Pricing Methodology for Gas Distribution Services

From 1 October 2016

Pursuant to:
The Gas Distribution
Information Disclosure Determination 2012

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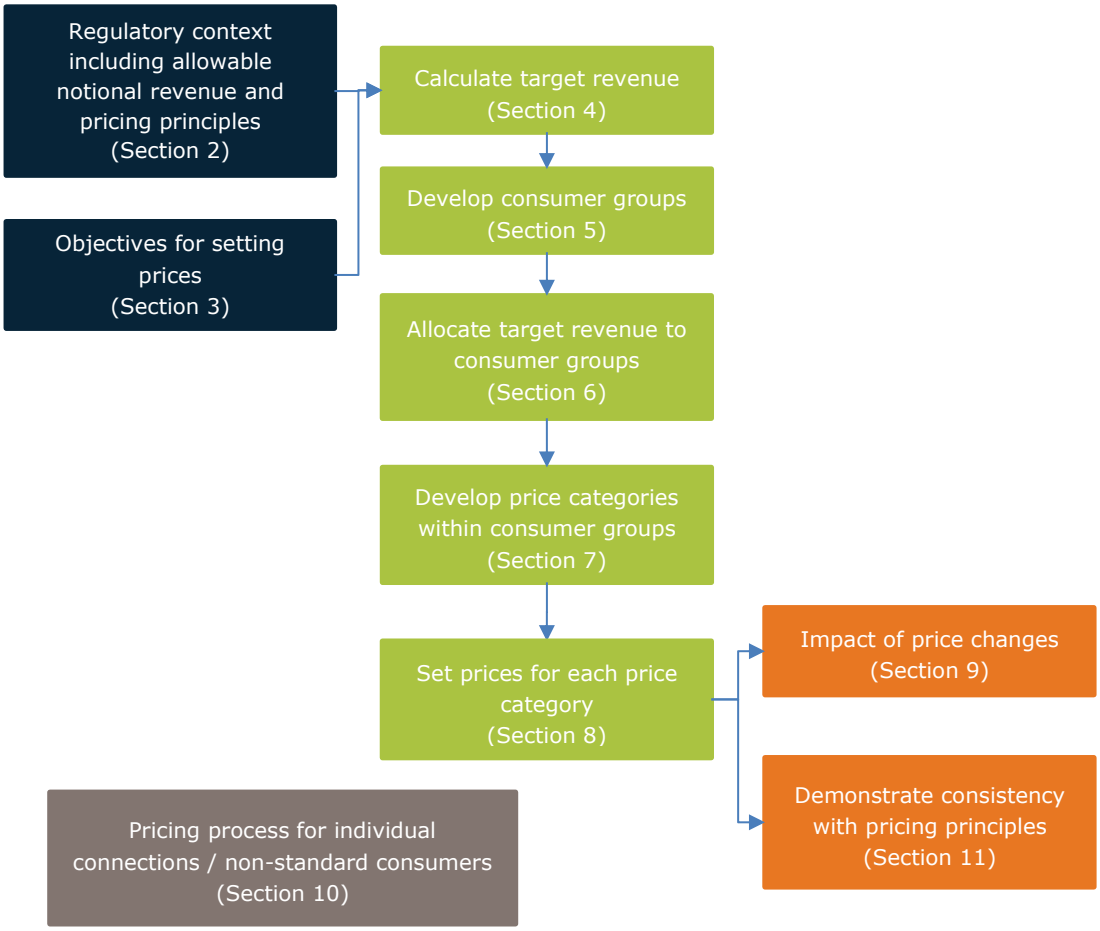
1 INTRODUCTION

Vector owns and operates the gas distribution network in the greater Auckland region and delivers gas to approximately 105,000 homes and businesses. We recover the cost of owning and operating the network through a combination of standard (published) and non-standard prices for gas distribution services, and capital contributions for new connections.

On 20 April 2016 Vector sold its North Island gas distribution network (excluding the greater Auckland region network) to First Gas Limited. This Pricing Methodology covers the price setting process for Vector's Auckland gas distribution network from 1 October 2016. A map showing the area that Vector's Auckland gas distribution network covers is provided in Appendix 2.

Vector remains regulated by the Commerce Commission (Commission) and is required to publish its pricing methodology for gas distribution services (Pricing Methodology). This document describes Vector's methodology and meets the requirements of the Gas Distribution Information Disclosure Determination 2012 (Disclosure Determination). It provides information to assist interested parties in understanding how our gas distribution prices are set. The process that Vector uses to allocate costs and set prices is shown in Figure 1 below.

Figure 1. Process used to allocate costs and set prices



2 REGULATORY CONTEXT

This section sets out the regulatory context within which Vector provides gas distribution services. It provides an overview of the Commerce Act regulation.

Commerce Act regulation

Under the Commerce Act 1986 (the Act) the Commission regulates markets where competition is limited. This includes gas distribution services. Regulation for gas distribution services is designed to ensure incentives and pressures, similar to those of a competitive market, are faced by distributors so that consumers will benefit in the long term. A number of applicable determinations cascade from the Commerce Act.

Price-Quality Path Determination[1]

Vector's gas distribution prices are subject to the Gas Distribution Services Default Price-Quality Path Determination 2013 (Price-Quality Path Determination). The Price-Quality Path Determination regulates Vector's prices for gas distribution services. It allows for the recovery of pass-through and recoverable costs that are largely outside of Vector's control. These include council rates and levies. The Price-Quality Path Determination is intended to ensure businesses have incentives to innovate and invest in their infrastructure, and to deliver services efficiently and reliably at a quality that consumers expect, while limiting businesses' ability to earn excessive profits.

The Price-Quality Path Determination set Vector's maximum allowable revenue from prices for the 15 months from 1 July 2013 to 30 September 2014 and allows prices to increase by CPI and changes to pass-through and recoverable costs in the following three years of the regulatory period. Compliance with the distribution price path is assessed on a notional basis, using prices multiplied by quantities from two years prior.

Disclosure Determination[2]

Under Part 4 of the Act, businesses supplying distribution services are also subject to information disclosure regulation which requires information about their performance to be published. The purpose of this regulation is to ensure that sufficient information is readily available to interested persons to assess whether the purpose of Part 4 of the Act is being met. As a result, Vector must make disclosures under the Disclosure Determination. This document contains the information that must be disclosed in accordance with clauses 2.4.1 to 2.4.5 of the Disclosure Determination (see Appendix 4).

Input Methodologies Determination[3]

Vector has developed its prices with reference to the Commission's Pricing Principles stated in the Gas Distribution Services Input Methodologies Determination 2012 clause 2.5.2. The purpose of the Pricing Principles is to ensure prices are based on a well-defined, clearly explained and economically rational methodology. The Disclosure Determination requires each gas distribution business (GDB) to either demonstrate consistency with the Pricing Principles or explain the reasons for any inconsistencies. Section 11 of this document sets out the Pricing Principles and comments on the extent to which Vector's Pricing Methodology is consistent with them.

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[1] *Gas Distribution Services Default Price-Quality Path Determination 2013* (NZCC4, 28 February 2013)

[2] *Gas Information Disclosure Determination 2012* (NZCC23, 1 October 2012)

[3] *Gas Distribution Services Input Methodologies Determination 2012* (NZCC 23, 16 December 2012).

3 OBJECTIVE FOR SETTING PRICES

Vector provides gas distribution services to consumers via its gas distribution network. Vector generally recovers the cost of providing gas distribution services to existing consumers through standard prices or (in a limited number of circumstances) non-standard prices.

Vector does not have a pricing strategy as defined in the Disclosure Determination. However, Vector has developed a high-level framework to guide the development of its Pricing Methodology. The overarching objectives for the Pricing Methodology include:

Objective	Rationale
Cost recovery	Ensure Vector recovers its costs, including the allowed return on and of investment. A key aspect of cost recovery is the predominantly sunk and fixed nature of the costs.
Meet regulatory obligations	Comply with the Price-Quality Path Determination, Disclosure Determination and the Pricing Principles.
Clear pricing structure	Pricing should be simple and easily understood by consumers therefore making it attractive for existing consumers to stay connected and for new consumers to connect.
Coherent overall price structure	There should not be incentives for consumers to switch consumer groups or price categories to take advantage of anomalies in the pricing structure.
Cost reflective pricing	• Ensure that all consumers face prices that reflect the cost of providing them with service; • Prices to all new consumers at least cover the incremental costs of connecting them to the network (including costs associated with upstream reinforcement); and • Charges to recover overhead costs and the cost of the shared network are allocated between consumers in a manner that is least likely to distort decisions.
Consumer-centric outcomes	• Take account of the value of the service to consumers; • Provide pricing stability; and • Manage price shock effectively in the transition to new pricing structures.
Incentivise efficient usage	Encourage more utilisation of gas distribution assets to ensure that sunk investments are not inefficiently by-passed and new investments are efficient.

4 CALCULATION OF TARGET REVENUE

This section sets out the amount of revenue that Vector is expecting to recover through prices (target revenue) and breaks this down by key cost components.

To determine target revenue from prices, Vector uses allowable notional revenue calculated in accordance with the Price–Quality Path Determination, adjusted for forecast volume growth. This is the amount of actual revenue that is expected for the 2016/17 pricing year.

The cost components of target revenue are derived from internal forecasts of costs over the 2016/17 period. Return on capital in the table below is the residual between the sum of the forecast costs and the target revenue.

Table 1 below shows the target revenue from prices that Vector expects to receive for 2016/17 compared with 2015/16. Target revenue from prices is $54m.

Table 1. Target revenue from prices 2016/17 and 2015/16

Component	Cost type	Target revenue ($m)	
		2016/17	2015/16*
Direct costs	Asset	11	16
Indirect costs	Non-Asset	2	3
Depreciation	Asset	12	16
Regulatory tax adjustment & allowance	Asset	10	15
Pass-through and recoverable costs	Non-Asset	2	3
Return on capital	Asset	17	26
Target revenue		54	79

*Note: Target revenue for 2015/16 includes the North Island network which is now owned by First Gas Limited

The second column of Table 1 categorises cost components as either 'Asset' or 'Non-Asset'. These categorisations determine the way that the costs are allocated to consumer groups, and are discussed in Section 6.

5 DEVELOPMENT OF CONSUMER GROUPS

The following section explains how Vector has developed distinct groups of consumers in order to allocate the components of target revenue to these groups as part of the price setting process.

Vector has developed consumer groups based on their utilisation of the network and the nature of the network service they receive. Due to the physical nature of distribution networks and the information that is available on consumer demand characteristics, these consumer groups are defined at a relatively high level. Examples of the network characteristics include:

a) There is a high degree of network meshing and interconnection of consumers. This means that multiple end consumers utilise many of the same assets. A large industrial consumer using large volumes of gas per year is likely to be using some of the same network assets as a residential consumer using only small amounts.

b) End consumers are not generally geographically segmented in their use of different network assets. For example, there are in general very few purely 'industrial zones' or 'residential zones'. A residential consumer is likely, in part at least, to use the same assets as an industrial consumer. A map of the location of different types of consumers across a portion of the network is included as Appendix 3 and illustrates this point.

c) There is a mix of consumers, including a large number of consumers with relatively low individual consumption, and a small number of consumers with relatively high individual consumption. For example, end consumers with a capacity less than 10 standard cubic metres per hour (scm/h) represent 96% of all connections but they only use 19% of the gas transported over the distribution network.

Vector has maintained the same consumer groups as in 2015/16. The consumers are segmented into four consumer groups based on the maximum flow rate of their connection, measured in scm/h. Table 2 sets out the consumer groups. Consumer groups are mutually exclusive so a consumer can only fit within one group.

Table 2. Consumer groups

Consumer group	Flow rate (scm/h)
Mass market	< 10
Small commercial	10 < 40
Large commercial	40 < 200
Industrial	> 200

6 ALLOCATION OF TARGET REVENUE TO CONSUMER GROUPS

The following section explains how Vector uses its cost of service model (COSM) to allocate the costs of owning and operating the distribution network to the consumer groups described in the previous section to determine how much target revenue Vector intends to recover from each consumer group.

6.1 Features of gas distribution system assets

A key feature of a gas distribution system is that it is a network of interconnected assets. Many consumers on the network share assets and it is difficult to identify precisely who benefits from which assets. While this means that the allocation of costs between consumers or groups of consumers can be made in many different ways, it also means that the cost of providing the network is shared widely and therefore the cost of network services is generally low for each consumer.

The way the network of assets has been built up over time is something that Vector now has limited ability to change, however Vector is able to influence present and future investment decisions in the gas distribution network.

6.2 Cost types

Table 1 in Section 4 lists the components of target revenue and categorises these components as either 'Asset' or 'Non-Asset'. This is summarised in Table 3 below.

Table 3. Total target revenue by cost allocation category

Category	Value ($m)
Asset	50
Non-Asset	4

6.3 Summary of allocation approaches

The allocators used to allocate costs to consumer groups are summarised in Table 4 below:

Table 4. Allocators used in the COSM model

Cost category	Allocator
Asset	Flow rate * number of consumers
Non-Asset	Number of consumers or annual consumption

The value of each allocator is shown in Table 5.

Annual consumption (MWh) and number of consumers (ICPs) are based on weighted average data from Schedule 8 of the Gas Information Disclosures. The values are weighted averages of up to five years' worth of data, with more recent years weighted more heavily. The connected flow rate of a consumer is derived from the midpoint for scm/h in relation to each consumer group. This approach was chosen in the absence of more detailed information on individual consumer capacity.

'Non-asset' costs can be broadly summarised as overhead costs and pass-through and recoverable costs. Costs categorised as 'Non-asset' have no direct cost driver. Vector has chosen to create a band of cost allocations using annual consumption and the number of consumers as the allocators.

'Asset' costs have been allocated based on the proportion of scm/h*ICP for each consumer group. This allocates based on the weighted average of scm/h per consumer that are in each consumer group, effectively capturing each consumer group's utilisation of network assets. scm/h*ICP is an appropriate allocator for assets and direct networks costs as the required pressure of a consumer will affect capacity of the network assets.

Table 5. Value of Allocators

Allocator	Number of consumers	Annual consumption	Flow rate
Units	ICP	MWh	scm/h
Source	Schedule 8 of the Information Disclosures	Schedule 8 of the Information Disclosures	Consumer group definition (midpoint)
Mass market	91,086	666,193	5
Small commercial	2,497	228,882	25
Large commercial	867	502,576	120
Industrial	149	822,725	400
Non-standard	47	1,228,534	400
Total	94,646	3,448,910	950

6.4 Total target revenue allocated to each consumer group

Vector has allocated target revenue to each consumer group using the method of allocation discussed above. The allocations are shown in Table 6.

Table 6. Target revenue allocation bands by consumer group

Consumer group	Target revenue ($m)	
	Lower	Upper
Mass market	32	34
Small commercial	4	4
Large commercial	7	8
Industrial	4	5
Non-standard	6	6

7 DEVELOPMENT OF PRICE CATEGORIES

The following section provides an overview of the various price categories that Vector offers within each consumer group (as described in Section 5). The key pricing differences between these categories and the reasons why are described in Section 8.

7.1 Auckland and North Island networks

Vector previously had two distinct sets of price categories, one applicable to consumers on the Auckland network and one applicable to consumers on the North Island network. Vector has sold the North Island network to First Gas Limited, so from 1 October 2016 Vector only has one set of price categories applicable to the Auckland network. The approximate area covered by the Auckland gas distribution networks is shown in Appendix 2.

7.2 Mass market consumer group

The mass market consumer group is split into two subgroups: residential and general. Vector looks to encourage as many connections as possible and residential consumers are more sensitive to fixed charges. Therefore the residential group has a lower fixed charge than general. The subgroups map directly into price categories as set out in Table 7 below.

7.3 Commercial consumer groups

The small and large commercial consumer groups map directly to price categories.

7.4 Industrial consumer group

The industrial consumer group is split into two subgroups: industrial and large industrial. In practice the industrial consumer group contains consumers with a large range of annual consumption. Some consumers, usually those with high annual consumption, do not meet the stand alone cost (SAC) test. In order to reduce the administrative burden of offering these consumers individual non-standard prices, Vector has a "large industrial" price category with a higher fixed price. The large industrial price category (GA05) is suitable for consumers with annual consumption greater than approximately 12,000 MWh per annum. The large industrial price category was introduced from 1 October 2015.

Table 7. Price categories within each consumer group

Consumer group	Price category code	Price category description
Mass market	GA0R	Residential
	GA01	General
Small commercial	GA02	Small commercial
Large commercial	GA03	Large commercial
Industrial	GA04	Industrial
	GA05	Large industrial

8 HOW STANDARD PRICES ARE SET FOR EACH PRICE CATEGORY

The following section explains how Vector sets its prices to recover the target revenue allocated to consumer groups. It explains what types of prices are used and how the levels of prices are determined.

As described in Section 4, Vector generally tries to recover the components of target revenue in line with how those costs are incurred, while having regard to (among other things) historical price structures, minimising rate shock to consumers, and minimising recovery risk.

8.1 Overview of price components that Vector uses

Each price category has two price components: a fixed daily price ($/day) and a volume price ($/kWh). Vector has to work with the metering technology available to measure consumers' use. The majority of consumers' meters are simple and record consumers' total use over monthly or two-monthly meter-reading cycles. These meters do not record the time of use or maximum demand. Having consumer consumption information limited to monthly intervals (at best) limits Vector's pricing structures to simple fixed and volume components.

Table 8. Description of price components

Price type	Price component	Code	Units	Description
Fixed	Daily	FIXD	$/day	Daily price applied to the number of days each consumer's point of connection is connected to the gas distribution network.
Variable	Volume	24UC	$/kWh	Volume price, applied to all gas distributed to each consumer.

8.2 How the price for each component is derived

Vector's price structure reflects the price sensitivity of consumers. The level of the fixed price component for each price category increases with consumer capacity, i.e. the larger the consumer's capacity requirement the higher the fixed price.

Vector is conscious of the effect of price changes for consumers. Vector's starting point for calculating prices is the corresponding price from the previous year. As there are only two price components available in each price category, Vector is limited to the extent that price adjustments can be made, changes will either apply to the fixed or volume component of prices.

The majority of Vector's costs are fixed and sunk, so Vector has been seeking to increase the fixed portion of revenues to align the recovery of revenues with the manner in which costs are incurred. For this reason, price increases for 2016/17 have been applied to the fixed price for each price category.

This year the fixed price component in each standard price category have increased by about 2.6%. There is some variation of this increase between price categories due to the desire to keep prices to two decimal places. See Section 9 for a table of prices for 2016/17 compared to prices for 2015/16. Volume prices are then set to recover the remainder of the revenue allocated to each consumer group, while minimising rate shock to consumers. Volume distribution prices for each price category have not changed from 2015/16.

Vector's final prices incorporate a weighted average price increase of 0.9%

Table 9. Proportion of target revenue by price component by consumer group

Consumer group	Price categories	Fixed prices Daily	Variable prices Volume
Mass market	GA0R	42%	58%
	GA01	32%	68%
Small Commercial	GA02	25%	75%
Large Commercial	GA03	22%	78%
Industrial	GA04	20%	80%
	GA05	72%	28%

8.3 Consultation prior to setting prices

Vector did not directly seek the views of consumers when setting prices. Rather, Vector consulted with retailers on behalf of consumers on the proposed price changes. Vector has not received any feedback that was unsupportive of the proposed changes.

9 IMPACT OF 2016/17 PRICE CHANGES

From 1 October 2016, increases in pass-through and recoverable costs of 0.6% combined with increases equivalent to the regulated CPI of 0.3% results in an overall weighted average increase to Vector's gas distribution prices of 0.9%.

Individual prices will change by more or less than the overall weighted average price increase due to differences in individual consumption levels. Vector has taken steps to mitigate the impact of price changes on standard consumers by *generally* limiting individual gas distribution price increases to no more than 10%. Table 10 illustrates the various changes to the price components for all standard price categories.

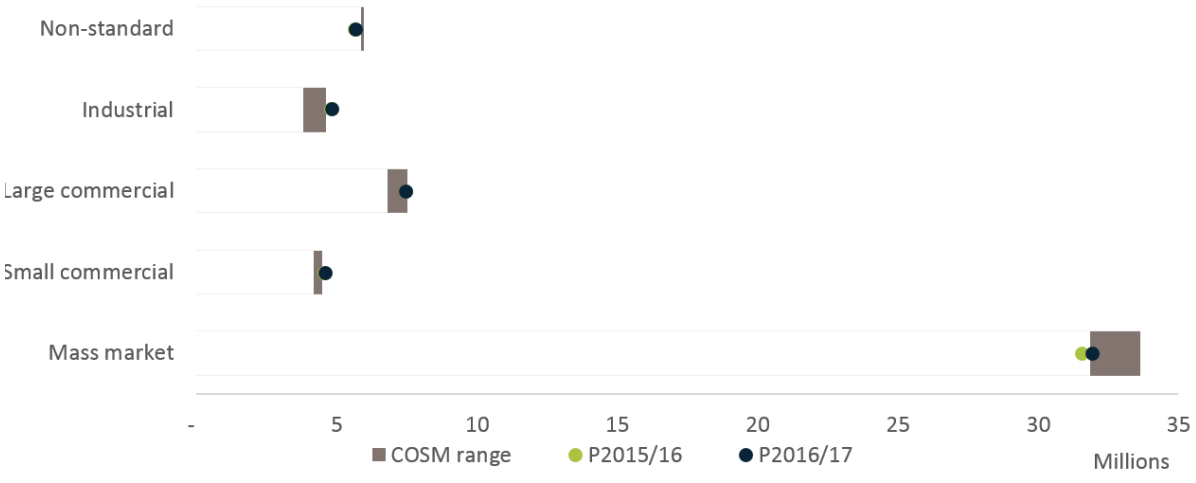
Table 10. Price changes by price category

		2016 Prices		2017 Prices		Price change		
Price category	Number of consumers as at July 2016	Fixed price ($/day)	Volume price ($/kWh)	Fixed price ($/day)	Volume price ($/kWh)	Fixed price change	Volume price change	Estimated total price change*
GA0R	98,000	0.34	0.0261	0.35	0.0261	2.9%	0.0%	1.2%
GA01	2,300	0.62	0.0165	0.63	0.0165	1.6%	0.0%	0.5%
GA02	2,700	1.10	0.0133	1.12	0.0133	1.8%	0.0%	0.4%
GA03	910	4.72	0.0102	4.79	0.0102	1.5%	0.0%	0.3%
GA04	140	14.48	0.0068	14.70	0.0068	1.5%	0.0%	0.3%
GA05	20	200.00	0.0015	203.00	0.0015	1.5%	0.0%	1.1%

*For an average consumer on each price category

Figure 2 below shows 2015/16 and 2016/17 prices compared with the desired COSM outcomes. This shows how 2016/17 prices have moved towards the desired COSM outcome through the application of the Pricing Methodology. Note that in many cases the change is minor or nil.

Figure 2. 2015/16 and 2016/17 prices compared with COSM outcomes



10 PRICING FOR NON-STANDARD CONTRACTS

In certain circumstances Vector's published standard prices may not:

1. Adequately reflect the actual costs of supplying a consumer;
2. Reflect the economic value of the service to the consumer; or
3. Address the commercial risks associated with supplying that consumer.

Non-standard contracts allow tailored or specific prices and non-standard commercial arrangements to be applied to individual consumers.

10.1 Extent of non-standard contracts

Revenue of around $5.4m is expected to be recovered from 42 non-standard consumers, representing about 10% of target revenue.

10.2 Criteria for non-standard contracts

Vector has established assessment criteria to determine whether to apply non-standard pricing. Consumers may be assessed for non-standard terms or pricing if they meet one of the following criteria:

- The total annual quantity of gas consumed or forecast to be consumed per annum (AQ) is greater than 20TJ; or
- The AQ is between 10TJ to 20TJ and the consumer's point of connection to Vector's gas distribution network is within 2km of a gas transmission delivery point of a gas distribution network not owned or operated by Vector; or
- It can be demonstrated that the alternative sources of energy (including but not limited to wood, coal or electricity) that could meet the consumer's requirements are technically, operationally and commercially viable and have a reasonable prospect of being able to be successfully implemented.

Vector assesses whether to apply non-standard pricing and the corresponding contractual arrangements to new consumers on a case-by-case basis. Generally, if a consumer does not meet at least one of the assessment criteria, they will be subject to published standard distribution prices. Meeting one or more of the assessment criteria does not mean that a non-standard arrangement will apply, merely that the consumer may be reviewed to determine whether standard pricing and standard contractual terms are suitable, given the consumer's individual circumstances.

For new investments that qualify for non-standard pricing, Vector uses actual costs and/or allocated costs derived from an allocation model to determine prices. This allocation model is consistent with the COSM used in determining standard pricing. The description provided under Section 11 to show consistency with the Pricing Principles therefore applies to the allocation model used for non-standard pricing.

For new non-standard investments, Vector applies a capital contributions policy. Vector's policy for determining capital contributions on Vector's gas distribution network is available at http://vector.co.nz/disclosures/gas/capital-contributions.

10.3 Obligations in respect of service interruptions

Vector's obligations and responsibilities to consumers on non-standard contracts are the same as Vector's obligations to consumers on standard contracts in the event that the supply of gas distribution services to the consumer is interrupted and has no impact on determining prices for those consumers on non-standard contracts.

11 CONSISTENCY WITH PRICING PRINCIPLES

11.1 Pricing Principles

The Pricing Principles are specified in clause 2.5.2 of the Input Methodologies Determination. This sections demonstrates the level to which Vector's Pricing Methodology is consistent with the Pricing Principles.

11.2 Principle #1: Economic costs of service provision

Pricing Principle 1) states that:

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.*

11.2.1 Subsidy-free pricing

Prices are said to be "subsidy-free" when they are not less than incremental cost (IC) and are not greater than stand-alone cost (SAC). Incremental costs for a consumer (or group of consumers) are those costs that are only incurred because of that consumer's (or group of consumers') connection to and use of the gas distribution network. SAC is the cost of a gas distribution network providing service to just that consumer (or group of consumers).

The revenue allowed under the Price-Quality Path Determination includes an allowance for certain costs (such as administration costs) that is based on an allocation of common and shared costs across Vector's regulated businesses rather than an estimate of the magnitude of those costs on a stand-alone basis. This means that the SAC for the provision of gas distribution services is higher than the revenue allowed under the Price-Quality Path Determination. This also means that, in aggregate, prices set to recover the target revenue are, by definition, less than the SAC for the provision of gas distribution services.

- ***SAC of an alternative network***

At a theoretical level, demonstrating that prices are subsidy-free requires that the regulated supplier demonstrates that, for a consumer (or group of consumers), the price is not less than the incremental cost of supplying that consumer (or group of consumers) and is not greater than the SAC of supplying that consumer (or group of consumers). This is generally not practical to apply across a distribution network with significant numbers of consumers. In particular, the SAC analysis is a highly theoretical exercise involving the construction of hypothetical networks to provide service to each consumer or group of consumers – this is a highly labour-intensive exercise that yields an average SAC for a consumer or group of consumers that is higher than the SAC for the network as a whole.[4] Given that prices in

[4] Because of the economies of scale inherent in gas distribution networks, the average per-consumer SAC for a consumer will generally be greater than the average per-consumer SAC for a group of consumers, which in turn will generally be greater than the average per-consumer SAC for the network as a whole. If prices are less than the SAC for the network as a whole then they are likely to be less than SAC for any given consumer or group of consumers. The exception to this is where a large consumer is located close to the gas transmission line and it would be economically viable to bypass the existing gas distribution system.

aggregate recover less than the SAC for gas distribution services, it is likely that prices are also less than SAC for any given consumer or group of consumers. Where this is not the case the consumer will have the incentive to bypass the gas distribution network – this is addressed under Pricing Principle 3 below.

- ***Incremental cost test***

Given the practical difficulty of demonstrating compliance with the SAC test, the normal approach to demonstrating compliance with the "subsidy-free" principle relies on demonstrating compliance with the IC test. By definition, if every consumer and every group of consumers is paying a price that recovers at least IC, then cross-subsidy is likely not occurring.

The estimation of IC is challenging given the highly meshed nature of the gas distribution network. The true IC for a consumer group cannot be easily observed, but must be estimated. This estimate of IC is obtained by the following process:

1. Estimate the replacement cost of the combined gas distribution network;
2. Allocate a percentage of the replacement cost based on the total revenue for the consumer group (as calculated by COSM);
3. Calculate the depreciation and return on capital based on the allocated replacement cost;
4. Assign an annual maintenance charge;
5. Add depreciation, return on capital, and maintenance charge; and
6. Divide the sum by the energy consumed by each consumer group (refer to Table 5, page 8).

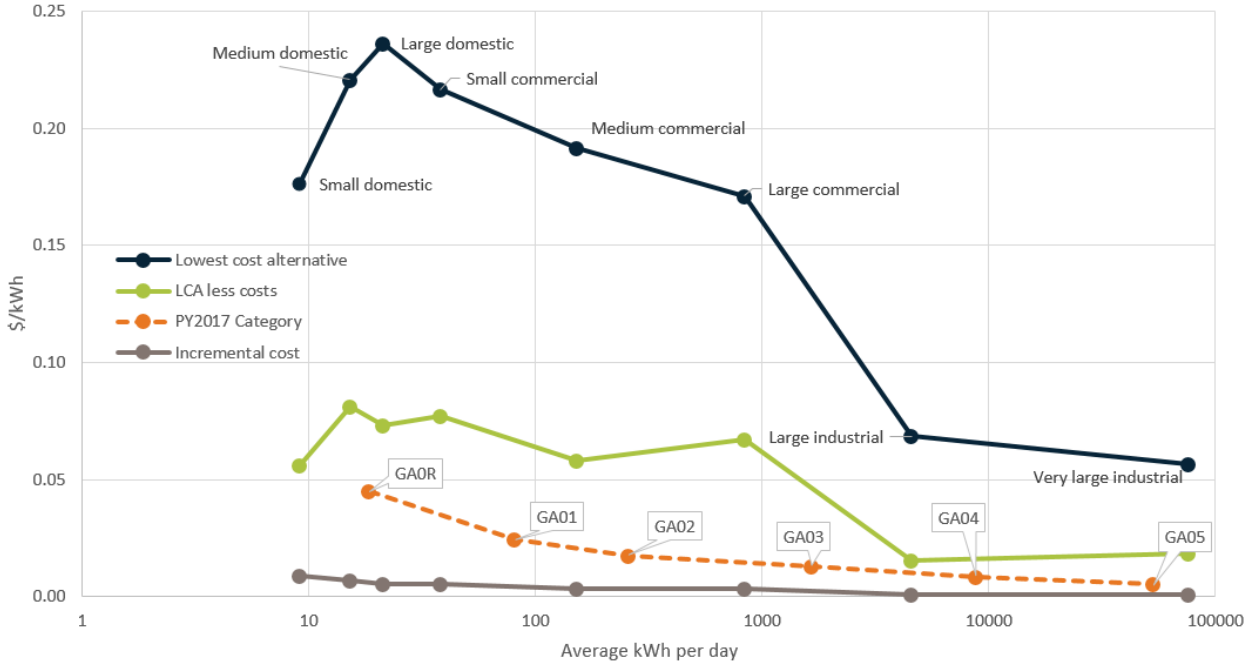
This estimate may be higher than IC to the extent that the use of replacement costs overstates the regulated asset value of Vector's gas distribution assets. This increases the confidence that prices greater than the estimated IC are also greater than the true IC and are therefore subsidy-free. Note also that this is an estimate of the IC for each consumer group as a whole, and not just for an individual consumer within that group. The IC for a group of consumers will be higher than the IC for an individual consumer within that group because the IC for the group will include shared assets used by all members of the group. This further increases the confidence that prices greater than the estimated IC are subsidy-free.

- ***Vector's application of the test - comparison against least cost alternative***

A key part of Vector's Pricing Methodology is testing proposed prices against the lowest cost alternative energy source. Average prices for each price category are compared against the least cost alternative to ensure that prices are not set at a level that would provide an incentive for consumers to disconnect from the gas distribution network.

In 2012 Vector asked PricewaterhouseCoopers to calculate an implied cap for gas transmission based on the cost of alternative fuels. The same data can be used to calculate an implied cap for gas distribution. The implied cap for gas distribution costs is a proxy for the maximum prices that could be charged for gas distribution before the cost of an alternative fuel is less than the cost of natural gas. The reasonableness of the cost estimates were reconfirmed in light of CPI and current pricing and costs.[5]

Figure 3. Comparison of average gas prices against lowest cost alternative



The gap between gas distribution services and the lowest cost alternative less costs is the least for residential and industrial consumers: because consumers are not homogenous this means that for some consumers in those categories there will be a lower cost alternative than natural gas. There are limits to the extent to which a standardised pricing schedule can take account of the particular circumstances of individual consumers, so in certain circumstances large (industrial) consumers are able to enter into a non-standard contract as described in Section 10.

Figure 3 demonstrates that for all consumer groups, gas distribution prices are less than the cost of the least-cost alternative (thus meet the SAC test) and are greater than incremental cost (i.e. meet the IC test). This means that Vector's gas distribution pricing is subsidy-free.

11.2.2 Available service capacity and future investment costs

There are no constraints on available service capacity in the gas distribution network that impact on the economic cost of service provision. Indeed, given the level of available service capacity, it is appropriate that pricing is set in a manner that encourages greater utilisation of the gas distribution network.

[5] Consumer information websites such as https://www.powerswitch.org.nz & http://www.smarterhomes.org.nz were used in this analysis.

There are no significant future investment costs that impact on the economic cost of service provision.

11.3 Principle #2: Recovery of any shortfall

Pricing Principle 2) states that:

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.-*

Prices set on efficient incremental costs would under-recover revenue. This shortfall can be observed in Figure 3 as the difference between the 'PY2017 Category' (dashed orange line) and the 'Incremental cost' (grey line).

It is generally not practicable to set standard prices in a manner that has regard to a consumers' demand responsiveness. It would require Vector to segment consumers into groups based on price elasticity of demand, a near impossible task except perhaps on a case-by-case basis for large customers where the transaction costs of developing non-standard arrangements are small in relation to the value of the network service.

11.4 Principle #3: Responsive to requirements of consumers

Pricing Principle 3) states that:

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.*

11.4.1 Prices discourage uneconomic bypass

Discouraging uneconomic bypass is an important commercial objective for Vector. Gas distribution services have to compete with alternative fuel and energy sources such as electricity, LPG, wood fires, coal, and solar heating.

Vector historically sought to avoid uneconomic bypass through the use of pricing zones based on distance from the transmission system gate stations. Competing networks need to connect to a transmission system gate station to supply downstream consumers so Vector previously priced consumers closer to the transmission network at a lower price to discourage bypass. Vector has since reconsidered the threat of such uneconomic network bypass and, on balance, decided to move away from the pricing zones, noting that there have been significant overall price reductions since zones were introduced.

Vector gives consideration to alternative fuels that may be economically viable for each consumer group. Prices are tested to ensure that, in general, they are both greater than incremental cost and not so high as to provide the incentive for a consumer to switch to an alternative fuel.

The removal of pricing zones significantly simplified Vector's gas distribution pricing, but may have increased the risk of a large consumer near the transmission network bypassing by way of an alternative network. A standard price schedule will never be able to eliminate all opportunities for uneconomic bypass, and Vector considers that it is more appropriate to deal

with these issues through non-standard contracts as each situation can be dealt with on a case-by-case basis where all consumer-specific factors can be taken into account.

11.4.2 Negotiation for non-standard prices

Vector considers that the best way to allow consumers to negotiate differing levels of economic value from a service or to mitigate against uneconomic bypass is through non-standard contracts. Large consumers are able to negotiate with Vector for different terms and conditions as long as it is commercially viable and possible for Vector to provide the service.

Typical examples of consumers negotiating to realise economic value of different specific services include reinforcement of the network to allow for greater capacity and the installation and management of specialist equipment and connections. Contracts have been negotiated on non-standard pricing structures to allow consumers to manage their risk, including adjustment in prices to allow for atypical demand loads (e.g. seasonal use patterns) or a preference for pricing that is largely, if not wholly, fixed. Vector is also willing to offer different terms for contracts of varying duration.

Please refer to Section 10 for Vector's policy regarding pricing for non-standard contracts.

11.5 Principle #4: Pricing process

Pricing Principle 4) states that:

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

11.5.1 Development of prices is transparent

Vector considers that a simple pricing structure enhances transparency. Costs are clearly identified and allocated on a simple and transparent basis.

11.5.2 Price stability and certainty

A simple pricing structure reduces the likelihood that changes in consumer behaviour will result in significant changes to cost allocations between consumer groups. This means that prices by consumer group, based on capacity band, will be more stable over time. A simple pricing structure also makes it easier for consumers to predict their likely costs.

11.5.3 Effect on consumers

Vector is particularly conscious of the effect of its pricing on consumers and seeks to implement a pricing framework that provides appropriate incentives for consumers to connect to the gas distribution network and continue to use natural gas.

In June 2016 Vector consulted with gas retailers. Vector's proposal did not incorporate any structural changes. Vector proposed increasing the fixed portion of our revenues to better reflect our costs, however such increases were mitigated by keeping volume prices the same resulting in little overall impact on average consumers. We have taken further steps to mitigate the impact of these initiatives on standard consumers by *generally* limiting individual price increases to no more than 10%. Vector did not receive any feedback that was unsupportive of the proposed changes.

APPENDIX 1. GLOSSARY

Allowable Notional Revenue (ANR): the revenue determined under the Price-Quality Path Determination that Vector is allowed to earn during the pricing year.

CPI: the Consumers Price Index, a measure of changes to the prices for consumer items purchased by New Zealand households giving a measure of inflation.

ICP: is an installation control point being a physical point of connection on a local network which a distributor nominates as the point at which a retailer will be deemed to supply gas to a consumer.

kWh: kilowatt-hour, a unit of energy being the product of power in watts and time in hours.

Price component: the various prices, fees and charges that constitute the components of the total price paid, or payable, by a consumer.

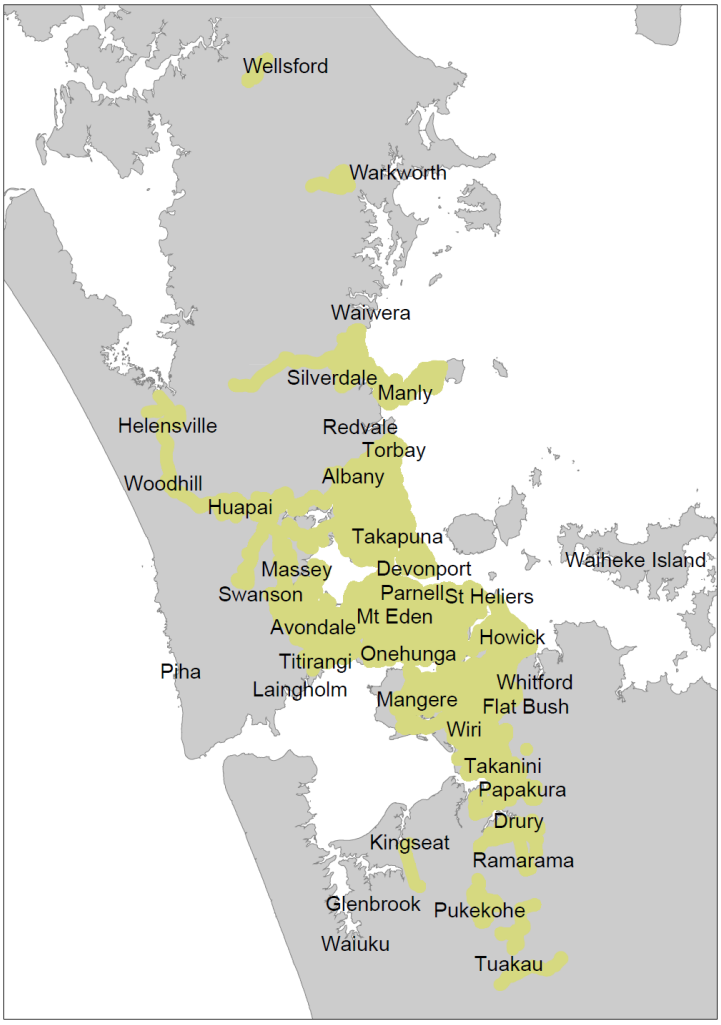
Pricing strategy: a decision made by the Directors of a GDB on the GDB's plans or strategy to amend or develop prices in the future, and recorded in writing.

Pricing Year: the annual period beginning on 1 October and ending on 30 September.

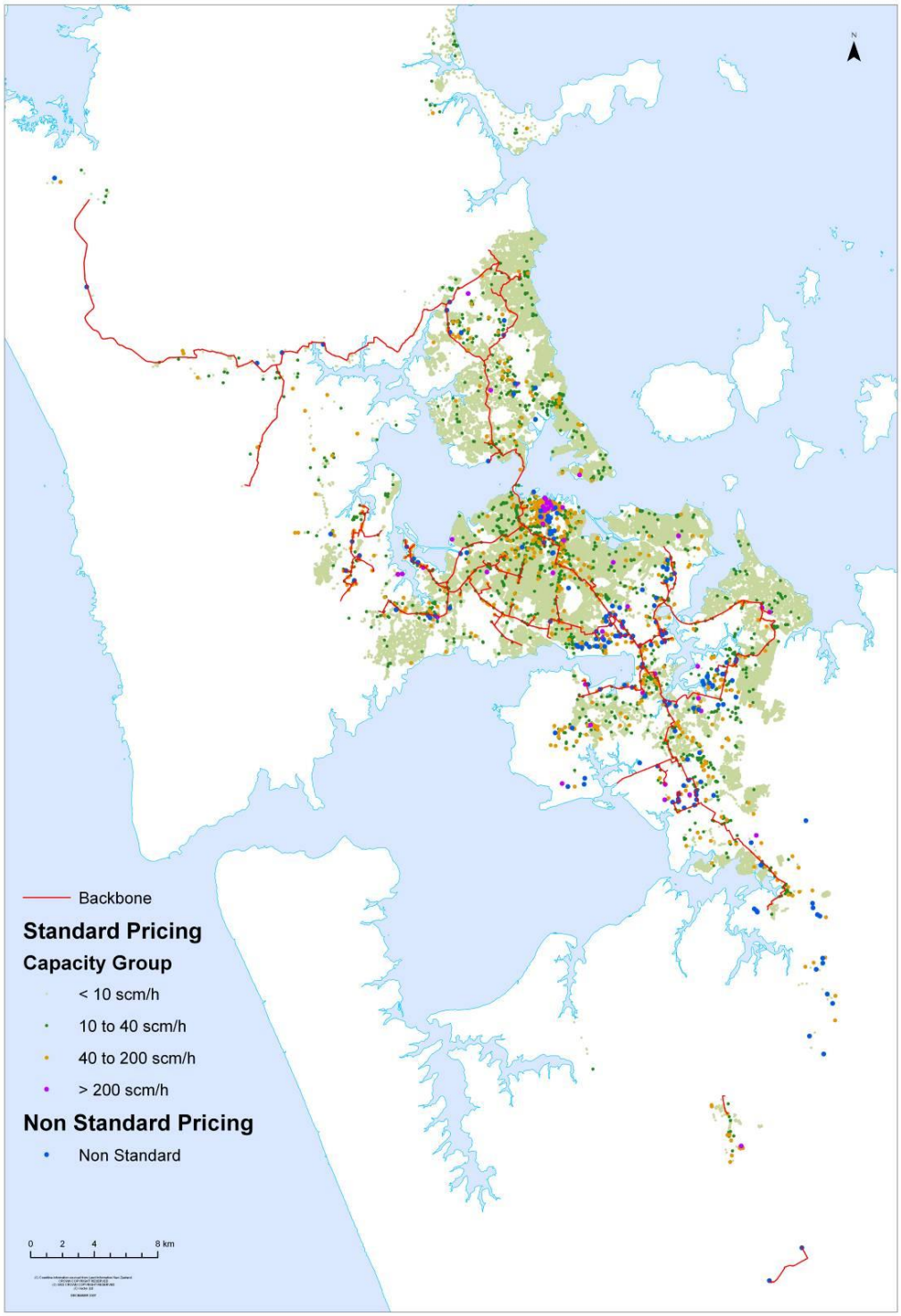
scm/h: standard cubic metres per hour a measure of gas capacity based on the flow rate.

Target revenue: the revenue Vector expects to receive from prices during the pricing year.

APPENDIX 2. MAP OF VECTOR'S AUCKLAND GAS DISTRIBUTION NETWORK



APPENDIX 3. CONSUMER GROUPS ON THE AUCKLAND NETWORK



APPENDIX 4. COMPLIANCE MATRIX

The table below is included to demonstrate how this disclosure complies with the Gas Distribution Information Disclosure 2012.

2.4.1 Every **GDB** must **publicly disclose**, before the start of each **pricing year**, a pricing methodology which-	
(1) Describes the methodology, in accordance with clause 2.4.3 of this section, used to calculate the **prices** payable or to be payable;	*Sections 3, 4, 5, 6, 7 and 8*
(2) Describes any changes in **prices** and **target revenues**;	*Sections 4 and 8*
(3) Explains, in accordance with clause 2.4.5 of this section, the approach taken with respect to pricing in **non-standard contracts**;	*Section 10*
(4) Explains whether, and if so how, the **GDB** has sought the views of **consumers**, their expectations in terms of **price** and quality, and reflected those views in calculating the **prices** payable or to be payable. If the **GDB** has not sought the views of **consumers**, the reasons for not doing so must be disclosed.	*Sections 8.3 and 11.5.3*
2.4.2 Any change in the pricing methodology or adoption of a different pricing methodology, must be **publicly disclosed** at least 20 working days before **prices** determined in accordance with the change or the different pricing methodology take effect.	N/A
2.4.3 Every disclosure under clause 2.4.1 above must-	
(1) Include sufficient information and commentary to enable interested persons to understand how **prices** were set for each **consumer group**, including the assumptions and statistics used to determine **prices** for each **consumer group**;	*Sections 5, 6, 7 and 8*
(2) Demonstrate the extent to which the pricing methodology is consistent with the **pricing principles** and explain the reasons for any inconsistency between the pricing methodology and the **pricing principles**;	*Section 11*
(3) State the **target revenue** expected to be collected for the **pricing year** to which the pricing methodology applies;	*Section 4*
(4) Where applicable, identify the key components of **target revenue** required to cover the costs and return on investment associated with the **GDB**'s provision of **gas pipeline services**. Disclosure must include the numerical value of each of the components;	*Section 4*
(5) State the **consumer groups** for whom **prices** have been set, and describe- (a) the rationale for grouping **consumers** in this way; (b) the method and the criteria used by the **GDB** to allocate **consumers** to each of the **consumer groups**;	*Section 5*
(6) If **prices** have changed from **prices** disclosed for the immediately preceding **pricing year**, explain the reasons for changes, and quantify the difference in respect of each of those reasons;	*Section 8.2*
(7) Where applicable, describe the method used by the **GDB** to allocate the **target revenue** among **consumer groups**, including	*Sections 6.2 to 6.4*

the numerical values of the **target revenue** allocated to each **consumer group** and the rationale for allocating it in this way;	
(8) State the proportion of **target revenue** (if applicable) that is collected through each **price component** as **publicly disclosed** under clause 2.4.18.	*Section 8.2*
2.4.4 Every disclosure under clause 2.4.1 above must, if the **GDB** has a **pricing strategy**-	*Vector's Board of Directors have not recorded in writing any decision on plans or strategies to amend or develop prices beyond the pricing year ending on 30 September 2016 and accordingly have not approved a "pricing strategy".*
(1) Explain the **pricing strategy** for the next 5 **pricing years** (or as close to 5 years as the **pricing strategy** allows), including the current **pricing year** for which **prices** are set;	
(2) Explain how and why **prices** are expected to change as a result of the **pricing strategy**;	
(3) If the **pricing strategy** has changed from the preceding **pricing year**, identify the changes and explain the reasons for the changes.	
2.4.5 Every disclosure under clause 2.4.1 above must-	
(1) Describe the approach to setting **prices** for **non-standard contracts**, including- (a) the extent of **non-standard contract** use, including the number of ICPs represented by **non-standard contracts** and the value of **target revenue** expected to be collected from **consumers** subject to **non-standard contracts**; (b) how the **GDB** determines whether to use a **non-standard contract**, including any criteria used; (c) any specific criteria or methodology used for determining **prices** for **consumers** subject to **non-standard contracts**, and the extent to which these criteria or that methodology are consistent with the **pricing principles**;	*Sections 10.1 to 10.2*
(2) Describe the **GDB**'s obligations and responsibilities (if any) to **consumers** subject to **non-standard contracts** in the event that the supply of **gas pipeline services** to the **consumer** is interrupted. This description must explain- (a) the extent of the differences in the relevant terms between **standard contracts** and **non-standard contracts**; (b) any implications of this approach for determining **prices** for **consumers** subject to **non-standard contracts**.	*Section 10.3*

2.4.6 – 2.4.8 Disclosure of capital contributions	This is disclosed in the separate document "Policy for determining capital contributions on Vector's gas distribution network" http://vector.co.nz/disclosures/gas/capital-contributions
2.4.9 – 2.4.17 Disclosure of prescribed terms and conditions of contracts	This is disclosed in the separate disclosure available at http://vector.co.nz/disclosures/gas/prescribed-terms-and-conditions-of-contracts

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

Clause 2.9.2

We, Robert William Thomson and

Jonathan Parker Mason, 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 Distribution 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.

R. [signature]

Director

Jonathan P. Mason

Director

23 August 2016

Date