



**Pricing methodology  
Electricity distribution network**

From 1 April 2015

Pursuant to:  
The Electricity Distribution  
Information Disclosure Determination 2012

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## 1 GLOSSARY

**Act:** the Commerce Act 1986.

**Allowable Notional Revenue:** the revenue Vector determined under the Determination that Vector is allowed to earn during the pricing year.

**Avoided Cost of Transmission (ACOT):** the incremental transmission saving created by and payable to a DG as determined by Vector from time to time in accordance with the Avoided Cost of Transmission methodology.

**The Commerce Commission (the Commission):** The Commission is an independent Crown entity established under section 8 of the Commerce Act 1986 responsible for competitive and regulated markets.

**Connection or Point of Connection:** each point of connection at which a supply of electricity may flow between the Distribution Network and the Consumer's installation, as defined by the Distributor.

**Consumer:** a purchaser of electricity from the Retailer where the electricity is delivered via the Distribution Network.

**Consumer Group:** a group of consumers who share the same connection type (eg Primary (HV), Secondary (TX), or Tertiary) and, for Tertiary consumers, who share similar structural features (eg. Low Voltage, Unmetered, Business, Residential)

**COSM:** Cost of Supply Model.

**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.

**Default Price Path (the Determination):** Electricity Distribution Default Price Quality Path Determination 2015

**Demand:** the rate of expending electrical energy expressed in kilowatts (kW) or kilovolt amperes (kVA).

**Distributed Generator (DG):** a party with whom Vector has an agreement for the connection of plant or equipment to Vector's electricity Distribution Network where the plant or equipment is capable of injecting electricity into Vector's distribution network.

**Distribution Network or Network:** the electricity distribution network in each area that Vector supplies distribution services, as defined by the following table:

Network	GXP
Auckland	Hepburn Penrose Mangere Roskill Otahuhu Takanini Pakuranga Wiri
Lichfield	Lichfield
Northern	Albany Silverdale Henderson Wellsford Hepburn

**Distributor:** means Vector Limited, as the operator and owner of the Distribution Networks, and includes its subsidiaries, successors and assignees.

**EDB:** Electricity Distribution Business such as Vector

**Electricity Authority (the Authority):** the Electricity Authority which is an independent Crown entity responsible for regulating the New Zealand electricity market.

**Grid Exit Point (GXP):** a point of connection between Transpower's transmission system and the Distributor's Network.

**High-Voltage (HV):** voltage above 1,000 volts, generally 11,000 volts, for supply to Consumers.

**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 electricity to a consumer.

**kVA:** kilovolt-ampere (amp), a measure of apparent power being the product of volts and amps. Used for the measurement of capacity and demand for capacity and demand charges.

**kVAh:** kilovolt ampere hour, a unit of energy being the product of apparent power in kVA and time in hours. Used for the measurement of power factor for power factor charges.

**kVAR:** kilovolt ampere reactive, is a unit used to measure reactive power in an AC electric power system. Used for the measurement of power factor for power factor charges.

**kW:** kilowatt, a measure of electrical power. Used for the measurement of demand during peak periods for the allocation of transmission charges.

**kWh:** kilowatt-hour, a unit of energy being the product of power in watts and time in hours. Used for the measurement of consumption for variable charges.

**Line Charges:** means the charges levied by the Distributor on Customers for the use of the Distribution Network, as described in the Pricing Schedule.

**Low Voltage (LV):** voltage of value up to 1,000 volts, generally 230 or 400 volts for supply to Consumers.

**Maximum Allowable Revenue (MAR):** Starting price specified in Schedule 1 of the Determination that applies to the regulatory period 1 April 2015 to 31 March 2020.

**Network:** see Distribution Network.

**Pass Through Costs:** has the meaning specified in clause 3.1.2 of the Electricity Distribution Services Input Methodologies Determination 2012 (including all amendments).

**Price Category:** the relevant price category selected by the Distributor from the Price Schedule to define the Line Charges applicable to a particular ICP.

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

**Pricing Principles:** the pricing principles specified by the Authority in Distribution Pricing Principles and Information Disclosure Guidelines (published 1 March 2010).

**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 12 month period from 1 April to 31 March each year.

**Primary Connection Type:** consumers who connect directly to Vector's HV network through consumer owned connection assets.

**RAB:** Regulatory Asset Base, the regulated value of the assets that Vector uses to provide electricity distribution services.

**Recoverable Costs:** has the meaning specified in clause 3.1.3 of the Electricity Distribution Services Input Methodologies Determination 2012 (including all amendments).

**Regional Coincident Peak Demand (RCPD):** for a Transmission Region, the sum of the offtake measured in kW) in that Region during Regional Coincident Peak Demand Periods, as determined by Transpower each year. Where a Transmission Region is one of the four regional groups of connection locations (as defined in Transpower's Transmission Pricing Methodology), Upper North Island, Lower North Island, Upper South Island, and Lower South Island; and Regional Coincident Peak Demand Period means for the Upper North Island a half hour in which any of the 12 highest regional demands (measured in kW) occurs during 1 September to 30 August immediately prior to the start of the Pricing Year.

**Retailer:** the supplier of electricity to Consumers with installations connected to the Distribution Network.

**Secondary Connection Type:** consumers who connect directly to Vector's LV network through consumer owned connection assets.

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

**Tertiary Connection Type:** consumers who connect to Vector's LV network through Vector owned connection assets.

**Time of Use Meter (TOU):** metering that measures the electricity consumed for a particular period (usually half-hourly).

**Transmission Costs:** the transmission charges that Vector incurs from Transpower.

**Transpower:** means Transpower New Zealand Limited and any successors or permitted assignees.

**Vector:** means Vector Limited and any successors or permitted assignees.

## 2 INTRODUCTION

This document describes Vector's Pricing Methodology for Electricity Lines Services (PMELS). It provides information for interested parties to understand how our electricity lines prices are set in a transparent manner. Our focus is to provide our customers with a cost efficient, high quality service and this document explains how we recover the cost of providing this service to our customers including how we have taken steps to mitigate the impact of pricing methodology changes by generally limiting price increases to no more than 10%.

Vector is regulated by the Commerce Commission who determine the amount of revenue that Vector is allowed to recover each year. Vector's line charges are set to recover this revenue and include a number of components: the distribution portion in respect of Vector's network assets, and the pass-through and recoverable portion which relates to other costs that are outside our control such as transmission costs in respect of Transpower's national grid, local authority rates and regulatory levies which are allowed to be passed through or recovered under Commerce Commission price-quality regulation.

The costs associated with providing electricity lines services are allocated to customer groups by a COSM. The shared nature of the network means that some of these allocations are necessarily arbitrary, however Vector has updated its allocation approaches to produce a cost allocation range for each customer group, reflecting the outcomes available with different allocation approaches. Vector then aims to set prices so that the revenue recovered for each customer group lies within the allocated range of costs, and that our total charges are below the regulated limits. This approach provides enhanced flexibility for managing price changes and providing price stability over time.

The distribution portion of Vector's prices is regulated and is generally not able to increase on average by more than inflation each year. Every 5 years Vector's prices are also subject to a price reset and, from 1 April 2015, Vector is setting prices to adhere to a 5 yearly regulatory reset. This has resulted in an increase to the distribution component of prices of 0.4%.

Over this same period pass through and recoverable costs have also generally decreased. From 1 April 2015, pass-through and recoverable costs (including transmission charges) are forecast to decrease by 2.3%. This includes forecast increases in local authority rates of 7.8%, but offset by decreases in the more significant transmission charges of 2.7% and Commerce Act, EGCC and EA levies of 0.1%.

The combination of the overall decrease in pass-through and recoverable costs of approximately 2.3% and an increase in distribution charges of 0.4% results in an overall weighted average decrease to Vector's lines charges of 0.6%. Individual prices will change by more or less than the overall weighted average price decrease due, for example, to the range of initiatives set out in this document.

Vector has also completed the alignment of prices between the the Auckland and Northern networks. Our COSM now allocates costs on a combined network basis, reflecting a homogenous service across our networks, and prices for Business and Residential consumers are now fully aligned across the two networks.

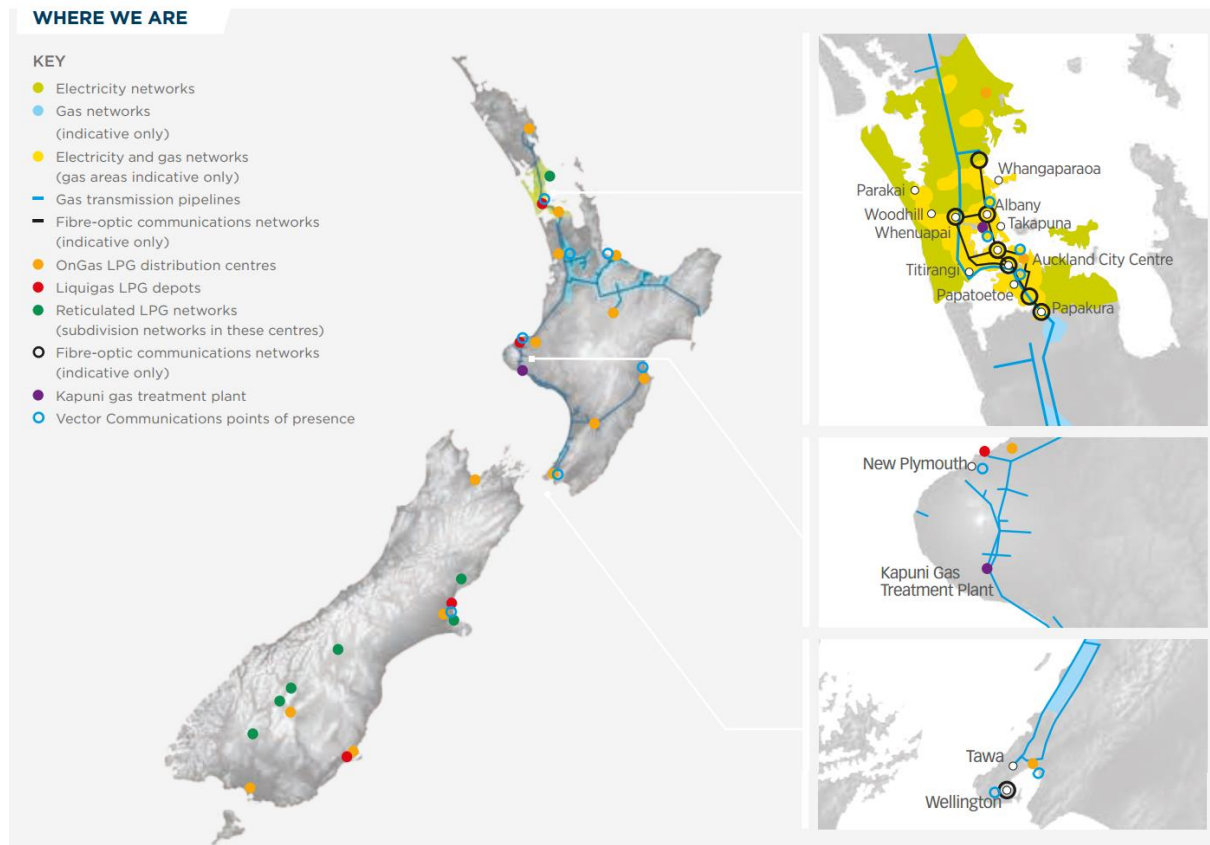
### 3 ABOUT VECTOR

Vector is focused on meeting the energy needs of more than 700,000 customers across the country. We keep the lights on, the gas flowing and provide many other essential services crucial to New Zealand’s economic success.

Our electricity networks span the Auckland region and we distribute natural gas to more than 40 towns and cities in the North Island. Our LPG business has depots spread from Invercargill in the south to Whangarei in the far north.

While we are New Zealand’s largest distributor of electricity and gas, we also own more than one million meters and we are leading a revolution in infrastructure management technology. Nearly 40% of our revenue is generated by related technology products and services and our gas intermediary operations. We are committed to continued strong growth while striving to service our customers better and streamline our systems and processes. Figure 1 below illustrates the geographic spread of our customers and services.

**Figure 1: Where our customers are located and our services are provided**



We provide vital services to consumers safely, efficiently and reliably. Employing 850 staff and over 1,000 contractors, we are one of the largest New Zealand companies on the NZX and we deliver consistent returns to shareholders. We are proudly New Zealand owned, firm advocates for an effective infrastructure sector and are committed to being the country’s best infrastructure company.

We are a significant provider of:

- a. Electricity distribution;
- b. Gas transmission and distribution;
- c. Electricity and gas metering installations and data management services;
- d. Natural gas and LPG, including 60.25% ownership of bulk LPG distributor Liquigas; and
- e. Fibre optic networks in Auckland and Wellington, delivering high speed broadband services.

In addition to our energy and fibre optic businesses we own:

- a. A 50% share in Treescape, an arboriculture and vegetation management company; and
- b. A 22.11% share in NZ Windfarms, a power generation company.

Vector is listed on the New Zealand Stock Exchange. Our majority shareholder, with a shareholding of 75.1%, is the Auckland Energy Consumer Trust (AECT). The AECT represents its beneficiaries, who are Vector's electricity customers in Auckland, Manukau and parts of the Papakura region. The balance of Vector's shares are held by individual and institutional shareholders.

Vector remains among the lowest-cost energy infrastructure providers in the country, while still more than meeting our service quality requirements. Average operating expenditure per customer on Vector's electricity networks are among the best performers in the country.

Vector's electricity distribution network supplies more than 500,000 houses and businesses in the greater Auckland region. Our network extends from just north of Wellsford to Papakura in the south, covering the Auckland Central region, Waiheke Island, North Shore, Waitakere, Rodney, Manukau and parts of the Papakura region. Part of our network (the Northern Network) was acquired from UnitedNetworks Limited in 2002. The remaining part of our network has historically been owned by Vector since the reforms to the electricity industry in the 1990's. Figure 2 shows a map of Vector's Auckland and Northern electricity distribution networks.



**Figure 2: Auckland and Northern electricity distribution networks**



#### **4 PRICE REGULATION FROM 1 APRIL 2015**

Under Part 4 of the Commerce Act 1986 (the Act), the Commerce Commission regulates markets where competition is limited. This includes electricity distribution services. Regulation for electricity distribution services includes regulation of price and quality through a price-quality path 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. This type of regulation 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. For price regulation, a price-quality path sets a maximum amount by which average prices can increase.

There are three key components required to form a price-quality path. These are:

- 1) The starting price. This is expressed as the Maximum Allowable Revenue (MAR) that a distributor is allowed to make in the first year of the 5 year regulatory period. MAR is then used to determine the starting prices in the first year of the five year regulatory period.
- 2) The annual rate of change. This is the amount that prices are allowed to increase by annually and is generally expressed in the form of "CPI-X". This means prices are restricted from increasing each year by more than the rate of inflation, less an adjustment to account for productivity improvements.
- 3) Quality standards. This is the minimum service quality standards that a business must meet. In the case of electricity distribution, these are currently based on historical averages of reliability in energy delivery.

Vector's lines charges from 1 April 2015 are subject to the Electricity Distribution Services Default Price-Quality Path Determination 2015 (the Determination) under Part 4 of the Act. The Determination has set Vector's MAR for the year beginning 1 April 2015 at \$395.2m and the annual rate of change at CPI-0. This means that weighted average prices are allowed to increase by the rate of inflation over the 5 year regulatory period.

Included in Vector's lines charges is the recovery of third party costs (known as pass-through and recoverable costs) that get passed through to consumers and are outside of Vector's control. These include Commission, Authority and Electricity and Gas Complaints Commission (EGCC) levies, transmission charges and council rates. In a change from the previous determination<sup>1</sup>, pass-through and recoverable costs are now treated separately from distribution revenue. Compliance for these costs is now demonstrated based on actual pass-through and recoverable costs revenues (prices and quantities) in the pricing year, less the corresponding costs. A mechanism at the end of each pricing year allows for any differences between pass-through and recoverable costs and revenues to be washed-up in subsequent years with a time value of money adjustment.

Under Part 4, 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 Electricity Distribution Information

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<sup>1</sup> Electricity Distribution Services Default Price-Quality Path Determination 2012

Disclosure Determination 2012 (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.

Vector's residential prices are also subject to the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004 (the Low User Regulations). These regulations were made under sections 172B, 172J and 172K of the Electricity Act and require distributors to offer residential consumers who use less than 8000kWh per year a price option with a fixed price of no more than \$0.15 per day (excluding GST) and where the sum of fixed and variable charges is no greater than any other residential price option (up to 8,000 kWh per annum).

Vector has developed its lines charges in conjunction with voluntary pricing principles (the Principles) established by the Electricity Authority (the Authority). The purpose of the Principles is to ensure distribution prices are based on a well-defined, clearly explained and economically rational methodology. The Authority plans to regularly review distributors' pricing approaches to monitor the extent to which they are consistent with the Principles.

## 5 OBJECTIVE FOR SETTING PRICES

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

A key feature of an electricity distribution system is that it is a network of interconnected assets. Many consumers on the network share assets and it is often difficult to identify precisely who benefits from which assets. While this means that the allocation of costs between consumers or groups of consumers is arbitrary, 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 electricity distribution network. Vector's distribution prices are designed, in line with Principles published by the Authority, to efficiently recover the cost of the existing electricity distribution network and to the extent allowed by regulatory constraints (such as the low-user fixed charge)..

The most significant cost element reflected in Vector's distribution prices relates to physical electricity distribution assets, for example the lines, wires, poles, transformers and cables. These assets are about half way through their useful life, meaning their value is also about half that of equivalent new assets. This means that Vector's distribution prices are lower than they would be if the assets were new. To send the right price signals to consumers to ensure new investments in the network are as efficient as possible, consumers need to be charged for the full cost of new assets and proportionate cost of existing assets that they will be using.

Vector has developed a high-level framework to guide the development of the PMELS. The overarching objectives for the PMELS 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. Clear pricing structure - by making it attractive to maintain connections and for new consumers to connect. Pricing should be simple and easily understood by consumers;
- d. Coherent overall price structure - so that there are not incentives for consumers to switch consumer groups or price categories to take advantage of anomalies in the pricing structure;
- e. Cost reflective pricing - to ensure that all consumers face prices that reflect the cost of providing them with service, that charges 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 investment decisions;

- f. Consumer centric outcomes – to take account of the economic value of the service to consumers, provide pricing stability and manage price shock effectively in the transition to new price structures; and
- g. Incentivise efficient usage - in other words, encourage/discourage more utilisation of electricity assets to ensure that new investments are efficient and sunk investments are not inefficiently by-passed.

## **6 HIGH LEVEL METHODOLOGY FOR ALLOCATING COSTS AND SETTING PRICES**

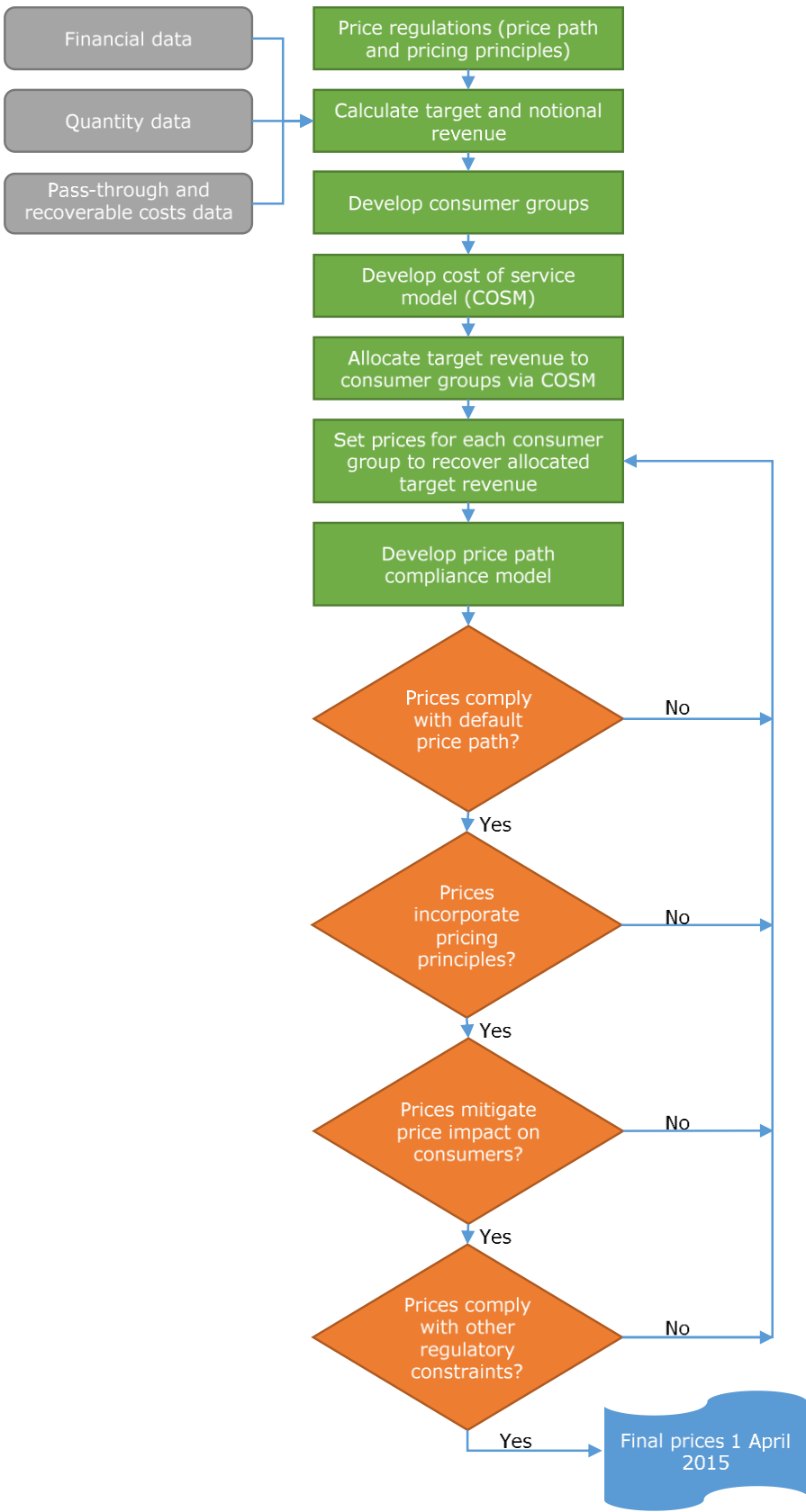
In this section we provide a high level description of Vector's pricing methodology for the electricity distribution networks. Vector's pricing methodology is developed to deliver Vector's pricing objectives as described in Section 5 above.

Vector uses a COSM to establish and allocate costs to consumer groups. Vector uses the COSM to provide a defensible and stable allocation of costs over time. Consumer groups have been designed on the basis of capacity, to reflect economies of scale in network augmentation. Prices in each of the consumer groups reflect these economies of scale (i.e. charges increase, but at a decreasing rate as volumes/capacity requirements increase). To allocate costs to consumer groups we also use connection types, which is a way of segmenting assets into categories that are used by each consumer group in different ways. More information on this is provided in Section 8 and 9.

A high level view of the process for developing prices is shown in Figure 3 and described as follows:

- a. Determine the target revenue required to cover the costs and return on investment of providing electricity lines services;
- b. Define connection types and then associated consumer groups based on consumers' usage of Vector's electricity distribution network assets and size of connection;
- c. Develop COSM to incorporate pricing principles and allocate the costs making up the target revenue to consumer groups;
- d. Set prices so that target revenue is recovered from consumer groups in accordance with the COSM;
- e. Ensure overall price changes are consistent with the pricing principles and provide for reasonable end consumer outcomes (e.g. mitigating rate shocks where indicated by the COSM) which includes;
  - i. The development of a preliminary tariff design model;
  - ii. The development of a price compliance model; and
  - iii. An iterative process to ensure that prices comply with the Determination, incorporate regulated pricing principles, mitigate the price impact on consumers and meet other regulatory drivers.

**Figure 3: Process used to allocate costs and set prices on 1 April 2015**



The foundation of the development of the pricing methodology is based on an application of economic pricing principles, given practical, physical and commercial constraints. It is useful to have an understanding of these factors, as it assists in understanding various decisions Vector has reached in establishing the pricing methodology:

- a. The majority of costs to be recovered are shared costs, which cannot be specifically attributed to particular consumer groups except at high levels of aggregation;
- b. There are practical limits on the information available with which to set prices to improve efficiency, for example electricity time of use metering for small consumers has only recently been installed and commercial systems and processes to make relevant consumption information available are still being developed; and
- c. Development of prices necessarily requires a high level of averaging due to the large number of customers and varying levels of consumption. There are practical considerations and administrative barriers in providing an individual price to each individual customer.



## **7 CALCULATION OF TARGET REVENUE**

Vector's electricity lines charges are constrained by the requirements of the regulated price path, the actual number of consumers, and electricity delivered over the distribution system. Price changes from 1 April 2015 are derived from the starting price adjustment determined by the Commission and increases in pass-through and recoverable costs.

This section describes the methodology that Vector has applied to calculate the amount of revenue that is required by Vector to recover the costs associated with owning, operating and maintaining an efficient electricity distribution network. The section also describes how Vector determines the pass-through and recoverable cost portion of revenues. Pass-through and recoverable costs are costs from third parties and are outside of Vector's control that Vector is allowed to pass-through to end consumers through its prices.

As pass-through and recoverable costs are recovered separately from distribution revenue under the Determination (described in Section 4) above, target revenue to recover distribution lines charges is calculated separately from target revenue to recover pass-through and recoverable costs.

Total Target Revenue is therefore the sum of target revenue for distribution and target revenue to recover pass-through and recoverable costs.

### **7.1 Calculation of target revenue for distribution**

Vector operates under a weighted average price cap where the Commission has specified, through the Determination, the expected Maximum Allowable Revenue (MAR) of \$395.2m that Vector is able to recover in the first year of the regulatory period beginning 1 April 2015.

The Determination requires distributors to demonstrate compliance using notional revenue rather than actual revenue. The difference between these is that notional revenue uses actual prices multiplied by quantities from 2 years earlier. This approach allows distributors to set prices without facing the risk of non-compliance due to externalities outside their control, for example changes in the amount of energy distributed. To change between actual revenue and notional revenue, MAR is converted under the Determination into Allowable Notional Revenue (ANR) using the Commission's forecast 2 year growth assumption of 2.07% (i.e. their estimation of the difference in actual quantities and those from 2 years prior). ANR is effectively MAR expressed on a notional basis (with quantities lagged by 2 years). Vector's Notional Revenue for 2015/16 (prices for 2015/16 multiplied by quantities lagged by 2 years) must not exceed the ANR.

Prices for 2015/16 are then set, based on the cost allocation resulting from the COSM (described in Section 9), to meet regulatory requirements (described in Section 4 and Section 10), to comply with pricing principles (described in Section 16) and to ensure that Notional Revenue is less than ANR.

To calculate Target Revenue, Vector uses the 2015/16 prices derived from the process described above multiplied by forecast 2015/16 quantities. This is the amount of actual revenue that is expected to be recovered during the 2015/16 pricing year.

The cost components of target revenue for distribution lines charges are derived from internal forecasts of costs over the 2015/16 period. Return on capital is the residual between the sum of the forecast costs for 2015/16 and the Target Revenue.

Table 1 below shows the Target Revenue for distribution lines charges that Vector expects to receive from prices calculated for 1 April 2015 to 31 March 2016. Target Revenue for distribution lines charges is \$385.7m.

**Table 1: Target Revenue from distribution lines charges, 1 April 2015 to 31 March 2016**

<b>Description</b>	<b>Cost Type</b>	<b>Target Revenue</b>
<b>Components</b>		
Maintenance	Asset	47,935,200
Direct costs	Asset	9,750,941
Indirect costs	Non-Asset	13,457,857
Allocated costs	Non-Asset	37,226,072
Depreciation - system assets	Asset	89,691,585
Depreciation - non-system assets	Non-Asset	17,862,682
Regulatory tax adjustment	Asset	23,012,798
Regulatory tax allowance	Asset	41,085,737
Return on Capital	Asset	105,649,038
Distribution Revenue		385,671,910

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 customer groups, and are discussed in Section 9.

## **7.2 Calculation of target revenue to recover pass-through and recoverable costs**

The Determination allows for Vector to recover pass-through and recoverable costs incurred from third parties through its prices. These include:

- Electricity Authority levies;
- Commerce Commission levies;
- EGCC levies (fixed and variable); and
- transmission charges

The Determination also includes a series of new recoverable costs as follows:

- energy efficiency and demand side management incentive allowance;
- quality incentive adjustment;
- NPV wash-up allowances;
- transmission asset wash-up adjustment;
- extended reserves allowance;
- catastrophic event allowance;
- reconsideration event allowance; and
- capex wash-up adjustment.

The annual value of these new recoverable costs from 1 April 2015 are zero and we have made no allowance for them in our final prices. In future periods, these additional recoverable costs may be material and are likely to impact on pass-through and recoverable prices.

As the Determination now allows for these costs to be recovered based on actual, rather than lagged quantities, Target revenue to recover pass-through and recoverable costs is simply the forecast value of these costs, or \$221.4m. Table 2 summaries the components of target revenue to recover pass-through and recoverable costs.

**Table 2: Target revenue to recover pass-through and recoverable costs, 1 April 2015 to 31 March 2016**

Description	Cost Type	Target Revenue
Rates	Non-Asset	9,035,009
EA Levies	Non-Asset	2,049,034
Commerce Commission Levies	Non-Asset	969,404
EGCC Levies	Non-Asset	241,174
Transmission costs	Transmission	209,077,426
Pass-through and Recoverable Revenue		221,372,047

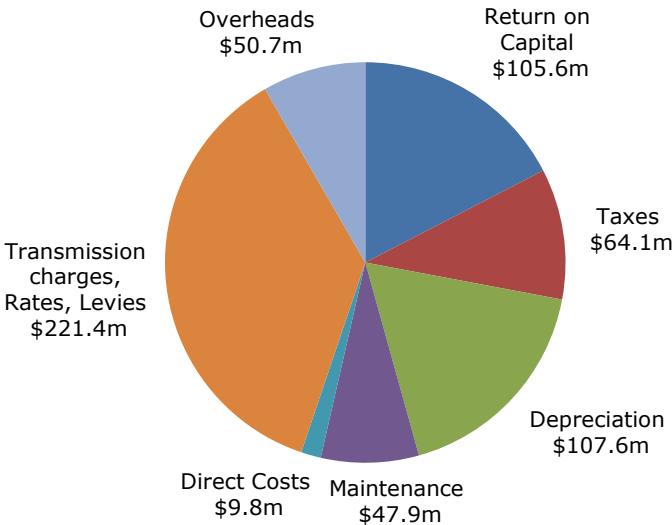
The second column of Table 2 categorises cost components as either “Non-Asset” or “Transmission”. These categorisations determine the way that the costs are allocated to customer groups, and are discussed in Section 9.

**7.3 Total Target Revenue**

Total Target Revenue is the sum of target revenue for distribution lines charges (\$385.7m) and target revenue to recover pass-through and recoverable costs (\$221.4m). Total Target Revenue for 2015/16 is \$607.0m. This compares with Target Revenue for 2014/15 of \$644.8m. The reduction in Target Revenue between 2014/15 and 2015/16 can be explained by forecast lower electricity consumption and a decrease in transmission charges.

A graphical breakdown of the components of Target Revenue for 2015/16 is provided in Figure 4.

**Figure 4: Break Down of Target Revenue**



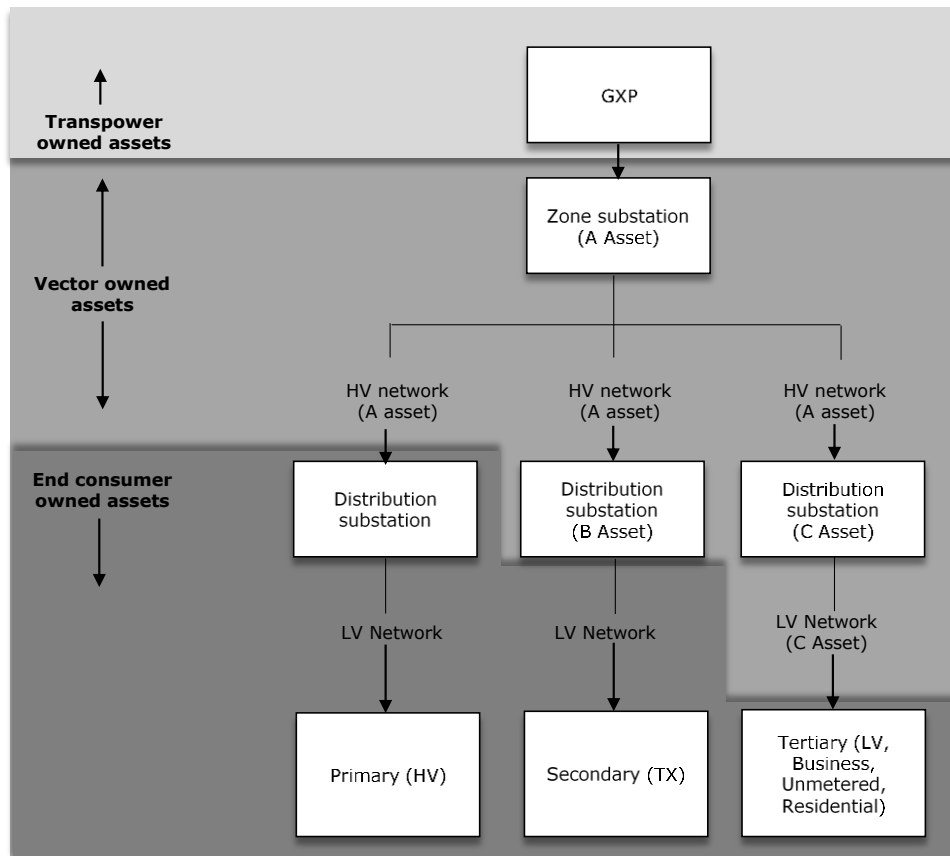
## 8 DEVELOPMENT OF CONSUMER GROUPS

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, the consumer groups are defined at a relatively high level. Examples of these considerations are:

- 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 consuming large volumes of electricity per year is likely to be using some of the same network assets as a residential end consumer consuming only small amounts;
- b. A large proportion of the network's costs are fixed, which means that they should be allocated in a manner that causes the least distortion to other key economic signals;
- c. End consumers are not generally geographically segmented in their use of different network assets. For example, there are in general no 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 spatial representation of the location of different types of consumers across the Auckland networks is included as Appendix 2 and illustrates this point; and
- d. 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 99% of end consumers with a capacity less than 69kVA use 55% of the energy transported, however the large size of the remaining 1% of end consumer's use 45% of the energy transported over the distribution network.

In previous years Vector had identified three connection types based on the nature of the connection to the electricity distribution network. Each of these connection types represents a group of end consumers that receive a homogenous but uniquely defined service from Vector. The three connection types were defined as Primary, Secondary, and Tertiary. A Primary connection type connects directly to Vector's HV network, the Secondary connection type connects a consumer owned network to Vector's HV network through Vector owned transformers while the Tertiary connection type connects to Vector's LV network. These connection types are illustrated diagrammatically in Figure 5.

**Figure 5: Electricity network diagram**



As a result of the high penetration of smart meter across our network, we now have more detailed information on peak usage by individual customers. This has allowed us to disaggregate the Tertiary connection type into Low Voltage, Unmetered and Mass Market consumer groups. The resulting five consumer groups used for the 1 April 2015 pricing year are:

- a. High Voltage consumers that have a Primary connection type that are supplied directly from Vector's high voltage or sub-transmission (6.6kV or higher) network;
- b. Transformer consumers that have a Secondary connection type that are supplied from a transformer(s) owned by Vector and which supplies the consumer's low voltage (400V three phase or 230V single and two phase) network;
- c. Low Voltage consumers that have a Low Voltage connection type other than Unmetered, Business, or Residential consumer groups that are supplied from Vector's low voltage (400V three phase or 230V single and two phase) network;
- d. Unmetered connections that have a Low Voltage connection type that are supplied from Vector's low voltage network and have capacity less than 69kVA; and
- e. Mass Market connections that have a Low Voltage connection type that are supplied from Vector's low voltage network who have capacity less than 69kVA. This includes business and residential consumers.

Vector determines which of the five consumer groups an individual consumer is in based on the physical point of connection to the network, their capacity, metering type and end usage. Each consumer group is therefore generally mutually exclusive, i.e. an end consumer can logically only fit within one group. Table 3 shows the mapping between pricing type and connection type:

**Table 3: Relationship between connection type and consumer groups**

Size	Large >69kVA		Small ≤69kVA		
Connection Type	Primary	Secondary	Tertiary		
Consumer group	HV	TX	LV	Unmetered	Mass Market

**8.1 Incorporating consumer groups into price structures**

Based on the connection types described above, we have identified three distinct classes of assets that are used to different extents by end consumers in each connection type:

- a. A asset types are all high voltage lines and cables, zone substation and sub-transmission assets. These assets are used by all connection types;
- b. B asset types are platforms (distribution substations) that have no Vector-owned low voltage lines or cables leaving and excludes platforms that supply only Tertiary end consumers. These assets are used by Secondary connection types; and
- c. C asset types are all low voltage assets and platforms (distribution substations) that have Vector-owned low voltage lines or Vector platforms that supply multiple end consumers connected at low voltage. These assets are used by Tertiary connection types.

Vector selected these asset types to reflect the costs associated with connecting consumers to various points on the distribution network. The use of voltage (high versus low) to segment assets provides a direct link between our asset segmentation (asset type) and connection type.

## **9 ALLOCATION OF COSTS TO CONSUMER GROUPS THROUGH COSM**

The following section explains how Vector uses the COSM to allocate the actual costs of owning and operating the distribution network into the consumer groups and how cost allocation is used to determine how much revenue we need to recover from each consumer group each year.

Table 1 and Table 2 above list the components of Target Revenue and categorises these components as either "Asset", "Non-Asset" or "Transmission". The COSM then uses this categorisation as a basis for four allocation approaches to allocate the cost components of Target Revenue to consumer groups. These categorisations form the allocations used to allocate costs to consumer groups. These allocation approaches are described in more detail as follows:

### **9.1 Allocation of "Asset" related costs**

Costs categorised as "Asset" related costs are primarily incurred as a result of electricity distribution network assets and are allocated in direct proportion to the assets attributed/allocated to each connection type.

As a large proportion of our costs are driven by assets, this provides a strong basis for the allocation of cost to connection types and therefore consumer groups. This means that, for example, low voltage assets are not allocated to high voltage consumer groups under Vector's COSM cost allocation process. This is illustrated diagrammatically in Figure 5.

The primary cost driver for high voltage assets is capacity used during peak periods. A assets are used by all consumer groups. Costs associated with A assets are allocated to consumer groups by the COSM on the basis of demand during Transpower's Regional Coincident Peak Demand (RCPD) periods.

B assets are able to be directly attributed to the Secondary connection type and therefore the Transformer consumer group.

C assets are directly attributed to the Tertiary connection type, but then must be allocated between the Low Voltage, Unmetered and Mass Market consumer groups. The closer that an asset is to the consumer, the more relevant the customer's local peak demand is, and the less relevant the system or regional coincident peak demand. The most appropriate allocator for C assets might therefore be Anytime Maximum Demand, or demand coincident with the zone-substation peak. Neither of these values are currently available for consumers with a Tertiary connection type. The available allocators are demand at peak and energy consumption (kWh). There is not a strong argument in favour of one allocator over the other, so both allocations are employed to produce a range of asset allocation values.

### **9.2 Allocation of "Non-Asset" costs**

"Non-Asset" costs include pass-through costs (Council rates, Commerce Act levies, Electricity Authority levies and EGCC levies), indirect and allocated costs. Costs categorised as "Non-Asset" have no specific cost driver. Arguments can be made to allocate these costs on the basis of capacity, energy consumption, number of customers, or gross profit margin, or on some arbitrary weighted average of any of these potential allocators. Vector has chosen to create a "band" of acceptable cost allocations by conducting alternative

allocations with energy consumption (kWh) and number of customers (ICPs) as the allocators.

**9.3 Allocation of “Transmission” costs**

Costs categorised as “Transmission” are transmission charges from Transpower passed through to consumers by Vector. Transmission interconnection costs are levied by Transpower on the basis of demand during RCPD periods. Under the COSM, transmission costs are allocated to each consumer group on the basis of demand during the RCPD periods, thus replicating the methodology used by Transpower to allocate interconnection costs.

**9.4 Summary of allocation approaches**

The allocators for “Asset”, “Non-Asset” and “Transmission” costs are applied to the combined Northern and Auckland networks. The allocators used to allocate costs to consumer groups are summarised in Table 4:

**Table 4: Allocators used in the COSM model**

Connection Type	Consumer group	A asset costs	B asset costs	C asset costs	Non-Asset costs (incl. pass-through costs)	Transmission costs
Primary	High voltage (HV)	kW@RCPD	n/a	n/a	ICP <b>or</b> kWh	kW@RCPD
Secondary	Transmission (TX)	kW@RCPD	Directly attributed	n/a	ICP <b>or</b> kWh	kW@RCPD
Tertiary	Low Voltage (LV)	kW@RCPD	n/a	kW@RCPD <b>or</b> kWh	ICP <b>or</b> kWh	kW@RCPD
	Unmetered	kW@RCPD	n/a	kW@RCPD <b>or</b> kWh	ICP <b>or</b> kWh	kW@RCPD
	Mass Market	kW@RCPD	n/a	kW@RCPD <b>or</b> kWh	ICP <b>or</b> kWh	kW@RCPD

**9.5 Data sources used in the COSM**

The COSM uses data from a number of sources. In general the data set used within the COSM uses the same information as that used to produce Vector’s disclosure statements under the Disclosure Determination. In some instances the information used in the COSM is at a more disaggregated level than is required for information disclosure purposes. Data sources used in COSM are described in Table 5.

Many of the allocators used within the COSM are influenced by end consumer behaviour. To smooth this natural volatility, allocators are based on a weighted average of the three most recent years of data. Vector intends to extend this to five years as data becomes available over time. This is a departure from Vector’s previous approach of using a static set of allocators. A weighted average will allow allocations to change over time, reflecting changing patterns of use, while ensuring that the changes are gradual. A ratio of 4:2:1 has been applied to 2014:2013:2012, thus giving a greater weighting to more recent data.



**Table 5: Data Sources used in COSM**

Information	Source
Forecast Costs for Target Revenue	Vector's internal budget forecasts
ICP	Schedule 8 of the Disclosure Determination for 2012, 2013 and 2014 <sup>2</sup> .
kWh	Schedule 8 of the Disclosure Determination for 2012, 2013 and 2014.
kW at RCPD	Vector's billing system and pricing models
Asset values	Vector's regulatory valuation system

## 9.6 Values for allocators and percentages

Table 6 summarises the value of each of the allocators used in the COSM.

**Table 6: Value of Allocators**

Customer Group	ICP	kWh	kW at RCPD
Mass market	529,795	4,494,589	1,191,024
Unmetered	2,190	54,423	13,675
Low Voltage	4,446	1,010,255	143,381
Transformer	1,349	1,411,057	199,563
High Voltage	136	505,324	68,445
Non-standard	57	802,014	105,776
Vector Total	537,966	8,277,661	1,721,864

Table 7 provides the allocation percentages arising from the allocators in Table 6.

**Table 7: Allocation Percentages**

Customer Group	ICP	kWh	kW at RCPD	kWh Tertiary	kW at RCPD Tertiary
Mass market	98.5%	54.3%	69.2%	80.8%	88.3%
Unmetered	0.4%	0.7%	0.8%	1.0%	1.0%
Low Voltage	0.8%	12.2%	8.3%	18.2%	10.6%
Transformer	0.3%	17.0%	11.6%	0%	0%
High Voltage	0.03%	6.1%	4.0%	0%	0%
Non-standard	0.01%	9.7%	6.1%	0%	0%
Vector Total	100%	100%	100%	100%	100%

Appendix 3, Appendix 4 and Appendix 5 show prices and target revenues, respectively, for each price plan.

Ranges of acceptable allocations of costs have been created through the choice of kWh or kW at RCPD for allocating C assets and the choice of ICP or kWh for allocating "Non-Asset" costs. The upper and lower bounds of these ranges are shown in Table 8 and Table 9 below.

<sup>2</sup> These disclosures are available at: <http://vector.co.nz/electricity-disclosures/financial-and-network-information>

**Table 8 : Target revenue allocated by consumer group (kWh allocator for C assets, kWh allocator for “Non-Asset Costs”) (\$000)**

	Mass Market	Unmetered	Low Voltage	Transformer	High Voltage	Non-standard	Total
A Asset Costs	103,993	1,194	12,519	17,425	5,976	6,591	147,698
B Asset Costs	-	-	-	4,129	-	172	4,301
C Asset Costs	48,087	582	10,809	-	-	-	59,478
Other Costs	38,281	464	8,605	12,018	4,304	4,875	68,547
Return on Capital	75,787	885	11,672	10,854	3,026	3,425	105,649
<b>Distribution total</b>	<b>266,147</b>	<b>3,125</b>	<b>43,604</b>	<b>44,426</b>	<b>13,306</b>	<b>15,063</b>	<b>385,672</b>
Pass-through Costs	7,392	90	1,661	2,321	831	-	12,295
Transmission Costs	145,512	1,671	17,517	24,381	8,362	11,633	209,077
<b>Pass-through and transmission total</b>	<b>152,904</b>	<b>1,760</b>	<b>19,179</b>	<b>26,702</b>	<b>9,193</b>	<b>11,633</b>	<b>221,372</b>
Total	419,052	4,886	62,783	71,128	22,500	26,697	607,044

**Table 9: Target revenue allocated by consumer group (kW@RCPD allocator for C assets, ICP allocator for “Non-Asset Costs”) (\$000)**

	Mass Market	Unmetered	Low Voltage	Transformer	High Voltage	Non-standard	Total
A Asset Costs	101,613	1,167	12,233	17,026	5,839	9,821	147,698
B Asset Costs	-	-	-	4,044	-	257	4,301
C Asset Costs	52,548	603	6,326	-	-	-	59,478
Other Costs	67,505	279	566	172	17	7	68,547
Return on Capital	77,317	879	9,178	10,412	2,885	4,979	105,649
<b>Distribution total</b>	<b>298,982</b>	<b>2,928</b>	<b>28,303</b>	<b>31,653</b>	<b>8,742</b>	<b>15,063</b>	<b>385,672</b>
Pass-through Costs	12,109	50	102	31	3	-	12,295
Transmission Costs	145,512	1,671	17,517	24,381	8,362	11,633	209,077
<b>Pass-through and transmission total</b>	<b>157,621</b>	<b>1,721</b>	<b>17,619</b>	<b>24,412</b>	<b>8,365</b>	<b>11,633</b>	<b>221,372</b>
Total	456,604	4,649	45,922	56,065	17,107	26,697	607,044

## **9.7 Setting prices so that target revenue is recovered from consumer groups in accordance with the COSM outputs**

Vector has set its prices for 2015/16 to ensure that its requirements under the Determination are met. The Determination specifies the allowable amount of notional revenue that Vector is able to recover through prices. Accordingly, each year Vector sets prices, so that on a forecast basis notional revenue does not exceed allowable notional revenue under the Determination. Vector also sets prices to ensure revenue is recovered in accordance with the outcomes of the COSM as described in Section 7.4 above. This ensures that revenues are recovered in line with where costs are incurred.

From 1 April 2015, Vector has increased the distribution component of prices by 0.4%. In addition to the increase to the distribution component of Vector's prices, Vector is able to change prices to reflect changes in pass through and recoverable costs outside of our control. Pass-through and recoverable costs (including transmission charges) are forecast to decrease by 2.3%. This includes forecast increases in local authority rates of 7.8%, decreases in transmission charges of 2.7%, decreases in Commerce Act levies of 40%, increases to EGCC levies of 9% and increases to Electricity Authority levies of 44%.

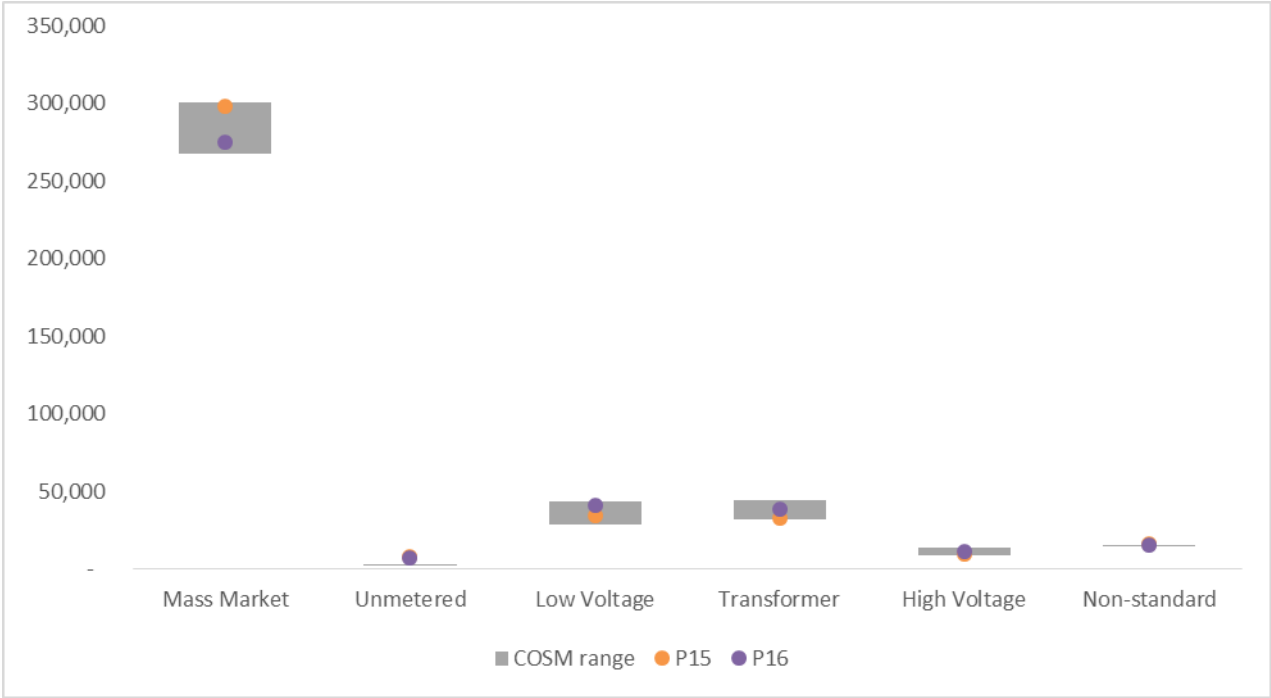
Forecast pass-through and recoverable costs make up approximately 36% of Vector's target revenue for the 2015/16 pricing year. Vector's distribution charges make up the residual 64% of the target revenue recovered by our line charges. The combination of decreases in pass-through and recoverable costs with the application of the increase to the distribution component of Vector's prices results in an overall weighted average price decrease of 0.6%.

Vector has applied this overall price decrease to prices in conjunction with a transition towards improved adherence to our cost allocations between individual consumer groups to ensure the revenue from each consumer group determined by the COSM is delivered. Individual prices will change by more or less than the overall weighted average price decrease. This results from a range of initiatives, as set out further in this document. We have taken steps to mitigate the impact of these initiatives on consumers by generally limiting price increases to no more than 10%; however we note there are some exceptions to this.

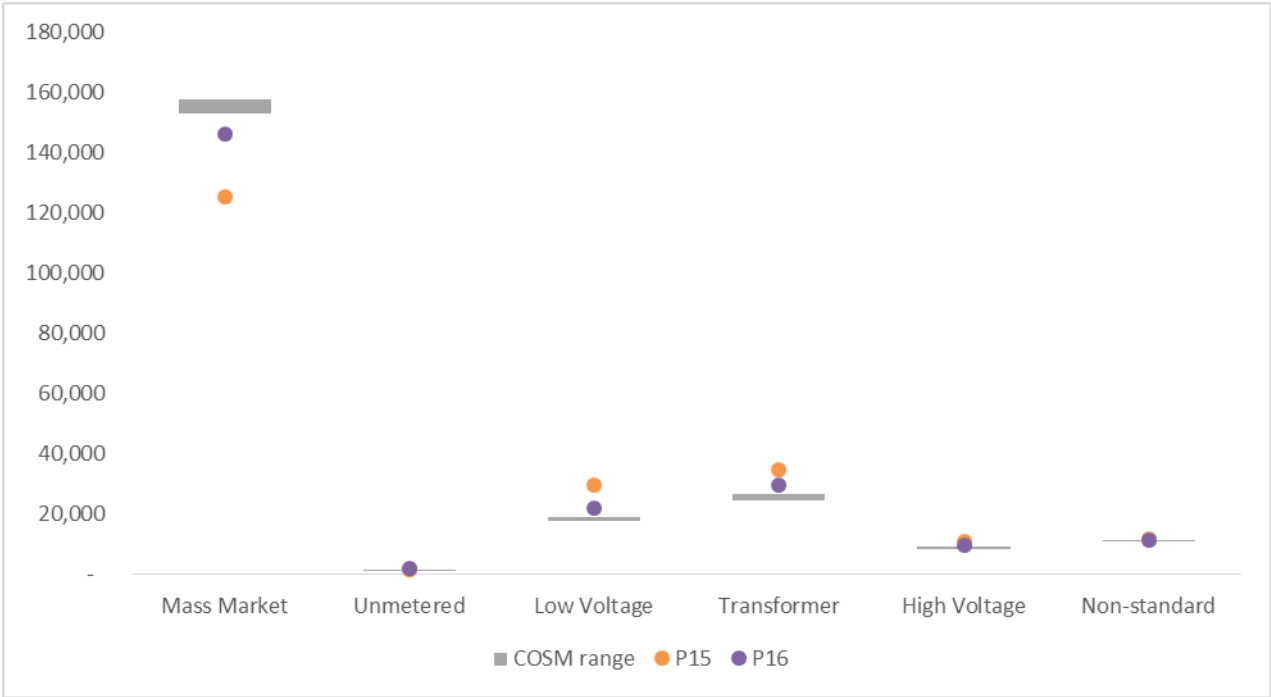
Figure 6 and Figure 7 below show 2014/15 and 2015/16 prices compared with the desired COSM outcomes. The desired COSM output represent a range of acceptable allocations and is presented as a grey band while 2014/15 and 2015/16 prices are presented as purple and orange dots. This shows how 2014/15 prices have moved towards the desired COSM outcome through the application of the PMELS.

The distribution prices and 2013/14 quantities that produce the notional distribution revenue shown in Figure 6 and the pass-through prices and forecast 2015/16 quantities that produce the pass-through and recoverable revenue are shown in Appendix 3 and Appendix 4.

**Figure 6: Distribution component of prices 2014/2015 and 2015/2016 compared with COSM outcomes on a notional basis**



**Figure 7: Pass-through and recoverable component of prices 2014/2015 and 2015/2016 compared with COSM outputs on a real basis**



## 10 DEVELOPMENT OF PRICE CATEGORIES

Vector has price categories applicable to each network and consumer groups within each network. Within each consumer group, Vector has price categories available depending on the specific requirements for each consumer group.

This section describes, at a high level, the rationale and purpose for each of the individual price categories that Vector offers and their link to consumer groups and connection types. Further details of how prices for each price category is derived is provided in Section 11 below.

Revenue for each consumer group from each price category is aligned with the costs allocated by the COSM to each consumer group as part of the process of setting final prices.

Table 10 below presents each of Vector's pricing categories and their relationship to networks, consumer groups and connection types.

**Table 10: Relationship between connection type and consumer groups and price category**

Size	Large >69kVA			Small ≤69kVA	
Connection Type	Primary	Secondary	Tertiary		
Consumer group	HV	TX	LV	Unmetered	Mass Market
Price categories – Auckland network	AHVN AHVT	ATXN ATXT	ALVN ALVT	ABSU	ARCL ARUL ARHL ARCS ARUS ARHS ABSN ABSH
Price categories – Northern network	WHVN WHVH	WTXN WTXH	WLVN WLVH	WBSU	WRCL WRUL WRHL WRCS WRUS WRHS WBSN WBSH

### 10.1 The distinction between Auckland and Northern networks

Vector has two distinct sets of price categories, one applicable to consumers on the Auckland network and one applicable to consumers on the Northern network. This is the result of Vector inheriting the pricing structure of the Northern network when it purchased UnitedNetworks in 2002. Since 2002, Vector has been working towards aligning pricing structures and prices between networks reflecting the interconnected nature of these networks and the homogenous services that are provided across the networks. Mass Market prices have been aligned between networks for the first time from 1 April 2015.

The network that consumers are supplied from is determined by Vector from time to time based on the physical location of the point of connection of the consumer's electrical

installation. The approximate area covered by the Northern and Auckland electricity distribution networks is shown in Figure 2 above.

## **10.2 Consumer groups within the Auckland and Northern networks**

Within each of the Auckland and Northern Networks, Vector has High Voltage, Transformer, Low Voltage, Unmetered and Mass Market consumer groups. Business and Residential prices have been combined into a Mass Market consumer group because of the linkage between the prices and services between the groups. In practice these consumers have similar size connections with the only fundamental difference between the groups being the application of the LFCR to the residential group only. These consumer groups are derived from the Primary, Secondary and Tertiary Connection types. This is described in more detail in Section 8 above. Vector has made the distinction between these types of consumers groups based on their utilisation of the network and the nature of the network service they receive.

## **10.3 Price categories within consumer groups**

Within each consumer group, Vector has price categories available depending on the specific requirements for each consumer group. These pricing categories are described at a high level for each consumer group below:

### *Mass Market price categories*

The Mass Market consumer group contains both residential and business price categories. These are explained in more detail below.

A residential consumer is where the consumer's metered point of connection to the network is for the purposes of supplying a home (the principle place of residence of the consumer), not normally used for any business activity.

Residential price structures and prices on the Auckland and Northern networks are aligned. Within each network, Vector offers a controlled, an uncontrolled and a TOU price category. These categories are offered to both low user and standard consumers creating six residential price categories on each network.

Vector's residential prices are subject to the Low User Regulations and therefore it is necessary to have price categories for consumers who use less than 8000kWh per year (who are considered "low user") and price categories for consumers who use more than 8000kWh per year (who are considered "standard").

Vector offers uncontrolled price categories to consumers where Vector is unable to control the consumer's load. Controlled price categories are available to residential consumers with an electrical hot water cylinder<sup>3</sup> connected to Vector's load control system. Vector may control load connected to its load control system at any time for a maximum of 5 hours in any 24 hour period.

In 2014 Vector deactivated the pilot wire system that operated on parts of the Northern network and stopped controlling hot water load connected to the pilot wire load

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<sup>3</sup> An electrical hot water cylinder must be in excess of 50 litres but may be substituted with fittings of a similar rating and load profile at Vector's discretion.

management system. Consumers who are on controlled price categories on the Northern network have been left on the controlled price category for the time being, however we have closed the Northern network controlled price category to all new consumers from 1 April 2015.

Residential TOU price categories are available to residential consumers who are on a qualifying retail price option with metering capable of recording half hourly data. Vector will determine whether a retail price option qualifies for Vector's half hourly price categories, following an application by a retailer, based on the extent that Vector's distribution price signals are incorporated into the retail option and the number of consumers affected.

Business price structures and prices on the Auckland and Northern networks are aligned. Within each network, Vector offers TOU and non-TOU price categories.

The TOU price category is available to business consumers who are on a qualifying retail price option with metering capable of recording half hourly data. Vector will determine whether a retail price option qualifies for Vector's half hourly price categories, following an application by a retailer, based on the extent that Vector's distribution price signals are incorporated into the retail option and the number of consumers affected. TOU price categories provide consumers with an incentive to move load to off-peak periods.

#### *Unmetered price categories*

Vector offers an unmetered price category to business consumers where the consumer's point of connection does not have a meter measuring consumption, has a capacity less than 1kVA and consists of fixed wired equipment with a predictable annual electricity usage. Where any of these criteria are not met, the consumer will be required to install a meter and will be placed on the appropriate metered price category. Unmetered price categories are the ABSU price category on the Auckland network and the WBSU price categories on the Northern network.

#### *Low Voltage price categories*

Within each network, Vector offers TOU and non-TOU price categories to low voltage consumers where the consumer's metered point of connection is normally used for business activities, is greater than 69kVA and is connected to Vector's low voltage (400V three phase or 230V single phase) network.

#### *Transformer price categories*

Within each network, Vector offers TOU and non-TOU price categories to transformer consumers where the consumer's metered point of connection is normally used for business activities, is greater than 69kVA and the consumer's low voltage (400V three phase or 230V single phase) network is supplied directly from transformers owned by Vector.

#### *High Voltage price categories*

Within each network, Vector offers TOU and non-TOU price categories to transformer consumers where the consumer's metered point of connection is normally used for business activities, is greater than 69kVA and is supplied directly from Vector's high voltage (6.6kV or higher) network.



## 11 HOW STANDARD PRICES ARE DERIVED

Vector's prices for a given consumer group are designed to recover the costs allocated to that consumer group through the COSM. Through a selection of different allocators where the choice of allocator is arbitrary, target revenue from COSM for each consumer group is expressed as a "band". This allows flexibility to ensure that there is greater stability in prices over time and that relationships between prices for different consumer groups remains stable over time.

The prices for Vector's Northern Network were inherited when Vector purchased this network from UnitedNetworks in 2002. Almost all aspects of the pricing approach for the Northern Network differed from the extant Auckland network. Since 2002, Vector has been working to align the distribution prices on its Auckland and Northern networks, to simplify and reduce the number of prices and to align revenues recovered with how costs are incurred. Throughout this time Vector has also focussed on keeping price increases to consumers to generally less than 10%.

Prior to setting final prices, Vector consulted with retailers to discuss a range of pricing initiatives considered for prices effective 1 April 2015. Vector has considered and included the views of retailers in its final prices.

From 1 April 2015, prices are aligned between networks for all Mass Market consumers, representing 98% of our connections.

Changes to individual prices may vary from the weighted average price increase. This follows a number of structural changes to prices to:

- a. Adhere to regulatory pricing principles;
- b. Meet requirements under the Determination to recover pass-through and recoverable costs separately from distribution revenue (see Section 4 above);
- c. Align how revenues are recovered with how costs are incurred; and
- d. Adhere with Low Fixed Charge Regulations.

Under the Determination, from 1 April 2015, the Commission has allowed for a separate recovery mechanism for pass-through and recoverable costs including a wash-up at the end of each pricing year. Pass-through and recoverable costs are therefore treated separately from distribution revenue with compliance being demonstrated based on actual pass-through and recoverable cost revenues (prices and quantities) received in the pricing year instead of using lagged quantities.

When developing prices for 2014/15, Vector explored unbundling the transmission component of prices from Vector's line charges and passing these costs through to energy retailers on a wholesale basis. This led to Vector separating the transmission component of line charges from Vector's prices and resulted in prices for distribution, transmission and total charges.

Unbundling of transmission charges from Vector's line charges was intended to make the transmission charges more transparent and address shortcomings in the way transmission costs are able to be recovered by distributors under price-quality regulation. The

Determination addresses the short-comings in the recovery of transmission charges by removing the volume risk associated with recovering transmission charges against actual quantities while showing compliance against quantities lagged by 2 years. Compliance for the recovery of pass-through and recoverable costs (including transmission charges) is now calculated based on actual quantities with a wash-up mechanism (that includes a time value of money adjustment) that ensures that Vector will exactly recover the amounts of pass-through and recoverable costs passed through to consumers.

With this in mind, Vector has expanded the transmission component of 2014/15 prices to include all pass-through and recoverable costs for 2015/16. Total lines charges from 1 April 2015 therefore include a distribution component and a pass-through and recoverable cost component.

### **11.1 How the distribution component of prices is derived**

#### *Mass Market consumer group*

Vector's residential prices are subject to the Low User Regulations. These regulations require distributors to offer residential consumers who use less than 8000kWh per year a price option with a fixed price of no more than \$0.15 per day (excluding GST) and where the sum of fixed and variable charges is no greater than any other residential price option (up to 8,000 kWh per annum). Vector complies with these regulations by offering a fixed price of \$0.15 per day for consumers who use less than 8000kWh per year on the controlled, uncontrolled and TOU price categories.

As Vector's costs are predominantly fixed and sunk, 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. Fixed prices in the standard price categories have therefore increased from \$0.85 per day to \$0.98 per day.

Vector offers both controlled and uncontrolled residential price categories. The price difference between these options has been set to reflect the benefits arising from consumers allowing Vector to control their hot water load. Vector also offers residential time-of-use options which also reflects the costs and benefits of consumption during the various time periods.

Business prices remain aligned with residential uncontrolled standard price categories as in practice these consumers have similar size connections and Vector provides the same services to these consumers.

#### *Unmetered consumer group*

The allocation of costs to the Unmetered consumer group through the COSM process is significantly less than the revenue recovered from unmetered consumers for 2014/15. Vector has therefore reduced the amount of revenue recovered through the unmetered price categories by reducing the variable distribution charge on the Northern network from \$0.0553/kWh to \$0.0372/kWh to align unmetered price categories between networks. Vector expects that this unmetered variable charge will continue to reduce across networks to further align the revenue recovered from this consumer group with the COSM.

### *Low voltage, transformer and high voltage consumer groups*

In the 1 April 2014 price change, Vector removed the summer/winter differential on the low voltage, transformer and high voltage price categories on the Auckland network. To further align pricing structures with the Northern network, from 1 April 2015 Vector has also removed the day/night differential. The day price has been reduced, while the night price has been increased. Whilst there is, on average, an overall reduction in revenue arising from these price changes, however depending on when consumers use electricity some consumers may see limited increases (for example if they use electricity mostly at night).

Vector will also amend the eligibility for half-hourly options for the high voltage price category to align with the industry standard requirement for half-hourly metering (500A or 345kVA) from 1 April 2015. Vector intends on making similar changes to the low voltage and transformer half-hourly price categories from 1 April 2016. The staged implementation allows retailers to manage the new requirements with their consumers (the high voltage price category affects very few consumers).

Vector has increased capacity charges while reducing variable charges for low voltage, transformer and high voltage consumers to reflect the fixed and unavoidable nature of our costs. The capacity charge increase will impact on a number of consumers on the Northern network (and to a lesser extent on the Auckland network) and particularly those whose capacity is high relative to their annual consumption.

Vector maintains a relationship between low voltage, transformer and high voltage price categories where, with the exception of power factor charges, high voltage prices are 97% of transformer prices which are 98% of low voltage prices. This approach reflects the underlying costs and removes the incentive for consumers to move between consumer groups to arbitrage Vector's prices. For example, if transformer prices were cheaper than high voltage prices, a consumer could ask Vector to install a transformer (at Vector's cost) to enable them to receive cheaper prices.

Vector includes a power factor charge in its pricing methodology to incentivise end-consumers to maintain a power factor of 0.95 or higher in accordance with our distribution code. Vector has reviewed consumer responses to the current level of power factor charges and are satisfied the existing power factor charges are sufficient to incentivise consumers to correct poor power factor (if any). Accordingly we are leaving the power factor charge unchanged from 1 April 2015.

### **11.2 How the pass-through and recoverable component of prices is derived**

Vector has determined the pass-through and recoverable component of prices so that the revenue from those prices recovers the pass-through and recoverable costs allocated to each consumer group through the COSM. Pass-through and recoverable costs are apportioned to each consumer group by using a choice of ICP or kWh as the allocator for pass-through costs and kW at RCPD as an allocator for transmission charges. This creates a band for the total revenue recovered by each consumer group to fall within.

The main component of pass-through and recoverable revenue is transmission charges. Transmission charges are allocated to Vector predominantly based on demand during the RCPD peak demand periods. Ideally this revenue would be recovered solely through

demand charges, however not all price categories have demand charges applied. Vector has therefore sought to recover this revenue from demand charges where available but where no demand charges are available, we have applied the recovery of this revenue to variable based charges. By allocating this revenue to variable charges, this more accurately reflects the way these charges are allocated to Vector than the alternatives, for example, a fixed based charge.

#### *Mass Market consumer group*

For non-TOU price categories, as price categories for residential and business consumers are linked, the pass-through and recoverable revenue required from the COSM for these two groups is combined and then divided by the forecast consumption (kWh) for 2015/16 to obtain a pass-through and recoverable price. Vector then implements a differential between the controlled and uncontrolled price categories that reflects that:

- Transpower is reviewing aspects of the transmission pricing methodology. This will likely result in reduced peak demand incentives and a corresponding reduction in the need to manage transmission peaks through hot water load management;
- Vector's engineers have assessed the potential hot water load management has for deferring network reinforcement as low at the current time;
- The advent of smart metering and home energy management systems is opening up new opportunities for consumers and 3rd parties to signal congestion and manage system load in a more de-centralised and consumer-led way.

Vector's network receives only limited benefit from customers being on controllable rather than uncontrollable plans. Accordingly, Vector consulted with retailers on a reduction in the price differential between the controlled and uncontrolled price categories from approximately 10% to 5% for low user price categories and from 15% to 10% for standard price categories. Retailers considered that a smaller reduction was required to mitigate the impact on those consumers that are currently on controlled price plans. Following that consultation, the price differential for low user price categories has reduced from approximately 10% to 9% and for standard price categories from 15% to 14%. The more limited reduction in the price differential signals the future shift in this over time to better reflect the underlying benefits of load management while mitigating the immediate impact on consumers.

For TOU price categories Vector has decided to recover the pass-through and recoverable revenue from consumption in the peak period only. This creates a greater incentive for consumers to move consumption from peak to non-peak periods. As the majority of this revenue relates to transmission charges, by recovering this revenue during peak periods only, this more closely aligns with how transmission charges are allocated to Vector.

Shoulder periods for TOU price categories that previously existed have been removed while the peak periods have been extended from two hours to four hours (each) to create a morning peak from 7am to 11am and an evening peak from 5pm to 9pm. The updated peak periods cover the RCPD periods when transmission costs have historically occurred on our network. This approach moves recovery of transmission costs into these peak periods and thereby aligns the recovery of transmission charges to the periods in which these costs are allocated to Vector.

Vector has forecast the total demand during peak periods for 2015/16 by considering the demand at GXP's that have a predominantly residential load. To calculate the pass-through and recoverable price for TOU residential and business consumers, Vector has then divided the total amount of pass-through and recoverable revenue required from the Mass Market consumer group by the forecast consumption during peak periods to obtain a pass-through and recoverable price of \$0.1253/kWh (applied at peak periods only).

*Low voltage, transformer and high voltage consumer groups*

For non-TOU low voltage, transformer and high voltage consumers, Vector has derived a pass-through and recoverable price by summing the total pass-through and recoverable revenue allocated to these consumer groups and then dividing this total by the total forecast consumption (kWh) for 2015/16 for these consumer groups periods to obtain a pass-through and recoverable price of \$0.0204/kWh.

For TOU low voltage, transformer and high voltage consumers, Vector has derived a pass-through and recoverable price by dividing the total revenue forecast to be recovered from TOU consumers (based on the variable a pass-through and recoverable price of \$0.0204/kWh and forecast consumption (kWh) for 2015/16) by the forecast demand (kVA) for TOU consumers for the 2015/16 period. This results in a demand charge of \$0.2480/kVA/day.

## 12 IMPACT OF 2015/16 PRICES CHANGES

The distribution portion of Vector's prices is regulated and is not able to increase on average by more than inflation each year, but are also subject to a price reset every 5 years.

From 1 April 2015, Vector is resetting prices and incorporating an increase to the distribution component of prices by 0.4%.

Over this same period pass through and recoverable costs have also generally decreased compared with inflation. From 1 April 2015, pass-through and recoverable costs (including transmission charges) are forecast to decrease by 2.3%. This includes forecast increases in local authority rates of 7.8%, but offset by more significant decreases in transmission charges of 2.7%, Commerce Act, EGCC and EA levies of 0.1%.

The combination of the decreases in pass-through and recoverable costs of approximately 2.3% and an increase in distribution charges of 0.4% results in an overall weighted average decrease to Vector's lines charges of 0.6%. Individual prices will change by more or less than the overall weighted average price decrease. This results from a range of initiatives, as set out in this document.

### 12.1 Impact of 2015/16 prices changes on consumer groups

Table 11 shows the weighted average change to prices by consumer group on both the Auckland and Northern networks. As these are weighted average price changes, some consumers will see a greater or lesser impact, depending on their consumption profile.

**Table 11: Impact of weighted average price changes on pricing types**

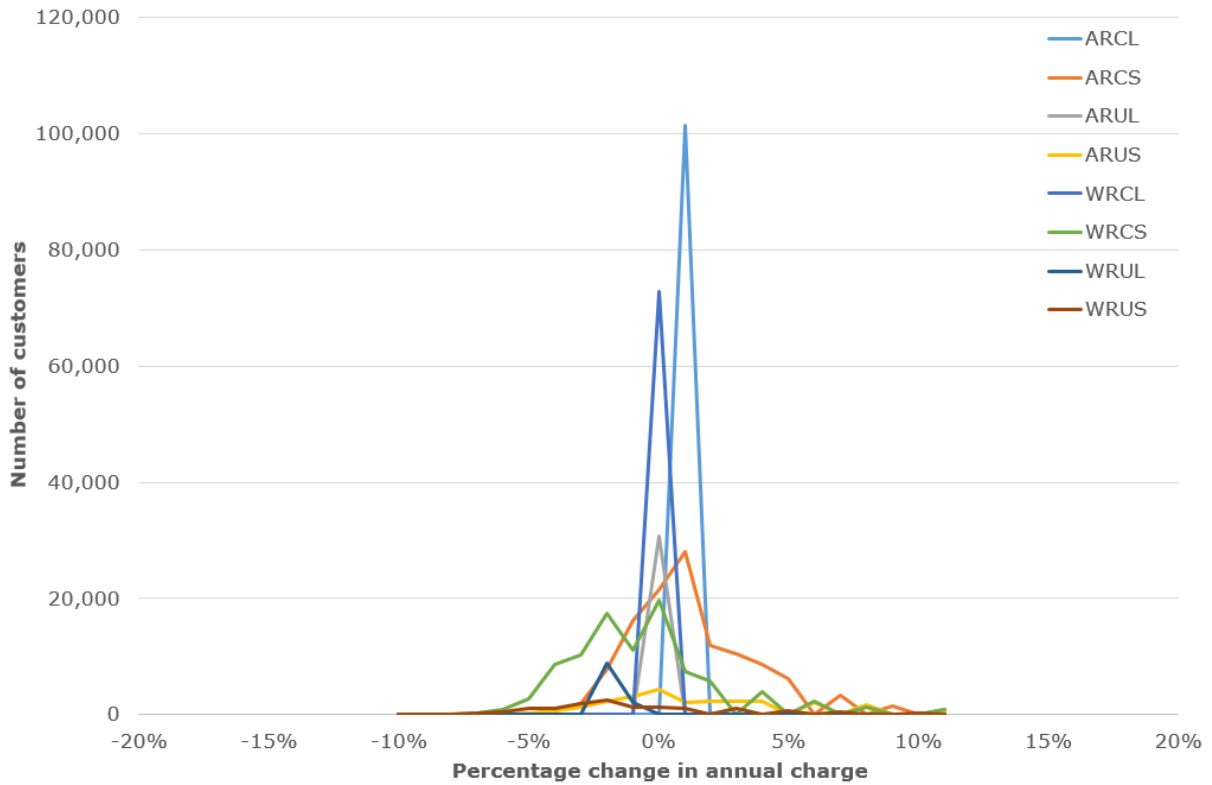
Size	Large (>69kVA)			Small (≤69kVA)	
	HV	TX	LV	Unmetered	Mass Market
Consumer Segment					
Auckland Network	-1.0%	-0.4%	-1.5%	0.0%	-0.2%
Northern Network	2.4%	3.6%	0.5%	-4.7%	1.5%
<b>Total</b>	<b>-0.6%</b>	<b>0.5%</b>	<b>-1.1%</b>	<b>-1.7%</b>	<b>0.5%</b>

### 12.2 Impact of 2015/16 prices changes on price categories

Figure 8 below shows the impact of price changes from 1 April 2015 on residential price categories while Figure 9 shows the impact of price changes from 1 April 2015 on residential price categories, if all residential consumers were on the most appropriate price category for their annual usage. Figure 8 shows that residential consumers on their current price category will receive no more than a 12% or \$43 increase from 1 April. The majority of consumers will see very little impact.

Comparing Figure 8 and Figure 9 shows that there is a large number of consumers not on the most appropriate price categories that are inadvertently receiving price increases much greater than they would receive if they were on the correct pricing category that applies for their level of annual consumption. If all residential consumers were on the correct price category, no residential consumer would see an increase of more than 2%.

**Figure 8: Percentage change in annual charge – residential price categories**



**Figure 9: Percentage change in annual charge – residential price categories (if consumer is on the correct plan for their usage)**

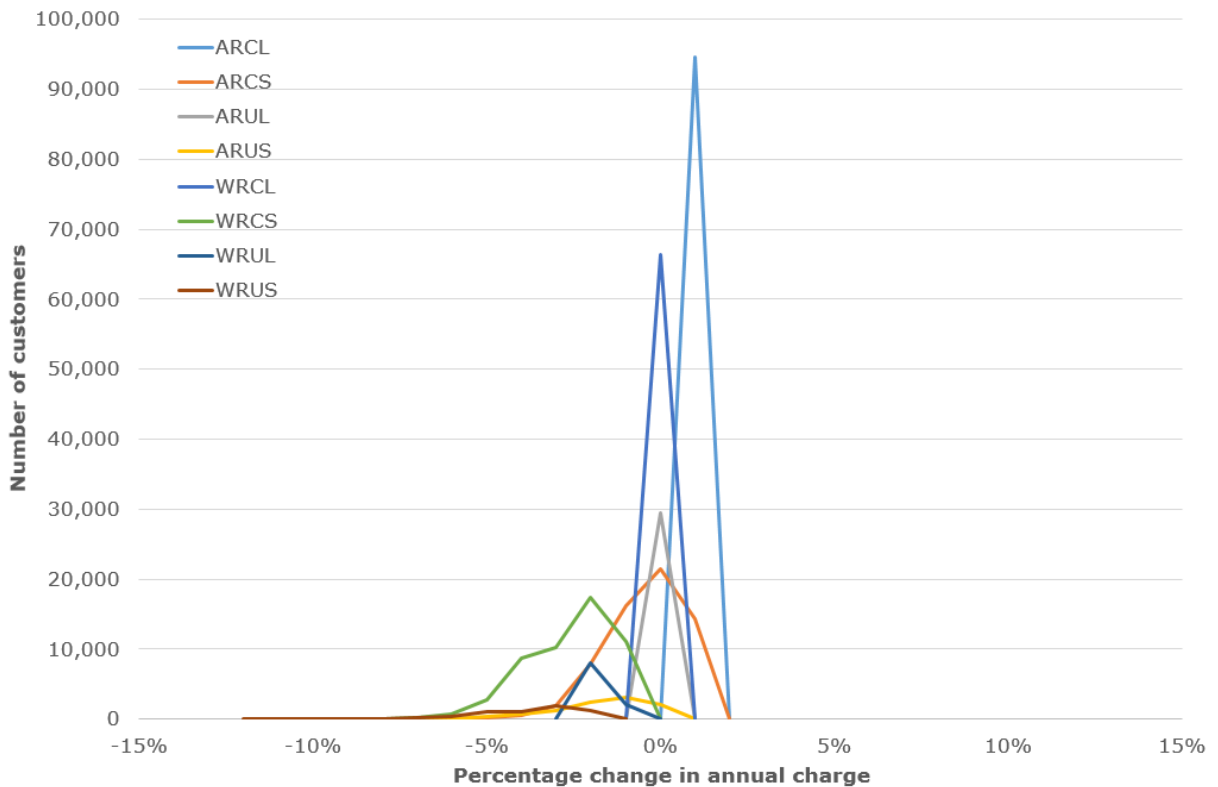
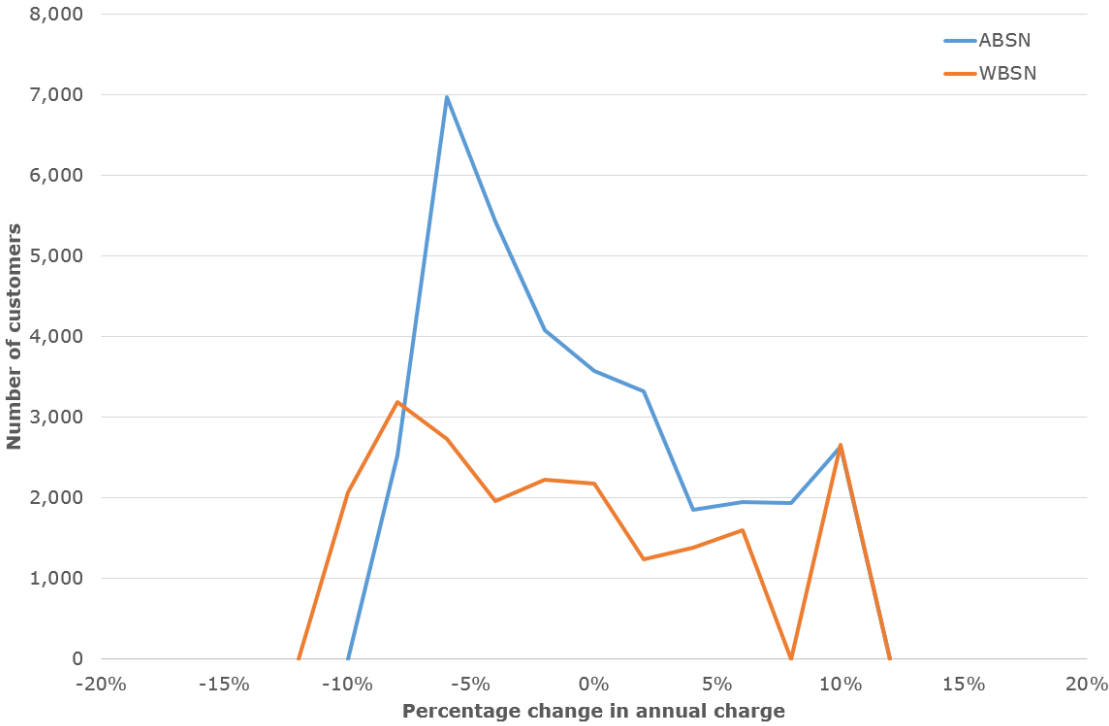


Figure 10 and Figure 11 below show the range of impacts on business, low voltage, transformer and high voltage price categories. Figure 10 shows that the majority of business consumers on both networks receive price decreases, especially on the Auckland network where around 7,000 consumers receive a 5% decrease. We note the spike where more than 2,600 consumers on each network incur a 10% increase predominantly results from the increase in fixed prices and where consumers have very little consumption to offset these increases through reductions in variable prices. The annual impact on these consumers is an increase of less than \$250 per year.

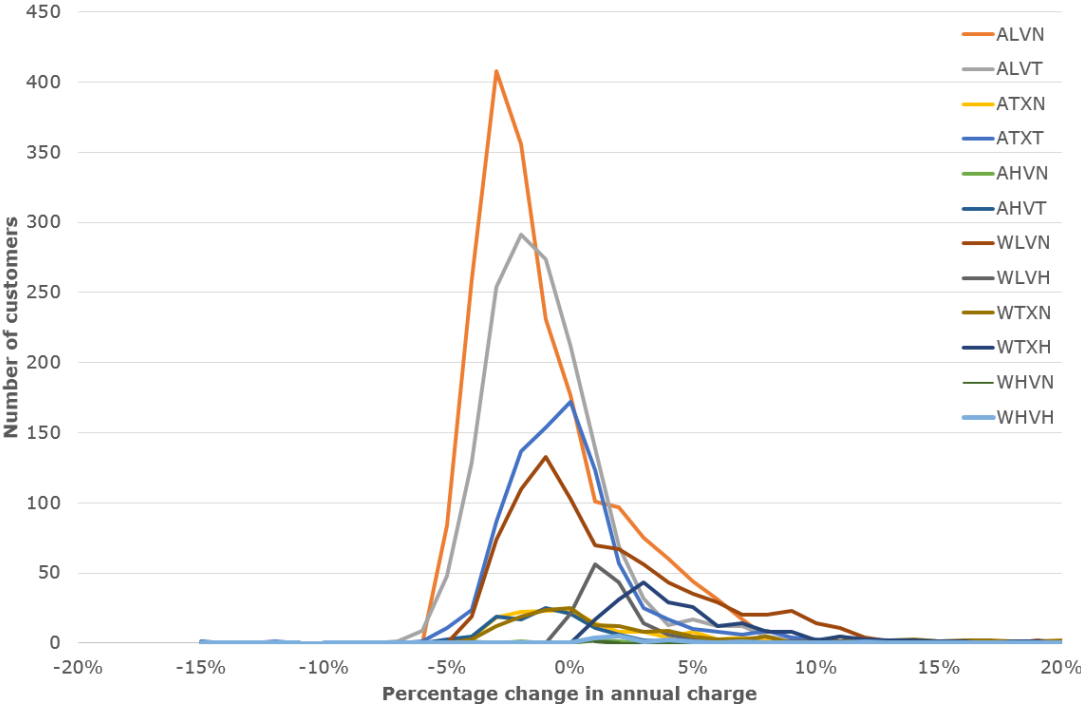
Figure 11 shows that of the industrial and commercial consumers, both metered and non-metered low voltage users on the Auckland network receive on average the largest price decreases. The majority of consumers on these plans see changes between a 4% decrease and a 1% increase. The majority of metered transformer consumers in Auckland and non-metered low voltage consumers on the Northern network see relatively small price changes. Metered transformer customers on the Northern network see a range of price increases and decreases, while all other Northern industrial and commercial consumers incur only constant prices or price increases, although these plans are small in terms of ICP numbers.

**Figure 10: Percentage change in annual charge – business price categories**





**Figure 11: Percentage change in annual charge – low voltage, transformer and high voltage consumers**



### 13 NON-STANDARD PRICING

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 PMELS also includes non-standard agreements.

Non-standard contracts allow tailored or specific prices and non-standard Network Connection and Services Agreement (NCSA) commercial arrangements to be applied to individual points on the distribution system.

Of the target revenue for 1 April 2015 to 31 March 2016 of \$607.0m, approximately 4% is recovered from 57 non-standard consumers. This equates to \$26.7m.

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:

- a. The capacity of the consumer's point of connection is greater than or equal to 1.5 MVA; or
- b. The consumer's maximum or forecast maximum demand (twice the maximum kVAh half hourly reading) is greater than or equal to 1.5 MVA; or
- c. The ratio of the consumer's maximum or forecast maximum demand over their average or forecast average demand in any year is greater than 4; or
- d. Vector incurs capital expenditure greater than \$250k augmenting its electricity distribution network in order to provide electricity lines services to the consumer.

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 further 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 allocation model used to determine standard pricing. The description provided under Section 9 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 electricity distribution networks is available at <http://vector.co.nz/disclosures/gas/capital-contributions>.

Vector's obligations and responsibilities to consumers subject to non-standard contracts on Vector's networks in the event that the supply of electricity lines services to the consumer is interrupted are provided in Appendix 7.

By comparison with the non-standard contract terms outlined above, Vector's standard contracts have the following terms:

- a. Vector is required to give consumers 4 days notice of any planned interruption and to notify retailers at the same time as it gives customers notice. Vector is also required to use reasonable endeavours to inform the retailer within 15 minutes of becoming aware of an unplanned interruption.
- b. Vector also has published the following published service standards:
  - i. Fault restoration CBD or Industrial: 2 hours, urban: 2.5 hours; rural: 4.5 hours.
  - ii. Number of interruptions: urban 4 per annum, rural 10 per annum.

For this pricing year Vector's obligations and responsibilities to consumers in the event that the supply of electricity lines services to them is interrupted have no implications for determining prices. Note however that consumers may receive consumer guarantee payments if fault restoration times (in b(i) above) are not met. These payments are not payable in respect of storm or force majeure events. These payments are not an input in the process of determining prices for electricity lines services.

## **14 APPROACH TO PRICING DISTRIBUTED GENERATION**

Vector's policies and procedures for the application for, installation and connection of distributed generation are in accordance with the requirements of Part 6 (Connection of distributed generation) of the Electricity Industry Participation Code 2010 (the Code).

The Electricity Authority has recently consulted on Avoided Cost of Transmission (ACOT) payments for Distributed Generation (DG). The EA's own analysis of aspects of the Code identified circumstances, where in complying with the Code, transmission charges plus avoided transmission payments made by distributors to DG can exceed the transmission charges consumers would incur absent any distributed generation.

Vector has submitted to the Commission, how in our opinion the ACOT issues are exacerbated by the distributed generation pricing principles. These provide for distributed generators to receive 100% of the ACOT benefits (avoided transmission and distribution) of distributed generation without any sharing with consumers. Even if distributed generation improves efficiency, consumers can be made worse off under the current pricing principles.

The current DG pricing principles provide that consumers should bear all fixed and common costs while distributed generators should not be required to contribute to any of these costs. Vector does not believe there is sound reason for these requirements and cannot see how this is to the long-term benefit of consumers. We believe the requirements of the Code exaggerates the incentives to install DG and increases the likelihood that uneconomic bypass may occur. We have, and continue to lobby the EA on these issues.

Notwithstanding the issues identified above, in order to comply with the requirements of the Code, Vector charges each distributed generator only the short run incremental cost of connection prior to them connecting to the network. Vector currently makes payments to three distributed generation sites and expects to start making payments to an additional two sites during 2015/16.

Following mandated changes to the Electricity Information Exchange Protocols, Vector provided retailers with updated prices (\$0.0000/kWh) in respect of energy injected into the network by distributed generation. The new price was set out for each price category and applied from 1 November 2014. These prices will continue to be charged from 1 April 2015.

Vector intends on reviewing the price in the future. It is our intention to move away from \$0.0000/kWh, as a minimum to reflect the long run marginal cost (per unit) of reinforcing the distribution network for distributed generation.

## 15 SERVICE CHARGES

In addition to the lines prices detailed in this document that enable Vector to recover distribution and pass-through and recoverable revenue Vector is allowed to charge for other services such as reconciliation/allocation services, disconnection and reconnection services. The table below outlines the charges applicable to these other services. These charges have been calculated to ensure that Vector recover's the incremental cost of providing these services.

Description of each service charge	Charge
<b>New connection or site visit fee</b> Payable for any site visit by the Distributor requested by the Retailer. Examples of site visits include, but are not limited to, energising a new point of connection for the first time, non-network call outs, temporary disconnection/reconnection, urgent after hours disconnection, and vacant site disconnection/reconnection.	\$120 per site visit
<b>Late, incorrect or incomplete consumption data fee</b> This fee is payable where consumption data does not comply with the requirements of this agreement. It will be charged on the basis of the actual time spent by a billing analyst to review, correct, validate and reconcile the information.	\$100 per hour

All non-network fault work, retailer or consumer services not listed above will be charged to the retailer on a time and materials basis at market rates.

## 16 CONSISTENCY WITH PRICING PRINCIPLES

The Electricity Authority's pricing principles (the Principles) provide a principle-based approach to developing pricing methodologies for electricity distribution services. This section demonstrates the extent to which the PMELS is consistent with the Principles.

Pricing principle (a) of the Principles states that:

*(a) Prices are to signal the economic costs of service provision, by:*

- i. being subsidy free (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;*
- ii. having regard, to the extent practicable, to the level of available service capacity; and*
- iii. signalling, to the extent practicable, the impact of additional usage on future investment costs.*

### *Available Service Capacity*

The electricity distribution system, by its very nature, consists of assets with significant capacity. When building the system, economies of scale exist such that the cost of installing an asset 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 distribution 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. To illustrate this point, Appendix 6 shows the utilisation<sup>4</sup> of zone substations and feeders in the Auckland and Northern networks from Vector's 2013 Asset Management Plan.

Appendix 6 illustrates, in some cases, areas of the network which have high utilisation. Where the system requires expansion, for example in order to connect a new user to the distribution system, then Vector generally funds this expansion through capital contributions and/or non-standard prices which ensure recovery of the incremental capital investment. Vector's approach to recovering these costs is outlined in the electricity distribution capital contribution policy. With respect to principle 1(a), the PMELS generally recovers the short run incremental costs specific to a new connection from the connecting party.

### *Incremental Costs*

The incremental cost test can be applied both for individual customers and for groups of customers. The incremental cost for an individual customer is just the cost of connecting that customer to the network, and therefore excludes the cost of shared assets. The incremental cost for a group of customers is the cost of connecting that group of customers to the network, and includes the cost of assets shared by that group. Applying the incremental cost test at the group level is more stringent because it includes shared costs,

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<sup>4</sup> Asset utilisation in a distribution network is defined as the ratio between the peak demand conveyed by an asset (such as a feeder or a zone substation) and the capacity of the asset. It is a measure of what an asset is actually delivering against what it is capable of delivering.

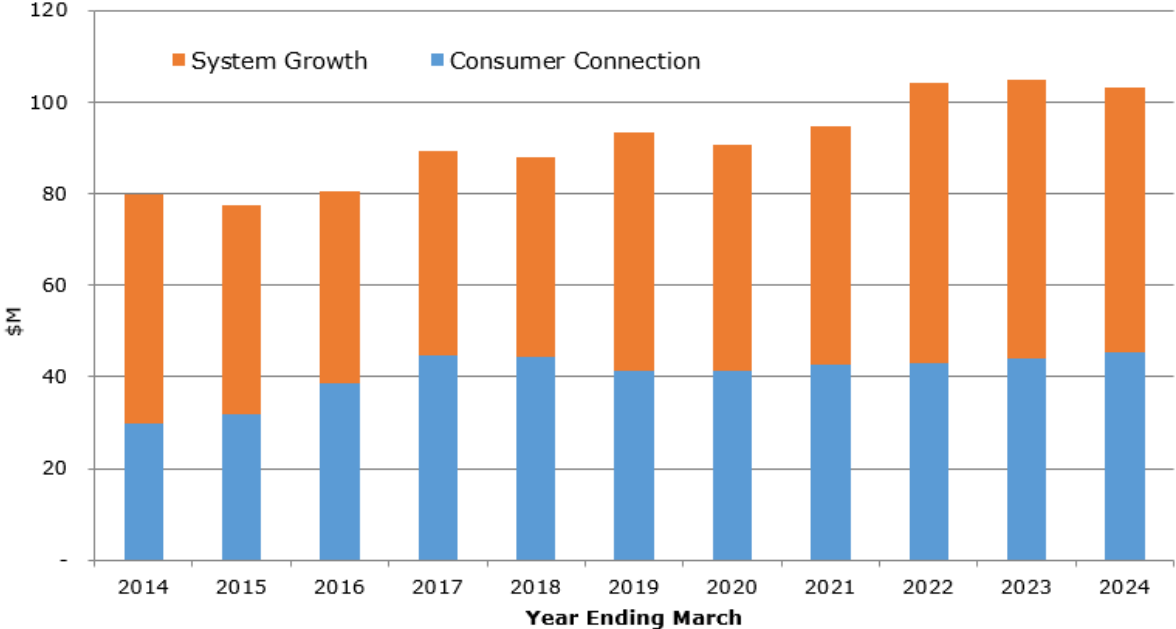
and revenues for the group must be higher than just the sum of the incremental cost for each individual consumer. The allocation of B and C type assets directly to the Secondary and Tertiary customer classes ensures that these customer classes, in aggregate, pay at least the incremental cost of connecting those customer classes to the network. In recognition that these customer classes also require capacity on the A type assets, an allocation of A type assets is also made.

Figure 6 and Figure 7 (page 28) show the recovery of revenue from distribution and pass-through charges, respectively, relative to allocated cost bands. The allocated cost bands are greater than incremental cost as they include allocations of shared cost. Distribution prices are within the allocated cost bands, but prices for pass-through costs are outside the allocated cost bands for some consumer groups. Figure 7 shows that prices for pass-through cost recovery have been moved closer to the cost-bands in 2015/16. Full recovery from the affected groups was limited by the need to prevent rate shock and Vector’s practice of limiting price increases to a maximum of 10%.

*Future Investment Costs*

Figure 12 below shows Vector’s forecast expenditure to meet future demand from Vector’s 2014 Asset Management Plan. Customer connections allow for the costs of connecting new customers and reticulating new subdivisions, while system growth relates to expansion of the network to provide the capacity to meet the electricity needs of these new connections. As discussed above, these costs are recovered through capital contributions and non-standard charges which recover the cost of the incremental capital investment.

**Figure 12: Forecast Capital Expenditure to Meet Future Demand**



Vector signals the level of available capacity over different time periods by signalling network congestion through the use of TOU prices and controlled load prices. TOU prices are used to signal congestion to consumers by applying higher prices at times of typical peak network demand. This provides incentives to end consumers to shift demand away from these peak periods and therefore reduce the need for future investment costs.

At this stage we have generally only applied congestion pricing in a very coarse manner and at a very high level. As technology improves and the uptake of time of use meters becomes more prevalent, we expect inter-temporal capacity price signals to become more effective. Vector offers controlled load prices to residential end consumers for the ability to remotely switch off the electricity supply of end consumers' hot water cylinders. This pricing approach signals the benefits to consumers, of allowing Vector to control their hot water load and manage network congestion during peak periods, through lower price options.

Vector's prices, however, are not fully dynamic. We acknowledge that this is an area for development and are currently considering mechanisms to ensure our approach to congestion charging facilitates efficient outcomes.

While we monitor the cost of alternative options for consumers, it can be difficult to apply these on a consumer specific basis. In some instances, the economic value of the service, including where that is set by the cost of an alternative form of supply, may be notified to us by the consumer. In these situations this pricing principle is delivered through the operation of pricing principle (c), detailed below.

Pricing principles (b) and (c) of the Principles state that:

*(b) Where prices based on 'efficient' incremental costs would under-recover allowed revenues, the shortfall should be made up by setting prices in a manner that has regard to consumers' demand responsiveness, to the extent practicable.*

*(c) Provided that prices satisfy (a) above, prices should be responsive to the requirements and circumstances of stakeholders in order to:*

*i. discourage uneconomic bypass;*

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

*iii. where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives (e.g. distributed generation or demand response) and technology innovation.*

Pricing based on incremental costs would almost certainly under-recover allowed revenues. The majority of Vector's costs are fixed and do not vary with the next unit of consumption. Our costs are also sunk and do not reduce if consumption reduces. Accordingly the pricing methodology recovers allowed target revenues in a manner that is as least distortionary as possible to investment decisions. The approach that Vector has adopted has had regard to consumers' demand responsiveness by differentiating charges in the following ways:

a. With respect to connection size, with the daily fixed fee rising with the size of connection, and the rate of the variable charge decreasing. Vector considers connection size is a reasonable proxy for a consumer's likely responsiveness to the level of the fixed charge.



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

The pricing methodology takes account of general consumer responsiveness in the structure of the charges and in the relative weightings and levels of fixed and variable charges across consumer groups. Consumers will bypass if the cost of alternatives, whether through a competing network or alternative fuel, are lower than the cost of the distributed electricity. Bypass may be either economic or uneconomic. Economic bypass occurs when the incremental costs of the alternative are lower than the incremental costs of distributed electricity. Uneconomic bypass occurs when the incremental costs of the alternative are higher than the incremental costs of distributed electricity, but relative prices nevertheless provide the incentive for the customer to switch to the alternative. All else being equal, high variable charges for electricity distribution will increase the likelihood of uneconomic bypass.

In most instances bypass of electricity distribution will only be partial, i.e. the consumer will continue to have a connection to the electricity distribution network and will use electricity for lighting and appliances. In such instances the most efficient pricing option is likely to be a declining block price, with a relatively high fixed charge and relatively high price for the first "block" of electricity, with lower rates for successive blocks reflecting the relatively low cost of using additional electricity. It is important to note, however, that for residential consumers this option is effectively prohibited by the Low Fixed Charge Regulations, and those Regulations effectively encourage uneconomic bypass. Vector continues to lobby for regulatory change to address these economic shortcomings of the Low Fixed Charge Regulations.

Charges for business and industrial customers are better able to be structured to reflect actual costs, with fixed daily charges, capacity charges, and demand charges all being levied for different Pricing Plans. Prices are then structured within capacity bands so that charges increase, but at a decreasing rate as volumes/capacity requirements increase. This is effectively a declining block structure.

Economically rational consumers will cease to consume if the cost of distributed electricity is more than the economic value of the electricity to them. Where the economic value the consumer ascribes to the service is less than the incremental cost of providing the service then Vector would cease to provide this service.

Vector has also tested the allocation of costs for each customer group against an estimate of the most cost-competitive alternative energy source. For all customer groups the allocations from COSM are less than the least cost alternative. While there is no incentive for bypass for the group as a whole, it is not possible to guarantee that the bypass incentives will not exist for customers with particular characteristics such as atypical load patterns, access to cheaper energy sources than average, etc.

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). The pricing methodology obliges Vector to take account of the issues described above when considering the design of a non-standard contract.

The pricing methodology does not provide specific incentives for investment in transmission and distribution alternatives. Where the connection of new load requires investment in the network (e.g. new subdivisions) then the cost of that investment is recovered via capital contributions and non-standard charges. Those charges provide the economic incentive for transmission and distribution alternatives to be investigated by the proponent of the development. For example, a new subdivision that utilises energy efficient buildings and solar heating or solar PV will not require the same level of network investment. Additional price signals beyond the requirements for capital contributions are not warranted by the economics of Vector's distribution network.

Pricing principle (d) of the Principles states that:

*(d) Development of prices should be transparent, promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact on stakeholders.*

The existing pricing methodology for the electricity distribution system is transparent in that it is documented and is available to consumers and other stakeholders from Vector's website and is provided to them on request.

We have promoted price stability and have had regard to the impact on stakeholders by ensuring that, where practicable, changes to prices have been limited for most consumption patterns to be no more than 10% each year. Where possible we have signalled expected future increases in prices ahead of time so that consumers are able to factor such increases into their budgets. Vector has consulted with stakeholders in the development of this pricing methodology and continues to consult as appropriate when applying it and future methodologies.

Vector is investigating ways to engage more meaningfully with consumers on their expectations on price and quality and how to include those views in prices. However, prices relate to long life assets deployed to provide distribution services to consumers and any change in these services (and prices) could only be implemented over time. Vector consults with retailers on an annual basis as part of its electricity distribution price setting process.

Pricing principle (e) of the Principles states that:

*(e) Development of prices should have regard to the impact of transaction costs on retailers, consumers and other stakeholders and should be economically equivalent across retailers.*

In recent years Vector has taken active steps in simplifying its distribution price structure so that the transaction costs on retailers, end consumers, and Vector itself are minimised.

Vector offers retailers the opportunity to comment on its proposed price structures for each pricing year. This provides an opportunity for all retailers to identify any proposals that would increase transaction costs, and provides Vector the opportunity to address any concerns retailers may have.

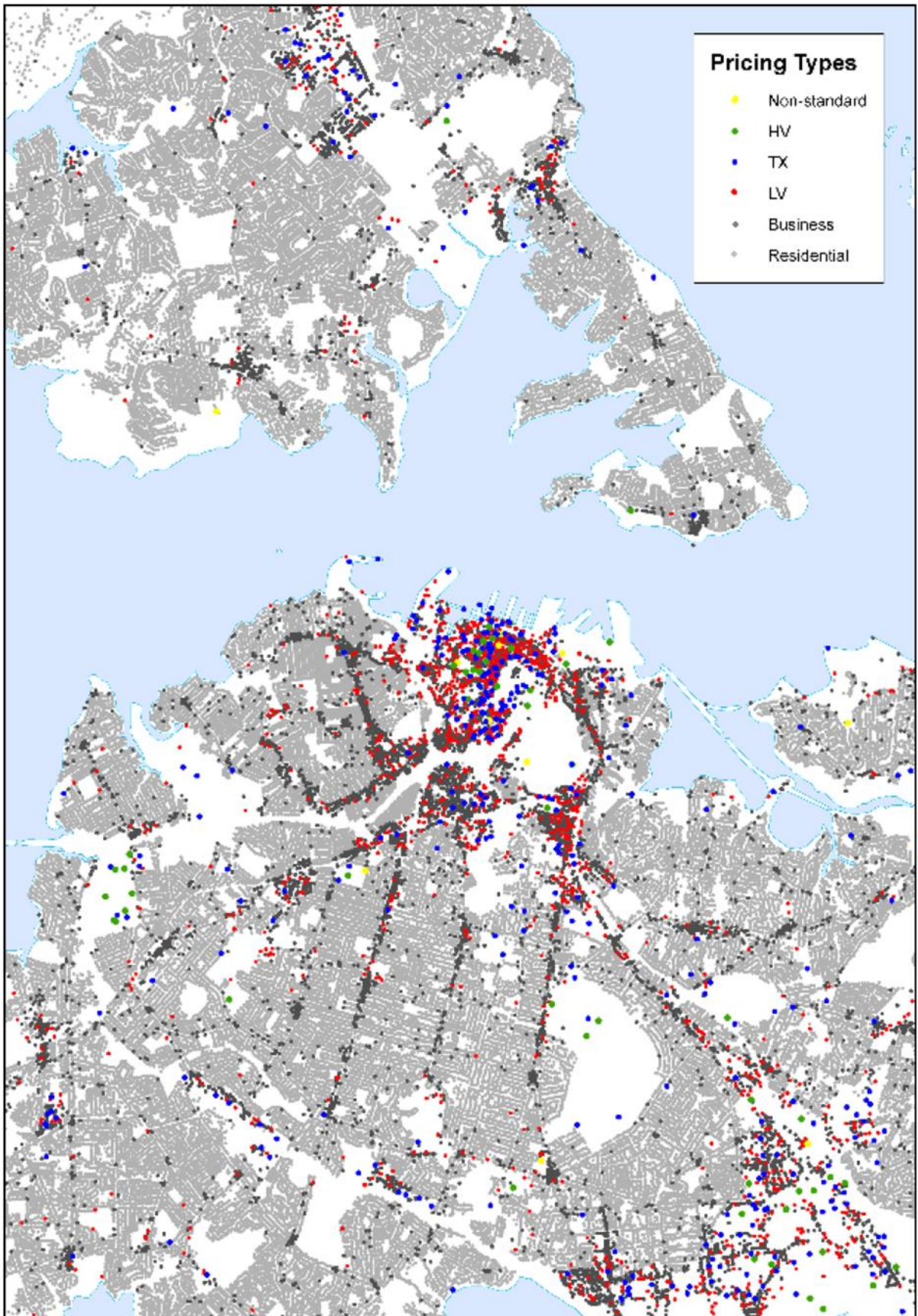
Vector offers the same network pricing to all end consumers irrespective of which retailer they use i.e. Vector does not provide any discounts or special terms to end consumers who are supplied by a particular retailer. The non-differentiation of network charges is

enshrined in the use of systems agreements that Vector has with retailers operating on the Vector network.

**APPENDIX 1. PRICING PRINCIPLES**

<b>Pricing Principles</b>	
(a)	Prices are to signal the economic costs of service provision, by:
(i)	being subsidy free (equal to or greater than incremental costs, and less than or equal to stand alone costs), except where subsidies arise from compliance with legislation and/or other regulation;
(ii)	having regard, to the extent practicable, to the level of available service capacity; and
(iii)	signalling, to the extent practicable, the impact of additional usage on future investment costs.
(b)	Where prices based on 'efficient' incremental costs would under-recover allowed revenues, the shortfall should be made up by setting prices in a manner that has regard to consumers' demand responsiveness, to the extent practicable.
(c)	Provided that prices satisfy (a) above, prices should be responsive to the requirements and circumstances of stakeholders in order to:
(i)	discourage uneconomic bypass;
(ii)	allow for negotiation to better reflect the economic value of services and enable stakeholders to make price/quality trade-offs or non-standard arrangements for services; and
(iii)	where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives (e.g. distributed generation or demand response) and technology innovation.
(d)	Development of prices should be transparent, promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact on stakeholders.
(e)	Development of prices should have regard to the impact of transaction costs on retailers, consumers and other stakeholders and should be economically equivalent across retailers.

**APPENDIX 2. SPATIAL ILLUSTRATION OF PRICING TYPES**



### APPENDIX 3. AUCKLAND PRICES & REVENUE BY CONSUMER GROUP AND PRICE CATEGORY

Vector's prices on the Auckland network from 1 April 2015

#### Mass Market - Residential

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
ARCL	ARCL-FIXD	Fixed	\$/day	0.1500	37,637,424	\$ 5,645,614	0.0000	-	\$ -	0.1500
ARCL	ARCL-AICO	Variable, controlled	\$/kWh	0.0630	525,070,553	\$ 33,079,445	0.0300	526,333,184	\$ 15,789,996	0.0930
ARCL	ARCL-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
ARUL	ARUL-FIXD	Fixed	\$/day	0.1500	11,655,097	\$ 1,748,265	0.0000	-	\$ -	0.1500
ARUL	ARUL-24UC	Variable, uncontrolled	\$/kWh	0.0630	129,533,043	\$ 8,160,582	0.0380	129,844,530	\$ 4,934,092	0.1010
ARUL	ARUL-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
ARCS	ARCS-FIXD	Fixed	\$/day	0.9800	43,245,437	\$ 42,380,528	0.0000	-	\$ -	0.9800
ARCS	ARCS-AICO	Variable, controlled	\$/kWh	0.0252	1,047,706,946	\$ 26,402,215	0.0300	1,050,226,355	\$ 31,506,791	0.0552
ARCS	ARCS-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
ARUS	ARUS-FIXD	Fixed	\$/day	0.9800	9,386,474	\$ 9,198,745	0.0000	-	\$ -	0.9800
ARUS	ARUS-24UC	Variable, uncontrolled	\$/kWh	0.0252	204,955,267	\$ 5,164,873	0.0380	205,448,121	\$ 7,807,029	0.0632
ARUS	ARUS-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
ARHL	ARHL-FIXD	Fixed	\$/day	0.1500	-	\$ -	0.0000	-	\$ -	0.1500
ARHL	ARHL-OFPK	Variable, off peak	\$/kWh	0.0630	-	\$ -	0.0000	-	\$ -	0.0630
ARHL	ARHL-PEAK	Variable, peak	\$/kWh	0.0630	-	\$ -	0.1253	-	\$ -	0.1883
ARHL	ARHL-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
ARHS	ARHS-FIXD	Fixed	\$/day	0.9800	-	\$ -	0.0000	-	\$ -	0.9800
ARHS	ARHS-OFPK	Variable, off peak	\$/kWh	0.0252	-	\$ -	0.0000	-	\$ -	0.0252
ARHS	ARHS-PEAK	Variable, peak	\$/kWh	0.0252	-	\$ -	0.1253	-	\$ -	0.1505
ARHS	ARHS-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
					Total Rev. Dist	\$ 131,780,265		Total Rev. Pass	\$ 60,037,907	

#### Mass Market - Business

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
ABSU	ABSU-FIXD	Fixed	\$/day/fitting	0.1400	22,622,925	\$ 3,167,210	0.0000	-	\$ -	0.1400
ABSU	ABSU-24UC	Variable	\$/kWh	0.0372	37,174,334	\$ 1,382,885	0.0380	34,772,384	\$ 1,321,351	0.0752
ABSU	ABSU-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
ABSN	ABSN-FIXD	Fixed	\$/day	0.9800	12,437,184	\$ 12,188,440	0.0000	-	\$ -	0.9800
ABSN	ABSN-24UC	Variable	\$/kWh	0.0252	771,148,806	\$ 19,432,950	0.0380	721,322,471	\$ 27,410,254	0.0632
ABSN	ABSN-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
ABSH	ABSH-FIXD	Fixed	\$/day	0.9800	-	\$ -	0.0000	-	\$ -	0.9800
ABSH	ABSH-OFPK	Variable, off peak	\$/kWh	0.0252	-	\$ -	0.0000	-	\$ -	0.0252
ABSH	ABSH-PEAK	Variable, peak	\$/kWh	0.0252	-	\$ -	0.1253	-	\$ -	0.1505
ABSH	ABSH-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
					Total Rev. Dist	\$ 36,171,485		Total Rev. Pass	\$ 28,731,605	

#### Low voltage

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
ALVN	ALVN-FIXD	Fixed	\$/day	1.5600	664,123	\$ 1,036,032	0.0000	-	\$ -	1.5600
ALVN	ALVN-24UC	Variable	\$/kWh	0.0424	206,803,755	\$ 8,768,479	0.0204	212,153,222	\$ 4,327,926	0.0628
ALVN	ALVN-CAPY	Capacity	\$/kVA/day	0.0365	94,625,995	\$ 3,453,849	0.0000	-	\$ -	0.0365
ALVN	ALVN-PWRP	Power Factor	\$/kVA/day	0.2917	306,588,7826	\$ 89,431,9479	0.0000	-	\$ -	0.2917
ALVN	ALVN-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
ALVT	ALVT-24UC	Variable	\$/kWh	0.0164	575,960,714	\$ 9,445,756	0.0000	590,859,297	\$ -	0.0164
ALVT	ALVT-CAPY	Capacity	\$/kVA/day	0.0365	128,281,278	\$ 4,682,267	0.0000	-	\$ -	0.0365
ALVT	ALVT-DAMD	Demand	\$/kVA/day	0.0583	52,482,360	\$ 3,059,722	0.2480	53,515,923	\$ 13,271,949	0.3063
ALVT	ALVT-PWRP	Power Factor	\$/kVA/day	0.2917	7,770,776	\$ 2,266,735	0.0000	-	\$ -	0.2917
ALVT	ALVT-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
					Total Rev. Dist	\$ 32,802,271		Total Rev. Pass	\$ 17,599,875	

#### Transformer

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
ATXN	ATXN-FIXD	Fixed	\$/day	1.5100	50,593	\$ 76,395	0.0000	-	\$ -	1.5100
ATXN	ATXN-24UC	Variable	\$/kWh	0.0411	18,973,206	\$ 779,799	0.0204	19,463,993	\$ 397,065	0.0615
ATXN	ATXN-CAPY	Capacity	\$/kVA/day	0.0358	11,639,628	\$ 416,699	0.0000	-	\$ -	0.0358
ATXN	ATXN-PWRP	Power Factor	\$/kVA/day	0.2917	35,588,3932	\$ 10,381,1343	0.0000	-	\$ -	0.2917
ATXN	ATXN-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
ATXT	ATXT-24UC	Variable	\$/kWh	0.0161	1,030,665,379	\$ 16,593,713	0.0000	1,057,325,970	\$ -	0.0161
ATXT	ATXT-CAPY	Capacity	\$/kVA/day	0.0358	188,515,422	\$ 6,748,852	0.0000	-	\$ -	0.0358
ATXT	ATXT-DAMD	Demand	\$/kVA/day	0.0522	83,700,352	\$ 4,369,158	0.2480	85,348,708	\$ 21,166,480	0.3002
ATXT	ATXT-PWRP	Power Factor	\$/kVA/day	0.2917	7,441,247	\$ 2,170,612	0.0000	-	\$ -	0.2917
ATXT	ATXT-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
					Total Rev. Dist	\$ 31,165,609		Total Rev. Pass	\$ 21,563,545	

#### High voltage

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
AHVN	AHVN-FIXD	Fixed	\$/day	1.4600	1,984	\$ 2,897	0.0000	-	\$ -	1.4600
AHVN	AHVN-24UC	Variable	\$/kWh	0.0393	677,977	\$ 26,645	0.0204	695,515	\$ 14,189	0.0597
AHVN	AHVN-CAPY	Capacity	\$/kVA/day	0.0347	525,639	\$ 18,240	0.0000	-	\$ -	0.0347
AHVN	AHVN-PWRP	Power Factor	\$/kVA/day	0.2917	-	\$ -	0.0000	-	\$ -	0.2917
AHVN	AHVN-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
AHVT	AHVT-24UC	Variable	\$/kWh	0.0156	403,408,644	\$ 6,293,175	0.0000	413,843,760	\$ -	0.0156
AHVT	AHVT-CAPY	Capacity	\$/kVA/day	0.0347	48,829,680	\$ 1,694,390	0.0000	-	\$ -	0.0347
AHVT	AHVT-DAMD	Demand	\$/kVA/day	0.0432	31,485,313	\$ 1,360,166	0.2480	32,105,371	\$ 7,962,132	0.2912
AHVT	AHVT-DEXA	Excess demand	\$/kVA/day	0.7280	148,905	\$ 108,403	0.0000	-	\$ -	0.7280
AHVT	AHVT-PWRP	Power Factor	\$/kVA/day	0.2917	2,080,834	\$ 606,979	0.0000	-	\$ -	0.2917
AHVT	AHVT-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
					Total Rev. Dist	\$ 10,110,893		Total Rev. Pass	\$ 7,976,320	



## APPENDIX 4. NORTHERN PRICES & REVENUE BY CONSUMER GROUP AND PRICE CATEGORY

Vector's prices on the Northern network from 1 April 2015

### Mass Market - Residential

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
WRCL	WRCL-FIXD	Fixed	\$/day	0.1500	26,461,327	\$ 3,969,199	0.0000	-	\$ -	0.1500
WRCL	WRCL-AICO	Variable, controlled	\$/kWh	0.0630	377,183,236	\$ 23,762,544	0.0300	387,839,366	\$ 11,635,181	0.0930
WRCL	WRCL-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WRUL	WRUL-FIXD	Fixed	\$/day	0.1500	4,042,009	\$ 606,301	0.0000	-	\$ -	0.1500
WRUL	WRUL-24UC	Variable, uncontrolled	\$/kWh	0.0630	54,204,033	\$ 3,414,854	0.0380	55,735,399	\$ 2,117,945	0.1010
WRUL	WRUL-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WRCS	WRCS-FIXD	Fixed	\$/day	0.9800	33,652,190	\$ 32,979,146	0.0000	-	\$ -	0.9800
WRCS	WRCS-AICO	Variable, controlled	\$/kWh	0.0252	826,793,881	\$ 20,835,206	0.0300	850,152,352	\$ 25,504,571	0.0552
WRCS	WRCS-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WRUS	WRUS-FIXD	Fixed	\$/day	0.9800	5,280,847	\$ 5,175,230	0.0000	-	\$ -	0.9800
WRUS	WRUS-24UC	Variable, uncontrolled	\$/kWh	0.0252	119,683,488	\$ 3,016,024	0.0380	123,064,770	\$ 4,676,461	0.0632
WRUS	WRUS-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WRHL	WRHL-FIXD	Fixed	\$/day	0.1500	-	\$ -	0.0000	-	\$ -	0.1500
WRHL	WRHL-OFPK	Variable, off peak	\$/kWh	0.0630	-	\$ -	0.0000	-	\$ -	0.0630
WRHL	WRHL-PEAK	Variable, peak	\$/kWh	0.0630	-	\$ -	0.1253	-	\$ -	0.1883
WRHL	WRHL-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WRHS	WRHS-FIXD	Fixed	\$/day	0.9800	-	\$ -	0.0000	-	\$ -	0.9800
WRHS	WRHS-OFPK	Variable, off peak	\$/kWh	0.0252	-	\$ -	0.0000	-	\$ -	0.0252
WRHS	WRHS-PEAK	Variable, peak	\$/kWh	0.0252	-	\$ -	0.1253	-	\$ -	0.1505
WRHS	WRHS-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
Total Rev. Dist						\$ 93,758,505		Total Rev. Pass		\$ 43,934,158

### Mass Market - Business

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
WBSU	WBSU-FIXD	Fixed	\$/day/fitting	0.1400	12,681,238	\$ 1,775,373	0.0000	-	\$ -	0.1400
WBSU	WBSU-24UC	Variable	\$/kWh	0.0372	18,829,828	\$ 700,470	0.0380	19,117,277	\$ 726,457	0.0752
WBSU	WBSU-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WBSN	WBSN-FIXD	Fixed	\$/day	0.9800	7,834,909	\$ 7,678,211	0.0000	-	\$ -	0.9800
WBSN	WBSN-24UC	Variable	\$/kWh	0.0252	390,553,535	\$ 9,841,949	0.0380	396,515,568	\$ 15,067,592	0.0632
WBSN	WBSN-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WBSH	WBSH-FIXD	Fixed	\$/day	0.9800	-	\$ -	0.0000	-	\$ -	0.9800
WBSH	WBSH-OFPK	Variable, off peak	\$/kWh	0.0252	-	\$ -	0.0000	-	\$ -	0.0252
WBSH	WBSH-PEAK	Variable, peak	\$/kWh	0.0252	-	\$ -	0.1253	-	\$ -	0.1505
WBSH	WBSH-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
Total Rev. Dist						\$ 19,996,003		Total Rev. Pass		\$ 15,794,048

### Low voltage

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
WLVN	WLVN-FIXD	Fixed	\$/day	5.5000	293,314	\$ 1,613,227	0.0000	-	\$ -	5.5000
WLVN	WLVN-24UC	Variable	\$/kWh	0.0237	143,901,286	\$ 3,410,460	0.0204	137,908,066	\$ 2,813,325	0.0441
WLVN	WLVN-CAPY	Capacity	\$/kVA/day	0.0266	42,155,939	\$ 1,121,348	0.0000	-	\$ -	0.0266
WLVN	WLVN-PWRF	Power Factor	\$/kVar/day	0.2917	656,458	\$ 191,489	0.0000	-	\$ -	0.2917
WLVN	WLVN-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WLVH	WLVH-FIXD	Fixed	\$/day	10.3800	50,250	\$ 521,595	0.0000	-	\$ -	10.3800
WLVH	WLVH-24UC	Variable	\$/kWh	0.0057	83,025,950	\$ 473,248	0.0000	79,568,074	\$ -	0.0057
WLVH	WLVH-CAPY	Capacity	\$/kVA/day	0.0266	13,702,466	\$ 364,486	0.0000	-	\$ -	0.0266
WLVH	WLVH-DAMD	Demand	\$/kVA/day	0.0339	6,204,666	\$ 210,338	0.2480	6,513,238	\$ 1,615,283	0.2819
WLVH	WLVH-PWRF	Power Factor	\$/kVar/day	0.2917	607,389	\$ 177,175	0.0000	-	\$ -	0.2917
WLVH	WLVH-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
Total Rev. Dist						\$ 8,083,366		Total Rev. Pass		\$ 4,428,608

### Transformer

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
WTXN	WTXN-FIXD	Fixed	\$/day	4.9500	59,600	\$ 295,020	0.0000	-	\$ -	4.9500
WTXN	WTXN-24UC	Variable	\$/kWh	0.0193	56,418,105	\$ 1,088,869	0.0204	54,068,396	\$ 1,102,995	0.0397
WTXN	WTXN-CAPY	Capacity	\$/kVA/day	0.0261	15,943,880	\$ 416,135	0.0000	-	\$ -	0.0261
WTXN	WTXN-PWRF	Power Factor	\$/kVar/day	0.2917	569,727	\$ 166,189	0.0000	-	\$ -	0.2917
WTXN	WTXN-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WTXH	WTXH-FIXD	Fixed	\$/day	9.3400	74,686	\$ 697,567	0.0000	-	\$ -	9.3400
WTXH	WTXH-24UC	Variable	\$/kWh	0.0056	329,590,661	\$ 1,845,708	0.0000	315,863,825	\$ -	0.0056
WTXH	WTXH-CAPY	Capacity	\$/kVA/day	0.0261	61,633,452	\$ 1,608,633	0.0000	-	\$ -	0.0261
WTXH	WTXH-DAMD	Demand	\$/kVA/day	0.0283	26,354,121	\$ 745,822	0.2480	27,664,771	\$ 6,860,863	0.2763
WTXH	WTXH-PWRF	Power Factor	\$/kVar/day	0.2917	1,602,334	\$ 467,401	0.0000	-	\$ -	0.2917
WTXH	WTXH-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
Total Rev. Dist						\$ 7,331,345		Total Rev. Pass		\$ 7,963,858

### High voltage

Price plan	Code	Description	Units	P.Dist	Q. 2014	P.Dist x Q. 2014 (Rev. Dist)	P.Pass	Q. 2016	P.Pass x Q. 2016 (Rev. Pass)	P.Total
WHVN	WHVN-FIXD	Fixed	\$/day	4.8000	130	\$ 624	0.0000	-	\$ -	4.8000
WHVN	WHVN-24UC	Variable	\$/kWh	0.0181	54	\$ 1	0.0204	52	\$ 1	0.0385
WHVN	WHVN-CAPY	Capacity	\$/kVA/day	0.0253	-	\$ -	0.0000	-	\$ -	0.0253
WHVN	WHVN-PWRF	Power Factor	\$/kVar/day	0.2917	-	\$ -	0.0000	-	\$ -	0.2917
WHVN	WHVN-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
WHVH	WHVH-FIXD	Fixed	\$/day	9.0600	5,475	\$ 49,604	0.0000	-	\$ -	9.0600
WHVH	WHVH-24UC	Variable	\$/kWh	0.0054	88,795,380	\$ 479,495	0.0000	85,097,218	\$ -	0.0054
WHVH	WHVH-CAPY	Capacity	\$/kVA/day	0.0253	11,041,250	\$ 279,344	0.0000	-	\$ -	0.0253
WHVH	WHVH-DAMD	Demand	\$/kVA/day	0.0200	6,141,987	\$ 122,840	0.2480	6,447,442	\$ 1,598,966	0.2680
WHVH	WHVH-DEXA	Excess demand	\$/kVA/day	0.6700	829	\$ 556	0.0000	-	\$ -	0.6700
WHVH	WHVH-PWRF	Power Factor	\$/kVar/day	0.2917	248,823	\$ 72,582	0.0000	-	\$ -	0.2917
WHVH	WHVH-INJT	Variable, injection	\$/kWh	0.0000	-	\$ -	0.0000	-	\$ -	0.0000
Total Rev. Dist						\$ 1,005,044		Total Rev. Pass		\$ 1,598,967

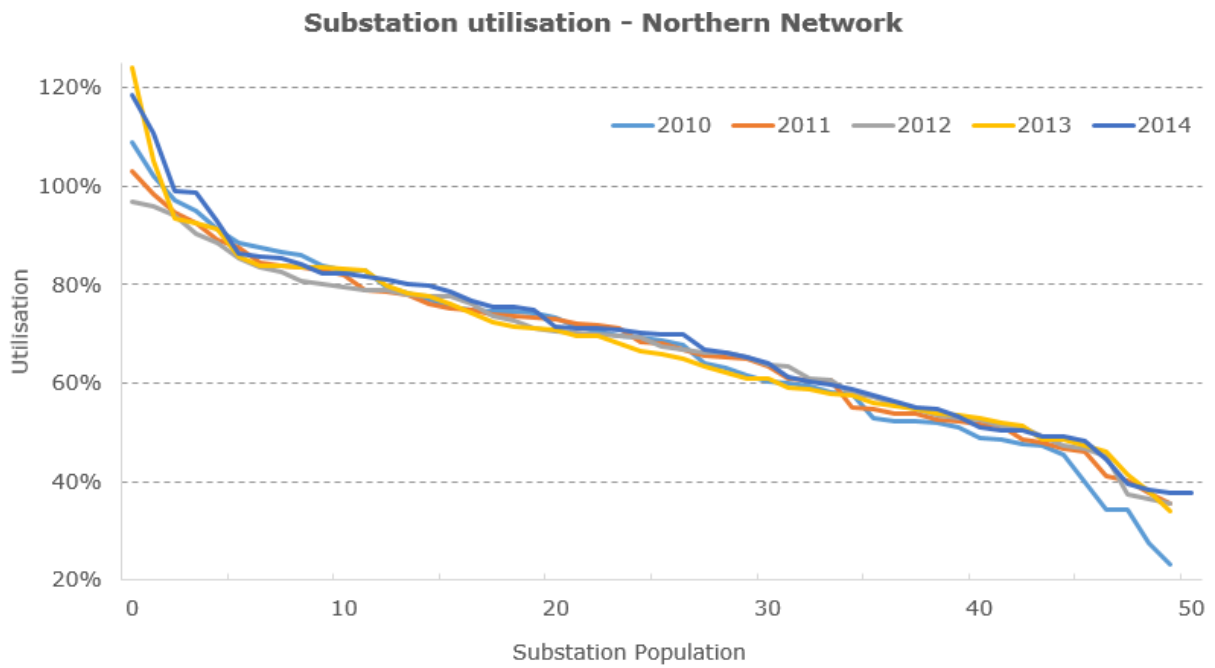
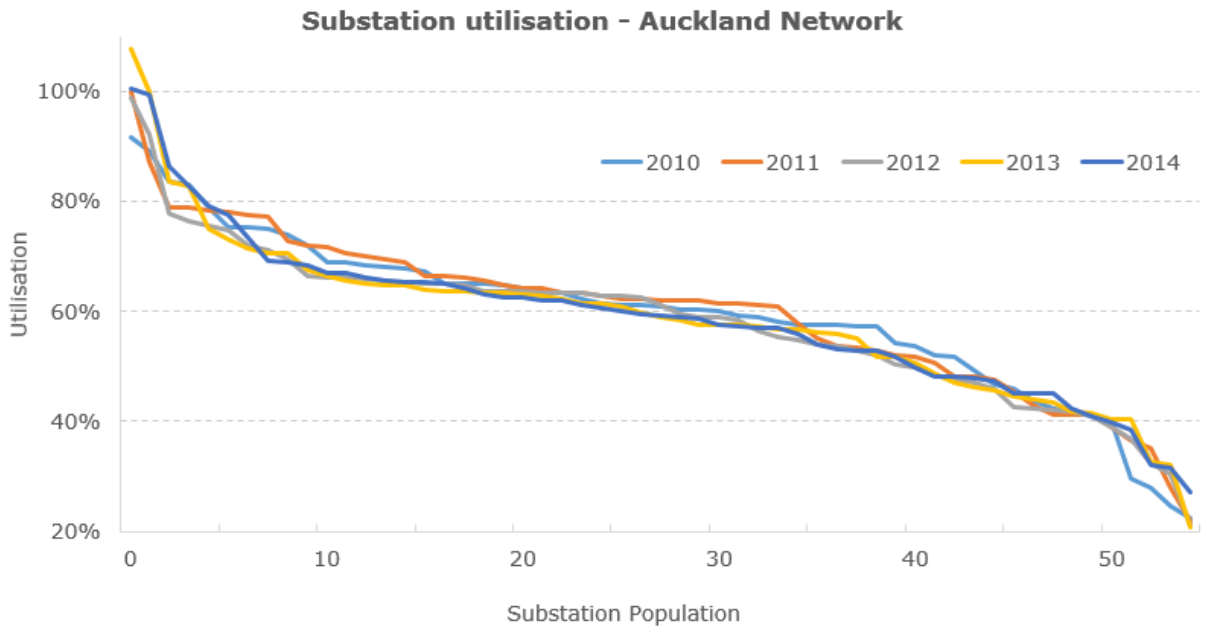
## APPENDIX 5. TARGET REVENUE BY PRICE CATEGORY

<b>Auckland network</b>					
Price Category	Description	Number of Customers	Fixed Revenue	Variable Revenue	Target Revenue
ARCL	Residential, low fixed charge, controlled	99,800	\$5,639,095	\$48,775,176	\$54,414,270
ARUL	Residential, low fixed charge, uncontrolled	29,600	\$1,746,246	\$13,067,731	\$14,813,976
ARHL	Residential, low fixed charge, time of use	0	\$0	\$0	\$0
ARCS	Residential, controlled	123,100	\$42,331,591	\$57,766,643	\$100,098,234
ARUS	Residential, uncontrolled	31,300	\$9,188,123	\$12,938,216	\$22,126,339
ARHS	Residential, time of use	0	\$0	\$0	\$0
ABSU	Business, unmetered	1,800	\$3,163,552	\$2,792,282	\$5,955,834
ABSN	Business, metered	35,500	\$12,174,366	\$48,680,328	\$60,854,695
ABSH	Business, time of use	0	\$0	\$0	\$0
ALVN	Low voltage, non-time of use	1,900	\$1,034,836	\$16,511,469	\$17,546,304
ALVT	Low voltage, time of use	1,400	\$0	\$32,432,611	\$32,432,611
ATXN	Transformer, non-time of use	150	\$76,307	\$1,592,091	\$1,668,399
ATXT	Transformer, time of use	840	\$0	\$50,581,548	\$50,581,548
AHVN	High voltage, non-time of use	10	\$2,893	\$58,647	\$61,540
AHVT	High voltage, time of use	120	\$0	\$17,850,834	\$17,850,834
Non Standard		48			\$24,880,534
<b>Total</b>					<b>\$403,285,120</b>

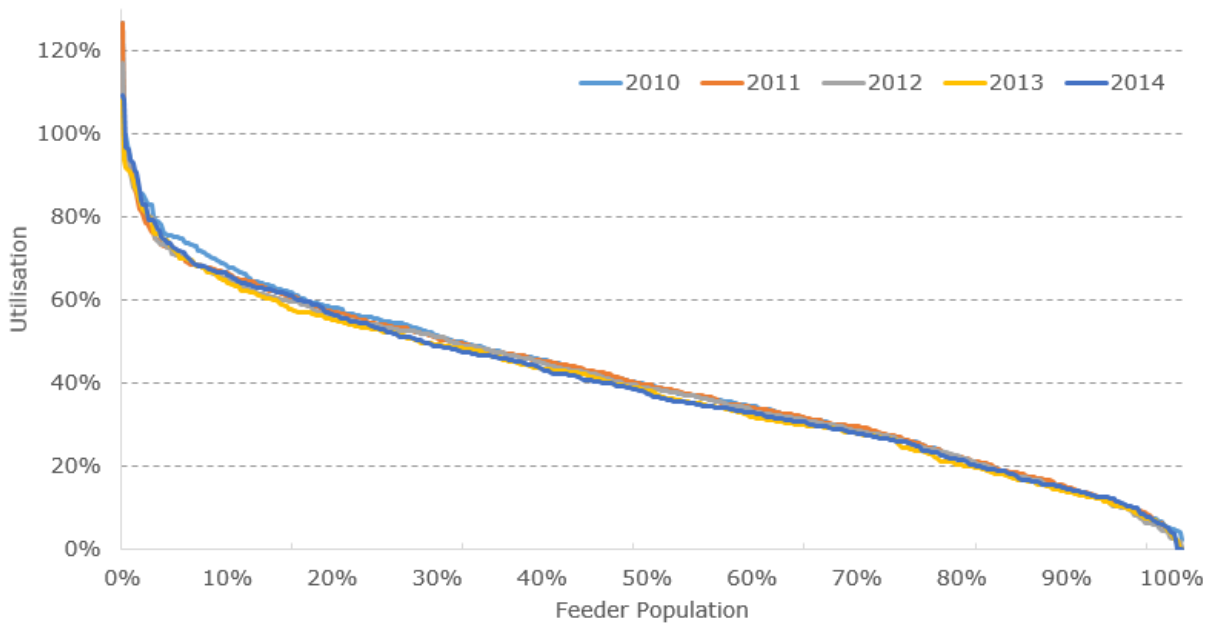
<b>Northern network</b>					
Price Category	Description	Number of Customers	Fixed Revenue	Variable Revenue	Target Revenue
WRCL	Residential, low fixed charge, controlled	74,300	\$3,964,616	\$35,037,536	\$39,002,152
WRUL	Residential, low fixed charge, uncontrolled	11,900	\$605,601	\$5,468,286	\$6,073,887
WRHL	Residential, low fixed charge, time of use	0	\$0	\$0	\$0
WRCS	Residential, controlled	90,500	\$32,941,065	\$45,586,323	\$78,527,388
WRUS	Residential, uncontrolled	16,400	\$5,169,254	\$7,555,262	\$12,724,517
WRHS	Residential, time of use	0	\$0	\$0	\$0
WBSU	Business, unmetered	270	\$1,773,323	\$1,414,368	\$3,187,691
WBSN	Business, metered	22,000	\$7,669,345	\$24,654,482	\$32,323,827
WBSH	Business, time of use	0	\$0	\$0	\$0
WLVN	Low voltage, non-time of use	790	\$1,611,364	\$7,650,040	\$9,261,404
WLVH	Low voltage, time of use	180	\$520,993	\$2,760,813	\$3,281,805
WTXN	Transformer, non-time of use	140	\$294,679	\$2,818,865	\$3,113,544
WTXH	Transformer, time of use	230	\$696,762	\$11,190,449	\$11,887,211
WHVN	High voltage, non-time of use	0	\$623	\$2	\$625
WHVH	High voltage, time of use	20	\$49,546	\$2,475,167	\$2,524,714
Non Standard	Non-standard customers	9			\$1,850,072
<b>Total</b>					<b>\$203,758,837</b>



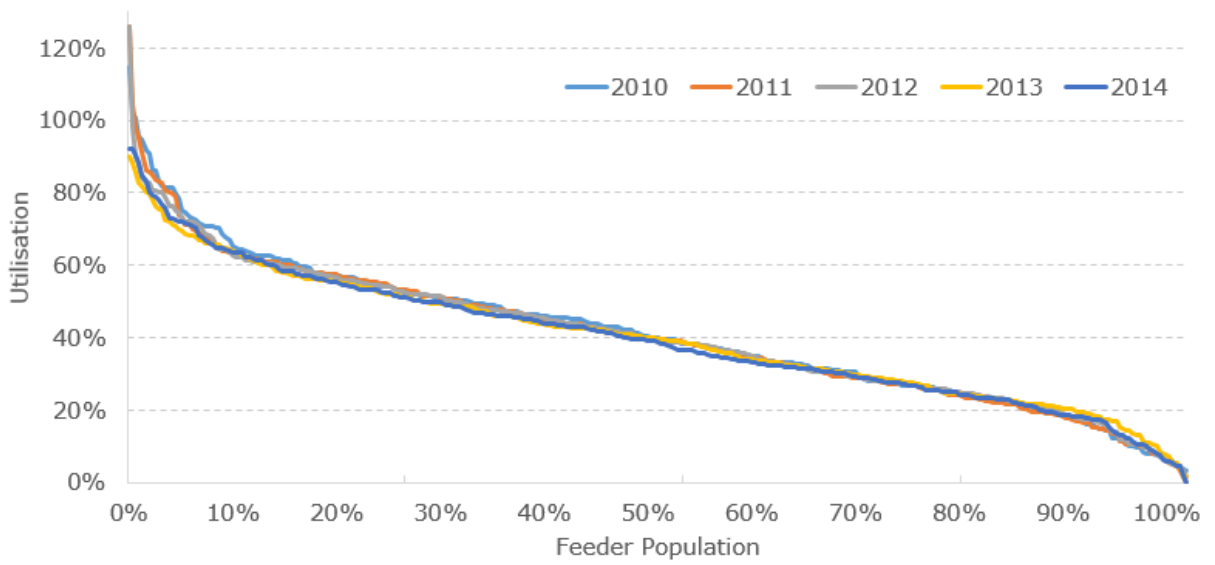
## APPENDIX 6. UTILISATION OF VECTOR'S ASSETS



**Feeder utilisation - Auckland network**



**Feeder utilisation - Northern network**



## APPENDIX 7. OBLIGATIONS TO NON-STANDARD CONSUMERS IN THE EVENT OF INTERRUPTIONS

Vector's obligations and responsibilities to consumers subject to non-standard contracts on Vector's networks in the event that the supply of electricity lines services to the consumer is interrupted are as follows:

### 1. Non-standard Agreement for 8 consumers.

#### Clause 6

#### Vector's Right to Interrupt Supply

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Point of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
  - (b) to avoid danger to persons or property, or to avoid interference with the regulatory of efficiency of the conveyance of electricity to the Point of Connection;
  - (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
  - (d) where Vector reasonably anticipates that due to circumstances outside of its reasonable control, the supply of electricity or any capacity to any Point of Connection is or will be reduced, impaired or interrupted;
  - (e) for any other purpose which, in Vector's reasonable opinion, requires the interruption or reduction in the conveyance of electricity;
  - (f) if the supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
  - (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;
  - (h) upon instructions from any Transmission Service Provider or any central or local government or statutory authority, or as a result of an action by any Transmission Service Provider under any agreement between Vector and that Transmission Service Provider; or
  - (i) in response to an event of Force Majeure,
- and, wherever possible, Vector shall use reasonable endeavors to provide the customer with as much advance warning of such interruption as is practicable in the circumstances. Where such prior notice is not possible, Vector will notify the Customer of such interruption as soon as practicable after the interruption has commenced.

#### Schedule 1:5(i)

Planned Maintenance: Where Vector plan to undertake maintenance on the Distribution Network that requires an interruption to the supply of electricity to any Point of Connection, Vector will notify the customer either directly or via the Customer's Retailer in writing to that effect, so that the Customer will receive 4 working days' notice prior to the interruption.

#### Schedule 1:5(i)

Restoration Times: In the event of an unexpected interruption to the supply of electricity Vector plans its resources in order to restore supply to most customers within 3 hours; however events outside Vectors control may influence this timeframe and Vector accepts no liability for failure to restore supply within such time frame. For instance, heavy traffic, multiple concurrent outages due, typically to inclement weather conditions, outages on networks not owned by Vector which affect Vector network or outages on remote areas of the network or emergency services preventing access. Where restoration takes over 3 hours Vector will provide the customer with a written explanation for the extended restoration time if requested by the customer.

## **2. Non-standard Agreement for 1 consumer.**

### Clause 6.1 (a)

Planned maintenance: The parties shall, in each year of the term, consult in good faith and use their reasonable endeavors to agree in writing, prior to 1 November of that year, on a schedule of planned maintenance to be carried out on the new network assets during the 12 month period following that date (based on a draft schedule to be delivered by Vector to the customer by 1 October in the same year). Such agreement shall not be reasonably withheld by either party, provided that nothing in this clause shall require the customer to agree to any provision of a schedule of planned maintenance, the effect of which would be (if that provision were to be implemented) that the supply of electricity referred in clause 5.1 would be interrupted.

### Clause 6.1 (c)

Unplanned Outages: In the event of any unplanned outage or any fault requiring remedial action by Vector (regardless of the cause of the fault or outage) Vector shall (in accordance with the relevant provisions in any written contingency plan agreed under clause 5.4) use its reasonable endeavor's to prioritize the restoration of the supply of electricity to the level specified in clause 5.1, above all other customers of Vector, except those customers which require electricity in order to provide emergency and other essential services to the general public, and which Vector reasonably determines require such high priority. For the avoidance of doubt the same priority shall apply if electricity rationing is required due to a shortage of supply.

## **3. Non-standard Agreement for 1 consumer.**

### Clause 5.1 Maintenance / Faults / Outages:

The Lines Business shall, at all times during the Term, ensure that all maintenance of, and all outages and faults in, the New Network Assets are dealt with in the following manner: (a) All planned outages shall be planned and agreed by the Lines Business with the Customer (such agreement not to be unreasonably withheld). (b) In the event of any unplanned outage or any fault requiring remedial action by the Lines Business, the Lines Business shall (regardless of the cause of the fault or outage): (i) use its reasonable endeavor's to prioritize the restoration of the supply of electricity to the levels specified in clause 4.1 (having due regard to the competing requirements, if any, of any essential or emergency services also requiring a supply of electricity). (ii) Comply with such emergency procedures as shall be agreed in writing between the parties from time to time (which procedures the parties shall endeavor to agree upon as soon as reasonably possible after the date of this agreement and before the Commissioning date) except to the extent to which emergency or similar circumstances make it impractical or impossible for the Lines Business to do so.

### Clause 18.3 (a) Disconnection:

The Lines Business may disconnect the Distribution Network at any or all of the Customers Connection Points, or may cease to provide the Network Services: (a) If, and to the extent which, this is: (i) Necessary to protect, in any emergency circumstances, the TPNZ network, either of the customers installations, the Distribution Network, any other property, or the health or safety of any person; or (ii) Requested by the Retailer under any agreement between the Lines Business and the Retailer (where the Retailer is entitled to request such disconnection, under its contract with the customer). In any such event, the Lines Business shall notify the Customer of the receipt of such request, at the earliest available opportunity after becoming aware of, and at least 2 Business Days prior to complying with, the request. (b) If: (i) The Customer fails to pay to the Lines Business on the due date any amount which is payable by the Customer to the Lines Business under this agreement: and (ii) That failure continues for 5 Business Days or more, in which case the Lines Business shall not be obliged to reconnection the Distribution Network to the relevant Customer's Premises or to resume providing the Network Services (as the case may be) until or unless the Customer has:

(iii) Brought up to date all payments required to be made by it to the Lines Business under this agreement; and

(iv) Paid to the Lines Business the cost of effecting any such disconnection and subsequent reconnection under this clause.

(c) If the Customer breaches, and remains in breach of, clause 8.1(c), or if there is no Retailer, in which case:

(i) The Lines Business shall give the Customer not less than 20 Business Days prior written notice of any such disconnection or cessation by the Lines Business.

- (ii) The Customer may, at any time, request the disconnection or cessation (in which case the Lines Business shall effect the disconnection or cessation as soon as reasonably possible).
- (iii) The Customer shall at all times indemnify the Lines Business in respect of any loss, damage, cost or expense which the Lines Business suffers or incurs as a result of the Lines Business continuing to maintain the connection referred to in this clause and/or continuing to provide the Network Services after notice has been given under clause 18.3(c)(i). Any amount which becomes payable under this indemnity shall be payable within 5 Business Days after the date of receipt by the Customer from the Lines Business of a written demand (in the form of a valid tax invoice for GST purposes) for such payment to be made, setting out all material particulars of the amount demanded.

**4. Non-standard Agreement for 1 consumer.**

Clause 4.2

Maintenance:

Prior to 1 June of each year during the Term, [the Customer] and [Vector] shall consult in good faith with a view to agreeing, by that date, a schedule of maintenance for the substation for the year following that date, provided however that such maintenance may be amended by [Vector] from time to time with the agreement of [the Customer] (such agreement not to be unreasonably withheld).

Clause 4.10

Interruption of supply: [Vector] may interrupt the supply of electrical energy from the substation to the plant at any time if [Vector] considers it reasonably necessary to do so:

- (a) to enable [Vector] to inspect, alter, maintain or repair the substation in accordance with the maintenance schedule agreed between [the Customer] and [Vector] pursuant to clause 4.2;
- (b) to avoid danger or to avoid interference with the regularity or efficiency of the supply of electrical energy;
- (c) in case of emergency, to preserve or protect the proper working of the substation, or any transmission system to which the substation is connected: or
- (d) as a consequence of any action taken or direction given by the operator for the time being of the National Grid.

Clause 4.11

Obligations where supply interrupted:

Where [Vector] interrupts the supply of electrical energy pursuant to clause 4.10, it will:

- (a) give [the Customer] reasonable prior notice of its intention to interrupt such supply unless, in the reasonable opinion of [Vector], the interruption must be effected immediately due to the circumstances in respect of which the interruption is required, such notice to state the date, time, and reasons for the interruption and its duration: and
- (b) resume the supply of electrical energy as soon as reasonably practicable; and
- (c) act in accordance with Good Industry Practice at all times.

**5. Non-standard Agreement for 1 consumer.**

Clause 5.2

**Maintenance:**

Prior to 1 June of each year during the term, [the Customer] and [Vector] shall consult in good faith with a view to agreeing, by that date, a schedule of proposed maintenance for the Distribution Network for the year following that date, provided however that such maintenance may be amended by [Vector] from time to time with the agreement of [the Customer] (such agreement not to be unreasonably withheld).

**Clause 5.10**

Interruption of supply: [Vector] may interrupt the supply of electrical energy from the network extension to the plant at any time if [Vector] considers it reasonably necessary to do so:

- (a) to enable [Vector] to inspect, alter, maintain or repair the distribution network in accordance with the maintenance schedule agreed between [the Customer] and [Vector] pursuant to clause 5.2:
- (b) to avoid danger or to avoid interference with the regularity or efficiency of the supply of electrical energy:
- (c) in case of emergency, to preserve or protect the proper working of the distribution network, the substation or the plant; or
- (d) as a consequence of any action taken or direction given by the operator for the time being of the national grid.

Clause 5.11

Obligations where supply interrupted:

Where [Vector] interrupts the supply of electrical energy pursuant to clause 5.10, it will:

- (a) give [the Customer] reasonable prior notice of its intention to interrupt such supply unless, in the reasonable opinion of [Vector], the interruption must be effected immediately due to the circumstances in respect of which the interruption is required, such notice to state the date, time, and reasons for the interruption and its expected duration: and
- (b) resume the supply of electrical energy as soon as reasonably practicable; and
- (c) act in accordance with good industry practice at all times.

**6. Non-standard Agreement for 1 consumer.**

Clause 5.2

**Maintenance:**

Prior to 1 June of each year during the term, [the Customer] and Vector shall consult in good faith with a view to agreeing, by that date, a schedule of proposed maintenance for the Network Extension for the year following that date, provided however that such maintenance schedule may be amended by Vector from time to time with the agreement of [the Customer] (such agreement not to be unreasonably withheld).

Clause 5.10

**Interruption of supply:** Vector may interrupt the supply of electrical energy from the Network Extension to the Plant at any time if Vector considers it reasonably necessary to do so:

- (a) to enable Vector to inspect, alter, maintain or repair the network extension in accordance with the maintenance schedule agreed pursuant to clause 5.2:
- (b) to avoid danger or to avoid interference with the regularity or efficiency of the supply of electrical energy:
- (c) in case of emergency, to preserve or protect the proper working of the Network Extension, the Substation or the Plant; or
- (d) as a consequence of any action taken or direction given by the operator for the time being of the National Grid.

Clause 5.11

**Obligations where Supply Interrupted:**

Where Vector interrupts the supply of electrical energy pursuant to clause 5.10, it will:

- (a) give [the Customer] reasonable prior notice of its intention to interrupt such supply unless, in the reasonable opinion of Vector, the interruption must be effected immediately due to the circumstances in respect of which the interruption is required, such notice to state the date, time, and reasons for the interruption and its expected duration: and
- (b) resume the supply of electrical energy as soon as reasonably practicable; and
- (c) act in accordance with Good Industry Practice at all times.

**7. Non-standard Agreement for 1 consumer.**

Clause 6. **VECTOR'S RIGHT TO INTERRUPT SUPPLY**

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Point of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property, or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Point of Connection;
- (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that due to circumstances outside its reasonable control, the supply of electricity or any capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose, which, in Vector's reasonable opinion, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;
- (h) upon instructions from any Transmission Service Provider or any central or local government or statutory authority, or as a result of an action by any Transmission Service Provider under any agreement between Vector and that Transmission Service Provider; or
- (i) in response to an event of Force Majeure.

and, wherever possible, Vector shall use reasonable endeavor's to provide the customer with as much advance warning of such interruption as is practicable in the circumstances. Where such prior notice is not possible, Vector will notify the Customer of such interruption as soon as practicable after the interruption has commenced.

SCHEDULE 1.5(i)

**Planned Maintenance:** Where Vector plans to undertake maintenance on the Distribution Network that requires an interruption to the supply of electricity to any Point of Connection, Vector will notify the customer either directly, or via the Customer's Retailer in writing to that effect, so that the Customer will receive 4 working days' notice prior to the interruption.

**Restoration Times:** In the event of an unexpected interruption to the supply of electricity Vector plans its resources in order to restore supply to most customers within 3 hours; however events outside Vectors control may influence this timeframe and Vector accepts no liability for failure to restore supply within such time frame. For instance, heavy traffic, multiple concurrent outages due, typically to inclement weather conditions, outages on networks not owned by Vector which affect Vector network or outages on remote areas of the network or emergency services preventing access. Where restoration takes over 3 hours Vector will provide the customer with a written explanation for the extended restoration time if requested by the customer.

**Schedule 1:7**

In relation to Vector's right to interrupt supply (clause 6), Vector confirms that its current policy is to provide 4 working days' notice prior to any interruption to a customer's supply.

**8. Non-standard Agreement for 1 consumer.**

6.1:

Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to or from the Points of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property or to avoid interference with the regularity or efficiency of the conveyance of electricity to or from the Points of Connection;
- (c) to preserve and protect the proper working of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that the supply of electricity or any transmission capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose which, in Vector's reasonable opinion and in accordance with Good Industry Practice, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be reduced, impaired to interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;
- (h) upon instructions from Transpower or any central or local government or statutory authority, or as a result of any action by Transpower under any agreement between Vector and Transpower; or
- (i) in response to an event of Force Majeure.

Schedule 2

3. Planned Maintenance

3.1 Prior to 1 April each year, Vector will consult with the Customer in good faith with a view to agreeing, by 1 April, a programme of proposed maintenance on the Distribution Network for the following 12 months, consistent with Good Industry Practice, if and to the extent to which such maintenance will or might reasonably be expected to affect the Customer's operations at the Customer's Premises. Any such maintenance that requires an interruption to the supply of electricity to the Customer in the following 12 months will be clearly identified in this programme. Vector and the Customer will endeavor to agree upon the planned maintenance programme after considering, in good faith, each other's comments. However, if by 1 April each year a maintenance schedule has not been agreed then Vector (acting reasonably) will determine the maintenance programme for the following 12 months.

3.2 Notwithstanding paragraph 3.1 of this Schedule, where Vector plans to undertake maintenance on the Distribution Network that requires an interruption to the supply of electricity to any Point of Connection Vector will:

- (a) notify the Customer in writing to that effect, at least 10 working days prior to the interruption (if possible in the circumstances); and
- (b) use its reasonable endeavor's to avoid such interruption occurring at any time other than between the hours of 10pm and 6am.

Schedule 2

#### 4. Unplanned Outages

Vector will ensure there will not be more than one unplanned outage per annum which results in a loss of supply to any one of the Points of Connection or that any outage exceeds two hours. The duration / time of the fault is measured from when the fault is located.

Unplanned outages relate only to outages on the Distribution Network, not the Customers network.

Schedule 2

#### 5. Service level rebates

Each time the unplanned outages exceed the standards described in paragraph 4 above, Vector will pay to the Customer, within 5 working days of receipt from the Customer of a written demand to do so, an amount of \$500.

### **9. Non-standard Agreement for 1 consumer.**

Clause 6:

#### VECTOR'S RIGHT TO INTERRUPT SUPPLY

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards and having regard to the essential nature of the services provided by the Customer and to clause 3.5, Vector may interrupt Network Services and the conveyance of electricity to or from the Customer's Points of Connection:

- (a) to enable VECTOR to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property or to avoid interference with the regularity of efficiency of the conveyance of electricity to or from the Points of Connection;
- (c) to preserve and protect the proper working of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) if supply of electricity to any Transpower grid exit point is or will be reduced, impaired to interrupted;
- (e) upon instructions from Transpower or as a result of any action by Transpower under any agreement between VECTOR and Transpower; or
- (f) as a result of or in response to an event of Force Majeure.

Schedule 2

#### Performance Standards and Service Guarantees

#### 3: Planned Maintenance



Where Vector plans to do maintenance on the Distribution Network that requires an interruption to the supply of electricity to or from the Customer it will notify the Customer of the Points of Connection affected 7 working days prior to the interruption. There will be no more than 3 planned interruptions to a Customer's Point of Connection in any 12 month period.

**10. Non-standard Agreement for 1 consumer.**

Clause 6.1: Vectors right to interrupt supply:

Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Points of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network
- (b) to avoid danger to persons or property or, to avoid interference with the regularity or efficiency of the conveyance of electricity to the Points of Connection;
- (c) to preserve and protect the proper working of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that the supply of electricity or any transmission capacity to any point of connection is or will be reduced, impaired or interrupted, provided that, where possible, Vector will use all reasonable endeavor's not to interrupt the conveyance of electricity of electricity to both Points of Connection on the customer's premises;
- (e) for any other purpose which, in Vectors reasonable opinion and in accordance with good industry practice, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the grid exit point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the distribution network;
- (h) upon instructions from Transpower or any central or local government or statutory authority, or as a result of an action by Transpower under any agreement between Vector and Transpower; or
- (i) in response to an event of force majeure.

6.2

Vector acknowledges that a loss of supply to the Customers Points of Connection may cause a public safety concern, and as such, where it may be necessary to interrupt the supply of electricity to some customers within its network, Vector will where possible, prior to interrupting supply to the Customer, take this factor into consideration.

**11. Non-standard Agreement 1 consumer.**

Clause 6. Vector's right to interrupt supply

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Point of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property, or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Point of Connection;
- (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that due to circumstances outside its reasonable control, the supply of electricity or any capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose, having regard to Good Industry Practice, which, in Vector's reasonable opinion, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;
- (h) upon instructions from any Transmission Service Provider or any central or local government or statutory authority, or as a result of an action by any Transmission Service Provider under any agreement between Vector and that Transmission Service Provider; or
- (i) in response to an event of Force Majeure.

and, wherever possible, Vector shall use reasonable endeavors to provide the customer with as much advance warning of such interruption as is practicable in the circumstances. If requested by the customer following receipt of advanced warning of the interruption from Vector, Vector will take into account the hours of operation of the Customer's Penrose Mill in its decision to allocate electricity under paragraph 6.1(g) above. Where such prior notice is not possible, Vector will notify the Customer of such interruption as soon as practicable after the interruption has commenced.

Schedule 1: 5

Planned Maintenance:

Where Vector plans to undertake planned maintenance on the Distribution Network that requires an interruption to the supply of electricity to any Point of Connection, Vector will use reasonable endeavors to notify the Customer either directly, or via the Customer's Retailer in writing to that effect, so that the Customer will receive at least 10 working days' notice prior to interruption. Vector shall have no liability to the Customer in relation to the failure to give such notice.

Restoration times:

In the event of an unexpected interruption to supply of electricity Vector plans its resources in order to restore supply to most customers within 3 hours; however events outside Vector's control may influence this time frame and Vector accepts no liability for failure to restore supply within such time frame. For instance, heavy traffic, multiple concurrent outages (due typically to inclement weather conditions), outages on networks not owned by Vector, which affect Vector network or outages on remote areas of the network or emergency services preventing access, may mean that Vector is unable to restore supply in this period.

Where restoration takes over three hours Vector will provide the Customer with a written explanation for the extended restoration time frame if requested in writing by the Customer.

**12. Non-standard Agreement for 7 consumers.**

6. Vector's right to interrupt supply

6.1

Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Point of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property, or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Point of Connection;
- (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that due to circumstances outside its reasonable control, the supply of electricity or any capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose which, in Vector's reasonable opinion, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;
- (h) upon instructions from any Transmission Service Provider or any central or local government or statutory authority, or as a result of an action by any Transmission Service Provider under any agreement between Vector and that Transmission Service Provider; or
- (i) in response to an event of Force Majeure,

and, wherever possible, Vector shall use reasonable endeavors to provide the customer with as much advance warning of such interruption as is practicable in the circumstances. Where such prior notice is not possible, Vector will notify the Customer of such interruption as soon as practicable after the interruption has commenced.

Schedule 1: 5

Planned Maintenance:

Where Vector plans to undertake maintenance on the Distribution Network that requires an interruption to the supply of electricity to any Point of Connection, Vector will notify the Customer either directly, or via the Customer's Retailer in writing to that effect, so that the Customer will receive at least 4 working days' notice prior to the interruption.

Restoration times: In the event of an unexpected interruption to supply of electricity Vector plans its resources in order to restore supply to most customers within 3 hours; however events outside Vector's control may influence this time frame and Vector accepts no liability for failure to restore supply within such time frame. For instance, heavy traffic, multiple concurrent outages due, typically to inclement weather conditions, outages on networks not owned by Vector which affect Vector's network or outages on remote areas of the network or emergency services preventing access.

Where restoration takes over three hours Vector will provide the Customer with a written explanation for the extended restoration time frame if requested in writing by the Customer.

**13. Non-standard Agreement for 2 consumers.**

6. Vector's right to interrupt supply

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Point of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property, or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Point of Connection;
- (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that due to circumstances outside its reasonable control, the supply of electricity or any capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose which, in Vector's reasonable opinion, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;
- (h) upon instructions from any Transmission Service Provider or any central or local government or statutory authority, or as a result of an action by any Transmission Service Provider under any agreement between Vector and that Transmission Service Provider; or
- (i) in response to an event of Force Majeure,

and, wherever possible, Vector shall use reasonable endeavors to provide the customer with as much advance warning of such interruption as is practicable in the circumstances. Where such prior notice is not possible, Vector will notify the Customer of such interruption as soon as practicable after the interruption has commenced.

Schedule 1: 5

Planned Maintenance:

Where Vector plans to undertake maintenance on the Distribution Network the requires an interruption to the supply of electricity to any Point of Connection, Vector will notify the Customer either directly, or via the Customer's Retailer in writing to that effect, so that the Customer will receive at least 10 working days' notice prior to the interruption.

Restoration times:

In the event of an unexpected interruption to supply of electricity Vector plans its resources in order to restore supply to most customers within 3 hours; however events outside Vector's control may influence this time frame and Vector accepts no liability for failure to restore supply within such time frame. For instance, heavy traffic, multiple concurrent outages (due typically to inclement weather conditions) outages on networks not owned by Vector which affect Vector network or outages on remote areas of the network or emergency services preventing access, may mean that Vector is unable to restore supply in this period.

Where restoration takes over three hours Vector will provide the Customer with a written explanation for the extended restoration time frame if requested by the Customer.

**14. Non-standard Agreement for 1 consumer.**

6. Vector's right to interrupt supply

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Points of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property, or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Points of Connection;
- (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that the supply of electricity or any transmission capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose which, in Vector's reasonable opinion, in accordance with Good Industry Practice, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;

- (h) upon instructions from Transpower or any central or local government or statutory authority, or as a result of an action by Transpower under any agreement between Vector and that Transpower; or
- (i) in response to an event of Force Majeure.

## 6.2

Vector acknowledges that the Customer is an essential service provider to the Auckland Region, and as such, where it may be necessary to interrupt the supply of electricity to some customers within its network, Vector will where possible, prior to interrupting supply to the Customer, take into consideration the Customer's status as an essential service provider.

## Schedule 2

### 3.1

Prior to 1 April each year, Vector will consult with the Customer in good faith with a view to agreeing, by 1 April, a programme of proposed maintenance on the Distribution Network for the following 12 months, consistent with Good Industry Practice, if and to the extent which such maintenance will or might reasonably be expected to affect the Customer's operation at the Customer's Premises. Any such maintenance that requires an interruption to the supply of electricity to the Customer in the following 12 months will be clearly identified in this programme. Vector and the Customer will endeavor to agree upon the planned maintenance programme after considering, in good faith, each other's comments. However, if by 1 April each year a maintenance schedule has not been agreed then Vector (acting reasonably) will determine the maintenance programme for the following 12 months.

3.2 Notwithstanding paragraph 3.1 of this Schedule, where Vector plans to undertake maintenance on the Distribution Network that requires an interruption to the supply of electricity to any Point of Connection, Vector will

- (a) notify the Customer in writing to that effect, at least 10 working days prior to the interruption (if possible in the circumstances); and
- (b) use its reasonable endeavors to avoid such interruption occurring at any time other than between the hours of 10pm and 6 am.

## **15. Non-standard Agreement for 1 consumer.**

### 4.3 (d) Response to Unplanned Outages

In the event of an unplanned outage in the New Network Assets VECTOR shall immediately begin work to identify the location of the fault, and continue to do so until the fault is located.

## 5. Maintenance/Outages/Priority of Supply

### Planned Maintenance

5.1 The parties shall in each year of the Term, consult in good faith and use their reasonable endeavors to agree in writing, prior to 1 November of that year, on a schedule of planned maintenance to be carried out on the New Network Assets during the 12 month period following that date (based on a draft schedule to be delivered by VECTOR to [the Customer] by 1 October in the same year). VECTOR shall, in any 12 month period, carry out all maintenance on the New Network Assets in accordance with the current schedule (if any) agreed under this clause the ("Current Planned Maintenance Schedule") to the extent to which it is reasonably able to do so.

### Outages/Faults

5.2 Vector shall, at all times during the Term, ensure that all outages and faults in the New Network Assets are dealt with in the following manner:

### Planned Outages

- (a) All planned outages shall be effected by VECTOR in accordance with the Current Planned Maintenance Schedule (if any) or, if there is no Current Planned Maintenance Schedule or that Schedule does not deal with maintenance involving planned outages, shall be planned and implemented by VECTOR, subject to the consent of [the Customer] (such consent not to be unreasonably withheld). Where VECTOR notifies [the Customer] that a planned outage (being one which is not covered by a Current Planned Maintenance schedule) is reasonably required for essential maintenance in order to protect the New Network Assets or the supply of electricity to the WTP Connection Point and, where such consent is not given by [the Customer] within the time period reasonably required by VECTOR, VECTOR shall not be liable for any breach of clause 5.2(b) if and to the extent to which that breach is a direct result of the withholding by [the Customer] of such a consent. Notwithstanding any contrary provision in any Current Planned Maintenance Schedule, planned maintenance to the New Network Assets shall not be undertaken by VECTOR on no more than one circuit at any time, except where VECTOR has demonstrated, to [the Customer's] reasonable satisfaction, that the maintenance is required and there is no alternative safe method by which that maintenance is reasonably

able to be undertaken. VECTOR shall, in any event, ensure that the maximum period of outage of one 33kV Cable Circuit and its associated 33/11 kV Transformer or one Primary 11kV Cable Circuit (as the result of a planned outage in the New Network Assets) shall be 8 hours in any period of 12 consecutive months. In respect of all planned outages, the parties shall consult and co-operate in order to minimize the duration of such outages.

**16. Non-standard Agreement for 1 consumer.**

Clause 6. Vector's right to interrupt supply

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Point of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property, or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Point of Connection;
- (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that due to circumstances outside its reasonable control, the supply of electricity or any capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose, having regard to Good Industry Practice, which, in Vector's reasonable opinion, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network due to circumstances outside Vector's reasonable control;
- (h) upon instructions from any Transpower or any central or local government or statutory authority, or as a result of an action by any Transpower under any agreement between Vector and that Transpower; or
- (i) in response to an event of Force Majeure.

and, wherever possible, Vector shall use reasonable endeavors to provide the customer with as much advance warning of such interruption as is practicable in the circumstances and shall provide the Customer with an appropriate rebate of the Charges for the interruption of conveyance for the period of the interruption arising under this clause 6.

Schedule 2:2 Where Vector plans to undertake maintenance on the Distribution Network that requires and interruption to the supply of electricity to any Point of Connection, Vector will notify the Customer in writing to that effect, at least 10 days prior to the interruption( if possible in the circumstances).  
Silent on unplanned outages.

**17. Non-standard Agreement for 1 consumer.**

6. Vector's right to interrupt supply

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards and clause 6.2, Vector may interrupt the conveyance of electricity to a Connection Point;

- a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- b) To avoid danger to persons or property or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Connection Point;
- c) To preserve and protect the proper working of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- d) where Vector reasonably anticipates that the supply of electricity or any transmission capacity to any point of connection is or will be reduced, impaired, or interrupted;
- e) for any other purpose which in Vector's reasonable opinion and in accordance with Good Industry Practice requires the interruption or reduction in the conveyance of energy;
- f) if supply of electricity to any Transpower grid exit point is or will be reduced, impaired or interrupted;
- g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the distribution network but only if Vector's selection of [the Customer's] Connection Point for interruption has been fair and reasonable and had had due regard to the nature of [the Customer's] business and the nature of the businesses connected to the alternative connection points;

- h) upon instructions from Transpower or any central or local government or statutory authority or as a result of an action by Transpower under any agreement between Vector and Transpower;
- i) in response to an event of Force Majeure.

6.2 Vector will comply with Good Industry Practice in relation to any interruption under clause 6.1 and will notify [the Customer] of any interruption as soon as reasonably practical.

Schedule 2.4

(a) Prior to 1 April each year, Vector will consult with [the Customer] in good faith with a view to agreeing, by 1 April, a schedule of proposed maintenance on the Distribution network for the following 12 months, addressing Vectors maintenance requirements on the Distribution Network consistent with Good Industry Practice and taking into account [the Customer's] operation at the Connection Address. Any maintenance that requires an interruption to the supply of electricity to [the Customer's] Connection Point 1, 2, 3 or 4 in the following 12 months will be clearly identified in this schedule. Vector and [the Customer] will endeavor to agree upon a planned maintenance schedule after considering in good faith each other's comments. However, if by 1 April each year a maintenance schedule has not been agreed then Vector will determine the maintenance schedule for the next 12 months.

(b) Notwithstanding clause 4(a) above, where Vector plans to do maintenance on the Distribution Network that requires an interruption to the supply of electricity to [the Customer] it will notify [the Customer] that the Connection Point will be affected 10 working days prior to interruption.

**18. Non-standard Agreement for 1 consumer.**

Clause 6: VECTOR'S RIGHT TO INTERRUPT SUPPLY

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Point of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property, or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Point of Connection;
- (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that due to circumstances outside its reasonable control, the supply of electricity or any capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose, which, in Vector's reasonable opinion, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;
- (h) upon instructions from any Transmission Service Provider or any central or local government or statutory authority, or as a result of an action by any Transmission Service Provider under any agreement between Vector and that Transmission Service Provider; or
- (i) in response to an event of Force Majeure.

and, wherever possible, Vector shall use reasonable endeavors to provide the customer with as much advance warning of such interruption as is practicable in the circumstances. Where such prior notice is not possible, Vector will notify the Customer of such interruption as soon as practicable after the interruption has commenced.

SCHEDULE 1.5(i):

Planned Maintenance:

Where Vector plan to undertake planned maintenance on the Distribution Network that requires an interruption to the supply of electricity to any Point of Connection, Vector will notify the customer either directly, or via the Customer's Retailer in writing to that effect, so that the Customer will receive 10 working days' notice prior to the interruption. Vector shall have no liability to the Customer in relation to a failure to give such a notice.

Restoration Times:

In the event of an unexpected interruption to the supply of electricity Vector plans its resources in order to restore supply to most customers within 3 hours; however events outside Vectors control may influence this timeframe and Vector accepts no liability for failure to restore supply within such time frame. For instance, heavy traffic, multiple concurrent outages

due, typically to inclement weather conditions, outages on networks not owned by Vector, which affect Vector network, or outages on remote areas of the network or emergency services preventing access.

Where restoration takes over 3 hours Vector will provide the customer with a written explanation for the extended restoration time frame if requested in writing by the customer.

**19. Non-standard Agreement for 1 consumer.**

Clause 6:

**VECTOR'S RIGHT TO INTERRUPT SUPPLY**

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Point of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property, or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Point of Connection;
- (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;
- (d) where Vector reasonably anticipates that due to circumstances outside its reasonable control, the supply of electricity or any capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose, which, in Vector's reasonable opinion, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;
- (h) upon instructions from any Transmission Service Provider or any central or local government or statutory authority, or as a result of an action by any Transmission Service Provider under any agreement between Vector and that Transmission Service Provider; or
- (i) in response to an event of Force Majeure,

and, wherever possible, Vector shall use reasonable endeavor's to provide the customer with as much advance warning of such interruption as is practicable in the circumstances.

Where such prior notice is not possible, Vector will notify the Customer of such interruption as soon as practicable after the interruption has commenced.

Schedule 1

Section 5

**Planned Maintenance:** Where Vector plan to undertake maintenance on the Distribution Network that requires an interruption to the supply of electricity to any Point of Connection, Vector will notify the customer either directly or via the Customer's Retailer in writing to that effect, so that the Customer will receive 10 working days' notice prior to the interruption. Vector shall have no liability to the Customer in relation to failure to give such a notice.

**Restoration Times:** In the event of an unexpected interruption to the supply of electricity Vector plans its resources in order to restore supply to most customers within 3 hours; however events outside Vector's control may influence this timeframe and Vector accepts no liability for failure to restore supply within such time frame. For instance, heavy traffic, multiple concurrent outages (due typically to inclement weather conditions) outages on networks not owned by Vector, which affect Vector network, or outages on remote areas of the network or emergency services preventing access, may mean that Vector is unable to restore supply in this period.

Where restoration takes over 3 hours Vector will provide the customer with a written explanation for the extended restoration time frame if requested in writing by the customer.

**20. Non-standard Agreement for 1 consumer.**

Clause 6. VECTOR'S RIGHT TO INTERRUPT SUPPLY

6.1 Notwithstanding clause 3.1, but subject to the Performance Standards, Vector may interrupt the conveyance of electricity to the Point of Connection:

- (a) to enable Vector to inspect or effect alterations, maintenance, repairs or additions to any part of the Distribution Network;
- (b) to avoid danger to persons or property, or to avoid interference with the regularity or efficiency of the conveyance of electricity to the Point of Connection;
- (c) to preserve and protect the proper working and safety of the Distribution Network or any other distribution network through which electricity is supplied to the Distribution Network;

- (d) where Vector reasonably anticipates that due to circumstances outside its reasonable control, the supply of electricity or any capacity to any Point of Connection is or will be reduced, impaired or interrupted;
- (e) for any other purpose, which, in Vector's reasonable opinion, requires the interruption or reduction in the conveyance of electricity;
- (f) if supply of electricity to the Grid Exit Point is, or will be, reduced, impaired or interrupted;
- (g) to allocate electricity where there is insufficient electricity to fully satisfy the demands of all customers whose premises are connected to the Distribution Network;
- (h) upon instructions from any Transmission Service Provider or any central or local government or statutory authority, or as a result of an action by any Transmission Service Provider under any agreement between Vector and that Transmission Service Provider; or
- (i) in response to an event of Force Majeure.

and, wherever possible, Vector shall use reasonable endeavor's to provide the customer with as much advance warning of such interruption as is practicable in the circumstances. Where such prior notice is not possible, Vector will notify the Customer of such interruption as soon as practicable after the interruption has commenced.

#### SCHEDULE 1.5(i)

**Planned Maintenance:** Where Vector plan to undertake maintenance on the Distribution Network that requires an interruption to the supply of electricity to any Point of Connection, Vector will notify the customer either directly or via the Customer's Retailer in writing to that effect, so that the Customer will receive 10 working days' notice prior to the interruption.

**Restoration Times:** In the event of an unexpected interruption to the supply of electricity Vector plans its resources in order to restore supply to most customers within 3 hours; however events outside Vectors control may influence this timeframe and Vector accepts no liability for failure to restore supply within such time frame. For instance, heavy traffic, multiple concurrent outages due, typically to inclement weather conditions, outages on networks not owned by Vector which affect Vector network or outages on remote areas of the network or emergency services preventing access. Where restoration takes over 3 hours Vector will provide the customer with a written explanation for the extended restoration time if requested in writing by the customer.



## Schedule 17 Certification for Year-beginning Disclosures

Clause 2.9.1 of section 2.9

We, Hugh Fletcher 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 Electricity 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 measured on a basis consistent with regulatory requirements or recognised industry standards.



\_\_\_\_\_  
Director



\_\_\_\_\_  
Director

19 February 2015

\_\_\_\_\_  
Date