customers place upon service when making operating and investment decisions;[36] and

- *efficiency benefit sharing schemes* – the purpose of such schemes is to provide for part of the benefit from efficiency gains in one regulatory period to be carried over into the next in order to provide a continuing incentive for efficiency gains.

Turning to the first of these, given the TFP approach – like the building block approach – would provide the distributors being rewarded for minimising expenditure, it is important to have measures in place to minimise the scope for distributors to gain financially from reducing cost at the expense of reduced service performance and thereby provide an incentive for a reduction in service performance. The measures that are currently employed across jurisdictions for this purpose include the measurement and reporting of comparative service performance, reasonable or best endeavours or strict obligations to meet minimum standards and a number of different financial incentive schemes related to service performance. The financial incentive schemes in existence include requirements to compensate individual customers for below threshold performance (so called 'guaranteed service levels') and adjustments to prices that reflect the service provided to all customers (with penalties applying for below target performance and rewards applying for above target performance).

The Rules currently require the AER to develop a service target incentive scheme for electricity distributors, taking account of the other jurisdictionally-imposed measures

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[36] A particular concern is to take away the incentive for distributors to reduce cost and hence obtain a financial reward under a cost-efficiency incentive mechanism by permitting service levels to decline.

that may exist.[37] The clause as currently drafted is sufficiently broad to permit the AER to develop a scheme that is appropriate for use under the TFP approach, and hence it is proposed that the same clause should apply irrespective of whether the building block or TFP approach is applied. Indeed, the design of an 'S factor' service incentive scheme would be expected to be quite similar between the building block and TFP approaches.

- Under the building block approach, the incremental cost increase (saving) arising from an individual firm increasing (reducing) in the level of service would be retained until the commencement of the next regulatory period (and potentially for a longer period if an efficiency benefit sharing scheme is applied, as discussed below). Accordingly, for the service incentive scheme to provide an incentive to deliver the optimal level of service, the scheme should permit the distributor to retain the customer benefit (incur the customer loss) from the increase (decrease) in service performance over the same period as the cost of that change in service levels is borne by the distributor.

- Similarly, under the TFP approach, the incremental cost increase (saving) arising from an individual firm increasing (reducing) in the level of service also would be retained until the commencement of the next regulatory period (and potentially for a longer period if an efficiency benefit sharing scheme is applied, as discussed below). Accordingly, again for the service incentive scheme to provide an incentive to deliver the optimal level of service, the scheme should permit the distributor to retain the customer benefit (incur the customer loss) from the increase (decrease) in service performance over the same period as the cost of that change in service levels is borne by the distributor.[38]

One matter where the AER would need some flexibility, however, is to ensure that the resetting of prices at the time of a price review is able to preserve the intent of the service incentive scheme. By way of example, under the service incentive scheme that operates in Victoria, an increment (decrement) is added (or deducted) from prices for each incremental improvement (decline) in service, and then reversed after 6 years, with the increment or decrement intended to apply irrespective of the timing of price reviews. It follows that when prices are reviewed, the intended effect of the scheme would be to remove the accumulated service-related increment or decrement from the prices, reset those prices to cost and then reapply the relevant increment or decrement. The flexibility to ensure that the initial prices under the TFP approach are set in a manner that is consistent with the service performance incentive scheme is provided in proposed Rule 6.6A.5(e)(3).

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[37] See Rule 6.6.2.

[38] This assumes that a fixed X factor applies, so that nothing that an individual firm does would affect its X factor within the regulatory period. If a rolling X factor is applied, then an increase in an individual firm's expenditure (i.e., as a result of improving service) would reduce its X factor and so offset some of the cost of that improvement, and vice versa for a reduction in expenditure resulting from a decline in service. However, the extent to which an individual firm's actions would affect its X factor would depend upon the number of firms in the sample and the period over which productivity growth is averaged.

Regarding the efficiency benefit sharing scheme, the absence of forecasts of expenditure under the TFP approach makes it difficult to apply such a scheme in the context of a TFP approach. However, the problem that the efficiency benefit sharing schemes are intended to address under the building block approach – which is to attempt to address the potential for incentives for efficiency to diminish as a cost-based review nears – would remain under the TFP approach as proposed in this rule change proposal. Accordingly, it is proposed that the discretion (but not a requirement) for the AER to introduce such a scheme, should such a scheme prove feasible, should exist under the TFP approach in a similar manner to what exists at present for the building block approach. However, an important modification to the building block scheme would be required, which is to change the outcome of the scheme from one that provides a reward (penalty) where actual *expenditure* is less (greater) than forecast to one where a reward (penalty) accrues if the actual growth in *inputs* is less (greater) than the growth assumed in the X factor in the preceding regulatory period.

If such a scheme does not prove feasible, the absence of an efficiency benefit sharing scheme under the TFP approach is unlikely to imply a significant diminution of the incentives for efficiency compared to the building block approach in practice.

- First, the initial expectations of the efficiency benefit sharing schemes have not been realised in practice. The difficulties of addressing deferred capital expenditure, and the potential for distributors to earn windfall gains from retaining capital expenditure efficiencies, has led to many jurisdictions only including operating expenditure in the efficiency benefit sharing scheme, as is the case for electricity transmission. In addition, the commitments from some regulators (including the ESC) not to permit a negative future benefit share have, in particular cases, eroded the incentive properties of the scheme, and as a result not obviated the need for an administrative review of the prudence and efficiency of expenditure.

- Secondly, the potential diminution of cost-efficiency incentives around the time of a price review under the TFP approach needs to be balanced off against the higher power of incentives that would apply earlier in the regulatory period if the TFP approach encourages the AER to accept longer periods between cost-based reviews.

4.1.10 Transitional measures

It is important that the change from the use of the building block approach to the TFP approach give effect to past commitments that were intended to have a continuing effect from one regulatory period to the next. By way of example, a central feature of efficiency benefit sharing schemes is that some of the benefit (loss) from efficiency gains (losses) in one regulatory period would be carried over into the next. The preservation of the past regulatory asset base is also of key importance.[39] A

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[39] For the avoidance of doubt, the same provisions that apply to the updating of the regulatory asset base for the building block approach will apply to the regulatory asset base under the TFP approach, except that the use of 'actual' rather than 'forecast' depreciation is the only practicable option under the former, as discussed in section 4.1.6.

requirement to give effect to those past commitments is consistent with creating a certain and predictable regulatory regime, and will also remove what could be barrier to the uptake of the TFP approach.

The mechanism for giving effect to past commitments may differ under the TFP approach compared to the building block approach, given that the former approach will not require forecasts of expenditure over the regulatory period. The proposed mechanism is as follows.
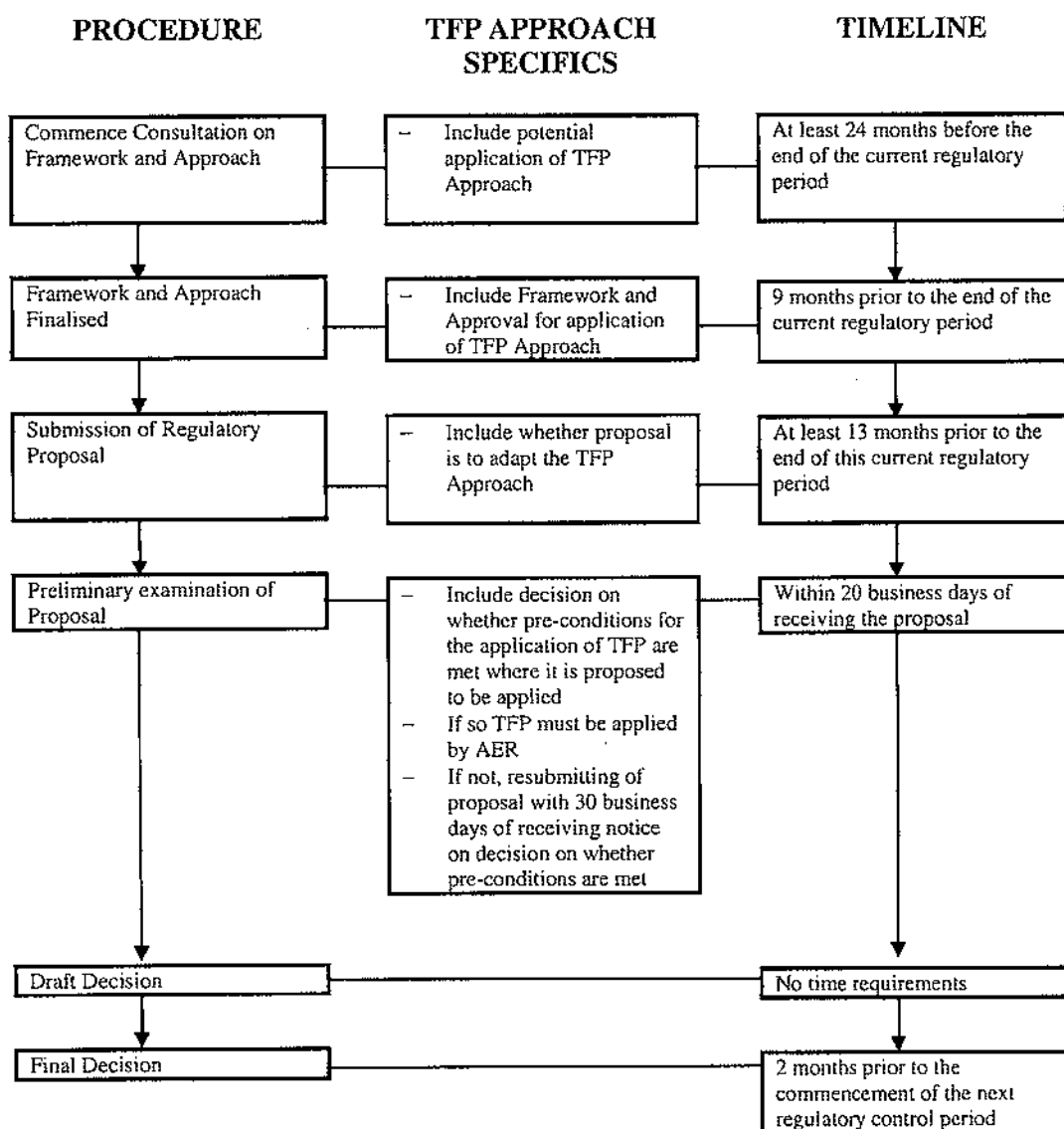
- First, the initial set of prices required for the TFP approach will be calculated for the first year of the regulatory period, rather than for a test year, using the same method that would have been used under the building block approach (except for the change described below). This method will ensure 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 will 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. While this task inevitably would require demand to be forecast, the economic significance of such forecasts would not be expected to be a first order issue and hence not add materially to the administrative costs of regulation.

These proposals are set out in proposed Rule 6.6A.5.

4.1.11 Process for adopting the TFP approach

The model for the TFP approach explained above process explained above require an initial decision of whether the TFP approach would be applied, or whether the building block should continue (noting that the distributor must consent to apply the TFP approach for the first time).

It is proposed that the distributor's regulatory proposal would include its proposal of whether the building block or TFP approach would apply, and that the AER would consider whether the criteria for applying the TFP approach are met when undertaking the preliminary review of the proposal, as illustrated below.

PROCEDURE	TFP APPROACH SPECIFICS	TIMELINE
Commence Consultation on Framework and Approach	– Include potential application of TFP Approach	At least 24 months before the end of the current regulatory period
Framework and Approach Finalised	– Include Framework and Approval for application of TFP Approach	9 months prior to the end of the current regulatory period
Submission of Regulatory Proposal	– Include whether proposal is to adapt the TFP Approach	At least 13 months prior to the end of this current regulatory period
Preliminary examination of Proposal	– Include decision on whether pre-conditions for the application of TFP are met where it is proposed to be applied – If so TFP must be applied by AER – If not, resubmitting of proposal with 30 business days of receiving notice on decision on whether pre-conditions are met	Within 20 business days of receiving the proposal
Draft Decision		No time requirements
Final Decision		2 months prior to the commencement of the next regulatory control period

If the AER rejects a proposal to apply the TFP approach (or, if the TFP approach had been used before, rejects a proposal to revert back to the building block approach), the distributor would be required to prepare a new regulatory proposal using the appropriate method.

4.2 Assessment of the proposed rule changes against the NEL requirements

4.2.1 Introduction

As discussed in section 3, the NEL requires the AEMC to be satisfied that:

- the Rule that is proposed in this submission meets or is likely to meet the national electricity objective; having regard to

- the revenue and pricing principles.

As the second of these provides the more definitive guidance it is convenient to address its requirements first. The discussion below focuses on the economic issues

associated with applying the relevant provisions of the NEL to assess whether the proposed rule change should be accepted. A more detailed discussion of the legal issues that are raised by these provisions is provided in Attachment B to this submission.

4.2.2 Revenue and pricing principles

This section will explain how the Rule proposal addresses each of the revenue and pricing principles considered seriatim.

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(2) A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in—

    (a) providing direct control network services; and

    (b) complying with a regulatory obligation or requirement or making a regulatory payment.

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. The AER will not be required merely to set prices that recover the distributor's actual costs at the end of the regulatory period, but will be empowered to undertake an administrative review of whether those costs are prudent and efficient.

However, the Rules as proposed will require the AER to apply the criteria under the current Rules for assessing expenditure forecasts under the building block approach when the AER sets the initial prices under the TFP approach. The result is that the criteria governing the AER's administrative review of the prudence and efficiency of a distributor's actual cost under the TFP approach are identical as those that apply to the AER's administrative review of the distributor's forecast expenditure under the building block approach. Thus, the prospect of a distributor recovering its efficient cost under the TFP approach should be no worse than the prospect of recovering efficient cost under the building block approach.

In addition, it is noted that the criteria that the apply to the AER's review of expenditure forecasts under the building block approach – and hence which apply to the AER's assessment of actual expenditure under the TFP approach – require the AER to be satisfied that the expenditure reflects efficient cost, is prudent and efficient, and based on a realistic expectation of demand (which, under the TFP approach, should be known). These criteria should provide the distributors with substantial assurance that they are able to recover the efficient cost of providing the services and complying with regulatory requirements relevant thereto.

Whether the price controls that result from applying the TFP approach will continue to permit the distributor to recover at least its efficient cost over the regulatory period will depend upon whether the X factor that has been derived with reference to industry-wide total factor productivity and inflation provides a (statistically) unbiased

estimate of the change in the unit cost of the distributor over the regulatory period. There are a number of measures in the Rule proposal that, in combination, should ensure that this requirement will be met, including:

- to require the distributor to consent to the application of the TFP approach for the first time, which consent it is reasonable to assume will only be provided if the distributor considers that its financial outcomes will be no worse than under the building block approach (which, in turn, sets price controls that reflect firm-specific forecasts of costs);

- to preclude the TFP approach from being applied where the productivity growth for the distributor in question is expected to be materially different to that of the industry as a whole;

- to provide an option to the distributors to select to use a 'fixed X factor' during the regulatory period, under which the X factor would be set with reference to the long term industry-wide rate of growth of productivity, or a 'rolling X factor', under which the X factor would adjust to commence passing through into prices any industry-wide change in cost immediately after the change in cost;

- by continuing to permit the immediate pass-through of the costs associated with specified exogenous events; and

- for prices at the expiration of a regulatory period to be reset with reference to cost, so that any misalignment between revenue and efficient cost that occurred during the regulatory period would be remedied from that time forward.

Accordingly, distributors should have a reasonable expectation of recovering at least the efficient cost of providing the services under the TFP approach.

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(3) A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes—

(a) efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and

(b) the efficient provision of electricity network services; and

(c) the efficient use of the distribution system or transmission system with which the operator provides direct control network services.

One of the outcomes that may be expected under the TFP approach is that the AER would be prepared to accept a longer period between periodic reviews of price controls than it would when the building block approach was applied. This follows because the X factor under the TFP approach will be set with reference to measured total factor productivity, rather than forecasts of firm-specific expenditure and demand, and hence be less affected by problems of the asymmetry of information

between the AER and distributor. Stated alternatively, the potential for the distributors under the building block approach to use their superior knowledge of their businesses to convince the regulator to accept upwardly-biased expenditure forecasts would be much reduced under the TFP approach. As a result, the AER should be less concerned under the TFP approach than under the building block approach that accepting a longer regulatory period than the current standard of 5 years would permit inappropriate windfall gains to accrue.

A lengthening of the period between cost-based reviews would be expected to improve the effectiveness (and power) of many of the arrangements that maybe employed to encourage the distributors to act efficiently.

- *price cap* – by setting a prices independent of the regulated business's own cost for a period, higher earnings than otherwise would arise where a business's costs are lower than otherwise, thus providing an incentive for businesses to make cost-efficiencies;

- *price structures* – a tariff basket form of price control is often used because it provides an incentive for a regulated business to align prices with its marginal cost and to recover the residual cost in the least distorting manner – that is, for distributors to adopt price structures that are efficient. Efficient prices, in turn, encourage the efficient use of the network.[40] Lengthening the regulatory period increases the power of the incentive under the tariff basket for distributors to set prices;[41] and

- *service incentive arrangements* – a key feature of regulatory regimes in a number of jurisdictions is that distributors are rewarded financially for improved service performance (and penalised for reduced service performance). A properly calibrated service incentive scheme would provide the distributor with a share of the customer benefit from service improvements that is the same as the share it bears of the cost of delivering that service improvement – thus providing the distributor with a financial incentive to provide the optimal level of service performance. As longer regulatory period result in the distributor bearing a greater share of the cost of any service improvements, a change to service incentive schemes would be required to provide an increased share of the benefits of service improvements. The combination of the distributor being more exposed to both the costs and benefits of service improving projects will provide stronger incentives to seek out efficient service improving projects, while not engaging in service improvements that are not sufficiently valued by customers (i.e., 'gold plating').

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[40] That is, by aligning price with marginal cost, consumers are encouraged to use the network only if they value the service more than the social cost of production, and by recovering any remaining cost in the least distorting manner, the optimal level of use of the network is preserved to the extent possible.

[41] This follows because the 'marginal cost' that the tariff basket encourages the business to consider when setting prices is only the cost of serving an additional unit of output that would be incurred prior to the next cost-based price review. By extending the time between reviews, the regulated business is encouraged to consider the effect of additional output on costs caused over a longer period, thus providing stronger incentives for efficient pricing.

One element of the incentive schemes that have been applied in the context of the building block approach that is may not be as practicable to apply in the context of a TFP approach is an efficiency benefit sharing scheme. One of the original objectives of such a scheme was to provide regulated businesses with an continuing incentive to make efficiency gains at the time of a price review – and remove the incentive that may otherwise occur to raise cost immediately prior to a review (e.g., by bringing forward planned maintenance). If a continuing incentive to make efficiency gains existed, then the regulator could justify presuming that actual expenditure at the end of the regulatory period was approximately efficient, and hence dispense with the need to undertake an administrative review of the prudence or efficiency of that expenditure.

The rule change proposal proposes to provide the AER with the discretion to introduce an efficiency benefit sharing scheme in the context of the TFP approach, and hence would permit such a scheme if the AER considered it feasible. The mechanics of the scheme would differ to what exists under the building block, however. In particular, rather than relying on comparisons between actual and forecast expenditure (the latter of which would not exist if the TFP approach is used) it is proposed that comparisons instead could be made between the actual growth rate of inputs and the growth rate of inputs that was assumed in the X factor that was set for the previous regulatory period (which would be available if the TFP approach is used).

In practice, however, the potential absence of an efficiency benefit sharing scheme under the TFP approach is unlikely to imply a significant diminution of the incentives for efficiency compared to the building block approach – but rather, it is plausible that the incentives for cost-efficiency under the TFP approach may be expected to be more powerful, for a number of reasons.

- First, the initial expectations of the efficiency benefit sharing schemes have not been realised in practice. The difficulties of addressing deferred capital expenditure, and the potential for distributors to earn windfall gains from retaining capital expenditure efficiencies, has led to many jurisdictions only including operating expenditure in the efficiency benefit sharing scheme, as is the case for electricity transmission. In addition, the commitments from some regulators (including the ESC) not to permit a negative future benefit share have, in particular cases, eroded the incentive properties of the scheme, and as a result not obviated the need for an administrative review of the prudence and efficiency of expenditure.

- Secondly, the potential diminution of cost-efficiency incentives around the time of a price review under the TFP approach needs to be balanced off against the higher power of incentives that would apply earlier in the regulatory period if the TFP approach encourages the AER to accept longer periods between cost-based reviews.

In summary, a direct outcome of the TFP approach is that it provides incentives for distributors to be cost efficient, and this incentive may be expected to be stronger than would apply under the building block approach. Incentives for cost efficiency imply that there would be incentives for:

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- the efficient provision of electricity network services (clause 3(b)); and

- efficient investment in a distribution system (clause 3(c)) in that:

  — an incentive would be created not to invest unnecessarily, and to meet service obligations at lowest capital (and operating) cost;

  — an incentive would also be created to choose the lowest cost option between capital projects and operating activities (including to select non-network options for meeting demand when it is efficient to do so; and

  — in combination with a service incentive mechanism, would provide an incentive for distributors to undertake efficient service improvement projects when it is efficient to do so.

In addition, the TFP approach is compatible with providing incentives for distributors to set efficient prices and to reward distributors for their level of service performance, and these incentives may be expected to be stronger than under the building block approach.

- The financial rewards for service performance, in conjunction with the incentives for cost efficiency, should provide incentives for the distributors to undertake efficient service improvement projects, which is a component of the investment referred to by clause 3(a).

- The incentive to set efficient prices will, once responded to, provide incentives for efficient use of the network, as required by clause 3(c). In addition, by setting efficient prices, consumers will only use the network when it is efficient to do so, thus permitting the distributor to defer of avoid augmentation projects where it is efficient to do so, which is relevant to clause 3(a).

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(4) Regard should be had to the regulatory asset base with respect to a distribution system or transmission system adopted—

(a) in any previous—

(i) as the case requires, distribution determination or transmission determination; or

(ii) determination or decision under the National Electricity Code or jurisdictional electricity legislation regulating the revenue earned, or prices charged, by a person providing services by means of that distribution system or transmission system; or

(b) in the Rules.

The proposed Rules require the AER to adopt the relevant principles from the building block approach when setting the initial prices under the TFP approach, thus requiring the 'prescribed' regulatory asset bases for the distributors to be used. These

prescribed regulatory asset bases were taken from relevant distribution determinations.

Secondly, the proposed TFP criterion requires consistency in the manner in which the initial set of prices are set and total factor productivity growth is estimated, including that there be consistency with the regulatory asset base and how capital inputs are derived when estimating productivity growth. The example was provided that a firm with a lower regulatory asset base all else constant (e.g., one that was written down materially from replacement cost) would be expected to have a lower reduction in unit cost (or higher increase in unit cost) in the future, all else constant.

These measures imply that the requirements of clause 4 are met.

> (5) A price or charge for the provision of a direct control network service should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates.

The proposed Rules require the AER to adopt the relevant principles from the building block approach when setting the initial prices under the TFP approach. Accordingly, distributors should have the same assurance under the TFP approach that prices will permit a return that is commensurate with the regulatory and commercial risks involved in providing the service. Relevantly, those clauses require the use of standard method for estimating the required rate of return, require standard and accepted methods for deriving key inputs (namely the use of a 10 year period for the nominal risk free rate and debt margin), and the AER's application of the clause is guided by the national electricity objective and the revenue and pricing principles, including this clause.

Accordingly, the requirements of clause 4 are met.

> (6) Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated network service provider in, as the case requires, a distribution system or transmission system with which the operator provides direct control network services.

As discussed above, the TFP approach should be expected to permit distributors to recover their efficient cost, thus preserving an incentive for investment. In addition, given the newness of the proposed regime, it is proposed that the TFP approach would only apply if it is proposed by the distributor, thus providing the distributor with the means to protect itself from a materially adverse change to the regime.

The incentive properties of the TFP approach discussed above – most notably, to minimise expenditure – should address the potential for over-investment.

> (7) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a distribution system or transmission system with which a

regulated network service provider provides direct control network services.

A key feature of the TFP approach is that the trajectory of prices is determined with reference to measured historical productivity growth rather than firm-specific forecasts of a distributor's expenditure and demand. By relying on 'known and measurable' information to set the price trajectory, and placing much less weight on information over which the distributors have a substantial asymmetry of knowledge, the capacity for the distributors to obtain a windfall gain from their information asymmetry would be reduced. This, in turn, would be expected to result in a greater share of efficiency gains being returned to consumers, and so protect against the potential under utilisation of the network.

The risk of over-utilisation of the network is addressed by the incentives created for efficient investment (discussed in the clause above) and by the incentive that is able to be created for the distributors to set efficient prices. This is an means of addressing a scarcity of network capacity in a manner that minimises the economic cost of that scarcity.

4.2.3 National electricity objective

The absolute and relative merits of the TFP approach against many of the contributors to economic efficiency that were discussed in section 3.2 were discussed in section 4.2.2 above, including that:

- the TFP approach would provide incentives for cost-efficiency, and that this incentive may be expected to be stronger than under the building block approach;

- the TFP approach would also provide a degree of assurance that costs would be recovered, thus preserving investment incentives;

- the TFP approach is compatible with providing incentives for efficient pricing, and stronger incentives for this may be expected compared to the building block approach; and

- the TFP approach is compatible with providing incentives for efficient levels of service performance, and stronger incentives for this may be expected compared to the building block approach.

A matter that was not addressed in the previous section was the administrative cost of regulation. As discussed above, one of the key benefits expected from the TFP approach is to reduce the administrative cost of regulation by setting the trajectory of prices to the extent possible with reference to 'known and measurable' information, and hence relaying much less on forecasts. The assessment of distributors' expenditure forecasts has been contentious and difficult for regulators in the past, principally because it relates to matters where the distributors will always have greater information and expertise than the regulator. Avoiding having to review forecasts in this context, but instead seeking to measure what is already known, therefore should reduce the cost of regulation considerably.

The other matter that was only touched on in the previous section was the distribution of the benefits of efficiency gains between the distributors and customers. The fact that the TFP approach sets the trajectory of prices in a manner that is less susceptible to a distributor's asymmetric information makes it likely that customers would receive a greater share of the efficiency gains achieved. Indeed, this outcome is consistent with a theoretical modelling of the creation and distribution of efficiency gains that was undertaken for the ESC.[42]

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[42] Refer to Pacific Economics Group, 2005, Incentive Power and Regulatory Options in Victoria, May.

Attachment A

Proposed Total Factor Productivity Rules

Clause 6.1.2:

Insert after paragraph (b)(3)

"(3A) Part CA sets out the total factor productivity methodology applying to the regulation of services classified as *standard control services.*"

New clause 6.2.4A:

Insert after clause 6.2.4 the following new clause

"6.2.4A Choice between building blocks approach and total factor productivity methodology

(a) If a *Distribution Network Service Provider* makes application to have the total factor productivity methodology apply to the regulation of services classified as *standard control services*, a distribution determination is to include a decision by the *AER* as to which of the building blocks approach or the total factor productivity methodology is to apply to the regulation of those services.

(b) In deciding which of the building blocks approach or the total factor productivity methodology is to apply the *AER* must have regard to:

> (1) the adequacy, quality and period of the data available for and relevant to the total factor productivity methodology;
> (2) whether, having regard to any previous change in costs, there is any real likelihood of a substantial change in costs in relation to the services over the foreseeable future which cannot be or is not accommodated by (without limitation):
>> (i) cost pass through pursuant to clause 6.6.1 or 6.6B.1;
>> (ii) use of the *rolling X factor method*;
>> (iii) a shorter rather than a longer *regulatory control period*;
>> (iv) any combination of the above;
> and if so, what mechanisms can be incorporated to address any uncertainty arising from such a change;

>> Note that pursuant to clause 6.6A.2(b) a *regulatory control period* must not be less than 5 *regulatory years.*

> (3) whether it is likely, if the total factor productivity methodology is applied, that over a *regulatory control period* the productivity growth of

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the *Distribution Network Service Provider* will, or is likely to, reflect industry-wide productivity growth having regard to (without limitation) whether the *Distribution Network Service Provider*:

(i) has been privatised within the 5 years prior to the application;

(ii) is subject to a regulatory obligation or requirement the effect of which the AER considers materially affects, or is likely to materially affect, that *Distribution Network Service Provider*'s productivity when compared with the productivity of all other *Distribution Network Service Providers*; or

(iii) is 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 *Distribution Network Service Provider* will, or is likely to, reflect industry-wide productivity growth; and

(4) any other relevant factor.

(c) That services have previously been regulated pursuant to the building blocks approach is not determinative of whether that approach should continue to apply or whether the total factor productivity methodology should apply instead.

(d) If the *AER* decides to apply the total factor productivity methodology, a *Distribution Network Service Provider* may not thereafter revert to the building blocks approach for subsequent *regulatory control periods* unless the *AER* consents. In deciding whether to give its consent the *AER* must have regard to the matters set out in paragraph (b).

(e) Reference in this clause to "industry" when used in the term "industry-wide" is to be taken to be a reference to the electricity distribution industry both in Australia and (where such is relevant in all the circumstances) overseas."

Clause 6.2.5:

Substitute for "The" at the start of paragraph (b) the following

"Subject to paragraph (ba), the"

Insert after paragraph (b)

"(ba) Where the total factor productivity methodology applies to the regulation of services, the control mechanism may consist of:

(1) caps on the prices of individual services; or
(2) tariff basket price control; or
(3) a combination of the above."

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Clause 6.2.6(a):

Insert at the end of the paragraph after "Part C" the following

"or Part CA"

Clause 6.2.6(c):

Insert after the words "Part C" the words "or Part CA"

Division 3 of Chapter 6:

Amend the heading of the Division by inserting after the word "Guidelines" the words ", Models and Publication of Annual TFP Calculations".

New clauses 6.2.8A, 6.2.8B and 6.2.8C:

Insert after clause 6.2.8 the following clauses:

"6.2.8A   TFP Guidelines

(a)   The *AER* must *publish* guidelines as to the total factor productivity methodology and its application ("**the TFP guidelines**").

(b) The *TFP guidelines* must (without limitation):

(1) set out the indexing method the *AER* proposes to use to calculate total factor productivity;

> Note: There are two indexing methods commonly used to calculate total factor productivity being the Tornqvist index form and the Malmquist index form.

(2) identify the inputs proposed to be used;
(3) set out the weights proposed to be given to those inputs and the basis for allocating those weights;
(4) identify the price indices proposed to be used for the various inputs;
(5) set out the methods and assumptions proposed to be used for determining inputs that are capital in nature;
(6) identify the outputs proposed to be used;
(7) set out the weights proposed to be given to those outputs and the basis for allocating those weights;
(8) identify the *Distribution Network Service Providers* from whom it is proposed to collect or use data;

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(9) identify the States and Territories in which it is proposed to collect or use data;

(10) identify the overseas jurisdictions (if any) from which, and from whom or what within those jurisdictions, it is proposed to collect or use data;

> Note: Particularly where the *fixed X factor method* is used, overseas data may be able to be used.

(11) set out the period or periods for which data is proposed to be collected or used;

(12) identify the data that is proposed to be collected or used;

(13) identify, if such has not already been done pursuant to the preceding subparagraphs, how that data is intended to be used in the application of the total factor productivity methodology;

(14) setting out, where feasible, the adjustments (if any) that the *AER* proposes to make pursuant to clause 6.6A.5(b)(6);

(15) setting out, where feasible, the modifications (if any) to Part C pursuant to clause 6.6A.5(c)(4) that the *AER* considers necessary in all the circumstances;

(16) setting out, where feasible, the modifications (if any) to Part C pursuant to clause 6.6A.5(d) that the *AER* considers necessary in all the circumstances;

(17) identify, for the purposes of 6.6A.6(f)(2), *Distribution Network Service Providers* whose data it is proposed be excluded and if so what of that data it is proposed be excluded;

(18) identify whether it is proposed to limit data to be used for calculating the X factor pursuant to clause 6.6A.6 either generally or in a particular case to a particular State or Territory or particular States and Territories and if so:

> (i) what data; and
>
> (ii) in respect of each set of data, which States or Territories.

(c) Except as otherwise provided in Part CA, the *TFP guidelines* are not mandatory (and hence do not bind the *AER* or anyone else) but if the *AER* makes a distribution determination that is not in accordance with the *TFP guidelines*, the *AER* must state, in its reasons for the distribution determination, the reason for departing from the *TFP guidelines*.

(d) The *AER* shall review the *TFP guidelines* at not less than 5 yearly intervals.

(e) In carrying out a review pursuant to the preceding paragraph, or in making or amending the *TFP guidelines* the *AER* must follow the *distribution consultation procedures* in Part G.

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(f) Clauses 6.2.8(b) and (e) apply to the *TFP guidelines* as if a reference in those clauses to "the guidelines" were a reference to the *TFP guidelines*.

6.2.8B Models proposed for the purposes of TFP guidelines

If the *AER* proposes to use any model for the purposes of the *TFP guidelines*, the *AER* must identify that model in the *TFP guidelines* and must *publish* that model at the same time as it *publishes* the *TFP guidelines*.

6.2.8C Publication of annual TFP calculations

(a) The *AER* must, for each calendar year commencing from the year after Part CA comes into force, *publish* its calculation of total factor productivity increase or decrease with respect to the electricity distribution industry for that year which calculation should be in accordance with the *TFP guidelines* and uses the model or models identified pursuant to clause 6.2.8B.

(b) The data on which the calculation is based must be *published* together with the calculation.

(c) Calculations *published* pursuant to this clause do not bind the *AER* in any subsequent distribution determination."

New Part CA

Insert after Part C the following new Part

"PART CA: TOTAL FACTOR PRODUCTIVITY DETERMINATIONS FOR STANDARD CONTROL SERVICES

6.6A Total Factor Productivity determinations

6.6A.1 Introduction

(a) A *total factor productivity determination* is a component of a distribution determination.

(b) The procedure for making a *total factor productivity determination* is contained in Part E of this Chapter and involves the submission of a *total factor productivity proposal* to the *AER* by the *Distribution Network Service Provider*.

(c) The *total factor productivity proposal:*

(1) must be prepared in accordance with the requirements of this Part, and Schedule 6.1A; and

(2) must comply with the requirements of, and must contain or be accompanied by the information required by, any relevant *regulatory information instrument.*

6.6A.2 Contents of a total factor productivity determination

(a) A *total factor productivity determination* for a *Distribution Network Service Provider* is to specify, for a *regulatory control period,* the following matters:

> (1) The tariffs for the first *regulatory year* of the *regulatory control period;*
>
> (2) In any case where the *rolling X factor method* is used: the X factor for the first *regulatory year* of the *regulatory control period* and the methodology for determining that X factor and for determining the X factors to apply thereafter;
>
> (3) In any case where the *fixed X factor method* is used: the X factor for the *regulatory control period;*
>
> > Note, with respect to both subparagraphs (2) and (3), pursuant to clause 6.6A.6(h) there may be either or both different X factors for different *regulatory years* and different X factors for different control mechanisms.
>
> (4) How any applicable *service target performance incentive scheme* or *demand management incentive scheme* are to apply to the *Distribution Network Service Provider;*
>
> (5) If the *AER* determines that an *efficiency benefit sharing scheme* is to apply to the *Distribution Network Service Provider,* how it is to apply;
>
> (6) The commencement and length of the *regulatory control period;* and
>
> (7) The amounts, values, inputs and outputs on which the *total factor productivity determination* is based (differentiating between those contained in, or inferred from the service provider's *total factor productivity proposal* and those based on the *AER's* own estimates or assumptions).

(b) A *regulatory control period* must not be less than 5 *regulatory years.*

> Note: see also clause 6.6A.4.

(c) If a *Distribution Network Service Provider* submits a *total factor productivity proposal* that:

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(1) uses the same indexing method proposed in the *TFP guidelines*;

(2) uses the same inputs as those identified in the *TFP guidelines*;

(3) uses the same weights for those inputs as set out in the *TFP guidelines*;

(4) uses the same basis for allocation of those weights as set out in the *TFP guidelines*;

(5) uses the same price indices for those inputs as identified in the *TFP guidelines*;

(6) uses the same methods and makes the same assumptions for determining inputs that are capital in nature as are set out in the *TFP guidelines*;

(7) uses the same outputs as those identified in the *TFP guidelines*;

(8) uses the same weights for those outputs as set out in the *TFP guidelines*;

(9) uses the same basis for allocation of those weights as set out in the *TFP guidelines*; or

(10) contains the same:

      (i) adjustments pursuant to clause 6.6A.5(b)(6); or

      (ii) modifications to Part C

as set out in the *TFP guidelines*,

the *AER* must use, for the purposes of the *total factor productivity determination* for that *Distribution Network Service Provider*, the indexing method, inputs, price indices, methods and assumptions, outputs, weights, bases for allocation, adjustments or modifications used in that *total factor productivity proposal* unless there is persuasive evidence justifying a departure, in a particular case, from that method or those inputs, price indices, methods and assumptions, outputs, weights, bases for allocation, adjustments or modifications as the case may be.

(d) In deciding whether a departure from an indexing method, inputs, price indices, methods and assumptions, outputs, weights, bases of allocation, adjustments or modifications proposed, identified or set out (as the case may be) in the *TFP guidelines* is justified, the *AER* must consider:

    (1) the criteria on which the indexing method, inputs, price indices, methods and assumptions, outputs, weights, bases of allocation, adjustments or modifications were proposed, identified or set out (as the case may be) in the *TFP guidelines* ("the **underlying criteria**");

    (2) whether, in the light of the underlying criteria, a material change in circumstances since the date of the *TFP guidelines*, or any other relevant factor, now makes the indexing method, inputs, price indices, methods and assumptions, outputs, weights, bases of

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allocation, adjustments or modifications proposed, identified or set out (as the case may be) in the *TFP guidelines* inappropriate;

(3) whether, where the *total factor productivity proposal* uses some but not all of the indexing method, inputs, price indices, methods and assumptions, outputs, weights, bases of allocation, adjustments or modifications proposed, identified or set out (as the case may be) in the *TFP guidelines*, that makes the use of that indexing method or those inputs, price indices, methods and assumptions, outputs, weights, bases of allocation, adjustments or modifications (as the case may be) inappropriate in all the circumstances.

(e) If the *AER*, in making a distribution determination, in fact departs from the indexing method, inputs, price indices, methods and assumptions, outputs, weights, bases of allocation, adjustments or modifications proposed, identified or set out (as the case may be) in the *TFP guidelines*, it must:

(1) state the substitute indexing method, inputs, price indices, methods and assumptions, outputs, weights, bases of allocation, adjustments or modifications in the determination; and

(2) demonstrate, in its reasons for departure, that the departure is justified:

(i) on the basis of the underlying criteria; or

(ii) because use of some but not all of the indexing method, inputs, price indices, methods and assumptions, outputs, weights, bases of allocation, adjustments or modifications proposed, identified or set out (as the case may be) in the *TFP guidelines*, is inappropriate in all the circumstances.

Note: Cf clause 6.5.4(f) – (i).

6.6A.3 Criterion of the total factor productivity methodology

(a) The purpose of paragraph (b) of this clause is to set out the criterion ("the **TFP criterion**") which the *AER* is to have regard to in order to assess the calculations required by clauses 6.6A.5 and 6.6A.6.

(b) The tariffs for the first *regulatory year* of a *regulatory control period* and the X factor for that and subsequent *regulatory years* in combination should permit a *Distribution Network Service Provider*, whose total factor productivity growth is the same as that assumed in calculation of the X factors, to recover at least its efficient costs over the *regulatory control period*.

Note: see also section 7A(2).

6.6A.4 Regulatory control period

When determining whether a *regulatory control period* of more than 5 *regulatory years* should be specified, the *AER* must also have regard to extent to which the particular *X factor method* used makes it more or less likely that over the *regulatory control period* tariffs will, or are likely to, reflect the efficient costs of the *Distribution Network Service Provider*.

> Note: See clause 6.6A.6 which sets out the two alternative *X factor methods*. The longer a *regulatory control period*, the greater the possibility - if the *fixed X factor method* is used - that tariffs will trend away from a *Distribution Network Service Provider's* efficient costs. This possibility is lessened if the *rolling X factor method* is used at the same time as a more lengthy *regulatory control period*.

6.6A.5 Calculation of Initial Tariffs

(a) When carrying out the calculations required by this clause, the *AER* must have regard to the *TFP criterion* in clause 6.6A.3.

(b) Where the total factor productivity methodology is to be applied in a *regulatory control period* (the **"subsequent total factor productivity regulatory control period"**) that commences immediately after a *regulatory control period* (the **"building blocks regulatory period"**) in which the building blocks approach has been used:

> (1) the initial tariff for a *standard control service*; or
> (2) where the control mechanism is tariff basket price control, the initial tariffs in the basket of tariffs for *standard control services*

shall be determined by the *AER* for the subsequent total factor productivity regulatory control period as follows:

> (3) The *AER* shall commence with the tariff or tariffs (as the case may be) in force in the last *regulatory year* of the building blocks regulatory period.
> (4) The *AER* may make such adjustments to that tariff or tariffs as the *AER* considers are necessary in any case where there is a difference between the forecasts upon which the tariff or tariffs were based and the actual costs that the *Distribution Network Service Provider* has incurred for the building blocks regulatory period.
> (5) The *AER* may make any further adjustments to the tariff or tariffs as the *AER* considers are necessary because of the cessation, change or application in the subsequent total factor productivity regulatory control period of any *efficiency benefit sharing scheme* or *schemes* applying to the *Distribution Network Service Provider*.

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(6) The *AER* may make such other adjustments to the tariff or tariffs as the *AER* considers are necessary by reason of the fact that the building blocks approach is not to apply.

(7) The outcome of the aforesaid calculations shall constitute the tariff or tariffs for the first *regulatory year* of the subsequent total factor productivity regulatory control period.

(c) Where the total factor productivity methodology is to be applied in a *regulatory control period* (the **"subsequent total factor productivity regulatory control period"**) that commences immediately after a *regulatory control period* (the **"prior total factor productivity period"**) in which the total factor productivity methodology has been applied:

(1) the initial tariff for a *standard control service*; or

(2) where the control mechanism is tariff basket price control, the initial tariffs in the basket of tariffs for *standard control services*

shall be determined by the *AER* for the subsequent total factor productivity regulatory control period as follows:

(3) The *AER* shall before the end of the prior total factor productivity period and for that period (or such part thereof as the *AER* considers necessary) assess the actual operating and capital costs incurred by the *Distribution Network Service Provider* and compare those costs with the revenues it received in that same period (or part thereof) in order to assess whether those revenues were less than, met or exceeded the costs. Where actual costs are not known, the *AER* may use expected costs.

(4) For the purposes of subparagraph (1), the *AER* shall use the building blocks approach to assess the costs of the *Distribution Network Service Provider*. Part C shall apply to that assessment with such modifications as the *AER* considers are necessary in the circumstances.

(5) The *AER* may also make any adjustments the *AER* considers necessary by reason of any change to or the application in the subsequent total factor productivity regulatory control period of any *efficiency benefit sharing scheme* or *schemes* applying to the *Distribution Network Service Provider*.

(6) The *AER* shall then determine how much (if at all) the tariff or tariffs for the last *regulatory year* of the prior total factor productivity regulatory control period should be increased or reduced in order to equate costs and revenues.

(7) That increase or reduction together with the X factor shall then be used by the *AER* to determine the tariff or tariffs for the first *regulatory year* of the subsequent total factor productivity regulatory control period.

(d)   If there was no tariff for a *standard control service* for the last *regulatory year* of the building blocks regulatory period or of the prior total factor productivity regulatory control period (as the case may be), the *AER* shall determine the tariff for that service for the first *regulatory year* of the subsequent total factor productivity period by use of the building blocks approach.   Part C shall apply to that determination with such modifications as the *AER* considers are necessary in the circumstances.

(e)   For the avoidance of doubt:

(1) The modifications that the *AER* may make to Part C for the purposes of this clause include (but are not limited to) limiting the assessment or determination of costs to only part of a *regulatory control period.*

(2) Nothing in this clause is to be taken to prevent:

(i) the adoption of tariff basket price control as the control mechanism;

(ii) calculating or expressing the outcome of the calculations required by paragraph (b) or (c) as a percentage change adjustment;

(iii) making, as part of those calculations, any adjustment to weightings where tariff basket price control is the control mechanism.

(3)   Nothing in this clause is to be taken to require, where tariff basket price control is the control mechanism, there to be a schedule of initial tariffs and instead the outcome of the calculations required by this clause may be expressed as an adjustment to the weighted average tariff between the last *regulatory year* of the previous *regulatory control period* and the first *regulatory year* of the new *regulatory control period.*

(4) Adjustments required because there is a *service target performance incentive scheme* applying to the *Distribution Service Provider* may also be made as part of the calculations required by this clause.

Note: The outcome of the calculations required by paragraph (b) or (c) will be:

(1)   If caps on the prices of individual services is the control mechanism, a schedule of initial tariffs;

(2)   If tariff basket price control is the control mechanism, an adjustment (normally expressed as a percentage change) to the weighted average tariff between the last *regulatory year* of the previous *regulatory control period* and the first *regulatory year* of the new *regulatory control period.*

6.6A.6 The X factor methodology

(a)   When carrying out the calculations required by this clause, the *AER* must have regard to the *TFP criterion* in clause 6.6A.3.

(b) A *total factor productivity determination* is to specify:

> (1) where the *rolling X factor method* is used:
> > (i) the X factor for each control mechanism for the first *regulatory year* of the *regulatory control period*; and
> > (ii) the methodology for determining the X factor for each subsequent *regulatory year* of the *regulatory control period.*
>
> (2) where the *fixed X factor method* is used, the X factor for the *regulatory control period.*

(c) The X factor for each *regulatory year* shall be determined by the *AER* in accordance with the following formula:

$$X = \text{growth TFP} - (\textit{growth Input Prices} - \textit{growth CPI})$$

Where:

> **growth TFP** is the increase or decrease in total factor productivity;
>
> > Note: growth TFP is a function of growth (ie increase or decrease) outputs less growth (ie increase or decrease) inputs.
>
> **growth *CPI*** is the increase or decrease in the *CPI*; and
>
> **growth Input Prices** is the increase or decrease in prices of the inputs used by *Distribution Network Service Providers* for services classified as *standard control services.*

and where the data used in applying the formula is collected from a period that is not less than three *regulatory years* in length which period:

> (1) after the calculation for the first *regulatory year* in which the total factor productivity methodology is to apply, varies for each *regulatory year* by the earliest year being removed from the calculation and the most recent year being brought into the calculation. (the **"rolling X factor method"**); or
> (2) does not vary as aforesaid but instead is fixed for the *regulatory control period* (the **"fixed X factor method"**).

(d) A *Distribution Network Service Provider* may, as part of its *total factor productivity proposal*, select which of the *rolling X factor method* and the *fixed X factor method* is to be used and the *AER* is bound by that selection in making its distribution determination.

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(e) Notwithstanding paragraph (d), the *rolling X factor method* may not be used for some of a *Distribution Network Service Provider*'s services that are classified as *standard control services* with the *fixed X factor method* used for the balance of those services, or vice versa, unless the *AER* agrees.

(f) In calculating the X factor pursuant to this clause, the AER:

(1) shall use industry-wide (and not firm specific):
(i) increases or decreases in total factor productivity; and
(ii) increases or decreases in CPI; and
(ii) increases or decreases in the prices of the inputs used by *Distribution Network Service Providers* for services classified as *standard control services*.

(2) may exclude in whole or in part from its calculation data with respect to a *Distribution Network Service Provider*:
(i) that has been privatised within the 5 years prior to the carrying out of the calculation;
(ii) that is subject to a regulatory obligation or requirement the effect of which the AER considers materially affects that *Distribution Network Service Provider*'s productivity when compared with the productivity of all other *Distribution Network Service Providers*; or
(iii) is 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 *Distribution Network Service Provider* will, or is likely to reflect industry-wide productivity growth.

(3) may, if the AER considers double counting would otherwise result, exclude from its calculation:
(i) any *positive pass through amount;* or
(ii) any *negative pass through amount*
that may pass through or has passed through pursuant to either or both:
(iii) clause 6.6.1; or
(iv) clause 6.6B.1.

(g) For the avoidance of doubt:

(1) The *rolling X factor method* may be used to calculate the X factor for each control mechanism for the initial *regulatory year* of the *regulatory control period*.

(2) The *fixed X factor method* may be used to calculate the X factor for each control mechanism for the initial *regulatory year* of the *regulatory control period*.

(3) The *regulatory years* used for the *rolling X factor method* or the *fixed X factor method* may predate the *regulatory control period* and may include years in which the building blocks approach was applied to the *Distribution Network Service Provider*.

(4) The period used for the *rolling X factor method* or the *fixed X factor method* may be longer than the *regulatory control period*.

(5) The *AER* may use, either generally or in a particular case:

    (i) Australia wide; or

    (ii) multiple States and Territories

industry-wide data.

(6) The *AER* may limit the industry-wide data it uses, either generally or in a particular case, to a particular State or Territory or particular States and Territories or (where data from overseas jurisdictions is used) to particular overseas jurisdictions or parts thereof.

(7) Reference in this clause to "industry" when used in the term "industry-wide" is to be taken to be a reference to the electricity distribution industry both in Australia and (where such is relevant in all the circumstances) overseas.

(h) There may be different X factors:

(1) for different *regulatory years* of the *regulatory control period*; and

(2) if there are two or more control mechanisms – for each control mechanism.

6.6A.7 Efficiency benefit sharing scheme

(a) The *AER* may, in accordance with the *distribution consultation procedures*, develop and *publish* a scheme or schemes (*efficiency benefit sharing scheme*) that provide for a fair sharing between *Distribution Network Service Providers* and *Distribution Network Users* of:

(1) the efficiency gains arising from the growth inputs in a *regulatory control period* being less than the growth inputs assumed for that *regulatory control period*; and

(2) the efficiency losses arising from the growth inputs in a *regulatory control period* being more than the growth inputs assumed for that *regulatory control period*.

(b) An *efficiency benefit sharing scheme* developed pursuant to this clause may be developed to cover *distribution losses.*

(c) Clause 6.5.8(c) and (d) apply to an *efficiency benefit sharing scheme* developed pursuant to this clause as if a reference in those clauses to an *efficiency benefit sharing scheme* were a reference to an *efficiency benefit sharing scheme* developed pursuant to this clause.

(d) For the avoidance of doubt:

> (1) In this clause "growth inputs" means either an increase or decrease of one or more inputs.
> (2) The *efficiency benefit sharing scheme* developed and implemented pursuant to this clause may differ from any *efficiency benefit sharing scheme* or *schemes* that applied to the *Distribution Network Service Provider* when the building blocks approach was applied.
> (3) Inputs may be operating or capital in nature.

6.6B Adjustments after making of total factor productivity determination

6.6B.1 Cost pass through

Clause 6.6.1 applies.

6.6B.2 Service target performance event

Clause 6.6.2 applies.

6.6B.3 Demand management incentive scheme

Clause 6.6.3 applies."

Clause 6.8.1:

Add at the end of paragraph (b) the following proviso:

> "Provided that it shall not be necessary, in any case where the total factor productivity methodology is to be applied, unless the *AER* is also considering that there should be an *efficiency benefit sharing scheme* or *schemes* that applies to the *Distribution Network Service Provider,* for the *framework and approach paper* to set out the *AER*'s likely approach to, or

its reasons for, the application of an *efficiency benefit sharing scheme* or *schemes*."

Insert after paragraph (b) the following paragraphs:

"(ba) Where the relevant *Distribution Network Service Provider* is considering applying the total factor productivity methodology instead of the building blocks approach, the *framework and approach paper* should set out *AER's* likely approach to the application of that methodology together with its reasons for that likely approach, in the forthcoming determination.

(bb) In any case where paragraph (ba) applies, the *framework and approach paper* should also set out how the *AER's* likely approach to the application of the total factor productivity methodology relates to the *TFP guidelines*, identifying as part thereof any proposed departure from those guidelines."

Insert after paragraph (d) the following paragraph:

"(da) As soon as practicable after the commencement of consultation on the *framework and approach paper*, the relevant *Distribution Network Service Provider* must in writing advise the *AER* as to whether that provider:

(1) is considering applying the total factor productivity methodology instead of the building blocks approach; or
(2) is not considering doing so."

Insert after paragraph (g) the following paragraph:

"(ga) If the *AER* proposes to use any model for the purposes of the total factor productivity methodology, the *AER* must identify that model in the *framework and approach paper* and must *publish* that model at the same time as it *publishes* the *framework and approach paper*. However *publication* of a model pursuant to this clause is not required if that model is the same as one previously *published* pursuant to clause 6.2.8B."

Clause 6.8.2:

Amend subparagraph (c)(2) by adding after *"building block proposal"* the words *"or total factor productivity proposal* as the case may be"

Clause 6.9.1:

Insert after paragraph (a) the following paragraph

"(aa) If the *regulatory proposal* includes a *total factor productivity proposal* and if the *AER* considers that any of the matters set out in clause 6.2.4A(b) do or are likely to apply, the *AER* may notify the *Distribution Network Service Provider* that it considers that those matters do or are likely to apply and notify the provider that it requires resubmission of the proposal."

Amend paragraph (b) as follows

Delete "The notice" and substitute "A notice given under this clause"

Clause 6.9.2:

Replace paragraph (a) with the following paragraph:

"(a) A *Distribution Network Service Provider* must:

(1) within 20 *business days* after receiving a notice under clause 6.9.1(a);
(2) within 30 *business days* after receiving a notice under clause 6.9.1(aa)

resubmit its *regulatory proposal* in an amended form that complies with the relevant requirements set out in the notice. Provided that if the notice is given under both clauses 6.9.1(a) and 6.9.1(aa) then 30 *business days* shall be the time within which the *regulatory proposal* is to be resubmitted."

Insert after paragraph (a) the following paragraph

"(aa) If the notice received by the *Distribution Network Service Provider* was one given under clause 6.9.1(aa), the *Distribution Network Service Provider* may (but is not obliged to) amend its *regulatory proposal* by replacing its *total factor productivity proposal* with a *building blocks proposal.*"

Clause 6.12.1:

Amend by numbering the present clause as paragraph (a) and adding the following paragraph

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"(b) Notwithstanding paragraph (a), in any case where the distribution determination includes a *total factor productivity determination*:

(1) The *constituent decisions* do not include the decisions listed in subparagraphs (2) to (8) (both inclusive) of paragraph (a) but instead include the following decisions:

(i) A decision on the initial tariff or tariffs for the *standard control services*; and

(ii) A decision on each of the constituent elements of the formula set out in clause 6.6A.6.

(2) The decision in subparagraph (9) of paragraph (a) does not include a decision on how any *efficiency benefit sharing scheme* is to apply unless the *AER* determines pursuant to clause 6.6A.7 that an *efficiency benefit sharing scheme* is to apply to the *Distribution Network Service Provider*; and

(3) The decision in subparagraph (10) of paragraph (a) is to include a decision of appropriate outputs."

New Schedule 6.1A:

Insert after Schedule 6.1 the following new schedule:

"Schedule 6.1A Contents of total factor productivity proposals

(a) A *total factor productivity proposal* must contain at least the following information and matters:

(1)　Actual capital expenditure for each of the past *regulatory years* of the previous and current *regulatory control period* (or where such is not known the expected expenditure) by reference to well accepted categories such as:
(i) asset class (eg *distribution lines, substations* etc); or
(ii) category driver (eg. *regulatory obligation or requirement,* replacement, *reliability,* net market benefit, business support etc)
which identifies in respect of material assets:
(iii) the location of the asset; and
(iv) the cost of the asset; and
(v) the categories of *distribution services* that are provided by the asset.
(2)　Actual operating expenditure for each of the past *regulatory years* of the previous and current *regulatory control period* (or

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where such is not known the expected expenditure) by reference to well accepted categories such as:

> (i) particular programs; or
>
> (ii) types of operating expenditure (eg. maintenance, payroll, materials etc)

which identifies in respect of each such category:

> (iii) to what extent the expenditure was fixed and to what extent it was variable; and
>
> (iv) the categories of *distribution services* to which the expenditure relates

(b) In addition the *total factor productivity proposal* must contain the information and matters required by:

(1) clause S6.1.3(2);
(2) clause S6.1.3(4);
(3) clause S6.1.3(5);
(4) clause S6.1.3(6);
(5) clause S6.1.3(7);
(6) clause S6.1.3(8);
(7) clause S6.1.3(12); and
(8) clause S6.1.3(13).

(c) For the purposes of applying clause S6.1.3(12), depreciation is to be calculated on the basis of the actual depreciation of the assets concerned."

Chapter 10:

Insert in their appropriate alphabetical order the following definitions:

"fixed X factor method

> The fixed X factor method more particularly described in clause 6.6A.6."

"rolling X factor method

> The rolling X factor method more particularly described in clause 6.6A.6."

"TFP criterion

> The criterion set out in clause 6.6A.3."

"TFP guidelines

> The guidelines published by the *AER* pursuant to clause 6.2.8A."

"X factor method

> The *rolling X factor method* or *fixed X factor method*."

Amend the definition of "efficiency benefit sharing scheme" by adding after the words "clause 6.5.8" the words "or clause 6.6A.7 as the case may be".

Attachment B

The "TFP approach"

The legal framework

1. Section 35 of the National Electricity Law ("NEL") formerly provided as follows (omitting parts immaterial in present context):

   35 Rules in relation to economic regulation of transmission systems

   (1) Subject to this section, the AEMC must make rules for or with respect to the matters or things specified in items 15 to 24 of Schedule 1 to this Law on or before 1 July 2006 or any later date that is prescribed in the regulations.

   (2)....

   (3) Rules made as required by this section must-

   > (a) provide a reasonable opportunity for a regulated transmission system operator to recover the efficient costs of complying with a regulatory obligation.

   > (b) ....

2. Items 15 to 24 of Schedule 1 provided at that time for the matters or things that the AEMC might make rules with respect to transmission system revenue and pricing. There was no specification in these items of what economic regulatory methodology was to be used, instead the items spoke generally to the "economic framework and methodologies" (item 18) and the "mechanisms or methodologies" (item 19).

3. The Expert Panel report[1] at section 6.4.7 discussed whether TFP was prevented by these provisions in the NEL. It said (at page 108) the following:

   > Section 35 of the NEL has been adopted by the Panel as the starting point for the development of guidance on the application of the control setting method, and sets out a number of requirements for the Rules made by the AEMC in relation to the economic regulation of transmission systems. Section 35(3) is of particular relevance since it mandates a number of principles with which the Rules for transmission regulation must comply.

   > A potential obstacle under the existing legislative framework to the development of TFP-based control setting methods for electricity transmission, is that such a method may not satisfy the requirements of section 35(3)(a), i.e., the need to provide a reasonable opportunity for a transmission operator to recover the efficient costs of providing services.

   > Under a TFP approach to control setting, a service provider may or may not have the opportunity to recover *its efficient costs* since, by definition, a price determination is based on the recovery of (changes in) *industry average costs*, whether or not adjusted to

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[1] *Expert Panel on Energy Access Pricing: Report to the Ministerial Council on Energy*, April 2006.

take account of the potential for varying rate of changes with varying environments. On the other hand, section 35(3)(a) remains a critical element of the application of the building block methodology, where expected revenues are set by reference to forecasts of *firm specific efficient costs*. It could also be contended that, given the potential role of adjustment mechanisms – such as off-ramps, and initial price reset mechanisms – that may be incorporated into a TFP-based control setting methodology, such an approach does still provide the opportunity for a service provider to recover efficient costs.

The Panel therefore recommends that the NEL be amended to clarify the ability of the AEMC to draft Rules that address the mechanisms or methodologies to be applied by the AER, including the potential use of a total factor productivity-based control setting method. Such a provision should be applicable to both electricity transmission and distribution services. Similarly, the Panel recommends that the same clarifying provision be included in the new NGL to apply to covered gas distribution and transmission services.

4.   Subsequent to this report, and cognizant of its advice[2], the *National Electricity (South Australia) (National Electricity – Miscellaneous Amendments) Amendment Act 2007* made a number of substantial amendments to the NEL as follows:

    a.   The former section 35 was repealed[3].

    b.   New section 7A was enacted which provides (again omitting parts immaterial in present context) as follows:

> **7A Revenue and pricing principles**
>
> (1) The revenue and pricing principles are the principles set out in subsections (2) to (7).
>
> (2) A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in-
>> (a) providing direct control network services; and
>> (b) complying with a regulatory obligation or requirement or making a regulatory payment.
>
> (3)....

    c.   Section 88B was enacted. It provides as follows:

> **88B AEMC must take into account revenue and pricing principles in certain cases**
>
> In addition to complying with sections 88 and 88A, the AEMC must take into account the revenue and pricing principles in making a Rule for or with respect to any matter or thing specified in items 15 to 24 and 25 to 26J of Schedule 1 to this Law.

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[2] The Second Reading Speech makes express reference to this report: see South Australian Hansard 27 September 2007, page 963.

[3] The replacement section 35 provides for a completely different matter, namely the consent of the Ministerial Council on Energy or Ministers to certain rules.

d. Items 26I and 26J were added to Schedule 1, they provide that the AEMC may make rules with respect to the following regulatory economic methodologies:

> 26I The regulatory economic methodologies (including the use of the methodology known as the "building block approach") to be applied by the AER in—
>
> (a) making a distribution determination or transmission determination; or
>
> (b) amending a distribution determination or transmission determination; or
>
> (c) making an access determination.
>
> 26J The methodology known as "total factor productivity"—
>
> (a) as a regulatory economic methodology to be applied by the AER for the purpose of—
>
> (i) making a distribution determination or transmission determination; or
>
> (ii) amending a distribution determination or transmission determination; or
>
> (iii) making an access determination;
>
> (b) as an economic regulatory tool to inform and assist the AER in applying, or analysing the application of the regulatory economic methodology known as the "building block approach" by the AER for the purpose of—
>
> (i) making a distribution determination or transmission determination; or
>
> (ii) amending a distribution determination or transmission determination; or
>
> (iii) making an access determination.

5. As will be realized from the above, several important changes were made as part of the 2007 amendments to the NEL. In terms of those changes the following is to be noted:

   a. Section 35(3)(a), the provision that caused the Expert Panel to conclude that TFP could not be adopted, was repealed.

   b. Although section 7A(2) may at first blush appear similar to section 35(3)(a), it is in fact quite different in that section 35(3)(a) was mandatory ("Rules .. **must** ..provide") while section 7A(2) merely sets out an objective ("a regulated network service provider **should be provided**")[4].

   c. The adoption of the phraseology "should be provided" echoes the wording of section 8.1 of the Gas Access Code[5] which used the words "should be designed with a view to achieving" which words were interpreted in *Re Dr Ken Maiden AM; Ex parte Epic Energy (WA) Nominees Pty Ltd & Anr (2002) ATPR 41-886* as establishing "objectives"[6].

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[4] Emphasis added in both quotes.

[5] Ie the *National Third Party Access Code for Natural Gas Pipeline Systems 1997*

[6] See eg the discussion commencing para 136 of the judgment of the Western Australian Full Court.

d. Further emphasizing the shift away from a mandatory provision is section 88B itself which requires only that the AEMC must "take into account" the revenue and pricing principles. As was held in *Re Dr Ken Maiden AM; Ex parte Epic Energy (WA) Nominees Pty Ltd & Anr*[7], these words mean that the AEMC must give weight to the principles as a "fundamental elements" in its decision making in respect of the rules made pursuant to the items listed in section 88B. However that does not mean that the AEMC must be satisfied that the revenue and pricing principles are equally (or indeed all) satisfied before it may make a rule. As was said in *Re Dr Ken Maiden AM; Ex parte Epic Energy (WA) Nominees Pty Ltd & Anr*[8]:

> It must be remembered, however, that once the basic issues of interpretation are clarified it is for the Regulator, not this Court, to consider and weigh those factors and objectives. It is for the Regulator to assess the relevance and weight of each of those factors and objectives and to exercise the discretions that are committed by the Code to him.

e. Apart from this significant change away from a mandatory requirement, it should be noted (and this appears not to have been fully appreciated by the Expert Panel) that section 35(3)(a) only spoke to the regulated transmission system operator having a "reasonable opportunity" to recover efficient costs. That is not the same as saying that it has a right to recover such costs. It speaks instead to there being a reasonable chance rather than an absolute right. As such it was certainly arguable that section 35(3)(a) did not prevent the adoption of the total factor productivity approach in any event. It will, of course, be noted that section 7A(2) repeats the phraseology "a reasonable opportunity" which likewise speaks to a reasonable chance as distinct from an absolute right. As is demonstrated in the main text of this submission, the total factor productivity approach does afford such a "reasonable opportunity".

f. It will also be noted that section 7A now provides that there be a "reasonable opportunity to recover **at least** the efficient costs" (emphasis added). The addition of the words "at least" should be viewed in the light of the discussion in *Re Dr Ken Maiden AM; Ex parte Epic Energy (WA) Nominees Pty Ltd & Anr*[9] where it had been argued that section 8.1 of the Gas Access Code set a ceiling. The words "at least" make clear that such is not the case.

g. A further change as between the former section 35(3)(a) and section 7A(2) lies in the addition of the words "the operator incurs" after "efficient costs". However this was implicit in the former section 35(3)(a) which

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[7] Supra, see paras 50-56 of the judgment.
[8] Supra, see para 187 of the judgment.
[9] Supra, see para 142 of the judgment.

was limited to compliance with a regulatory obligation. That said, the "total factor productivity approach" cannot and does not proceed in isolation from the efficient costs of an individual service provider. As discussed in the main text of the submission, the starting point both for first application of the "total factor productivity approach" and at resets thereafter is always the regulated network service provider's efficient costs.

h. Lastly, and if there was any remaining doubt about the intention that rules might be made to provide for the "total factor productivity methodology" as a regulatory economic methodology instead of the "building block approach", there is item 26J(a) itself which expressly so provides. That this provision appears only in the Schedule is not to be taken as indicating that it is in some way inferior to the rest of the NEL. Clause 4(2) of Schedule 2 to the NEL expressly provides that the Schedules are part of the NEL. And the modern legal view of schedules is that, as part of an act, they may be used in the same way as any other provision in the act (be they sections in the main part of the act or other schedules) to interpret the meaning of all provisions in the act including sections in the main part thereof[10].

6. In summary, there can be no real doubt that by reason of the changes made by the *National Electricity (South Australia) (National Electricity – Miscellaneous Amendments) Amendment Act 2007*, the "total factor productivity approach" is now permitted. It is not prevented by section 7A(2) or by any other provisions of the NEL as it now stands (if indeed it was ever so prevented). Indeed it is expressly allowed and rules providing for it may be made accordingly.

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[10] See *Statutory Interpretation in Australia* 5th ed para 4.43.