Pricing Methodology
Gas transmission system

From 1 October 2012

Pursuant to:
The Gas Transmission Information Disclosure Determination 2012

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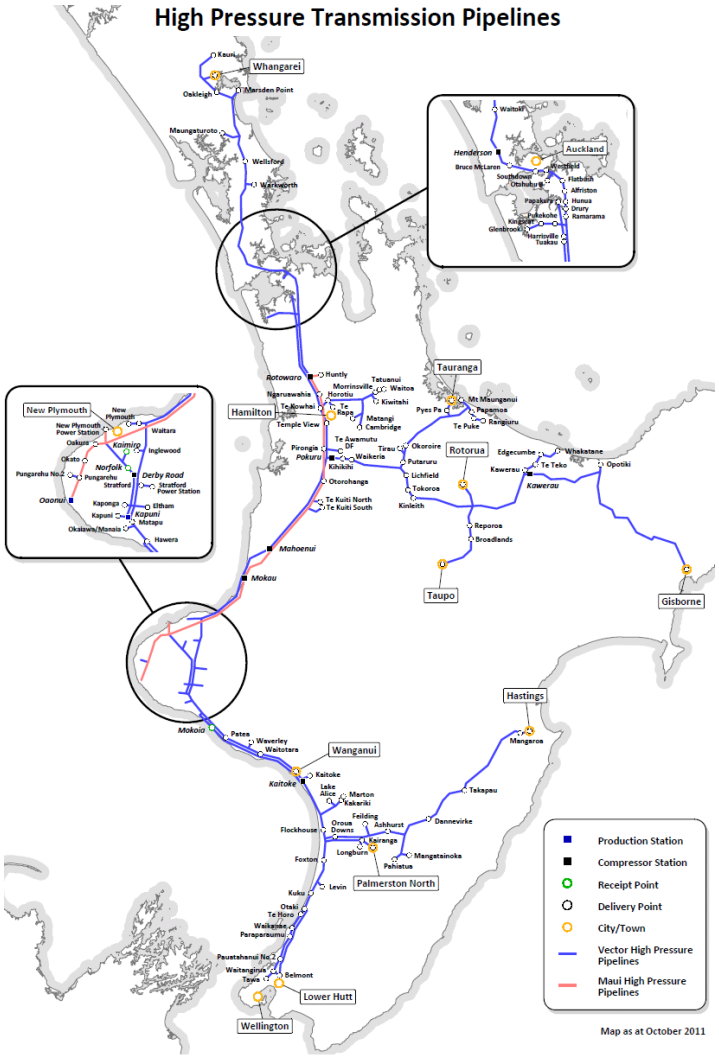
2 Introduction

2.1 Vector provides gas transmission services in the North Island over a network that comprises 2,400km of pipeline. The system was largely built between 1968 and the mid-1980s by the Natural Gas Corporation (NGC) and was purchased by Vector in 2005. The map below shows the Vector Transmission System in blue:

Figure 1, Vector's gas transmission system:



2.2 Gas is taken from Vector's transmission system at over 130 delivery points (DPs), all of which are owned by Vector. They supply both distribution networks and single consumers such as industrial plants and power stations. Vector generally contracts with only a small number of shippers who use the transmission system. It is the shipper's gas that Vector moves from its source (typically in Taranaki) through the transmission system to where it is finally consumed.

2.3 In October 2012, the Commerce Commission issued the Gas Transmission Information Disclosure Determination 2012 (the Determination). Amongst other things, the Determination requires Vector to publicly disclose the methodology used to set prices for the forthcoming pricing year. Vector has adopted a

transparent approach to the development of the gas transmission pricing methodology (GTPM). Vector is currently undertaking a review of the gas transmission pricing methodology and has published consultation material on our website at:

http://vector.co.nz/gas/gas-transmission-pricing-methodology

2.4 This document is Vector's disclosure of our pricing methodology. It provides information about the development of the GTPM in a transparent manner and meets the pricing methodology disclosure requirements of the Determination.

3 Objective for setting prices

3.1 A key feature of a gas transmission system is that many of the assets used to convey gas are used by multiple shippers and many consumers. While the way this system has been built up over time is something that we now have limited ability to influence, we are able to influence present and future decisions to invest in the gas transmission system.

3.2 The pricing methodology (including the published standard prices) is designed, in line with pricing principles published by the Commerce Commission, to efficiently recover the costs of the existing gas transmission system and send efficient signals to users when new investments are required.

3.3 Vector's published standard prices are set to recover the costs of owning and operating the gas transmission system as it currently exists. The most significant cost element reflected in our prices relates to the physical gas transmission assets, for example the pipes, stations and compressors.

3.4 To send the right signals to shippers and consumers and to ensure new investments in the system are as efficient as possible, those shippers and consumers need to be charged for the full or proportionate cost of those assets (new and existing) they will be using.

3.5 Vector has developed a high-level framework used to guide the development of the Gas Transmission Pricing Methodology (GTPM). The applicable requirements which form an overarching set of objectives for the GTPM include:

a) Cost recovery - ensuring Vector recovers its costs, including an appropriate return on and of investment. A key aspect of cost recovery is the predominantly sunk and fixed nature of the costs;

b) Meet regulatory obligations - including compliance with the weighted average price requirements and the pricing principles;

c) Incentivise efficient usage - in other words, encourage better utilisation of pipe segments to ensure that new investments are efficient, the cost of additional capacity is signalled when existing capacity is scarce and sunk investments are not inefficiently by-passed; and

d) Market design consistency - optimise consistency of the GTPM with eventual market design.

3.6 Finally, price cap regulation is intended to promote improvements in efficiency over time. We consider that this applies equally to the development of pricing methodologies. The reality for Vector is that information on consumer and shipper response to prices is highly imperfect. Vector intends to review consumer responses to the prices and will continue to enhance price design over time.

4 Methodology for setting prices

4.1 Vector's current GTPM was largely designed by NGC in the mid-1990s. Vector has made very few changes to the GTPM used to determine prices.

4.2 The VTC allows shippers to reserve annual blocks of system capacity with a right of first refusal for the same capacity the following year. Capacity is the entitlement to have specified quantities of gas transported from nominated receipt points to nominated delivery points subject to a number of rules and requirements.

4.3 Once reserved, capacity blocks are divisible into any number of secondary blocks from one day to one year's duration. A shipper may trade blocks of capacity to other users at freely negotiated prices.

4.4 Capacity can also be transferred throughout the system from any receipt point/delivery point combination to any other, subject to physical system constraints. Overrun arrangements provide for the purchase of capacity in excess of reserved capacity should this be necessary.

4.5 In designing the pricing methodology in the 90's, NGC used an Optimised System Cost Allocation (OSCA) model to generate the prices charged to shippers for using the transmission system. From the mid-1990s up to and including the 1999-2000 pricing year the way OSCA was applied is set out below.

a) The price for reserving system capacity (being a Capacity Reservation Fee or CRF) for each delivery point on the transmission system was initially designed to recover a return on and of system fixed assets utilised by that delivery point. CRFs were determined by the:

(i) reserved capacity at each delivery point; and
(ii) the distance between the relevant receipt point and the delivery point.

The logic was that the further down a pipeline a delivery point was located the more assets were used to ship gas there (being a distance-based pricing model).

b) A throughput fee (TPF) was set to recover only variable costs i.e. the estimated cost of compressor and line heater fuel. All other costs of the

transmission business were considered essentially fixed, so they were recovered, along with transmission asset costs, in CRFs. Hence up to (and including) the 1995-96 contract year the TPF was only $0.03/GJ.

c) Overrun charges – unauthorised overrun charges are applied to shippers who take more gas on a day than they have reserved capacity for (at 20 x the daily CRF).

d) From the 1996-97 pricing year onwards shippers successfully lobbied NGC to make transmission fees less fixed and more variable. Accordingly the calculation of TPF fees changed to include the recovery of other network costs including a return on fixed assets other than pipelines and stations, maintenance and operating costs. The TPF jumped immediately to $0.41/GJ. More or less at the same time overrun charges were reduced from 20x to 10x the applicable CRF.

4.6 Subsequent changes to the TPF have moved it further away from being a cost reflective variable charge. Since 2008, CRFs have been frozen and the TPF has been adjusted annually to ensure that expected total transmission revenues for a year do not exceed the previous year's revenues plus a weighted-average CPI adjustment.

4.7 Vector has given consideration to the appropriateness of the historical GTPM and is currently undertaking a review of the gas transmission pricing methodology. This review is likely to affect future price changes. A number of relatively minor changes were implemented from 1 October 2012, while consideration of more fundamental changes continues through consultation with the industry. The key driver for changes to the GTPM is to establish a more economically robust and defensible pricing methodology that better aligns with the Commission's pricing principles. A revised GTPM is expected to be consistent with and supportive of potential market and contractual reform, being considered in a wider GIC-led industry review, to better address instances of capacity constraint through price signalling and provide incentives for capacity trading.

4.8 The key aspects of the changes to the gas transmission pricing methodology, which are reflected in the prices from 1 October 2012, include a change to the relativity of capacity charges between regions (to improve network utilisation incentives); a reduction in variable charges (to better reflect marginal costs); and a corresponding increase to the fixed charges (to reflect the nature of our underlying costs and ensure recovery of our revenue requirement under the price path). More information on the gas transmission pricing methodology review can be found at:

http://vector.co.nz/gas/gas-transmission-pricing-methodology

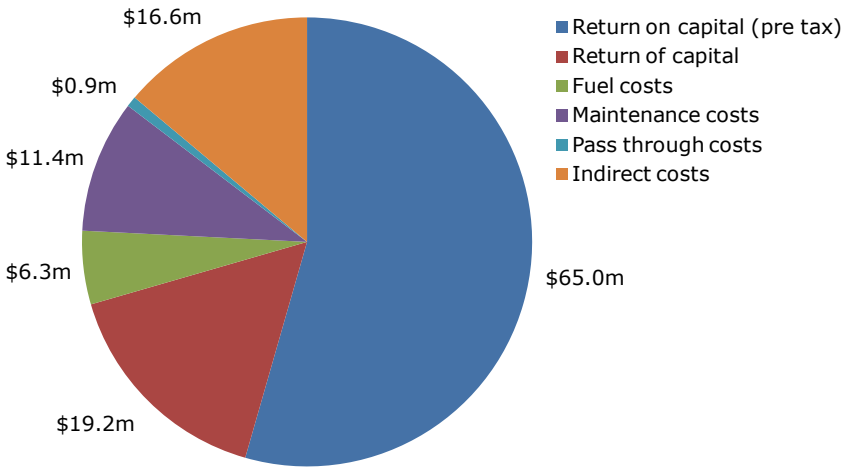
5 Determining target revenues

5.1 Vector's gas transmission business revenues are constrained by the requirements of the price path. Revenue changes from year to year are capped by the permitted (CPI-based) increase in weighted average prices.

5.2 The target revenue that Vector is able to recover each year is determined by the regulated weighted average prices and the actual capacity reserved and gas delivered over the transmission system. The target revenue that Vector expects to receive from the gas transmission system between 1 October 2012 and 30 September 2013 is $119.3m. We note this assessed target revenue incorporates a component of both changes in quantities (growth) and changes in prices when compared with revenue from the previous year.

5.3 A breakdown of the target revenue into the key components is shown in the chart in Figure 2. The breakdown of target revenue into the key cost components in the forthcoming year has been assessed using historical relativities between key cost components and revenue.

Figure 2 Breakdown of target revenue



6 How the transmission system is segmented

6.1 The transmission system has very few individual end consumers connected directly to it. More often the end consumers of gas are connected to intermediate distribution systems that then connect to the transmission system. Vector's (and NGC's, prior to Vector's) approach to segmenting the transmission system into discrete components in order to set prices for each of those components, was with consideration of the capacity required by shippers between individual receipt and delivery points.

6.2 The receipt and delivery points are illustrated in Figure 1 and listed in Vector's price schedules publicly available from

https://www.oatis.co.nz/Ngc.Oatis.UI.Web.Internet/Common/Publications.aspx

6.3 In some cases individual delivery points have been combined into single pricing zones. A price zone is a group of delivery points, within a specified geographical area, for which the CRF is the same. Vector establishes price zones for a number of reasons:

a) where several delivery points all serve a common distribution system and, as a result, deliveries at individual delivery points may be affected substantially by the operation of the distribution system and not just by the demand of the shippers' customers;

b) to avoid setting a CRF at a level which might encourage shippers to avoid using a delivery point: for example, by building a connecting pipeline to a nearby delivery point with a lower CRF;

c) to remove significant price differences between proximate delivery points which can arise when these points are supplied from different parts of a pipeline;

d) to enable CRFs at under-utilised delivery points to be set at a level that will encourage growth in usage of such points.

6.4 Vector may from time to time establish new price zones, or modify or extend existing price zones where Vector reasonably considers this justified by one or more of the reasons listed above.

6.5 Vector also describes the transmission system with respect to a number of pipelines. Each pipeline being a part of the gas transmission system that is connected to a just a single Maui Welded Point. The pipeline based segmentation (rather than delivery/receipt point) is predominantly used for balancing and peaking pool charges from MDL. The receipt of these charges from MDL is not relevant to the method by which Vector recovers its target revenue each year and so is not considered further in this document. However for completeness further information on pipelines can be found in the "01 Description of Pipelines (April 2012)" document at:

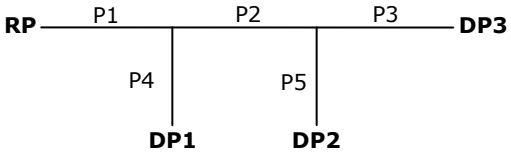
https://www.oatis.co.nz/Ngc.Oatis.UI.Web.Internet/Common/Publications.aspx

7 Allocating target revenues to segments of the transmission system

7.1 Subject to the background to setting CRFs and TPFs described in section 4), the OSCA model allocated the cost of providing the assets required to provide capacity reserved by Vector's shippers on the basis of historical Maximum Daily Quantity (MDQ) reservations and the distances between receipt and delivery points.

7.2 To illustrate how costs were allocated within the OSCA model, the diagram below represents a simplified pipeline transporting gas from a receipt point to three delivery points (DP1, DP2 and DP3). P1 through P5 are discrete elements of the pipeline. It is assumed that the historical MDQs at each delivery point are 10 units at DP1, 20 units at DP2 and 5 units at DP3.

Figure 3, illustrative transmission network for demonstrating cost allocation



7.3 The gas flowing from the single receipt point RP to each of the delivery points must all pass through the pipeline element P1. The MDQ in pipeline P1 is therefore the sum of all the gas at each delivery point: 35 units of MDQ being made up of 10 for DP1, 20 for DP2 and 5 for DP3. The portion of pipeline costs allocated to each delivery point is therefore made up of each deliver point's share of each pipeline element. For example:

a) The asset costs of P1 will be shared in proportion to MDQ, that is, 10/35th to DP1, 20/35th to DP2 and 5/35th to DP3.

b) DP3 is allocated 5/35th of the cost of P1, 5/25th of the cost of P2 and the full cost of P3.

7.4 These allocations for each delivery point are shown in the figure 4 below.

Figure 4, Asset cost allocations under OSCA

		Asset Cost Allocations				
	Pipeline	P1	P2	P3	P4	P5
DP	**MDQ**	35	25	5	10	20
DP1	10	10/35 × P1			10/10 × P4	
DP2	20	20/35 × P1	20/25 × P2			20/20 × P5
DP3	5	5/35 × P1	5/25 × P2	5/5 × P3		

7.5 Applying OSCA meant that at far-distant, little-used delivery points the CRF derived could be greater than Vector's assessment of what shippers would be prepared to pay. Therefore, Vector applied an "economic value" test to CRFs produced by OSCA. The CRF at any individual delivery point was capped at $600 per GJ of MDQ.

7.6 Since OSCA was last run by NGC there has been some erosion of the overall relativities in costs, for example as CRFs were frozen and weighted average CPI increases to revenues were recovered from TPFs. Notwithstanding this the underlying relativities between prices at individual delivery points continues to be based on the OSCA allocations. Vector is consulting on re-determining the GTPM in order to be able to ensure that Vector is able to demonstrate future prices are cost reflective and that the pricing objectives are delivered.

8 Consistency with pricing principles

8.1 The Commerce Commission's pricing principles provide a principle-based approach to developing and assessing pricing methodologies for gas transmission services. This section demonstrates the extent to which the GTPM is consistent with the pricing principles, as required to be disclosed under Subpart 5 of the Commerce Act (Gas Transmission Services Input Methodologies) Determination 2010 (the Input Methodologies).

8.2 Pricing Principle 1 under section 2.5.2 of the Input Methodologies states that:

a) Prices are to signal the economic costs of service provision, by being subsidy free, that is, equal to or greater than incremental costs and less than or equal to standalone costs, except where subsidies arise from compliance with legislation and/or other regulation;
b) Prices are to signal the economic costs of service provision, by having regard, to the extent practicable, to the level of available service capacity; and
c) Prices are to signal the economic costs of service provision, by signalling, to the extent practicable, the effect of additional usage on future investment costs.

8.3 The gas transmission system, by its very nature, consists of pipes with significant capacity. When building the system, economies of scale exist such that the cost of installing a pipe larger than that which is immediately required does not add significantly to the cost of network build. As a consequence many parts of the extant transmission system are characterised by having spare capacity. In most cases, due to the availability of spare capacity, the short run cost of the next unit of capacity is nil.

8.4 Where the system requires expansion, for example in order to connect a new user to the transmission system, then Vector generally funds this expansion through capital contributions and/or non-standard prices which directly offset, or ensure recovery of the incremental capital investment. Vector's approach to recovering these costs is outlined in the gas transmission capital contribution policy. With respect to principle 1(a), the GTPM generally recovers the short run incremental costs specific to a new connection from the connecting party.

8.5 The primary driver of the long run incremental cost (LRIC) of any connection, or classes of connections, is the extent to which they contribute to congestion in the system, as such congestion drives the need to periodically expand the capacity of the system.

8.6 In a gas transmission system the relationship between the capacity taken by any one connection (or groups of connections) and congestion in the system is difficult to define. The presence of "line-pack" in a gas transmission system means that there can be significant timing differences between when gas is taken and the timing of congestion. In these instances the costs of using the system (including the cost of system expansion) are allocated to users of the network. This allocation

process determines the prices charged for the use of the system. In addition Vector has a capacity determination process whereby Vector systematically assesses the capacity that is available for separate sections of the system, after taking account of the contractual and operating pressure requirements of the system.

8.7 While the cost of investment in additional capacity is signalled to the industry when congestion is identified, there is not currently any particular mechanism to determine the value of, and signal through transmission prices that available capacity is becoming (relatively) more scarce.

8.8 Vector has applied the stand alone cost (SAC) test in Principle 1 (a) to the charges for providing gas transmission services to each group of consumers (i.e. those consumers that are part of a particular group, or a single consumer in the case of non-standard contracts). There are large economies of scale in a gas transmission network; the sum of all stand alone costs to provide service to each consumer in the same region is much higher than the cost to provide the same service using a single network. It is these economies of scale that result in there being only one gas system in most locations.

8.9 Vector has checked, using its cost models, that the pricing methodology does not result in any consumer group (including any consumer on a non-standard contract) being charged amounts in excess of an estimated SAC to provide service to them. The assessment of SAC has also assessed non-network alternatives, for example alternative fuels in order to provide an equivalent service provision as that provided by shipped gas on the transmission system. The market tends to ensure this SAC test is met as a matter of course, as any large consumer, or group of large consumers in the same location that have a lower-cost gas delivery option to what Vector is charging them will usually raise this with Vector in the context of exploring a possible non-standard contract.

8.10 Pricing Principle 2 and 3 under section 2.5.2 of the Input Methodologies state that:

a) Where prices based on 'efficient' incremental costs would under-recover allowed revenues, the shortfall is made up by prices being set in a manner that has regard to consumers' demand responsiveness, to the extent practicable.

b) Provided that prices satisfy pricing principle 1, prices are responsive to the requirements and circumstances of consumers in order to-

a. discourage uneconomic bypass; and

b. allow negotiation to better reflect the economic value of services and enable consumers to make price/quality trade-offs or non-standard arrangements for services.

8.11 The pricing methodology recovers allowed target revenues in a manner that has regard to consumers' demand responsiveness by differentiating charges in the following ways:

a) Vector allows shippers to reserve the capacity on the system they require;

b) Allowing (and encouraging) secondary trading of capacity to ensure more efficient use of the gas transmission system; and

c) Established rules and criteria for non-standard pricing arrangements to take into account the requirements of individual consumers.

8.12 The pricing methodology also provides for non-standard contractual arrangements, with such arrangements being able to address changes to the structure or level of charges (e.g. for atypical load patterns, or to address particular by-pass or fuel substitute situations), or differing service levels where possible (e.g. a higher level of redundancy, or priority response if an outage occurs).

8.13 The pricing methodology obliges Vector to take account of the issues described above under Principles 1 and 2 when considering the design of a non-standard contract.

8.14 Pricing Principle 4 under section 2.5.2 of the Input Methodologies states that:

a) Development of prices is transparent, promotes price stability and certainty for consumers, and changes to prices have regard to the effect on consumers.

8.15 The existing pricing methodology for the gas transmission system is documented and is available to shippers, consumers and other stakeholders from Vector's website and is provided to them on request. This pricing methodology has been stable for many years. Changes to prices have been limited for most consumption patterns to be no more than 10% each year. Vector has consulted with stakeholders in the development of this pricing methodology and continues to consult as appropriate when applying it and future methodologies.

9 Consumer consultation on price-quality trade-offs

9.1 Vector has sought the views of consumers, shippers and stakeholders in the development of prices. Vector has commenced a comprehensive consultation with industry participants as part of its process to determine available pipeline capacity, particularly as it relates to the North Pipeline. Details of this process are available on:

http://www.vector.co.nz/gas/pipeline-capacity-consultation

9.2 Vector has conducted a transparent consultation process with stakeholders around changes to the GTPM, including the development of prices from 1 October 2012. These can be found at:

http://vector.co.nz/gas/gas-transmission-pricing-methodology

10 Impact on prices

10.1 The GTPM had worked reasonably well until relatively recently – largely given the reasonable availability of capacity in most parts of the network. However Vector reviewed the current GTPM, by applying assessment criteria (made up predominantly of the pricing principles), and considered that the GTPM was no longer fit for purpose, in particular, as current prices provide an incentive to increase use of the Northern Pipeline where available capacity is limited.

10.2 The schedule of final prices is available from:

https://www.oatis.co.nz/Ngc.Oatis.UI.Web.Internet/Common/Publications.aspx

10.3 The price schedules do not state the portion of revenue from each price component as this is relatively meaningless with the significant number of delivery points which each typically make up less than 1% of target revenue each. More broadly capacity reservation fees provide for 30% of target revenues, throughput fees 32% of target revenues, overrun fees 1% of target revenues with the balance being made up by non-standards (37% of target revenue). The final price changes effective from 1 October 2012 incorporated the following:

a) Subject to (b) below, the CRFs for all DPs are increased by a fixed dollar change (rather than a fixed percentage) of $25/GJ;

b) The maximum CRF at any DP is maintained at $600; and

c) A reduction in the TPF of $0.058/GJ (from $1.014/GJ to $0.956/GJ) ensuring Vector achieves but does not exceed its revenue cap. The reduced TPF applied to all areas is a step towards a more cost reflective variable charge.

10.4 The price changes adhere to the overall weighted average price cap under s55F(2) of the Commerce Act which limits aggregate price changes to no more than the consumer price index. Vector has also been concerned to manage the impact of any major price movement on shippers (and their end consumers) and this has informed the magnitude of the price change.

11 Non-standard pricing

11.1 In certain circumstances Vector's published standard prices may not adequately reflect the actual costs of supplying a consumer, reflect the economic value of the service to the consumer or address the commercial risks associated with supplying that consumer. In addition to standard published prices, the GTPM also includes supplementary (non-standard) agreements and interruptible agreements (a form of supplementary agreement) as follows:

a) Supplementary (non-standard) agreements – a bi-lateral agreement between Vector and a shipper that amends parts of the Vector Transmission Code (VTC) for the purposes of delivery of gas to:

(i) A specific consumer and/or specific site; or
(ii) A specific delivery point.

b) Interruptible capacity – a form of supplementary agreement which is provided under the terms and conditions of an interruptible agreement.

11.2 These contracts allow tailored or specific prices and contractual terms to be applied to individual points on the transmission system.

11.3 Of the allowable target revenue for 1 October 2012 to 30 September 2013 of $119.3m, 37% is recovered from 52 non-standard consumers[1].

11.4 Vector has a published policy that it provides a general guideline of the steps that Vector will follow and the factors that it will take into account when deciding whether or not to offer a non standard (supplementary agreement) on the transmission system. This document (Supplementary Agreements Policy (March 2012)) can be found on OATIS at:

https://www.oatis.co.nz/Ngc.Oatis.UI.Web.Internet/Common/Publications.aspx

11.5 Vector determines whether a consumer is eligible for non-standard pricing on a case by case basis subject to the Supplementary Agreements Policy contained in the Vector Transmission Code.

11.6 The prices for non-standard contracts are set to ensure that Vector is able to recover the costs of supplying non-standard customers. These are determined on a case by case basis and the nature of prices is determined specific to the circumstances of the shipper/consumer.

11.7 When an existing contract is due for renewal, Vector assesses the pricing in that contract and prices are either set to non-standard, or renegotiated.

11.8 Vector's obligations to consumers and shippers under standard and non-standard contracts for transmission services are identical, excepting those non-standard contracts that are Interruptible Agreements.

11.9 Firm transmission capacity provided under shippers' transmission services agreements (reserved capacity) ranks equally with firm capacity provided under non-standard contracts (supplementary capacity) in the event of any emergency or other event that affects Vector's ability to provide transmission capacity. On the other hand, Vector's contracts require the system operator (Vector) to use all reasonable endeavours to curtail consumers on interruptible agreements before restricting consumers' reserved capacity or supplementary capacity.

[1] Note these numbers include a number of interim agreements and superseded contracts. These numbers may differ from actual contractual disclosures.

11.10 The main difference between firm transmission capacity and interruptible capacity is the probability of curtailment. In the event curtailment is required, the effect on the consumer is similar under all contracts:

a) if compelled to curtail reserved capacity or supplementary capacity, Vector is generally obliged to rebate fixed transmission fees to affected consumers for the period of the curtailment;

b) under an interruptible agreement, the consumer will not be charged for its interruptible capacity to the extent of a curtailment.

Appendix 1 Pricing principles

1) Prices are to signal the economic costs of service provision, by-
   (a) being subsidy free, that is, equal to or greater than incremental costs and less than or equal to standalone costs, except where subsidies arise from compliance with legislation and/or other regulation;
   (b) having regard, to the extent practicable, to the level of available service capacity; and
   (c) signalling, to the extent practicable, the effect of additional usage on future investment costs.
2) Where prices based on 'efficient' incremental costs would under-recover allowed revenues, the shortfall is made up by prices being set in a manner that has regard to consumers' demand responsiveness, to the extent practicable.
3) Provided that prices satisfy (1) above, prices are responsive to the requirements and circumstances of consumers in order to-
   (a) discourage uneconomic bypass; and
   (b) allow negotiation to better reflect the economic value of services and enable consumers to make price/quality trade-offs or non-standard arrangements for services.
4) Development of prices is transparent, promotes price stability and certainty for consumers, and changes to prices have regard to the effect on consumers.

Schedule 18 Certification for Disclosures at the Beginning of a Pricing Year

Clause 2.9.2

We, Michael Strassny and

Alison Paterson, being directors of Vector Limited certify that, having made all reasonable enquiry, to the best of our knowledge:

a) the following attached information of Vector Limited prepared for the purposes of clause 2.4.1 of the Gas Transmission Information Disclosure Determination 2012 in all material respects complies with that determination;

b) the prospective financial or non-financial information included in the attached information has been forecast on a basis consistent with regulatory requirements or recognised industry standards.

Director

Director

20 February 2013

Date