

Commerce Commission

Initial Default Price-Quality Path
for
Gas Pipeline Businesses

Issues Paper

12 April 2010



COMMERCE COMMISSION

Regulation Branch

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SECTION 1: INTRODUCTION

Overview

Background

- 1.1 As suppliers of gas pipeline services, gas pipeline businesses (**GPBs**) are subject to Part 4 of the Commerce Act 1986 (**the Act**).¹ Subpart 10 of Part 4 provides that GPBs are subject to default/customised price-quality regulation.² Under s 55F(1), the Commerce Commission (**the Commission**) is required to set an initial default price-quality path for GPBs—hereafter referred to as the “**Initial DPP**”. In its *Updated Process Paper*, the Commission stated that it intended to make a s 52P determination (**Determination**) giving effect to the Initial DPP by 1 July 2012.³
- 1.2 GPBs consist of both gas transmission businesses (**GTBs**) and gas distribution businesses (**GDBs**). Table 1 sets out a list of GPBs that the Commission considers to be subject to Part 4.

Table 1: Gas Pipeline Businesses subject to Part 4

GTBs	GDBs
Maui Development Limited (MDL)	Powerco Limited (Powerco)
Vector Limited (Vector)	Vector Limited (Vector)
	Wanganui Gas Limited (WGL)

Purpose

- 1.3 This “**Issues Paper**” provides the Commission’s initial views on a selection of issues that it considers are important to how the Initial DPP is set.⁴ In forming its initial views, the Commission has given consideration to relevant previous work. This includes research, consultation papers, submissions and decisions, where applicable, on:
- the Gas Control Inquiry;⁵
 - the Authorisations for Powerco’s and Vector’s⁶ controlled gas pipeline services (**the Authorisations**);⁷

¹ By virtue of the definition of gas pipeline services under s 55A (and set out in Schedule 6) of the Act, some gas pipeline services and GPBs are exempt from these regulatory provisions. Unless stated otherwise, these exempt services and GPBs are not addressed in this Issues Paper.

² Unless stated otherwise, all statutory references in this paper refer to the Commerce Act 1986.

³ Commerce Commission, *Setting of the Default Price-Quality Path for Suppliers of Gas Pipeline Services Updated Process Paper*, 9 October 2009, paragraph 10.

⁴ For clarity, the Commission has previously referred to this *Issues Paper* as an ‘*Initial Consultation Paper*’.

⁵ Information on the Gas Control Inquiry can be found at the Commission’s website <http://www.comcom.govt.nz>, including the *Gas Control Inquiry - Final Report*, published 29 November 2004.

⁶ Note that Vector’s controlled gas pipeline services relate to its Auckland distribution network.

⁷ Information on the Authorisations can be found at the Commission’s website <http://www.comcom.govt.nz>, including the *Authorisation for the Control of Supply of Natural Gas*

- the electricity distribution default price-quality path (**Electricity DPP**);⁸ and
- the input methodology work-stream.⁹

1.4 The Commission seeks feedback from interested parties on the issues discussed and its initial views. Parties may also wish to comment on other matters that they consider relevant to the Initial DPP. Submissions on this *Issues Paper* will assist in informing the Commission's decisions on the Initial DPP.

Scope of Issues

- 1.5 The Commission has deliberately focused the scope of this *Issues Paper* on a selection of issues, which are likely to significantly influence the shape and nature of the Initial DPP. Focusing on these issues and considering the related views of interested parties will inform the Commission's approach for setting the Initial DPP and help to identify work priorities going forward.
- 1.6 Consideration of some specific matters has been deferred and will be addressed as part of future consultation on the Initial DPP (as discussed in paragraph 1.8 below).

Issues Considered in this Paper

- 1.7 Each of the particular issues covered in this paper is set out in a separate section, which includes an overview of the issue, general discussion, potential options for addressing the issue, and the Commission's initial views on its preferred course of action. These initial views are intended to be a starting point for the Initial DPP consultation process, and as such are subject to change and do not represent decisions. Set out below is a brief description of the issues considered in this paper:
- *Nature of Gas Pipeline Services*: whether distribution and transmission services can or should be considered as different types of services for the purposes of Part 4 and whether these gas pipeline services should be considered together or separately under the Initial DPP;
 - *Structure of the Initial DPP*: the incorporation of price and quality elements within the Initial DPP, i.e., the merits of separate price-path and quality standards versus an integrated price-quality path;
 - *Form of Price Control*: the appropriate form of price control for gas distribution and transmission services;
 - *Pricing Arrangements prior to the Initial DPP*: the potential application of claw-back where a GPB has increased its prices by more than CPI from 1 January 2008;

Distribution Services by Vector Ltd and Powerco Ltd - Decisions Paper, published 30 October 2008.

⁸ Information on the Electricity DPP can be found at the Commission's website <http://www.comcom.govt.nz>, including the *Initial Reset of the Default Price-Quality Path for Electricity Distribution Businesses - Decisions Paper*, published 30 November 2009.

⁹ Information on the Commission's input methodologies workstream can be found at the Commission's website <http://www.comcom.govt.nz>.

- *Productivity Analysis*: the form of productivity analysis to be used to inform setting the rate(s) of change (X-factor)¹⁰ for gas distribution and transmission services, including the relevance of international productivity data;
- *Quality Standards*: consideration of the approach to defining, setting and assessing quality standards;
- *Data Requirements*: the availability and quality of data to be used in setting the Initial DPP, including the extent to which information is available, assessment of this information against what may be required to set a robust regulatory mechanism, and options for obtaining further information from GPBs; and
- *Annual Assessment and Regulatory Periods*: the impact of GPB pricing years, including the respective alignment with the commencement of the Initial DPP, the potential impact on the regulatory period, and the timing of annual compliance assessments.

Issues Not Considered in this Paper

1.8 There are a number of matters related to the Initial DPP that the Commission considers can be deferred until future consultation. Those matters include:

- *Price Path Assessment Formulae*: implementation of the price path assessment formulae is dependent on a number of matters, including the particular form of control that will apply to GPBs, how price is specified, what pass-through costs are allowable under input methodologies, and the approach to the “headroom”¹¹ issue (which was previously discussed in regard to the Electricity DPP);
- *Starting Prices*: the determination of starting prices for GPBs—the Commission will be considering the process for starting price adjustments for GPBs and electricity distribution businesses (**EDBs**) in unison. Preliminary discussions will be included in the *General Issues Discussion Paper* to be published in July 2010; and
- *Compliance*: decisions on compliance processes and information requirements are relevant to other decisions that impact on the shape and nature of the Initial DPP.

¹⁰ The Commission has adopted the term X-factor to represent the “X” component of the CPI-X indexation component of the price path. While the overall rate of permitted change in weighted average prices under the DPP will, in practice, be CPI-X%, the Commission notes that s 53P(5) provides an example that refers to the “rate of change” as being solely the “X” in a “CPI-X” path.

¹¹ The headroom issue relates to whether the under-recovery of allowable notional revenue in one period should have an impact on the allowable notional revenue in subsequent periods. Although raised as part of the EDB DPP consultation process, this matter has implications for the Initial DPP for GPBs and will be addressed in the *General Issues Discussion Paper*.

Next Steps

- 1.9 The Commission's proposed process for setting the Initial DPP is set out in Table 2. This process includes the publication of the *General Issues Discussion Paper* that will include discussion of starting price adjustments and other issues relevant to default price-quality regulation for both GPBs and EDBs.
- 1.10 The Commission may also release consultation material in succinct 'update' papers, if the need arises, in an effort to resolve issues in a timely manner and ease the consultation burden on stakeholders. These potential papers have not been included in Table 2.

Table 2: Proposed process for setting the Initial DPP

Key Step	Indicative Date
– Submissions due on <i>Form of Price Control</i> section of this paper	30 April 2010
– Submissions due on remainder of this paper	14 May 2010
– Cross-submissions due on all submissions	31 May 2010
General Issues Discussion Paper (including discussion on starting price adjustments)	July 2010 ¹³
– GPB related submissions due ¹²	September 2010
Emerging Views Paper	March 2011
– Submissions due	April 2011
Draft Decisions Paper and Draft Determination	June 2011
– Submissions due	August 2011
– Cross-submissions due	August 2011
Updated Decisions Paper and Updated Draft Determination	November 2011
– Submissions due	December 2011
Final Determination Summary of Final Determination in <i>Gazette</i> Final Decisions Paper	29 February 2012 ¹⁴

¹² The Commission notes that submissions relevant to the continued development of the EDB Reset DPP will have a separate earlier due date.

¹³ The timing of this paper is based on the indicative date published in Commerce Commission, *Further Work for the Reset Default Price-quality Path for Electricity Distribution Businesses, Process Paper*, February 2010.

¹⁴ The Commission recognises that in accordance with s 53M(7), the Commission must provide four months between publishing a summary of the determination in the *Gazette* and the determination's commencement. For a 1 July 2012 commencement, this sets an effective deadline of 29 February 2012.

Submissions

- 1.11 Submissions are invited on this *Issues Paper*. Submissions on the *Form of Price Control* section of this paper should be received by the Commission no later than 11 am Friday, 30 April 2010,¹⁵ while submissions on the remainder of the paper should be received by the Commission no later than 11 am Friday, 14 May 2010. The Commission also invites cross-submissions on matters raised in submissions to the *Issues Paper*. The purpose of cross-submissions is to ensure that the Commission is aware of points of agreement or disagreement on matters raised by other submitters. The Commission therefore asks that parties providing cross-submissions focus their cross-submissions in this way. Cross submissions should be received by the Commission no later than 11 am Monday, 31 May 2010. All submissions and cross-submissions should be supported by documentation and evidence, where appropriate.
- 1.12 To foster an informed and transparent process, the Commission intends to publish all submissions (on the due dates) and subsequent cross-submissions on its website. Accordingly, the Commission requests an electronic copy of each submission and requests that hard copies of submissions not be provided (unless an electronic copy is not available). The Commission also requires that these electronic copies be provided in an accessible form (i.e., they are ‘unlocked’ and text can be easily transferred). If the submission contains confidential information or if the submitter wishes that the published version be ‘locked’, an additional document labelled “public version” should be provided. Submissions should be sent to:

regulation.branch@comcom.govt.nz;

or

Matthew Lewer
Regulation Branch
Commerce Commission
P.O. Box 2351
Wellington

Confidentiality

- 1.13 The Commission discourages requests for non-disclosure of submissions, in whole or in part, as it is desirable to test all information in a fully public way. The Commission is unlikely to agree to any requests that submissions in their entirety remain confidential. However, the Commission recognises that there will be cases where interested parties making submissions may wish to provide confidential information to the Commission.
- 1.14 If it is necessary to include such material in a submission the information should be clearly marked and preferably included in an appendix to the submission. Interested parties should provide the Commission with both confidential and public versions of their submissions. The responsibility for ensuring that

¹⁵ The *Form of Control* section of this paper is subject to a condensed submission period due to the interrelationship of these issues with the input methodologies workstream.

confidential information is not included in a public version of a submission rests entirely with the party making the submission.

- 1.15 Parties can request that the Commission makes orders under s 100 of the Act in respect of information that should not be made public. Any request for a s 100 order must be made when the relevant information is supplied to the Commission and must identify the reasons why the relevant information should not be made public. The Commission will provide further information on s 100 orders if requested by parties, including the principles that are applied when considering requests for such orders. A key benefit of such orders is to enable confidential information to be shared with specified parties on a restricted basis for the purpose of making submissions. Any s 100 order will apply for a limited time only as specified in the order. Once an order expires, the Commission will follow its usual process in response to any request for information under the Official Information Act 1982.

SECTION 2: NATURE OF GAS PIPELINE SERVICES

Overview

- 2.1 This section explores the nature of gas pipeline services, particularly whether distribution and transmission can or should be considered as different ‘types’ of services under Part 4 and whether these gas pipeline services should be considered together or separately under the Initial DPP. This matter has direct impact on whether the Initial DPP applies to all regulated gas pipeline services, or whether separate DPPs are warranted for distribution and transmission services.

Discussion

Nature of Services

- 2.2 Different goods and services may be treated differently under default/customised price-quality regulation. In addition, s 53P(5) requires the Commission to set only one rate of change per type of regulated goods or services. The Commission considers that it is not precluded from defining gas distribution services and gas transmission services as different types of regulated services under the Act. If the Commission was to determine that gas transmission services should be defined separately from gas distribution services, then it would be appropriate to have separate DPPs with the potential for different starting prices processes, rates of change and quality standards.

Characteristics of Distribution and Transmission

- 2.3 The Commission considers that a number of characteristics of distribution and transmission services are significantly different and that these differences may impact on how the services should be regulated. Some of these differences are set out in Table 3 below.

Table 3: Comparison of distribution and transmission characteristics¹⁶

	Transmission	Distribution
Physical	<ul style="list-style-type: none"> ▪ High transportation capacity, large pipeline diameter ▪ Total length of pipeline system relatively low, mostly single pipeline covering large distances ▪ Operate at high pressures (e.g. >2000 kPa) ▪ Steel pipe construction 	<ul style="list-style-type: none"> ▪ Low transportation capacity, small pipeline diameter ▪ Total length of pipeline system high, with numerous pipe sections covering relatively short distances ▪ Operate at relatively low pressures ▪ Generally plastic pipe construction
Market	<ul style="list-style-type: none"> ▪ Small number of direct connections with high volumes ▪ Reliance on downstream pipelines to reach residential, industrial, and commercial users 	<ul style="list-style-type: none"> ▪ Large number of connections with low volumes
Financial / Risks	<ul style="list-style-type: none"> ▪ Lumpy, infrequent investments in pipeline capacity ▪ Long-term demand uncertainties, risk of asset stranding 	<ul style="list-style-type: none"> ▪ More predictable, comparatively smooth capital expenditure profiles ▪ Risk of asset stranding relatively low

2.4 The Commission is interested in the views of parties as to whether there are any further characteristics where differences exist between distribution and transmission services that warrant different regulatory approaches. For example, the Commission is interested in whether the level of service quality is significantly different between distribution and transmission services, including whether the probabilities and impacts of interruptions are significantly different. The Commission is also interested in views as to the similarities between distribution and transmission services, and whether these similarities ought to prevent these services from being treated separately.

Scope of Input Methodologies

2.5 The Commission is currently considering the input methodologies relevant to GPBs. In doing so the Commission will decide whether transmission and distribution services should be covered by a single input methodology determination, or whether separate input methodology determinations should apply. The Commission’s preliminary view is that it “will determine separate input methodology determinations for gas distribution services and gas transmission services”.¹⁷ The Commission considers it appropriate and will seek

¹⁶ This table reflects the differences between distribution and transmission as perceived by MDL and Vector, as presented to the Commission at the *Electricity Distribution and Gas Pipelines Workshop*, 24 February 2010.

¹⁷ Commerce Commission, *Input Methodologies (Gas Pipeline Services) Emerging Views Paper*, 23 December 2009, paragraph 1.

to, maintain consistent treatment of transmission and distribution services under the input methodologies workstream and for the Initial DPP.

Overseas Jurisdictions

- 2.6 The Commission has looked at overseas regulatory regimes governing the supply of natural gas services. In general, the Commission found it was common practice to regulate transmission and distribution separately, and no examples of a combined regulatory regime were identified. A table setting out overseas regulatory regimes for gas transmission and distribution services is included as Appendix A.

Form of Control

- 2.7 As discussed below in the *Form of Price Control* section of this paper, the Commission considers it may be appropriate for transmission and distribution services to be subject to different forms of control. The application of different forms of control is consistent with having separate DPPs for distribution and transmission.

Differentiation of Distribution and Transmission Services

- 2.8 If the Commission was to set a separate DPP for distribution and transmission services, there would need to be a demarcation of the physical boundary between transmission and distribution systems. This is particularly pertinent for Vector, given its ownership of both distribution and transmission systems.
- 2.9 Gas transmission is defined in s 2 of the Gas Act 1992 as “the supply of line function services by means of high pressure gas pipelines operated at a gauge pressure exceeding 2,000 kPa”. The Commission understands, however, that there are gas distribution pipelines that operate or potentially could operate at pressures greater than 2,000 kPa, suggesting that this definition may not be appropriate.
- 2.10 Alternatively, transmission pipelines may usefully be defined as being bounded by welded points. This level of demarcation, however, does not define which assets within gate stations are owned and operated by which party. There may be a need to define the boundary within the gate station (e.g., the boundary may be the flange providing electrical isolation between the gate station and the downstream distribution system) and there may be a further need to define the ownership of other assets, such as control equipment.
- 2.11 For distribution systems, the pipelines can be defined with similar boundaries, with the downstream boundaries defined by Inter-Connection Points (ICPs). The distributions systems should be able to be defined by listing the receipt points of the systems, which will in general be gate stations, but could also be ICPs in the case of embedded networks. There is a need to define the local ownership of assets, such as defining the downstream limit of a distribution network as being at the outlet of the customer isolation valve.
- 2.12 Another option may be to define the “gas transmission system” by reference to the definition in the *Gas Governance (Critical Contingency Management) Regulations 2008*. These regulations define “transmission system” with respect to

a map, which is required to be produced, maintained and published by the Gas Industry Company Limited (**GIC**) under regulation 10 of those regulations.¹⁸ “Gas transmission services” could therefore be defined with reference to the transmission system identified in the GIC map.

- 2.13 The Commission would appreciate feedback on whether demarcation issues are of significant concern within the industry and any information that will provide assurance to the Commission that asset values, operating costs and other measures relevant to regulation are being correctly allocated.

Initial View

- 2.14 The Commission’s initial view is that gas distribution and transmission are sufficiently different to warrant being considered as different types of services for the purposes of the Initial DPP. As such, separate Determinations for gas distribution services and gas transmission services are appropriate. Separate Determinations will also enable distribution and transmission specific matters to be adequately addressed, including the potential for separate starting price adjustment processes, rates of change and quality standards. This approach is consistent with the input methodologies work-stream, and how gas pipeline services are regulated overseas.
- 2.15 In terms of making a distinction between distribution and transmission services, the Commission’s initial view is to define “gas transmission services” with reference to the definition of “transmission system” as set out in the *Gas Governance (Critical Contingency Management) Regulations 2008*. The Commission considers that adopting this approach provides an appropriate distinction which closely approximates the relevant differences for regulatory purposes. As the differentiation is of primary relevance for Vector’s assets and operations, any services provided by MDL could be directly specified under the “gas transmission services” definition. It is likely that “gas distribution services” would then be defined by exclusion using this definition of “gas transmission services” and the definition of “gas pipeline services” in s 55A.

¹⁸ The map may be found at the following link: <http://www.gasindustry.co.nz/work-programme/market-administration/transmission-system-map>. The map document also contains links to associated pipeline schematics on the Open Access Transmission Information System (OATIS) website <https://www.oatis.co.nz>.

SECTION 3: STRUCTURE OF THE INITIAL DPP

Overview

- 3.1 Each default price-quality path (**DPP**) is required to specify the maximum prices that may be charged or maximum revenues that may be recovered and the quality standards that must be met by suppliers.¹⁹ The Act does not, however, prescribe how these price and quality dimensions are to be structurally incorporated under a DPP. This section discusses two options for addressing this matter under the Initial DPP, which are either to:
- (a) specify an integrated price-quality path that explicitly links price and quality; or
 - (b) set a separate price path and quality standards.

Discussion

Integrated price-quality path

- 3.2 An integrated path approach is possible under the Act, as provisions allow the Commission to set financial incentives for a supplier to maintain or improve its quality of supply. Options for such incentives may include penalties or rewards by way of a change to the supplier's allowable maximum prices and consumer compensation schemes.²⁰
- 3.3 An "S-factor" is a form of incentive mechanism used in some overseas jurisdictions that allows a supplier's pricing allowance to adjust to reflect changes in their quality performance.²¹ The Commission has previously sought views from interested parties on the relevance of an S-factor approach for GPBs as part of its *Regulatory Provisions Paper*.²²
- 3.4 GPBs were generally supportive of further exploring this type of approach but were cautious of the practical implications of putting in place a mechanism for the Initial DPP. For example, Vector submitted that "data quality issues are likely to be significant in deriving quality indicators for the gas pipeline businesses. Although Vector considers that an S-factor approach to quality is worth exploring, it would only be appropriate once a robust data series on quality has been collected, which may be at the next regulatory reset."²³ Powerco also commented that "Any mechanism should be sustainable in the long term, use a statistically

¹⁹ s 53M(1)(a) & (b). For the purpose of this section the term 'price' should be read to include both price and revenue.

²⁰ ss 53M(2) & 53P(8)(b).

²¹ Under an incentive-based CPI-X price control, an "S-factor" involves an adjustment to the X-factor, such that a supplier is provided explicit incentives to improve (and in some cases reduce) quality. That is, the S-factor captures a relationship between an improvement in service quality and an increase in price that the supplier may be allowed as an incentive (or as compensation for the costs incurred) to improve service quality. The S-factor is generally represented by a separate variable in the CPI-X formula—i.e., CPI-X+S.

²² Commerce Commission, *Regulatory Provisions of the Commerce Act 1986, Discussion Paper*, 19 December 2008, p.137.

²³ Vector Limited, *Regulatory Provisions of the Commerce Act 1986, Response to Discussion Paper*, 16 February 2009, p.38.

robust method and be available to all gas pipeline businesses, not just those deemed to have poor reliability.”²⁴

- 3.5 The Commission also considered whether an integrated path was appropriate for the Electricity DPP. An important consideration for successfully implementing an S-factor is the ability to determine the relationship between the marginal cost and benefit of quality and the level of any price/revenue incentive term. The Commission noted that a lack of information on the value that consumers place on reliability and their willingness to accept or pay for price/quality trade-offs would make the specification of incentive levels potentially arbitrary and, if set at the wrong levels, may create unintended consequences.²⁵ For gas pipeline services, however, any price/quality trade-off that reduces service quality could also have adverse safety implications. Furthermore, the Commission considers that data quality and availability would be issues for determining an appropriate trade-off and setting an integrated path for the Initial DPP. As such, the Commission’s initial view is to not implement an integrated price-quality path. Such a mechanism is potentially unpredictable given the aforementioned data issues and the use of such an untested mechanism could result in uncertainty for GPBs. In the longer term, it may not be appropriate to include incentives that allow deterioration in service quality due to potential safety concerns.

Separate price/revenue path and quality standards

- 3.6 Under this option, the Commission would specify and assess a separate price path and quality standards. A breach of either of the price path or quality standards would be considered a breach of the Initial DPP.
- 3.7 This approach was adopted for the Electricity DPP. The Commission considered that a separate price path and quality standards is conceptually appropriate for that default price-quality path given that it must specify elements for both price and quality. The Commission was of the view that accounting for both price and quality in this manner is more likely to promote the purpose of Part 4 of the Act, provide better incentives for suppliers to improve efficiency and provide services at quality that reflects consumer demands.²⁶

Initial View

- 3.8 The Commission considers that the current data quality and availability issues are likely to prevent the development of a robust incentive mechanism, which would be necessary to develop an integrated price-quality path for the Initial DPP. The Commission’s initial view is that it is appropriate for the Initial DPP to consist of a separately specified and assessed price path and quality standards. This view is consistent with the reasoning put forward in submissions on the *Regulatory Provisions Paper* and the approach taken under the Electricity DPP.

²⁴ Powerco Limited, *Powerco Submission on Regulatory Provisions of the Commerce Act 1986*, 16 February 2009, p.37.

²⁵ Commerce Commission, *Reset of Default Price-Quality Path for Electricity Distribution Businesses, Discussion Paper*, 19 June 2009, p.46.

²⁶ Commerce Commission, *Initial Reset of the Default Price-Quality Path for Electricity Distribution Businesses, Decisions Paper*, 30 November 2009, p.19.

SECTION 4: FORM OF PRICE CONTROL

Overview

- 4.1 Price regulation can be implemented in the form of caps to suppliers' price or revenue. The broad forms of price controls are rate of return and incentive regulation. The choice of the form of price control and how it is implemented can have a significant impact on the incentives provided to regulated suppliers. This section explores the form or forms of price control that may be appropriate for the Initial DPP.²⁷

Discussion

DPP Framework

- 4.2 The provisions in the Act relating to setting the DPP (particularly s 53P) have a major influence on the appropriateness of price control options. The Commission must specify the starting prices (or revenues)²⁸ applying to each supplier and a rate of change by which these prices are allowed to change. The rate of change essentially sets the cap that applies for the regulatory period (the *Productivity Analysis* section discusses the proposed use of a CPI-X cap and the setting of X).
- 4.3 Starting prices are to be either the prices that applied at the end of the preceding regulatory period;²⁹ or prices, determined by the Commission, that are based on the current and projected profitability of each supplier.³⁰ The rate of change, informed by productivity analysis,³¹ sets an upper limit to price that applies to all suppliers in the industry.³² As such, the price path under a DPP may not necessarily take account of year-on-year changes in operating expenditure or capital expenditure which deviates from projections at the time the appropriate starting price was determined. This is due to the DPP not involving a detailed assessment of suppliers' past and future expenditure requirements as used under a "full" building blocks approach.³³ A supplier, however, has the option to apply for a CPP which has the scope to more accurately reflect operating expenditure and capital expenditure requirements.

²⁷ While the decision on the form of price control will have initial impact under the DPP, it may also influence the basis of the price path under a CPP.

²⁸ For the remainder of this section, the term "price" should be read to include both price and revenue.

²⁹ For the purposes of setting the Initial DPP, section 55F(1) deems 30 June 2010 to be the end of the preceding regulatory period.

³⁰ s 53P(3).

³¹ s 53P(6).

³² The Commission may set alternative rates under certain circumstances, as provided for by s 53P(8).

³³ Commerce Commission, *Input Methodologies Discussion Paper*, 19 June 2009, p.80.

Pricing Methodologies under the DPP

- 4.4 As noted in the *Emerging Views Paper*,³⁴ the Commission's preliminary view is that "suppliers will not be required to apply a pricing methodology input methodology under the DPP, as the Commission considers that the net benefits of doing so might not be sufficient".³⁵ The Commission considers that a DPP should be generic in nature and should not specify prices for suppliers at a disaggregated tariff level (e.g., for individual services, classes of services or different customer groups). Such an approach would allow GPBs the flexibility to set and alter the structure of prices to apply for an assessment period (e.g., to reflect changing consumer demands) subject to the overall cap. Furthermore, the Commission considers that as a DPP is set for an industry sector, it is inappropriate to take into account individual supplier pricing methodologies when developing mechanisms under a DPP.

Form of Price Control

- 4.5 There are two broad forms of price control regulation: rate of return regulation and incentive regulation. For suppliers, rate of return regulation is a low risk form of control as suppliers' prices are allowed to closely reflect their actual expenditure levels. Given this close linkage between costs and prices, suppliers' incentives for improving efficiency may be low.
- 4.6 Incentive regulation provides incentives for suppliers to improve their efficiencies over a regulatory period. Suppliers can earn higher-than-expected profits in the short term, as a result of performance superior to that implied by their cap. Suppliers are permitted to retain a proportion of efficiency gains for a certain period of time in order to provide them with incentives to make such gains in the first place.
- 4.7 Section 52A(1)(b) sets the regulatory objective to provide incentives to suppliers to improve their efficiency and to provide services at a quality that reflects consumer demands. The Commission considers that incentive regulation is more consistent with this objective than rate of return regulation. At this stage, the Commission has considered two forms of incentive regulation for the Initial DPP, namely a total revenue-cap and a weighted average price-cap. The Commission, however, is interested in the views of parties as to whether any other forms of regulation are considered appropriate (particularly for transmission services) for the Initial DPP. A high-level overview of a total revenue-cap and a weighted average price-cap is outlined below.

³⁴ Commerce Commission, *Input Methodologies (Gas Pipeline Services): Emerging Views Paper*, 23 December 2009.

³⁵ Commerce Commission, *Input Methodologies (Gas Pipeline Services): Emerging Views Paper*, 23 December 2009, p.54.

Total Revenue-Cap

- 4.8 Under a total revenue-cap, the total revenue a regulated supplier is allowed to earn over the regulatory period is limited. The key features of a total revenue-cap are:
- a supplier's allowed revenue is capped, however the supplier can increase its prices if its volumes reduce within the regulatory period and must decrease prices when volumes rise to stay within the overall revenue-cap; and
 - a supplier is much less subject to demand risk (i.e., the risk associated with actual demand being different to forecast) than under a weighted average price-cap, as the supplier may vary prices according to volume fluctuations, subject to the overall revenue-cap.
- 4.9 Total revenue-caps are generally considered appropriate where fixed costs comprise a large share of the supplier's total costs and demand is outside the control of the supplier.³⁶
- 4.10 Key features of a price path under a total revenue-cap approach include:
- a starting revenue is specified for each supplier, which applies for the first year of the regulatory period (e.g., in the form of an allowable notional revenue); and
 - the starting revenue is allowed to adjust by CPI-X on an annual basis over the regulatory period.

Weighted Average Price-Cap

- 4.11 A weighted average price-cap sets a limit for the prices that suppliers are allowed to charge during the regulatory period. In practice, in a multi-output and multi-tariff context, the price is the weighted average of the prices in one or several defined baskets of services. The key features of a weighted average price-cap are:
- a supplier's allowed revenue is dependent on total volume – a supplier can adjust its prices irrespective of volume, subject to the overall price-cap; and
 - the supplier bears the demand risk, i.e., reducing volumes may lead to revenue shortfalls, and increasing volumes may result in revenues above those required to cover fixed costs.
- 4.12 Weighted average price-caps are generally considered in instances where multiple outputs are sold, quantities sold can be influenced by the supplier and variable costs (i.e., costs that vary with volume) comprise a significant share of the supplier's total costs, and thus provide scope for suppliers to make efficiency gains.

³⁶ For example, see Regulatory Policy Institute, *Characteristics of alternative price control framework: an overview*, prepared for Ofgem, February 2009.

- 4.13 Key features of a price path under a weighted average price-cap approach include:
- a starting price is specified for each supplier, which applies for the first year of the regulatory period (e.g., in the form of an allowable notional revenue);
 - the starting price is allowed to adjust by CPI-X on an annual basis over the regulatory period; and
 - the quantities used in the price path assessment formulae may be specified in different ways (including fixed, annually updating or forecasted).

Compliance under a Total Revenue-Cap and a Weighted Average Price-Cap

- 4.14 Under both a total revenue-cap and a weighted average price-cap, annual compliance would be monitored by comparing the supplier's performance against the cap. More specifically, the Commission considers that it is appropriate to set the cap as an allowable notional revenue and monitor performance using a notional revenue figure, where notional revenue is determined using prices for an assessment period multiplied by the relevant quantities (e.g., base or updating reference quantities, as determined by the price path assessment formulae). Under a weighted average price-cap, a supplier would be in breach of the cap if notional revenue exceeds the allowable notional revenue.

Form of Control for Distribution Services and Transmission Services

- 4.15 As discussed in the *Nature of Gas Pipeline Services* section, the Commission's initial view is that it is appropriate to consider distribution and transmission services as different types of services for the purposes of the Initial DPP and specify separate DPPs. As such, a decision on the most appropriate form of price control is required for each service. The Commission considers that there are particular differences between distribution services and transmission services that may impact on which form of control is appropriate for the respective services, for example:
- cost structure (i.e., the share of fixed and variable costs in total costs);
 - ability to forecast demand (i.e., the likelihood of demand fluctuations and the impact of these fluctuations on a GPB's revenue);
 - structure of demand (i.e., customer base and contractual arrangements); and
 - future capital expenditure profiles.

Distribution

- 4.16 The Commission considers that a weighted average price-cap has a number of features which make it appropriate for the regulation of distribution services, particularly with regard to the promotion of efficiency. For example, a weighted average price-cap:
- limits aggregate price increases, but does not constrain prices for individual services, classes of services, or for different customer groups;
 - puts the demand risk onto GDBs – the Commission considers this may be appropriate for GDBs, as it understands that distribution services have a relatively high degree of variable costs which are recovered in proportion to volume. Furthermore, the Commission considers that GDBs should have a robust understanding of drivers of future demand and as such be able to forecast demand with a reasonable degree of accuracy. This means that GDBs are better placed than customers to manage demand risk;
 - provides GDBs with flexibility to reflect changing demands (or other factors) as part of their pricing structures and incentivises GDBs to price more cost reflectively – this is consistent with the Commission’s position that suppliers will not be required to apply a pricing methodology under a DPP; and
 - provides incentives to invest in infrastructure used to serve new customers, as it provides GDBs with additional revenue for new customers and new volume immediately.
- 4.17 The use of a weighted average price-cap for gas distribution services is consistent with previous regulatory decisions in New Zealand and overseas. A weighted average price-cap also applies to electricity distribution services under the Electricity DPP.
- 4.18 The Commission seeks the views of interested parties on the matters relevant to determining the appropriate form of control for GDBs, as discussed above.

Transmission

- 4.19 With respect to transmission services, the Commission considers that the nature of these services (e.g., structure of demand, cost structure, capital expenditure profiles) should be considered in establishing an appropriate form of control. The Commission is also mindful of differences between the current contractual arrangements of MDL and Vector. The Commission considers it is important to have regard to the characteristics of both networks when assessing the impact of the different forms of control and in making a decision on what form may be appropriate for both Vector and MDL.
- 4.20 The Commission considers that, to the extent practicable, a DPP should provide incentives for suppliers to make efficiency gains. However, where suppliers have a high proportion of fixed costs, the ability to make efficiency gains may be limited. The Commission considers there are circumstances in which suppliers should bear risks in order to promote incentives for efficiencies, however this may not be appropriate in all circumstances. For example, it may not be appropriate for a supplier with a high proportion of fixed costs to fully bear the demand risk

on the recovery of those fixed costs, as the scope for efficiency gains may be limited.

- 4.21 At this time, the Commission considers that a total revenue-cap may be appropriate for transmission services. This would mitigate the demand risk resulting from demand volatility and reduced longer term forecast accuracy which may impact on GTBs' ability to recover their fixed costs. A total revenue-cap may also be appropriate given the comparatively lumpy and infrequent nature of transmission investment. Revenue would be capped for a GTB for the regulatory period. However if its future capital expenditure requirements would not be accommodated under the cap, then it may apply for a CPP.
- 4.22 The Commission notes that the current views of GTBs on the form of control for transmission services differ. For example, Vector commented at the *Input Methodologies (Electricity Distribution and Gas Pipelines) Workshop* (24/25 February 2010) that a weighted average price-cap would be appropriate for transmission services.³⁷ However, in its submission to the *Emerging Views Paper*, MDL stated that it is more comfortable with a form of revenue-cap than a price-cap as a means to recover appropriate costs.³⁸ The Commission seeks the views of MDL and Vector on their respective positions, bearing in mind that the decision on the form of control for transmission services will apply to both parties.
- 4.23 The Commission is interested in the views of parties on the matters relevant to determining the appropriate form of control for GTBs, as discussed above.

Implementation Considerations

- 4.24 The Commission recognises that the practical implementation of a price cap (whether it may be a total revenue-cap or a weighted average price-cap) has a bearing on the incentives that the cap provides. As noted in paragraph 1.8, specification of the price path assessment formulae and its components have been deferred for future consultation. However, the Commission seeks the views of interested parties on implementation issues that need further consideration when implementing a default price path for distribution and transmission services. These issues include:
- how price / revenue and quantity should be defined in the price path assessment formulae (e.g., what reference quantities should be used – fixed base, updating on a lagged basis);
 - how the price path assessment formulae should take account of inflation;
 - how pass-through costs should be allowed for in the price path assessment formulae, and how predictable are these costs when GPBs set their prices;
 - whether the potential inclusion of an *ex-post* volume adjustment mechanism is appropriate to mitigate forecast errors by GTBs (including what impact the

³⁷ Vector Limited, *Differences between Gas Transmission and Distribution*, Presentation at Input Methodologies (Electricity Distribution and Gas Pipelines) Workshop, 24 February 2010.

³⁸ Maui Development Limited, *Emerging Views Pre-workshop Submission*, 1 February 2010, p.3.

inclusion of such a mechanism would have for MDL and Vector),³⁹ and how it might be implemented;

- how a GTB's past, current and future cost structure could be accounted for under a DPP, and how a GTB's variable cost recovery should be treated under a potential volume adjustment mechanism;
- what is the interaction of a volume adjustment mechanism and suppliers' pricing structures;⁴⁰
- under a volume adjustment mechanism, whether a supplier's over-recovery of revenue could be reimbursed to consumers in a subsequent year and whether a supplier's allowed revenue should take account of any under-recovery;
- whether there is a need to reconcile forecast and actual volumes for pricing and compliance purposes; and
- how compliance with the price cap should be assessed.

4.25 The Commission is interested in the views of parties on the implementation issues raised above and any others that parties consider relevant when implementing a price cap for distribution and transmission services.

Initial View

4.26 The Commission's initial view is that a weighted average price-cap is appropriate for distribution services, and that this form of control has a number of features that the Commission considers are appropriate for the regulation of distribution services.

4.27 The Commission considers that the nature of transmission services (e.g., structure of demand, cost structure, capital expenditure profiles) should be considered in establishing an appropriate form of control. The Commission's initial view is that a total revenue-cap may be the most appropriate form of control for transmission services. A total revenue-cap better manages demand risk for GTBs and allows fixed costs to be recovered.

4.28 The Commission also recognises that the practical implementation of a price cap has a bearing on the incentives that the cap provides and seeks the views of interested parties on the implementation issues raised in this section.

4.29 Submissions on this *Form of Control* section should be received by the Commission no later than 11 am Friday, 30 April 2010.

³⁹ A total revenue-cap may not fully eliminate demand risk for GTBs. An *ex-post* volume adjustment mechanism as part of the compliance formulae may allow GTBs to recover their fixed costs where forecast errors may prevent them from doing so.

⁴⁰ Parties should have regard to the Commission's view that suppliers will not be required to apply a pricing methodology under a DPP and that it is inappropriate to take account of individual supplier pricing methodologies when developing mechanisms under a DPP.

SECTION 5: PRICING ARRANGEMENTS PRIOR TO INITIAL DPP

Overview

- 5.1 The Act provides for the application of claw-back under certain circumstances. This section focuses on the claw-back provision of s 55F(2), which provides:

However, if a supplier has increased its weighted average prices by more than the movement, or forecast movement, in the all groups index number of the New Zealand Consumer Price Index in the period beginning 1 January 2008 and ending with the date that the determination is made, the Commission may apply claw-back to the extent of requiring the supplier to lower its prices in order to compensate consumers for some or all of any over-recovery of revenues that occurred during that period. (Emphasis added).

- 5.2 Whether claw-back can be applied is contingent on the condition contained in the bolded text of the provision as set out above (**CPI Criterion**). The Commission may apply claw-back under s 55F(2) only in instances where the CPI Criterion is met. This section discusses the Commission's initial views on an approach for demonstrating whether a GPB has met the CPI Criterion, and when it may be reasonable and appropriate for the Commission to apply claw-back.

Discussion

Process

- 5.3 The Commission's consideration of whether to apply claw-back involves all of the following steps:
- (i) assessing whether the GPB has met the CPI Criterion;
 - (ii) determine the extent of any over-recovery;
 - (iii) determining whether it is reasonable and appropriate for the Commission to apply claw-back; and
 - (iv) determining how claw-back is implemented.
- 5.4 The Act does not expressly state when claw-back should be applied. The Commission considers that there are two broad options:
- (i) applying claw-back as part of a starting price adjustment at the outset of the Initial DPP; or
 - (ii) applying claw-back as an adjustment to prices during the regulatory period.
- 5.5 At this stage, the Commission considers that it would be advantageous to avoid multiple price adjustments during the regulatory period and instead apply any potential claw-back as part of starting price adjustments.
- 5.6 In order to assess whether each GPB has met the CPI Criterion, the Commission considers that it is appropriate for GPBs to provide an assessment of whether or not the CPI Criterion has been met in accordance with a specified methodology (discussed below). The Commission is likely to require these assessments to be completed and submitted for review in the third quarter of 2011. GPBs would have finalised any price adjustments for their 2011/12 pricing period by this time and the timing would allow the Commission to undertake necessary analysis

before finalising the Initial DPP. The Commission is interested in the views of interested parties on the proposed timing of these assessments and any potential claw-back.

Assessment Methodology

- 5.7 The Commission understands that GPBs are seeking certainty as to the circumstances in which claw-back may be applied. With this in mind, the Commission proposes employing an assessment methodology, to be determined subject to consultation, to assess whether the CPI Criterion has been met (**Assessment Methodology**). GPBs demonstrating compliance under the Assessment Methodology would be deemed to have not met the CPI Criterion and hence will not be potentially subject to claw-back. By providing full transparency on the approach used to identify when a claw-back is triggered, this provides certainty to GPBs. The Commission seeks the views of interested parties on the Assessment Methodology briefly described below and detailed in Appendix B.
- 5.8 The Assessment Methodology involves comparing a GPB's change in weighted average prices (by calculating a notional revenue at different points in time using the same reference quantities)⁴¹ with the corresponding change in CPI between 1 January 2008 to the beginning of each of the GPB's annual pricing periods prior to 29 February 2012 (i.e., the proposed publication date for the Determination). For instance, in the case where a GPB adjusts its prices from 1 October each year, the Assessment Methodology would involve weighted average price and CPI comparisons for the periods:⁴²
- 1 January 2008 to 1 October 2008;
 - 1 January 2008 to 1 October 2009;
 - 1 January 2008 to 1 October 2010; and
 - 1 January 2008 to 1 October 2011.⁴³
- 5.9 A GPB would be regarded as having met the CPI criterion and increased its weighted average prices by more than CPI if its notional revenue had increased by more than the CPI increase for any of these periods. The Commission would then assess whether the GPB has over-recovered any revenues during the period, and the extent of any over-recovery.
- 5.10 To the extent practicable, the Assessment Methodology would use actual CPI figures over the specified period. As the Commission proposes that GPBs complete their assessments in the third quarter of 2011, these actual CPI figures will not be available for the whole period being analysed. As such, the methodology would incorporate forecasted CPI figures from the third quarter of 2011 onwards.

⁴¹ The Commission considers that pass-through costs are not relevant for these calculations.

⁴² The dates specified for these periods are inclusive, i.e., comparisons include price changes that take effect from 1 October.

⁴³ The Commission does not consider that a separate assessment is required for the period 1 January 2008 to 29 February 2012, as the change in notional revenue would be the same as for the period 1 January 2008 to 1 October 2011. This assumes that the GPB will not make a price adjustment after 1 October 2011; however the Commission would require verification of this.

- 5.11 As a GPB's quantities may fluctuate year to year, to provide certainty the change in notional revenue would be calculated using the same reference quantities. The quantities proposed are those for the 12 month period ending 30 June 2010.
- 5.12 The first period in the Assessment Methodology will be a partial year. As such, the change in CPI for this period will relate to a period less than 12 months (e.g., for the period 1 January 2008 to 1 October 2008, the change in CPI relates to a 9 month period). Given that notional revenue is calculated using reference quantities for a 12 month period, the Commission considers that it is appropriate that the change in notional revenue is pro-rated according to the length of the first period. The Commission, however, is interested in parties' views as to whether this pro-rating should account for seasonality of demand.

Amendments to the Assessment Methodology

- 5.13 In recognition that the claw-back period has already commenced, the Commission is open to providing additional flexibility for demonstrating compliance for GPBs, where appropriate. A GPB may propose an amendment to the Assessment Methodology to demonstrate whether the CPI Criterion has been met or not if:
- (i) the GPB provides justification to the Commission's satisfaction that it is not practical to apply the Assessment Methodology without amendment in its particular circumstances; and
 - (ii) the GPB demonstrates to the satisfaction of the Commission that an Amended Methodology has the equivalent effect of the Assessment Methodology.
- 5.14 In demonstrating whether an amendment to the Assessment Methodology has the equivalent effect of the Assessment Methodology, the Commission considers that the GPB should only make the minimal changes necessary to address the aspects that are inappropriate for its individual circumstances, detailing those changes as part of any amendment to the Assessment Methodology.

Services controlled under the Commerce (Control of Natural Gas Services) Order 2005

- 5.15 The Commission's initial view is that services controlled under the *Commerce (Control of Natural Gas Services) Order 2005* for which the pricing complies with the Authorisations should not have to demonstrate whether the CPI Criterion has been met or not with respect to those services. An implication of this approach is that the gas distribution services of Vector's subsidiary NGC Holdings Limited would be considered under s 55F(2), but not Vector's Auckland distribution services. The Commission seeks the views of interested parties on this matter.

Revenue Assessment and Application of Claw-back

- 5.16 The proposed Assessment Methodology determines if a GPB has increased its weighted average prices by more than CPI, but it does not determine the extent of possible over-recoveries. If the CPI Criterion is met, the Commission would also determine the extent to which a GPB has over-recovered revenue.
- 5.17 The Commission considers the use of either actual revenues or notional revenues as options for determining whether a GPB has over-recovered revenue above CPI. An assessment that uses actual revenue data would provide the most accurate assessment of the GPB's revenue recovery. However, due to the timing of the

availability of this data set, any claw-back would need to be applied as an adjustment to prices during the regulatory period. The Commission seeks the views of interested parties on the calculation of any over-recovery and the timing of any claw-back.

- 5.18 The Commission considers that its assessment of GPBs' profitability is likely to be a relevant consideration when determining whether claw-back may be appropriate in the instance of over-recovery. The Commission considers that there may be instances where a GPB is allowed a higher starting price than current levels and in some such cases a claw-back may be counterproductive. The Commission will take account of potential starting price adjustments, in particular the relative size of the potential increase to starting prices and size of claw-back being considered, when determining whether to apply claw-back.

Initial View

- 5.19 The Commission's initial view on the application of claw-back under s 55F(2) is to require GPBs to demonstrate compliance with a specified Assessment Methodology. This Assessment Methodology would assess whether or not a GPB has increased its weighted average prices by more than the movement in CPI over the period 1 January 2008 to the date when the Determination is made. Alternatively, a GPB may propose an amendment to the Assessment Methodology where the GPB can demonstrate that the Assessment Methodology is not practicable in its particular circumstances and the Amended Methodology has an equivalent effect.
- 5.20 If a GPB is shown to have increased its weighted average prices by more than the movement in CPI, the Commission will assess whether the GPB has over-recovered any revenue and determine the extent of any over-recovery. The Commission seeks the views of interested parties on how any over-recovery might be assessed and the process for applying any necessary claw-back.

SECTION 6: PRODUCTIVITY ANALYSIS

Overview

- 6.1 In accordance with s 53P(1), the Commission must set out the rate(s) of change (**X-factor**)⁴⁴ that apply to suppliers for the Initial DPP. Generally a single X-factor will apply for each regulated service, though alternative rates may be used in certain circumstances.⁴⁵ This section outlines the Commission's initial views on setting the rate(s) of change that will apply to GPBs.
- 6.2 The X-factor limits the maximum amount by which GPBs are permitted to increase their weighted average price or revenue. The X-factor incentivises GPBs to manage costs efficiently. Efficiencies made below the CPI-X mechanism can be retained by GPBs, allowing above normal profits to be earned, at least until the next price reset.

Discussion

Setting the X-factor

- 6.3 The Act specifies that the X-factor for regulated suppliers under a DPP is to be:
- based on the long run average productivity improvement rate achieved by either or both of suppliers in New Zealand, and suppliers in other comparable countries, of the relevant goods or services, using whatever measures of productivity the Commission considers appropriate.*⁴⁶ (Emphasis added).
- 6.4 The Commission may use whatever measures of productivity it considers appropriate to set the X-factor. There are a number of methods for measuring productivity growth rates including partial productivity, multilateral total factor productivity and total factor productivity (**TFP**). Each method has its relative merits, although the Commission has predominantly relied on TFP analysis.
- 6.5 Both the Commission and a number of GPBs have prior experience with the use of TFP analysis to measure productivity growth rates. The Commission used TFP to analyse the New Zealand gas sector, during the Gas Control Inquiry.⁴⁷ TFP has been used to inform the setting of the X for use as part of a CPI-X mechanism under the Electricity DPP.
- 6.6 The Commission's initial view is that TFP analysis is the preferred measure of productivity, therefore proposes to use TFP to inform its decision on the level of an X-factor for use in the CPI-X mechanism under the Initial DPP.
- 6.7 When setting the X-factor for the Electricity DPP, the Commission recognised that although the X-factor is to be based on the long run average productivity improvement rate achieved (therefore, past productivity improvement rates), the

⁴⁴ The Commission has adopted the term X-factor to represent the "X" component of the CPI-X indexation component of the price path. While the overall rate of permitted change in weighted average prices under the DPP will, in practice, be CPI-X%, the Commission notes that s 53P(5) provides an example that refers to the "rate of change" as being solely the "X" in a "CPI-X" path.

⁴⁵ ss 53P(5) & (8).

⁴⁶ s 53P(6).

⁴⁷ Meyrick and Associates (2004), *Productivity Growth in New Zealand Gas Distribution Networks*, 14 May 2004.

incentives created by the CPI-X constraint are forward-looking.⁴⁸ The Commission is mindful that GPBs' past performance may not necessarily be an appropriate predictor of forward looking productivity growth potential. Reflecting the approach taken for the Electricity DPP, the Commission's initial view is that the results of any productivity analysis should not be mechanically applied. Rather, these results should be used to inform the Commission's decision and be considered in light of other relevant matters.

Options for Undertaking Productivity Analysis

- 6.8 The Commission considers that there are three broad options appropriate for the purpose setting of the X-factor:⁴⁹
- (i) *Undertake a New Zealand Productivity Analysis* similar to the approach used for the Electricity DPP. Under this approach the Commission would inform its decisions using a derived estimate of the long-run average productivity of New Zealand's gas sector;
 - (ii) *Use Overseas Gas Sector Productivity Growth Estimates* to inform the Commission's decision; or
 - (iii) *Use Information from Other Sectors of the Economy* that considers the productivity of the New Zealand gas sector against other regulated sectors or the economy on as a whole.
- 6.9 Option (i) is a direct approach for informing the setting of the X-factor, that uses information from New Zealand's gas sector. Options (ii) and (iii) are indirect approaches for informing the setting of the X-factor. Whilst Option (ii) uses gas sector information, it is information that is not directly related to the New Zealand gas sector. Option (iii) uses information from sectors of the economy other than the gas sector. The advantages and disadvantages these options are discussed further below.
- 6.10 There are a number of factors that the Commission considers relevant when considering approaches for assessing productivity growth rates, these include:
- *New Zealand Data Availability*: data availability, its robustness, and the degree to which time series information is available can influence the decision as to which productivity approach can be used, and the degree to which the results can be relied upon to inform the setting of the X-factor;⁵⁰
 - *Suitability of Overseas Data*: the inclusion of overseas data is considered by the Commission to be appropriate, but can be problematic given the need to source appropriate, comparable information and the likely need to normalise (i.e., standardise) data;

⁴⁸ Commerce Commission, *Initial Reset of Default Price-Quality Path for Electricity Distribution Businesses: Decisions Paper*, 30 November 2009, p.37.

⁴⁹ While the Commission's initial view is that TFP should be used, these options are also relevant to the use of other potential forms of productivity analysis.

⁵⁰ A time series is a sequence of data points, typically measured at successive and uniform time intervals.

- *Nature of Services*: as discussed in paragraph 2.14, the Commission considers that it is likely to be appropriate to develop separate Determinations for gas transmission and distribution services. It may also be appropriate to set a separate X-factor for each service, and to undertake separate productivity assessments; and
- *Consistency with Electricity DPP*: the gas and electricity industries share similarities and the Act imposes very similar regulatory requirements on both sectors. When setting the X-factor(s) for GPBs the Commission considers it appropriate that the approach, to the extent practicable, is consistent with that used under the Electricity DPP.

6.11 In light of these factors, the three broad options proposed for undertaking productivity analysis are discussed below.

Undertake a New Zealand Productivity Analysis

- 6.12 Data requirements are discussed in the *Data Requirements* section. Table 4 provides an indicative list of the type of information that the Commission may need to undertake a New Zealand productivity analysis. The advantage of using a direct approach, and undertaking a New Zealand gas sector productivity analysis, is that the results will be relevant to the New Zealand gas sector. However, this approach may be data intensive, and sourcing an adequate data set that is sufficiently robust and available in time series will be necessary. The Commission considers that the most robust historical dataset for the gas sector is likely to relate to the period prior to Vector's acquisition of NGC Limited. The Commission is interested in the extent to which Vector continues to collect separate data for the NGC distribution network.
- 6.13 As discussed at paragraph 6.9, it may be appropriate to set separate X-factors for distribution and transmission services, and use separate productivity analyses for each service. This may require Vector to provide separate data sets for distribution and transmission services. Some data may be available through current reporting requirements (i.e., information disclosure),⁵¹ whereas other data may need to be requested.
- 6.14 The Commission is interested to understand:
- what types of data are currently held by the GPBs;
 - how robust the GPBs believe the available data to be; and
 - over what time span the data might be available.

⁵¹ A key source of data is the GPB's disclosures under the *Gas (Information Disclosure) Regulations 1997*. While there was ad hoc data collection for the Gas Control Inquiry and the Authorisations, the only systematic and regular data collection has been through these Regulations.

Use Overseas Gas Sector Productivity Growth Estimates

- 6.15 The Act provides for the use of overseas data when setting the X-factor.⁵² The incorporation of overseas data into productivity analysis and using it to inform the setting of the X-factor was not generally supported by submitters during the consultation process on the Electricity DPP. However, submitters did support the use of overseas studies to help assess whether the findings of productivity analysis were reasonable.
- 6.16 The Commission is mindful that the information that was available to undertake the TFP analysis for EDBs may not be available for all GPBs. In particular, the sample size is significantly smaller for GPBs and the acquisition of NGC Limited by Vector may have resulted in the loss of data. For analysis to produce a meaningful result the data must be presented as a comprehensive data set that is sufficiently robust and available over a sufficiently long time period.
- 6.17 Should the Commission find that New Zealand gas sector data is insufficient to produce a meaningful result, it may use overseas long-run productivity growth rates to inform the setting of the X-factor. The Commission could compare New Zealand's gas sector to overseas gas sectors to inform its view of what productivity growth rates might be achievable. Overseas data could also be used as a 'cross-check' for the New Zealand based productivity analysis in a similar way used by the Electricity DPP.
- 6.18 Appendix C provides a summary of the results of overseas productivity studies undertaken for gas distribution and transmission services.

Use Information from Other Sectors of the Economy

- 6.19 The direct and indirect approaches discussed above use information from either the New Zealand gas sector or from overseas gas sectors, to develop a rate of change to inform the setting of the X-factor. In the absence of suitable evidence from either the New Zealand gas sector or overseas gas sectors, the Commission could undertake comparisons with other regulated sectors of the economy or the economy as a whole.
- 6.20 One such approach uses the historical performance of other infrastructure sectors to form a view on what productivity gains may be expected in the New Zealand gas sector. Sectors such as electricity distribution and transmission, water, and telecommunications are similar to gas, in that they operate, maintain and enhance large infrastructure assets. Productivity measures that may be used include trends in real unit operating expenditure (i.e., growth in operating expenditure per unit of output delivered), or, to the extent available, TFP.
- 6.21 Another approach is a 'nature-of-work comparison' whereby the activities of the gas sector are compared to the activities of other sectors of the New Zealand economy.⁵³ Using this approach, the GPBs activities are broken into a subset of activities for which TFP measures are available.⁵⁴ Appropriate weights for each

⁵² s 53P(6).

⁵³ For example, the gas sector may be deemed to be composed of construction, transport and storage, professional services activities, etc.

⁵⁴ Statistics New Zealand and the OECD prepare TFP measures, at a disaggregate level, for different sectors of the New Zealand economy.

of the activities are chosen to form a ‘virtual comparator’. The weights are applied to the TFP measure for each activity. A productivity measure is developed by summing the weighted TFP measures for each activity. Additional factors may need to be taken account of to ensure the resultant TFP is of relevance to the New Zealand gas sector.

- 6.22 A TFP analysis using direct evidence from the New Zealand gas sector or indirect evidence from overseas gas sectors is likely to produce a productivity growth rate that is more relevant to the New Zealand gas sector. However, approaches that rely on information from other sectors of the economy may be useful in the absence of direct evidence, or as a cross-check for other analysis.

Initial View

- 6.23 The Commission considers that New Zealand gas sector productivity analysis, of all the alternatives, is of most direct relevance for the purposes of setting the X-factor. Therefore the Commission’s initial view is that, to the extent practicable, it will consider undertaking a New Zealand-based study. The Commission is mindful, however, that the small size of the sample of GPBs may limit the robustness of such analysis.
- 6.24 The use of other indirect approaches for assessing productivity may be used as an alternative if data issues cannot be resolved. This type of approach may also be useful as a cross-check.
- 6.25 The Commission is of the initial view that the results of any productivity analysis should not apply mechanically. The results from any analysis should be used to inform its view on the appropriate value of the X-factor with those results given appropriate weight in light of other relevant considerations.

SECTION 7: QUALITY STANDARDS

Overview

- 7.1 Under s 53M(1)(b), every price-quality path must specify the quality standards that must be met by the regulated supplier. Quality regulation is important within a price control regime, as it can mitigate potential incentives for suppliers to reduce expenditure (and so increase profit levels under a price-cap) to the detriment of service quality.
- 7.2 This section outlines the Commission's initial views on an approach to defining, setting and assessing quality standards for the Initial DPP. In particular, this section examines the following issues:
- *Quality Indicators*: what indicators are appropriate measures of quality performance under a DPP;
 - *Data Availability*: the availability of data to support those indicators; and
 - *Setting Standards*: the basis for setting levels of gas transmission and distribution quality standards.

Discussion

Quality Indicators

- 7.3 The Act provides a high degree of flexibility for the Commission when setting quality standards. The Commission has considered measures used by overseas regulators (examples provided as Appendix D) and those explored under the Authorisations process (indicators adopted under the Authorisations are set out in Appendix E) to inform what measures of quality performance are appropriate for the Initial DPP.
- 7.4 Relevant measures for the quality of supply for gas services fall into four broad categories:
- (i) *Reliability* – measures used to indicate whether gas is delivered dependably to customers. Indicators largely focus on outages experienced by customers and include System Average Interruption Duration Index (**SAIDI**), System Average Interruption Frequency Index (**SAIFI**) and Customer Average Interruption Duration Index (**CAIDI**);
 - (ii) *System Integrity* – measures used to indicate the condition and maintenance of network infrastructure, and which can impact safety standards. Indicators include Publicly Reported Escapes (**PRE**), third party damage events, leaks, poor pressure events, and Unaccounted For Gas (**UFG**);
 - (iii) *Quality of Gas* – measures used to indicate that the gas delivered is to the right quality,⁵⁵ free of contaminants and at the appropriate pressure. Indicators include pressure of gas supplied and gas composition; and

⁵⁵ Quality here relates to maintenance of quality during transmission or distribution.

- (iv) *Customer Service* – measures used to indicate the timeliness of the provision of service such as the connection of a new customer, the response to customer’s enquiries, emergencies and the keeping of appointment times. Indicators include connection times, emergency response times and number of customer complaints.

7.5 The Commission considers that reliability measures may be the most relevant for the Initial DPP, as they provide important information on service delivery that impacts directly on the end consumer. Also, reliability is largely in the control of suppliers. Reliability measures are also employed under the Authorisations and the Electricity DPP. Some measures of system integrity may also be useful, as they may indicate where investment in the quality of the gas pipeline network is not being maintained before the point where a customer outage occurs. Some other measures, such as performance against safety standards, are monitored by other agencies and largely fall outside of the Commission’s purview under Part 4. However, these safety performance indicators may be useful in highlighting other service quality issues.

7.6 In overseas jurisdictions, both quality of gas and customer service measures have also been used as indicators of quality for gas pipeline businesses in various regulatory contexts. The applicability of such measures in New Zealand is a matter for further consideration. Some quality measures, however, may be more appropriately monitored through an information disclosure regime, rather than incorporated in the Initial DPP.

Data Availability

7.7 The availability of data is a key issue. From a practical perspective, if data is not currently collected then requiring it will mean an increase in costs for GPBs. The Commission understands that currently SAIDI data is collected and that some suppliers record PRE in some form. It is unclear if SAIFI data is currently collected or if historical SAIFI data is available for all GPBs. As an alternative, international standards or standards set by overseas regulators may usefully inform the Commission when setting quality standards if historical data is unavailable.

7.8 The Commission is interested in understanding how GPBs collect data, measure reliability or other relevant indicators, what data is collected and how it could be used to set quality standards under the Initial DPP. Going forward, the Commission considers that data made available through information disclosure regulation and any additional reporting requirements will inform the setting of quality standards.

Setting Standards

7.9 Quality standards may be prescribed in any way the Commission considers appropriate, including as targets, bands or formulae.⁵⁶ This suggests that the Commission has fairly wide discretion to develop quality standards that are fit for purpose.

⁵⁶ s 53M(3).

- 7.10 Where possible, the Commission considers that an objective, ideally numeric standard should be established for quality measures. This provides a clear constraint for suppliers, and clearly identifies breaches when they occur. Where there is a possibility of enforcement action it is important, in light of the need to provide regulatory certainty, that suppliers are clear about where they have or have not breached.
- 7.11 However, the lack of data currently available to the Commission makes it difficult to determine what the appropriate level of any standards should be for a number of quality measures. As noted above, the Act does provide some flexibility around how standards are set, and more graduated standards may need to be set for the Initial DPP. Options for setting a defined threshold standard include:
- a ‘hard’ limit (e.g., a floor or ceiling derived from historic data) where quality performance in excess of the limit is a breach of the quality standards. For example, a limit might be based on a GPB’s previous x years’ average performance (or similar measure);
 - a ‘dead-band’ over and above a hard limit where performance in excess of the ‘buffer’ is considered a breach of the quality standards; or
 - a ‘tiered’ set of limits. For example, the lowest limit might be based on a GPB’s average performance and subsequent limits allow for a percentage increase in performance. This approach may be consistent with some form of graduated enforcement; or
 - a recognised industry technical/safety standard (e.g., an accredited NZS / ISO standard).
- 7.12 Under the Electricity DPP, a SAIDI measure of distribution network reliability was one such factor used to set the quality standard. The SAIDI data was obtained from a large number of separate interruption events, and as such the historical record of the measure was amenable to a statistical basis for the quality standard.⁵⁷
- 7.13 In examining SAIDI statistics for gas transmission and distribution services, however, the Commission has found few unplanned interruptions. This may present a challenge to setting a statistically robust quality standard. The Commission considers that under the Initial DPP, quality standards and the implications of a breach of those standards may be different for GTBs and GDBs. The views of interested parties on this matter would be useful.

Initial View

- 7.14 The Commission’s initial view is that, to the extent practicable, the regime will put in place objective quality standards with defined and measurable indicators. This will ensure that requisite quality can be identified and monitored easily, and that GPBs have certainty around the required performance.

⁵⁷ Commerce Commission, *Initial Reset of the Default Price-Quality Path for Electricity Distribution Businesses Decisions Paper*, 30 November 2009, p.57.

- 7.15 As discussed, reliability is central to service quality as a deterioration of reliability is likely to impact on the quality of the service experienced by end-users. Well understood indicators of reliability include SAIDI and SAIFI. The Commission also considers that PRE may be an appropriate indicator, as it could potentially indicate future investment requirements to maintain system integrity.
- 7.16 The Commission is interested in exploring options for how quality standards can be set. The Commission considers it important that any such standards are meaningful in terms of assessing compliance, and the Commission seeks views of interested parties on this issue.

SECTION 8: DATA REQUIREMENTS

Overview

8.1 The Commission requires various data to inform the Initial DPP, particularly for setting starting prices, a rate of change and quality standards. Specific data requirements have been previously highlighted in this paper. This section further discusses the availability and suitability of certain data in light of these data requirements. It goes on to consider how shortfalls in available information might be addressed.

Discussion

Data Availability

8.2 The type and detail of information currently varies significantly across GPBs. Powerco and Vector's Auckland network are subject to price control under the Authorisations. As such the Commission has relatively detailed information on these services. Information disclosed under the *Gas (Information Disclosure) Regulations 1997* provides a data set for a wider set of GPBs but with less detail. The exception to this is MDL, which under clause 29 of these regulations is currently exempt from a number of these disclosure requirements, including the requirement to disclose financial statements.

Data Suitability

8.3 The current information disclosure regime, however, does not provide sufficiently detailed information for the purpose of regulatory decision making. In addition, GPBs may have used different interpretations and approaches for disclosing data, thus creating issues for undertaking consistent analysis. For example:

- the information disclosure financial statements include an income statement and balance sheet, but not information from which capital expenditure and revaluations can be reliably extracted;
- valuation methods and methods of determining depreciation are not specified;
- methods of allocating costs between gas and non-gas activities are not typically specified nor required to be disclosed, nor is it clear whether double counting of some costs is permitted in the allocation process; and
- disclosure relating to quality of supply is limited to unplanned interruption data.

8.4 The result is that the information that is immediately available for all GPBs is limited and the robustness, accuracy, and consistency of data is unclear in the absence of an agreed audit/verification process. While some data is not currently available to the Commission, some information might be able to be readily provided by GPBs. The Commission is interested to understand what data GPBs currently collect and what time series might be available. Table 4 provides an indication of the type of information that might be required to set the parameters of the Initial DPP.

Requests for Data

- 8.5 If necessary, the Commission will make requests for data that is not currently available – this data may be either currently collected or required to be prepared by GPBs. There may be data, however, that GPBs would find problematic to prepare. As stated above, the Commission is interested in understanding what data GPBs currently collect (e.g., Table 4 provides a guide as to the type of information that could usefully inform the Initial DPP). If required, the Commission may use its information gathering powers under the Act.

Data for Setting the Initial DPP

- 8.6 Table 4 sets out a preliminary list of indicators for which information might be required to inform the setting of the Initial DPP. The list is not meant to be exhaustive and the Commission may use other information to inform its decisions (including a more disaggregated level of information). The table also provides a view as to what the information may be used for and an assessment of the current information availability. Non-supplier specific information that is publicly available, such as CPI figures and the corporate tax rate, is not included in the table.
- 8.7 Starting price adjustments for the Initial DPP are not discussed in this paper. However, the Commission considers that it would require sufficient information to undertake return on investment calculations consistent with the input methodologies that are set.

Table 4: Indicative list of the types of data for informing the Initial DPP and availability

Indicator description	Data use *		Data availability †	
	X #	Quality ^	Currently disclosed	May be required
Statistics				
Throughput (GJ)	✓		✓	
System length	✓		✓	
Maximum monthly flow	✓		✓	
Total customer numbers	✓		✓	
Pipeline length broken down by material, diameter and pressure class	✓			✓
District regulating stations (number)	✓			✓
Performance Indicators				
SAIDI		✓	✓	
SAIFI		✓		✓
Public reported escapes		✓		✓
Unaccounted for gas ratio		✓	✓	
Financial				
Revenue	✓		✓	
Operating expenditure	✓		✓	
Capital expenditure	✓			✓
Direct line costs per km	✓		✓	
Asset Values				
Regulatory asset base	✓			✓
Regulatory depreciation	✓			✓
Revaluations	✓			✓
Acquisitions and disposals	✓			✓

† Data use provides an indication as to what the information would likely to be used for in relation to the Initial DPP (i.e., X – rate of change; and Quality – quality standards).

* Data availability relates to whether data is currently disclosed under the *Gas (Information Disclosure) Regulations 1997* and/or whether the Commission may need to request data.

Indicative data requirements if a New Zealand gas sector productivity analysis is undertaken. The data series for this analysis should be as long as possible.

^ The Commission is likely to be interested in the most recent five year data series for these indicators.

Initial View

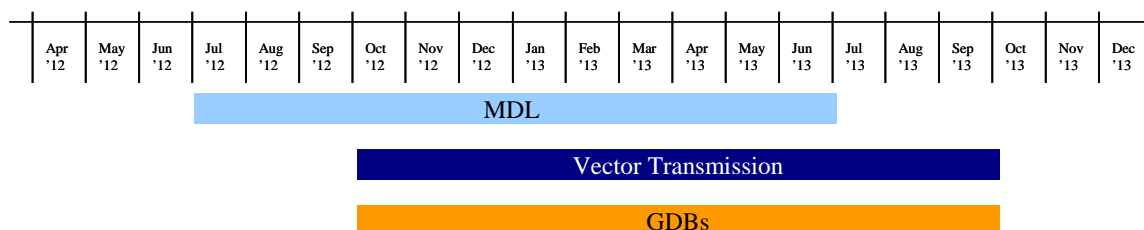
- 8.8 The Commission's initial view is that it will need to seek further data from GPBs in order to set the Initial DPP, as the scope and quality of information currently available to the Commission is inconsistent across GPBs. The Commission is interested in the views of GPBs as to the scope and quality of information required for setting the different elements of the Initial DPP, in particular:
- are the indicative information requirements identified in Table 4 appropriate for setting rate(s) of change and quality standards;
 - the extent to which this information is collected by GPBs, and the consistency of information collection and indicator definitions across the industry;
 - the time period for which information is available; and
 - what other information is considered relevant for setting the Initial DPP.

SECTION 9: ANNUAL ASSESSMENT AND REGULATORY PERIODS

Overview

- 9.1 The Commission must specify relevant timeframes that apply to the Initial DPP, including a commencement date, an annual compliance date and the regulatory period.⁵⁸ Section 53M(4) specifies that the regulatory period must be five years. Section 53M(5), however, stipulates that the Commission may set a shorter regulatory period provided it is not less than four years.
- 9.2 The Commission has identified a number of issues which merit further consideration in determining these relevant timeframes. While the Initial DPP is due to come into effect on 1 July 2012, the annual pricing year of GDBs commences on 1 October. This would imply that if the annual assessment period commences from 1 July, assuming that a price is set to apply on 1 October, at least two price levels would apply during each assessment period. An additional complexity for GTBs is that MDL and Vector have different pricing periods from each other. This potentially affects the specification of assessment period and the length of regulatory period. Figure 1 sets out the Commission’s understanding of the pricing years for GPBs.

Figure 1:GPB Pricing Years



- 9.3 The Commission has considered two options which may address the timing issues. These options are discussed further below. The Commission seeks feedback from interested parties on these proposed options, as well as identifying any specific industry considerations or any other factors that are considered pertinent to the decision on this matter. Specifically the Commission wishes to gain an understanding of the ability of GPBs to satisfy compliance requirements that split across two pricing years and the degree to which GPBs restructure prices. Also, the Commission wishes to know whether GPBs have the ability to adjust their pricing periods to a specified annual assessment period.

Discussion

Distribution

- 9.4 Under the Authorisations, the alignment of assessment period and pricing period was also an issue. While the Authorisations had a commencement date of 1 January 2009, the regulated suppliers had an annual pricing year of 1 October to 30 September. This mismatch was addressed by providing for an initial commencement/assessment period of nine months (requiring partial year

⁵⁸ ss 52P(3)(b) & 53O(d) & (f).

compliance), thus aligning the regulated suppliers' pricing year and future assessment periods.

- 9.5 In the context of the Commission's initial view that a weighted average price cap is appropriate for GDBs and that compliance is to be demonstrated on an *ex-post* basis (as discussed in the *Form of Price Control* section), the Commission considers that there are two potential options for specifying an annual assessment period and the regulatory period.

Option 1 – July to June Assessment Period

- 9.6 Under this option the Commission would specify an annual assessment period of 1 July to 30 June and GDBs would be required to demonstrate compliance on that basis, irrespective of their pricing years. Thus for any given assessment period, at least two sets of prices would apply (assuming a new set of prices apply from 1 October). The Commission is also interested in understanding whether more than two sets of prices are possible for this 12 month period (i.e., can and do suppliers undertake any mid-year price changes) and welcomes views from interested parties on this matter. In order to demonstrate compliance under this approach, given the three month and nine month pricing year split, various components of the price path assessment formulae may need to be apportioned on a time/volume basis.

- 9.7 A five year regulatory period would appear to be appropriate under this option.

Option 2 – October to September Assessment Period

- 9.8 This option involves an initial commencement period of three months (i.e., 1 July 2012 to 30 September 2012) in which GDBs would be required to undertake a partial year compliance assessment. An annual assessment period of 1 October to 30 September would follow for each of the remaining years in the regulatory period. The reason for the initial commencement period is to align the annual assessment period with the start of GDBs' pricing years on an ongoing basis. This approach is similar to that of the Authorisations.

- 9.9 A five year regulatory period under this approach, in addition to an initial commencement period, would require partial year compliance for nine month period 1 October 2016 to 30 June 2017. Alternatively, a shorter regulatory period of four years and three months is likely to be more compatible with this approach. This would facilitate alignment of future resets of the Initial DPP and GDBs' current pricing years. A regulatory period of four years and three months would also preclude the need for any partial year compliance at the end of the regulatory period.

Transmission

- 9.10 The timing issues for transmission services are essentially the same as for distribution services, with the additional complexity that MDL (1 July to 30 June) and Vector (1 October to 30 September) operate separate pricing years. The Commission would be interested in views from interested parties on how feasible it might be for a GTB to alter its pricing year to align with a specified assessment period so both GTBs are consistent. Given the current pricing arrangements for transmission services, however, the two options presented above also apply but potentially with some variation.

- 9.11 Under *Option 1*, the annual assessment period would map MDL's pricing year but straddle two pricing periods for Vector (with a split of three months and nine months). A five year regulatory period would likely be appropriate for this option.
- 9.12 Under *Option 2*, both GTBs would be subject to an initial three month commencement period. On an ongoing basis, however, the annual assessment period would map Vector's pricing year but straddle two pricing periods for MDL (nine months and three months, respectively).

Initial View

- 9.13 In choosing the most appropriate annual assessment periods and regulatory period for the respective DPPs, the Commission wishes to minimise regulatory complexity and ensure that it is both appropriate and cost-effective to implement. The Commission is interested in hearing the views of interested parties on the perceived merits and disadvantages of the various options identified, or any other options that may be considered appropriate, to inform its decision on these timing issues. Although the price path assessment formulae have yet to be determined, the merits and disadvantages of the options might include the potential impact on a GPB's ability to accurately determine prices, quantities and pass-through costs. The Commission also wishes to explore the willingness of GPBs to align their pricing periods with the assessment period. Table 5 sets out some of the characteristics of the proposed options.

Table 5: Comparison of proposed options for annual assessment period

	Pros	Cons
Option 1	<ul style="list-style-type: none"> ▪ Straight-forward to implement ▪ Longer regulatory period likely to give greater certainty ▪ Annual assessment period aligns with 1 July 2012 commencement ▪ Aligns with MDL pricing year ▪ Likely to provide more opportunities to make CPP proposals 	<ul style="list-style-type: none"> ▪ Potential for increased assessment complexity for majority of GPBs
Option 2	<ul style="list-style-type: none"> ▪ Aligns with all GPBs' pricing years, except MDL ▪ Option for future resets to commence from 1 Oct 	<ul style="list-style-type: none"> ▪ Requires partial year compliance ▪ Potential for increased assessment complexity for MDL

APPENDIX A: OVERSEAS GAS REGULATORY REGIMES

	Transmission	Distribution
Ofgem (UK)	Price Control (Transmission Price Control Review 4)	Price Control (Gas Distribution Price Control Review 2007-2013)
CER (Ireland)	Revenue regulation (Bord Gais Networks Revenue Review 2007/2008 - 2011/2012)	Tariff Regulation (Decision on Bord Gais Networks Allowed Revenues and Gas Distribution Tariffs for 2009/10)
CRE (France)	Endorses investment programmes	Monitoring
NYPSE (NY, USA)	N/A	Price Control (Gas Competition - Local Distribution Company Rate & Restructuring Plans)
AER (Australia)	Monitoring and approval of access arrangements – individual suppliers are required to submit access arrangements which cover both non-tariff and tariff items	Monitoring and approval of access arrangements – individual suppliers are required to submit access arrangements which cover both non-tariff and tariff items

APPENDIX B: CPI CRITERION ASSESSMENT METHODOLOGY

- A.1 The Assessment Methodology proposed by the Commission is set out below (based on a GPB's pricing adjustments taking effect from 1 October each year).
- A.2 The CPI values referred to below are those issued by Statistics New Zealand in the *All Groups Index SE9A* series, except for the 2011 Q3 and Q4 CPI values, which shall be those forecast by the New Zealand Treasury in its *Budget Economic and Fiscal Update 2011*.

1 January 2008 to 1 October 2008

- A.3 Determine the "January 2008 Notional Revenue" – the sum of prices applying at 1 January 2008 multiplied by the corresponding quantities for the year ending 30 June 2010;
- A.4 Determine the "October 2008 Notional Revenue" – the sum of prices applying at 1 October 2008 multiplied by the corresponding quantities for the year ending 30 June 2010;
- A.5 Determine the "2008 Price Increase Factor" – three quarters of the difference between the October 2008 Notional Revenue and the January 2008 Notional Revenue, divided by the January 2008 Notional Revenue, plus one; and
- A.6 Determine the "2008 CPI Factor" – the 2008 Q3 CPI divided by the 2007 Q4 CPI.

1 January 2008 to 1 October 2009, 2010 and 2011

- A.7 The years 2009, 2010 and 2011 are to be inserted into the following steps when undertaking calculations for each of the periods beginning 1 January 2008 and ending 1 October 2009, 2010 and 2011 respectively:
- Determine the "October [*insert year*] Notional Revenue" – the sum of prices applying at 1 October [*insert year*] multiplied by the corresponding quantities for the year ending 30 June 2010;
 - Determine the "[*insert year*] Price Increase Factor" – the 2008 Price Increase Factor multiplied by the difference between the October [*insert year*] Notional Revenue and the October 2008 Notional Revenue, divided by the October 2008 Notional Revenue; and
 - Determine the "[*insert year*] CPI Factor" – the CPI for the [*insert year*] Q3 CPI divided by the 2007 Q4 CPI.

Compliance Assessment

- A.8 For any of the specified periods, if the Price Increase Factor is greater than the corresponding CPI Factor then the GPB would have increased its weighted average prices by more than the movement in the CPI. Therefore, the Commission would consider that the GPB has met the CPI Criterion in s 55F(2).

APPENDIX C: REVIEW OF SELECTED PRODUCTIVITY STUDIES IN OVERSEAS JURISDICTIONS

Country (Author)	Time period	Comments
Distribution		
Australia (Meyrick and Associates) ⁵⁹	Historic period: 1998 to 2006 Forecast period: 2007 to 2012	The study presents productivity growth estimates for the nine year period since the privatisation of the Victorian gas distribution industry. The study finds that the gas distribution businesses were able to achieve significant productivity gains over the period between 1998 and 2006. The study also examines the future productivity growth potential (2007 to 2012) and identifies a reduction in the growth potential, largely driven by an expected drop in operating expenditure.
Australia (Economic Insights) ⁶⁰	1998 to 2007	The Australian Energy Market Commission undertook a review of the possible uses of TFP methodologies for the regulation of prices and revenues of energy networks. The study concludes that gas distribution systems' measured productivity is sensitive to the TFP model specification. In particular, model specifications which place greater weight on the number of customers and system capacity output measures are found to exhibit higher TFP growth, but lower year-on-year volatility.
Great Britain (Brattle Group) ⁶¹	1973 to 2004	The study estimates labour productivity growth adjusted for capital substitution for five sectors deemed to be comparable to the gas sector. The report suggests that the regulator may use regulatory judgement to develop a point estimate of productivity, based on the productivity growth range formed by the estimates from the five sectors.
Canada (Brattle Group) ⁶²	Econometric approach: 1992 to 2003 Index number approach: 1994 to 2004	The report reviews two TFP studies based on similar data sets from US gas distribution companies. The report observes that growth estimates based on econometric modelling are sensitive to the model specification, and can be difficult to reproduce.

⁵⁹ Meyrick and Associates, *The Total Factor Productivity Performance of Victoria's Gas Distribution Industry*, 23 March 2007, prepared for Envestra, Multinet and SP AusNet, pp. 29-30.

⁶⁰ Economic Insights, *Energy Network Total Factor Productivity Sensitivity Analysis*, 9 June 2009, prepared for Australian Energy Market Commission, p. 21.

⁶¹ The Brattle Group, *Use of Total Factor Productivity Analyses in Network Regulation Case Studies of Regulatory Practice*, October 2008, prepared for the Australian Energy Market Commission, p. 29.

⁶² *ibid*, p. 39.

Country (Author)	Time period	Summary
Transmission		
United States of America (Jamasp, Pollitt and Triebs) ⁶³	1996 to 2004	The study measures the TFP growth rates of US gas transmission companies using four different Malmquist productivity indices. The authors find that the results were highly sensitive to the choice of model specification.
Australia and New Zealand (Meyrick and Associates) ⁶⁴	1997 to 2003	<p>The New Zealand gas transmission service exhibits some year-on-year volatility in TFP growth. The study concludes that the reduction in productivity growth during 2001 and 2002 were the result of significant increases in operating expenditure. The study suggests that the increased productivity identified in 2003 was driven by an increase in ODV following a revaluation.</p> <p>The study draws parallels with the Victorian (Australia) transmission system, which is also found to have exhibited significant measured year-on-year variations in productivity as a result of operating expenditure and ODV increases.</p>

⁶³ Tooraji Jamasp, Michael Pollitt and Thomas Triebs, *Productivity and Efficiency of US Gas Transmission Companies: A European Regulatory Perspective*, ERG Working Paper 0806, Cambridge Working Paper in Economics 0812, Table 7 and 8, pp. 22-23.

⁶⁴ Meyrick and Associates, *Comparative Benchmarking of Gas Networks in Australia and New Zealand*, 14 May 2004, prepared for the Commerce Commission, p. 54.

APPENDIX D: QUALITY INDICATORS USED OVERSEAS

	United Kingdom ⁶⁵	Australia (Victoria) ⁶⁶
System Reliability	<ul style="list-style-type: none"> ▪ SAIDI (planned &unplanned) ▪ SAIFI (planned &unplanned) 	<ul style="list-style-type: none"> ▪ SAIDI (planned &unplanned) ▪ SAIFI (planned &unplanned) ▪ CAIDI (unplanned) ▪ No. of unplanned outages ▪ No. of unplanned outages affecting five or more customers
System Condition / Gas Quality / Networks Integrity	Mains replacement	<ul style="list-style-type: none"> ▪ Gas leaks ▪ Mechanical (third party) damage ▪ Replacement of aged assets (in particular low-pressure network replacement)
Customer Service	Customer satisfaction surveys (e.g. separate surveys of customers who have experienced an unplanned and planned interruptions)	<ul style="list-style-type: none"> ▪ Response to customer calls ▪ Guaranteed service levels (including financial compensation for affected customers) ▪ Complaints (e.g. customer complaints to distributors, complaints to the Energy and Water Ombudsman (Victoria))
Others	Environmental performance (CO ₂ , NO _x , CH ₄)	

⁶⁵ Ofgem, *Gas distribution quality of service report 2007-08*, 17 December 2008, and *Gas Distribution Quality of Service Regulatory Instructions and Guidance Version 4*, 1 August 2008.

⁶⁶ Essential Services Commission, *Gas Distribution Businesses Comparative Performance Report – 2004*, 28 July 2005.

APPENDIX E: QUALITY INDICATORS FOR THE AUTHORISATIONS

Reliability Indicator	Measure
SAIDI-unplanned, excluding transmission faults	System Average Interruption Index. The sum of the duration of each unplanned interruption (in customer minutes) attributable solely to distribution divided by the average total number of distribution customers.
SAIFI –unplanned, excluding transmission faults	Customer Average Interruption Frequency Index. The total number of unplanned interruptions attributable solely to distribution divided by the total number of distribution customers.
CAIDI-unplanned, excluding transmission faults	Customer Average Interruption Duration Index. The sum of the duration of each unplanned (excl transmission) interruption, divided by the total number of unplanned (excl transmission) interruptions.
SAIDI planned	The sum of the duration of each planned interruption (in customer minutes) divided by the average total number of customers.
SAIFI planned	The total number of planned interruptions (in customer minutes) divided by the average total number of customers.
Outage Events	Number of unplanned interruptions that affect more than five customers.
Outage Events caused by Third Party damage	Number of unplanned interruptions that affect more than five customers, and have been caused by third party damage.
System Condition & Integrity-Indicator	Measure
Third Party Damage Events	Number of occurrences of where damage causing interruptions have been caused by third parties on the distributor's network (both mains and services).
Leaks	Number of leaks detected by survey carried out by the distributor.
Public Reported Escapes (PRE)	Number of confirmed public reported escapes of gas on the network.
Poor pressure due to network causes	Number of unplanned incidents where delivery pressure drops below target levels within a pressure system
Unaccounted for Gas	Ratio of the volume of unaccounted for gas to total gas delivered to entry points.
Customer Service-Indicator	Measure
Responses to Emergency	Proportion of emergencies responded to within one hour
Answering Telephone calls	Answering telephone calls at the business/call centre
Complaints	Number of Complaints received