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Productivity Commission**

**PRODUCTIVITY COMMISSION REVIEW  
OF THE GAS ACCESS REGIME**

**SUBMISSION TO THE DRAFT REPORT**  
by the  
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# 1 INTRODUCTION AND OVERVIEW

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The Essential Services Commission (ESC) welcomes the opportunity to present its views on the Productivity Commission’s (the PC’s) Draft Report on its Review of the Gas Access Regime (the Gas Code).

As noted in the ESC’s earlier submission, the Review provides a timely opportunity to examine the experience of the last six years of operation of the Gas Code and to present findings and recommendations aimed at improving the Gas Access Regime while retaining and building on its strengths.

As other submissions to the Review have noted, there has been substantial progress in the development of a more competitive, integrated, multi-state Australian natural gas market during the six years of the Gas Code’s operation. These developments have been accompanied by considerable investment in transmission pipelines and the expansion of gas distribution networks.

Regulators have made a number of access decisions under the provisions of the Gas Code covering both gas distribution networks and transmission pipelines. A number of these decisions have been appealed to relevant tribunals on merits and to the courts on matters of law. Ministers have also made important coverage decisions under the Code on advice from the National Competition Council, some of which have been appealed to the Australian Competition Tribunal.

Evolution has also taken place in incentive regulation methodologies as applied under the Gas Code and in other infrastructure sectors during the last six years. Regulators and others have considered alternative regulatory approaches that may create stronger incentives, while simultaneously reducing information asymmetry and forecasting problems and the overall cost and intrusiveness of regulation.

It has also been recognised that even more “light handed” regulation may be appropriate for regulated industries where infrastructure owners are exposed to increasing competition yet still retain substantial market power. Such light-handed approaches may be a transitional step to eliminating regulation entirely as competitive forces take hold. A range of light-handed methods have been applied in these market circumstances in Australia and overseas, and regulators have been reviewing that experience as a basis for improving regulatory applications and performance in markets where competition is emerging.

Accordingly, in a relatively short period, a rich Australian history of gas market development, regulatory experience and debate has been established to inform the analysis, conclusions, and recommendations of the PC’s review. There is also extensive international experience on gas market policy and regulation that the PC can draw on to frame the recommendations of this important review.

The ESC is concerned, therefore, that the PC does not appear to have substantively drawn on these information sources, or to have examined the actual experience of gas access regulation in Australia<sup>1</sup> and overseas, in conducting its analysis or framing the conclusions and recommendations of the Draft Report. Instead, the PC appears to have placed most weight on conceptual analyses of regulation and its likely effects, references to the economic literature

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<sup>1</sup> Including the privatisation experience of several gas infrastructure businesses.

and the PC's own publications on regulation, as well as extensive references to the views of interested stakeholders.

The ESC recognises the PC's work is complicated by the lack of a counterfactual scenario with which to compare the impacts that the Gas Code appears to have had on competition, investment and economic efficiency. The absence of such a counterfactual makes it difficult to assess whether "no regulation" or a different regulatory approach would have resulted in greater net benefits. The ESC agrees that the PC will therefore have to exercise informed judgements about how the Gas Access Regime has performed in the past and what modifications will improve its operation and effectiveness in the future. However, instead of relying on "conceptual considerations" as the principal basis for those judgements, the ESC believes that gas regulation policy is more likely to be sound if it is largely based on objective and informed analysis of the recent Australian gas market experience and the performance and impact of the Gas Code in that context.

For example, the PC's analysis and findings would be more persuasive if it addresses more comprehensively issues such as:

- the benefits that have been delivered through the Gas Code in terms of promoting gas exploration and production, competition in wholesale and retail gas markets and efficiency and productivity gains in gas infrastructure service delivery which could then be set against a balanced assessment of the costs and shortcomings of regulation;
- opportunities for simplifying and rationalising the guiding principles and operational sections of the Gas Code, particularly section 8 of the Code dealing with pricing principles; and
- the actual experience and performance of regulators in administering the Code in terms of providing appropriate incentives for efficient service delivery and investment, in reducing the cost and intrusiveness of regulation and the shortcomings and failings that have been evident in their performance.

Although the PC emphasises a conceptual approach in conducting the Review, it does not appear to have established a relevant analytical framework as the basis for making its assessments of:

- the economic consequences of unregulated monopoly behaviour;
- when regulation is warranted to redress these consequences and the most appropriate form of regulation to adopt; and
- the costs, benefits and trade-offs involved in adopting more or less intrusive regulation.

The adoption of a more comprehensive analytical framework and greater reference to the actual Australian and overseas experience with gas access regulation would ensure a more complete and balanced report. For example, the PC's findings on the recent regulatory experience under the Gas Code are based predominantly on its analysis of the transmission sector and on the issue of investment incentives for new transmission assets. There is far less analysis of the regulatory experience with gas distribution networks which have very different market structure, investment and operational characteristics.

The PC has concluded from its analysis that the Gas Access Regime and its regulators have not performed well in achieving the goals of gas access policy and that major changes are

therefore warranted. The creation of a price monitoring regime would become the major regulatory approach with price cap regulation employed<sup>2</sup> and then only under “the more extreme circumstances”. Placing more emphasis on the market circumstances, materiality to final gas users and regulatory requirements of gas distribution networks, would lead the PC to take a broader view of regulators’ tasks and appropriate reforms of the Gas Code.

Regarding the available options for improving gas access regulation, the ESC disagrees with the PC’s conclusion that there is little merit in undertaking further research and development work on productivity-based approaches to regulation. The ESC and other Australian regulators are continuing to assess the implementation and data requirements of productivity-based methods, with a view to their possible future implementation if they prove to be feasible and cost-effective.

The remainder of this submission develops these themes in further detail and suggests areas where the PC could improve the focus and balance of its analysis and give greater attention to operational areas of the Gas Code in greatest need of simplification and reform. Section 2 reviews the efficiency basis for natural monopoly regulation and the limitations and costs of regulation. Section 3 examines the different characteristics of the transmission and distribution sectors of the gas market and draws out some implications for the approaches to regulation that are appropriate. Section 4 addresses the regulatory objectives and methods that are appropriate for a natural monopoly essential infrastructure services; focusing particularly on the relative merits of building blocks and productivity-based approaches to price regulation. Section 5 reviews the regulatory objectives and methods that are more appropriate for more contestable infrastructure services markets which nevertheless retain substantial market power. Section 6 comments on some aspects of the PC’s analysis and conclusions on the impact of gas access regulation on investment and the incentive to undertake efficient long-term investment.

To assist the PC in comprehensively reviewing productivity-based developmental work, the ESC has supported the preparation of a companion submission to this one, by Dr Lawrence Kaufmann of Pacific Economics Group (PEG). Dr Kaufmann’s submission provides further analysis and information on productivity-based regulation as it has been applied in a number of North American jurisdictions.

The ESC has also engaged National Economic Research Associates (NERA) to prepare a report on alternative light-handed approaches to regulation and the market and institutional circumstances in which they may be appropriate. This report was commissioned to assist the ESC’s consideration of appropriate regulatory approaches for infrastructure sectors such as port services, freight access to rail track and export grain handling where some contestability is emerging. The report, which is available on the ESC’s website, provides additional perspectives on some of the issues addressed in the PC’s Draft Report.

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<sup>2</sup> Productivity Commission 2003, Review of the Gas Access Regime, Draft Report, Canberra, p261.

## 2 OBJECTIVES, PRINCIPLES AND METHODS OF REGULATION

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The Commission believes it is important for the PC's review to be guided by a clear conceptual framework and an understanding of relevant regulatory principles and practice. These should, in turn, be based on an understanding of the implications of market failure under conditions of monopoly supply, the underlying rationale for regulation and the problems confronting regulators.

Answers to the two fundamental issues of when gas infrastructure services should be regulated and what form of regulation should be adopted should be developed within an analytical framework that is comprehensive enough to address the array of market structures and competitive conditions in Australia's natural gas industry. While the Draft Report relies on first principles reasoning and guidance from the economic literature, the analytical framework on which the report is based is not sufficiently comprehensive to encompass all of the relevant issues that require consideration in assessing options for effective future gas access regulation in Australia. This deficiency circumscribes the subsequent examination of regulatory options in the Draft Report. In this section, the ESC presents a range of issues that it considers to be relevant for the development of a more fully-articulated analytical framework within which to assess the performance of gas access regulation in Australia.

### 2.1 The Efficiency Basis for Regulation

The ESC agrees with the Draft Report that the overall objective of the Gas Access Regime must be to foster long-run economic efficiency and with its recommendation that an overarching objects clause focused on long-run efficiency be added to the Regime. Economic efficiency is ultimately the key to the material well-being of the community, since improved efficiency allows a given amount of resources to yield a greater volume of valuable goods and services. Industry structures that promote efficient behaviour will therefore generate the maximum possible benefits for society by promoting economic growth and the long-run welfare of consumers.

It is widely accepted that competitive markets are the most effective means of promoting efficiency and creating the maximum benefits for society. The operative market forces of customer choice and producer competition create optimal incentives to behave efficiently. Competitive markets also create strong incentives for dynamic productive and allocative efficiency (i.e. efficient investment and product development choices, respectively).

While economists agree that competition is more effective than regulation in promoting efficiency and long-term customer benefit in most markets, it is equally clear that this is not always the case. Efficiency in the provision of certain goods and services is promoted by allowing a single firm to serve the entire market. Whether this is the case depends on the underlying production technology for the good or service and, in particular, on the magnitude of efficiency gains that are realised as the firm expands the size of its operations to take advantage of economies of scale or economies of scope<sup>3</sup>. If scale and scope economies are

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<sup>3</sup> Scale economies are realised when, for a given good or service, increases in output decrease the unit cost of production. Economies of scope exist when multiple products can be supplied by one company more cheaply than if produced by separate, specialised companies.

realised at output levels that equal or exceed total market demand for the product, the industry is known as a natural monopoly.<sup>4</sup>

Many essential infrastructure services are supplied under natural monopoly conditions and are provided by firms with monopoly franchises. But while monopoly supply may provide the potential for the efficiencies inherent in natural monopoly technologies to be realised, this market structure also enables firms to engage in inefficient behaviour. The reason is that monopolies enjoy substantial market power, and this market power creates incentives to behave in ways that undermine efficiency. For example, monopolies are not subject to competitive forces that encourage them to produce at minimum cost. They may therefore have inefficient operations, sub-optimal costs and capacity. Typically monopolies also have greater markups of price over both marginal and average cost, charging more and supplying less than would firms in more competitive markets. Since natural monopoly infrastructure services are often critical inputs in vertically-related markets (e.g. natural gas marketers require access to gas delivery infrastructure), misallocated resources will distort production and investment decisions in downstream or upstream gas markets and ultimately in the economy as a whole. There is accordingly an inherent tension in natural monopoly industries: efficiency in these industries can potentially be realised by adopting a market structure (monopoly) that itself encourages behaviour that runs counter to the goal of promoting efficiency.

Many of Australia's regulatory reforms have, in fact, attempted to address the inefficiencies that result from firms' exercise of monopoly power. The National Competition Policy adopted in the mid-1990s included monopoly pricing and third party access features that were reflected in relevant provisions of the Trade Practices Act, the Competition Principles Agreement, the National Electricity Code and the Gas Code. These provisions were designed to mitigate the inefficiencies and misallocated resources that result from the unregulated market behaviour of natural monopoly industries and which, in turn, adversely impact international competitiveness, economic growth and community welfare.

The main public policy objective of natural monopoly regulation is to maximise the efficiency benefits of natural monopoly supply while minimising the resource distortions that can result from unregulated natural monopoly conduct. The efficiency and effectiveness of policy and regulatory measures to contain inefficient natural monopoly behaviour needs to be kept under ongoing review, as does the issue of whether natural monopoly conditions continue to prevail. In doing so it would be inappropriate to overlook or under-weight the economy-wide consequences that can result from the potentially resource-distorting behaviour of unregulated natural monopolies.

Similar problems may manifest themselves in regulated infrastructure markets where firms are exposed to emerging competition yet retain substantial market power. This market power may be exercised in ways that distort resource allocation in related markets. The pricing and

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<sup>4</sup> Natural monopoly conditions can arise for various reasons. One is that some economies are inherent in coordinating production. At least up to a certain point, there are often low incremental costs associated with planning and organising a firm's activities, so unit costs therefore decline as output expands. "Pecuniary" scale economies may arise from bulk purchasing of some inputs. Some inputs can also be purchased "whole" only in certain sizes. At smaller output levels some component of these inputs may be underutilised, but as output grows, more of these inputs are utilised and average cost tends to fall. Delivery networks also tend to realise economies from growth in the number of customers served in a given area. This is sometimes referred to as "economies of customer density." These economies arise as inputs placed at a given location provide the same service to nearby locations at low incremental cost.

production behaviour of such firms may thereby also be inefficient, although the magnitudes of the inefficiencies and resource distortions will usually be less than under monopoly.

In these situations, the goal of regulation should be to replicate, as best as it possibly can, the incentives, behaviour and outcomes that prevail in competitive market structures. Regulators should clearly play this role in natural monopoly markets. There may also be an efficiency basis for regulating incumbent firms with a dominant position (and therefore continuing market power) in contestable infrastructure service markets.

As noted in section 1 of the submission, the PC's Draft Report would have been improved by an objective assessment of the contributions the Gas Code has made to enhanced efficiency and competition in the wholesale and retail gas markets and to more efficient gas infrastructure service delivery. Any objective assessment would recognise that the goal of efficiency and long-run customer benefit will be promoted, and not undermined, when regulation is applied appropriately, since regulation is necessary to prevent firms with market power from engaging in inefficient behaviour. These benefits of regulation can then be set against the costs and shortcomings that have been evident in the Code's administration.

With the above points in mind, the ESC believes a slight re-wording of the overarching objects clause presented in the Draft Report is in order. The currently proposed overarching objects clause is the following:

*To promote the economically efficient use of, and investment in, the services of transmission pipelines and distribution networks, thereby promoting competition in upstream and downstream markets.*

This clause may give the impression that the objective of achieving efficiency in the gas infrastructure sector is to create greater competition in related markets. However, competition is not an end in itself and the essential policy goal of gas pipeline access regulation should be to promote efficiency (through enhanced competition) in related markets and ultimately in the economy as a whole. The ESC therefore suggests the following minor change in the wording:

*To promote economically efficient operation and use of, and investment in, transmission pipelines and distribution networks, thereby promoting competition and efficiency in upstream and downstream markets and the economy as a whole.*

## **2.2 Regulatory Limitations, Tradeoffs, and Options**

While regulation has the objective of promoting efficient behaviour in industries where firms enjoy monopoly or dominant market power, regulation and regulators have important limitations in attempting to achieve this goal. These limitations should be understood and reflected both in the framing and implementation of regulatory policy. A balanced understanding of these considerations is also essential for the PC's review of the Gas Code and should inform its analysis and recommendations.

The most important limitation is the information asymmetry that exists between regulators and the firms they regulate. If regulators knew the efficient way to produce and market utility services, they could simply mandate the optimal array of services and set prices to recover the minimum cost of providing them. Unfortunately, it is often difficult for even



company managers to recognise best practices given the substantial uncertainty that exists regarding future supply, demand and policy conditions. The challenge is much greater for regulators since they are apt to know much less about the utility businesses, and the costs, risks and market conditions they face.<sup>5</sup>

Regulators seek to overcome the information asymmetry problem by gathering information about the businesses they regulate. These efforts are costly for the both the regulator and the regulated firm. The information asymmetry and inherent difficulty of identifying efficient behaviour also implies that regulatory decisions are unable to flawlessly mimic competitive market outcomes; there will be regulatory errors, sometimes favouring regulated businesses and at other times favouring service users.

These inherent limitations create a tradeoff between regulators' attempts to replicate the efficient behaviour and outcomes of a competitive market and the regulatory costs that are incurred through these efforts. In some circumstances, the regulatory costs incurred in pursuing a more efficient outcome may outweigh the potential benefits that are available. These potential benefits depend on the extent of the firm's monopoly power, the materiality of the regulated services in related markets, and the extent of the resource misallocation that would result from unregulated monopoly supply.

One way that regulators can reduce this tradeoff is by providing incentives (rewards) to firms for operating efficiently and revealing efficient costs through their behaviour. These regulatory approaches are referred to as "high powered" incentive schemes because they decouple allowed prices from a firm's actual costs, at least for a period of time. Accordingly, regulated businesses bear a greater degree of risk in relation to changes in their cost structures than under "low powered" incentive schemes such as cost-plus, rate of return regimes.

Under "high powered" regulatory incentive models, regulated businesses have the opportunity to earn and retain higher profits when they manage their costs effectively and generate efficiencies beyond those anticipated when the price caps were set. Utilities will respond to these incentives with different degrees of success, so that a company's returns under high-powered regulation will be commensurate with its performance in the same way as a competitive market rewards superior performance and penalises inferior performance. Thus high-powered regulation does not impose the same returns on all firms and it does not create explicit links between returns and risks. Such a direct link would be consistent with a cost-based, and therefore low-powered, regulatory scheme.

In addition to encouraging efficient behaviour by monopoly businesses, regulators must also try to ensure that customers share in the benefits of realised efficiency gains. But transferring benefits to customers reduces companies' incentives to undertake actions that lead to efficiency gains in the first place. Regulators therefore face another tradeoff in trying to create incentives for utilities to behave efficiently, while ensuring that customers share in benefits from efficiency gains. Laffont and Tirole refer to this as the "rent and efficiency trade-off."<sup>6</sup> Optimising this tradeoff is also central to regulation.

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<sup>5</sup> Australian regulators have made considerable progress in addressing the information asymmetry problem in their administration of the Gas Code. These developments have focused on measures to strengthen the incentives for efficient performance while seeking to reduce the intrusiveness and cost of regulation. Notwithstanding this progress, however, there is a remaining need to continue to improve the efficiency and effectiveness of regulation and to reduce its cost.

<sup>6</sup> Laffont and Tirole (2000), *Competition in Telecommunications*, MIT Press, Cambridge Massachusetts, p.41

Regulators may also face a tradeoff with respect to incentives and risk. As noted, high-powered incentive regimes create stronger performance incentives but also entail greater risk. Low-powered regulation reduces incentives but also mitigates risk. Regulators must be cognisant of investors' risk perceptions since these will influence the amount of investment that takes place in the industry, as well as the terms on which investors are willing to provide capital. Efficient investment, in turn, is critical to both the efficiency and quality of utility services provided to consumers, particularly in the long run.

In addition to these tradeoffs, regulators must also recognise that high-powered incentive regulation rules can become rigid and inflexible. Circumstances can change in regulated industries, and regulatory flexibility should be allowed to accommodate these changes. A failure to adapt regulation to new technological developments, changing cost and market conditions and "best practice" regulatory techniques runs counter to the goals of promoting efficiency and/or ensuring that customers benefit from efficiency gains. A degree of regulatory discretion is therefore appropriate.

However, excessive discretion or the inappropriate exercise of discretion can increase uncertainty and regulatory risk which can in turn increase the cost of capital, or prevent companies from undertaking investments or initiatives that would otherwise improve efficiency. Regulators therefore face yet another tradeoff in exercising the discretion available to them in ways that encourage rather than undermine efficient behaviour.

In considering these tradeoffs, it is worth noting that the pricing principles in the current Gas Code (Section 8) say that reference prices should include a return that is commensurate with the risk of the investment but also that returns should be commensurate with the company's performance.<sup>7</sup> As noted above, returns are commensurate with performance under high-powered incentive regimes, while explicit links between returns and risk presupposes a cost-based, lower-powered regime. The ESC is of the view that high-powered regulation is the more effective means of achieving the overarching objectives clause, which emphasises long-run efficiency. The ESC therefore believes that the Gas Code should be modified to make the link between returns and performance the primary consideration when setting reference prices, while noting that the relationship between returns and risk is an important, related issue but secondary to the fundamental objective of promoting long-run efficiency.

In deciding on the regulatory methods that are most appropriate for different infrastructure service markets, regulatory policy formulation and its implementation by regulators must also have regard to differences in market structure, monopoly or market power and the presence or potential for contestability from alternative suppliers of a substitute service among infrastructure industries. This is of particular relevance in choosing between more or less light-handed regulatory approaches for essential infrastructure services. Central to this choice is the extent of market power involved. As a general proposition, the more substantial the market power, the greater is the likely efficiency loss and the greater the likelihood that a heavier handed form of regulation will produce efficiency improvements well in excess of its costs. When a service provider remains in a dominant market position (and direct regulation therefore remains warranted) but some competition is emerging or prospective, the exercise of market power will lead to fewer inefficiency losses, so a more lighter-handed, less costly form of regulation is likely to be more appropriate. Other relevant considerations in addressing the trade-off between the costs of market failure and the cost of regulation identified in the NERA paper<sup>8</sup> referred to earlier include the prevailing institutional dynamics

<sup>7</sup> This is also implied in 8.1b replicating the outcome of a competitive market.

<sup>8</sup> NERA Alternative Approaches to Lighter-handed Regulation: A report to the Essential services Commission Victoria, 1 March 2004.

and regulatory design and process considerations. These issues are also critically important to a review of the effectiveness of the Gas Code, when lighter-handed regulatory options such as price monitoring are under consideration. They also highlight the need to evaluate and suggest improvements to the principles, methodologies and processes in the Gas Code, some of which tend to be intrusive, prescriptive and inflexible (eg section 8 on pricing principles).

Beyond these general principles, it should be recognised that there is a wide spectrum of regulatory approaches and methods available to policy makers and regulators seeking to address the regulatory trade-offs. For the regulation of natural monopoly services, these methods include different high-powered incentive regulation approaches, alternative methods for sharing benefits between customers and shareholders, and different provisions for mitigating risk. A range of light-handed regulatory approaches is also available<sup>9</sup> and have been applied in different market circumstances with varying degrees of success. These regulatory alternatives are examined further in sections 4 and 5 of this submission and in detail in the PEG and NERA papers referred to above.

In summary, the ESC considers that there is room for the PC to adopt a broader view of the natural monopoly problem and the problems of regulation in seeking to address it in the Final Report. Rather than focussing predominantly on the costs of regulation and the risks it creates for infrastructure investors the Final Report should more fully address:

- The nature and extent of the monopoly/market power problem in the supply of gas infrastructure services;
- Australia’s regulatory experience in addressing those problems under the Gas Code to date;
- the future need to regulate gas transmission and distribution infrastructure and the types and methods of regulation that are appropriate in different market circumstances; and
- the various trade-offs that must be assessed in making well-informed policy recommendations on those matters.

### **2.3 Some Implications for the PC’s Gas Code Review**

The ESC agrees with the recognition in the PC’s Draft Report that long-run economic efficiency should be the central theme of a new overarching objective for the Gas Code and has suggested some variations to the clause proposed by the PC to emphasise that the objective is enhanced efficiency in related markets and the wider economy rather than simply enhanced competition. This modification goes to the important distinction between means and ends.

The ESC considers, however, that the Draft Report would benefit from a more balanced assessment of the implications for economic efficiency of market failure under conditions of natural monopoly supply, the rationale for regulation in those circumstances or the complexities and trade-offs that must be addressed in designing and implementing cost-effective access regulation regimes. As a result, the PC’s analysis, findings and recommendations should address the broader set of the issues involved and focus on a greater

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<sup>9</sup> NERA, Ibid

number of regulatory options for improving the effectiveness of gas access regulation in the period ahead.

The Draft Report has placed considerable emphasis on emerging contestability in significant parts of the gas transmission sector as the basis for proposing a more light-handed regulatory approach in those circumstances. However, in doing so, it has focused principally on the investment incentive issue and on a single methodology - price monitoring - without adequately considering other possible options.

The Draft Report's balance would be further improved by adopting a broader conceptual framework of issues and principles within which to analyse and evaluate the Gas Code experience to date and to frame recommendations to address identified shortcomings and improve its effectiveness.

While this section of the submission is not intended to address that shortcoming by providing such a conceptual framework, it does identify a range of issues that are relevant in that respect.

The remainder of the submission draws on the generic issues identified in this section in commenting on particular matters raised in the Draft Report.

### 3 CHARACTERISTICS OF GAS TRANSMISSION AND GAS DISTRIBUTION INDUSTRIES

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With the issues raised in sections 1 and 2 of the submission in mind, this section examines the differences between gas transmission pipelines and gas distribution networks and the implications of those differences for the approaches to access regulation for each of them. While the Draft Report presents (in Chapter 2) a detailed discussion of the gas transmission and distribution sectors, it then makes few if any distinctions between the two sectors in its analysis of the administration of the Gas Code and in framing its recommendations for reform of the Code. Rather, the principal focus of the Draft Report is on the gas transmission sector and on the incentives for investment in transmission pipelines and particularly greenfields pipelines.

This is an important shortcoming, because while gas distribution networks remain essentially natural monopolies (particularly in Victoria where gas is much less a discretionary fuel) the more interconnected and competitive Australian gas market makes gas transmission an increasingly contestable service. It is also relevant that distribution networks deliver gas directly to end use customers and that gas distribution costs account for a significantly larger proportion of the delivered price of gas than gas transmission costs. For these reasons, the appropriate approach to future gas distribution regulation requires greater attention than it was given in the PC's Draft Report.

The main differences between gas distribution and gas transmission stem from their customer bases. Distributors deliver gas directly to end-users, while transmission pipelines provide bulk delivery from supply sources to a few large customers (including distributors). Gas distributors serve a much larger number of customers, which are typically clustered in a relatively compact service territory. Distributors are usually required to provide service to new customers in their (territories) provided they meet certain conditions (e.g. with respect to line extension policies). The number of gas distribution customers therefore tends to grow over time. These customers are diverse but usually have smaller consumption volumes and more "peaked" load profiles than customers served by transmission pipelines.

Compared with transmission, the production technology for gas distribution is characterised by greater economies of density, which is one of the factors that gives rise to natural monopoly supply conditions. Density economies reflect efficiencies related to network construction and operation. Existing networks that are in place to provide service at a given location can usually provide service to nearby locations at low incremental cost. When the incremental cost of extending the gas distribution network is lower than the average cost of service, network expansions cause average costs to decline. Productive efficiencies are thereby realised and lower prices are possible for new and existing gas delivery customers. Unlike transmission, the gas distribution business involves ongoing network extensions to serve new customers. These network extensions often allow the company to achieve continued density economies, so the gas distribution business naturally gives rise to ongoing production efficiencies that reinforce the industry's natural monopoly position.

Furthermore, at the level of the individual small customer, reticulation supply has considerable excess capacity, making it infeasible to duplicate supply, even where there are substantial increases in demand. In contrast, the capacity of gas transmission pipelines can usually be tailored more closely to demand, and consequently any lumpy increases in demand (eg a new power station or energy-intensive industry) can provide an opportunity for a new competing pipeline to enter, and to achieve minimum efficient scale. (Alternatively, the

existing transmission pipeline can satisfy this additional demand through looping or additional compression.) The incumbent gas transmission utility does not necessarily enjoy a cost advantage with respect to constructing this new infrastructure. That is, compared with incremental extensions of a gas distribution network, it is less likely that an incumbent pipeline's ability to leverage off its existing infrastructure leads to lower construction or operation costs vis-à-vis a de novo competitor.

In addition, the demand characteristics of transmission customers make transmission a more contestable service. Transmission customers typically have more ability to switch quickly from natural gas to alternative energy sources in response to price differentials. Transmission customers have larger consumption volumes and less peaked demands, so potential pipeline investors incur fewer transaction costs in identifying and negotiating with transmission customers than would a distribution investor, who must attract many more customers to make a "greenfields" investment profitable. Once the pipeline capacity is constructed, it will be utilised more uniformly throughout the year than would distribution capacity due to transmission customers' less peaked demands. This again makes transmission customers more attractive to new asset developers and increases the contestability of the service.

Transmission pipelines also have more tools available to manage capacity and ensure that it is as fully utilised as possible. These tools include gas storage and secondary capacity markets. These avenues for increasing capacity utilisation are generally not available to distribution networks. Thus even though both gas transmission and gas distribution investments are "sunk," there are more tools available for managing transmission capacity, and these tools effectively increase its liquidity.

Gas transmission pipelines connect sources of supply to centres of demand and hence the demand of usage of the pipeline depends importantly on demand for gas from a particular source of supply. By contrast, distribution systems reticulate gas within an urban area, and as such demand for use of the system is independent of the source of gas supply. The scope for competition between gas transmission pipelines is greatly enhanced by the potential for competition between alternative sources of gas supply to meet a given market.

Market developments in Australia have increased the contestability of gas transmission services. Investments in gas transmission infrastructure have led to progressive interconnection of gas basins and gas markets. This has, in turn, increased gas-on-gas and pipeline-on-pipeline competition. Market participants now have more choice and negotiating power over the terms of their bulk gas supplies (commodity plus transmission costs). This type of contestability, with rare exceptions, does not exist in gas distribution.

In sum, the ESC considers that gas distribution and gas transmission are very different industries. Gas distribution is exposed to only limited contestability (eg inset or cross-border competition) and in general continues to exhibit the characteristics of natural monopoly. Gas transmission displays a number of features that make it increasingly contestable in the Australian gas market context. The PC's Final Report would benefit from greater attention to these differences and their implications for the approaches to regulation that is most appropriate to their market circumstances. As the analytical framework outlined in the previous section indicates, it is not necessarily true that regulatory methods appropriate for the more contestable gas transmission sector will be equally suitable for gas distributors. In spite of the different characteristics of these industries, however, the Gas Access Regime must remain flexible enough to accommodate effective regulatory methods for both transmission and distribution.

It may be argued that the two alternative regulatory approaches identified in the Draft Report (building blocks price cap regulation and price monitoring) are capable of accommodating regulation of both natural monopoly distribution networks and more contestable transmission pipelines without labouing their differences. The ESC considers, however, that the regulatory options identified in the Draft Report for regulating natural monopolies and more contestable gas infrastructure services are unduly limited and that the PC's under-weighting of gas distribution in its analysis of the recent Gas Code experience has led it to place undue emphasis on the issues of gas transmission contestability and investment incentives in framing its analyses and recommendations.

These concerns are elaborated further in the next two sections of the submission.

## 4 REGULATORY OBJECTIVES AND METHODS APPLIED TO NATURAL MONOPOLY MARKETS

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In essence the Draft Report recommends that the future Gas Access Regime should provide for the use one of two possible regulatory methods. The first is the building block approach to CPI-X regulation for natural monopoly markets. The second is a new, lighter-handed “price monitoring” option for contestable markets.

The ESC believes these recommendations are too restrictive and close the door on potentially valuable regulatory alternatives. The ESC considers that the regime should allow for flexibility in means (e.g. regulatory methods) to achieve overall ends (economic efficiency). Constraining the means can only make it more difficult to achieve ends. At the same time, the Regime must take measures to prevent flexibility from becoming an additional source of uncertainty and risk. This section discusses alternative measures available for the regulation of natural monopoly gas infrastructure service markets. Section 5 then considers a broader range of regulatory measures available for the regulation of more contestable gas infrastructure markets.

### 4.1 Building Block CPI-X Regulation

As the ESC has noted in previous submissions to the PC, it believes that building block methods have yielded benefits in past applications in Victoria and elsewhere in Australia. The building blocks approach has been shown to be a robust methodology and has provided high-powered incentives to achieve cost efficiencies and to maintain service quality. The incentive mechanisms incorporated into the approach have reduced regulators’ informational disadvantage and made the approach less intrusive and information-intensive in subsequent access reviews. In addition, by placing relatively more emphasis on revealed cost information, regulators can 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, while the building block model has been effective in the past, the ESC is concerned that it may not be the best regulatory approach going forward. In particular, the problem of information asymmetries remain pronounced under the building blocks model. Even if the efficiency of past expenditures is “revealed,” the method still requires forecasts of efficient capital and operating expenditures during the price control period. Projecting future costs is an information-intensive and inherently uncertain process that is fraught with risk. On the one hand, there is the risk of overcompensating regulated businesses, thereby leading to excessive prices and profits, distorted infrastructure investment and misallocated resources in upstream and downstream markets. On the other hand, there is a risk of providing inadequate prices and revenues for regulated businesses, undermining their financial viability and incentive and capacity to invest. The potential risk of overcompensation is exacerbated by the fact that firms clearly have incentives to “game” the cost forecasts that are used to determine their forward-looking revenues. The information asymmetry between regulators and regulated firms may make it especially difficult for regulators to detect such gaming.

These concerns are one reason the ESC and other Australian regulators have been exploring alternative regulatory options to the building blocks model. The ESC’s previous submission examined the potential value of using productivity-based regulation for natural monopoly infrastructure service providers. That approach is examined next.



## 4.2 Productivity-Based Regulation

The main regulatory alternative to the building block approach that has been discussed in Australia is productivity-based regulation. In its previous submission, the ESC recommended that the PC examine the feasibility of enhanced flexibility in the Gas Code to allow productivity-based regulation to be applied in appropriate circumstances. The PC also recommended greater use of productivity-based regulation in its review of Part IIIA of the Trade Practices Act.

The ESC will not review the arguments it previously advanced regarding the potential merits of productivity-based regulation. The companion submission by Dr. Kaufmann evaluates these merits in some detail and also describes the experience with productivity-based regulation in North American energy applications. Here, the ESC would like to address the PC's conclusion that there is "little merit in more research" on productivity-based regulation.

The ESC considers that the Draft Report reveals that productivity-based regulatory regimes have not, in fact, been seriously examined to date in Australia. The most significant research on this topic was commissioned by the Utility Regulators' Forum. The Draft Report acknowledges that this paper "concluded that, in principle, TFP based approaches are likely to be superior" to building-block approaches but "the effectiveness of possible options depends on detailed design features." The Report labelled these findings "somewhat inconclusive" and said they were investigated further in a one-day seminar in which there was "little progress...in identifying an approach that can be implemented by regulators." This represents an insufficient basis for supporting the PC's conclusion that "further work on index and productivity-based pricing methods is unlikely to be fruitful".

The ESC considers that this conclusion simply does not follow from the facts presented. The most comprehensive evaluation of the topic has concluded that there could be real value in implementing TFP-based regulation but that further work is needed to flesh out a productivity-based regime. The only follow-up examination was a one-day seminar that presented a range of views on the general issue. A one-day seminar is clearly not an appropriate forum for devising feasible implementation approaches nor is it intended to be such a forum. Such seminars are designed to present alternative views and stimulate thinking, not to develop ultimate solutions on the spot. The ESC would find it surprising if seminar participants could, in a single day, work through and reach agreement on all the details needed to develop a full-fledged alternative to the building block model.

In short, the ESC notes that Australia has only scratched the surface of the issue of productivity-based regulation. If the most serious examination of this option concludes that it is theoretically superior to building blocks but further research is needed to work out details, the most reasonable response is to undertake that research and not discontinue work. The ESC and other regulators are undertaking further work on this topic through the Utility Regulators Forum to assess the data and operational requirements and feasibility of productivity-based regulation. Those efforts would be assisted by a more open and positive attitude to such developmental work by the PC.<sup>10</sup>

<sup>10</sup> The ESC also believes that the Draft Report has unintentionally conflated the issues of productivity-based regulation and benchmarking per se. The report says respondents exhibited little interest in benchmarking, but this is likely because benchmarking was presented as a component of the building block approach rather than as a regulatory alternative. Many companies may oppose benchmarking within a building block framework since they may view it as another source of regulatory discretion and uncertainty. Any such company opposition to "benchmarking" does not logically imply that there is little interest in productivity-based regulation as a regulatory alternative.

### 4.3 Other Regulatory Tools

In addition to productivity-based regulation, many other regulatory tools can be brought to bear on Gas Access regulation of natural monopoly services. Some of these tools can be used to strengthen performance incentives while others can be used to mitigate business and regulatory risk. These tools can be integrated in either a fundamentally building block or productivity-based regulatory model.

The Draft Report showed little appreciation of the range of regulatory tools available to be used in the Gas Access Regime. This is an important oversight. Given the uncertainties of designing appropriate Gas Access regulation and the resulting potential for regulatory “error,” there may be great value in further examining a fuller range of regulatory methods. Some of the regulatory tools that have been discussed in the theoretical literature and applied in other jurisdictions include the following:

- *Earnings sharing mechanisms* Earnings sharing mechanisms (ESMs) refer to pre-established rules for sharing earnings between companies and customers; ESMs are widely seen as devices that mitigate shareholder risk, although these lower risks are also accompanied by lower performance incentives.
- *Revenue sharing mechanisms* Revenue sharing mechanisms are similar to earnings sharing mechanisms, although company revenues rather than earnings are shared according to pre-established formulas.
- *Alternative inflation measures* In Australian price control plans, some measure of consumer price inflation has been selected as the inflation measure. In principle, other inflation measures can be chosen. Inflation measures that are constructed to more closely reflect changes in prices of inputs that are actually purchased by utility industries may reduce the risk that CPI-X controls lead to either systematic over- or under-compensation of companies during the term of the plan. Any such over- or under-compensation can invite unexpected adjustments when the plan is updated.
- *Inter-plan sharing provisions* These are provisions that share the benefits of efficiency gains between different regulatory plans. Such mechanisms can strengthen incentives and create more uniform incentives to pursue efficiency gains in all years of a regulatory plan. One example is the efficiency carry-over mechanism first applied by the Office of Water Regulation (Ofwat) in the United Kingdom in its 1999 review of water and sewer price controls. The ESC adopted a nearly identical efficiency carry-over mechanism in its 2001 Electricity Distribution Price Review.
- *Trigger mechanisms and “off ramp” provisions* Price control plans can incorporate various trigger mechanisms that lead to automatic regulatory adjustments when certain variables pass established thresholds. An example might be an automatic, up or down adjustment of rates when the cost of capital changes by a certain amount. An “off ramp” is a more radical trigger mechanism where a fundamental review of plan terms can take place under certain, specified conditions.
- *Menu approaches* The tools above and others can be brought together in various combinations. It is also possible to construct “menus” of alternative price control plans with varying terms. An example might be a menu that presents three different regulatory

options, each of which has a different X factor and an associated earnings sharing mechanism. A higher X factor would be associated with a less demanding ESM, while a lower X factor would have a more demanding ESM. The Company could then select its desired choice from the menu.

The ESC would emphasise that it does not necessarily endorse any of the above regulatory tools. Indeed, because none of these tools has yet been investigated in detail, the ESC believes it is premature to make any such recommendation. It does believe, however, that it is valuable to encourage regulatory innovation by interested parties.

The ESC also believes there is a desire for alternative regulatory approaches among regulated companies. There is, in fact, substantial evidence of this in the Draft Report, such as the statement that “service providers were concerned that the only option under the Gas Code is cost-based regulation based on a building block methodology.” Greater flexibility could be encouraged by modifying Section 8 of the Gas Code to allow for a greater range of regulatory methods and mechanisms than the very limited range of regulatory methods that are currently allowed.

The obvious objection to this proposal is that enhanced flexibility will generate greater uncertainty and regulatory risk. This is a legitimate concern, and the Commission proposes the following safeguards to ensure that discretion is used appropriately.

First, any use of discretion and alternative regulatory methods should not be restricted to regulators and should also be available to regulated companies and other interested parties. One of the companies’ main concerns with existing regulatory methods is that nearly all potential use of discretion is in the hands of regulators. A large part of the problem, then, is not changes in regulatory methods per se but rather asymmetries in which parties are allowed to exercise discretion. The ability for regulated companies to propose creative new regulatory methods may generate improved models that promote efficiency and better manage risk. This proposal is similar in spirit to the concept of access undertakings, which regulated companies are free to propose under the national access regime as an alternative to control. There would be value in including this concept in the Gas Access Regime itself.

Second, the exercise of regulatory discretion could be limited to situations that contribute to the Code’s new overarching objective. Any party (including a regulator) proposing an alternative regulatory approach could be required to demonstrate that its recommended approach will promote greater long-run efficiency compared with existing regulation. This requirement could be made explicit but not be applied overly stringently. It will often not be possible to quantify any efficiency gains associated with a new regulatory method, but the proposing party should at least put forward a compelling conceptual case describing how its method will promote greater long-run efficiency.

#### **4.4 Conclusion**

For natural monopoly services, the Draft Report essentially limits its analysis to the single regulatory approach of building block CPI-X methods. It finds little merit in pursuing further research on productivity-based regulation and shows little appreciation for the full range of incentive regulation techniques that have been applied in other jurisdictions. By unnecessarily restricting the scope of its analysis, the Draft Report recommends the continued application of building block, CPI-X regulation to natural monopoly services almost by default.

The ESC considers that this conclusion is not sufficiently supported. The regulation of natural monopoly services will continue to be critical to the operation of the Gas Access Regime. As discussed in section 3 of this submission, gas distribution is with few exceptions a natural monopoly industry, and this service accounts for a larger share of end-user delivered gas costs than gas transmission. Effective regulation of natural monopoly services will therefore have a material impact on consumer welfare and the overall efficiency of the natural gas industry. While the ESC believes that building block CPI-X methods have operated well in the past, the ESC has some concerns about whether this is the most effective regulatory approach for the future. It is critical therefore, that regulators and other interested parties to explore whether alternatives to the building block model are feasible and desirable. These alternatives include productivity-based regulation, the other incentive regulation techniques mentioned in this submission, and perhaps other options. Further exploration of regulatory alternatives is also likely to appeal to service providers, for the Draft Report indicates that many of these firms desire regulatory alternatives to “cost-based regulation based on a building block methodology.” The ESC therefore recommends that the Pricing Principles of the Gas Code be amended to allow for greater flexibility in regulatory methods and alternatives to the building block approach. To prevent this flexibility from generating additional uncertainty, the ESC recommends that the Gas Code also be amended to include two safeguards: first, that all interested parties and not just regulators are free to propose regulatory alternatives; and second, that any application of alternative regulatory methods must advance the Code’s overarching objective of promoting long-run efficiency.

## 5 REGULATORY OBJECTIVES AND METHODS APPLIED TO MORE CONTESTABLE MARKETS

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The ESC recognises that different regulatory approaches may be warranted for more contestable infrastructure services than for natural monopoly services. As previously discussed, one of the primary issues when considering regulatory methods is the cost of regulation relative to the inefficiencies resulting from firms' exercise of market power. Heavier-handed regulation may be warranted when the monopoly/market power of infrastructure utilities is substantial, since the higher regulatory costs are likely to be more than compensated by the elimination of the more substantial inefficiencies resulting from the exercise of market power. In contrast, lighter-handed regulation is more appropriate where utilities exercise less market power, since regulation is likely to generate fewer efficiency gains compared with unregulated market forces, and the administrative costs imposed by heavy-handed regulation would be more likely to outweigh those efficiency gains.

A number of light-handed regulation approaches may be appropriate for more contestable markets. As previously discussed, NERA has recently prepared a report on light-handed regulatory approaches for the ESC. The light-handed regulatory options identified by NERA include price monitoring, negotiation-arbitration models, regulatory undertakings, the application of pricing principles, and regulatory "thresholds" approaches. The Draft Report did not address this full range of options when recommending price monitoring as the sole light-handed regulatory approach. This is an important oversight. Any recommendation for a light-handed regulatory approach should be based on a comprehensive analysis of the available options. In addition to being unnecessarily restrictive, the report's analysis of the price monitoring option is incomplete. Below the ESC will briefly assess some of the other light-handed regulatory options that we believe the Draft Report should have addressed, as well as other issues that we believe deserve further consideration when evaluating light-handed regulatory options.

### 5.1 Other Light-Handed Regulatory Alternatives

The NERA report identifies several other light-handed regulatory approaches, including:

- The negotiation-arbitration approach, where access providers and access seekers attempt to negotiate a commercial agreement. This approach maximises reliance on commercial processes and minimises regulatory intervention in the market.
- Pricing principles that set qualitative criteria with which access prices must comply.
- Regulatory undertakings, which are similar to regulatory determinations except the regulated entity rather than the regulator proposes the regulatory framework. The regulator's role is to assess whether the company's proposed terms adequately protect against the use of market power and promote the long-term interests of customers.
- The price monitoring regime, as proposed in the PC's Draft Report.
- The Regulatory threshold and control schemes. Under this approach, a number of price, quality and/or profit thresholds are established, as well as a process for periodically assessing firms' compliance with the thresholds. If the thresholds are breached, there is a more extensive investigation that could lead to formal price control.

While the Draft Report does briefly discuss the negotiation-arbitration model in the context of light-handed regulatory options, it does not consider the regulatory undertaking and regulatory threshold and control light-handed alternatives.

The NERA report also discusses how the appropriate light-handed technique depends on a complex mix of market, institutional and procedural characteristics. These characteristics include the degree of actual and potential market competition, the extent of buyers' countervailing monopoly power, the stage of market development, the nature of the regulatory "threat" and the size of the regulated entity. While not attempting to reprise all of this analysis, some of the highlights include:

- Light-handed regulation generally becomes more viable when actual and potential competition increases, since greater competitive forces diminish the service provider's market power.
- Similarly, if customers have countervailing market power, the potential for service providers to exercise market power in ways that reduce efficiency also declines. The degree of customers' countervailing market power depends positively on their size and competitive options (e.g. ability to switch between gas and other fuels) and is negatively related to the number of customers in the marketplace.
- Light-handed regulatory approaches may be more appropriate for relatively new and emerging markets that are growing rapidly. Rapidly developing markets are more likely to see new firm entry and the erosion of incumbents' market shares than more mature markets with more stable supply and demand conditions. The dynamism of new markets can diminish incumbent firms' market power and reduce the need for regulation. Heavy-handed regulatory approaches can also discourage new firms from entering these markets and thereby be potentially damaging.
- Ultimately, most light-handed regulatory approaches include a "threat" of more onerous regulation if the light-handed approach fails to deliver the desired outcome. This threat can constrain infrastructure companies to act in the same, efficient manner that the threat of potential entry creates to discipline incumbent firms in contestable markets. This is more likely to be the case when the regulatory framework itself exhibits clear regulatory pricing principles that have been openly, transparently and consistently implemented. These circumstances allow industry participants to have a better understanding of what constitutes acceptable and unacceptable conduct. The regulatory threat must also be credible, so that firms understand that there will be material consequences if light-handed regulation fails to operate effectively.

Applying these criteria to the range of light-handed regulatory approaches can yield valuable insights about what light-handed regulatory technique may prove most appropriate in a given set of market and institutional circumstances. For example, the negotiate-arbitrate model is likely to be less effective for gas distribution services since gas distribution customers are typically smaller and less numerous than gas transmission customers and therefore have less countervailing market power. The pricing principles approach is likely to prove more effective under a complaints-based mechanism, such as a regime where tariffs are assumed to comply with the required principles unless an interested party raises an objection. This is more likely to be true in relatively mature markets where disputes are infrequent.

A theoretical advantage of the regulatory undertakings option is that it leads to tailored pricing rules that necessarily reflect the concerns of the access provider and may also be

sensitive to the needs of its customers. Undertakings also put an emphasis on flexibility and regulatory innovation, which may be critical given the uncertainties of designing appropriate Gas Access regulation and the resulting potential for regulatory “error” highlighted in the Draft Report. The main disadvantage of regulatory undertakings is the relatively high cost that firms may incur to develop and evaluate this option. Nevertheless, regulatory undertakings could prove attractive for relatively large infrastructure firms, especially if management has a clear and positive vision on how to re-engineer Gas Access regulation. It may also be possible for several gas access firms in a single jurisdiction to combine resources to develop a single undertaking that then applies to all firms.

The ESC believes the Draft Report should have contained a more exhaustive analysis and critique of the available light-handed regulatory options. As with the regulation of natural monopoly services, there is a richer array of regulatory techniques available to regulate more contestable services than is evident in the Draft Report. These methods have not been systematically assessed, so the ESC believes that it is at the very least premature for the PC to recommend price monitoring as the single light-handed regulatory approach.

## 5.2 Concerns with the Price Monitoring Option

In addition to not being sufficiently comprehensive, the ESC believes that the PC’s analysis of the price monitoring option neglects important issues. One concern with the monitoring option is that it may create gaming incentives for companies. The Draft Report specifies two possible regulatory approaches for covered pipelines: the light-handed monitoring option and the relatively heavy-handed application of building block, CPI-X regulation. Companies will naturally prefer the light-handed option and will have strong incentives to try to demonstrate that they qualify for this approach under the Draft Report’s specified criteria. This could potentially create new avenues for firms to exploit their information advantages.

The Draft Report does, in fact, consider that gaming incentives can arise with the monitoring option, but its analysis of this issue is one-sided. The report says “the monitoring option would include a credible threat that the misuse of market power by a service provider would trigger use of the Gas Code’s heavier handed approach involving access arrangements with reference tariffs.<sup>11</sup> *However, this threat might create an incentive for users to game the system in favour of heavier handed regulation*” (emphasis added). While this may be true, the opposite incentives also apply for service providers. They clearly have an incentive to game the system in favour of lighter-handed regulation. If they are successful in doing so, then by the Draft Report’s recommendations, the light-handed regulatory option could not be reviewed for 10 years.

A second problem with the monitoring option is that it is not at present well specified. In particular, the Draft Report does not include a clear process for determining whether or not the price monitoring option is successful or contains a credible regulatory “threat” if price monitoring proves unsuccessful. The only such threat can apparently be exercised after the price monitoring regime has been in place for 10 years. The ESC believes that this may create an unacceptable risk for infrastructure users and that any price monitoring regime will be more effective if it is accompanied by a more immediate and credible threat of greater regulatory oversight if light-handed regulation fails to achieve its objectives.

These comments should not be interpreted as signalling the ESC’s opposition to a price monitoring option. Indeed the ESC has recommended such an approach in its Draft Report

<sup>11</sup> See p311 of the Productivity Commission’s Draft Report on Review of Gas Access Regime

regarding the future regulation of the Port of Melbourne Corporation.<sup>12</sup> The ESC believes that a price monitoring approach may prove to be effective if it is well-specified, accompanied by a clear regulatory threat and applied in the appropriate circumstances. Our main concern is that the PC has not systematically analysed these issues, nor has it considered whether price monitoring is more appropriate than the other light-handed techniques discussed in the NERA report. The ESC believes further work is needed to assess the full range of light-handed regulatory methods and the circumstances when a given approach will prove most effective. The ESC would also emphasise that it believes light-handed regulation under the Gas Access Regime will almost exclusively apply to gas transmission services, since gas distribution is a much less contestable, natural monopoly service.

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<sup>12</sup> See ESC's Draft Report on Regulation of the Victorian Ports (<http://www.esc.vic.gov.au/ports94.html>).



## 6 “DETERRED” AND EFFICIENT INVESTMENT

Finally, the ESC would like to briefly address the issue of investment. The Draft Report talks at length about the “chilling effect” that regulation may have on investment, as well as investment that has been “deterred” under the Gas Access Regime. The source of this deterred investment is said to be regulatory risk. The report says (p. 86) that regulatory risk might arise, for example, from the regulator altering regulatory methods after the investment has taken place, altering regulatory methods when certain events take place, or altering the parameters of regulation after investment has taken place.

The ESC believes the Draft Report’s discussion of investment is misguided on several fronts. Most fundamentally, a distinction must be made between deterred investment and inefficient investment. “More” investment is not synonymous with “more efficient” investment since investment, like competition, is only a means and not an end in itself. Both over-investment and under-investment are sub-optimal, and it is not clear which is less desirable. For example, if over-investment leads to capacity that is under-utilised for substantial periods of time, the resources used to overbuild that asset could have been better utilised elsewhere. It is also not correct, as the Draft Report argues, that heavy-handed regulation necessarily leads to under-investment. Indeed, there is significant economic literature arguing that rate of return regulation – a relatively heavy-handed approach – can lead to “gold plating” and overcapitalisation.

The Draft Report also says that regulatory risk can lead to an excessive reliance on “safe” investments. One cited example is “fit for purpose” pipelines designed to serve only foundation customers. The Draft Report claims that such investments may not be efficient because they do not have excess capacity that could be used to serve future growth in demand.

The ESC believes the PC and any other public agency should exercise caution in second-guessing investor decisions. Certainly, there is nothing necessarily wrong with “safe” investments. Any diversified investment portfolio will contain a share of safe assets, so firms that seek out and operate in “safe” market niches must exist in the private sector. Similarly, there is nothing necessarily suspect about “fit for purpose” pipelines. These relatively safe investments can reflect certain investors’ preferences for returns relative to business risk. Decisions about investing in excess capacity versus expanding capacity through looping or additional compression will also depend on expectations regarding the magnitude and timing of changes in demand. If future demand is not expected to be sufficient or to materialise quickly enough, it can be more costly and less profitable to carry unused pipeline capacity rather than expanding capacity at a later date. This could, in fact, be an example of inefficient over-investment.

In addition, while regulatory actions after an investment is locked in can certainly increase risk, the underlying problem is not regulatory discretion per se. Indeed, regulation can in principle evolve over time so that overall risk is diminished. An example might be regulators choosing to add regulatory mechanisms like earnings-sharing provisions that share down-side earnings with customers and thereby reduce companies' business risk. If regulation were to change over time in such a direction, regulators would clearly be using their discretion to offset other risks that companies face rather than imposing additional risks.<sup>13</sup>

In addition, investor decisions not to invest, or to invest in relatively safe projects, are not necessarily signals that regulation is distorting investment. The marketplace obviously entails considerable commercial risk, and Australia's natural gas infrastructure is still not as mature as in many developed nations. A degree of investor caution in a relatively immature industry could be prudent. For example, over recent years a number of the local councils or shires in Victoria have used the Code's competitive tendering process in an attempt to secure new gas extensions to their areas and there has been a mixture of success and failure. Examples of successful proposals include Mildura and East Gippsland<sup>14</sup> while a number of others including Yarra Ranges and Loddon Murray had minimal or no tender responses. A crucial factor in these unsuccessful projects has been the lack of economic feasibility of these projects, notwithstanding the claims that the regulatory regime may have impeded such projects from proceeding.

In its last review of the access arrangements for the three Victorian gas distributors, the ESC addressed the issue of potential regulatory barriers at some length and accepted the distributors' proposals to alleviate these potential regulatory barriers.

In terms of the industry's experience in complying with the administrative processes required under the Code, there have been some strong and possibly valid points made by the local councils and shires:

- The processes involving the competitive tendering requirements under sections 3.21 to 3.36 under the Code are considered to be complex and onerous in dealing with the smaller extensions to distribution networks; and

<sup>13</sup> On a more theoretical level, the ESC believes the PC's analysis of the economic literature on regulation and investment does not sufficiently distinguish between the impacts of uncertainty and asymmetry on investor behaviour. For example, the Draft Report's conclusion on gas access and investment is based on "a strong body of literature, which the (Productivity) Commission has drawn on in this section, to support the claim that access regulation has a 'chilling effect' on investment." But the two literature citations presented in this section do not support the view that uncertainty itself creates a chilling or deterrent effect on investment. Instead, these disincentives are created by regulators' asymmetric treatment of losses and returns. For example, Train (1991) says it is the "asymmetric treatment of uncertainty – by which losses by the firm are treated differently by the regulator than extraordinary profits – leads to distortions in the firm's actions that operate against optimality" (p. 104). Kolbe, Tye and Myers (1993) say "if competition creates downside risks and tight rate of return regulation eliminates profits above the cost of capital, then pipelines cannot earn fair profits on average. Consequently, investment in the natural gas pipeline industry will eventually be retarded and biased..." (p. 105). Both of these statements clearly highlight that the main factor distorting pipeline investment is asymmetric treatment of profits and losses rather than merely changes in regulatory methods or regulatory risk. Indeed, if investors were entirely certain that losses and gains would be treated asymmetrically by regulators, investment would likely be further retarded compared with a scenario where there was some positive probability that regulators would treat losses and gains symmetrically.

<sup>14</sup> Note: although the tender was awarded to East Coast Gas and an access arrangement subsequently approved by the ESC as a consequence of commercial decisions by the project proponents, the project was not implemented.

- Therefore, in order to comply with the Code requirements, councils and shires have to engage expert consultants to assist, which can be costly and does not help the already uneconomic proposals confronting the new areas.

These are, however, matters justifying refinement to the existing Code rather than arguments suggesting that regulation per se deters investment.

Overall, the record clearly indicates that extensive pipeline investment has taken place under the Gas Access Regime. The recent experience with US gas greenfields developments discussed in Dr. Kaufmann’s submission also indicates that regulation per se does not necessarily have a “chilling effect” on investment. In light of this record, the ESC believes that the burden of proof should be on those who claim that the Gas Access Regime, or regulation per se, is distorting and leading to inefficient investment choices.

## 7 CONCLUSION

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The ESC believes the current review of the Gas Access Regime represents an important milestone in Australian regulation. This review is an opportunity for all stakeholders to undertake a comprehensive review of the regulatory arrangements that apply to an important infrastructure industry and to propose changes to the Gas Code that will lead to more efficient regulation of Australia's natural gas industry and perhaps other infrastructure industries as well.

While the PC's Draft Report has taken some steps in this direction, it has important deficiencies. The Report would have benefited if more attention was paid to the actual industry and regulatory experience that has taken place in Australia and overseas since the Gas Access Regime was implemented. The Report's recommendations would also be improved if the PC had specified a more complete and balanced analytical framework within which to evaluate the salient economic and regulatory issues. Such a framework would have recognised that firms with market power have incentives to engage in behaviour that distorts resource allocation and reduces efficiency in infrastructure services and upstream and downstream competitive markets; regulation is needed to combat this market power and improve overall efficiency. A more balanced analysis would have also recognised the very significant differences between the gas transmission and gas distribution industries and consequent need for different regulatory approaches in these sectors. The Report's recommendation to discontinue research on productivity-based regulation is premature, and more attention should have been devoted to the range of incentive regulation options that can be applied to natural monopoly services. And while the Draft Report does advance the discussion of light-handed regulatory methods in Australia, a fuller and more exhaustive analysis of this important issue is needed.

In addition to these general points, the ESC believes the Gas Access Regime should be amended to:

- highlight the importance of long-run efficiency; towards this end, we recommend a slight re-wording of the overarching objects clause presented in the Draft Report;
- state explicitly that returns should be commensurate with performance, thus reinforcing the need for high-powered incentive regulation approaches that promote the overarching objectives clause;
- allow for productivity-based regulation and other alternative regulatory tools to be proposed and used to set reference prices; and
- contain language and provisions ensuring that discretion in the Gas Access Regime is used appropriately.

The ESC also believes that further research could improve gas access regulation. We believe that further research on productivity-based regulation and other incentive regulation options for natural monopoly services would be fruitful. Additional analysis is also needed on light-handed regulatory methods. As discussed in this submission, the ESC itself has supported and will continue to support research in these areas, but further efforts would also be valuable.