Electricity and Gas Distribution and Transmission Use of Total Factor Productivity for the Determination of Prices and Revenues
Rule Change Request (including proposed Rules)

Implementation of the Rule change recommendations from the Australian Energy Market Commission's Review into the Use of Total Factor Productivity for the Determination of Prices and Revenues

5 October 2011

1 Background and context for the Rule change request

In 2011 the Australian Energy Market Commission (AEMC) completed a review into the use of total factor productivity (TFP) methodology to determine regulated prices and revenues for electricity and gas service providers (Review).[1]

This Review was initiated by the AEMC and followed consideration of submissions to a Rule change request from the Victorian Minister for Energy and Resources. That Rule change request sought to amend the National Electricity Rules (NER) to allow the use of a TFP methodology as an alternative option for pricing determinations.[2]

The objectives of the Review were to:

- Advise the MCE on whether permitting the use of a TFP methodology, as an alternative to the current building block approach, would contribute to the national gas objective (NGO) and/or national electricity objective (NEO), and in what circumstances;
- Advise on the arrangements that would need to be put in place to facilitate its application, including information, reporting and data requirements; and
- Where appropriate recommend, for consideration by the MCE, proposed Rules to allow a TFP based methodology for any individual or group of service providers.

The AEMC submitted its final report for the *Review into the Use of Total Factor Productivity for the Determination of Prices and Revenues* on 7 July 2011 (Final Report). The Final Report recommended that the use of a TFP methodology, as an alternative to the building blocks approach, would have the potential to promote the national energy objectives, subject to certain conditions being satisfied. A two-staged approach to implement the TFP methodology was recommended:

- Stage 1: Implementation of an initial Rule to facilitate data collection and testing;
- Stage 2: The detailed design of the TFP methodology will be considered, subject to whether the necessary conditions can be, or are likely to be, met given the current and forecasted market conditions and regulatory framework at that time.

The Final Report included some proposed Rules in relation to Stage 1. These were developed following the AEMC's consideration of stakeholder submissions on the Draft Report for the Review, and accompanying specifications for the national energy frameworks.

[1] AEMC *Review in the use of total factor productivity for the determination of process and revenues*, Final Report, 30 June 2011.

[2] Victorian Minister for Energy and Resources, Rule change proposal to allow use of total factor productivity methodology in distribution, 18 June 2008.

2 Rule change request

2.1 Name and address of Rule change request proponent

The Ministerial Council on Energy
MCE Secretariat
GPO Box 9839
CANBERRA ACT 2601

2.2 Description of the proposed Rules

The Final Report recommended that a Rule change be made to implement Stage 1 of the approach, specifically, the proposed data collection and testing framework for electricity and gas transmission and distribution networks. The MCE accepts the rationale for the framework set out in the Final Report.

This document incorporates two Rule change requests in relation to the implementation of a data collection and testing framework, to facilitate the possible implementation of a TFP methodology under both the National Electricity Law (NEL) and the National Gas Law (NGL). In particular, the Rule change requests would involve amendments to chapters 6, 6A, 10 and 11 of the NEL and the insertion of new provisions into the NGL.

The AEMC's proposed data collection and testing framework has the following main components:

The proposed Rules oblige all service providers to submit specified data for TFP data collection and testing. Specifically they:

- oblige all regulated distribution and transmission (electricity and gas) service providers to submit an annual disclosure of regulatory data (Regulatory Disclosure Data) in the form of a report (Regulatory Disclosure Data Report) to the Australian Energy Regulator (AER);
- specify the required financial, asset and network operational TFP reporting items in schedules to the NER and the National Gas Rules (NGR), such items to be included in the Regulatory Disclosure Data Report;
- oblige the AER to develop supporting guidelines on the detailed coverage and specification of the required data in conjunction with a working group(s) of industry and end-user representatives;
- require specific items of the Regulatory Disclosure Data to be audited (financial data only), and for all disclosed data to be provided under certification of the CEO and the Company Secretary and/or a Director; and
- require the Regulatory Disclosure Data Report to be made publicly available (subject to approved commercial confidentiality).

It should be noted that the lists of items required in the Regulatory Disclosure Data Reports are indicative only of the data set required for TFP calculation. It is expected that these items, along with the definitions of the terms used and other requirements, would be subject to further detailed consultation before being finalised.

The proposed Rules require the AER to publish an Annual TFP Report by 1 March each year which:

- requires the AER to prepare TFP indices as part of their assessment of whether conditions necessary for a TFP methodology has been met. Calculations must comply with the principles for calculating TFP, specified in the Rules;
- uses the Regulatory Disclosure Data submitted by service providers and only adjusts it in specified circumstances (the reasons for any adjustments must also be disclosed);
- provides an assessment of the possible use of TFP-based methods in regulatory determinations, that assessment to be based on specific assessment factors set out in the Rules;

- presents TFP index results for all included service providers, for the industry as a whole and for relevant groups of service providers identified by the AER as facing similar operating environment conditions; and
- includes all data used in calculating the TFP index results.

The proposed Rules establish the following principles with which the AER must comply when calculating a TFP index:

- must use the index number approach - econometric approaches are not permitted;
- must be designed to avoid bias in the TFP growth estimate;
- must use output quantities that accurately reflect standard control services supplied by service providers;
- capital user costs are to be set exogenously, are to be consistent with the service provider's regulatory asset base (RAB) and are to be consistent with the concept of ex ante financial capital maintenance (FCM); and
- measures of capital input quantities are to accurately reflect the physical service potential of assets employed in the provision of standard control services by providers.

The proposed Rules list the following assessment factors that the AER must consider in testing whether a TFP-based methodology could be used for the determination of prices and revenues:

- availability of Regulatory Disclosure Data of sufficient length to establish reliable TFP trends are available, robust and consistent both through time and across service providers;
- calculation of TFP indices that represent an accurate measure of productivity growth for individual, as well as grouped, providers is possible;
- sufficient service providers are included in each group for calculating TFP indices for distribution determinations so that the TFP index cannot be manipulated by an individual provider or a collective of related providers with common ownership; and
- calculation of TFP index growth rates using historic data represent a fair and reasonable estimate of future productivity growth potential for providers in that grouping.

3 Nature and scope of the issues, and how the proposed Rules will address these issues

Under the existing Rules frameworks, regulated prices for electricity networks and gas pipelines are determined using the building block approach whereby an 'efficient' level of prices is estimated by the Regulator, with reference to information and forecasts specific to each individual service provider. While this approach is considered by some stakeholders to be a relatively straight forward, stable and well-understood process which provides adequate incentives for service providers to seek cost efficiencies, a number of significant and on-going problems with the approach have also been identified.

The TFP Review was initiated by the AEMC following a Rule change proposal from the Victorian Minister for Energy and Resources, in relation to concerns about the efficiency of current prices and the ability of current network regulatory arrangements to deliver good regulatory outcomes for consumers, and the overall performance of service providers under the building block approach.

During the Review process, other concerns regarding the building block approach were also raised by various stakeholders, including:

- problems associated with the information asymmetry faced by regulators: this refers to the lack of relevant information and knowledge held by the regulator about the service provider, making it difficult to ascertain whether the costs presented by a service provider represented efficiently incurred costs. This could lead to inefficient levels of prices being set to the disadvantage of

consumers if the efficient pricing level is set too high, or insufficient returns to the service provider if the efficient pricing level is subsequently set too low;

- the often information-intensive nature of the process, with regulators often issuing onerous requests for information, leading to the possibility of significant administrative costs being incurred;
- the lack of transparency of process and the presence of information asymmetry within the current framework, coupled with a perception of intrusive and less well informed regulatory decision making, leading to disputes over the outcomes between providers and regulators. These disputes also contribute to increases in the overall costs associated with the process;
- failure of the approach to provide for innovation, particularly in light of emerging regulatory challenges, such as the impact of climate change policies and the introduction of new technologies.

The Final Report outlines a number of potential improvements to the current process that could be achieved with the use of a properly implemented TFP methodology, either by facilitating benchmarking under the building block approach, or as an alternative approach. This is because of the potential of the TFP methodology to create stronger incentives for service providers to pursue cost efficiencies, provide higher returns to service providers when they make investments and improve operating practices which deliver continuing productivity improvements, and to lower regulatory costs.

Equally, even if the detailed drafting stage for a TFP methodology is not implemented (i.e. Stage 2 of the Final Report's recommendations), there is significant scope to utilise the TFP indices as a benchmarking technique in the building blocks approach. The data collected should also support the use of other benchmarking techniques, should this be the preferred option.

A TFP methodology operates by providing a way of comparing how productive businesses or industries use their resources by measuring how inputs are used to produce outputs that are valued by customers. Instead of an assessment of business-specific costs, the regulator links the annual change in prices to estimates of the industry TFP growth index.

However, a number of conditions need to be satisfied for a TFP methodology to work properly and promote regulatory efficiency, which are not presently met and which will take time to be established. The lack of a sufficiently robust and consistent data-set is the most critical of these. This short-coming has also been a factor in the limited use, to date, of benchmarking techniques by the AER under the building block approach, even though the use of TFP indices in setting benchmarks is already allowed under the Rules.

The Final Report therefore recommended a two stage approach be taken. The AEMC considered that there was merit in splitting the process of making and applying a TFP methodology into two stages, since it would permit the drafting of the Rules on how the TFP methodology will be applied to be deferred until the conditions are met. This would allow flexibility to adapt the design of the TFP methodology in accordance with the operating conditions at that time and avoid the need for drafting of detailed Rules at an early stage. For example, it will allow proper consideration of the impact of current climate change activities and policies (such as smart technology or an emissions trading scheme) plus any new measures relating to the occurrence of extreme physical events (such as bushfires) on the practicality of applying a TFP methodology.

This Rule change request represents the first of those two stages. The initial proposed Rules would facilitate data collection from electricity and gas distribution and transmission service providers on an annual basis, which would then permit the AER to test for conditions necessary to support a TFP methodology and undertake paper trials of initial calculations.

While it is envisaged that a TFP methodology might be applied at a later stage, in the meantime, or even if a detailed drafting stage is not subsequently triggered, the collection of robust and relevant data will also go some way to addressing some existing problems under the building block approach. Specifically, it will help address the information asymmetry problem through provision of a reliable data-set that can be used to undertake benchmarking and comparative analysis between service providers.

4 How the proposed Rules will contribute to the achievement of the National Energy Objectives

The National Electricity Objective (NEO) is set out in section 7 of the National Electricity Law (NEL). The NEO states:

> "The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to –
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system."

Under section 88 of the NEL:

> (1). The AEMC may only make a Rule if it is satisfied that the Rule will or is likely to contribute to the achievement of the NEO.
>
> (2). For the purpose of subsection (1), the AEMC may give such weight to any aspect of the NEO as it considers appropriate in all the circumstances, having regard to any relevant MCE statement of policy principles.

The National Gas Objective (NGO) is phrased in similar terms and is set out in section 23 of the National Gas Law (NGL):

> "The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas."

Under section 291 of the NGL:

> (1). The AEMC may only make a Rule if it is satisfied that the Rule will or is likely to contribute to the achievement of the NGO.
>
> (2). For the purpose of subsection (1), the AEMC may give such weight to any aspect of the NGO as it considers appropriate in all the circumstances, having regard to any relevant Ministerial Council on Energy statement of policy principles.

A TFP methodology, as an alternative to the building block approach, would contribute to the energy objectives through its potential to drive stronger incentives for service providers to pursue cost efficiencies. This is because it attempts to expose regulated service providers to competitive market-like pressures by linking their prices and revenue to the recent productivity performance of the industry group as a whole, instead of basing them on an assessment of forecast service provider-specific costs.

Accordingly, implementing a TFP methodology as an alternative to the current building block approach could lead to increased productivity and lower prices for consumers in the long term.

Reliable and consistent data will also go some way to addressing the information asymmetry problem that regulators face under the building block approach. This is consistent with improving regulatory practice, transparency and achieving the efficiency potential of incentive regulation. This will, in turn, provide both end-users of the regulated services and service providers with greater confidence that prices reflect efficient costs over the long term.

Even if a TFP methodology is not ultimately included in the energy Rules, or, if the methodology is not selected by service providers, the collection of relevant and robust data, using consistent definitions is an important part of cost effective economic regulation.

Importantly, these issues apply equally to both transmission as well as distribution service providers, and therefore it is appropriate that the reporting requirements apply to both.

A core set of physical and financial data collected will support greater use of a range of benchmarking techniques by the AER in its building blocks determinations. This includes not only the use of TFP indices as efficient benchmarks but other methods such as data envelopment analysis and stochastic frontier analysis.

The contribution to the national energy objectives, and in promoting the principles of good regulatory design and practice, would be in providing:

- a better understanding for the regulator and users of the differences and similarities of the service providers' operating environments, conduct and performance;
- relevant information to assist in the management of the service providers' businesses; and
- data that can be used to undertake benchmarking and comparative analysis between service providers (and over time) within the building block approach.

5 Expected benefits and costs of the proposed Rule change and potential impacts of those changes

It is acknowledged that the proposed Rule changes will impose costs to service providers, the regulator and to consumers. However, it is also considered that there would be an overall net economic benefit associated with their implementation.

Establishing a stable reporting regime will take time and resources, and will incur costs for all regulated service providers associated with ongoing compliance and improvements. Ultimately, these costs would be recovered through regulated prices, and therefore there would also be some flow on cost to consumers.

Nevertheless, it is considered that these costs are not so significant as to render the benefits under a TFP methodology unfeasible. Thought has been given to ensuring that these costs are minimised by requiring that only necessary data be provided. In addition the data required should be readily available to service providers, and is comparable to the data currently required under the building block approach. Moreover, even if it is not implemented as an alternative approach, the data collection and testing will provide an opportunity to use TFP as a benchmarking technique (or other similar benchmarking techniques) in the building block approach.

There will also be costs associated with changing reporting practices and systems in order to provide the data in a consistent manner as required for a TFP methodology. However it is considered that the benefits of implementing a TFP methodology will offset these costs. For example, the expected reduction in the cost of determinations due to improved regulatory practice resulting from the reporting requirements is expected to more than cover the additional data collection costs.

Aspects of the proposed Rules are also designed to manage these costs by specifying the data requirements in the schedules to the Rules, and by the establishment of a Regulatory Disclosure Data Working Group, ensuring that there is regular input and consultation with industry as to the reporting requirements.

Significant costs are also incurred under the building block approach. This includes the costs associated with the analysis and interpretation of data provided by individual service providers, which can be considerably more time consuming, intrusive and lead to less well informed and subjective regulatory decision making. In addition, the current arrangements may not be fully supporting the collection of the regulatory data necessary for good regulation.

The proposed Rules will detail the required data variables necessary to support TFP methodology, but which will also support other forms of benchmarking, and these requirements overlap with the data requirements for building block determinations.

Notwithstanding that the AER already has information gathering powers under the current energy laws, the new requirements under the proposed Rules will be contained in separate provisions under the NER and NGR. The proposed Rules will therefore not prevent the AER's use of its existing powers to obtain any other information that it requires, but will provide a number of benefits that will accrue for the Regulator. Placing an obligation in the Rules on the service providers to provide the necessary data (in a clearly defined and consistent format) would:

- Add clarity and regulatory certainty;
- Provide support to the tasks given to the AER; and
- Ensure that the AER can start its work without unnecessary delay or argument.

The benefit of having separate rules is that it will remove uncertainty on what information is to be provided for revenue decision making processes, and prevent service providers from delaying revenue determinations and information gathering processes by questioning of or seeking justification for data requests from the AER.

The annual reports will also have a number of benefits:

- they will facilitate analysis of the data-set and help identify any problems with the data at an early stage. This will allow refinement of data collection and reporting as necessary so that a robust data-set can be established quickly. Once several years of robust data are available, the focus of the annual reports should move to undertaking 'paper trials' of a TFP methodology for price and revenue determinations. This will assist with refining the methodology and help build stakeholder confidence in the approach.
- The requirements relating to provision of data and publication of annual reports will also help improve stakeholders' understanding of TFP, and allow for practical adjustments to be made, before a TFP methodology is applied. Similarly, they will promote understanding of possible TFP growth figures and their key drivers.
- The reports will function to inform a wider audience on the productivity levels of network businesses, providing end users of regulated services with greater confidence that prices reflect efficient costs over the long term, as well as assisting policy makers in the continued development of the energy markets.
- Finally, the AER's future research on TFP indices based on a robust and reliable data-set and associated coverage in the annual reports should facilitate the use of TFP indices as a benchmarking tool for use in building block determinations. This will require work not only on TFP growth but also on TFP levels and the influence of operating environment conditions on both TFP levels and TFP growth. This work will, in turn, inform the formation of industry groups for use in a TFP methodology.

6 Decision procedure for possible future implementation

It is envisaged that service providers will submit their annual Regulatory Disclosure Data Reports to the AER on an on-going basis. The published Annual TFP Report will set out the AER's calculations and assessment of whether conditions satisfactory for implementation of a TFP methodology are met. If the AER's assessment is that the specified conditions are not met, then no further action is taken that year and the process is repeated the following year.

However, if the AER's assessment is that the conditions are met, then the AER would notify stakeholders of the same. The MCE would be required to consider whether the implementation of a TFP based methodology should be initiated, taking into account such matters as the prevailing market conditions at the time, potential energy policy developments, the performance of the regulatory framework and the effectiveness of building blocks regulation. The MCE would also need to weigh up the potential instability caused by likely market and technological changes and the relative ability of the TFP based methodologies to cope with these, against the benefits of the incentives associated with it.

If the MCE decides that conditions at the time do not warrant initiation of the TFP implementation process then no further action is taken that year and the process is repeated the following year.

If the MCE decides otherwise, then the AEMC would prepare a Rule change request for MCE consideration, which would include details of the TFP index specification and formula and design of the TFP based methodology.