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SECOND SUPPLEMENTAL SUBMISSION TO THE AEMC REVIEW INTO THE USE OF TOTAL FACTOR PRODUCTIVITY FOR THE DETERMINATION OF PRICES AND REVENUES

ESC RESPONSE TO THE CONSULTANTS' REPORTS

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1 INTRODUCTION

The Australian Energy Market Commission (**AEMC,** or the **Commission**) has recently issued three new consultant reports as part of its Review into the use of Total Factor Productivity (**TFP**) in the determination of regulated prices and revenues. These reports are Incentives Under Total Factor Productivity Based and Building-Blocks Type Price Controls by The Brattle Group (**the Brattle report**); Energy Network Total Factor Productivity Sensitivity Analysis by Denis Lawrence of Economic Insights (**the Lawrence TFP report**); and Assessment of Data Currently Available to Support TFP-Based Network Regulation by Denis Lawrence and John Kain of Economic Insights (**the Lawrence data report**). In this submission, the Essential Services Commission (**ESC**) would like to comment briefly on these reports and bring some additional, relevant information on these topics to the attention of the Commission.

2 BRATTLE REPORT

The Brattle Report examines the strength of incentives under the TFP-based and building block approaches to price regulation. The ESC was surprised that this report made essentially no reference to a significant research project which we sponsored on these very issues.[1] This research included the creation of an "incentive power" model by Pacific Economics Group (**PEG**). This incentive power model is an analytical tool that quantifies the power of incentives and the benefits to customers and shareholders under various regulatory systems.[2] The results of this model were summarised in the report *Incentive Power and Regulatory Options in Victoria*, which is available from the ESC's website. This incentive power report presented detailed information on projected cost savings, and inflation-adjusted price reductions, for 25 different regulatory scenarios, including various applications of building block and TFP-based regulation. Without exception, the report found that customer prices were lower under TFP-based regulation than building block regulation. In fact, building block regulation sometimes leads to higher prices than *cost of service* regulation, due to companies' ability and incentives to "game" their operating and capital cost forecasts, which are in turn used to set their forward-looking prices.[3]

The ESC believes that any objective evaluation of the incentive effects of TFP-based and building block regulation must reference and build on this incentive power work. The ESC-sponsored project represents the most comprehensive, rigorous assessment of the incentive effects of alternative regulatory regimes that has been presented in Australia. Some results of this research also directly contradict Brattle's main conclusions. For example, Brattle concludes that prices will be higher under a TFP-based regulatory option, essentially because TFP-based regulation does not create materially stronger incentives to reduce costs, therefore companies would not elect this option unless it led to higher prices – and hence higher profits – than building block regulation. As noted, the incentive power

1 The Brattle Report referenced this project only once, in footnote 72 on page 42 of the report. This footnote also addressed only the "partial reset" option that was analysed, and whose incentive effects were quantified, in PEG's incentive power report, but did not acknowledge the far more fundamental analysis on the incentive power of alternative regulatory regimes.

2 The incentive power model uses a sophisticated optimising algorithm to determine how companies respond to different regulatory plans. The model essentially "solves" for a company's optimal cost reduction efforts under a given set of regulatory rules, substitutes the resulting costs back into the regulatory plan, and calculates the subsequent changes in prices and profits. Accordingly, the incentive power model shows the maximum benefits to customers and shareholders that are inherent in a given regulatory plan if the regulated firm responds optimally to the incentives that the plan creates. Plans can be ranked in terms of the power of the incentives they create and the overall benefits they are expected to generate for different parties.

3 Gaming of multi-year cost forecasts is almost never possible under cost of service regulation, which typically uses observed cost data to set allowed prices.

model comes to precisely the opposite conclusion, using a rigorous, optimising framework that evaluates company behaviour and the implications for prices under TFP-based and building block methods. If Brattle disagrees with the conclusions of the incentive power model, the bases for their disagreements must be made clear. An informed debate, and a determination by the AEMC, on incentives must consider all available evidence and not simply ignore the most important research presented to date on this issue. The ESC finds Brattle's evaluation of the relative incentives of TFP-based and building block regulation to be unpersuasive, since it fails to contend with a variety of important issues, including:

- *Ex-post vs. ex ante incentives* – Brattle's discussion concentrates almost entirely on companies' cost-control behavior after the price controls are in place. These can be termed the companies' ex-post incentives. However, building block regulation creates very strong incentives for companies to "game" their operating and capital cost projections *before* the price controls take effect. These incentives are entirely absent from TFP-based regulation. The impact of the regulatory regime on companies' ability and incentive to manipulate their projected costs can be termed the ex-ante incentives. Any evaluation of the merits of TFP-based and building block regulation must consider both the ex-post and ex-ante incentives that they create, especially since the latter have been so central to the problems that have been observed in actual building block regimes. The ESC-sponsored research considers firm's ex ante and ex post incentives in a comprehensive, rigorous, and logically consistent manner; the Brattle report considers only ex post incentives and not the ex ante incentives related to cost projections. Brattle's conclusion that building blocks do not create incentives for companies to inflate their RAB is particularly unpersuasive, on both theoretical and empirical grounds. The experience from Victoria and the UK (among other jurisdictions) strongly supports the view that many companies under building block regulation project excessive capital expenditures in advance of the controls (*i.e.* ex ante) and then "underspend" when the controls are in place (ex post).
- *Long-term cost reduction initiatives* – The Brattle report does not consider how TFP-based and building block regimes compare in terms of longer-term cost reduction initiatives, or risky long-term projects (e.g. R & D and innovation investments) where regulators are not well-positioned to assess risks. Such projects typically have payback periods in excess of the typical five-year term for price controls.[4] If the costs are not passed through to consumer such initiatives will usually be unprofitable under building block regimes, where firms can only retain the benefits from their efforts for five years (even with an efficiency carry-over regime). In contrast, many longer-term initiatives will be profitable under TFP-based regulation and provide a more appropriate allocation of risk between the business and customer. One of the analytical strengths of the incentive power research sponsored by the ESC was that it explicitly considered how regulatory regimes impacted cost control efforts with different payback periods, including periods that exceeded the length of the price controls.

4 Anecdotal evidence suggests that such long-term initiatives are prevalent for energy utilities. For example, many merger agreements in the US include rate freeze provisions of more than five years. These provisions are designed to protect companies against price reductions that can take away the cost savings associated with mergers before the time at which those cost savings pay back the initial merger costs.

- *Light-handed P_0 updates* – An important part of the ESC's proposed TFP-based regulatory model is a relatively "light handed" review of company costs when the TFP-based plan is updated. Especially since it is known in advance, this can have a very material impact on company incentives, but the Brattle analysis does not adequately consider this feature of the TFP-based regime. Brattle does, however, say that partial P_0 resets can also be included in building block controls, but it is very difficult to see how this would operate in practice. The reason is that the P_0 in a building block methodology is established using both historical and projected cost data. Any partial reset of P_0 under building blocks would therefore exacerbate the already significant incentives to inflate cost forecasts, since a "partial reset" would lock in a portion of the cost over projection in perpetuity. Thus, a partial reset under building blocks would appear to exacerbate the negative ex ante incentives of the regime and reduce customer welfare. The positive incentive effects of the partial P_0 reset that were quantified in the incentive power work stem directly from the fact that price resets under TFP-based regulation are based entirely on historical, observed costs.
- *Implementation and Administrative costs* – The Brattle report does not really examine the implementation and administrative costs of the rival regimes, but only notes "in passing" (footnote 44 on p. 24) that it believes that the administrative savings associated with TFP-based regulation will be material in practice. However, the ESC's initial submission for this review presents concrete evidence on the relative costs associated with building block reviews and the TFP research that it has sponsored in Victoria (e.g. in response to Issue 32 in the AEMC's original paper). Our experience clearly suggests that there will be material administrative cost savings associated with TFP-based regulation. It should also be noted that the Lawrence data paper concluded that the incremental costs associated with data collection would not be substantially greater if a TFP-based option were added to the regime, compared with exclusive reliance on building blocks. Lower implementation costs directly increase customer welfare, and we believe that any review AEMC should consider the concrete evidence that has been presented in the review on this issue.

In addition to the incentive power research, the Brattle report does not address the detailed argument that the ESC presented (in response to Issue 25 in our submission) on why TFP-based regulation creates stronger incentives to pursue broader energy market objectives than building block regulation. Since it can be instrumental in responding to the imperatives of climate change, the ESC believes that adding a TFP-based option to the regulatory framework will be particularly valuable at the present time. We recognise that regulatory debates have almost entirely neglected the relationship between energy network regulation and broader energy market objectives, but we believe that this is a critical oversight. The extent to which TFP-based and building block regulation facilitate broader energy market objectives should be absolutely central to this review. The ESC has presented a detailed analysis on why believe TFP-based regulation will be superior in this regard, and we urge the Commission to consider this analysis carefully.

While the Brattle report does not evaluate the Incentive Power research or the relationship between network regulation and energy policy goals, it does make recommendations that go beyond assessing the relative incentives created by

TFP-based and building block regulation. For example, it says that the problems of information asymmetries could perhaps be ameliorated by implementing a "menu" approach or by using TFP as a benchmarking tool in building block information.[5] The latter recommendation is supported by Brattle's view that "regulators benefit from more information rather than less" (p. viii).

The ESC disagrees with these recommendations – other than to note that adding TFP-based regulation to the regulatory framework does, in itself, create a menu of options available to utilities. We believe the menu approach presented in Appendix One of the Brattle Report is too vague to have any practical implications for the current review. The most recent menu approaches have been implemented in the UK, primarily to elicit more truthful capital expenditure forecasts.[6] As we stated in our Supplemental Submission, the ESC believes that this type of menu would be undesirable for Australian regulation. One reason is that a prerequisite for these menus are detailed, company specific benchmarking studies for capital expenditures. We believe that Australia's experience with benchmarking has not, in general, been benign, and it would be a mistake to increase the role that benchmarking plays in regulation. In addition, this approach would greatly complicate network regulation and impose new regulatory costs on customers.

The ESC also does not believe it is necessarily true that "regulators benefit from more information rather than less." One reason is that for any information to be valuable, it must be accurate and objective. Gamed expenditure forecasts, for example, will not prove helpful to regulators and will only decrease the "signal to noise" ratio in the available data. In addition, there are incremental costs associated with adding information. Regulators must therefore constantly assess the incremental costs and incremental benefits associated with adding to their information base, and these will necessarily vary by the type of information that is being considered. Taken literally, Brattle's statement implies that more information should always be compiled in regulatory reviews, which is clearly untrue. As we stated in our supplemental submission, the ESC believes that it is not appropriate for TFP to be considered as merely a metric or a tool that can be integrated into building block methods. TFP-based regulation is a fundamentally different approach, and we believe there would be real value to stakeholders from making a regulatory alternative available to utilities.

Finally, although most of the issues regarding TFP specification are treated in the Lawrence papers, we wish to comment on two points regarding TFP estimation that appear in the Brattle Report. First, Brattle (and Lawrence) say that the outputs included in a TFP specification should ideally include service quality. The ESC disagrees, and again we note that this issue has been discussed in our submissions, but Brattle has not addressed these points. Our response to Issue

5 On page 11, the Brattle Report even says that "(i)n general, TFP approaches (to regulation) are a form of benchmarking." The ESC strongly disagrees. Benchmarking per se for regulatory applications is where allowed prices depend on the direct and explicit comparison between some external performance measure (or measures) and the company's own performance. These direct and explicit comparisons between external benchmarks and the companies own performance on those benchmarks do not occur in TFP-based regulation.

6 The Brattle Report also says that regulatory mechanisms of this type can be used to deal with expenditure gaming concerns in building block applications.

27 shows that including service quality in TFP studies can create conflicting and perhaps perverse incentives if the regulatory plan also includes a service quality incentive, which Brattle, Lawrence and the ESC all support. We believe the AEMC must evaluate all evidence and analysis presented on this point, even though Brattle has not considered all the incentive work done to date in Australia.

The Brattle Report also says (p. 26) that the "basic idea" behind TFP measurement "is to divide a physical measure of inputs (e.g. length of wire at various voltages, number of transformers, hours worked) by a physical measure of output (e.g. MWh distributed, number of customers, peak MWh)." The Lawrence TFP report (p. 3) also makes a similar statement, that "productivity is a measure of the physical output produced from the use of a given quantity of inputs." First, it should be noted that Brattle has inverted the relationship here; TFP is defined as output divided by input, not vice versa. But more fundamentally, the notion that TFP necessarily measures "physical" quantities is not true. TFP is measured for a wide array of economic sectors, including many service industries whose outputs are not by nature "physical." The real issue in productivity measurement is to separate prices from quantities, and to use only the measured quantity of outputs, and the measured quantity of inputs, in TFP estimates. This point is illustrated in the indexing logic that underlies that relationship between CPI-X regulation and TFP and input price measures. The ESC detailed this basic logic in equations (1) through (4) in our response to Issue 4 of the AEMC's Framework report. This logic also shows a clear link between financial data and price and quantity measures. Changes in revenue (in this instance, the revenue of a regulated utility industry) are decomposed into changes in output quantities and output prices; changes in cost (in this instance, the cost of a regulated utility industry) are decomposed into changes in input quantities and input prices. Changes in measured quantities do not need to be defined in physical terms on either the input or output side of the TFP measure.

Consider the advertising industry. To oversimplify only slightly, the change in output for this industry will be the change in advertising sales revenues minus the change in prices for advertising services. This is a 'volume' measure that is not necessarily equal to, say, the number of new advertisements the advertising agency has generated. Similarly, the change in the input quantity for the advertising industry will be equal to the change in total costs for the industry minus the growth in industry input prices. This figure will not necessarily correspond to (a cost-share weighted average of) the number of hours worked and new computers and other capital goods purchased.

This may seem like an academic distinction, but in this consultation it is not. A key issue in this review is how output and input quantities are defined in TFP specifications. If productivity is *defined* in explicitly "physical" terms, readers might naturally assume that the choices for individual outputs and inputs should also be physical measures. The AEMC should recognise that there is no need for this to be true and, in fact, nearly all productivity studies utilise financial and not physical metrics when measuring inputs and outputs.

3 LAWRENCE TFP REPORT

The Lawrence TFP report addresses the sensitivity of TFP measures when different choices are made for input quantities, output quantities, and output quantity weights. As the report implies (p. 2), the degree of TFP sensitivity is really just a mathematical issue; for example, if all possible output choices are growing at the same rate, it will not make any difference what choices are made for different outputs or how those outputs are weighted. The Lawrence TFP report says that "(t)he purpose of the (TFP sensitivity) exercise is to determine the possible range of TFP estimates resulting from different specifications and hence the likely need for more or less direction in the Rules. If results are quite sensitive to the specification adopted then it may be desirable to have a higher degree of direction regarding allowable specifications in the Rules to promote certainty among regulated businesses" (p. 1). While there is a certain plausibility to this argument, we respectfully submit that this view puts the cart before the horse. The issue is not whether energy network TFP trends will vary if they use different variables or weight them differently, but rather whether there are clear standards and criteria for determining the correct TFP specification itself and to discriminate between alternate specifications. The Lawrence TFP Report does not explicitly address this fundamental issue, but it was discussed extensively in the ESC's submission on the Framework Paper.

The Lawrence TFP Report essentially evaluates two TFP specifications: the Lawrence and PEG/Kaufmann TFP specifications. These alternate specifications are investigated for Victoria's electricity distribution and gas distribution, building on the extensive TFP research that the ESC has sponsored for these industries since 2004. There are clear differences between the Lawrence and PEG/Kaufmann TFP specifications that need to resolved by the AEMC in this Review. For example, Lawrence says that physical measures of capital are essential for TFP measurement, while PEG/Kaufmann advocate financial measures. The ESC believes there is far more analytical, empirical and regulatory support for the PEG/Kaufmann choices for capital inputs. The logic presented in the ESC's submission on the Framework Paper shows a clear link between changes in financial costs and changes in the input quantities – including capital input quantities – in TFP studies that are used to set the terms of CPI-X indexing formulas. It should also be noted that PEG/Kaufmann put forth a very detailed analysis of the merits of these approaches in Appendix Two of the gas distribution TFP report it prepared for the ESC in November 2008. We believe that this critique, and all other analysis and evidence presented in ESC submissions or sponsored research, should be considered during the AEMC in this Review. We are confident that the capital cost measurement issue can be successfully resolved through an objective evaluation of the evidence and honest, transparent debate.

In that regard, it should be noted that Lawrence and PEG/Kaufmann have debated the issue of alternate TFP specifications in other jurisdictions. The issue of appropriate capital measures was the subject of considerable debate in 2007-2008 for a power distribution incentive regulation plan in the Canadian Province of Ontario. PEG advised the Ontario Energy Board (**OEB**) Staff in this proceeding, and it estimated an industry TFP trend using monetary capital values. Dr. Lawrence was advising a team headed by Julia Frayer of London Economics, and it developed an alternative TFP measure which used physical capital measures in part. In its September 2008 final decision, the OEB accepted PEG's approach and wrote that "(o)f greatest concern with Ms. Frayer's approach is the (physical) measurement of capital, which is inconsistent with the prior Ontario TFP studies and does not appear to have been adopted in any jurisdiction other than New Zealand."[7] This finding is notable, since the Ontario proceeding is the only instance that we are aware of in which the merits of physical versus monetary capital values has been debated extensively and transparently in a regulatory setting. As noted, the ESC strongly encourages the AEMC to undertake its own independent analysis of choices for capital inputs, but it should be recognised that there was an objective review of this issue within the last year, and the physical capital measures that Dr. Lawrence is recommending in this proceeding were examined and rejected by an independent, well respected regulatory agency.[8]

On the output side, the most fundamental disagreement between Lawrence and PEG concerns the choice of output weights. PEG/Kaufmann recommend revenue share weights, as they have in all price indexing applications where these data are available (including Australia). Lawrence advocates using cost share weights for different outputs, claiming that the revenue share alternative is, for non-competitive network industries, equivalent to making "some arbitrary judgments about the relative importance of the output components" (p. 5).

The ESC strongly disagrees with the Lawrence view. Nothing could be less arbitrary in terms of its importance for customer welfare than the prices that customers actually pay for different utility services and indeed should pay from an allocative efficiency perspective. The ESC also believes that using cost shares to weight outputs is fundamentally inconsistent with the indexing logic detailed in the ESC submission. It should be emphasised that, in the Lawrence TFP specification, there will be no logical or empirical connection (other than by chance) between changes in selected outputs and changes in industry revenues, which is intuitively implausible. [9]

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7 Ontario Energy Board, Supplemental Report of the Board on 3rd Generation Incentive Regulation for Ontario's Electricity Distributors, September 17, 2008, p. 12.

8 In fact, the OEB accepted PEG's entire TFP specification without modification. However, the OEB did select a longer sample period for the approved TFP trend than what was recommended by Dr. Kaufmann of PEG. The effect of this change by the OEB was to reduce the approved X factor by 0.16% below PEG's recommended value.

9 The Lawrence TFP report further claims that revenue shares are inappropriate when there is a divergence between prices and marginal costs for different output components (p. 5). However, prices are equal to marginal costs only in perfectly competitive industries, which are relatively rare in advanced industrial economies. Most industries are better described as monopolistically competitive or oligopolistic, and in such industries there will be a divergence between price and marginal cost (i.e. price will exceed marginal cost). Nevertheless, government statistical agencies use revenue shares to weight the output of these industries in national TFP studies.

It should also be noted that the productivity specifications of PEG and Lawrence have been reviewed by an Appeal Panel in Victoria. The issue was the method for estimating opex partial factor productivity for gas distributors. Because it applied to opex only, there were no issues regarding appropriate capital measures. While the Appeal Panel did not explicitly assess the alternate output specifications put forward by PEG and Lawrence, it did accept PEG's recommendation, finding that it was "an objective quantitative analysis undertaken by a qualified and experienced consultant." The Panel rejected the Lawrence alternative, finding that it did not "appear to the Panel to derive from an entirely objective analysis."

The ESC whole-heartedly agrees with Dr. Lawrence that it is "important to specify the correct (TFP) methodology in any future implementation of TFP-based regulation." We strongly encourage the AEMC to undertake an independent review of this subject, paying close attention to what the indexing logic implies is the correct TFP specification for CPI-X applications and the precedents for TFP applications throughout the world (in regulatory applications and by national statistical agencies). Some materials that shed light on these issues include: 1) the ESC's submission on the Framework Paper, particularly in response to Issue Four; 2) the discussion of merits of alternative capital measures in PEG's 2008 gas TFP report; and 3) the 2008 decisions by the Ontario Energy Board on incentive regulation for electricity distributors.

4 LAWRENCE DATA REPORT

Lawrence and Kain have also prepared a report on the data currently available to support TFP-based regulation (**the Lawrence Data Report**). The ESC believes that these data requirements should be driven by the TFP specification. There is no need to impose unnecessary data burdens on the industry, or collect more data than necessary. The Lawrence Data Report says that financial data needed to estimate TFP are generally available but that physical data are also needed to measure inputs and outputs. As discussed, the ESC fundamentally disagrees with this view, and we strongly encourage the AEMC to undertake an objective review of the theory, evidence and precedents regarding this issue. If this review leads to the conclusion that physical inputs (and Lawrence's constructed measure of physical network capacity as output) are not necessary for TFP measurement, then the Lawrence Data Report implies that the data for estimating TFP are, in fact, currently available in Australia. This would conform with the ESC's extensive experience, where we have found the data necessary to estimate TFP for gas and electricity distributors are quite modest and generally available.[10]

In addition to data availability, the primary concern in the Lawrence Data report concerns data comparability and consistency. Lawrence and Kain note that, with the exception of the ESC and the Victorian Department of Primary Industries, all stakeholders expressed scepticism on whether data in Australia were sufficiently comparable and consistent to be used for TFP studies. In this regard, it should be noted that since Victoria has sponsored a series of TFP studies for the last six years, it is, in fact, the one jurisdiction that has investigated this issue in some depth. The AEMC should therefore be comforted by the fact that the ESC and VDPI both believe that Victorian data are suitable for TFP studies. This is especially true since the ESC has put forward a detailed, workable proposal in which the Victorian TFP estimates could be the starting point for national TFP estimates, and additional data could be rolled into calculations over time.

The ESC also believes that data quality issue is and will be even more of an issue under the building block methodology for two reasons. First, building blocks creates a direct link between a company's costs and its price adjustments, whereas TFP-based regulation links rate adjustments to industry-wide TFP and input price trends. Second, in the absence of strict legal and physical ring fencing, Australia's network businesses have been able to adopt highly complex and

10 Contrary to Lawrence's insinuation on p. 28, it is not the case that the TFP specifications developed by PEG in its work for the ESC were driven by the available data. In fact, the response to Issue 4 in our submission to the Framework Paper demonstrates that the opposite was true; PEG compiled those data because they were consistent with the proper TFP specification.

regularly changing corporate structures.[11] As it stated in the Framework Paper, the AEMC needs to evaluate the issue of data quality for TFP-based regulation relative to the counterfactual - exclusive and mandatory reliance on building block regulation – and not in isolation.

In that regard, the ESC believes it is important to examine the view expressed in the Lawrence Data Report that there must be a very high standard to ensure that data available for TFP estimation in Australia are fit for purpose. We believe that this is a relatively vague criterion that may lead to non-transparent decisions. The ESC would posit what we believe is a more clear and useful standard for evaluating whether available data are suitable for TFP estimation. The relevant test is whether there is a high expectation that available data will create a *systematic* bias in the industry's TFP *trend*. There are two key parts of this test, which can be applied sequentially. The first is whether data quality problems create a systematic bias. Random data anomalies among companies will not bias the industry TFP measure, since these random anomalies can be expected to balance out and have an expected value of zero. If careful inspection of available data leads observers to believe there are systematic data anomalies, the next question is whether these anomalies are impacting the TFP trend. This is critical, and a significant difference from building blocks, where any anomaly in the information used for price controls necessarily impacts allowed prices. Anomalies will impact the key metric used in TFP-based regulation only if they are reflected in the rate of change of TFP, not its level. For example, if there is a systematic bias in industry costs, but it is constant in every year, computations of the TFP growth rate will not be affected by this bias.

The ESC also disagrees with Lawrence's assertion that operating conditions will impact TFP trends. He presents no evidence to support this inherently empirical claim. In our original submission, however, the ESC cites work from Victoria and the UK which shows that the impact of business conditions on measured TFP growth is negligible. Again, this is different from the impact of business conditions on cost or TFP *levels*, which is often the focus of benchmarking studies. No one disputes that there is a correlation between operating conditions and TFP levels, but that correlation has no necessary implications for TFP trends.[12]

The ESC has never downplayed the importance of data quality. Clearly, the quality of the underlying data is important for the outcome of any empirical study. However, we believe the data problems that exist in Australia will be more problematic for building block regulation than for TFP-based regulation. A key reason is that TFP-based regulation focuses on the rate of change of industry TFP, and for data anomalies to impact this measure they must be systematic across the industry and reflected in the TFP trend, not its level. We believe the AEMC's investigation of data comparability and consistency will be much more focused and fruitful if it focuses on what is in fact the key issue for TFP-based regulation –

11 This prompted considerable litigation in Victoria and the use of extensive information gathering powers. However, this could not overcome the reality that the data was and would always be problematic when applied in the level cost calculations required by building blocks.

12 It should be noted that the quotes from PEG's work in Ontario regarding the impact of operating conditions applied to benchmarking of levels, not the estimation of TFP trends.

whether data problems are manifested in a systematic bias in the industry's TFP trend. It should also be clear that the ESC believes that the data currently exist in Australia to estimate the appropriate TFP specification for CPI-X regulatory applications. We also believe that the TFP estimates that have been developed for Victoria's electricity and gas distribution industries constitute a feasible foundation for nationwide TFP studies. The ESC has put forward a concrete plan for extending these TFP estimates to other States and Territories, but we acknowledge that this plan can be refined through further consultation. We encourage the AEMC to consider our proposals carefully, and we look forward to constructive dialogue on how a workable TFP option may be added to Australia's regulatory framework.