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BY EMAIL TO: aemc@aemc.gov.au

(And through the electronic lodgement facility)

Dear John

Re: Preliminary Findings. Review into the use of total factor productivity for the determination of prices and revenues

Please find enclosed a submission prepared by United Energy Distribution and Multinet Gas in response to the preliminary findings of the review into the use of total factor productivity for the determination of prices and revenues.

Should you or your staff have any queries in relation to this submission, please do not hesitate to contact Jeremy Rothfield, Regulatory Economist, on (03) 8540 7808.

Yours sincerely

Andrew Schille
Regulatory Manager



**UNITED ENERGY
Distribution**

**Preliminary findings of the review
into the use of total factor
productivity for the determination
of revenues and prices.
Submission to the AEMC by
United Energy Distribution and
Multinet Gas.**

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REVISION LOG

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1. Overview of response to preliminary findings

United Energy Distribution (UED) and Multinet Gas (MNG) strongly support the continuing search for a form of price regulation that is more **light-handed** than the building block approach.

In the remainder of this submission, the two entities, UED and MNG will be referred to jointly as “the Companies”. On occasion, the discussion will centre only on UED, if the matters in question are germane to electricity distribution.

Regulatory approaches where the linkage between costs and revenues is relaxed are light-handed in nature, and a TFP methodology in its purest form is one such alternative. On this basis, the Companies would have no *in principle* objection to the adoption of a TFP methodology once it becomes available. Over time, a TFP methodology should reduce the administrative burden and costs to both service providers and the regulator by using known and measurable information instead of relying on business-specific forecasts, and by reducing the frequency of resource-intensive regulatory reviews.

Notwithstanding the above, whether the Companies would opt to use a TFP methodology *in practice* will depend entirely on the detail of the design of that methodology and on the quality of underlying data. The effectiveness of a TFP methodology will hinge on these practical considerations.

In fact, the Companies believe that more detailed information is required regarding the design and detail of a TFP methodology before the possible merits of applying a TFP methodology can be properly assessed. A TFP methodology is in itself no panacea. The potential exists for a TFP methodology to be designed and implemented in such a way that is not beneficial, with service providers having to contend with increased compliance costs, and the regulator having to countenance a greater administrative burden.

1.1 Key aspects of the preliminary findings with which the Companies agree

Promotion of efficiency under a TFP methodology

The Companies agree with the Commission that, in principle, a TFP methodology offers scope to:

- create stronger incentives for service providers to pursue cost efficiencies compared to the building block approach;
- lengthen regulatory periods;
- lower regulatory costs;
- develop a less adversarial approach;
- develop greater regulatory consistency across energy markets (electricity, gas); and
- reduce regulatory risk and uncertainty, by reducing the scope for regulatory discretion when dealing with business-specific forecasts.

How the design of a TFP methodology would impact on efficiency

The Companies concur with the Commission that a TFP methodology works best where:

- *efficient* costs reflect industry group factors rather than business-specific factors and forecasts;
- a longer regulatory period is possible, and regular P_0 adjustments are not necessary;
- the TFP methodology is an option, and not a mandated replacement for the building block approach; and
- past rates of growth of industry TFP provide a relatively accurate prediction of future rates of productivity growth for the industry.

The Companies can also agree with the Commission that a TFP methodology does ***not***:

- provide incentives to maintain or improve the quality of service as the outputs associated with network security and reliability are difficult to measure and value; or
- deal well with uncertainties regarding future costs conditions.

Recovery of efficient costs and investment under a TFP methodology

The Companies support the analysis in the Preliminary Findings (AEMC, 2009I) that:

A TFP methodology (assuming that the index is robust and measures productivity accurately) will enable a service provider [which] is capable of delivering average productivity growth over the medium term the opportunity to recover its efficient costs, as long as there are no adverse industry-wide productivity shocks. ...

The inclusion of safeguard mechanisms would ensure that a TFP methodology provides a reasonable opportunity for the recovery of efficient costs. (pp.35,42)

How any safeguard mechanisms would be applied is particularly important. The key issue is striking the balance between providing certainty on cost recovery and maintaining efficiency incentives.

Conditions needed for a TFP methodology

The Companies agree with the position in the Preliminary Findings that:

- Service providers must have the discretion to select a TFP methodology.
- Central to the TFP design must be safeguard mechanisms that will allow a reassessment of a service provider's situation if required.
- A TFP methodology requires reliable and robust data from service providers.
- Whether a TFP methodology provides a level of opportunity for service providers to recover efficient costs at least comparable to the opportunity under the building block approach depends on whether the TFP index is correctly calculated.

At a practical level, the Companies agree that further empirical testing is essential to confirm the degree to which any proposed TFP methodology has the following important properties:

- The industry TFP growth rate is relatively predictable and stable.
- The TFP growth rate is not significantly influenced by operating conditions (such as customer density, geographic location and spread), with differences in operating conditions captured in the main by the setting of each service provider's initial price level.

Potential impacts of a TFP methodology on the regulatory framework

The Companies endorse the conclusions in the Preliminary Findings that how well the TFP methodology achieves the targeted benefits depends upon whether:

- the specification of criteria and circumstances for the exercise of any regulatory discretion are included in the rules for a TFP methodology, consistent with best practice regulation; and
- the collection of a standardised, relevant and robust regulatory data-set can be achieved.

The extent of the benefits from introducing a TFP methodology is difficult to estimate, and more than one regulatory period may pass before the gains eventuate.

Assessment of a TFP methodology in electricity and gas sectors

Consistent with the Preliminary Findings, the Companies accept that:

- in order to confirm how appropriate a TFP methodology is *in practice* for use in the electricity and gas distribution sectors requires both:
 - a working specification of the TFP calculation; and
 - sufficiently robust and relevant data to allow for testing and refining the TFP methodology; and
- data is required to test the extent to which:
 - the industry TFP growth index is stable and accurate;
 - all service providers are sufficiently homogeneous to form a single industry group; and
 - a sector's capital intensity, and the lumpiness of its capital expenditure, impact upon the reliability of the TFP index.

1.2 Those aspects of the preliminary findings with which the Companies disagree

Promotion of efficiency under a TFP methodology

The Preliminary Findings suggest that a TFP methodology reduces the scope for a service provider to boost returns by exploiting its information advantage over the regulator. In fact, "information asymmetry" is a strong and recurring theme throughout the Preliminary Findings.

The Companies reject the argument that efficiency under a TFP methodology is promoted in the main by reducing the scope for a service provider to exploit its information advantage over the regulator (or “capture informational rents”). More pertinently, the reliance on business-specific forecasts, which is at the core of the building block approach, results directly in heightened levels of regulatory discretion and greater regulatory error, more burdensome information requirements on service providers, and greater intrusion by the regulator into operational management decisions.

The Companies remain less optimistic than some that the building block approach can evolve to address these inherent deficiencies. While a TFP methodology can be prone to incomplete data, it holds out the promise of more emphasis on known and measurable information and less exposure to regulatory judgment.

How the design of a TFP methodology would impact on efficiency

The Preliminary Findings suggest that the likely design of a TFP methodology would not diminish its additional efficiency properties.

The Companies take the contrary view, namely that the design of the TFP methodology will very much determine its efficiency properties and wider benefits. For example, the Companies disagree with the Preliminary Findings that:

Having longer regulatory periods is not essential to ensure that a TFP methodology delivers stronger incentives. (p.23)

From the perspective of the Companies, any new regulatory regime needs to be clear, understood and transparent in order to provide the requisite levels of regulatory certainty and confidence. Likewise, if the regulator is allowed to exercise significant discretion, then regulatory uncertainty will result, with adverse ramifications for business decision-making which will potentially outweigh the benefits of a TFP methodology.

Conditions needed for a TFP methodology

The Preliminary Findings include the statement that:

The preliminary indications are that a well specified and designed TFP index will meet the condition of being a stable index and be able to provide a stable price path. (p.48)

This is too early to say. Judgments like this must await finalisation of the TFP specification, and collection and analysis of the necessary data. As the Commission has acknowledged elsewhere in the Preliminary Findings, further empirical testing is essential to test key design elements of a TFP methodology.

1.3 Those aspects of the preliminary findings which require more analysis

Generally, much more data and analysis is required. To date, important aspects of a *workable* TFP methodology have not yet been modelled or tested sufficiently.

The remainder of this submission highlights those features which the Companies consider to be central to the medium-term regulatory and commercial sustainability of a TFP regime.

2. Design features of a TFP methodology

This chapter deals with matters other than the specification and measurement of industry TFP growth. The latter is addressed in the following chapter.

2.1 Optionality

The Companies strongly support the position in the Preliminary Findings that:

The initial selection of a TFP methodology and its continued application beyond the first regulatory control period would be a decision for the service provider. No approval of the regulator would be required. (p.101)

There should be no avenue available by which a regulator or third party could impose a TFP methodology upon a service provider without the latter's consent. The TFP method should be introduced as an option and not as a replacement of the building block approach. Only service providers should be able to initiate the transition from the building block approach to a TFP methodology.

The Companies note that some service providers have expressed concern about the potential for the 'optionality' of a TFP methodology to be eroded by future rule changes. The Commission is urged to give serious consideration to recommending draft rules which provide assurance against such a possibility.

An important corollary to 'optionality' is that the service provider has some control over how the methodology is to be applied. As the Preliminary Findings acknowledge:

...under [the Commission's] current thinking on the design of a TFP methodology, the service provider would have some control on how the methodology would be applied. Therefore, it would be expected that service providers would understand the risks of the various design options and select a design [according] to their appetite for risk. (p.45, emphasis added)

2.2 Length of regulatory period

Longer regulatory periods are consistent with a TFP methodology and should be available to service providers. This is consistent with the current provisions of the NER and NGR which confer upon service providers the right to propose an extended regulatory period under the building block approach.

In fact, the Companies' view is that the benefits to be derived from use of a TFP methodology will ultimately depend upon the length of the regulatory period. A key component of the incentive properties of a TFP methodology lies in the ability to have long or even indefinite regulatory periods. These would create greater certainty for service providers regarding their long-term prices.

2.3 Role of regulator

Subject to a range of design options being recognised in the NER and NGR, the Companies support the position in the Preliminary Findings that:

A high level of prescription on the TFP methodology would be included in the NER and NGR. All the TFP principles, key mechanics (such as formulas, calculations and

definitions), key rights and obligations and procedural requirements should be clearly and comprehensively established in the NER and NGR. (p.99)

The purpose of such prescription should be to curtail the regulator's – not the service provider's – discretion.

Only if TFP methodologies are fully specified in the rules in advance, and service providers have the right to both select the chosen approach and achieve a longer regulatory period if desired, will a minimum level of certainty be provided for businesses seeking to depart from the building block approach.

2.4 Reversion to the building block approach

The Preliminary Findings state that:

A service provider may return to the building block approach after a regulatory period using a TFP methodology if it can satisfy the regulator that under a TFP methodology it will not have the opportunity to recover efficient costs over the long term. (p.100)

The 'exceptional circumstances' test will reduce the scope for gaming and ensure that only service providers with confidence in the TFP methodology will switch from the building block approach. The existence of the test will also contribute to ensuring that the design features of a TFP approach are fully developed up front.

Even so, circumstances can change and reversion to the more traditional approach may become necessary for an individual service provider. Details of the scope of the 'exceptional circumstances' test, the information required and the timing of this decision need to be included in the NER and the NGR. If a service provider's ability to subsequently opt out and revert back to the building block approach is to be highly constrained, then the criteria to be applied in any regulatory decision regarding a service provider's request to revert to the building block approach should also be made explicit in the rules.

The Companies consider that a possible circumstance which would warrant a reversion to the building block approach would be any significant change to the TFP methodology-related rules. If such changes were to occur, provision should be made to allow a service provider to opt out of the TFP methodology (and to return to the building block approach).

The significance of this decision for the two businesses implies that a provision should be made available for a merits review of any regulatory decision in respect of a service provider's request to revert to the building block approach.

2.5 Deriving the X factor from industry TFP growth

The TFP methodology is an alternative to the building block in terms of the application of a CPI-X form of incentive regulation. Under a TFP methodology, the X factor is set according to an external benchmark; that is, the productivity performance (or rate of change in productivity) of a relevant industry group over time. In addition to being an index of total factor productivity, the X factor also reflects industry input price inflation.

Under the Preliminary Findings (p.103), the X factor is proposed to be set as follows:

$$X = [\Delta \text{ industry TFP} - \Delta \text{ economy TFP}] - [\Delta \text{ industry input prices} - \Delta \text{ economy input prices}]$$

The specification presented above shows that the X factor can be negative in circumstances where:

Δ industry TFP < Δ economy TFP; or

Δ industry input prices > Δ economy-wide input prices.

Hence, in addition to an estimate of the annual percentage change in industry TFP, calculating the X factor for use under a TFP methodology also requires estimates of:

- the annual % change in economy-wide TFP;
- the annual % change in consumer prices;
- the annual % change in economy-wide input prices; and
- the annual % change in industry input prices.

Annual % change in economy-wide TFP

The Preliminary Findings did not make mention of how the economy-wide productivity index might be measured. The Companies consider that this matter should be addressed in the Commission's draft report. The Companies favour a proposition whereby a method for calculating the economy-wide productivity index would be specified in the NER and the NGR. There would be in-built provisions for regulatory review after experience has developed.

Annual % change in consumer prices

The Companies presume that this parameter would be measured in the same way as specified under the NER and NGR for the building block approach. The Companies consider that this matter should be addressed in the Commission's draft report.

Annual % change in economy-wide input prices.

The Companies agree with the Preliminary Finding that:

The producer price index would be used for the economy input price growth term. (p.104)

Annual % change in industry input prices

Under the Preliminary Findings:

A separate measure for industry input prices growth would be included in the determination of the X factor, and prescribed in the NER and NGR. Further work and consultation with the industry would be required to determine the most appropriate measure. (p.103)

The Companies believe that the method for calculating the growth in industry input prices should be stipulated in the NER and the NGR, with scope provided for regulatory review after experience has developed. This method would need to be consistent with the measurement technique and the underlying basis for calculating the annual percentage change in economy-wide input prices.

2.6 Single or multiple X factors

The Preliminary Findings raise the prospect of an additional component to the X factor calculation (resulting in "multiple Xs"):

An additional term would be included in the formula for determining the X factor to permit the regulator to make business specific adjustments. Such adjustments would only be justified if the regulator considers that the industry TFP growth rate should be adapted to reflect a significant difference in the productivity growth potential of that specified service provider. The regulator's decision would need to be consistent with the relevant national objective and the revenue and pricing principles. The adjustment could be positive or negative. Further analysis would be needed to develop the appropriate framework, including the potential use of benchmarking techniques, governing this decision. (p.104)

In principle, such an additional component would be of the form:

$$[\Delta \text{ group TFP} - \Delta \text{ industry TFP}] - [\Delta \text{ group input prices} - \Delta \text{ industry input prices}]$$

While indicating a preference for a single TFP growth rate factor to be applied to any service provider within the respective sector, the Commission has foreshadowed further assessment and specification of this element of the TFP design before firm conclusions can be drawn. The Companies agree with the need for further evaluation.

At issue is whether there are significant factors that may cause variations in the rate of change in TFP within an industry. There are numerous reasons as to why service providers might be different, including factors pertaining to climate, topography, density or technology.

While business-specific price path adjustments under a TFP methodology would add significant complexity to the administration of a TFP methodology, measuring a TFP index for each group of comparable service providers would improve the reliability of the TFP index and provide a more appropriate basis for benchmarking benchmark productivity growth.

On balance, therefore, the Companies agree with the Preliminary Findings that:

...to make an assessment on industry groups (that is, the use of whole sector groups and the possible use of subgroups) an analysis of the data collected through the regulatory reporting program should be undertaken when the data is available. In making this assessment, consideration should be had to the number of regulated service providers, whether any one service provider represents a significant proportion of an industry group's TFP index and whether there are any issues arising from the common ownership of service providers within an industry group. (p.98)

Hence, choosing between single or different growth rate factors needs to be informed by more information on TFP inputs, outputs and weightings and how specific circumstances would be handled under a TFP methodology.

2.7 Fixed or rolling X factors

The Victorian TFP proposal envisaged that the service provider would be able to request either a rolling X or a fixed X for the regulatory period (with approval by the regulator also required).

A rolling X could ameliorate concerns about the recovery of capital spending albeit at the cost of some decrease in regulatory certainty and increased administrative cost.

Service providers are in a better position to determine their operational needs (their choice would reflect how much risk they would be prepared to take) and the interaction with other TFP design elements. The Companies therefore support the Preliminary Finding that:

Service providers would propose the form of the X factor (that is, either a fixed or rolling X) for the duration of the forthcoming regulatory period. (p.103)

2.8 Price or revenue caps

The Preliminary Findings envisage that a TFP methodology would be applied to either a price cap or a revenue cap. The Companies consider that this choice should be exercised by the service provider.

From the perspective of the Companies, a TFP methodology is logically applied in the context of a price cap form of control, with the constraint having effect on a weighted average of individual network access tariffs (or 'the tariff basket'). A revenue cap is more consistent with the building block approach.

With a price cap mechanism being used, revenue is regulated on a per unit of billable output basis rather than as an absolute amount (as would be the case if a revenue cap was being applied). This allows revenue to grow from year to year in line with actual billable outputs.

2.9 First initial cap

A TFP methodology does not provide information about the appropriate *level* of prices at the commencement of regulation based on that methodology.

The Preliminary Findings (p.102) propose the use of what is termed a 'partial' building block approach to set the initial price or revenue cap at the start of the regulatory period. The amended TFP design in the Preliminary Findings also clarifies the Commission's intention that under a 'partial' building block approach:

... a service provider would submit an estimate of [actual] costs for the last year of the current regulatory period (for example, in a five year regulatory period, this would be estimates (or updated forecasts) for the fifth year). To aid in its assessment and in setting of reasonable costs, the regulator would consider these estimates in light of actual costs for that period (for a five year regulatory period, there should be actual data for the first, second and third years). (p.98)

The Companies accept that basing the initial price or revenue cap on forward-looking (i.e. forecast) operating and capital expenditures would be inconsistent with a TFP methodology. Instead, attention should be focused on the latest observed operating and capital expenditures. Equally, in the Companies' view, prudence assessments of these actual expenditure levels when determining P_0 would be inappropriate and inconsistent with a TFP methodology, because these evaluations would be taking place after more than a decade of regulation of each service provider's price *levels*. The only conceivable issue to be addressed is whether or not prices at the end of the preceding regulatory period are *at least* sufficient to cover existing costs. Any attempt to pare back prices deemed in excess of cost recovery would erode the incentive qualities of regulatory arrangements and call into question the effectiveness of regulation to date.

The Companies suggest that service providers should be able to participate in the decision over whether or not a 'partial' building block adjustment to prices will take place at the start of the regulatory period. Service providers would canvass and discuss the matter in their regulatory proposals.

2.10 Subsequent P_0 adjustments

The Preliminary Findings appear to also establish a role for regular P_0 adjustments or resets, namely at the commencement of each subsequent regulatory period. This intention is flagged in the following extracts from the Preliminary Findings (where the emphasis has been added):

It is important that there are periodic realignments of prices to efficient costs to protect both customers and the service providers from wide divergences between prices and costs. This helps to maintain [the] efficiency properties of a TFP methodology. (p.27)

This method [of using a partial building block approach at the start of the regulatory period] would be used regardless of whether under the current regulatory period the service provider is using the building block approach or a TFP methodology. (p.102)

The Companies are concerned that regular resets of prices to costs (referred to as a P_0 adjustment) will undermine the aims of a TFP methodology to delink prices from costs. By affecting the value of savings to service providers from making efficiencies, such regular P_0 adjustments would significantly weaken the motivation for service providers to deliver efficiency savings under a TFP methodology, particularly in the absence of any efficiency carryover mechanisms as also proposed by the Commission.

The Companies urge that more consideration be given to the nature of the relationship between P_0 and the X factor. This is important because the efficacy of the approach taken to realign prices to efficient costs (and thus remove inefficiencies) will depend upon the spread of efficiency levels across an industry group at a particular point in time. The actual realignment may also have a bearing on incentive properties.

If we assume that the application of the building block approach in previous regulatory periods has removed most existing inefficiencies and industry (or peer group) TFP growth mainly reflects technical change then there would probably not be a problem in removing any (small) inefficiencies as well as realigning revenues with (truly efficient) costs.

But, if there is a wide range of efficiency levels and the regulator tries to remove all the inefficiency with the price reset then the result may be an incompatibility between the price reset and the industry (or peer group) TFP growth rate. That is, the observed TFP growth rate will reflect a fair degree of 'catch up' growth which a truly efficient service provider [may be unable] to match. (p.28)

The Companies agree that this issue can only be resolved once the necessary data has been collected to enable modelling of the productivity levels of each service provider. The key issue which is yet to be resolved is whether P_0 adjustments can be designed in such a way that would not destroy the incentive properties of a TFP methodology.

2.11 Role of an efficiency carryover mechanism (ECM)

Under the Preliminary Findings:

- *An efficiency carryover mechanism should be excluded from operating in conjunction with a TFP based methodology as it is not consistent with that methodology.*
- *Any efficiency carryover mechanism existing at the commencement of a TFP regulatory period should continue to run its course as initially planned. (p.103)*

In contrast, the Victorian TFP proposal envisaged that the regulator would have the option to include an ECM in a TFP methodology if it could establish an appropriate mechanism.

The Victorian TFP proposal acknowledged that the absence of expenditure forecasts under a TFP approach would make it difficult to apply such a scheme in the context of a fully-fledged TFP regime (Department of Primary Industries, Victoria, 2008, p.35). However, the submission also emphasised that the problem of reduced incentives for efficiency in the period immediately preceding a cost-based price review would be as prevalent under TFP as it is under building blocks regulation. In the absence of an efficiency benefit sharing scheme (EBSS), service providers would become less interested in implementing initiatives aimed at improving efficiency as the date of a price review approached. The Victorian TFP proposal therefore argued that the regulator should have the discretion to introduce an EBSS, if such a scheme proved feasible. The scheme would be predicated on the assumed growth in the X-factor in the preceding regulatory period. Hence, instead of a reward (or penalty) being provided where actual expenditure turned out to be less (or greater) than forecast, a reward (or penalty) would accrue if the usage of inputs by a service provider increased at a rate which was below (or above) the value already incorporated into the X-factor.

The Commission has recognised that the incremental return to a business, which is able to achieve recurrent reductions in operating expenditure, will vary according to the regulatory system in operation. There is a potential for higher returns under the building blocks with an ECM than under a TFP method, depending upon the number of years remaining until the next price reset. As is noted in the Preliminary Findings:

Under the building block approach, the ECM acts to provide a constant value. However, under a TFP methodology, the value [of an efficiency gain] would diminish the [the shorter the remaining time period to the next price reset determination] (page 30).

In Appendix D, the Commission has presented a table which shows that a 29% share of ongoing operating expenditure savings is retained by the service provider. The proportion is applicable if the retention period under an ECM is five years. The Companies concur with the figures presented in Table D.1 for operating expenditure, and believes that the underlying calculations are correct. The Companies can also refer to a working assumption adopted by the AER which is that a five-year regulatory carry-over period results in a benefit sharing ratio of approximately 30:70 between the DNSP and distribution network users respectively (see, for instance, AER 2008f2). Hence, the cost savings which may be brought about as a result of an ECM or EBSS are advantageous to electricity consumers over the long term.

Application of an ECM and cost categorisation

The Commission appears to have given consideration to partial factor productivity (PFP) trends in its assessment of whether or not an ECM can be adapted into a TFP methodology. A possible option would be to use observed movements in partial factor productivity to extrapolate the operating expenditure allowance in the initial price determination. However, the Commission has then deduced that this approach would have a negative impact on the balance of incentives between operating and capital expenditures. Specifically, the Commission has argued that factor substitution effects could occur, with capital outlays tending to be favoured over operating spending. A possible predilection towards capital expenditure would result in a decline in unit operating costs, thereby giving a boost to partial productivity measures.

In response to the Commission's concerns about cost shifting between operating and capital expenditure components, the Companies make the point that these issues have already been adequately addressed under the existing regulatory framework. For instance,

the Companies have a capitalisation policy in place which provides guidance on the appropriate classification of company spending into costs that can be capitalised as assets on the balance sheet, and other costs which are expensed through the income statement when incurred. The policy was developed in accordance with guidelines issued by the Essential Services Commission, Victoria.

Under the policy, capital expenditure includes any spending that:

- relates to the purchase, development or construction of a new asset;
- increases the capacity or functionality of the assets;
- significantly reduces the on-going maintenance of the assets; and/or
- extends the service life of the assets beyond that expected when the assets were originally installed.

In accordance with the Australian Accounting Standard, AASB116, the costs of an item of property, plant and equipment (PPE) will be recognised as an asset if, and only if:

- it is probable that future economic benefits associated with the item will flow to the entity; and
- the cost of the item can be measured reliably.

The Companies consider that the specifications mentioned above limit the degree to which capital spending can be substituted for operating spending, and vice versa. Consequently, the concerns expressed by the Commission about factor substitution effects are somewhat over-stated.

Furthermore, in the context of the EBSS proposed by the AER, a service provider is obliged to notify the AER of any changes to its capitalisation policy over a regulatory period. Amendments to the benchmark data must also be made. According to the final version of the EBSS (AER, 2008f2):

If capitalisation policies during the regulatory control period have changed, the DNSP must adjust the forecast opex used to calculate the carry-over amounts so that the forecast opex is consistent with the capitalisation changes. A DNSP must provide a detailed description of the changes in capitalisation policies and a calculation of the impact of those changes in capitalisation policy on forecast and actual opex (page 30).

The Commission has also claimed that the application of an ECM to operating expenditure and not to capital spending, as is the case in several jurisdictions, is itself a possible source of distortion. The Commission refers to the specific example of the substitution of network infrastructure (capital expenditure) in place of demand-side participation (operating spending). A full discussion of this effect is provided in the final report of the review of demand-side participation (AEMC, 2009k).

A contract with a DSP provider involves incurring additional operating expenditure (in the form of payments under the contract) as a means of avoiding capital expenditure. Hence, all other things being equal, it results in the network business over-spending relative to its operating expenditure forecast in order to under-spend against its capital expenditure forecast. An ECM on operating expenditure but not capital expenditure means that a network owner bears the cost of the over-spend for five years, but only retains the benefits from the under-spend until the next re-set. This has the effect of making DSP arbitrarily more expensive than a network infrastructure alternative because the costs are borne for longer than the benefits are retained.

The Companies consider that there are measures in place to encourage demand-side participation, including the demand management incentive scheme (DMIS), introduced and administered by the AER, and a requirement to engage with non-network providers as part of the new framework for (electricity) distribution network planning and expansion¹. In the past, the preference of service providers for capital works in place of demand-side solutions, was attributable to the difficulties of obtaining firm, contracted levels of demand-side participation and to the exigencies of maintaining the reliability of the network. Contrary to the opinions expressed by the Commission, the role played by the ECM in discouraging operating expenditure on demand side measures, has been comparatively minor. The possible misallocations that may arise as a result of the application of an ECM to operating spending and not to capital outlays are therefore of a lesser order of significance in the context of demand-side participation and non-network solutions more generally.

The Companies' stand-point on the ECM and TFP

The Companies consider that the absence of an ECM from the TFP framework *together with regular P_0 resets* would undermine the quest for better business practices and cost savings. A service provider which achieved efficiency improvements in excess of the industry average would not be in a position to realise the benefits, with all of the gains potentially being passed onto consumers in full and with immediate effect. Service providers would be encouraged to undertake initiatives aimed at reducing costs early on in the regulatory period rather than at a late stage. This would lead to an overall diminution of the incentives for efficiency. As the Preliminary Findings concede:

... it is self-evident that incentives are weaker under any scheme that resets prices to outturn costs at the end of the regulatory period relative to one that does not. (p.17)

The Commission has dismissed suggestions that a partial reset of costs to prices could play a role (Preliminary Findings, p.27). Under this method the P_0 adjustment would change at the start of a new regulatory period by being equal to or less than 100 per cent of the difference between prices and efficient costs.

A partial reset is just one form that an ECM might take under a TFP methodology, with the objective being to moderate the extent to which prices can be realigned with costs at the time of a P_0 adjustment, so as to preserve the incentive for service providers to pursue efficiencies. Regrettably, the Commission's aversion to an ECM (under building block and TFP approaches) seems to underpin its dismissal of the need to reconcile regular P_0 adjustments with the TFP framework:

The [partial reset] methodology would strengthen the incentive to control costs because it would weaken the link between reductions in cost and reductions in prices. However, it would also increase the risk of a significant gap between prices and costs. (pp.27-28)

This stance comes very close to rejecting the logic of a TFP approach itself, which is to value the benefits that can arise for consumers and businesses alike in the long term from weakening the link between cost and allowed prices.

¹ The new, national framework is discussed in AEMC (2009i).

The Companies believe that the AEMC needs to rise to the challenge and apply greater thought and analysis to the development of a conceptually sound EBSS which will work in the context of a TFP regime. The AEMC should also strive towards the development of an EBSS which could be applied satisfactorily to both operating spending and capital expenditure.

2.12 Cost pass through mechanisms

The Preliminary Findings envisage that:

A cost pass through mechanism would be available for service providers to include in their revenue or access arrangement proposals at their discretion. The regulator would then respond to the proposed mechanism within the decision making process.

This will allow individual service providers to insure against future cost changes and allow for individual service providers to accommodate their specific circumstances and manage risks.

The Companies consider that a cost pass through mechanism is an essential part of a TFP design, in much the same way as it is a core feature of the building block approach.

2.13 Capital modules

By their nature, cost pass through mechanisms focus on exogenous increases (usually ex post) in operating expenditure.

A capital module would permit the TFP price cap to be adjusted upwards if a service provider is committed to significant increases in capital expenditure. A TFP methodology assumes a relatively smooth pattern of capital expenditure, with internal sources of financing growing in line with billable outputs.

However, capital expenditures can be lumpy and large scale. For example, UED is likely to be subject to a “wall-of-wire” effect because large swathes of its distribution network were installed over a relatively short period in the past, and will need to be replaced as part of a concentrated programme in future. As a result, a marked increase in capital outlays is anticipated over particular years, with projects having to be undertaken in batches. It is highly likely that a TFP methodology without a suitable capital module will not generate sufficient internally-sourced financing to ensure that all justified capital spending is undertaken.

The Companies therefore consider that a capital module is an important complement to a TFP methodology, and agree with the Preliminary Findings that:

A service provider could include a capital module in its proposed revenue or access arrangement to recover actual efficient, extraordinary significant increases in capital expenditure during a regulatory period. The regulator would need to be satisfied that the expenditure is outside the scope of the cost drivers that are taken into account in setting the X factor. Discussions with stakeholders would be needed to determine the most appropriate design of this module. (p.102)

Such a capital module is important to compensate service providers that make step changes in expenditure. In the absence of a capital module, significant business risks would need to be borne.

2.14 Off-ramps

Under the Preliminary Findings, off-ramps would be available under a TFP methodology.

An off ramp mechanism would:

- *be proposed by the service provider or required by the regulator;*
- *clearly specify the 'off ramp event' at the start of the regulatory period. This could be a specified event or a rate of return or revenue band (for example, [if] the actual rate of return varies by more than 20 per cent [around the] allowed rate of return);*
- *require an 'off ramp event' to be significant; and*
- *require that the need and specification of an off ramp mechanism be assessed for each forthcoming regulatory period. (p.103)*

While resort to any off-ramps is a matter that could be dealt with by individual service providers in their regulatory proposals, the Companies consider that profitability off-ramps are inappropriate as they:

- duplicate the safeguards available via regular P_0 adjustments;
- result in rate of return regulation;
- increase the complexity and weaken the design of a TFP methodology; and
- invariably inject significant regulatory discretion into the process.

If off-ramps are available as an option to service providers, then it is essential that the criteria according to which the regulator decides whether an off-ramp would be accepted or rejected are specified in the NER and NGR.

The Companies are concerned that the possible existence of off-ramps could reduce the effort put in to ensuring that the main 'safeguard mechanisms' under a TFP approach (namely capital modules, cost pass through mechanisms and any regular P_0 reviews) are appropriately designed. The key issue yet to be resolved is whether off-ramps can be structured in a way that does not destroy the incentive properties of a TFP methodology.

More generally, the Companies support the reasoning advanced in the Preliminary Findings that:

Whether such safeguard mechanisms weaken the incentive to control costs would depend on how the mechanisms [are] designed. The key issue is striking the balance between allowing the service provider the ability to recover efficient costs and maintaining the efficiency incentives on service providers. (p.43)

2.15 Implications of the development of smart grids

The energy industry, and the electricity distribution sector in particular, is facing a period of revolutionary change as a result of the application of modern communication technologies and new interactive control capabilities. In addition, there is widespread deployment of distributed generation and remote controlled loads, with the result that differing requirements will be imposed upon the distribution system.

In order to connect embedded generation to the network, service providers generally have to provide additional reserve capacity so as to ensure the continuity and reliability of supply

when the generation is inactive. Thicker wires and larger conductors generally have to be used and there are additional complexities inherent in the management of reverse flows.

The installation of smart meters, and the adoption, by consumers, of services which rely on smart metering will increase the range of information available about the quality of electricity supply. A predicted trend is that consumers will increase their awareness of, and pay greater attention to the frequency and voltage aspects of electricity supply. The standards for frequency, in terms of oscillations, and voltage stability are set globally by accreditation agencies, but greater knowledge about supply issues at a local level will, in time, prompt consumers to raise their expectations about the nature of the service delivered.

In introductory comments provided in the Preliminary Findings paper, the Commission has given explicit recognition to the likely establishment of smart grids in Australia:

In conducting the Review, we also had regard to the future challenges facing electricity and gas service providers, especially with the introduction of a carbon pollution reduction scheme (CPRS) in Australia, and the development of smart grids. (p.5)

The Commission has also echoed concerns expressed by certain distributors that past trends in productivity may not serve as a useful guide to the quantum of improvement that can be expected in future. The Commission has noted that if changes in energy markets (including the introduction of smart meters) influence the productivity growth of service providers (rather than the price level), then there may be difficulty in relying upon past TFP growth to determine the revenue and price paths of service providers (see page 61).

There is an expectation that different distribution businesses will adopt and implement smart grids to varying degrees. In metropolitan regions, there may be opportunities to use electric cars as battery banks which support the electricity network, however the scope for such connections will be more limited in regional and rural areas. A TFP framework would need to accommodate these disparities so as to ensure that some form of comparability between urban and rural distributors can be maintained.

To its credit, the Commission has acknowledged that in conditions of extreme market dislocation, the prospective benefits of a TFP regulatory method may not materialise.

If there were significant changes in market characteristics, then a TFP methodology may not be a suitable tool to alleviate information asymmetry. This is because the market changes may break the link between historical and future productivity. (p.20)

Moreover:

The ability of the TFP growth index to be a good estimate of future productivity growth for the service providers within [an] industry group would be met in a steady and mature market. However, there is some doubt that the condition can be met in the foreseeable future as there are a range of external factors that may impact upon what service providers are required to deliver. (p.48)

And:

It will take at least eight years before data is sufficient to permit a TFP methodology. In the meantime, significant changes in the industry may occur that could undermine the suitability of a TFP methodology. (p.86)

UED believes that the emergence of new phenomena in energy markets bolsters the case for having a broadly-based TFP index which is established with sufficient latitude in its mode of construction. The quality of delivered electricity may warrant explicit recognition on the output side, and there will be a commensurate need to record the capital inputs that are directly associated with the provision of this service. New tariff categories can be created



for premium products, with price and service offerings made available outside the standard tariff basket. Importantly, the price cap form of regulation should be retained so as to mitigate the overall revenue risks to which a service provider would be exposed as a result of possible volumetric changes.

Distributors should also be entitled to revert to a building blocks regime if TFP is rendered unsuitable for use as a result of major changes in energy markets.

It is important too that the design of the various “safeguard features” associated with a TFP methodology (including the Po adjustment, cost pass throughs, the capital module, and off-ramps) be sufficiently flexible to cater for the types of technological developments in prospect in the energy industry.

3. Calculating the industry TFP growth rate

Central to the development of any workable TFP methodology is the question of how the annual percentage change in industry TFP is to be measured.

3.1 Lack of progress to date

In recent years, a great deal of technical expertise has been applied to the task of determining an optimally specified TFP growth rate. Government and industry have both participated in the processes surrounding TFP formulation.

As much 'heat' as 'light' seems to have been generated by the accompanying debates, including in the reference material circulated by the Commission during this review. At present, the debate sees alternative index specifications favoured by Economic Insights and Pacific Economics Group.

In these circumstances, it is unsurprising that stakeholders are uncertain about the preferred method of calculation. Service providers have also taken the initiative to advance methods which would then be assessed by the regulator.

In the Companies' view, a considerable amount of further work is required on determining the most appropriate method for calculating the annual percentage change in industry TFP before any service provider would consider seeking to be regulated under a TFP methodology.

The Companies are dismayed that, after more than a year, the Preliminary Findings are somewhat bereft of detail about how the TFP index might in practice be calculated.

3.2 Responsibility for developing the appropriate TFP specification

The Preliminary Findings contain an indication from the Commission that the manner in which the TFP index is to be calculated, and the components to be determined, (including the outputs, inputs and weightings),

...are not matters for the AEMC to decide on alone. (p.99)

While no-one is suggesting that the Commission should dictate any TFP specification, and even if there is general agreement that a consultative process is the most appropriate method to resolve these matters, the Companies are disappointed that the Commission has not been able to make further progress during the course of the current review in narrowing or resolving essentially technical matters that are central to the effectiveness of a TFP methodology.

The Companies are concerned that the Victorian TFP design proposal – that responsibility for determining how best to calculate the TFP growth rate should be left to the regulator – might end up being accepted through a process of attrition².

² Note that the Victorian TFP proposal was essentially concerned with changes to the National Electricity Rules, and no mention was made of gas.

The Companies did not agree with this aspect of the Victorian TFP design proposal. Rather than await a decision by the regulator, the Companies believe that the approach to calculating the TFP growth rate (including determining input and output specifications and weightings) should be largely specified in the NER and NGR.

The Companies therefore strongly support the suggestion in the Preliminary Findings that:

The specification for calculating the TFP growth rate (that is, inputs, outputs and weightings) would be prescribed in the NER and NGR. However, at this stage further analysis and consultation is needed to determine the correct specification. (p.100.)

In fact, future consultations will be greatly assisted if further analysis is undertaken by the Commission and its advisers with a view to narrowing the issues down to key matters of principle.

In addition, to facilitate the development of draft Rules for calculating TFP growth rates, a working (spreadsheet-based) model is required. This model may need to be populated with dummy data. The Companies' preference is that such a model be published before, or with, the Commission's draft report. That model needs to be designed to be used and adapted by market participants. The alternative of leaving the appropriate TFP specification to be addressed during stage two of the review runs the risk of leaving it too late.

3.3 Main TFP specification options

TFP analysis is relatively sensitive to the output and input specifications chosen, the time period examined and the method used to calculate growth rates.

We note the Brattle Group's acknowledgment (Brattle, 2008j) that TFP methodologies can be technically difficult and controversial, with different TFP specifications providing different results (p.11).

Economic Insights also concluded that TFP analyses of Australian electricity and gas distribution systems will be quite sensitive to the specification chosen. Using currently available data, Economic Insights indicated that, depending on which TFP specification is chosen, TFP growth rates seem to range between 1 per cent and 2.2 per cent since 1995 for electricity distribution, and between 1.5 and 3.5 per cent over the period since 1998 for gas distribution (Economic Insights, 2009f, page v).

Assessment criteria

The Preliminary Findings make no reference to the five criteria for the assessment of TFP specifications identified by the Commission in its August 2009 Discussion Paper (AEMC, 2009h, pp.26-27), namely, that the index:

- *results in a stable index over time;*
- *creates no systematic bias in the TFP growth estimate;*
- *is consistent with promoting economic efficiency and does not result in any perverse incentives;*
- *is consistent with the service provider's regulatory asset base; and*
- *results in reporting requirements which are proportionate and not onerous.*

In place of these criteria in the Preliminary Findings are a set of specific conditions or requirements to be met by a TFP index:

Provided certain conditions are met, a TFP index can be designed to reflect industry productivity and give service providers the opportunity to recover efficient costs during the regulatory period. That is, if:

- *capital costs are set with reference to meeting financial capital maintenance needs (that is, the net present value of the return of and return on capital less any scrap value equals the initial value of the asset);*
- *growth rates for actual outputs and inputs are a reasonable and unbiased estimate of future growth rates;*
- *outputs and inputs used in the calculation of TFP for the industry group reflect the service provider's activities (this includes billable and non-billable outputs);*
- *there is reasonable comparability on the relationship over time between changes in outputs and changes in inputs between the service providers within the industry group and the service provider subject to the regulatory decision; and*
- *the measurement of capital input quantity reflects the actual use of capital (that is, the depreciation profile used is consistent with physical asset depreciation). (p.56)*

These requirements for a TFP index seem reasonable as they would increase the likelihood that service providers have a reasonable opportunity to recover the efficient costs incurred in the provision of regulated services.

Nevertheless, the Companies also consider that some of the previous criteria continue to have merit, in particular the specification relating to reporting requirements being proportionate and not onerous. The TFP index will have to be calculated from readily-available or easily collected data, without relying on significant changes to reporting requirements and processes and the development of new information systems.

In addition, it is also important that the method used to calculate a service provider's (or the industry's) TFP index will need to be consistent with the basis and measurement method used for calculating the annual percentage change in economy-wide TFP.

Measurement of outputs and inputs

Economic Insights identified a range of technical issues which remain to be resolved with respect to the measurement of outputs and inputs (*Total factor productivity index specification issues*, Economic Insights, 2009I, pp.10-11,20-21).

The Companies hope that the Commission's draft report will provide suggested answers to the largely technical questions posed on measurement issues in Economic Insights' *Total factor productivity index specification issues* paper. While the Companies – in common with other service providers – invariably have views on some of the questions posed (or aspects of them at least), such partial responses are unlikely to be helpful and much uncertainty exists about how any partial responses will be used. What is needed instead is a complete and workable specification to which service providers can respond with some confidence in respect of how any responses will be used.

Weightings

Growth rates for individual outputs and inputs need to be weighted together. Economic Insights has suggested that the weights should be derived from "...from the share of each output in ... revenue and marginal cost (in the case of natural monopolies) and the share of

each input in total costs” (Economic Insights, 2009l, p.2). That said, no detail has been provided.

The Commission’s experts need to devise a working model so that service providers can more effectively get a feel for the issues involved. Progress is needed beyond the highly theoretical level of the debate so far.

Indexing method

Weighting together growth rates for individual outputs and inputs requires a suitable indexing method.

While the Preliminary Findings suggest that:

The regulator would choose the index number method it considers appropriate, provided the method chosen satisfies the important technical requirement of being ‘superlative’ (that is, it can provide a close approximation to an arbitrary smooth function). (p.100)

The Companies favour a proposition whereby a method for calculating a particular index formulation (such as the Fisher index) would be specified in the NER and the NGR. There would be in-built provisions for regulatory review after experience has developed.

Method used to calculate TFP growth rates

Economic Insights has identified two different approaches for calculating the TFP growth rate: An average annual growth rate between the first and last observations, and a regression–based trend method.

While the Preliminary Findings suggest that:

The regulator would have the option to decide whether to use an average annual growth rate approach or a regression–based trend method in calculating the TFP growth rate. (p.101)

The Companies would favour the NER and NGR nominating a particular method for calculating the TFP growth rate, with scope provided for regulatory review after experience has developed.

Time period

The Companies agree with the Preliminary Findings that the regulator:

...would be required to use the longest time period that is possible provided that the available data is robust. (p.101)

However whether a minimum time series of eight years of data is sufficient (as suggested in the Preliminary Findings) is a matter for empirical testing.

Method used to calculate the industry TFP method

Economic Insights has identified two different approaches to form the industry TFP index. One is the weighted average of individual service providers’ growth rates, and the other uses data for all variables summed to the industry level.

The Preliminary Findings paper no longer advocates the position taken in the Commission’s August 2009 Discussion Paper, (AEMC, 2009h), namely that the industry (or group) TFP growth rate be calculated based on the average TFP growth rate for all relevant service

providers. However, the Companies would favour the NER and NGR nominating a particular method for calculating the industry TFP growth rate, with scope provided for regulatory review after experience has developed.

3.4 Data collection

The information required to derive TFP performance is not available on a robust basis from adjusted past data. Applying a TFP methodology therefore requires a relevant data set to be collected on a consistent basis over an extended period. The Companies agree with the Commission that this means there is insufficient information available to support a TFP methodology in the near future.

Only once the preferred TFP specification is narrowed is it then appropriate to focus on collecting the appropriate data-set.

Without further progress being made on the TFP specification, service providers are justified in taking issue with the purpose and scope of any proposed information request which is likely to smack of being a “shopping list”.

If this is done, in all likelihood data collection which could be used to support the use of TFP within a regulatory process is already permitted by the NEL and NGL, making new or amended information collection powers unnecessary. Such collections need to be incorporated in an industry-wide Regulatory Information Order so that service providers are not subject to overlapping information collection processes.

The Companies agree with the Preliminary Findings that:

All service providers operating in the sector would be required to provide TFP data, even if they have not elected to use the TFP methodology themselves. For gas, all covered pipelines would be included (even if the covered pipeline is subject to light regulation). (p.101)

However, while there may be grounds for not permitting the inclusion of data on any overseas businesses, there could be merit in including data for Australian service providers outside the jurisdiction of the NEL or NGL (most notably Western Power).

Careful consideration and consultation is needed to develop the minimum data-set required. Without careful consideration, there is a considerable risk that data collection could result in a substantial ongoing cost for service providers and the regulator.

Further work should therefore be done on the detailed design of a TFP methodology so as to improve the specification and provision of regulatory reporting data from service providers.

Care must be taken to avoid onerous compliance costs for service providers. Regulatory reporting is a cost to service providers, the regulator and users. It will take some resources to establish a regime as well as ongoing costs for all regulated service providers in compliance and costs for ongoing improvements. Ultimately, these costs must be recovered through regulated prices.

3.5 Scope for adjustment to and normalisation of data

Any 'cleaning' of or adjustments to audited TFP data to eliminate anomalous features should be restricted to standardised, widely accepted quantitative methods of data cleansing – and should be documented. Normalisation of the data may also have a role to play to ensure comparability of data.

The Companies are concerned that without clear guidance in the NER and NGR, there is a risk of arbitrary adjustments and lack of transparency, and added complexity and regulatory subjectivity, potentially leading to a diminished appeal for a TFP methodology. Relevant principles need to be specified in the NER and NGR.

On this basis, the Companies agree with the Preliminary Findings that:

- *The regulator would be required to use audited historical data as provided by the service providers. It would only be permitted to make adjustments to the data to:*
 - *adjust for structural differences to improve the consistency of the data (for example, for different classifications of services); or*
 - *to adjust certain years data for certain service providers because of exceptional circumstances.*
- *Any [regulatory] adjustments [to historical data] need to be made transparent and done in accordance with the guidelines. The data-set used should be available to all service providers to allow them to undertake their own modelling (subject to any confidentiality issues). Normalising the data for operating environment differences would not be permitted.*
- *The regulator would only be permitted to remove a service provider from the calculation under exceptional circumstances such as if there are serious gaps or problems with the data provided by that service provider. (p.101)*

4. Specific issues arising out of the Economic Insights paper on TFP index specification

4.1 Output index specification

- Do pricing and tariff structures differ between distributors to the extent suggested by Lawrence (Economic Insights, 2009I, page 5)?
- UED agrees that non-coincident peak demand (which is the observed maximum demand) is a poor proxy for the maximum contracted level of output. A better treatment of the reserved capacity billed output may therefore be required.
- UED is capable of recording electricity distribution system capacity (measured in MVA-kilometres) at discrete points in time. The measure would be reported down to the low voltage network, excluding service lines. However, UED is not currently equipped to record this measure on an ongoing basis.
- Should one of the non-billed functional outputs be the installed distribution transformer capacity (at the last level of transformation to utilisation voltage) multiplied by the length and capacity of lines?
- What is the best approach to weighting the outputs? Lawrence has suggested that the weights should be derived from “information on revenue and marginal cost (in the case of natural monopolies)”, though no detail has been provided.
 - In a report on partial factor productivity prepared for SP-Ausnet (PEG, 2004j), the Pacific Economics Group used output cost elasticities, estimated from separate translog cost equations, to weight distribution system outputs. The output measures were customer numbers, delivered energy volumes, and peak demand. The values of the elasticities, when normalised to sum to unity, were 0.431, 0.296, and 0.272. These elasticities were subsequently used by the ESCV as weights for the same output measures when developing its formulation of an efficiency carry-over mechanism (ECM).
- Is there a satisfactory way of transforming reliability indices into output measures that can be used in TFP measurement?
 - The preliminary response is “no” because the reliability indices, unplanned SAIDI and SAIFI are also greatly affected by weather patterns from year-to-year.

4.2 Input index specification

- Is it feasible for distributors to maintain a constant cost allocation method over time?
 - Probably not for the Companies because of recent corporate restructuring.
- How does the passing through of costs lead to double-counting? Does this occur simply because the costs feature on the output side (as a form of revenue) as well as on the input side? The Companies doubt that the arrangement is overly generous, as suggested by Economic Insights (2009I)?

- Lowry and Kaufmann (1995) have proposed the use of a Z-factor to avoid the reported double-counting of uncontrollable costs. Will this work, and has it been tested satisfactorily?
- Should some uncontrollable costs be exempted from TFP calculations rather than simply be passed through? For the purpose of the AER Efficiency Benefit Sharing Scheme (EBSS), UED has categorised the following cost components as being uncontrollable:
 - Spending on non-network alternatives
 - Self-insurance costs
 - Insurance premiums
 - Debt and equity raising costs
 - Superannuation costs relating to defined benefit and retirement schemes.
 - Expenditure that meets the requirements for an approved pass-through event without satisfying the materiality threshold.
- Lawrence (Economic Insights, 2009I, page 13) raises the issue of price caps being applied to unbundled services. In the NEM, the price cap is applied on an unbundled basis to distribution businesses. Distribution charges are treated separately from transmission charges, which are regulated through an alternate but similar process. Charges for transmission use of services are simply passed through by distributors.

4.3 Input price index

- Lawrence has discussed the desirable properties of an input price index (page 13, Economic Insights, 2009I), but hasn't explained why such an index is needed. Is there a plan to deflate all labour and non-labour operating costs? Why do these components need to be measured in real terms? There was no discussion on the output side of the measurement of revenues, in constant prices.
- Owing to the introduction of advanced metering infrastructure (AMI), the PEG choice of "computer services" as an appropriate producer price index (PPI) category may in fact be correct. For meter data services, billing and revenue collection, PEG (2004j) used the computer services PPI, which incorporates cost components for consultancy services. The lower level PPI category selected by Lawrence may be less suitable as a wholesale price proxy because consultancy services are excluded, with consideration only being given to the costs of data processing services, information storage and retrieval.

4.4 Capital inputs and proxy measures

- Most statistical agencies have adopted age-efficiency profiles for measuring the quantity of capital inputs (Economic Insights, 2009I, page 17). When evaluating the capital stock, a hyperbolic age-efficiency profile can be set to give a similar depreciation pattern to "one hoss shay".
- An appropriate proxy for the quantity of capital input is said to be the physical quantity of the principal assets. Lawrence has suggested the use of MVA-kilometres to sum power

line capacities, and kVAs to sum transformer capacities. But this would imply the use of similar measures on the input side as on the output side.

- Kaufmann (2009j) has contended that a monetary based proxy for capital input quantities would allow for wall of wire effects by raising the capital input quantity, and reducing measured TFP growth at an appropriate juncture, thus permitting the application of a less onerous X factor. How valid is this argument?

4.5 Capital annual user costs

- The approach to calculating annual capital costs is essentially the same under building blocks regulation and a TFP-based approach if financial capital maintenance is important (Economic Insights, 2009l, page 19). An amortisation charge for each year is worked out as follows:

$$\sum (WACC \times RAB) + (WACC \times capex) + \text{annual depreciation on RAB and on new capital}$$

- The amortisation charge is to be applied to historical data and not to forecasts.
- The TFP framework thus appears to support two different concepts of depreciation. There is depreciation for the capital input, for which the preferred approach is one hoss shay, and then there is a depreciation component for the return of capital. Standard asset lives can be used in respect of the latter.
- The AEMC has noted in its Preliminary Findings paper that:

The use of front-end loaded depreciation schedules or asset lifetimes for depreciation purposes that do not reflect actual asset lifetimes can potentially cause distortions in a TFP methodology. To manage this, service providers using a TFP methodology should, from that period onward, be required to use depreciation profiles that accurately reflect actual asset lifetimes and which are not front-end loaded. (p. 66)

- However, the AEMC has not made clear whether it is referring to depreciation from the perspective of calculating the capital stock, or the amortisation charge under financial capital maintenance.
- A model has been provided by Economic Insights for review, however it is not in spreadsheet format, and therefore cannot be followed as intuitively.

4.6 Boundary issues

- There may be a requirement to adjust for differences in system boundaries and historic system structures.
 - Economic Insights (2009l) has suggested that distributors in this State have simpler systems and draw power from the transmission network service provider at lower voltages than do distributors in NSW and Queensland. This would appear to be incorrect.
 - UED and other distributors in Victoria do have sub-transmission feeders operating at 66kV.

4.7 Criteria set by the AEMC for the assessment of TFP specifications

4.7.1 Stability

- Lawrence has maintained that a stable index would result from the use of non-billed functional outputs, such as system capacity, in conjunction with billed outputs. The application of one hoss shay depreciation to capital input quantities would also contribute to stability.

4.7.2 Reporting requirements

- Significant changes would be needed to reporting requirements and processes.
- More detailed and disaggregated information on asset lives would be needed to work out one hoss shay depreciation.
- Information on the physical characteristics of the network would have to be gathered and reported more systematically.
- Improvements to existing information systems would be required, and the development of new systems would be warranted.

4.8 System security

- On the matter of system security and redundancy, how do we take account of the observed differences in planning standards?
 - Probabilistic planning methods are used commonly in Victoria, with (N-1) being the standard that is regularly applied. In the Melbourne CBD, the standard has been set at (N-2) because there is a greater need for network security and redundancy.
 - Hence, the task of making comparisons within jurisdictions is made more complicated.



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