

SUBMISSION TO THE PRODUCTIVITY COMMISSION REVIEW OF THE GAS ACCESS REGIME

1. INTRODUCTION

The Essential Services Commission welcomes the opportunity to contribute to the Review of the National Gas Access Regime, including the detailed arrangements set out in the *National Third Party Access Code for Natural Gas Pipeline Systems* (the Gas Code).

The Gas Access Regime has been operating for around six years, with most networks now having undergone (or in the process of undergoing) a second review by regulators of their access arrangements. This Productivity Commission review, therefore, provides a timely opportunity to examine the effectiveness of the Gas Access Regime, particularly in terms of its impact on competition, efficiency and investment. It is also timely in light of (1) the recent reviews of the overarching access framework contained in part IIIA of the *Trade Practices Act 1974*¹ and (2) the Parer Committee's examination of national energy market policy.²

In Victoria, the Gas Code is given effect through the *Gas Pipelines Access (Victoria) Act 1998*, under which the Commission is the relevant regulator of gas distribution pipeline access. Recently, the Commission completed its second review of the Victorian gas distribution access arrangements. It has also been responsible for administering the competitive tendering, ringfencing and other relevant provisions of the Gas Code. As a result, it is well placed to provide input to this review, with particular reference to its practical experience in administering and enforcing the various provisions of the Gas Code.

In light of that experience, this submission sets out what the Commission considers to be some key issues for the Productivity Commission review. In particular, it focuses on the operation and effectiveness of the Gas Code and emphasises the need to:

- establish a clear objective for the Gas Code that is focused on economic efficiency
- review the incentive properties of the current regulatory methods required by the Gas Code and of alternative regulatory approaches that have been proposed as a means of enhancing the incentive properties of the regime

¹ Productivity Commission 2001a, *Review of the National Access Regime*, September, Melbourne.

² CoAG (Council of Australian Governments) 2001, *Towards a Truly National and Efficient Energy Market*, Commonwealth of Australia, December, Canberra.

- critically evaluate the basis of claims that the Gas Access Regime and its administration by regulators has had a dampening effect on investment
- examine the effectiveness of gas access regulation in promoting competition and economic efficiency in related markets, and address the impact of any recommended Code changes on this dimension of economic performance
- improve aspects of the administration of the Gas Code, including providing more effective powers for regulators to obtain relevant information to both ensure compliance with the Gas Code and address issues associated with the Gas Code change process.

2. OBJECTIVES OF THE GAS CODE

The terms of reference require the Productivity Commission to identify any necessary improvements to the objectives of the Gas Access Regime. The Commission has concerns about the Gas Access Regime's current objectives as set out in the relevant legislation and the Gas Code. In particular, there is no single high level objective that encapsulates the principal purpose of the Code. There is also a lack of clarity about the status of the objectives set out in the introduction of the Gas Code and their interaction with other objectives and principles set out elsewhere in the Code. This section examines these issues in turn.

2.1 Ambiguity of the current objectives

As identified in the Issues Paper, the preamble to the *Gas Pipelines Access Act 1997* and the introduction to the Gas Code set out objectives that the gas access regime is intended to achieve. In particular, it is intended that the framework:

- (a) *facilitates the development and operation of a national market for natural gas; and*
- (b) *prevents abuse of monopoly power; and*
- (c) *promotes a competitive market for natural gas in which customers may choose suppliers, including producers, retailers and traders; and*
- (d) *provides rights of access to natural gas pipelines on conditions that are fair and reasonable for both Service Providers and Users; and*
- (e) *provides for resolution of disputes.*³

However, the Code's introduction also states that 'this introduction to the Code and the overview in italics at the beginning of each section of the Code do not form part of the Code but in certain circumstances regard may be had to them in interpreting the Code'.⁴ This statement creates considerable uncertainty as to the status of these objectives, particularly given that other sections of the Code contain objectives and criteria that must be taken into account when designing and assessing an access arrangement. Section 2.24, for example, sets out factors that the relevant regulator

³ Productivity Commission, Review of the Gas Access Regime, Issues Paper, July 2003, p.15.

⁴ See clause 10.4 of the Gas Code. Clause 10.5 also states that in interpreting a provision of the Code, consideration should be given to the introduction of the Code and the overview in italics at the beginning of each relevant section of the Code to either confirm the meaning of the provision or to determine the meaning of the provision when it is ambiguous or obscure or the ordinary meaning leads to a result that is manifestly absurd or unreasonable.

must take into account when assessing a proposed access arrangement, and sections 8.1 and 8.2 contain general objectives that the design and assessment of reference tariffs must reflect.

The uncertainty arises because the objectives set out in different sections of the Code are often conflicting and require regulators to exercise discretion and judgment in their application. However, the Code does not contain a single overarching or primary objective as a reference point for regulators seeking to reach decisions that place appropriate weight on the subordinate objectives to which they must have regard.

Highlighting this problem in the Code's construction and interpretation was the recent Western Australian Supreme Court judgment on the Western Australian regulator's draft decision on the proposed Dampier–Bunbury natural gas pipeline access arrangement. The Court concluded that in deciding how to weight and balance the objectives set out in section 8.1 of the Code, the regulator must have regard to the objectives set out in section 2.24. However, as noted above, the objectives in section 2.24 also need to be weighted and balanced.

This lack of clarity about the fundamental objective of the Code—and about the interaction between, and the emphasis to be placed on, subordinate objectives and criteria in different sections of the Code—creates uncertainty about the Code's interpretation and application for regulators, access providers and access seekers. The Productivity Commission should address this matter by establishing a clear overarching objective to which regulators must have regard when interpreting and applying the Code. Also, it should clarify that other objectives and principles elsewhere in the Code are intended to be secondary or facilitating objectives that must take into account to achieve the Gas Code's primary objective.

2.2 A primary objective of the Gas Code

Consistent with the view expressed by the Productivity Commission as part of the part IIIA review, the Commission considers that the primary objective of the Gas Code guiding the interpretation and application of subordinate objectives and criteria should focus on 'the promotion of long term economic efficiency'. Such an approach would be consistent with the objective proposed by the Hilmer Committee for national competition policy:

*The promotion of long term economic efficiency, taking into account the desirability of fostering investment, innovation and productivity improvement and the desirability of discouraging a person who has a substantial degree of power in a market from using that power to set prices above efficient levels.*⁵

An objective that focuses on economic efficiency would also be consistent with the Productivity Commission's recommended objects clause for part IIIA: 'to enhance overall economic efficiency, by promoting efficient use of and investment in essential infrastructure services'.⁶

⁵ Hilmer Committee 1993, *National Competition Policy, Report by the Independent Committee of Inquiry*, August, Canberra, p. 279.

⁶ Productivity Commission 2001a, *op. cit.*, p. 130.

The Commission considers that it would be highly desirable for the Gas Code to include an objects clause that focuses directly on achieving overall economic efficiency, rather than continuing the Code introduction's current focus on objectives such as preventing monopoly abuses and promoting a competitive natural gas market. These latter objectives are simply means of achieving economically efficient outcomes.

An overarching economic efficiency objective, appropriately interpreted and applied, could still be consistent with achieving subordinate outcomes, such as efficient investment, productivity improvement and innovation, competition in upstream and downstream markets, and protection of the legitimate interests of access providers and seekers and consumers. To the extent that such considerations are desirable, they could be specified as subordinate objectives and criteria to be included in the operational sections of the Code. However, any attempt to use them to elaborate or qualify the overarching objective clause might introduce ambiguity and complexity to what would otherwise stand as a brief, high level statement of the principal purpose of the Gas Access Regime.

2.3 Conclusion

The Gas Code should be amended to provide a clear objects clause that is directed to achieving economically efficient outcomes. This would have benefits, including:

- reducing the current uncertainty about the Code's purpose, interpretation and application
- providing a guiding reference point for weighting and balancing subordinate objectives and principles in the Code's operational sections
- increasing the consistency of the Code's interpretation and application by regulators, appeal tribunals and the courts
- requiring regulators' processes and decisions to be more transparent and accountable.

3. GAS REGULATION AND EFFICIENCY INCENTIVES

Over the past few years, the ongoing debate over the efficacy of access regulation has centred on whether the current regulatory framework provides adequate incentives for the efficient provision of infrastructure services and for optimal investment in infrastructure assets. In reviewing part IIIA of the Trade Practices Act, for example, the Productivity Commission expressed concerns about the incentive properties of Australian regulators' current approach to access regulation and about the potentially 'chilling effect' of that approach on investment.⁷

These concerns have tended to focus on whether the current application of economic regulation has achieved an appropriate balance between:

- preventing resource distortions in related markets, which may arise from the unrestrained exercise of monopoly power by infrastructure businesses

⁷ Ibid., p. xix.

- providing sufficient incentive and revenue for infrastructure businesses to operate efficiently and to undertake efficient investments necessary to maintain long term efficient and reliable service provision.

Section 4 addresses the regulatory incentives for efficient long run investment by regulated infrastructure businesses. This section considers the effectiveness of the Gas Code and its application by regulators in providing incentives for economic efficiency in a more general sense (that is, in promoting economic efficiency in regulated infrastructure markets, related markets and the economy generally). This issue is central to the current review of the Gas Code, because any proposed changes to the Code should be based on the promotion of economic efficiency, rather than on the more narrowly focused interests of the regulated infrastructure sector.

In analysing this issue, it is important for the Productivity Commission to reflect on the fundamental public policy rationale for establishing third party access regimes. In considering the effectiveness of the efficiency incentives provided by the regulatory requirements of the Gas Code, it is also necessary to recognise the implications of the information asymmetry that exists between regulated businesses and regulators. In this context, it is important that the Code continues to enable regulators to provide so-called ‘high powered’ incentives for monopoly service providers to invest in and operate their services efficiently, and for them to ‘reveal’ those efficient outcomes in response to the regulatory regime.

Chapter 8 of the Gas Code specifies a method for the regulation of monopoly pipeline services—namely, the building blocks method. The Productivity Commission needs to understand and evaluate the incentive properties and effectiveness of that method as regulators have applied it. It will also need to consider whether it is appropriate to continue to confine regulators to that method at the expense of other emerging approaches that may be more effective in achieving the public policy objectives of the Gas Code, either now or in the future. This section examines these issues in turn.

3.1 The policy rationale for monopoly infrastructure regulation

It is generally accepted that the policy rationale for direct regulation of the terms and conditions of access to the services of monopoly infrastructure is based on the following two propositions.

- Many infrastructure services, such as those of gas transmission and distribution networks, are generally provided under natural monopoly conditions. It may not be economically feasible, therefore, for another service provider to duplicate those services.
- Given that natural monopolies are not exposed to actual or potential competition, in the absence of regulation, those service providers may have an incentive to invest in and operate those facilities inefficiently. That is, they may have incentives to supply less and to charge more and/or to sustain less efficient levels of investment and operation than would be the case in a competitive market.

A key rationale for introducing a legislated right for third party access to natural monopoly infrastructure is to minimise the resource distortions in upstream and

downstream markets and the wider economy that can arise from such infrastructure service providers exercising their market power.

However, regulation is inevitably less than perfect in redressing the consequences of ‘market failures’ associated with natural monopoly service provision. Accordingly, there is a risk that ‘regulatory failure’ in some cases may result in greater distortions than those associated with the market failures that regulation is intended to overcome. Thus, the access regime policy framework and its implementation by regulators must be directed to delivering net public benefits.

A related issue is whether access regulation in practice has been confined to natural monopoly infrastructure services as intended, or whether it has extended to apply to services that are now being provided in potentially contestable or effectively competitive markets. In the gas pipelines sector, for example, a key issue is whether certain transmission pipelines that have become contestable by virtue of interconnections (such as the Eastern Gas Pipeline) and accordingly are no longer natural monopolies should continue to be subject to access regulation under the Gas Code. The issue of defining and identifying natural monopoly facilities arises under all access regimes, including the arrangements established by part IIIA. In the case of the Code, it is addressed by the ‘coverage’ provisions of Chapter 1 of the Code.

A key issue that the Productivity Commission should carefully review is whether the provisions of chapter 1 of the Code adequately and effectively ensure access regulation of gas pipelines is confined to infrastructure that continues to exhibit the features of natural monopoly. The Code must ensure pipelines that are genuinely contestable are either not covered or can readily have their coverage revoked. Clause 1.9 of the Code is the key provision here because one or more of its criteria (clause 1.9(a)–(d)) must be satisfied before a decision is made to cover a pipeline or to revoke coverage. These criteria are broadly similar to those for declaration of a service in section 44G(2) of part IIIA, and a review of their appropriateness raises similar issues to those considered in the Productivity Commission’s part IIIA report.

This coverage issue is central to the Code’s effectiveness and must be effectively addressed to ensure the Code does not impose costs on infrastructure service providers that do not have natural monopoly characteristics. It must be resolved through the coverage provisions of the Code, rather than by relying on regulators to address the consequences through the operational provisions of the Code.

Another issue raised in recent policy discussions is whether the Code should cover so-called ‘greenfields pipelines’ and, if so, whether these pipelines should be fully subject to the Code’s regulatory requirements or subject to a more limited regulatory framework, or an ‘access holiday’. Particular features of greenfields pipeline investments have motivated this debate, including the uncertainty of future demand for their services, the resulting heightened risk of asset stranding, and the so-called ‘truncation problem’ associated with access regulation. Section 4 elaborates on the greenfields pipeline issue.

While the coverage and greenfields pipeline issues are relevant to the Productivity Commission’s review of the Gas Code, these issues typically arise only in relation to certain transmission pipelines rather than gas distribution networks (such as those regulated in Victoria). Gas distribution networks are rarely subject to actual or

potential competition, and they typically involve large, mature networks with new investment undertaken as marginal increments. Most of these mature investments continue to exhibit the natural monopoly characteristics that infrastructure access regulation and the Gas Code are intended to address. As a result, in considering any changes to the Gas Code to deal with coverage and greenfields issues, the Productivity Commission should limit relevant amendments of the Code to the gas transmission sector.

3.2 Information asymmetry and incentive regulation

In designing an effective access regime, regulators need to be able to provide effective incentives for monopoly pipeline operators to operate and invest efficiently in circumstances where they know much more about their businesses and market environments than regulators know. As noted by the Productivity Commission:

The tasks regulators face are complex and require considerable information. Regulators have neither all the information nor the tools to guarantee that they set prices that unambiguously improve on market outcomes. Firms which are subject to regulation typically know more about their operations and markets than regulators could ever be expected to know. ... Regulation is always vulnerable to manipulation by industry players aiming to delay or otherwise manipulate the regulatory intent.⁸

This information asymmetry between regulated businesses and the regulator arises under the building blocks regulatory approach currently adopted by most Australian regulators—an approach that depends on the regulators' ability to identify whether a regulated business's actual historical and forecast costs are efficient. This information disparity highlights two opposing risks that policy framers need to understand and regulators need to manage:

- the risk of overcompensating regulated businesses, which results in excessive prices and profits, distorted infrastructure investment incentives and corresponding resource allocation distortions in related markets
- the risk of providing inadequate revenue for regulated businesses, undermining their financial viability and their incentive and capacity to invest.

Australian regulators have generally sought to address these opposing risks by adopting an approach that seeks to provide regulated businesses with sufficient revenue to operate efficiently and viably, and with 'high powered' incentives to pursue efficiencies and to maintain (or improve) service and reliability standards.

High powered incentives involve regulated businesses bearing a high proportion of the risk of changes to its cost structure. As a result, a regulated business will profit from managing those risks effectively and will be penalised for not doing so. Price cap regulation creates these risks and incentives by decoupling the price cap from the business's actual costs for an extended period. One implication of adopting high powered efficiency incentives is that they offer the prospect of both higher expected returns and higher risks to regulated businesses, compared with the outcomes of low powered efficiency incentive regimes such as rate of return regulation. Another implication is that adopting such an approach inevitably results in prices exceeding efficient costs over time, because regulated businesses are allowed some ongoing rent

⁸ Productivity Commission 2001b, *Annual Report 2000–01*, Canberra. p. 13.

extraction as the reward for them continuing to pursue (and reveal) efficient costs. By contrast, cost-plus or rate of return regulatory approaches provide low powered incentives because cost increases are largely compensated with price increases (and vice versa) with little or no impact on profitability.⁹

The Gas Code's chapter 8 appears to require the adoption of the building blocks method to determine the stream of future revenue required to recover the efficient costs of delivering the reference services over the expected life of the assets employed. In approving reference tariffs, sections 8.44–8.46 of the Code also require the regulator to provide appropriate incentives for service providers to retain all, or a share of, efficiency gains achieved during a regulatory period, particularly those gains attributable to the efforts of the service provider. Section 8.46 also sets out objectives that such incentives should seek to achieve.

In considering whether these Code provisions should be revised to enhance the effectiveness of incentive regulation under conditions of information asymmetry, the Productivity Commission needs to evaluate:

- whether the method and incentive requirements of chapter 8 (including the degree of prescription) are appropriate
- how effectively regulators have given effect to chapter 8 requirements in providing efficiency incentives for regulated businesses and in promoting broader economic efficiency policy objectives
- whether other methods may have superior incentive properties that should be permitted under the Code.

In assessing these issues, the Productivity Commission will need to understand the detailed requirements of the Code and assess objectively how regulators have implemented those requirements. To assist in this task, the following section 3.3 sets out the approach that the Commission has taken in providing high powered efficiency incentives using the building blocks method under the Gas Code as part of its recent review of Victorian gas distribution access arrangements. Section 3.4 comments on the merits of using productivity based methods to implement CPI-X incentive regulation relative to those of using the building blocks approach.

3.3 Incentive regulation using the building blocks method

In its 2002 review of Victorian gas distribution access arrangements, the Commission adopted a building blocks approach to assess the distributors' revenue requirements, together with a range of incentives to pursue cost and service efficiencies. This approach enabled the Commission to (1) adopt a less intrusive, top-down approach in assessing the revenue required by each of the businesses to recover the efficient costs of supplying reference services and (2) reduce the uncertainties arising from the information asymmetry problem associated with the building blocks method.

⁹ For a discussion of the economic principles of incentive regulation of monopoly service providers and the distinction between high powered and low powered regulatory incentives, see J. Laffort and Tirole, J., 2002, *Competition in Telecommunications*, MIT Press, Cambridge, Ch. 2

The following were the essential features of the Commission's approach.

- Under the building blocks approach, the price caps were based on a build-up of assumptions about each of the key components of revenue required over the five-year access period (that is, Revenue sufficient to recover efficient operating, maintenance and investment expenditure and efficient capital financing costs, including a risk adjusted return on past investment).
- The Commission identified and adopted numerous 'conservative assumptions' to estimate the revenue benchmarks, recognising the imprecise nature of the analysis and the consequences for investment incentives and network performance of imposing unduly onerous price controls.
- A 'no clawback' rule was used, under which the price controls remain unchanged for the five-year duration of the access period (thus decoupling prices from the distributors' own costs for a period and thus imposing a high powered incentive to pursue cost efficiencies).
- An 'efficiency carryover' mechanism was designed to provide a continuous incentive for distributors to pursue cost efficiencies until the end of the access period by permitting any such gains to be carried forward to the next period.
- Specific incentives (known as S factors) were introduced for distributors to maintain and improve their network reliability and customer service, to counter the risk that incentives to pursue cost reductions may occur to the detriment of service quality.

The first gas access arrangements approved by the Commission in 1998 included well specified incentive mechanisms to reinforce the efficiency incentives inherent in the five-year price caps. In reviewing the second access arrangements in 2002, the Commission inferred from the distributors' responses to the initial incentives that the operating and capital expenditures incurred and revealed in the previous access period were efficient. This inference enabled the Commission to avoid a detailed examination of past expenditure and to confine its assessment of forecast costs to the justifications advanced by the distributors for significant departures from historical trends in (efficient) operating and capital expenditure. This approach also reduced the significance of the information asymmetry problems of a more comprehensive bottom-up approach to assessing forecast expenditures.

The following were the key elements of this inferential approach to determining the expenditure benchmarks.

- Capital costs incurred during 1998–2002 were taken to be efficient by virtue of the incentive mechanisms applying over the period, so were added to the capital base without a specific review of their prudence or efficiency. That is, the Commission assumed that the incentives had encouraged the distributors to incur and reveal efficient capital costs.
- The Commission developed expenditure benchmarks for capital and noncapital costs for the 2003–07 access period based on levels and trends in current and past expenditures (which, as noted above, were taken to be efficient). The review process focused on the justification for any step changes in proposed expenditure relative to historical trends.

- Finally, CPI–X price caps were again applied for a five-year period, supported by efficiency carryover and service quality incentive mechanisms, such that the distributors have continuing incentives to reveal the level and trend in operating and capital costs, so the Commission can again draw inferences when determining revenue benchmarks for the next access arrangement review.

The Commission’s 2002 review of the Victorian gas distributors’ access arrangements illustrates points that are relevant to the Productivity Commission’s review of the Gas Code. First, the building blocks approach has been a reasonably robust method for implementing price based regulation that can provide high powered incentives to achieve cost efficiencies and to maintain service quality. Second, the incentive mechanisms incorporated in the approach can be used to minimise the regulators’ informational disadvantage and to adopt a less intrusive approach (one that is data and analysis intensive) in second and subsequent access reviews. Third, placing relatively more emphasis on revealed cost information enables regulators to achieve a more appropriate balance between the legitimate commercial interests of infrastructure operators (in maintaining financially viable operations and having the capacity and incentive to undertake long term investment) and the legitimate interests of users of infrastructure services in receiving reliable service at efficient prices.

However, the Commission recognises that the building blocks approach is not the only, or necessarily the most effective, method for establishing CPI–X price caps in all foreseeable regulatory situations. Among the alternative methods available,¹⁰ the one that has been subject to most public discussion involves determining the X factor in the price cap by reference to an external benchmark index—that is, the long term trend in total factor productivity (TFP). Rather than basing price caps on an assessment of each business’s costs, TFP is a top–down approach that is designed to mimic the operation and outcome of competitive markets.¹¹ Section 3.4 discusses this approach in further detail.

3.4 Incentive regulation using productivity based approaches

As noted above, chapter 8 of the Gas Code appears to exclude the use of productivity based regulatory approaches by focusing on cost based approaches for determining price caps. This section considers the features and requirements of an alternative approach for determining the X factor for CPI–X price cap regulation—namely, the TFP approach—and comments on its merits relative to those of the building blocks approach to determining the X factor.

Under the TFP approach, the rate of change in prices permitted during the regulatory period (that is, the X factor) is based on an external benchmark index of historical productivity improvement in the regulated industry. Under such an approach, the

¹⁰ A recent paper by Farrier Swier Consulting (prepared for the Utility Regulators Forum) identified other possible regulatory methods, including frontier methods, econometric benchmarking and engineering economic analysis.

¹¹ As in a competitive industry, the trend in prices charged is equal to the trend in that industry’s unit cost. The benefits of productivity growth are passed to customers in the form of slower price growth. Because the industry unit cost trend is insensitive to individual company actions, companies have strong incentives to improve their productivity. Unlike building blocks, price controls under TFP method are calibrated through the observed historical cost trends of the industry.

distributor's own costs or expected costs are not used to determine the terms of the CPI-X price controls, and as a consequence the distributor's own actions cannot influence the value of the benchmark. For this reason, TFP approaches have the potential to overcome some problems associated with company-specific bottom-up methods.

Information asymmetries remain at the heart of the problem. Redressing information asymmetry problems can require substantial data processing and analysis, and regulators are aware of the natural incentive to game regulatory reviews. The introduction of carryover mechanisms or regulatory lags within building blocks can compensate for these deficiencies and also provide incentives for companies to reveal trends in efficient costs.

Nevertheless, under a building blocks approach, regulated businesses know that improved cost performance will translate into lower regulated tariffs.¹² As a result, businesses split their attention between the basic business and the regulatory process. Company-specific cost regulation, therefore, tends to distort a company's corporate culture, with these deficiencies more apparent in competitive dynamic environments where businesses are required to respond quickly to unanticipated market developments.

Because TFP approaches use data that are external to the company, they can enhance performance incentives as well as improve marketing flexibility and reduce regulatory costs. Prices for monopoly services can also be insulated from businesses' involvement in competitive markets. This insulation reduces concerns about cross-subsidies and the impact of uncertain market initiatives or investment in new technologies on regulated tariffs. Companies can also have more flexibility in their dealings with associated companies and in their depreciation policies.

Stronger incentives to perform may also develop skills that can facilitate successful involvement in other markets (for example, wholesale power generation). Decoupling a distributor's prices from that distributor's specific costs can also encourage that company to discover new uses for its assets and thus facilitate efficient diversification and integration into other areas, such as distributed generation.

For these reasons, appropriately developed and applied TFP approaches have the potential to provide an effective alternative to the existing building blocks approach typically applied by Australian regulators. They could, for example, reduce the significance of the information asymmetry problem and enhance the dynamic efficiency incentives required in an increasingly competitive environment. Through the Utility Regulators Forum, Australian regulators recently commissioned research on the application of TFP methods to price cap regulation, and they are continuing to work together to assess the feasibility and operational requirements of these methods.

However, it is important to recognise some of the challenges of moving to a TFP approach in the regulatory context, including:

¹² In Victoria, the efficiency carryover mechanism returns gains to customers after a five-year period.

- ensuring robust, consistent historical cost data are available over a suitable period on which to base industry productivity indices¹³
- applying TFP indices across industries and companies on an appropriate basis that accounts for different operating environments faced by individual businesses (for example, urban versus rural customer bases, and cost differences due to variations in geographic, network and other characteristics)
- accounting for step changes in costs as a result of government policies or new environmental and safety standards
- establishing the implementation arrangements (for example, whether there is a need for a transitional period during which returns are subject to floors or caps)
- incorporating appropriate incentives (such as S factors discussed in Section 3.3 above) and adopted in conjunction with the building block approach) to ensure regulated businesses do not trade off efficiency gains with lower levels of reliability
- educating regulated businesses and stakeholders so they understand and accept such an approach.

In considering the relative merits of the two approaches, the Commission considers that both building blocks and TFP approaches are potentially effective approaches to price cap regulation of monopoly infrastructure services. However, longer term work is required to develop the TFP method to a stage at which it is understood, accepted and able to be implemented effectively. Nevertheless, the Commission considers that it would be appropriate to amend chapter 8 of the Gas Code to permit regulators to adopt alternative approaches to determining price caps, including the TFP approach to the extent that it can be demonstrated to achieve the overarching (and facilitating) objectives of the Code.

4. REGULATORY RISK AND INVESTMENT INCENTIVE UNDER THE GAS CODE

4.1 Incentives for greenfields projects

Recently, there has been a more narrowly focused debate over the effects of the Gas Code framework and its administration by regulators on incentives for long term investment in gas pipeline infrastructure. Much of this debate has involved pipeline operators and investors arguing that regulatory assumptions about the benchmark cost of capital adopted in determining CPI-X price caps under the building blocks approach do not sufficiently reflect the risks faced by infrastructure investors, particularly in making long term greenfields investments with uncertain future cash flow prospects.

The issues paper emphasises these concerns in stating:

¹³ TFP analyses in the United States, for example, typically incorporate time series data stretching back to the 1960s and earlier. However, many energy utility plans have accepted 10 years as being a sufficient period.

*Access regulation has the potential to result in inefficient levels of infrastructure investment if it asymmetrically truncates the distribution of expected returns from such investment. In particular, access regulation may limit the potential to earn above normal profits if an investment is successful but still leave investors exposed to the risk of losing money if it fails. The possibility of earning higher than normal profits on an infrastructure investment may be essential to balance the possibility that it will fail.*¹⁴

The issue of asymmetrical regulatory truncation of returns concerns the risk to an investor that a regulator will periodically remove any greater than expected revenue while not allowing for the possibility that the investment might have made losses or failed. The significance of truncated returns may be material only for projects with a high level of demand risk (such as greenfields investments) and to the extent that such projects are not underpinned by foundation contracts.¹⁵ Nevertheless, the large, upfront capital investments and the uncertainty of future markets mean that such projects are likely to experience different risk exposures to those of investments at the margins of existing networks.¹⁶ Such projects are regulated at the transmission network level and outside the Commission's jurisdiction. However, the Commission's limited experience with projects with these characteristics suggests they may warrant regulatory approaches that focus more on the nature of expected cash flows and stranded asset risk. To this end, a range of possible approaches exist under the Gas Code, including:

- allowing access holidays and extended access arrangement periods that offset stranded asset risk by enabling investors to retain any upside profit arising from better than expected market developments—for example, the Australian Competition and Consumer Commission's (ACCC) adoption of this approach for AGL's Central West Pipeline using a 10-year regulatory period
- establishing triggers for reopening access decisions, say in the event that a regulator considers project circumstances to be so significantly different from assumptions made at the outset as to threaten the viability of a project¹⁷
- allowing facility investors to manage revenue truncation by capitalising losses incurred early in the economic life of an investment and/or backloading the recovery of capital invested until the market for the facility's services has been established—for example, the Commission's use of this approach in some cases involving the extension of the gas distribution network to country towns
- allowing reference tariffs to be set under the competitive tendering provisions of the Gas Code.

While the Commission's comments on regulatory arrangements for greenfields projects are based on limited direct experience with such projects, proposals to extend the gas distribution network to unreticulated towns have raised similar issues about

¹⁴ Productivity Commission 2003, *Review of the Gas Access Regime, Issues Paper*, July, Melbourne, p. 20.

¹⁵ The issue of truncated returns is discussed in more detail in The Allen Consulting Group 2003, *Submission to the Review of the Gas Code*, August, Melbourne, pp. 17–19.

¹⁶ Note that greenfields projects are usually underwritten to a large extent by long term foundation contracts, which assure the investor of a sufficient throughput to make the project feasible.

¹⁷ Section 2.28 of the Gas Code.

the optimal regulatory treatment of projects where there is a significant risk of assets being stranded. In assessing such proposals, the Commission could, for example, regulate under an existing access arrangement with a longer regulatory period. However, the Commission's preferred approach has generally involved rolling such projects into an existing access arrangement. Key features of the Commission's regulatory treatment of new investment under such an approach include:

- rolling project costs (including the net financing cost) that are not recovered through customer capital contributions into the regulatory asset base at the commencement of the next regulatory period, thus spreading the project's risk over the distribution network
- quarantining project costs from the operation of expenditure efficiency incentives (known as the efficiency carryover mechanisms) operating under the regulatory instruments
- providing the opportunity for proponents of a pipeline extension (namely, large customers or local councils) to enter into risk sharing arrangements with distributors.¹⁸

The Commission recognises the complex and costly nature of greenfields gas network developments and supports the development of appropriate regulatory arrangements to facilitate optimal investment in such projects. The Commission acknowledges that such projects may not lend themselves to a 'one size fits all' approach. However, in considering the possible approaches, the Commission considers that there is merit in exploring the applicability of the principles that it has developed for regulating extensions to the gas distribution network. These principles aim to smear investment risk. Such developments can and are occurring under the provisions of the Gas Code and, in the Commission's experience, are not contingent on an overhaul of the current regulatory framework.

4.2 Investment incentives more generally

More generally, the Commission recognises that the Gas Access Regime has the potential, if applied inappropriately by regulators, to result in inefficient underinvestment in the infrastructure required to sustain the efficiency and reliability of infrastructure services over the long term. Equally, inappropriate overcompensation of access providers through regulatory decision making can encourage overinvestment and inefficiently high access prices that distort use and investment decisions in upstream and downstream markets.

In examining this issue and its implications for the need to amend the Gas Code, the Productivity Commission needs to consider the nature and impact of regulatory risk, the uncertainty about future outcomes that characterises both investment and regulatory decision making, and the nature and consequences of 'regulatory errors' that will inevitably occur in that environment.

One interpretation of regulatory risk is the presence of continuing uncertainty about the regulatory basis, analysis and discretion that will be adopted in reaching

¹⁸ For a detailed explanation of this approach, see Essential Services Commission, 2002, *Review of Gas Access Arrangements, Final Decision*, Melbourne, www.esc.vic.gov.au.

regulatory decisions, which results in uncertainty and unpredictability about the adequacy (or inadequacy) of the future cash flows and returns from risky long term infrastructure investments. Viewed in this way, regulatory risk could apply equally to investors in and users of gas infrastructure to the extent that the uncertainty involved the risk of either overcompensating or undercompensating the investor for the risks involved. The question is whether such regulatory risk exists and seriously impedes investment within the pipeline sector and/or in upstream or downstream markets.

Regulatory errors will inevitably occur, given the information asymmetry, uncertainty about future states of the world, and the necessary exercise of discretion that regulatory decision making involves. However, if those errors are normally distributed around a mean trend of regulatory outcome that is consistent with the requirements of economic efficiency in the long run, then such broadly compensating errors should not be a major concern, provided the distribution of errors is also reasonably narrowly based.

There is reason for believing that the experience in recent years has considerably reduced regulatory uncertainty of this type and that the bases, analytical approaches and likely outcomes of regulatory decisions are now much better understood and more predictable than in the early years of the Gas Code.

- There is much greater clarity about regulators' interpretation of the Gas Code by regulators, decision making methods, and data requirements and processes.
- The decision making processes have been very transparent and consultative, and draft and final decisions have provided detailed analyses and reasons in support of those decisions.
- Regulators in applying the Gas Code have increased the consistency of their methods and process both over time and across jurisdictions.
- A number of decisions have been subject to appeal on the merits and in law, further clarifying important aspects of the interpretation and application of the Gas Code.

As a result, in recent times, both financial market analysts and credit reference agencies have been able to closely predict regulatory decisions and their implications for share prices and financial viability. For similar reasons, infrastructure operators and investors now face much less uncertainty about the basis of regulatory decision making and are better placed to predict the outcome of regulatory decisions.

However, the debate has not been about the predictability of regulatory outcomes. Rather, it has focused on the view that regulatory decisions, while now reasonably predictable, have been systematically biased against the interests of long term infrastructure investors and towards the interests of users of infrastructure services by imposing unsustainably low prices, cash flows and investment returns.

In its report on part IIIA of the Trade Practices Act, the Productivity Commission concluded that the practice of adopting five-year regulatory reset periods in Australia may lead regulators to focus unduly on short term price-service gains for users of infrastructure services, giving insufficient weight to the need for longer term investment incentives. Accordingly, it recommended that regulators should base their price controls on rates of return and revenue forecasts that err towards the interests of

infrastructure investors, thereby allowing a degree of economic rent to accrue to asset owners as an incentive to continue to undertake risky long term investments.¹⁹

At the same time, the Productivity Commission recognised the adverse resource allocation consequences in upstream and downstream markets arising from infrastructure service prices that exceed the long run cost of service delivery.²⁰ Further, while economic regulation will (and is intended to) have an impact on the level of investment in infrastructure, it will not be the sole driver of commercial decisions of this complex nature and magnitude. Given that conceptual debate and disagreement over the merits and effects of particular regulatory approaches will always be expected—owing to the opposing aspirations of access providers, access seekers and those in related markets—it is important that a balanced assessment be made, not one that relies disproportionately on the views of a section of interested parties. Such an assessment should focus on the existence or not of any systematic bias, rather than on isolated instances of regulatory error (which would be expected to occur at times given asymmetrical information, among other problems).

The most useful proxy for assessing the effectiveness of the current access regime is the empirical record of new investment, industry development and performance of investments since the implementation of the Gas Code.

- A number of *substantial new Victorian fields* have or soon will come into production. Origin Energy, Australian Worldwide Exploration (AWE) and CalEnergy are developing the Yolla field in the Bass Basin—a field that is proposed to supply 20 petajoules per year from 2004 (10 per cent of the Victorian market). Fields in the offshore Otway Basin are also being developed, including Thylacine, Minerva and Geographe. TXU signed a heads of agreement with Woodside to take 30 petajoules of gas per year from the Thylacine and Geographe fields in 2006. Santos is developing small onshore Otway Basin fields. The Patricia–Baleen gas field, operated by OMV, Trinity and Santos, will inject gas into the Eastern Gas Pipeline at Orbost, which Duke Energy will swap into the Victorian market under a contract with Energex.
- The *development of pipeline interconnections between Victoria and New South Wales* (the Interconnect and the Eastern Gas Pipeline), along with further recent and prospective pipeline interconnection, has created links between the previously separate markets of South Australia and Tasmania. The Interconnect was upgraded substantially following the Longford emergency in 1998, to provide a genuine alternative supply from New South Wales to Victoria. The Tasmanian gas pipeline has opened a further market for gas from Victoria and further afield by virtue of VicHub, which bypasses the Longford facility and links the Eastern Gas Pipeline to the Gasnet pipeline servicing the Victorian distribution system. The SEAGAS pipeline will connect the disparate Victorian and the South Australian markets.

¹⁹ Productivity Commission (2001) op. cit.

²⁰ For example, the Productivity Commission has stated “[w]hile prices need to be at least sufficient to cover the long-run costs of facility operators including an adequate return for the risk involved, prices should not be set so far above costs as to deter the efficient use of services and investment and innovation in related markets” (Productivity Commission, 2001b, p.13).

- *Structural disaggregation of the gas industry and the implementation of full retail competition* have occurred in Victoria (discussed further below).
- Empirical evidence suggests a *strong financial performance of entities subject to access regulation*. Research undertaken by The Allen Consulting Group on the market performance of regulated utilities, for example, appears to refute the argument that regulated returns are driving down profitability, as evidenced by the fact that ‘the market value of the regulated activities has exceeded the regulatory value almost universally [and] ... market values have typically exceeded the regulatory values by a substantial margin’.²¹

The existence of systematic bias by regulators is expected to have adverse implications for either the regulated pipeline industry (in terms of inadequate returns leading to underinvestment) or upstream and downstream markets (in terms of excessive access prices leading to investments being deferred). An objective assessment of empirical market evidence and observations of gas pipeline developments under the regime would suggest that the Gas Code has contributed to a favourable investment climate. This positive outlook was echoed in the Parer Review, which indicated that ‘while there have been strong concerns raised regarding the current arrangements in gas, the market is developing and becoming more competitive, dynamic and efficient’.²²

In conclusion, the underlying rationale for access regulation is to facilitate overall economic efficiency rather than favour the particular interests of investors, competitors in upstream and downstream markets, or energy users. This rationale requires regulators to ensure appropriate incentives exist to facilitate efficient investment in monopoly pipeline services without compromising the efficiency of related markets. In assessing how the Gas Code might more effectively achieve such outcomes, the Productivity Commission needs to be mindful of the need not to tip the balance unduly towards investors. Rather, the Code should provide appropriate criteria and guidance on which regulators can base their judgments.

5. PROMOTING COMPETITION IN RELATED MARKETS

Historically, Australian gas markets have been geographically isolated and characterised by monopoly producers and retailers, with transportation provided by monopoly transmission businesses under long term ‘take-or-pay’ contracts. This situation is in contrast to the rapid industry development in recent years coinciding with the Gas Access Regime (discussed in section 4.2), resulting in a geographically interconnected multistate market characterised by:

- new gas supply sources and interbasin competition
- gas transmission system interconnections that extend the geographic boundaries of gas markets.

This greater interconnectedness has increased the opportunity for Victorian gas retailers to contract with interstate producers, thus reducing their dependency on

²¹ The Allen Consulting Group, op. cit., p. 58.

²² CoAG, op. cit., p. 190.

supplies from the Gippsland Basin. The opening up of interstate markets also increases incentives for the exploration of new basins in Victoria, while reducing reliance on the Longford processing facility as the sole source of supply.

In the retail gas market, the Victorian Government's policy framework for restructuring the gas industry included a progressive timetable for the implementation of full retail contestability, starting with the largest gas users in October 1999 and moving to smaller commercial and industrial customers and then to full retail competition (including domestic customers) in October 2002.²³ The three former franchise retailers (TXU, AGL and Origin) continue to service the Victorian market and, following recent acquisitions in the electricity retail sector, market dual fuel (that is, gas and electricity) products to Victorian energy consumers. Energex and Energy Australia are the only new market entrants that are active in the gas and electricity retail market, but they continue to remain relatively small players, focusing at this stage on the niche market of large industrial gas users.

The principal Victorian energy retailers also provide dual fuel services in a number of jurisdictions, and they have different ownership and operating strategies and differing geographic reach in the broader multistate energy retail market. Origin has interests in both the retail and gas transportation markets, TXU has interests in the retail and underground storage facility, and AGL has a significant position in the Victorian and New South Wales markets. The gas infrastructure developments referred to earlier have facilitated greater diversity in the sources of gas available to these retailers. TXU and Origin Energy, for example, now have a diversified portfolio of gas supply contracts, which has reduced their dependence on Esso–BHP Billiton supplies from Longford.

A further matter about related markets concerns the effectiveness of capacity trading provisions in the Gas Code. This is an important and complex issue, because the development of a liquid secondary market in gas depends on a liquid secondary market in pipeline capacity. To this end, the Commission notes the findings of the Parer Review that such activity is underused and 'should become more frequently used and play an important role in providing greater flexibility in gas transportation options'.²⁴ The Commission agrees that the scope for capacity trading should increase as the natural gas market becomes increasingly interconnected and dynamic. It may be timely, therefore, to evaluate the effectiveness of trading provisions in the Gas Code, including:

- a comparison of Australian arrangements with those in overseas markets where a more vigorous trade in pipeline capacity occurs
- the effect of confining regulatory arrangements under the Gas Code to covered pipelines (as noted in the Parer Review)
- the possibility of separating such market arrangements from the Gas Code
- the extent to which the current lack of capacity trading reflects the immaturity of gas markets and factors such as the market power of producers, rather than current regulatory arrangements.

²³ Approximately 7 percent of gas customers in Victoria have switched gas retailer since the introduction of full retail contestability in October 2002.

²⁴ CoAG, *op. cit.*, p. 196.

In conclusion, developments over the past five years suggest that the adoption of a third party access regime has played a significant role in meeting the Council of Australian Governments' vision of a more dynamic and competitive gas market. While it is timely to consider refinements and improvements to the Gas Access Regime, the Productivity Commission should note the remarkable and continuing transformation of the gas market under the Gas Code when recommending any broader changes.

6. IMPROVING THE GAS CODE'S ADMINISTRATION

The Commission considers that the Productivity Commission should consider three key issues in improving the administration of the Gas Code, namely:

- the Code change process
- the access arrangement approval process
- information disclosure requirements.

6.1 Code change process

Under section 9 of the Gas Code, the National Gas Pipelines Advisory Committee (NGPAC) is responsible for making recommendations to all relevant Ministers on Code changes. Numerous stakeholders are represented on NGPAC, and the respective Ministers are required to agree to any changes before those changes are given effect under the Code.

The experience with NGPAC suggests the current arrangements are ineffective. In particular, NGPAC has tended to take a long time to consider proposed Code changes. Further, given the numerous stakeholders represented on the committee, NGPAC members have generally found it difficult to agree on proposed changes. This problem has hampered the ongoing effectiveness of the Code, particularly its ability to respond to emerging problems, issues and market developments.

The Commission considers that there is some merit in more clearly separating the roles of policy development and Code amendment. Further, the composition of NGPAC needs to be reconsidered. The Commission notes the Parer Review recommendation that a new Gas Advisory and Code Change Committee replace NGPAC and the Gas Policy Forum. However, this recommendation is part of a wider suite of proposed revisions to governance arrangements (including the creation of a national regulator responsible for Code changes) and should not be considered in isolation. There may also be scope for further integrating the gas and electricity processes in this broader, more energy focused environment.

6.2 Access arrangement approval process

Sections 2.9–2.27 of the Gas Code outline the process for approving an access arrangement, which involves:

- a service provider submitting a proposed access arrangement and accompanying information to the relevant regulator for approval

- the relevant regulator possibly requiring the service provider to amend and resubmit the access arrangements
- the relevant regulator having to call for and consider public submissions on the proposed access arrangement
- the relevant regulator issuing a draft decision, triggering a further consultation process
- the relevant regulator issuing a final decision, either (1) approving the access arrangement or (2) not approving it and stating the required revisions
- the regulator being able, in the case of the latter decision, to impose its own access arrangement (which triggers the ability for the service provider to appeal).

Under section 2.21 of the Gas Code, a regulator must issue a final decision within six months of receiving a proposed access arrangement, with certain requirements for public consultation to be undertaken within that period.

Regulators have often been criticised for being unable to issue their final decision under the Code within the prescribed timelines. While the Commission's latest review of Victorian gas distribution access arrangements was undertaken in a significantly shorter timeframe than that of the first review, it was nevertheless a complex and time consuming task, and involved a detailed analysis of comprehensive distributor proposals and stakeholder submissions.

The Commission's experience in undertaking two reviews of gas access arrangements suggests the timing requirements to issue a final decision are generally inadequate. This problem partly reflects the inadequate information disclosure provisions and the incentives for the service provider to delay providing information to the regulator. Where, for example, the service provider does not provide sufficient reliable information to the regulator as part of its proposed access arrangement, the six-month period can be quickly exhausted by the requirement for additional information to be provided, thereby reducing the time available for the regulator to consult and make its assessment. Service providers can also employ delaying tactics to attempt to pressure a regulator into making a decision based on insufficient data.

Many of these issues can be partly overcome by strengthening the ability of regulators to clearly set out their expectations and information requirements in advance of an access arrangement review (which is discussed in section 6.3).

6.3 Information gathering provisions

Cost-effective access to relevant information is essential to enable regulators to effectively undertake their decision making functions under the Code. This access is particularly important given the information asymmetry that exists between regulators and the regulated businesses, and concerns about the accuracy of data on which previous regulatory decisions have been based.

Regulators have expressed concerns to NGPAC that the Gas Code provisions regarding regulators' information collection are inadequate. Specifically, the provisions do not clearly empower the regulators to:

- define the information to be kept and retained by service providers
- prescribe the form in which information is to be kept or retained during the term of an access arrangement
- prescribe the frequency with which information is to be provided to a regulator during an access arrangement period.

The experience presented to NGPAC across jurisdictions suggests regulators are often not well placed to consider an access arrangement, given that service providers are not obliged to keep certain information during the regulatory period and that the information retained may not be in a fit format for use. As a result, a regulator may have to rely on information that is either not reliable or strictly fit for purpose, and make ongoing requests information from the service provider.

The Commission recognises the need for regulators to ensure regulatory approaches do not impose excessive compliance costs on businesses. However, access to data is essential, given the existence of information asymmetries and the importance of ensuring the regulator can effectively assess compliance with the Code's requirements. As a result, the Commission considers that the Gas Code should be amended to explicitly empower regulators to require service providers to keep and provide information (in a manner determined by the regulator) that may be relevant to the regulator undertaking its functions under the Code.

7. CONCLUSION

Effective regulation of natural monopoly infrastructure is a key prerequisite for the emergence of an integrated, efficient and more competitive gas market in Australia. The Commission considers that the Gas Code has provided a sound framework for establishing third party access, as evidenced by the dynamic, interconnected and increasingly competitive natural gas industry that has emerged under the Gas Access Regime.

That said, regulators are charged with making judgments that seek to balance, in the absence of perfect information, incentives for efficient investment in regulated infrastructure which also minimise the possibility of excessive rents. The recent gas market developments highlighted in this submission, combined with empirical evidence on the market performance of businesses regulated under the Code, thus appear at odds with assertions that regulated returns are driving down profitability and undermining the viability of new pipeline investment.

The development and performance of the market under the Code also suggest that any changes to the existing regime and its application by regulators need to be based on rigorous and objective analysis, rather than on anecdotal claims or isolated examples of regulatory failure.

Nevertheless, there are a number of areas in which the Code could be further reviewed and refined that have been discussed throughout this paper. They include:

- establishing of clear overarching objective in the Gas Code, and clarifying that status of other objectives and principles in the operational provisions of the Code;

- basing the Gas Code's principal objective on the concept of economic efficiency, as distinct from other objectives such as preventing monopoly abuses and promoting the natural gas market
- ensuring that Chapter 1 of the Code focuses clearly on the coverage of infrastructure with monopoly characteristics
- amending Chapter 8 of the Gas Code to provide regulators with greater flexibility to adopt alternative regulatory approaches to determining prices caps (including both building block and TFP approaches)
- improving administrative provisions of the Gas Code in relation information disclosure and process for amending the Gas Code itself.