GasNet Australia Access Arrangement - Submission

Annexure 10 - Consultation Paper on Proposed Tariff Design for the Victorian Gas Transmission System, prepared by NERA

CONSULTATION PAPER
On Proposed Tariff Design
For the Victorian Gas Transmission System

This paper has been prepared by GasNet with the assistance of National Economic Research Associates (NERA).

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Purpose of this Consultation Paper

GasNet is in the process of preparing a revised Access Arrangement for its gas transmission system, to be submitted to the ACCC by 31 March 2002. It is anticipated that this will incorporate both the Principal Transmission System (PTS) and the Western Transmission System (WTS), which are currently subject to separate access arrangements.

An important part of the Access Arrangement will be a revised tariff structure, to apply for the years 2003 to 2007 inclusive. This report focuses mainly on the *structure* of tariffs rather than the *level* of tariffs and the overall revenue requirement, although it does address the issue of an appropriate form of price control. Issues related to the overall revenue requirement and the tariff level will be addressed separately as part of the upcoming ACCC review.

Earlier this year GasNet started a consultation process on tariff design issues, and sought comments on the current tariff structure from a range of interested parties. This paper is part of the ongoing process of consultation and analysis being undertaken by GasNet in developing a revised tariff structure for the upcoming review period.

Recently GasNet applied to the ACCC for a revision to roll-in the South West Pipeline under the system-wide benefits test. The ACCC advised to defer this application to the reset. GasNet is currently considering its proposal with respect to this issue, and will make a revised application in March 2002 as part of the overall revision of the Access Arrangement. We are asking interested parties to defer their comments on this issue until this time.

GasNet invites the comments of interested parties on the issues raised in this consultation paper, and on the proposals put forward. Written submissions should be submitted to the following address:

GasNet Australia Ltd
180 Greens Road
Dandenong
Victoria 3175

Please provide your written submissions by **23th November 2002.**

GasNet will also hold a workshop to discuss tariff design issues if required by market participants.

1.2 Structure of this Consultation Paper

This paper is structured as follows:

- section 2 summarises the background within which the tariff review is being undertaken, including the regulatory context, and the market context;
- section 3 discusses the principles underlying the development of tariffs, based on the requirements of the National Third Party Access Code for Natural Gas Pipeline Systems (the National Code), and GasNet's interpretation of those requirements;
- section 4 discusses a range of issues that need to be addressed when designing gas transmission tariffs, and identifies weaknesses in the current tariff arrangements;
- section 5 outlines GasNet's proposed approach to designing a revised transmission tariffs structure, in light of the discussion in section 4;
- section 6 provides concluding comments; and
- Appendix A provides a description of the current and new tariff regime.

2 BACKGROUND

2.1 Regulatory Context

GasNet owns and maintains the primary high-pressure natural gas transmission pipeline system in Victoria. GasNet's network consists of the Principal Transmission System (PTS) and the Western Transmission System (WTS). As well as its pipeline system, the company also owns and operates a liquefied natural gas storage and vaporisation facility in Dandenong, and other facilities including metering and communication systems.

GasNet provides its services under the terms of its Access Arrangements, approved by the Australian Competition and Consumer Commission (ACCC) in November 1998. The Access Arrangements were developed under the access regime contained in the Victorian Third Party Access Code for Natural Gas Pipeline Systems *(the Victorian Code)*[1]. The Victorian Code has been superseded by the National Third Party Access Code for Natural Gas Pipeline Systems *(the National Code)*[2], which will apply from 2003, when the revised Access Arrangements are introduced.

The Access Arrangements define the terms and conditions and the reference tariffs under which third parties may ship gas on GasNet's pipeline system. There are currently separate Access Arrangements for the PTS and the WTS[3]. The reference tariffs associated with access to GasNet's transmission system are contained within the applicable Access Arrangements or in the Tariff Order 1998.[4]

The revised Access Arrangements for the PTS and the Western Transmission System will apply from 2003 to 2007 (inclusive). The GasNet transmission system is now an integrated network, and it is anticipated that the WTS, currently subject to a contract carriage framework, will become part of the VENCorp gas market. Given these factors, it makes sense to incorporate the entire GasNet network into one Access Arrangement, so that the terms and conditions of access and the tariff design methodology are consistent throughout the State.

2.2 Market Context

The functioning of the Victorian gas market is governed by the access arrangements applying to the transportation of gas from the source to the final customer. The

---

1 Victorian Third Party Access Code for Natural Gas Pipeline Systems, 11 December 1997

2 National Third Party Access Code for Natural Gas Pipeline Systems, 7 November 1997

3 Access Arrangements for the Principal and Western Transmission System, Final Approval, ACCC, 16 December 1998

4 Victorian Gas Industry Tariff Order 1998

transmission tariff structure is a key component of an access arrangement and should be developed to ensure consistency with the design of the Victorian gas market.

The Victorian gas market has some specific characteristics. A key feature of the Victorian gas market is the separation between the ownership of the gas transmission system and its operation. GasNet owns and maintains the gas transmission system whereas VENCorp, a government owned statutory authority, acts as the Independent System Operator and manages the gas spot market. This separation of ownership and operational functions on a gas transmission system is unique, and in contrast to the approach most commonly adopted in the gas markets in other jurisdictions.

In addition to the separation of ownership and operational responsibilities, Victoria has adopted a "market carriage" model. Under the market carriage system, as opposed to the more typical contract carriage system, shippers are not required to contract for capacity in the pipeline system. As a consequence shippers do not have a 'firm' capacity reservation as provided under the contract carriage system.

Under the current arrangements, VENCorp and GasNet have entered into a 'service envelope' agreement, whereby GasNet makes the transmission system available to VENCorp for the provision of services under the MSO rules. VENCorp has allocated the Authorised Maximum Daily Quantity (AMDQ) in respect to the existing pipeline system to large customers and industrial users approximately in line with their existing usage. Shippers who underwrite new capacity can receive an allocation of AMDQ Credit Certificates in respect of that capacity. VENCorp ensures that the system is balanced and constraints are managed, which it does by calling upon offers to increase injections or decrease withdrawals of gas as required. If transmission constraints arise, uplift charges are allocated in such a way as to 'penalise' those parties who can be identified as having contributed to the cause of those costs.[5]

GasNet and VENCorp both have responsibilities in regard to the transportation of gas to final customers, and both charge transmission tariffs for their respective services. Consequently, the effect of GasNet's tariff structure on shippers depends to a certain extent on the tariffs VENCorp charges for its services, and potential changes to those tariffs.

Finally, Victoria is planning to introduce full retail competition (FRC) in the gas market. FRC is scheduled to start in late 2002. Contestability in the Victorian gas market has been introduced in stages and started on 1 October 1999 with large customers consuming more than 500,000 gigajoules being eligible to choose their own gas supplier. Since then, the market has been further liberalised in stages and by 1 September 2001 all customers consuming more than 5,000 gigajoules can switch supplier. FRC will have a significant

---

[5] The intent of the Victorian gas market design is to allocate uplift charges to the cause. However, in practice, this goal has only partially been achieved. The current uplift methodology is being investigated as part of the ongoing VENCorp Market Review with a view to enhancing the link between the cause and the allocation of uplift.

impact on market participants and it is important to ensure that the transmission tariff structure is consistent with the requirements of FRC, and does not unduly impact on the development of competition in the market.

3 PRINCIPLES AND OBJECTIVES OF GAS TRANSMISSION PRICING

3.1 Tariff Design Principles in the National Code

The National Code sets out principles with which reference tariffs and the reference tariff policy must comply.

The Code specifies an overarching requirement that, when Reference Tariffs are determined and reviewed, they should be based on the efficient cost (or anticipated efficient cost) of providing the Reference Services.[6]

Section 8.1 of the National Code states that the reference tariff policy and all reference tariffs should be designed to achieve the following objectives:

(a) providing the Service Provider with the opportunity to earn a stream of revenue that recovers the efficient costs of delivering the Reference Service;

(b) replicating the outcome of a competitive market;

(c) ensuring the safe and reliable operation of Pipeline;

(d) not distorting investment decisions in Pipeline transportation systems or in upstream and downstream industries;

(e) efficiency in the level and structure of the Reference Tariff; and

(f) providing an incentive to the Service Provider to reduce costs and to develop the market for Reference and other Services.

Section 8.38 of the National Code requires that, to the maximum extent that is commercially and technically reasonable, a Reference Tariff should recover costs directly attributable to the Reference Service and a fair and reasonable share of costs incurred jointly with other Services. Section 8.42 also requires that a particular User's share of costs should be recovered in line with these principles.

---

6 National Third Party Access Code for Natural Gas Pipeline Systems, 7 November 1997, p. 84

3.2 Applying the National Code Objectives

The tariff design principles set out in the National Code form the basic framework for setting gas transmission tariffs in the Victorian gas market. GasNet has recognised the following tariff objectives, which incorporate both the principles outlined in the National Code, as well as other design objectives:

(i) efficiency, in terms of the promotion of efficiency in:

- *customers' usage of pipeline system* – transmission prices should where possible signal to system users the economic costs of use of the system, and promote maximum utilisation of the system;
- *the operation and maintenance of pipeline system* – transmission prices should be consistent with the efficient operation and maintenance of the pipeline system and minimise the costs of the service levels requested by users; and
- *investment in system augmentation* – transmission prices should signal efficient new investment in the pipeline system.

(ii) simplicity and predictability – enabling users to identify the cost impact of their usage decisions, and ensuring administration costs are not excessive;

(iii) robustness, in light of possible changes to the future development of the pipeline system, and changes in demand and supply patterns;

(iv) price stability – avoiding unacceptably large price shocks at subsequent reviews; and

(v) consistency with full retail competition (FRC) – ensuring that transmission tariffs do not artificially impede customer churn .

Finally, an efficient gas transmission pricing regime must allow the recovery of GasNet's revenue requirements. The setting of a revised tariff structure needs to consider how the *tariff structure* relates to the degree of revenue recovery risk.

Setting network tariffs will invariably involve a pragmatic trade-off between these objectives, and indeed the trade-off may be different for different types of customers.

3.3 The Role of Marginal Cost

Prices influence the amount of a particular good or service a customer will choose to purchase. If prices do not reflect the marginal cost to society of the good or service, customers will buy more or less of the good than is socially desirable. Consequently, basic economic principles suggest that prices should be set by reference to *marginal cost.*

Marginal cost can be defined in either short-run (SRMC) or long-run (LRMC) terms. SRMC can be defined as having two components. The first component is the cost immediately incurred in responding to an increase in demand, without expanding capacity. The second

component of SRMC is the cost imposed on users as the limits of capacity are reached, generally referred to as *congestion costs*. These costs include, eg, the need to buy more expensive gas due to pipeline congestion, or supply interruptions.

LRMC measures the cost of an incremental change in demand assuming all factors of production (including capacity) can be varied.

In calculating efficient prices, SRMC is relevant as it reflects the marginal cost to society at any given time. However, there may be sound reasons for diverging from this principle, eg:

- SRMC pricing may not sufficiently recover the total costs of transmission, including a sufficient return on and of capital investment;
- information constraints may prohibit the measurement of SRMC;
- there may be significant transaction costs involved in administering a SRMC arrangement;
- prices under a pure SRMC pricing arrangement may be highly volatile.

Where SRMC prices do not recover total costs, a 'second-best' approach may be adopted, involving setting up a two-part tariff structure with one part reflecting the marginal cost of supply, and the second component recovering the remaining revenue requirement. To minimise distortions to customers' behaviour, the second component would be charged inversely to the sensitivity of price elasticities of demand. This is commonly known as 'Ramsey' pricing.[7]

A 'range' of prices can be established, outside of which prices can be defined as inefficient. At a minimum, the price charged should recover the incremental costs of supplying that customer. At a maximum, prices should not exceed the costs to the customer of alternatives (the stand-alone cost). If prices lie within this range, then a customer is covering the directly attributable costs of their supply, as well as contributing to the common costs of the business (and thus reducing the burden of common costs on other customers).

To avoid many of the practical difficulties in determining SRMC, long-run incremental cost (LRIC) may be adopted as an alternative.[8] Like SRMC, LRIC varies according to peak and off-peak demand levels. Outside the peak, LRIC may be low or zero, as expanding demand at those times does not create a need for additional capacity.

LRIC is closely related to the congestion element of SRMC, because incremental investment becomes cost-effective when its value exceeds the congestion costs that otherwise would

---

7 Ramsey pricing principles have been employed in the design of the current VENCorp tariffs.

8 LRIC is a more practical variant of LRMC. The main difference is that LRIC is based on capacity being added in discrete and large lumps, which results in the measurement of an average marginal or incremental cost.

have been experienced. LRIC can therefore be considered as SRMC smoothed over time, assuming efficient investment decisions.

The design of the Victorian gas market means that, at least to some extent, the costs of congestion are reflected in the uplift charges levied by VENCorp. Ideally, GasNet's tariffs should complement (rather than duplicate) the price signals provided in the market. However, calculating transmission tariffs to "fill in the gaps" left after the price signals provided by the gas market would be very complex, and would introduce significant uncertainty over time. Nonetheless, where practical, GasNet has developed its revised transmission tariffs taking into account the objective of providing price signals that encourage the efficient use and development of the transmission system.

4 TARIFF DESIGN ISSUES

This section discusses tariff design principles, and issues that have arisen in relation to the current structure of transmission tariffs and in view of the upcoming changes to the gas market, eg, FRC. These include issues related to:

- the number of tariff classes defined;
- distance based charges;
- the separation of tariffs into injection and withdrawal charges;
- whether tariffs differentiate between peak and non-peak charges;
- the form of price control and the rebalancing of tariffs;
- the wash-up process; and
- prudent discounts.

We discuss each of these issues in turn below. A detailed description of the current tariff structure and a comparison with the revised structure is attached as Appendix A. For a numerical example of how existing transmission tariffs are calculated and which transmission tariffs currently apply please refer to our website[9].

4.1 Tariff Classes Defined

There are currently two tariff classes defined in relation to GasNet's transmission tariffs – Tariff V and Tariff D. Tariff D applies to larger industrial and commercial customers who consume at least 10,000 GJ per annum or a maximum hourly demand greater than 10 GJ, while Tariff V applies to smaller customers consuming less than 10,000 GJ per annum.

Where the demand characteristics of a group of customers significantly differs, or where the costs they impose on the network differ, there may be good reasons for introducing new tariff classes. However, a proliferation of tariffs classes is likely to increase administration costs, and may confuse customers if they must calculate the tariff that is most beneficial to them. Furthermore, in Victoria it may make sense to define tariff classes that are consistent with those defined by VENCorp.

A judgement balancing these factors is required in determining whether new tariff classes should be defined under the revised Access Arrangements.

---

9 www.gpugasnet.com.au

4.2 Distance Based Charges

Both pipeline construction and operating costs are affected by the distance gas is transported. These factors should all be reflected in an efficient transmission tariff structure.

Three issues arise in this context under the current arrangements adopted by GasNet:

i. the allocation of costs;

ii. the way in which 'distance' is defined; and

iii. the difference between actual and forecast gas flows on the pipeline system.

In a 'single' point-to-point pipeline, the calculation of tariffs and the allocation of costs among customers or customer groups might be a fairly simple and straightforward process. However, the Victorian gas system is a relatively 'meshed' network, with multiple injection and off-take points, reversals of gas flow, and null points. Gas flows on such a meshed system are less predictable, and may change over time as the pipeline system develops and as injection and withdrawal quantities vary, potentially causing or relieving congestion on the system in unpredictable ways.

The cost allocation model currently applied by GasNet is relatively complex. The model identifies a large number of cost groups based on the size and cost of each pipeline segment. The existing tariffs allocate costs to flows based on a pro-rata allocation of the costs of each pipeline segment to the flows through that segment. The tariff over a flow path is calculated as the sum of the tariffs through each contiguous segment. Although this approach reflects the cost and usage of he pipeline, it creates some very high tariffs for customers on smaller diameter laterals in outlying parts of the network. This may be the case even where the pipeline is under-utilised, and the principles of efficient pricing would suggest that lower tariffs should apply, to encourage use of the pipeline.

This methodology for calculating tariffs and allocating costs to customers is complex, and to the extent that it does not reflect incremental costs, it is not necessarily efficient. Also, given that the transmission tariff component only accounts for between 5 and 10 percent of final delivered gas tariffs, the complexity might not be justified.

The second issue relates to the manner in which a distance-based pricing regime measures the distance that is relevant in calculating a customer's tariff. GasNet currently calculates injection charges based on the costs of transporting gas from the injection point to a notional Hub. Withdrawal charges reflect the cost of transporting the gas from the Hub to the off-take points based on a forecast of those gas flows made at the beginning of the regulatory period.

Certain anomalies arise from the way distance is defined in the current tariff regime, in particular where the actual distance over which gas is supplied is not well approximated by the combined distance from injection to the Hub, and the Hub to the delivery zone. For

example, where a delivery zone lies between an injection point and the Hub, customers located in the zone may pay relatively high tariffs compared to the distance gas is shipped on the system. Although GasNet currently applies discounts to tariffs in the form of matched injection and withdrawal factors to address that issue, some anomalies persist, eg, the current tariffs from Culcairn to South Hume are higher than those from Culcairn to Melbourne, despite Melbourne being more distant form the injection point.

The third issue raised is related to the actual flow of gas. A distance-related pricing methodology is currently applied by GasNet to calculate transmission tariffs, as described above. However, the current approach does not completely reflect *actual* gas flows through the system as the calculation of withdrawal tariffs is based on pre-determined flow forecasts made at the beginning of the regulatory period. This causes a "lock-in" of transmission tariffs that may not reflect the actual gas flows or efficient cost allocations on the network.

4.3 Injection and Withdrawal Tariffs

GasNet currently applies separate injection and withdrawal charges for calculating tariffs for Tariff D and Tariff V customers. As noted above, injection charges reflect the costs of transporting gas from the injection point to the Hub[10], while withdrawal charges reflect the distance from the Hub to the off-take points. There are currently four injection points and approximately 120 off-take points on GasNet's system. Withdrawal tariffs are simplified into "zones".

One option for revising tariffs would be to dispense with injection tariffs and charge the full cost of transportation through withdrawal tariffs. The choice between maintaining the current, separate injection and withdrawal charges, and moving to withdrawal charges only, is likely to involve balancing a range of factors, including simplicity, stability in tariff structures over time, the potential to structure injection and withdrawal charges differentially, and any existing market factors that support one approach rather than the other (such as existing contractual arrangements between GasNet and its customers).

4.4 Peak versus Non-peak Charging

Pipeline capacity is initially determined with reference to demand at peak times. There are therefore valid arguments for the costs of providing such "peak usage" capacity to be recovered from those customers who use peak capacity. Allocating costs to those who drive investment requirements may be considered "fair", and consistent with providing ongoing price signals for future investment in the pipeline system.

---

10 The Culcairn injection charge only covers the length of the InterConnect.

GasNet's current tariff structure and cost allocation approach is based on 'peak load pricing'. Under this approach, 65 percent of the costs of gas transmission are allocated to peak periods.

The current peak pricing approach distinguishes between Tariff D and Tariff V customers. For Tariff D customers, the peak delivery charge is based on the quantity of gas delivered to the customer on the five peak transmission delivery days ("Peak Demand Charge"). For Tariff V customers, the peak delivery charge is based on the quantity of gas delivered to the customer during the peak period (1 June to 30 September) ("Peak Volume Charge"). Injection charges for both Tariff V and D customers are based on injection volumes over the five days of highest injection demand ("Peak Injection Charge").

However, the current peak pricing approach raises a number of issues. In order to send signals to customers about the impact of their demand on their transmission tariffs, prices need to be known in advance. However, the peak injection and withdrawal days are determined ex post and are not known to customers until the end of the winter period. This means that Tariff D customers cannot manage their load and shippers cannot manage their injections in response to different transmission price signals.

The current peak tariff methodology charges more for peak usage even though there may be no congestion on the pipeline system, and the higher usage of pipeline capacity at peak times may not result in higher network costs. For example, in one incident, 'emergency' gas exports to New South Wales over the winter period attracted an entire year's peak transmission charge, even though the flows were for a relatively short period of time, the flows were 'as available', and there was no congestion on the pipeline system connecting Victoria with New South Wales at that time.

Even if there is congestion on the pipeline system, there is a danger that the peak tariffs charged by GasNet may, to some extent, duplicate the congestion signals sent by the gas market in the form of uplift charges and costs associated with the risk of being curtailed.

The current peak pricing methodology may also cause problems in relation to the implementation of FRC. Currently, Victorian gas retailers pay GasNet monthly transmission tariffs based on forecasts of peak usage, which are then passed on to customers. Actual charges can only be determined after the winter period, when the peak days have been determined. This time lag is likely to cause reconciliation problems (eg billing) between shippers and their customers. This is particularly so given that customers can churn at any period of time during the year, which can result in retailers facing significant risks. For example, an existing customer could switch supplier before peak charges are known, and the retailer could be left with the responsibility for paying unexpectedly high transmission charges on behalf of that customer, without any contractual basis for recovering those costs from the customer.

Finally, the current approach is based on the assumption that peak days occur during the winter period. The growth of summer gas-fired electricity generation might eventually

introduce a summer peak, which could make the current winter peak approach inappropriate.

4.5 The Form of Price Control

GasNet's transmission tariffs are subject to an overall average revenue yield mechanism, as specified in the Tariff Order. Under this control, the forecast average tariff charged in a given year by GasNet must be no more than the maximum average tariff permitted in that year. The maximum average tariff increases each year by (CPI minus X), with the "X" factor being set at 2.7 % per annum until the end of this review period (31 December 2002).

A "K-factor" is calculated to adjust for any over- or under-recovery of the allowed average revenue in a year. The K-factor is applied to the maximum average tariff allowed for in subsequent years.

A range of alternative approaches could be adopted to regulate the revenue GasNet is permitted to recover. These include, at one end of the spectrum, a control on the absolute level of revenue recovered, to a weighted tariff basket approach, or, at the other end of the spectrum, a schedule of defined tariffs.

The form and level of price control adopted can have a significant impact on the incentives provided to the regulated business to operate the network efficiently and encourage efficient use of the network. In addition, the interaction of the price control mechanism and the structure of tariffs can have a significant effect on the likelihood of the business over- or under-recovering its allowed revenue.

There is a cap imposed on the extent to which GasNet can adjust tariffs in future years to recover past revenue under-recovery. This cap has restricted GasNet from recovering revenue shortfalls from previous years. Avoiding such a problem in future requires either a relaxation of the 'cap' on adjustments to tariffs for this purpose, or a tariff-setting methodology that is more accurate in meeting the tariff control on a year-to-year basis.

4.6 The Rebalancing of Tariffs

GasNet currently has the flexibility to vary individual tariff components within the overall average revenue allowance on a year-to-year basis. Tariff adjustments may be desirable to more closely reflect underlying costs.

However, rebalancing is limited, with increases in any individual tariff component confined to (CPI plus a rebalancing factor "Y"). The rebalancing factor for GasNet has been set at CPI–1.7% per annum for the period to 31 December 2002, which is 1% above the normal tariff path.

Limitations on the level of tariff rebalancing can be justified in order to avoid price shocks for particular customers or customer groups. However, this limitation might also reduce GasNet's ability to rebalance tariffs where there are sound reasons for doing so, eg, where published tariffs lead to under-utilization of the existing network.

4.7 Wash-Up

Under the current arrangements, GasNet levies a sculpted monthly charge on shippers based on a forecast of peak and off-peak use. A wash-up is undertaken to reconcile the difference between forecast charges and the annual tariff liabilities given the actual flows.

Forecast charges are based on the previous year's actual profile. Actual peak injection and withdrawal charges for Tariff D customers are based on the quantity of gas injected and delivered on the five peak injection and delivery days. Actual peak injection and withdrawal charges for Tariff V customers are based on the quantity of gas injected on the five peak injection days and delivered over the peak period from June to September.

Peak usage is not known until October when the winter period is over. The wash-up is normally conducted in December each year. The wash-up can involve significant adjustments due to the current peak pricing approach, which might result in large differences between the forecast and actual tariff.

In addition to these differences, the tracking of costs and the reconciliation at the wash-up are costly to administer and a cause of complexity, confusion and uncertainty for shippers and final customers. The wash-up, where it is significant and where it occurs annually, could also cause problems once FRC is implemented, since customers can switch retailer at any time during the year, but there can be a timing mismatch between when retailers charge their customers, and when actual transmission charges are known and charged to the retailer.

4.8 Prudent Discounts

As noted in section 3.3, efficient transmission tariffs can be defined as lying between incremental costs and the cost of alternative sources of supply (stand-alone costs). The tariff methodology adopted may lead to incentives for some customers to by-pass the network, by setting a tariff that exceeds the stand-alone cost. In these circumstances it would be prudent to offer the customer a discount to ensure that the customer remains on the network, and does not decide to by-pass. As long as the customer is covering their incremental costs, and making a contribution to the shared network costs, then all customers are better off.

Where the tariff setting methodology involves averaging, individual tariffs that result may lie above stand-alone costs. Such averaging could involve the allocation of costs to a number of categories for simplification, or the averaging of locational prices into "zones".

The methodology used to calculate the transportation distance may also result in inaccuracies for some customers.

GasNet applies a zonal pricing methodology to its transmission system. Withdrawal charges are 'averaged' over 10 zones. The averaging process has the potential to create opportunities for some customers to by-pass GasNet's pipeline system, eg, at zone boundaries.

As discussed earlier, Tariff V and Tariff D customers also pay VENCorp charges for the operation of the system. The design of an efficient tariff must also take these charges into account.

In order to avoid the potential for system by-pass, a "prudent" discount (ie, one that does not result in tariffs that are less than incremental cost) may be justified. Such discounts are consistent with efficient network prices.

5 PROPOSED TARIFF DESIGN

This section discusses proposals for a revised tariff structure for GasNet's transmission tariffs, to apply from 2003. These proposals result from GasNet's own analysis and experience with the current tariff structure, as well as the feedback from our customers. While GasNet holds firm views on the appropriate direction of change in relation to some aspects of the tariff design, we have not yet formed a firm view on other aspects.

GasNet is seeking the views of interested parties in relation to the issues discussed in the previous section and on the proposals put forward here.

5.1 Tariff Classes Defined

As noted in section 4.1, where the demand characteristics of a group of customers is distinctly different, or where the tariff design does not adequately reflect the costs they impose on the network, there may be good reasons for introducing new tariff classes.

GasNet notes that there are some customers who have increased in significance in recent years, and whose characteristics differ substantially from the existing customer base. These include gas storage and gas-fired peaking power stations. These loads are characterised as being essentially controllable, and hence it is unlikely they will contribute to peak day congestion.

As a result, GasNet proposes to create additional tariffs designed specifically for these customers, in addition to the standard Tariff D and Tariff V categories. These new tariff classes will not be allocated any peak related costs.

5.2 Distance Based Charges

GasNet believes tariffs should reflect a fair and efficient allocation of the cost of transporting gas to different parts of the State. This cost is reflected both in the distance the gas is transported, the cost of the pipes in which it flows, and the usage of the pipeline at any particular point in time.

As noted in section 4.2, three issues arise in this context under the current arrangements adopted by GasNet:

iv. the allocation of costs;

v. the way in which 'distance' is defined; and

vi. the difference between actual and forecast gas flows on the pipeline system.

As discussed in section 4.2, the existing cost allocation approach has a number of drawbacks. First, there are a large number of cost categories for different types of pipes, which is

relatively complex and may not lead to a fair allocation of costs. Furthermore, the methodology creates very high tariffs in some outlying parts of the network, due to the existence of long pipes with relatively low usage, which may lead to an inefficient under-utilization of these assets.

GasNet proposes to make changes to the way costs are allocated over the network, which it believes will simplify the calculation of tariffs, and avoid many of the drawbacks of the current tariff structure.

The basis of the proposed tariffs will be a standard price per kilometre over which the gas flows. A unique unit price will apply for each of the three trunk pipelines, with a fourth unit price applying to the smaller lateral pipelines[11]. This will greatly simplify the cost allocation process. Maintaining the distinction between trunk and lateral pipelines will ensure that the significantly lower unit cost of larger pipelines (due to economies of scale) is recognised, while significantly simplifying the calculation of tariffs.

The use of a uniform rate per kilometre on the non-trunk network will tend to reduce the large differential between metro and country tariffs. In outlying parts of the network, tariffs will continue to reflect the greater distance involved in transporting gas to those customers, but will not overly discourage consumption on currently small or low-utilization pipes.

The proposed tariffs will also reflect more closely the distance over which gas has actually travelled. The charges will be based on the distance from the location of gas injection to the location of the withdrawal. In deriving tariffs, GasNet's cost allocation model will assume that gas has flowed optimally over the network (ie, from the closest injection point based on a forecast of injection volumes). However, the tariffs actually charged will be based on the actual injection and withdrawal locations used by each shipper over each month. [12]

While withdrawal charges will be based on distance, for simplicity withdrawal points will be grouped into 10-15 locational zones. This will ensure that tariffs reflect locational factors, without being unduly complex to administer.

Effectively, there will be four withdrawal tariffs for each zone, one for each main injection point. This approach can be used either where withdrawal tariffs only are applied, or where both injection and withdrawal tariffs continue to apply (discussed in section 5.3). Where both injection and withdrawal tariffs apply, the path from injection to withdrawal will effectively be split in two, one part comprising the injection charge and the other being allocated to the withdrawal charge. However, the total charge will always be related to the distance from the injection point to the withdrawal zone.

---

[11] Lateral pipelines have a diameter of equal or less than 350 mm, or operate at a pressure of less than 7,000 kPa. All other GasNet pipelines are considered to be trunk pipelines.

[12] If a shipper supplies their load from more than one point, the charges will be based on the matching withdrawal and supplies over the most economical paths.

It is likely that there will continue to be a need for rebates, where the withdrawal point lies off an injection line. This will preserve the distance-based character of our charges.

5.3 Injection and Withdrawal Charges

As noted in section 4.3, separate transmission charges currently apply for gas injections and gas withdrawals.

Under the revised tariff methodology, tariffs could be levied only on withdrawals (dispensing with injection charges), or they could be split into withdrawal and injection charges. GasNet proposes that, consistent with the current approach, the separation of tariffs into withdrawal and injection charges be maintained.

There are a number of advantages in maintaining separate injection and withdrawal charges. It allows flexibility to apply seasonal tariffs to some tariff components and not others, if that is considered desirable (as discussed in section 5.4 below). Furthermore, it maintains consistency with a number of GasNet's existing contractual arrangements.

GasNet believes that the division into separate injection and withdrawal charges does not add significant complexity to the tariff structure, and may even enable simplification of some withdrawal tariffs. Simplification could occur, eg, where the separation of injection tariffs results in the different withdrawal tariffs within a zone being sufficiently close that they can be merged into one withdrawal tariff for the zone.

Our proposal is to define the injection pipelines as the Longford pipeline, the Iona to Lara pipeline, and the Interconnect pipeline (Culcairn to Barnawartha).

5.4 Peak versus Non-Peak Charging

Currently 65 percent of costs are allocated to the peak charges. As a result, customers who consume more gas in peak times, such as Tariff V, are liable for a higher annual charge than less peaky users.

Section 4.4 discusses the issues that have arisen as a result of the current peak charging methodology. As a result of these factors, GasNet proposes revisions to the current peak pricing methodology, as described below.

In the first instance, GasNet proposes to remove the current peak pricing methodology based on the 5 system peak days for injections and for Tariff D withdrawals. With respect to injections, injection charges will be applied during the whole winter period (and be zero at other times). This will allow shippers to know their injection charges when they decide to ship gas into the system. They then have the option to recover those charges either through their bids into the market, or through transmission charges to customers.

In relation to withdrawal charges, GasNet proposes to employ a similar charging model for all customer classes, based on a flat Anytime charge over the whole year (although the rates for each class will differ according to the cost allocation model discussed below).

GasNet has considered whether there is benefit in retaining a seasonal variation in withdrawal tariffs. Currently, Tariff V customers face a higher per unit charge during the winter months. This would be more predictable than the current peak charging model for Tariff D customers. Alternatively, a flat anytime rate could apply throughout the year for both Tariff D and Tariff V customers.

Deciding whether or not to incorporate a seasonal peak component in tariffs is a matter of weighing up a number of factors. On the one hand, a single flat anytime rate is simple to understand and apply. Furthermore, it leaves the signalling of system congestion to the market (and to injection charges), thus avoiding any risk of duplicating the gas market signals. Most importantly, it removes the anomaly that occurs in the present model where strong peak charges are levied on actual customer flows, even when there may be no congestion on the pipeline.

However, it is recognised that the congestion signals provided through the market are imperfect. In addition, while there is little congestion on the network at present, as congestion increases in the future it will be demand at peak times that drives the need for new investment in the network. As such, there may be justification for signalling this future cost through higher transmission charges at peak times. Establishing these longer term price signals will provide greater price stability than varying transmission charges in response to the short term costs of congestion.

If tariffs are more predictable, it will be easier for retailers to manage the risks of customer churn once FRC is introduced. Tariffs will be more predictable once the 5 day peak charging methodology is abolished.

Judgement is required in balancing these various factors. GasNet has reached the view that a seasonal component to winter charges on the injection pipelines could be beneficial in signalling long run costs, while not adding unreasonable complexity to the tariff structure. For withdrawal charges, our preference is for a flat anytime charge.

Peak/Offpeak Cost Allocation

A separate but related issue is the appropriate allocation of costs between peak and off-peak times, and between different customer groups. As noted above, currently 65 percent of costs are allocated to peak usage, and these costs are borne to a greater extent by Tariff V customers, reflecting the pattern of their demand. The appropriateness of this cost allocation needs to be considered.

GasNet proposes to broadly retain the current cost allocation between forecast peak and non-peak usage customers, but to move towards a slightly lower allocation of 60% of costs to

the peak. This recognises the fact that the gas market does send peak signals through uplift, but that this signal is currently imperfect. In addition, a significant move away from the current allocation of 65% of costs to peak usage would lead to a significant rebalancing of tariffs between Tariff D and Tariff V customers.

This cost allocation rule is intended to reflect the fact that in the long run, there is likely to be congestion, and long run incremental costs. The cost allocation rules should therefore allocate a reasonable level of costs to the peak to reflect the costs to add capacity on the peak day, and the economies of scale in pipeline construction. Allocating costs on long-run trends runs the risk of allocating too much to the peak if there is no congestion in the short to medium term, but it also not desirable for the allocation rule to fluctuate radically from one regulatory period to the next as congestion comes and goes.

A consequence of this cost allocation rule is that a peaky Tariff V customer will on average pay more than a less peaky Tariff D customer per GJ (as is the case under the current tariff model). A further consequence is that the controllable storage and gas-fired peaking power station loads will pay a lower tariff based only on the offpeak costs, reflecting the fact that these controllable loads will not be contributing to peak congestion.

To significantly change the allocation between customer groups could lead to large price shocks for some customers, without any significant efficiency benefits. Furthermore, given that the need for current and future peak capacity is largely driven by the demand of Tariff V customers, it is appropriate that these customers face price signals reflecting the long run costs of capacity.

5.5 Wash-Up

The wash-up is necessary to reconcile sculpted charges based on the forecast usage with the actual tariff liabilities. The current method for charging at peak times leads to highly unpredictable peak charges. As a result, the wash-up can involve a significant amount of money.

The changes to the tariffs proposed by GasNet, in particular the simplification of peak charges, will enable more accurate estimates to be made of transmission charges. In relation to some tariffs, it may even be possible to charge on the basis of actual rather than estimated usage.

As a result, the wash-up can be expected to fall significantly. In consequence, it will be less of a barrier to FRC. It may even be possible to remove the wash-up, where charges are based on actual rather than estimated usage, or where the amounts involved in the wash-up do not justify the administrative costs to GasNet and the shippers of carrying out the wash-up.

5.6 Form of Price Control and Rebalancing

GasNet believes there are advantages in retaining the current price control mechanism. These include the avoidance of spurious incentives to artificially encourage peak flows, flows to a specific zone, or flows from a specific zone. The rebalancing mechanism also enables GasNet to facilitate efficient utilisation of the network because it creates incentives to increase flows over the whole system whilst remaining within the overall price control.

Under its current Access Arrangement, there is a cap on the extent to which GasNet is able to rebalance its tariffs. This cap applies both to the extent to which overall tariffs can be rebalanced, and to the extent that individual tariff components can be rebalanced against each other (eg, the split between peak and non-peak charges, or between different zones).

The limit on rebalancing overall tariffs has prevented GasNet from recovering a repeated shortfall in revenue from that allowed under the price control. As a result, GasNet proposes that, under the revised Access Arrangement, adjustments to tariffs should fully compensate for any over- or under-recovery of revenue in the previous period.

However, GasNet proposes that the limit to rebalancing between different components of the tariff structure (eg, between tariff zones or between peak and anytime charges) be continued. This will provide flexibility for GasNet to adjust tariffs to encourage efficient utilization of the network, while ensuring that price variations between individual customers will be limited.

This proposal will be effected by a K-Factor which will apply pro-rata to all tariffs, but which will not be capped, and a Y-Factor which will allow individual tariff components to be rebalanced in a revenue neutral manner (after application of the K-factor), but which will be capped at +1%.

5.7 Prudent Discounts

As noted in section 3.3, the principles of efficient pricing suggest that prices should lie between incremental cost and stand-alone cost.

The proposed tariffs involve averaging, both in terms of the cost charged per kilometre (which effectively averages the cost of pipelines per kilometre) and in creating zonal withdrawal tariffs. Such an averaging process, while having the advantage of simplicity, could potentially lead to incentives to bypass the system at some parts of the network. In designing the revised tariffs, GasNet will undertake modelling to identify any parts of the system where the proposed tariffs lie outside the boundaries of efficient pricing. Where necessary, tariffs will be adjusted to ensure cross-subsidies do not occur.

6 CONCLUSION

It has been widely accepted that GasNet's current tariff structure has some shortcomings, as outlined in this paper. These shortcomings have become more acute with the introduction of retail competition, to the extent that there are concerns that the current transmission tariffs represent a significant barrier to a competitive market once FRC is introduced.

GasNet is seeking to revise its tariff structure as part of the revised Access Arrangements that will apply for the period 2003 to 2007. The proposals are designed to make transmission tariffs conceptually simpler, more predictable, and more consistent with the introduction of FRC. At the same time, the proposed tariffs recognise the underlying costs of transmission – the cost of the pipelines used, and the distance over which gas is transported.

GasNet is inviting its customers and other interested parties to comment on the issues raised in this consultation paper, and the proposed changes to the transmission tariff structure.

Appendix Comparison of Existing and Revised Tariff Structures

Existing Model	Revised Model
Cost Allocation Rules	
65% of costs are allocated to forecast peak day volumes. Remainder to annual volumes.	60% of costs are allocated to forecast peak day volumes. Remainder to annual volumes.
Pipeline costs are computed for 23 segments, and costs are allocated to off-takes within each segment by the volume-distance method.	Pipeline costs are computed for 4 segments, and costs are allocated to off-takes within each segment by the volume-distance method. The segments are: Longford trunk South West Pipeline trunk Interconnect Remainder (all <= 350mm diameter or < 7000 kPa)
System-asset costs for each segment are computed using the Optimized Replacement Cost (ORC) of each asset, scaled down to match the total Depreciated ORC (DORC) of the pipeline system.	Same.
Locational operating costs are allocated to each segment based on pipeline length for pipe costs, and to each compressor for compressor costs.	Same, but regulators are also individually allocated.
The non-locational costs (overheads, and buildings and land) are allocated to the annual volume at each off-take.	The non-locational costs are allocated to annual volumes by distance transported.
A forecast of injection and off-take volumes is made, and flow paths are constructed. The costs are allocated to the forecast flow paths by picking up the allocated costs of each segment on the path through which the gas flows.	Same.
The forecast gas flows to each off-take are taken from the nearest injection points.	Same.

Existing Model	Revised Model
Tariff Structure – Injections/Withdrawals	
Separate Injection and Withdrawal tariffs are defined. Injections tariffs apply to: Longford Port Campbell Culcairn	Same.
Injection tariffs recover only the asset-related costs. Operating costs are allocated to the withdrawal tariffs, based on forecasts of operating costs used on each injection pipeline.	Same. Irrespective of the definition of the injection tariff, the total injection plus withdrawal tariff will recover the costs based on the distance from the injection point to the withdrawal point.
Withdrawal tariffs recover all other costs.	Same.
Tariff Classes	
Tariff D Tariff V	Tariff D Tariff V Storage Gas-Fired Peaking Power Stations
Tariff Structure – Flow Paths	
Withdrawal tariffs are locked-in based on the forecast flow paths, and are independent of injection point. However, for zones near injection points, a special tariff (the matched-booking rebate) is offered if injections are made at that point.	Withdrawal tariffs are source-dependent. In any month, the injections and withdrawals of each shipper are matched by a GasNet algorithm, and the shortest supply paths connecting injection and withdrawal points are assumed (for each shipper). For an *in-balance* shipper, the tariff is always related to the distance transported from injection to withdrawal points. For a net withdrawer, the withdrawals during a month are assumed to be supplied from the net out-of-balance injections in that month. The withdrawal tariff is based on the flow paths from the closest out-of-balance injections.

Existing Model	Revised Model
Tariff Structure – Charging Structure	
Injection charges are based on the 5-peak injection days at each injection point over June-September. No charge outside this period.	Injection charges are based on the monthly injections June-September. No charge outside this period.
Withdrawal charges: Operating costs (including overheads) are charged as an Anytime charge, which is the same for both Tariff-V and Tariff-D. Peak costs are charged to the 5-peak days for Tariff-D, and the 4 months of winter for Tariff-V. These charges are designed to recover the same peak cost from the peak day usage within each tariff class (based on the forecast profiles of each tariff class).	Withdrawal charges: All customer classes are charged a flat Anytime charge, which differs by tariff class. The charge for each tariff class is based on the forecast peak and annual usage of each class within each zone ie. Peaky Tariff-V volumes attract a higher charge than less peaky Tariff-D customers. Storage and peaking power stations are not allocated peak costs.
Zones	
Off-takes are grouped into ten zones for tariff purposes. The Metro zone from Pakenham to Geelong contains the majority of off-takes and gas load.	Zones boundaries are yet to be determined. It is likely that the Geelong area will be a separate zone given its proximity to Iona relative to Longford. The Metro zone may be further split into Eastern and Western segments.
Price Control	
Company is allowed to earn an Average Transmission Tariff times the actual annual flow. Shortfalls (over-recoveries) are repaid/collected by adjusting the tariffs up/down in subsequent years. The adjustments are made against a CPI-X price path. Individual tariff components can be adjusted at GasNet's discretion, subject to a cap of 1% above the CPI-X price path.	Same, except that the adjustments are in two parts. The first adjustment corrects the shortfall/over-recovery using the same percentage adjustment to each tariff component. This is not capped. The second adjustment is a revenue neutral adjustment (after the first adjustment is completed) to individual tariff components. This adjustment is capped at +1% on individual tariff components.

Wash-Up	
Charges to each shipper are levied monthly based on a sculpted profile which matches the volume profile. The monthly charges are forecast at the beginning of each year. The difference between forecast charges and actual liabilities under the tariff are corrected at an annual wash-up at year's end.	If a sculpted profile is desired, then the shipper will pay a fixed $/GJ rate for each tariff component. This means that the revenues will follow the volumes over the course of the year, but if a shipper loses load in a high priced zone, and gains load in a low priced zone, their charges will follow the customer. The difference between charges and liabilities under the tariff will be corrected at an annual wash-up.