Electricity Distribution Services Default Price-Quality Path Determination 2015

Annual Compliance Statement

31 May 2017

Assessment as at 31 March 2017

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1. INTRODUCTION

1.1. Background

1.1.1. This Annual Compliance Statement ("the Statement") is submitted by Vector Limited ("Vector") pursuant to clause 11 of the Electricity Distribution Services Default Price-Quality Path Determination 2015 ("the Determination").

1.1.2. The Determination is issued pursuant to Part 4 of the Commerce Act 1986 and requires a non-exempt supplier of lines services ("EDB") to provide information to the Commerce Commission ("the Commission") relevant to the assessment of their performance against the price path and quality standards.

1.1.3. Under clause 8 of the Determination an EDB's notional revenue must not exceed the allowable notional revenue during the current Assessment Period.

1.1.4. Under clause 9 of the Determination an EDB's assessed reliability values either must not exceed the reliability limits for the current Assessment Period or must not have exceeded the reliability limit for either of the two immediately preceding Assessment Periods.

1.1.5. The Statement has been approved for issue on 15 June 2017. In the Statement, references to Vector relate only to Vector's electricity distribution business.

1.2. Statement of compliance

1.2.1. As required by clause 11.2(a) of the Determination, this Statement confirms Vector's compliance with the price path in clause 8 and sets out Vector's non-compliance with the quality standards in clause 9 in respect of the Assessment Period ending on 31 March 2017.

1.2.2. As required by clause 11.2(d)(i) of the Determination, this statement confirms that Vector has undertaken a Restructure of Prices during the Assessment Period (detail provided in Section 2.4).

1.2.3. As required by clause 11.2(d)(ii) of the Determination, this statement confirms that no System Fixed Assets were transferred from Transpower to Vector, or from Vector to Transpower, during this Assessment Period.

1.2.4. As required by clause 11.2(d)(iii) – (iv) of the Determination, this statement confirms that no Amalgamation or Merger has occurred in the Assessment Period and no Major Transaction has occurred in the Assessment Period.

1.3. Disclaimer

1.3.1. The information contained in this Statement has been prepared for the express purpose of complying with the requirements of clause 11 of the Determination. This statement has not been prepared for any other purpose. Vector expressly disclaims any liability to any other party who may rely on this statement for any other purpose.

1.3.2. For presentation purposes some numbers in this document have been rounded. In most cases calculations are based on more detailed numbers. This may cause small discrepancies or rounding inconsistencies when aggregating some of the information presented in this document. These discrepancies do not affect the overall compliance calculations which are based on the more detailed information.

2. PRICE PATH

2.1. Introduction

2.1.1. In this section Vector demonstrates that it has complied with the price path requirements (clause 8) of the Determination.

2.2. Price path (clause 8 of the Determination)

2.2.1. As required by clause 8 of the Determination, in order to demonstrate compliance with the price path, an EDB must demonstrate that their notional revenue during the Assessment Period has not exceeded the allowable notional revenue for the Assessment Period. The current Assessment Period is the second Assessment Period of the Determination and covers the 12 months to 31 March 2017.

2.2.2. As outlined in the calculation below, Vector complies with the price path:

$$NR_{2017} \leq ANR_{2017}$$

$$\$390,289,082 \leq \$390,550,831$$

2.2.3. Notional revenue for the 2017 Assessment Period:

$$NR_{2017} = \sum DP_{i,2017}Q_{i,2015}$$

$$NR_{2017} = \$390,289,082$$

Details of $\sum DP_{i,2017}Q_{i,2015}$ are included in Appendix 2.

2.2.4. The calculation of allowable notional revenue for the 2017 Assessment Period is set out in Schedule 3B of the Determination:

$$ANR_{2017} = (\sum DP_{i,2016}Q_{i,2015} + (ANR_{2016} - NR_{2016}))(1+ \Delta CPI_{2017})(1 - X)$$

$$ANR_{2017} = (\$388,688,984 + (\$387,229,352 - \$387,159,023)) \times (1 + 0.00461) \times (1 - 0)$$

$$ANR_{2017} = \$390,550,831$$

X is set out in Schedule 2 of the Determination.

Details of $\sum DP_{i,2016}Q_{i,2015}$ are included in Appendix 5.

2.2.5. The Pass-through Balance for the 2017 Assessment Period is:

$$PTB_{2017} = \sum PTP_{i,2017}Q_{i,2017} - K_{2017} - V_{2017} + PTB_{2016}\,(1 + r)$$

$$PTB_{2017} = \$220,963,372 - \$11,929,645 - \$210,988,003 + \$4,418,078 \times (1 + 0.0609)$$

$$PTB_{2017} = \$2,732,862$$

Details of $\sum PTP_{i,2017}Q_{i,2017}$ are included in Appendix 3.

Details of K_{2017} and V_{2017} are included in Section 2.5.

Details of PTB_{2016} are included in Section 2.2.6.

2.2.6. As required under clause 8.6(a), the Pass-through Balance for the 2016 Assessment Period has been recalculated for additional information available at the end of the 2017 Assessment Period, being quantity data, $Q_{i,2016}$. The Pass-through Balance for the 2016 Assessment Period is:

$$PTB_{2016} = \sum PTP_{i,2016}Q_{i,2016} - K_{2016} - V_{2016} + PTB_{2015}\,(1 + r)$$

$$PTB_{2016} = \$224,852,866 - \$11,453,240 - \$208,981,548 + 0$$

$$PTB_{2016} = \$4,418,078$$

Details of $\sum PTP_{i,2016}Q_{i,2016}$ are included in Appendix 4.

2.3. Distribution and Pass-through Prices

2.3.1. Interested parties may refer to Vector's Pricing Methodology where we have set out in detail our methodology used to calculate Distribution Prices and Pass-through Prices[1]. This is set out in Appendix 8.

2.3.2. For each Pass-through Price, all of the price is attributable to Pass-through Costs and Recoverable Costs for the 2017 Assessment Period. No portion is attributable to under- or over-recovery from a prior Assessment Period.

2.3.3. Distribution Prices and Pass-through Prices are set out in Appendix 1.

[1] https://vectorwebstoreprd.blob.core.windows.net/blob/vector/media/vector/160225-pricing-methodology-disclosure-2016-certified_1.pdf, section 8.

2.4. Restructure of Prices

2.4.1. Vector undertook a Restructure of Prices during the 2017 Assessment Period:

- Vector separated out price categories ARGL, ARGS, WRGS and WRGL from price categories ARUL, ARUS, WRUL and WRUS respectively. Each of these four new price categories contain a FIXD component representing a fixed charge, and a 24UC component representing a volume price.

- Vector limited the eligibility of non-time of use price categories ALVN, WLVN, ATXN, and WTXN to connections with installed capacity less than or equal to 345 kVA.

2.4.2. Vector adopted the following approach in determining the quantities corresponding to the Restructure of Prices:

- Each distribution price component of the ARGL, ARGS, WRGL, and WRGS price categories is the same value as its existing, corresponding price category ARUL, ARUS, WRUL and WRUS. Vector has elected not to derive a Quantity for the new price categories as doing so would only be arbitrary with no effect on notional revenue calculations in this or future Assessment Periods.

- Vector identified those connections on non-time of use price categories ALVN, WLVN, ATXN, WTXN with a capacity of more than 345 kVA and reassigned the quantities associated with these connections to the corresponding price components of the time of use equivalent price categories, ALVT, WLVH, ATXT and WTXH[2].

2.4.3. Vector undertook a Restructure of Prices during the 2016 Assessment Period:

- For the AHVN and WHVN price categories, Vector introduced an additional eligibility criterion limiting these categories to connections with installed capacity less than or equal to 345 kVA.

- For the ALVT, ATXT and AHVT price categories, Vector combined the four seasonal volume prices (SMDY, SMNT, WNDY, WNNT) into a single volume price (24UC).

- For the ARHL, ARHS, WRHL and WRHS price categories, Vector moved from a peak—shoulder—off-peak structure to a peak—off-peak structure by removing the

[2] In the case of the DAMD price component of the time of use price categories, for which there was no equivalent non-time of use price component, quantities were derived by multiplying the CAPY quantity of reassigned connections by the ratio of the total DAMD quantity to total CAPY quantity of each corresponding time of use price category.

SHLD volume price and adjusting the time periods during which the PEAK and OFPK volume prices applied.

2.4.4. Vector did not derive Quantities under clause 8.10 for the following Restructure of Prices:

- No connections were impacted by the Restructure of the WHVN price category.

2.4.5. For the ALVT, ATXT and AHVT price categories, Vector allocated all Quantities from the four seasonal volume prices (SMDY, SMNT, WNDY, WNNT) to the new volume price (24UC).

- There were no connections on the ARHL, ARHS, WRHL or WRHS price categories at the time of the Restructure and therefore no Quantities to allocate.

2.4.6. Vector did derive Quantities for the AHVN price category:

- Vector identified a connection on non-time of use price category AHVN with a capacity of more than 345 kVA and reassigned the quantities associated with that connection to the corresponding price components of the time of use equivalent price category, AHVT.

2.5. Pass-through and recoverable costs

2.5.1. The table below sets out the forecast pass-through and recoverable costs used to set prices ($K_{2017,\ forecast}$ and $V_{2017,\ forecast}$) and actual pass-through and recoverable costs (K_{2017} and V_{2017}) used in the calculation of the Pass-through Balance for the 2017 Assessment Period.

2.5.2. Table 2.1 Summary of $K_{2017,\ forecast}$, K_{2017}, $V_{2017,\ forecast}$ and V_{2017} for the 2017 Assessment Period

$	K_{2017}	$K_{2017,\ forecast}$	Difference
Local Authority Rates	8,859,800	8,941,897	(82,097)
Electricity Authority Levies	1,615,562	1,571,244	44,318
EGCC Levy (fixed)	277,686	241,018	36,668
EGCC Levy (variable)	52,000	26,087	25,913
Commerce Act Levy	1,124,597	1,169,402	(44,805)
Grand total (K)	**11,929,645**	**11,949,647**	**(20,002)**

$	V_{2017}	$V_{2017,\ forecast}$	Difference
Transmission costs	213,312,326	213,266,171	46,156
CAPEX wash-up	(2,324,323)	(2,324,323)	-
Grand total (V)	**210,988,003**	**210,941,847**	**46,156**

2.5.3. Variances between pass-through and recoverable costs used to set prices and the same costs measured at the end of the Assessment Period arise due to the need to forecast these costs ex-ante, with the actual costs being determined ex-post. None of the costs are fully fixed and variances will naturally occur. The net impact of these differences is negligible.

2.5.4. Movements in the Pass-through Balance from the prior Assessment Period and the current Assessment Period are driven by two key factors:

- The difference between the revenue from Pass-through Prices and Pass-through and Recoverable Costs in the current Assessment Period; and
- The cost of carry of the Pass-through Balance from the preceding Assessment Period and the current Assessment Period.

2.5.5. A reconciliation between the Pass-through Balance for the current Assessment Period and the preceding Assessment Period is shown below:

Pass-through Balance, 2016 @ May-16	PTB_{2016}	$4,678,659
Pass-through Price revenue, 2016 updated quantities	$\sum PTP_{i,2016} \Delta Q_{i,2016}$	$(260,581)
Pass-through Balance, 2016 @ May-17	PTB_{2016}	$4,418,078
Pass-through Price revenue, 2017	$\sum PTP_{i,2017} Q_{i,2017}$	$220,963,372
Pass-through and Recoverable Costs, 2017	$K_{2017} + V_{2017}$	$(222,917,648)
Cost of carry, 2016-2017	$(1 + r)$	$269,061
Pass-through Balance, 2017	PTB_{2017}	$2,732,862

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2.6. New investment contracts

2.6.1. As required under clause 11.4(h) of the Determination, the amount of charge during the 2017 Assessment Period relating to any new investment contract entered into the 2017 Assessment Period is zero.

3. QUALITY STANDARDS

3.1. Introduction

3.1.1. In this section Vector demonstrates that it has not complied with the quality standards detailed in clause 9 of the Determination. Vector has provided information to illustrate the statement of non-compliance including: SAIDI and SAIFI Assessed Values, Limits, Unplanned Boundary Values, Caps, Collars, Targets for the Assessment Period, supporting calculations and the annual reliability assessments for the six previous Assessment Periods. Furthermore, Vector has included reasons for not complying with the annual reliability assessment and documented actions taken to mitigate and prevent non-compliance in future Assessment Periods. Finally, Vector has provided a description of the policies and procedures for recording SAIDI and SAIFI statistics and documented the cause of each Major Event Day within the Assessment Period.

3.2. Quality standards (clause 9 of the Determination)

3.2.1. As required by clause 9 of the Determination, in order to demonstrate compliance with the quality standards (per clause 9.1) in respect of each Assessment Period, EDB's must either:

3.2.2. Comply with the annual reliability assessment specified in clause 9.2 for that Assessment Period; or

3.2.3. Have complied with those annual reliability assessments for the two immediately preceding Assessment Periods.

3.2.4. Vector does not comply with either of the quality standards in clause 9.1. As outlined in the calculations below, Vector has exceeded the annual reliability assessment requirement for SAIDI and SAIFI specified in clause 9.2(a) of the Determination for the 2017 Assessment Period. Vector also exceeded the annual reliability assessment requirement for SAIDI for the three previous Assessment Periods.

3.3. Assessed Values

3.3.1. SAIDI and SAIFI values were calculated for the 2017 Assessment Period, incorporating Class B and Class C interruption types (planned interruptions and

unplanned interruptions originating within the system fixed assets) per connection point served during the period. Average connection point numbers for the year were used in the calculation.

3.3.2. Results of this Assessment Period and previous Assessment Periods (normalised) are summarised in Table 3.1. An explanation of the reasons for exceeding the SAIDI and SAIFI Limit for the 2017 Assessment Period is provided in Appendix 6.

Table 3.1 Results of this Assessment Period and previous Assessment Periods

Period	$SAIDI_{assess}$	$SAIDI_{limit}$	SAIDI Outcome	$SAIFI_{assess}$	$SAIFI_{limit}$	SAIFI Outcome
2011	114	127	Not Exceeded	1.24	1.86	Not Exceeded
2012	95.7	127	Not Exceeded	1.12	1.86	Not Exceeded
2013	95.8	127	Not Exceeded	1.01	1.86	Not Exceeded
2014	141	127	Exceeded	1.45	1.86	Not Exceeded
2015	155	127	Exceeded	1.84	1.86	Not Exceeded
2016[3]	117	104	Exceeded	1.11	1.40	Not Exceeded
2017	174	104	Exceeded	1.85	1.40	Exceeded

3.3.3. Calculation of the SAIDI and SAIFI Assessed Values is as per that described in Schedule 4A of the Determination.

3.3.4. The SAIDI Assessed Value ($SAIDI_{assess}$) for the Assessment Period is calculated in accordance with the formula –

$$SAIDI_{assess} = (0.5 \times SAIDI_B) + SAIDI_C$$

Where –

$SAIDI_B$ is the sum of the daily SAIDI Values for Class B Interruptions commencing within the Assessment Period; and

$SAIDI_C$ is the sum of the daily SAIDI Values for Class C Interruptions commencing within the Assessment Period, where any daily SAIDI Value for Class C Interruptions greater than the SAIDI Unplanned Boundary Value equals the SAIDI Unplanned Boundary Value

[3] Start of the new Electricity Distribution Services Default Price-Quality Path Determination

Table 3.2 SAIDI Assessed Value Calculation for the Assessment Period

Quality Metric	Formula	RY2017 Total
Planned SAIDI	$(0.5 \times SAIDI_B)$	36
Unplanned SAIDI	$SAIDI_C$	138
SAIDI Assessed Value	$SAIDI_{assess} = (0.5 \times SAIDI_B) + SAIDI_C$	174

3.3.5. The SAIFI Assessed Value ($SAIFI_{assess}$) for the Assessment Period is calculated in accordance with the formula –

$SAIFI_{assess} = (0.5 \times SAIFI_B) + SAIFI_C$

Where –

$SAIFI_B$ is the sum of the daily SAIFI Values for Class B Interruptions commencing within the Assessment Period; and

$SAIFI_C$ is the sum of the daily SAIFI Values for Class C Interruptions commencing within the Assessment Period, where any daily SAIFI Value for Class C Interruptions greater than the SAIDI Unplanned Boundary Value equals the SAIFI Unplanned Boundary Value

Table 3.3 SAIFI Assessed Value Calculation for the Assessment Period

Quality Metric	Formula	RY2017 Total
Planned SAIFI	$(0.5 \times SAIFI_B)$	0.18
Unplanned SAIFI	$SAIFI_C$	1.67
SAIFI Assessed Value	$SAIFI_{assess} = (0.5 \times SAIFI_B) + SAIFI_C$	1.85

3.3.6. The SAIDI Limits, SAIFI Limits, SAIDI Unplanned Boundary Values and SAIFI Unplanned Boundary Values, for Vector for the Regulatory Period 1 April 2015 to 31 March 2020, as set out in Table 4A.1 in the Determination, are as follows:

3.3.7. Table 3.4 Reliability Limits and Boundary Values

Non-exempt EDB	SAIDI Limit	SAIDI Unplanned Boundary Value	SAIFI Limit	SAIFI Unplanned Boundary Value
Vector	104.173	3.374	1.395	0.039

3.3.8. The SAIDI Target, SAIDI Collar, and SAIDI Cap for Vector during the Regulatory Period 1 April 2015 to 31 March 2020, as set out in Table 5B.1 in the Determination, are as follows:

Table 3.5 SAIDI Limits

Non-exempt EDB	SAIDI Target	SAIDI Collar	SAIDI Cap
Vector	96.0364	87.8999	104.1728

3.3.9. The SAIFI Target, SAIFI Collar, and SAIFI Cap for Vector during the Regulatory Period 1 April 2015 to 31 March 2020, as set out in Table 5B.2 in the Determination, are as follows:

Table 3.6 SAIFI Limits

Non-exempt EDB	SAIFI Target	SAIFI Collar	SAIFI Cap
Vector	1.2914	1.1874	1.3954

3.4. Major Event Days within the Assessment Period

3.4.1. Within the 2017 Assessment Period Vector experienced five Major Event Days. The results of these days are summarised in Table 3.7 with the SAIDIC and SAIFIC values highlighted where the SAIDI / SAIFI Unplanned Boundary Value is used in the SAIDI / SAIFI Assessed Values calculation. The cause of each Major Event Day is provided in Appendix 6.

3.4.2. Table 3.7 Major Event Days within the Assessment Period Contributing to the SAIDI / SAIFI Assessed Values

Date	$SAIDI_C$	SAIDI Unplanned Boundary Value	$SAIFI_C$	SAIFI Unplanned Boundary Value
6 May 2016	2.124	3.374	0.077	0.039
26 August 2016	5.787	3.374	0.040	0.039
21 January 2017	31.270	3.374	0.071	0.039
22 January 2017	11.647	3.374	0.032	0.039
8 March 2017	3.606	3.374	0.019	0.039

3.5. Policies and procedures for recording SAIDI and SAIFI

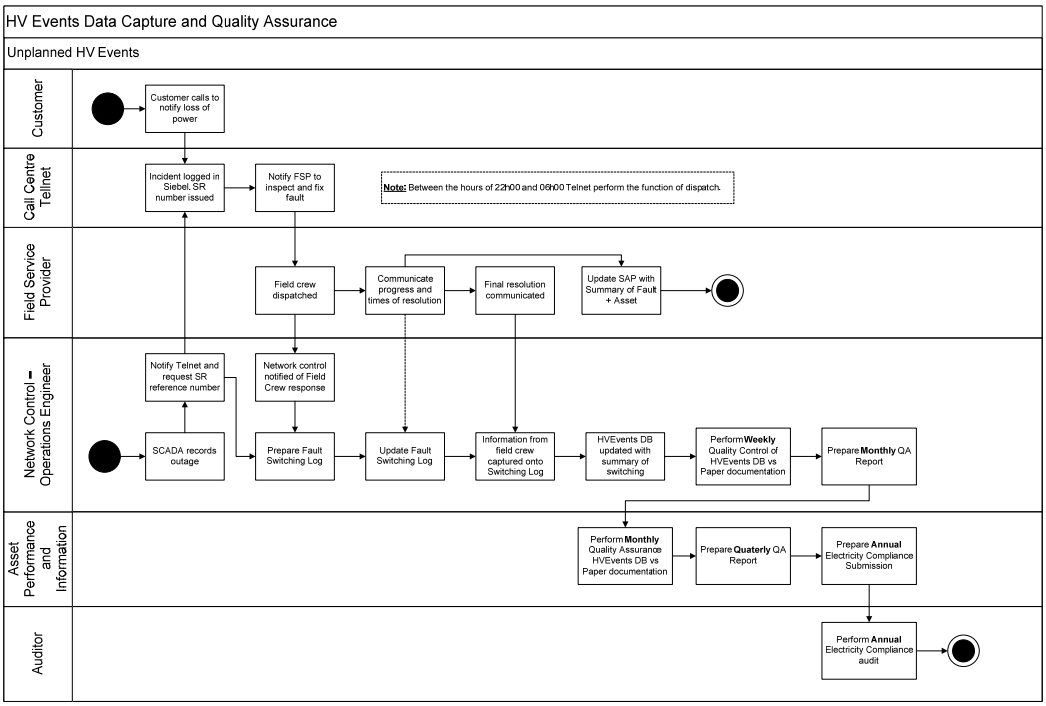
3.5.1. Vector's Electricity Operations Centre (EOC) is responsible for managing the electricity network. Resolution of planned and unplanned events is under direction of the duty Electricity Operations Controller. The EOC also manages the network in accordance with Vector's standard ENG-0051 'Electricity network guidelines: HV Events data capture and quality assurance'. This standard defines the end-to-end process for capturing and reporting reliability performance data.

3.5.2. The majority of medium voltage and high voltage interruptions are monitored and controlled in real-time by the EOC through Vector's SCADA system. Where equipment is involved that is not SCADA enabled, it is operated by Vector's service providers, with communication to the EOC by radio. All planned and unplanned records are captured by the network control engineer both in hard copy (electricity fault switching log) and electronically (the HVSPEC database described below). All interruptions are also logged and tracked separately in Vector's Customer Management System by Vector's customer services team.

3.5.3. Vector maintains a bespoke system for recording interruptions, HVSPEC. HVSPEC holds a replica of Vector's high voltage and medium voltage network structure, including customer numbers. The EOC controllers record details of all network interruptions, in accordance with the standard ENG-0051. For each interruption, the event type, location, duration and number of customers affected is identified. HVSPEC is also used to prioritise network reconfiguration and restoration after an

event. The figure below illustrates the HVSPEC data capture process and the quality assurance carried out on outage information.

Figure 3.1 HVSPEC Data Capture Process



3.5.4. SAIDI and SAIFI are calculated in HVSPEC for each interruption, and the data retained in a database for reporting and analysis.

3.5.5. At the end of each year the period's average network customer base is calculated using the Gentrack billing and revenue system (averaging customers at the start and end of the year). The following reliability metrics are extracted from the HVSPEC database for disclosure reporting:

- Interruption frequency and duration by class;
- Interruption frequency and duration by cause;
- Interruption frequency and duration by main equipment involved; and
- SAIDI/SAIFI/CAIDI (calculated using average customer count).

APPENDIX 1: DETAILS OF $DP_{I,2017}$ AND $PTP_{I,2017}$

Northern published prices

Residential

Price category	Code	Description	Units	$DP_{I,2017}$	$PTP_{I,2017}$	Price
WRCL	WRCL-FIXD	Fixed	$/day	0.1500	-	0.1500
WRCL	WRCL-AICO	Variable, controlled	$/kWh	0.0638	0.0300	0.0938
WRUL	WRUL-FIXD	Fixed	$/day	0.1500	-	0.1500
WRUL	WRUL-24UC	Variable, uncontrolled	$/kWh	0.0638	0.0380	0.1018
WRCS	WRCS-FIXD	Fixed	$/day	0.9900	-	0.9900
WRCS	WRCS-AICO	Variable, controlled	$/kWh	0.0255	0.0300	0.0555
WRUS	WRUS-FIXD	Fixed	$/day	0.9900	-	0.9900
WRUS	WRUS-24UC	Variable, uncontrolled	$/kWh	0.0255	0.0380	0.0635
WRHL	WRHL-FIXD	Fixed	$/day	0.1500	-	0.1500
WRHL	WRHL-OFPK	Variable, off peak	$/kWh	0.0638	-	0.0638
WRHL	WRHL-PEAK	Variable, peak	$/kWh	0.0638	0.1000	0.1638
WRHS	WRHS-FIXD	Fixed	$/day	0.9900	-	0.9900
WRHS	WRHS-OFPK	Variable, off peak	$/kWh	0.0255	-	0.0255
WRHS	WRHS-PEAK	Variable, peak	$/kWh	0.0255	0.1000	0.1255
WRGL	WRGL-FIXD	Fixed	$/day	0.1500	-	0.1500
WRGL	WRGL-24UC	Variable, uncontrolled	$/kWh	0.0638	0.0300	0.0938
WRGS	WRGS-FIXD	Fixed	$/day	0.9900	-	0.9900
WRGS	WRGS-24UC	Variable, uncontrolled	$/kWh	0.0255	0.0300	0.0555

General

Price category	Code	Description	Units	$DP_{I,2017}$	$PTP_{I,2017}$	Price
WBSU	WBSU-FIXD	Fixed	$/day/fitting	0.1500	-	0.1500
WBSU	WBSU-24UC	Variable	$/kWh	0.0320	0.0380	0.0700
WBSN	WBSN-FIXD	Fixed	$/day	0.9900	-	0.9900
WBSN	WBSN-24UC	Variable	$/kWh	0.0255	0.0380	0.0635
WBSH	WBSH-FIXD	Fixed	$/day	0.9900	-	0.9900
WBSH	WBSH-OFPK	Variable, off peak	$/kWh	0.0255	-	0.0255
WBSH	WBSH-PEAK	Variable, peak	$/kWh	0.0255	0.1000	0.1255

Low voltage

Price category	Code	Description	Units	$DP_{I,2017}$	$PTP_{I,2017}$	Price
WLVN	WLVN-FIXD	Fixed	$/day	5.5000	-	5.5000
WLVN	WLVN-24UC	Variable	$/kWh	0.0237	0.0204	0.0441
WLVN	WLVN-CAPY	Capacity	$/kVA/day	0.0298	-	0.0298
WLVN	WLVN-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917
WLVH	WLVH-FIXD	Fixed	$/day	10.3800	-	10.3800
WLVH	WLVH-24UC	Variable	$/kWh	0.0057	-	0.0057
WLVH	WLVH-CAPY	Capacity	$/kVA/day	0.0298	-	0.0298
WLVH	WLVH-DAMD	Demand	$/kVA/day	0.0339	0.2480	0.2819
WLVH	WLVH-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917

Transformer

Price category	Code	Description	Units	$DP_{I,2017}$	$PTP_{I,2017}$	Price
WTXN	WTXN-FIXD	Fixed	$/day	4.9500	-	4.9500
WTXN	WTXN-24UC	Variable	$/kWh	0.0193	0.0204	0.0397
WTXN	WTXN-CAPY	Capacity	$/kVA/day	0.0292	-	0.0292
WTXN	WTXN-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917
WTXH	WTXH-FIXD	Fixed	$/day	9.3400	-	9.3400
WTXH	WTXH-24UC	Variable	$/kWh	0.0056	-	0.0056
WTXH	WTXH-CAPY	Capacity	$/kVA/day	0.0292	-	0.0292
WTXH	WTXH-DAMD	Demand	$/kVA/day	0.0283	0.2480	0.2763
WTXH	WTXH-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917

High voltage

Price category	Code	Description	Units	$DP_{I,2017}$	$PTP_{I,2017}$	Price
WHVN	WHVN-FIXD	Fixed	$/day	4.8000	-	4.8000
WHVN	WHVN-24UC	Variable	$/kWh	0.0181	0.0204	0.0385
WHVN	WHVN-CAPY	Capacity	$/kVA/day	0.0283	-	0.0283
WHVN	WHVN-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917
WHVH	WHVH-FIXD	Fixed	$/day	9.0600	-	9.0600
WHVH	WHVH-24UC	Variable	$/kWh	0.0054	-	0.0054
WHVH	WHVH-CAPY	Capacity	$/kVA/day	0.0283	-	0.0283
WHVH	WHVH-DAMD	Demand	$/kVA/day	0.0200	0.2480	0.2680
WHVH	WHVH-DEXA	Excess demand	$/kVA/day	0.6226	-	0.6226
WHVH	WHVH-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917

Auckland published prices

Residential

Price category	Code	Description	Units	$DP_{i,2017}$	$PTP_{i,2017}$	*Price*
ARCL	ARCL-FIXD	Fixed	$/day	0.1500	-	0.1500
ARCL	ARCL-AICO	Variable, controlled	$/kWh	0.0638	0.0300	0.0938
ARUL	ARUL-FIXD	Fixed	$/day	0.1500	-	0.1500
ARUL	ARUL-24UC	Variable, uncontrolled	$/kWh	0.0638	0.0380	0.1018
ARCS	ARCS-FIXD	Fixed	$/day	0.9900	-	0.9900
ARCS	ARCS-AICO	Variable, controlled	$/kWh	0.0255	0.0300	0.0555
ARUS	ARUS-FIXD	Fixed	$/day	0.9900	-	0.9900
ARUS	ARUS-24UC	Variable, uncontrolled	$/kWh	0.0255	0.0380	0.0635
ARHL	ARHL-FIXD	Fixed	$/day	0.1500	-	0.1500
ARHL	ARHL-OFPK	Variable, off peak	$/kWh	0.0638	-	0.0638
ARHL	ARHL-PEAK	Variable, peak	$/kWh	0.0638	0.1000	0.1638
ARHS	ARHS-FIXD	Fixed	$/day	0.9900	-	0.9900
ARHS	ARHS-OFPK	Variable, off peak	$/kWh	0.0255	-	0.0255
ARHS	ARHS-PEAK	Variable, peak	$/kWh	0.0255	0.1000	0.1255
ARGL	ARGL-FIXD	Fixed	$/day	0.1500	-	0.1500
ARGL	ARGL-24UC	Variable, uncontrolled	$/kWh	0.0638	0.0300	0.0938
ARGS	ARGS-FIXD	Fixed	$/day	0.9900	-	0.9900
ARGS	ARGS-24UC	Variable, uncontrolled	$/kWh	0.0255	0.0300	0.0555

General

Price category	Code	Description	Units	$DP_{i,2017}$	$PTP_{i,2017}$	*Price*
ABSU	ABSU-FIXD	Fixed	$/day/fitting	0.1500	-	0.1500
ABSU	ABSU-24UC	Variable	$/kWh	0.0320	0.0380	0.0700
ABSN	ABSN-FIXD	Fixed	$/day	0.9900	-	0.9900
ABSN	ABSN-24UC	Variable	$/kWh	0.0255	0.0380	0.0635
ABSH	ABSH-FIXD	Fixed	$/day	0.9900	-	0.9900
ABSH	ABSH-OFPK	Variable, off peak	$/kWh	0.0255	-	0.0255
ABSH	ABSH-PEAK	Variable, peak	$/kWh	0.0255	0.1000	0.1255

Low voltage

Price category	Code	Description	Units	$DP_{i,2017}$	$PTP_{i,2017}$	*Price*
ALVN	ALVN-FIXD	Fixed	$/day	1.5800	-	1.5800
ALVN	ALVN-24UC	Variable	$/kWh	0.0429	0.0204	0.0633
ALVN	ALVN-CAPY	Capacity	$/kVA/day	0.0370	-	0.0370
ALVN	ALVN-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917
ALVT	ALVT-24UC	Variable	$/kWh	0.0166	-	0.0166
ALVT	ALVT-CAPY	Capacity	$/kVA/day	0.0370	-	0.0370
ALVT	ALVT-DAMD	Demand	$/kVA/day	0.0590	0.2480	0.3070
ALVT	ALVT-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917

Transformer

Price category	Code	Description	Units	$DP_{i,2017}$	$PTP_{i,2017}$	*Price*
ATXN	ATXN-FIXD	Fixed	$/day	1.5300	-	1.5300
ATXN	ATXN-24UC	Variable	$/kWh	0.0416	0.0204	0.0620
ATXN	ATXN-CAPY	Capacity	$/kVA/day	0.0362	-	0.0362
ATXN	ATXN-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917
ATXT	ATXT-24UC	Variable	$/kWh	0.0163	-	0.0163
ATXT	ATXT-CAPY	Capacity	$/kVA/day	0.0362	-	0.0362
ATXT	ATXT-DAMD	Demand	$/kVA/day	0.0528	0.2480	0.3008
ATXT	ATXT-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917

High voltage

Price category	Code	Description	Units	$DP_{i,2017}$	$PTP_{i,2017}$	*Price*
AHVN	AHVN-FIXD	Fixed	$/day	1.4800	-	1.4800
AHVN	AHVN-24UC	Variable	$/kWh	0.0398	0.0204	0.0602
AHVN	AHVN-CAPY	Capacity	$/kVA/day	0.0351	-	0.0351
AHVN	AHVN-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917
AHVT	AHVT-24UC	Variable	$/kWh	0.0158	-	0.0158
AHVT	AHVT-CAPY	Capacity	$/kVA/day	0.0351	-	0.0351
AHVT	AHVT-DAMD	Demand	$/kVA/day	0.0437	0.2480	0.2917
AHVT	AHVT-DEXA	Excess demand	$/kVA/day	0.7722	-	0.7722
AHVT	AHVT-PWRF	Power Factor	$/kVAr/day	0.2917	-	0.2917

Non-standard prices

Code	Description	Units	$DP_{i,2017}$	$PTP_{i,2017}$
WN1		$/year	$204,420	$224,565
WN2		$/year	$48,056	-
WN3		$/year	$242,141	$271,662
WN4		$/year	-	-
WN5		$/year	-	-
WN6		$/year	$29,704	-
WN7		$/year	$10,700	-
WN8		$/year	$423,530	$247,574
AN1		$/year	-	-
AN2		$/year	$474,086	$71,774
AN3		$/year	$38,606	-
AN4		$/year	$633,023	$374,363
AN5		$/year	$879,792	$1,848,649
AN6		$/year	-	-
AN7		$/year	$77,569	$46,354
AN8		$/year	$66,024	-
AN9		$/year	$369,365	$86,578
AN10		$/year	$642,373	$682,981
AN11		$/year	$87,094	-
AN12		$/year	$668,896	$353,614
AN13		$/year	-	-
AN14		$/year	-	-
AN15		$/year	-	-
AN16		$/year	-	-
AN17		$/year	$24,590	-
AN18		$/year	$222,276	$415,812
AN19		$/year	$181,866	$553,737
AN20		$/year	$217,623	-
AN21		$/year	$1,198,198	$428,213
AN22		$/year	-	$219,490
AN23		$/year	$500,988	-
AN24		$/year	-	-
AN25		$/year	$144,400	-
AN26		$/year	$366,652	$116,531
AN27		$/year	$387,122	$995,948
AN28		$/year	$32,011	-
AN29		$/year	$142,278	$398,201
AN30		$/year	-	-
AN31		$/year	$478,086	$229,502
AN32		$/year	$189,507	$18,884
AN33		$/year	$464,464	$386,514
AN34		$/year	$292,437	-
AN35		$/year	$166,296	-
AN36		$/year	$76,261	-
AN37		$/year	-	-
AN38		$/year	$536,440	$613,263
AN39		$/year	$690,465	$102,848
AN40		$/year	$60,257	-
AN41		$/year	$440,573	$48,969
AN42		$/year	$56,303	$326,697
AN43		$/year	-	$613,976
AN44		$/year	-	$123,401
AN45		$/year	-	-
AN46		$/year	$142,278	$398,201
APR1		$/year		
WPR1		$/year		

Injection - Northern

Price category	Code	Description	Units	$DP_{i,2017}$	$PTP_{i,2017}$	*Price*
WRCL	WRCL-INJT	Variable	$/kWh	-	-	-
WRUL	WRUL-INJT	Variable	$/kWh	-	-	-
WRHL	WRHL-INJT	Variable	$/kWh	-	-	-
WRCS	WRCS-INJT	Variable	$/kWh	-	-	-
WRUS	WRUS-INJT	Variable	$/kWh	-	-	-
WRHS	WRHS-INJT	Variable	$/kWh	-	-	-
WBSU	WBSU-INJT	Variable	$/kWh	-	-	-
WBSN	WBSN-INJT	Variable	$/kWh	-	-	-
WBSH	WBSH-INJT	Variable	$/kWh	-	-	-
WLVN	WLVN-INJT	Variable	$/kWh	-	-	-
WLVH	WLVH-INJT	Variable	$/kWh	-	-	-
WTXN	WTXN-INJT	Variable	$/kWh	-	-	-
WTXH	WTXH-INJT	Variable	$/kWh	-	-	-
WHVN	WHVN-INJT	Variable	$/kWh	-	-	-
WRGS	WRGS-INJT	Variable	$/kWh	-	-	-
WRGL	WRGL-INJT	Variable	$/kWh	-	-	-
WHVH	WHVH-INJT	Variable	$/kWh	-	-	-

Injection - Auckland

Price category	Code	Description	Units	$DP_{i,2017}$	$PTP_{i,2017}$	*Price*
ARCL	ARCL-INJT	Variable	$/kWh	-	-	-
ARUL	ARUL-INJT	Variable	$/kWh	-	-	-
ARHL	ARHL-INJT	Variable	$/kWh	-	-	-
ARCS	ARCS-INJT	Variable	$/kWh	-	-	-
ARUS	ARUS-INJT	Variable	$/kWh	-	-	-
ARHS	ARHS-INJT	Variable	$/kWh	-	-	-
ABSU	ABSU-INJT	Variable	$/kWh	-	-	-
ABSN	ABSN-INJT	Variable	$/kWh	-	-	-
ABSH	ABSH-INJT	Variable	$/kWh	-	-	-
ALVN	ALVN-INJT	Variable	$/kWh	-	-	-
ALVT	ALVT-INJT	Variable	$/kWh	-	-	-
ATXN	ATXN-INJT	Variable	$/kWh	-	-	-
ATXT	ATXT-INJT	Variable	$/kWh	-	-	-
AHVN	AHVN-INJT	Variable	$/kWh	-	-	-
ARGS	ARGS-INJT	Variable	$/kWh	-	-	-
ARGL	ARGL-INJT	Variable	$/kWh	-	-	-
AHVT	AHVT-INJT	Variable	$/kWh	-	-	-

APPENDIX 2: DETAILS OF $DP_{I,2017}Q_{I,2015}$

Summary of $DP_{i,2017}Q_{i,2015}$ for the 2017 assessment period

	$DPi_{,2017}Qi_{,2015}$
Sum	**$390,289,082**

	$DPi_{,2017}Qi_{,2015}$
Northern published charges between 1 April 2016 to 31 March 2017	$133,161,417
Auckland published charges between 1 April 2016 to 31 March 2017	$245,220,915
Northern non-standard charges between 1 April 2016 to 31 March 2017	$958,552
Auckland non-standard charges between 1 April 2016 to 31 March 2017	$10,948,198

Northern published charges between 1 April 2016 to 31 March 2017

	$DPi_{,2017} Qi_{,2015}$
Sum	**$133,161,417**

Residential

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017} Qi_{,2015}$
WRCL	WRCL-FIXD	Fixed	$/day	0.1500	27,487,347	$4,123,102
WRCL	WRCL-AICO	Variable, controlled	$/kWh	0.0638	399,588,196	$25,493,727
WRUL	WRUL-FIXD	Fixed	$/day	0.1500	4,461,250	$669,188
WRUL	WRUL-24UC	Variable, uncontrolled	$/kWh	0.0638	60,291,033	$3,846,568
WRCS	WRCS-FIXD	Fixed	$/day	0.9900	32,310,127	$31,987,026
WRCS	WRCS-AICO	Variable, controlled	$/kWh	0.0255	805,830,459	$20,548,677
WRUS	WRUS-FIXD	Fixed	$/day	0.9900	5,938,466	$5,879,081
WRUS	WRUS-24UC	Variable, uncontrolled	$/kWh	0.0255	132,176,178	$3,370,493
WRHL	WRHL-FIXD	Fixed	$/day	0.1500	-	-
WRHL	WRHL-OFPK	Variable, off peak	$/kWh	0.0638	-	-
WRHL	WRHL-PEAK	Variable, peak	$/kWh	0.0638	-	-
WRHS	WRHS-FIXD	Fixed	$/day	0.9900	-	-
WRHS	WRHS-OFPK	Variable, off peak	$/kWh	0.0255	-	-
WRHS	WRHS-PEAK	Variable, peak	$/kWh	0.0255	-	-
WRGL	WRGL-FIXD	Fixed	$/day	0.1500	-	-
WRGL	WRGL-24UC	Variable, uncontrolled	$/kWh	0.0638	-	-
WRGS	WRGS-FIXD	Fixed	$/day	0.9900	-	-
WRGS	WRGS-24UC	Variable, uncontrolled	$/kWh	0.0255	-	-

General

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017} Qi_{,2015}$
WBSU	WBSU-FIXD	Fixed	$/day/fitting	0.1500	12,700,546	$1,905,082
WBSU	WBSU-24UC	Variable	$/kWh	0.0320	18,840,924	$602,910
WBSN	WBSN-FIXD	Fixed	$/day	0.9900	7,887,470	$7,808,595
WBSN	WBSN-24UC	Variable	$/kWh	0.0255	394,041,748	$10,048,065
WBSH	WBSH-FIXD	Fixed	$/day	0.9900	-	-
WBSH	WBSH-OFPK	Variable, off peak	$/kWh	0.0255	-	-
WBSH	WBSH-PEAK	Variable, peak	$/kWh	0.0255	-	-

Low voltage

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017} Qi_{,2015}$
WLVN	WLVN-FIXD	Fixed	$/day	5.5000	287,732	$1,582,526
WLVN	WLVN-24UC	Variable	$/kWh	0.0237	131,245,844	$3,110,527
WLVN	WLVN-CAPY	Capacity	$/kVA/day	0.0298	40,833,473	$1,216,838
WLVN	WLVN-PWRF	Power Factor	$/kVAr/day	0.2917	508,254	$148,258
WLVH	WLVH-FIXD	Fixed	$/day	10.3800	66,136	$686,492
WLVH	WLVH-24UC	Variable	$/kWh	0.0057	99,999,341	$569,996
WLVH	WLVH-CAPY	Capacity	$/kVA/day	0.0298	16,821,116	$501,269
WLVH	WLVH-DAMD	Demand	$/kVA/day	0.0339	7,755,469	$262,910
WLVH	WLVH-PWRF	Power Factor	$/kVAr/day	0.2917	696,112	$203,056

Transformer

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017} Qi_{,2015}$
WTXN	WTXN-FIXD	Fixed	$/day	4.9500	47,026	$232,779
WTXN	WTXN-24UC	Variable	$/kWh	0.0193	39,426,631	$760,934
WTXN	WTXN-CAPY	Capacity	$/kVA/day	0.0292	11,346,479	$331,317
WTXN	WTXN-PWRF	Power Factor	$/kVAr/day	0.2917	328,791	$95,908
WTXH	WTXH-FIXD	Fixed	$/day	9.3400	88,944	$830,737
WTXH	WTXH-24UC	Variable	$/kWh	0.0056	353,301,312	$1,978,487
WTXH	WTXH-CAPY	Capacity	$/kVA/day	0.0292	67,731,440	$1,977,758
WTXH	WTXH-DAMD	Demand	$/kVA/day	0.0283	29,071,496	$822,723
WTXH	WTXH-PWRF	Power Factor	$/kVAr/day	0.2917	1,664,308	$485,479

High voltage

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017} Qi_{,2015}$
WHVN	WHVN-FIXD	Fixed	$/day	4.8000	22	$106
WHVN	WHVN-24UC	Variable	$/kWh	0.0181	550	$10
WHVN	WHVN-CAPY	Capacity	$/kVA/day	0.0283	154	$4
WHVN	WHVN-PWRF	Power Factor	$/kVAr/day	0.2917	-	-
WHVH	WHVH-FIXD	Fixed	$/day	9.0600	5,475	$49,604
WHVH	WHVH-24UC	Variable	$/kWh	0.0054	97,835,946	$528,314
WHVH	WHVH-CAPY	Capacity	$/kVA/day	0.0283	11,077,750	$313,500
WHVH	WHVH-DAMD	Demand	$/kVA/day	0.0200	6,663,134	$133,263
WHVH	WHVH-DEXA	Excess demand	$/kVA/day	0.6226	947	$590
WHVH	WHVH-PWRF	Power Factor	$/kVAr/day	0.2917	190,337	$55,521

Auckland published charges between 1 April 2016 to 31 March 2017

	$DPi_{,2017}Qi_{,2015}$
Sum	**$245,220,915**

Residential

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017}Qi_{,2015}$
ARCL	ARCL-FIXD	Fixed	$/day	0.1500	37,508,554	$5,626,283
ARCL	ARCL-AICO	Variable, controlled	$/kWh	0.0638	543,106,965	$34,650,224
ARUL	ARUL-FIXD	Fixed	$/day	0.1500	11,719,164	$1,757,875
ARUL	ARUL-24UC	Variable, uncontrolled	$/kWh	0.0638	133,928,893	$8,544,663
ARCS	ARCS-FIXD	Fixed	$/day	0.9900	40,355,011	$39,951,461
ARCS	ARCS-AICO	Variable, controlled	$/kWh	0.0255	1,017,352,355	$25,942,485
ARUS	ARUS-FIXD	Fixed	$/day	0.9900	9,714,273	$9,617,130
ARUS	ARUS-24UC	Variable, uncontrolled	$/kWh	0.0255	213,657,127	$5,448,257
ARHL	ARHL-FIXD	Fixed	$/day	0.1500	-	-
ARHL	ARHL-OFPK	Variable, off peak	$/kWh	0.0638	-	-
ARHL	ARHL-PEAK	Variable, peak	$/kWh	0.0638	-	-
ARHS	ARHS-FIXD	Fixed	$/day	0.9900	-	-
ARHS	ARHS-OFPK	Variable, off peak	$/kWh	0.0255	-	-
ARHS	ARHS-PEAK	Variable, peak	$/kWh	0.0255	-	-
ARGL	ARGL-FIXD	Fixed	$/day	0.1500	-	-
ARGL	ARGL-24UC	Variable, uncontrolled	$/kWh	0.0638	-	-
ARGS	ARGS-FIXD	Fixed	$/day	0.9900	-	-
ARGS	ARGS-24UC	Variable, uncontrolled	$/kWh	0.0255	-	-

General

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017}Qi_{,2015}$
ABSU	ABSU-FIXD	Fixed	$/day/fitting	0.1500	22,667,222	$3,400,083
ABSU	ABSU-24UC	Variable	$/kWh	0.0320	37,037,764	$1,185,208
ABSN	ABSN-FIXD	Fixed	$/day	0.9900	12,349,743	$12,226,246
ABSN	ABSN-24UC	Variable	$/kWh	0.0255	779,494,433	$19,877,108
ABSH	ABSH-FIXD	Fixed	$/day	0.9900	-	-
ABSH	ABSH-OFPK	Variable, off peak	$/kWh	0.0255	-	-
ABSH	ABSH-PEAK	Variable, peak	$/kWh	0.0255	-	-

Low voltage

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017}Qi_{,2015}$
ALVN	ALVN-FIXD	Fixed	$/day	1.5800	683,792	$1,080,391
ALVN	ALVN-24UC	Variable	$/kWh	0.0429	213,145,871	$9,143,958
ALVN	ALVN-CAPY	Capacity	$/kVA/day	0.0370	100,825,697	$3,730,551
ALVN	ALVN-PWRF	Power Factor	$/kVAr/day	0.2917	492,840	$143,762
ALVT	ALVT-24UC	Variable	$/kWh	0.0166	577,268,507	$9,582,657
ALVT	ALVT-CAPY	Capacity	$/kVA/day	0.0370	131,747,165	$4,874,645
ALVT	ALVT-DAMD	Demand	$/kVA/day	0.0590	51,839,758	$3,058,546
ALVT	ALVT-PWRF	Power Factor	$/kVAr/day	0.2917	6,856,204	$1,999,955

Transformer

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017}Qi_{,2015}$
ATXN	ATXN-FIXD	Fixed	$/day	1.5300	46,964	$71,855
ATXN	ATXN-24UC	Variable	$/kWh	0.0416	16,614,952	$691,182
ATXN	ATXN-CAPY	Capacity	$/kVA/day	0.0362	10,068,632	$364,484
ATXN	ATXN-PWRF	Power Factor	$/kVAr/day	0.2917	23,121	$6,744
ATXT	ATXT-24UC	Variable	$/kWh	0.0163	1,058,941,046	$17,260,739
ATXT	ATXT-CAPY	Capacity	$/kVA/day	0.0362	207,788,630	$7,521,948
ATXT	ATXT-DAMD	Demand	$/kVA/day	0.0528	86,064,701	$4,544,216
ATXT	ATXT-PWRF	Power Factor	$/kVAr/day	0.2917	6,465,385	$1,885,953

High voltage

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017}Qi_{,2015}$
AHVN	AHVN-FIXD	Fixed	$/day	1.4800	2,247	$3,326
AHVN	AHVN-24UC	Variable	$/kWh	0.0398	734,605	$29,237
AHVN	AHVN-CAPY	Capacity	$/kVA/day	0.0351	474,693	$16,662
AHVN	AHVN-PWRF	Power Factor	$/kVAr/day	0.2917	-	-
AHVT	AHVT-24UC	Variable	$/kWh	0.0158	430,327,499	$6,799,174
AHVT	AHVT-CAPY	Capacity	$/kVA/day	0.0351	54,386,180	$1,908,955
AHVT	AHVT-DAMD	Demand	$/kVA/day	0.0437	34,234,502	$1,496,048
AHVT	AHVT-DEXA	Excess demand	$/kVA/day	0.7722	253,856	$196,028
AHVT	AHVT-PWRF	Power Factor	$/kVAr/day	0.2917	1,998,202	$582,876

Northern non-standard charges between 1 April 2016 to 31 March 2017

	$DPi_{,2017}Qi_{,2015}$
Sum	**$958,552**

Non-standard

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017}Qi_{,2015}$
WN1			$/year	$204,420	1	$204,420
WN2			$/year	$48,056	1	$48,056
WN3			$/year	$242,141	1	$242,141
WN4			$/year	-	1	-
WN5			$/year	-	1	-
WN6			$/year	$29,704	1	$29,704
WN7			$/year	$10,700	1	$10,700
WN8			$/year	$423,530	1	$423,530
WPR1			$/year	-	1	-

Auckland non-standard charges between 1 April 2016 to 31 March 2017

	$DPi_{,2017}Qi_{,2015}$
Sum	**$10,948,198**

Non-standard

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017}Qi_{,2015}$
AN1			$/year	-	1	-
AN2			$/year	$474,086	1	$474,086
AN3			$/year	$38,606	1	$38,606
AN4			$/year	$633,023	1	$633,023
AN5			$/year	$879,792	1	$879,792
AN6			$/year	-	1	-
AN7			$/year	$77,569	1	$77,569
AN8			$/year	$66,024	1	$66,024
AN9			$/year	$369,365	1	$369,365
AN10			$/year	$642,373	1	$642,373
AN11			$/year	$87,094	1	$87,094
AN12			$/year	$668,896	1	$668,896
AN13			$/year	-	1	-
AN14			$/year	-	1	-
AN15			$/year	-	1	-
AN16			$/year	-	1	-
AN17			$/year	$24,590	1	$24,590
AN18			$/year	$222,276	1	$222,276
AN19			$/year	$181,866	1	$181,866
AN20			$/year	$217,623	1	$217,623
AN21			$/year	$1,198,198	1	$1,198,198
AN22			$/year	-	1	-
AN23			$/year	$500,988	1	$500,988
AN24			$/year	-	1	-
AN25			$/year	$144,400	1	$144,400
AN26			$/year	$366,652	1	$366,652
AN27			$/year	$387,122	1	$387,122
AN28			$/year	$32,011	1	$32,011
AN29			$/year	$142,278	1	$142,278
AN30			$/year	-	1	-
AN31			$/year	$478,086	1	$478,086
AN32			$/year	$189,507	1	$189,507
AN33			$/year	$464,464	1	$464,464
AN34			$/year	$292,437	1	$292,437
AN35			$/year	$166,296	1	$166,296
AN36			$/year	$76,261	1	$76,261
AN37			$/year	-	1	-
AN38			$/year	$536,440	1	$536,440
AN39			$/year	$690,465	1	$690,465
AN40			$/year	$60,257	1	$60,257
AN41			$/year	$440,573	1	$440,573
AN42			$/year	$56,303	1	$56,303
AN43			$/year	-	1	-
AN44			$/year	-	1	-
AN45			$/year	-	1	-
AN46			$/year	$142,278	1	$142,278
APR1			$/year	-	1	-

Injection - Northern

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017}Qi_{,2015}$
WRCL	WRCL-INJT	Variable	$/kWh	-	-	-
WRUL	WRUL-INJT	Variable	$/kWh	-	-	-
WRHL	WRHL-INJT	Variable	$/kWh	-	-	-
WRCS	WRCS-INJT	Variable	$/kWh	-	-	-
WRUS	WRUS-INJT	Variable	$/kWh	-	-	-
WRHS	WRHS-INJT	Variable	$/kWh	-	-	-
WBSU	WBSU-INJT	Variable	$/kWh	-	-	-
WBSN	WBSN-INJT	Variable	$/kWh	-	-	-
WBSH	WBSH-INJT	Variable	$/kWh	-	-	-
WLVN	WLVN-INJT	Variable	$/kWh	-	-	-
WLVH	WLVH-INJT	Variable	$/kWh	-	-	-
WTXN	WTXN-INJT	Variable	$/kWh	-	-	-
WTXH	WTXH-INJT	Variable	$/kWh	-	-	-
WHVN	WHVN-INJT	Variable	$/kWh	-	-	-
WHVH	WHVH-INJT	Variable	$/kWh	-	-	-
WRGL	WRGL-INJT	Variable	$/kWh	-	-	-
WRGS	WRGS-INJT	Variable	$/kWh	-	-	-

Injection - Auckland

Price plan	Code	Description	Units	$DPi_{,2017}$	$Qi_{,2015}$	$DPi_{,2017}Qi_{,2015}$
ARCL	ARCL-INJT	Variable	$/kWh	-	-	-
ARUL	ARUL-INJT	Variable	$/kWh	-	-	-
ARHL	ARHL-INJT	Variable	$/kWh	-	-	-
ARCS	ARCS-INJT	Variable	$/kWh	-	-	-
ARUS	ARUS-INJT	Variable	$/kWh	-	-	-
ARHS	ARHS-INJT	Variable	$/kWh	-	-	-
ABSU	ABSU-INJT	Variable	$/kWh	-	-	-
ABSN	ABSN-INJT	Variable	$/kWh	-	-	-
ABSH	ABSH-INJT	Variable	$/kWh	-	-	-
ALVN	ALVN-INJT	Variable	$/kWh	-	-	-
ALVT	ALVT-INJT	Variable	$/kWh	-	-	-
ATXN	ATXN-INJT	Variable	$/kWh	-	-	-
ATXT	ATXT-INJT	Variable	$/kWh	-	-	-
AHVN	AHVN-INJT	Variable	$/kWh	-	-	-
AHVT	AHVT-INJT	Variable	$/kWh	-	-	-
ARGL	ARGL-INJT	Variable	$/kWh	-	-	-
ARGS	ARGS-INJT	Variable	$/kWh	-	-	-

APPENDIX 3: DETAILS OF $PTP_{I,2017}Q_{I,2017}$

Summary of $PTP_{i,2017}Q_{i,2017}$ for the 2017 assessment period

	$PTP_{i,2017}Q_{i,2017}$
Sum	**$220,963,372**

	$PTP_{i,2017}Q_{i,2017}$
Northern published charges between 1 April 2016 to 31 March 2017	$73,659,535
Auckland published charges between 1 April 2016 to 31 March 2017	$137,105,536
Northern non-standard charges between 1 April 2016 to 31 March 2017	$743,801
Auckland non-standard charges between 1 April 2016 to 31 March 2017	$9,454,500

Northern published charges between 1 April 2016 to 31 March 2017

	$PTP_{i,2017}Q_{i,2017}$
Sum	**$73,659,535**

Residential

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
WRCL	WRCL-FIXD	Fixed	$/day	-	32,005,355	-
WRCL	WRCL-AICO	Variable, controlled	$/kWh	0.0300	467,595,310	$14,027,859
WRUL	WRUL-FIXD	Fixed	$/day	-	4,123,709	-
WRUL	WRUL-24UC	Variable, uncontrolled	$/kWh	0.0380	57,249,560	$2,175,483
WRCS	WRCS-FIXD	Fixed	$/day	-	27,009,854	-
WRCS	WRCS-AICO	Variable, controlled	$/kWh	0.0300	706,367,087	$21,191,013
WRUS	WRUS-FIXD	Fixed	$/day	-	4,837,813	-
WRUS	WRUS-24UC	Variable, uncontrolled	$/kWh	0.0380	106,677,435	$4,053,743
WRHL	WRHL-FIXD	Fixed	$/day	-	1,032	-
WRHL	WRHL-OFPK	Variable, off peak	$/kWh	-	11,819	-
WRHL	WRHL-PEAK	Variable, peak	$/kWh	0.1000	3,495	$349
WRHS	WRHS-FIXD	Fixed	$/day	-	2,323	-
WRHS	WRHS-OFPK	Variable, off peak	$/kWh	-	35,453	-
WRHS	WRHS-PEAK	Variable, peak	$/kWh	0.1000	14,586	$1,459
WRGL	WRGL-FIXD	Fixed	$/day	-	2,344,721	-
WRGL	WRGL-24UC	Variable, uncontrolled	$/kWh	0.0300	30,125,592	$903,768
WRGS	WRGS-FIXD	Fixed	$/day	-	1,793,810	-
WRGS	WRGS-24UC	Variable, uncontrolled	$/kWh	0.0300	41,231,039	$1,236,931

General

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
WBSU	WBSU-FIXD	Fixed	$/day/fitting	-	14,349,988	-
WBSU	WBSU-24UC	Variable	$/kWh	0.0380	20,952,297	$796,187
WBSN	WBSN-FIXD	Fixed	$/day	-	8,046,320	-
WBSN	WBSN-24UC	Variable	$/kWh	0.0380	385,739,120	$14,658,087
WBSH	WBSH-FIXD	Fixed	$/day	-	6,350	-
WBSH	WBSH-OFPK	Variable, off peak	$/kWh	-	2,136,384	-
WBSH	WBSH-PEAK	Variable, peak	$/kWh	0.1000	691,798	$69,180

Low voltage

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
WLVN	WLVN-FIXD	Fixed	$/day	-	294,289	-
WLVN	WLVN-24UC	Variable	$/kWh	0.0204	126,000,608	$2,570,412
WLVN	WLVN-CAPY	Capacity	$/kVA/day	-	43,036,389	-
WLVN	WLVN-PWRF	Power Factor	$/kVAr/day	-	450,258	-
WLVH	WLVH-FIXD	Fixed	$/day	-	78,732	-
WLVH	WLVH-24UC	Variable	$/kWh	-	113,973,689	-
WLVH	WLVH-CAPY	Capacity	$/kVA/day	-	18,599,777	-
WLVH	WLVH-DAMD	Demand	$/kVA/day	0.2480	8,495,097	$2,106,784
WLVH	WLVH-PWRF	Power Factor	$/kVAr/day	-	679,722	-

Transformer

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
WTXN	WTXN-FIXD	Fixed	$/day	-	50,807	-
WTXN	WTXN-24UC	Variable	$/kWh	0.0204	39,290,646	$801,529
WTXN	WTXN-CAPY	Capacity	$/kVA/day	-	12,612,579	-
WTXN	WTXN-PWRF	Power Factor	$/kVAr/day	-	225,153	-
WTXH	WTXH-FIXD	Fixed	$/day	-	98,046	-
WTXH	WTXH-24UC	Variable	$/kWh	-	363,095,729	-
WTXH	WTXH-CAPY	Capacity	$/kVA/day	-	74,570,885	-
WTXH	WTXH-DAMD	Demand	$/kVA/day	0.2480	28,646,649	$7,104,369
WTXH	WTXH-PWRF	Power Factor	$/kVAr/day	-	1,599,558	-

High voltage

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
WHVN	WHVN-FIXD	Fixed	$/day	-	-	-
WHVN	WHVN-24UC	Variable	$/kWh	0.0204	-	-
WHVN	WHVN-CAPY	Capacity	$/kVA/day	-	-	-
WHVN	WHVN-PWRF	Power Factor	$/kVAr/day	-	-	-
WHVH	WHVH-FIXD	Fixed	$/day	-	6,935	-
WHVH	WHVH-24UC	Variable	$/kWh	-	118,326,940	-
WHVH	WHVH-CAPY	Capacity	$/kVA/day	-	12,555,350	-
WHVH	WHVH-DAMD	Demand	$/kVA/day	0.2480	7,912,832	$1,962,382
WHVH	WHVH-DEXA	Excess demand	$/kVA/day	-	652	-
WHVH	WHVH-PWRF	Power Factor	$/kVAr/day	-	222,464	-

Auckland published charges between 1 April 2016 to 31 March 2017

	$PTP_{i,2017}Q_{i,2017}$
Sum	**$137,105,536**

Residential

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
ARCL	ARCL-FIXD	Fixed	$/day	-	46,886,595	-
ARCL	ARCL-AICO	Variable, controlled	$/kWh	0.0300	667,850,035	$20,035,501
ARUL	ARUL-FIXD	Fixed	$/day	-	9,830,986	-
ARUL	ARUL-24UC	Variable, uncontrolled	$/kWh	0.0380	103,825,420	$3,945,366
ARCS	ARCS-FIXD	Fixed	$/day	-	33,415,963	-
ARCS	ARCS-AICO	Variable, controlled	$/kWh	0.0300	863,057,632	$25,891,729
ARUS	ARUS-FIXD	Fixed	$/day	-	5,673,343	-
ARUS	ARUS-24UC	Variable, uncontrolled	$/kWh	0.0380	117,049,544	$4,447,883
ARHL	ARHL-FIXD	Fixed	$/day	-	2,587	-
ARHL	ARHL-OFPK	Variable, off peak	$/kWh	-	21,877	-
ARHL	ARHL-PEAK	Variable, peak	$/kWh	0.1000	11,462	$1,146
ARHS	ARHS-FIXD	Fixed	$/day	-	1,210	-
ARHS	ARHS-OFPK	Variable, off peak	$/kWh	-	42,801	-
ARHS	ARHS-PEAK	Variable, peak	$/kWh	0.1000	12,426	$1,243
ARGL	ARGL-FIXD	Fixed	$/day	-	5,638,992	-
ARGL	ARGL-24UC	Variable, uncontrolled	$/kWh	0.0300	71,847,184	$2,155,416
ARGS	ARGS-FIXD	Fixed	$/day	-	3,492,355	-
ARGS	ARGS-24UC	Variable, uncontrolled	$/kWh	0.0300	88,688,644	$2,660,659

General

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
ABSU	ABSU-FIXD	Fixed	$/day/fitting	-	24,878,118	-
ABSU	ABSU-24UC	Variable	$/kWh	0.0380	37,607,191	$1,429,073
ABSN	ABSN-FIXD	Fixed	$/day	-	13,114,812	-
ABSN	ABSN-24UC	Variable	$/kWh	0.0380	757,894,919	$28,800,007
ABSH	ABSH-FIXD	Fixed	$/day	-	16,765	-
ABSH	ABSH-OFPK	Variable, off peak	$/kWh	-	5,684,030	-
ABSH	ABSH-PEAK	Variable, peak	$/kWh	0.1000	1,829,759	$182,976

Low voltage

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
ALVN	ALVN-FIXD	Fixed	$/day	-	761,858	-
ALVN	ALVN-24UC	Variable	$/kWh	0.0204	223,349,198	$4,556,324
ALVN	ALVN-CAPY	Capacity	$/kVA/day	-	112,746,375	-
ALVN	ALVN-PWRF	Power Factor	$/kVAr/day	-	485,293	-
ALVT	ALVT-24UC	Variable	$/kWh	-	564,181,836	-
ALVT	ALVT-CAPY	Capacity	$/kVA/day	-	129,898,029	-
ALVT	ALVT-DAMD	Demand	$/kVA/day	0.2480	48,265,585	$11,969,865
ALVT	ALVT-PWRF	Power Factor	$/kVAr/day	-	5,221,397	-

Transformer

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
ATXN	ATXN-FIXD	Fixed	$/day	-	59,298	-
ATXN	ATXN-24UC	Variable	$/kWh	0.0204	22,114,689	$451,140
ATXN	ATXN-CAPY	Capacity	$/kVA/day	-	13,546,309	-
ATXN	ATXN-PWRF	Power Factor	$/kVAr/day	-	42,845	-
ATXT	ATXT-24UC	Variable	$/kWh	-	1,127,230,790	-
ATXT	ATXT-CAPY	Capacity	$/kVA/day	-	226,616,682	-
ATXT	ATXT-DAMD	Demand	$/kVA/day	0.2480	89,273,121	$22,139,734
ATXT	ATXT-PWRF	Power Factor	$/kVAr/day	-	5,637,308	-

High voltage

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
AHVN	AHVN-FIXD	Fixed	$/day	-	2,830	-
AHVN	AHVN-24UC	Variable	$/kWh	0.0204	1,138,015	$23,216
AHVN	AHVN-CAPY	Capacity	$/kVA/day	-	752,250	-
AHVN	AHVN-PWRF	Power Factor	$/kVAr/day	-	38,426	-
AHVT	AHVT-24UC	Variable	$/kWh	-	443,995,001	-
AHVT	AHVT-CAPY	Capacity	$/kVA/day	-	56,457,660	-
AHVT	AHVT-DAMD	Demand	$/kVA/day	0.2480	33,928,469	$8,414,260
AHVT	AHVT-DEXA	Excess demand	$/kVA/day	-	57,972	-
AHVT	AHVT-PWRF	Power Factor	$/kVAr/day	-	1,851,375	-

Northern non-standard charges between 1 April 2016 to 31 March 2017

	$PTP_{i,2017} Q_{i,2017}$
Sum	**$743,801**

Non-standard

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017} Q_{i,2017}$
WN1			$/year	$224,565	1	$224,565
WN2			$/year	-	1	-
WN3			$/year	$271,662	1	$271,662
WN4			$/year	-	1	-
WN5			$/year	-	1	-
WN6			$/year	-	1	-
WN7			$/year	-	1	-
WN8			$/year	$247,574	1	$247,574
WPR1			$/year	-	1	-

Auckland non-standard charges between 1 April 2016 to 31 March 2017

	$PTP_{i,2017} Q_{i,2017}$
Sum	**$9,454,500**

Non-standard

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017} Q_{i,2017}$
AN1			$/year	-	1	-
AN2			$/year	$71,774	1	$71,774
AN3			$/year	-	1	-
AN4			$/year	$374,363	1	$374,363
AN5			$/year	$1,848,649	1	$1,848,649
AN6			$/year	-	1	-
AN7			$/year	$46,354	1	$46,354
AN8			$/year	-	1	-
AN9			$/year	$86,578	1	$86,578
AN10			$/year	$682,981	1	$682,981
AN11			$/year	-	1	-
AN12			$/year	$353,614	1	$353,614
AN13			$/year	-	1	-
AN14			$/year	-	1	-
AN15			$/year	-	1	-
AN16			$/year	-	1	-
AN17			$/year	-	1	-
AN18			$/year	$415,812	1	$415,812
AN19			$/year	$553,737	1	$553,737
AN20			$/year	-	1	-
AN21			$/year	$428,213	1	$428,213
AN22			$/year	$219,490	1	$219,490
AN23			$/year	-	1	-
AN24			$/year	-	1	-
AN25			$/year	-	1	-
AN26			$/year	$116,531	1	$116,531
AN27			$/year	$995,948	1	$995,948
AN28			$/year	-	1	-
AN29			$/year	$398,201	1	$398,201
AN30			$/year	-	1	-
AN31			$/year	$229,502	1	$229,502
AN32			$/year	$18,884	1	$18,884
AN33			$/year	$386,514	1	$386,514
AN34			$/year	-	1	-
AN35			$/year	-	1	-
AN36			$/year	-	1	-
AN37			$/year	-	1	-
AN38			$/year	$613,263	1	$613,263
AN39			$/year	$102,848	1	$102,848
AN40			$/year	-	1	-
AN41			$/year	$48,969	1	$48,969
AN42			$/year	$326,697	1	$326,697
AN43			$/year	$613,976	1	$613,976
AN44			$/year	$123,401	1	$123,401
AN45			$/year	-	1	-
AN46			$/year	$398,201	1	$398,201
APR1			$/year	-	1	-

Injection - Northern

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
WRCL	WRCL-INJT	Variable	$/kWh	-	924,867	-
WRUL	WRUL-INJT	Variable	$/kWh	-	346,422	-
WRHL	WRHL-INJT	Variable	$/kWh	-	-	-
WRCS	WRCS-INJT	Variable	$/kWh	-	921,568	-
WRUS	WRUS-INJT	Variable	$/kWh	-	465,316	-
WRHS	WRHS-INJT	Variable	$/kWh	-	-	-
WBSU	WBSU-INJT	Variable	$/kWh	-	-	-
WBSN	WBSN-INJT	Variable	$/kWh	-	151,073	-
WBSH	WBSH-INJT	Variable	$/kWh	-	-	-
WLVN	WLVN-INJT	Variable	$/kWh	-	22,233	-
WLVH	WLVH-INJT	Variable	$/kWh	-	-	-
WTXN	WTXN-INJT	Variable	$/kWh	-	-	-
WTXH	WTXH-INJT	Variable	$/kWh	-	-	-
WHVN	WHVN-INJT	Variable	$/kWh	-	-	-
WHVH	WHVH-INJT	Variable	$/kWh	-	-	-
WRGL	WRGL-INJT	Variable	$/kWh	-	134,535	-
WRGS	WRGS-INJT	Variable	$/kWh	-	143,306	-

Injection - Auckland

Price plan	Code	Description	Units	$PTP_{i,2017}$	$Q_{i,2017}$	$PTP_{i,2017}Q_{i,2017}$
ARCL	ARCL-INJT	Variable	$/kWh	-	646,327	-
ARUL	ARUL-INJT	Variable	$/kWh	-	243,293	-
ARHL	ARHL-INJT	Variable	$/kWh	-	1,078	-
ARCS	ARCS-INJT	Variable	$/kWh	-	786,222	-
ARUS	ARUS-INJT	Variable	$/kWh	-	260,306	-
ARHS	ARHS-INJT	Variable	$/kWh	-	-	-
ABSU	ABSU-INJT	Variable	$/kWh	-	-	-
ABSN	ABSN-INJT	Variable	$/kWh	-	130,920	-
ABSH	ABSH-INJT	Variable	$/kWh	-	-	-
ALVN	ALVN-INJT	Variable	$/kWh	-	68,110	-
ALVT	ALVT-INJT	Variable	$/kWh	-	114,636	-
ATXN	ATXN-INJT	Variable	$/kWh	-	380	-
ATXT	ATXT-INJT	Variable	$/kWh	-	-	-
AHVN	AHVN-INJT	Variable	$/kWh	-	-	-
AHVT	AHVT-INJT	Variable	$/kWh	-	1,427,103	-
ARGL	ARGL-INJT	Variable	$/kWh	-	187,259	-
ARGS	ARGS-INJT	Variable	$/kWh	-	187,120	-

APPENDIX 4: DETAILS OF $PTP_{I,2016}Q_{I,2016}$

Summary of $PTP_{i,2016}Q_{i,2016}$ for the 2017 assessment period

	$PTP_{i,2016}Q_{i,2016}$
Sum	**$224,852,866**

	$PTP_{i,2016}Q_{i,2016}$
Northern published charges between 1 April 2015 to 31 March 2016	$74,142,841
Auckland published charges between 1 April 2015 to 31 March 2016	$138,949,319
Northern non-standard charges between 1 April 2015 to 31 March 2016	$650,496
Auckland non-standard charges between 1 April 2015 to 31 March 2016	$11,110,211

Northern published charges between 1 April 2015 to 31 March 2016

	$PTP_{i,2016}Q_{i,2016}$
Sum	**$74,142,841**

Residential

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
WRCL	WRCL-FIXD	Fixed	$/day	-	31,756,900	-
WRCL	WRCL-AICO	Variable, controlled	$/kWh	0.0300	464,331,393	$13,929,942
WRUL	WRUL-FIXD	Fixed	$/day	-	5,831,897	-
WRUL	WRUL-24UC	Variable, uncontrolled	$/kWh	0.0380	79,422,697	$3,018,062
WRCS	WRCS-FIXD	Fixed	$/day	-	27,876,936	-
WRCS	WRCS-AICO	Variable, controlled	$/kWh	0.0300	739,749,860	$22,192,496
WRUS	WRUS-FIXD	Fixed	$/day	-	5,851,916	-
WRUS	WRUS-24UC	Variable, uncontrolled	$/kWh	0.0380	135,712,247	$5,157,065
WRHL	WRHL-FIXD	Fixed	$/day	-	294	-
WRHL	WRHL-OFPK	Variable, off peak	$/kWh	-	4,709	-
WRHL	WRHL-PEAK	Variable, peak	$/kWh	0.1253	1,152	$144
WRHS	WRHS-FIXD	Fixed	$/day	-	658	-
WRHS	WRHS-OFPK	Variable, off peak	$/kWh	-	3,121	-
WRHS	WRHS-PEAK	Variable, peak	$/kWh	0.1253	7,586	$951

General

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
WBSU	WBSU-FIXD	Fixed	$/day/fitting	-	12,736,656	-
WBSU	WBSU-24UC	Variable	$/kWh	0.0380	18,867,835	$716,978
WBSN	WBSN-FIXD	Fixed	$/day	-	7,960,730	-
WBSN	WBSN-24UC	Variable	$/kWh	0.0380	392,715,358	$14,923,184
WBSH	WBSH-FIXD	Fixed	$/day	-	4,091	-
WBSH	WBSH-OFPK	Variable, off peak	$/kWh	-	1,391,531	-
WBSH	WBSH-PEAK	Variable, peak	$/kWh	0.1253	440,892	$55,244

Low voltage

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
WLVN	WLVN-FIXD	Fixed	$/day	-	291,096	-
WLVN	WLVN-24UC	Variable	$/kWh	0.0199	132,327,797	$2,633,323
WLVN	WLVN-CAPY	Capacity	$/kVA/day	-	43,044,400	-
WLVN	WLVN-PWRF	Power Factor	$/kVAr/day	-	489,368	-
WLVH	WLVH-FIXD	Fixed	$/day	-	73,524	-
WLVH	WLVH-24UC	Variable	$/kWh	-	108,769,771	-
WLVH	WLVH-CAPY	Capacity	$/kVA/day	-	17,449,392	-
WLVH	WLVH-DAMD	Demand	$/kVA/day	0.2430	8,239,004	$2,002,078
WLVH	WLVH-PWRF	Power Factor	$/kVAr/day	-	663,832	-

Transformer

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
WTXN	WTXN-FIXD	Fixed	$/day	-	53,548	-
WTXN	WTXN-24UC	Variable	$/kWh	0.0199	44,814,731	$891,813
WTXN	WTXN-CAPY	Capacity	$/kVA/day	-	15,549,492	-
WTXN	WTXN-PWRF	Power Factor	$/kVAr/day	-	419,230	-
WTXH	WTXH-FIXD	Fixed	$/day	-	88,606	-
WTXH	WTXH-24UC	Variable	$/kWh	-	351,197,522	-
WTXH	WTXH-CAPY	Capacity	$/kVA/day	-	67,657,306	-
WTXH	WTXH-DAMD	Demand	$/kVA/day	0.2430	27,554,634	$6,695,776
WTXH	WTXH-PWRF	Power Factor	$/kVAr/day	-	1,294,813	-

High voltage

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
WHVN	WHVN-FIXD	Fixed	$/day	-	300	-
WHVN	WHVN-24UC	Variable	$/kWh	0.0199	261	$5
WHVN	WHVN-CAPY	Capacity	$/kVA/day	-	9,104	-
WHVN	WHVN-PWRF	Power Factor	$/kVAr/day	-	-	-
WHVH	WHVH-FIXD	Fixed	$/day	-	6,742	-
WHVH	WHVH-24UC	Variable	$/kWh	-	114,622,369	-
WHVH	WHVH-CAPY	Capacity	$/kVA/day	-	12,694,750	-
WHVH	WHVH-DAMD	Demand	$/kVA/day	0.2430	7,925,020	$1,925,780
WHVH	WHVH-DEXA	Excess demand	$/kVA/day	-	12,338	-
WHVH	WHVH-PWRF	Power Factor	$/kVAr/day	-	193,282	-

Auckland published charges between 1 April 2015 to 31 March 2016

	$PTP_{i,2016}Q_{i,2016}$
Sum	**$138,949,319**

Residential

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
ARCL	ARCL-FIXD	Fixed	$/day	-	45,305,878	-
ARCL	ARCL-AICO	Variable, controlled	$/kWh	0.0300	646,543,812	$19,396,314
ARUL	ARUL-FIXD	Fixed	$/day	-	14,567,932	-
ARUL	ARUL-24UC	Variable, uncontrolled	$/kWh	0.0380	167,214,091	$6,354,135
ARCS	ARCS-FIXD	Fixed	$/day	-	35,555,267	-
ARCS	ARCS-AICO	Variable, controlled	$/kWh	0.0300	918,814,454	$27,564,434
ARUS	ARUS-FIXD	Fixed	$/day	-	8,772,069	-
ARUS	ARUS-24UC	Variable, uncontrolled	$/kWh	0.0380	202,416,382	$7,691,823
ARHL	ARHL-FIXD	Fixed	$/day	-	741	-
ARHL	ARHL-OFPK	Variable, off peak	$/kWh	-	9,301	-
ARHL	ARHL-PEAK	Variable, peak	$/kWh	0.1253	2,141	$268
ARHS	ARHS-FIXD	Fixed	$/day	-	238	-
ARHS	ARHS-OFPK	Variable, off peak	$/kWh	-	14,995	-
ARHS	ARHS-PEAK	Variable, peak	$/kWh	0.1253	3,307	$414

General

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
ABSU	ABSU-FIXD	Fixed	$/day/fitting	-	24,174,846	-
ABSU	ABSU-24UC	Variable	$/kWh	0.0380	38,664,927	$1,469,267
ABSN	ABSN-FIXD	Fixed	$/day	-	13,220,237	-
ABSN	ABSN-24UC	Variable	$/kWh	0.0380	768,590,473	$29,206,438
ABSH	ABSH-FIXD	Fixed	$/day	-	11,085	-
ABSH	ABSH-OFPK	Variable, off peak	$/kWh	-	4,005,647	-
ABSH	ABSH-PEAK	Variable, peak	$/kWh	0.1253	1,255,222	$157,279

Low voltage

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
ALVN	ALVN-FIXD	Fixed	$/day	-	754,497	-
ALVN	ALVN-24UC	Variable	$/kWh	0.0199	225,635,627	$4,490,149
ALVN	ALVN-CAPY	Capacity	$/kVA/day	-	111,866,408	-
ALVN	ALVN-PWRF	Power Factor	$/kVAr/day	-	509,561	-
ALVT	ALVT-24UC	Variable	$/kWh	-	572,950,725	-
ALVT	ALVT-CAPY	Capacity	$/kVA/day	-	130,345,234	-
ALVT	ALVT-DAMD	Demand	$/kVA/day	0.2430	50,277,404	$12,217,409
ALVT	ALVT-PWRF	Power Factor	$/kVAr/day	-	6,017,949	-

Transformer

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
ATXN	ATXN-FIXD	Fixed	$/day	-	62,182	-
ATXN	ATXN-24UC	Variable	$/kWh	0.0199	27,173,077	$540,744
ATXN	ATXN-CAPY	Capacity	$/kVA/day	-	16,497,518	-
ATXN	ATXN-PWRF	Power Factor	$/kVAr/day	-	150,670	-
ATXT	ATXT-24UC	Variable	$/kWh	-	1,106,722,843	-
ATXT	ATXT-CAPY	Capacity	$/kVA/day	-	214,334,602	-
ATXT	ATXT-DAMD	Demand	$/kVA/day	0.2430	88,607,949	$21,531,732
ATXT	ATXT-PWRF	Power Factor	$/kVAr/day	-	5,962,320	-

High voltage

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
AHVN	AHVN-FIXD	Fixed	$/day	-	3,324	-
AHVN	AHVN-24UC	Variable	$/kWh	0.0199	2,280,404	$45,380
AHVN	AHVN-CAPY	Capacity	$/kVA/day	-	1,636,956	-
AHVN	AHVN-PWRF	Power Factor	$/kVAr/day	-	230,352	-
AHVT	AHVT-24UC	Variable	$/kWh	-	439,706,362	-
AHVT	AHVT-CAPY	Capacity	$/kVA/day	-	54,464,357	-
AHVT	AHVT-DAMD	Demand	$/kVA/day	0.2430	34,088,607	$8,283,532
AHVT	AHVT-DEXA	Excess demand	$/kVA/day	-	139,234	-
AHVT	AHVT-PWRF	Power Factor	$/kVAr/day	-	1,688,039	-

Northern non-standard charges between 1 April 2015 to 31 March 2016

	$PTP_{i,2016} Q_{i,2016}$
Sum	**$650,496**

Non-standard

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016} Q_{i,2016}$
WN01			$/year	$179,716	1	$179,716
WN02			$/year	-	1	-
WN03			$/year	$5,839	1	$5,839
WN04			$/year	$260,952	1	$260,952
WN05			$/year	-	1	-
WN06			$/year	-	1	-
WN07			$/year	$1,831	1	$1,831
WN08			$/year	$1,562	1	$1,562
WN09			$/year	$200,595	1	$200,595
WPR1			$/year	-	1	-

Auckland non-standard charges between 1 April 2015 to 31 March 2016

	$PTP_{i,2016} Q_{i,2016}$
Sum	**$11,110,211**

Non-standard

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016} Q_{i,2016}$
AN01			$/year	-	1	-
AN02			$/year	-	1	-
AN03			$/year	$66,392	1	$66,392
AN04			$/year	-	1	-
AN05			$/year	$383,014	1	$383,014
AN06			$/year	$1,635,623	1	$1,635,623
AN07			$/year	-	1	-
AN08			$/year	$55,981	1	$55,981
AN09			$/year	-	1	-
AN10			$/year	$88,528	1	$88,528
AN11			$/year	$164,736	1	$164,736
AN12			$/year	-	1	-
AN13			$/year	$41,816	1	$41,816
AN14			$/year	$333,038	1	$333,038
AN15			$/year	-	1	-
AN16			$/year	-	1	-
AN17			$/year	-	1	-
AN18			$/year	-	1	-
AN19			$/year	$764	1	$764
AN20			$/year	$339,935	1	$339,935
AN21			$/year	$493,080	1	$493,080
AN22			$/year	$109,013	1	$109,013
AN23			$/year	$445,929	1	$445,929
AN24			$/year	$307,896	1	$307,896
AN25			$/year	-	1	-
AN26			$/year	-	1	-
AN27			$/year	$37,689	1	$37,689
AN28			$/year	$248,779	1	$248,779
AN29			$/year	$995,948	1	$995,948
AN30			$/year	-	1	-
AN31			$/year	$3,609,162	1	$3,609,162
AN32			$/year	-	1	-
AN33			$/year	$233,549	1	$233,549
AN34			$/year	$17,596	1	$17,596
AN35			$/year	-	1	-
AN36			$/year	-	1	-
AN37			$/year	$371,611	1	$371,611
AN38			$/year	-	1	-
AN39			$/year	-	1	-
AN40			$/year	$82,049	1	$82,049
AN41			$/year	-	1	-
AN42			$/year	-	1	-
AN43			$/year	$606,214	1	$606,214
AN44			$/year	$109,451	1	$109,451
AN45			$/year	-	1	-
AN46			$/year	$18,925	1	$18,925
AN47			$/year	$112,345	1	$112,345
AN48			$/year	$191,271	1	$191,271
AN49			$/year	$9,876	1	$9,876
APR1			$/year	-	1	-

Injection - Northern

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
WRCL	WRCL-INJT	Variable	$/kWh	-	738,550	-
WRUL	WRUL-INJT	Variable	$/kWh	-	333,170	-
WRHL	WRHL-INJT	Variable	$/kWh	-	-	-
WRCS	WRCS-INJT	Variable	$/kWh	-	- 197,488	-
WRUS	WRUS-INJT	Variable	$/kWh	-	416,947	-
WRHS	WRHS-INJT	Variable	$/kWh	-	-	-
WBSU	WBSU-INJT	Variable	$/kWh	-	-	-
WBSN	WBSN-INJT	Variable	$/kWh	-	105,843	-
WBSH	WBSH-INJT	Variable	$/kWh	-	-	-
WLVN	WLVN-INJT	Variable	$/kWh	-	20,336	-
WLVH	WLVH-INJT	Variable	$/kWh	-	-	-
WTXN	WTXN-INJT	Variable	$/kWh	-	-	-
WTXH	WTXH-INJT	Variable	$/kWh	-	-	-
WHVN	WHVN-INJT	Variable	$/kWh	-	-	-
WHVH	WHVH-INJT	Variable	$/kWh	-	-	-

Injection - Auckland

Price plan	Code	Description	Units	$PTP_{i,2016}$	$Q_{i,2016}$	$PTP_{i,2016}Q_{i,2016}$
ARCL	ARCL-INJT	Variable	$/kWh	-	454,417	-
ARUL	ARUL-INJT	Variable	$/kWh	-	253,994	-
ARHL	ARHL-INJT	Variable	$/kWh	-	166	-
ARCS	ARCS-INJT	Variable	$/kWh	-	569,209	-
ARUS	ARUS-INJT	Variable	$/kWh	-	250,943	-
ARHS	ARHS-INJT	Variable	$/kWh	-	-	-
ABSU	ABSU-INJT	Variable	$/kWh	-	-	-
ABSN	ABSN-INJT	Variable	$/kWh	-	147,546	-
ABSH	ABSH-INJT	Variable	$/kWh	-	-	-
ALVN	ALVN-INJT	Variable	$/kWh	-	48,802	-
ALVT	ALVT-INJT	Variable	$/kWh	-	5,626	-
ATXN	ATXN-INJT	Variable	$/kWh	-	-	-
ATXT	ATXT-INJT	Variable	$/kWh	-	-	-
AHVN	AHVN-INJT	Variable	$/kWh	-	-	-
AHVT	AHVT-INJT	Variable	$/kWh	-	6,423	-

APPENDIX 5: DETAILS OF $D_{I,2016}Q_{I,2015}$

Summary of $DP_{i,2016}Q_{i,2015}$ for the 2017 assessment period

	$DPi_{,2016}Qi_{,2015}$
Sum	**$388,688,984**

	$DPi_{,2016}Qi_{,2015}$
Northern published charges between 1 April 2015 to 31 March 2016	$131,726,587
Auckland published charges between 1 April 2015 to 31 March 2016	$243,567,461
Northern non-standard charges between 1 April 2015 to 31 March 2016	$927,387
Auckland non-standard charges between 1 April 2015 to 31 March 2016	$12,467,550

Northern published charges between 1 April 2015 to 31 March 2016

	$DPi_{,2016}Qi_{,2015}$
Sum	**$131,726,587**

Residential

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
WRCL	WRCL-FIXD	Fixed	$/day	0.1500	27,487,347	$4,123,102
WRCL	WRCL-AICO	Variable, controlled	$/kWh	0.0630	399,588,196	$25,174,056
WRUL	WRUL-FIXD	Fixed	$/day	0.1500	4,461,250	$669,188
WRUL	WRUL-24UC	Variable, uncontrolled	$/kWh	0.0630	60,291,033	$3,798,335
WRCS	WRCS-FIXD	Fixed	$/day	0.9800	32,310,127	$31,663,924
WRCS	WRCS-AICO	Variable, controlled	$/kWh	0.0252	805,830,459	$20,306,928
WRUS	WRUS-FIXD	Fixed	$/day	0.9800	5,938,466	$5,819,697
WRUS	WRUS-24UC	Variable, uncontrolled	$/kWh	0.0252	132,176,178	$3,330,840
WRHL	WRHL-FIXD	Fixed	$/day	0.1500	-	-
WRHL	WRHL-OFPK	Variable, off peak	$/kWh	0.0630	-	-
WRHL	WRHL-PEAK	Variable, peak	$/kWh	0.0630	-	-
WRHS	WRHS-FIXD	Fixed	$/day	0.9800	-	-
WRHS	WRHS-OFPK	Variable, off peak	$/kWh	0.0252	-	-
WRHS	WRHS-PEAK	Variable, peak	$/kWh	0.0252	-	-

General

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
WBSU	WBSU-FIXD	Fixed	$/day/fitting	0.1400	12,700,546	$1,778,076
WBSU	WBSU-24UC	Variable	$/kWh	0.0372	18,840,924	$700,882
WBSN	WBSN-FIXD	Fixed	$/day	0.9800	7,887,470	$7,729,721
WBSN	WBSN-24UC	Variable	$/kWh	0.0252	394,041,748	$9,929,852
WBSH	WBSH-FIXD	Fixed	$/day	0.9800	-	-
WBSH	WBSH-OFPK	Variable, off peak	$/kWh	0.0252	-	-
WBSH	WBSH-PEAK	Variable, peak	$/kWh	0.0252	-	-

Low voltage

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
WLVN	WLVN-FIXD	Fixed	$/day	5.5000	288,511	$1,586,811
WLVN	WLVN-24UC	Variable	$/kWh	0.0242	132,150,318	$3,198,038
WLVN	WLVN-CAPY	Capacity	$/kVA/day	0.0266	41,326,803	$1,099,293
WLVN	WLVN-PWRF	Power Factor	$/kVAr/day	0.2917	528,064	$154,036
WLVH	WLVH-FIXD	Fixed	$/day	10.3800	65,357	$678,406
WLVH	WLVH-24UC	Variable	$/kWh	0.0057	99,094,867	$564,841
WLVH	WLVH-CAPY	Capacity	$/kVA/day	0.0266	16,327,786	$434,319
WLVH	WLVH-DAMD	Demand	$/kVA/day	0.0389	7,528,017	$292,840
WLVH	WLVH-PWRF	Power Factor	$/kVAr/day	0.2917	676,302	$197,277

Transformer

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
WTXN	WTXN-FIXD	Fixed	$/day	4.9500	51,041	$252,653
WTXN	WTXN-24UC	Variable	$/kWh	0.0198	41,855,065	$828,730
WTXN	WTXN-CAPY	Capacity	$/kVA/day	0.0261	13,992,729	$365,210
WTXN	WTXN-PWRF	Power Factor	$/kVAr/day	0.2917	437,755	$127,693
WTXH	WTXH-FIXD	Fixed	$/day	9.3400	84,929	$793,237
WTXH	WTXH-24UC	Variable	$/kWh	0.0056	350,872,878	$1,964,888
WTXH	WTXH-CAPY	Capacity	$/kVA/day	0.0261	65,085,190	$1,698,723
WTXH	WTXH-DAMD	Demand	$/kVA/day	0.0333	27,935,680	$930,258
WTXH	WTXH-PWRF	Power Factor	$/kVAr/day	0.2917	1,555,345	$453,694

High voltage

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
WHVN	WHVN-FIXD	Fixed	$/day	4.8000	22	$106
WHVN	WHVN-24UC	Variable	$/kWh	0.0186	550	$10
WHVN	WHVN-CAPY	Capacity	$/kVA/day	0.0253	154	$4
WHVN	WHVN-PWRF	Power Factor	$/kVAr/day	0.2917	-	-
WHVH	WHVH-FIXD	Fixed	$/day	9.0600	5,475	$49,604
WHVH	WHVH-24UC	Variable	$/kWh	0.0054	97,835,946	$528,314
WHVH	WHVH-CAPY	Capacity	$/kVA/day	0.0253	11,077,750	$280,267
WHVH	WHVH-DAMD	Demand	$/kVA/day	0.0250	6,663,134	$166,578
WHVH	WHVH-DEXA	Excess demand	$/kVA/day	0.6700	947	$635
WHVH	WHVH-PWRF	Power Factor	$/kVAr/day	0.2917	190,337	$55,521

Auckland published charges between 1 April 2015 to 31 March 2016

	$DPi_{,2016}Qi_{,2015}$
Sum	**$243,567,461**

Residential

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
ARCL	ARCL-FIXD	Fixed	$/day	0.1500	37,508,554	$5,626,283
ARCL	ARCL-AICO	Variable, controlled	$/kWh	0.0630	543,106,965	$34,215,739
ARUL	ARUL-FIXD	Fixed	$/day	0.1500	11,719,164	$1,757,875
ARUL	ARUL-24UC	Variable, uncontrolled	$/kWh	0.0630	133,928,893	$8,437,520
ARCS	ARCS-FIXD	Fixed	$/day	0.9800	40,355,011	$39,547,911
ARCS	ARCS-AICO	Variable, controlled	$/kWh	0.0252	1,017,352,355	$25,637,279
ARUS	ARUS-FIXD	Fixed	$/day	0.9800	9,714,273	$9,519,987
ARUS	ARUS-24UC	Variable, uncontrolled	$/kWh	0.0252	213,657,127	$5,384,160
ARHL	ARHL-FIXD	Fixed	$/day	0.1500	-	-
ARHL	ARHL-OFPK	Variable, off peak	$/kWh	0.0630	-	-
ARHL	ARHL-PEAK	Variable, peak	$/kWh	0.0630	-	-
ARHS	ARHS-FIXD	Fixed	$/day	0.9800	-	-
ARHS	ARHS-OFPK	Variable, off peak	$/kWh	0.0252	-	-
ARHS	ARHS-PEAK	Variable, peak	$/kWh	0.0252	-	-

General

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
ABSU	ABSU-FIXD	Fixed	$/day/fitting	0.1400	22,667,222	$3,173,411
ABSU	ABSU-24UC	Variable	$/kWh	0.0372	37,037,764	$1,377,805
ABSN	ABSN-FIXD	Fixed	$/day	0.9800	12,349,743	$12,102,748
ABSN	ABSN-24UC	Variable	$/kWh	0.0252	779,494,433	$19,643,260
ABSH	ABSH-FIXD	Fixed	$/day	0.9800	-	-
ABSH	ABSH-OFPK	Variable, off peak	$/kWh	0.0252	-	-
ABSH	ABSH-PEAK	Variable, peak	$/kWh	0.0252	-	-

Low voltage

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
ALVN	ALVN-FIXD	Fixed	$/day	1.5600	686,911	$1,071,581
ALVN	ALVN-24UC	Variable	$/kWh	0.0429	215,420,181	$9,241,526
ALVN	ALVN-CAPY	Capacity	$/kVA/day	0.0365	102,643,879	$3,746,502
ALVN	ALVN-PWRF	Power Factor	$/kVAr/day	0.2917	546,105	$159,299
ALVT	ALVT-24UC	Variable	$/kWh	0.0164	574,994,197	$9,429,905
ALVT	ALVT-CAPY	Capacity	$/kVA/day	0.0365	129,928,983	$4,742,408
ALVT	ALVT-DAMD	Demand	$/kVA/day	0.0633	51,124,341	$3,236,171
ALVT	ALVT-PWRF	Power Factor	$/kVAr/day	0.2917	6,802,939	$1,984,417

Transformer

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
ATXN	ATXN-FIXD	Fixed	$/day	1.5100	52,593	$79,415
ATXN	ATXN-24UC	Variable	$/kWh	0.0416	20,916,857	$870,141
ATXN	ATXN-CAPY	Capacity	$/kVA/day	0.0358	13,432,742	$480,892
ATXN	ATXN-PWRF	Power Factor	$/kVAr/day	0.2917	106,055	$30,936
ATXT	ATXT-24UC	Variable	$/kWh	0.0161	1,054,639,141	$16,979,690
ATXT	ATXT-CAPY	Capacity	$/kVA/day	0.0358	204,424,520	$7,318,398
ATXT	ATXT-DAMD	Demand	$/kVA/day	0.0572	84,661,913	$4,842,661
ATXT	ATXT-PWRF	Power Factor	$/kVAr/day	0.2917	6,382,451	$1,861,761

High voltage

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016}Qi_{,2015}$
AHVN	AHVN-FIXD	Fixed	$/day	1.4600	2,873	$4,195
AHVN	AHVN-24UC	Variable	$/kWh	0.0398	2,102,175	$83,667
AHVN	AHVN-CAPY	Capacity	$/kVA/day	0.0347	1,342,193	$46,574
AHVN	AHVN-PWRF	Power Factor	$/kVAr/day	0.2917	27,704	$8,081
AHVT	AHVT-24UC	Variable	$/kWh	0.0156	428,959,929	$6,691,775
AHVT	AHVT-CAPY	Capacity	$/kVA/day	0.0347	53,518,680	$1,857,098
AHVT	AHVT-DAMD	Demand	$/kVA/day	0.0482	33,788,841	$1,628,622
AHVT	AHVT-DEXA	Excess demand	$/kVA/day	0.7280	253,856	$184,807
AHVT	AHVT-PWRF	Power Factor	$/kVAr/day	0.2917	1,929,931	$562,961

Northern non-standard charges between 1 April 2015 to 31 March 2016

	$DPi_{,2016} Qi_{,2015}$
Sum	**$927,387**

Non-standard

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016} Qi_{,2015}$
WN01			$/year	$203,482	1	$203,482
WN02			$/year	$56,463	1	$56,463
WN03			$/year	$61,838	1	$61,838
WN04			$/year	$240,590	1	$240,590
WN05			$/year	-	1	-
WN06			$/year	-	1	-
WN07			$/year	$27,095	1	$27,095
WN08			$/year	$8,596	1	$8,596
WN09			$/year	$425,833	1	$425,833
WPR1			$/year	($96,510)	1	($96,510)

Auckland non-standard charges between 1 April 2015 to 31 March 2016

	$DPi_{,2016} Qi_{,2015}$
Sum	**$12,467,550**

Non-standard

Price plan	Code	Description	Units	$DPi_{,2016}$	$Q_{i,2015}$	$DPi_{,2016} Qi_{,2015}$
AN01			$/year	$274,449	1	$274,449
AN02			$/year	-	1	-
AN03			$/year	$473,690	1	$473,690
AN04			$/year	$25,645	1	$25,645
AN05			$/year	$579,014	1	$579,014
AN06			$/year	$1,108,064	1	$1,108,064
AN07			$/year	-	1	-
AN08			$/year	$85,155	1	$85,155
AN09			$/year	$67,259	1	$67,259
AN10			$/year	$380,985	1	$380,985
AN11			$/year	$599,838	1	$599,838
AN12			$/year	$259,203	1	$259,203
AN13			$/year	$124,482	1	$124,482
AN14			$/year	$668,338	1	$668,338
AN15			$/year	-	1	-
AN16			$/year	-	1	-
AN17			$/year	-	1	-
AN18			$/year	-	1	-
AN19			$/year	$44,439	1	$44,439
AN20			$/year	$234,856	1	$234,856
AN21			$/year	$192,158	1	$192,158
AN22			$/year	$161,192	1	$161,192
AN23			$/year	$1,210,383	1	$1,210,383
AN24			$/year	-	1	-
AN25			$/year	$851,614	1	$851,614
AN26			$/year	-	1	-
AN27			$/year	$167,147	1	$167,147
AN28			$/year	$421,434	1	$421,434
AN29			$/year	$392,540	1	$392,540
AN30			$/year	$39,412	1	$39,412
AN31			$/year	$743,686	1	$743,686
AN32			$/year	$65,453	1	$65,453
AN33			$/year	$475,027	1	$475,027
AN34			$/year	$189,349	1	$189,349
AN35			$/year	$106,387	1	$106,387
AN36			$/year	$88,645	1	$88,645
AN37			$/year	$462,333	1	$462,333
AN38			$/year	$289,423	1	$289,423
AN39			$/year	$179,512	1	$179,512
AN40			$/year	$287,978	1	$287,978
AN41			$/year	$78,552	1	$78,552
AN42			$/year	-	1	-
AN43			$/year	$537,800	1	$537,800
AN44			$/year	$689,888	1	$689,888
AN45			$/year	$16,798	1	$16,798
AN46			$/year	$36,546	1	$36,546
AN47			$/year	$46,734	1	$46,734
AN48			$/year	-	1	-
AN49			$/year	-	1	-
APR1			$/year	($187,860)	1	($187,860)

Injection - Northern

Price plan	Code	Description	Units	$DPi_{i,2016}$	$Q_{i,2015}$	$DPi_{i,2016}Qi_{i,2015}$
WRCL	WRCL-INJT	Variable, controlled	$/kWh	-	-	-
WRUL	WRUL-INJT	Variable, controlled	$/kWh	-	-	-
WRHL	WRHL-INJT	Variable, controlled	$/kWh	-	-	-
WRCS	WRCS-INJT	Variable, controlled	$/kWh	-	-	-
WRUS	WRUS-INJT	Variable, controlled	$/kWh	-	-	-
WRHS	WRHS-INJT	Variable, controlled	$/kWh	-	-	-
WBSU	WBSU-INJT	Variable, controlled	$/kWh	-	-	-
WBSN	WBSN-INJT	Variable, controlled	$/kWh	-	-	-
WBSH	WBSH-INJT	Variable, controlled	$/kWh	-	-	-
WLVN	WLVN-INJT	Variable, controlled	$/kWh	-	-	-
WLVH	WLVH-INJT	Variable, controlled	$/kWh	-	-	-
WTXN	WTXN-INJT	Variable, controlled	$/kWh	-	-	-
WTXH	WTXH-INJT	Variable, controlled	$/kWh	-	-	-
WHVN	WHVN-INJT	Variable, controlled	$/kWh	-	-	-
WHVH	WHVH-INJT	Variable, controlled	$/kWh	-	-	-

Injection - Auckland

Price plan	Code	Description	Units	$DPi_{i,2016}$	$Q_{i,2015}$	$DPi_{i,2016}Qi_{i,2015}$
ARCL	ARCL-INJT	Variable, controlled	$/kWh	-	-	-
ARUL	ARUL-INJT	Variable, controlled	$/kWh	-	-	-
ARHL	ARHL-INJT	Variable, controlled	$/kWh	-	-	-
ARCS	ARCS-INJT	Variable, controlled	$/kWh	-	-	-
ARUS	ARUS-INJT	Variable, controlled	$/kWh	-	-	-
ARHS	ARHS-INJT	Variable, controlled	$/kWh	-	-	-
ABSU	ABSU-INJT	Variable, controlled	$/kWh	-	-	-
ABSN	ABSN-INJT	Variable, controlled	$/kWh	-	-	-
ABSH	ABSH-INJT	Variable, controlled	$/kWh	-	-	-
ALVN	ALVN-INJT	Variable, controlled	$/kWh	-	-	-
ALVT	ALVT-INJT	Variable, controlled	$/kWh	-	-	-
ATXN	ATXN-INJT	Variable, controlled	$/kWh	-	-	-
ATXT	ATXT-INJT	Variable, controlled	$/kWh	-	-	-
AHVN	AHVN-INJT	Variable, controlled	$/kWh	-	-	-
AHVT	AHVT-INJT	Variable, controlled	$/kWh	-	-	-

APPENDIX 6: MAJOR EVENT DAY EXPLANATIONS

In accordance with Commerce Commission definitions, a Major Event Day means any day where the daily SAIDI Value for Class C Interruptions or daily SAIFI Value for Class C Interruptions exceeds the applicable SAIDI Unplanned Boundary Value or SAIFI Unplanned Boundary Value. The following events qualify as Major Event Days. Table 1 details the Unplanned SAIDI and SAIFI Assessed Boundary Values applied to Major Event Days.

Table 1 SAIDI and SAIFI Assessed Boundary Values

SAIDI	SAIFI
3.374	0.039

Event Description – Albany GXP Loss of Supply to 33kV Bus: 06 May 2016

On 6 May 2016, Vector lost supply to the 33kV busbar located at the Albany Grid Exit Point (GXP). The GXP outage was due to the three 33kV incomer SCADA circuit breakers (CB) tripping on the CB fail protection settings. The inadvertent tripping was caused by preventative maintenance activities being completed on the protection relays by Vector's Field Service Provider.

The incident impacted approximately 40,815 customers at its peak, with most customers having been restored supply within 26 minutes.

On 6 May 2016 Vector's SAIFI Value for Class C Interruptions exceeded the SAIFI Unplanned Boundary Value. Table 2 details the non-normalised total impact of the day. The highlighted cells show which values exceeded the Unplanned Boundary Values.

Table 2 Non-normalised SAIDI and SAIFI for 6 May 2016

Major Event Day	SAIDI	SAIFI
06/05/2016	2.124	0.077

A formal detailed investigation was completed on the Albany GXP Loss of Supply to the 33kV busbar incident to identify the root causes and apply appropriate control mechanisms to reduce the likelihood of similar incidences occurring.

Event Description – Storm Event: 26 August 2016

On 26 August 2016, a period of strong north-westerly flows and heavy rain began to spread across many areas of New Zealand, resulting in strong winds for the Auckland region. Wind speeds peaked at 70 km/h, resulting in asset failures and a loss of supply to customers.

In figure 1, the impact of the storm is graphically illustrated with customer numbers on the left-hand scale. The impact of the gale force wind speeds on the network performance is evident.

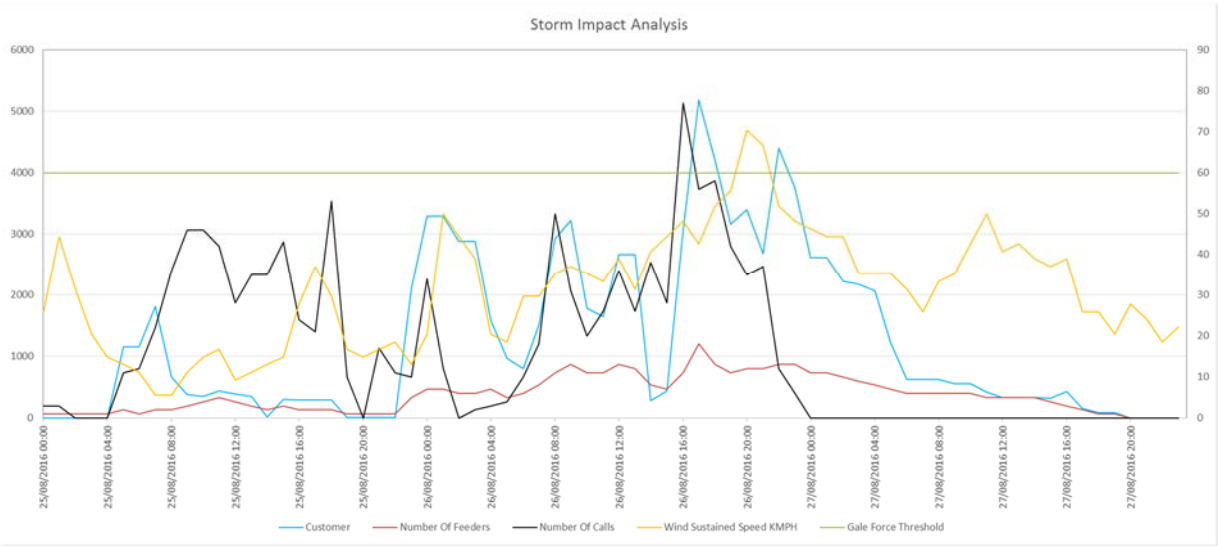


Figure 1 August Storm Event Customer Impact

Both Vector's SAIDI and SAIFI Values for Class C Interruptions exceeded the applicable SAIDI and SAIFI Unplanned Boundary Values. Table 3 details the non-normalised total impact of each day. The highlighted cells show which values exceeded the Unplanned Boundary Values.

Table 3 Non-normalised SAIDI and SAIFI for 26 August 2016

Major Event Days	SAIDI	SAIFI
26/08/2016	5.787	0.040

The storm resulted in a significant rise in overhead asset faults, most of which were caused by tree contact and vegetation debris as a result of the extreme wind speeds. At its peak, around 18 circuits were affected by the storm, impacting 5,185 customers.

Event Description – Storm Event: 21 - 22 January 2017

On 21 January 2017, a period of strong north-easterly flows and heavy rain began to spread across many areas of New Zealand, resulting in strong winds for the Auckland region. The storm period continued from 21-22 January with wind speeds peaking at 77 km/h, resulting in asset failures and a loss of supply to customers.

In figure 2, the impact of the storm is graphically illustrated with customer numbers on the left-hand scale. The impact of the gale force wind speeds on the network performance is evident.

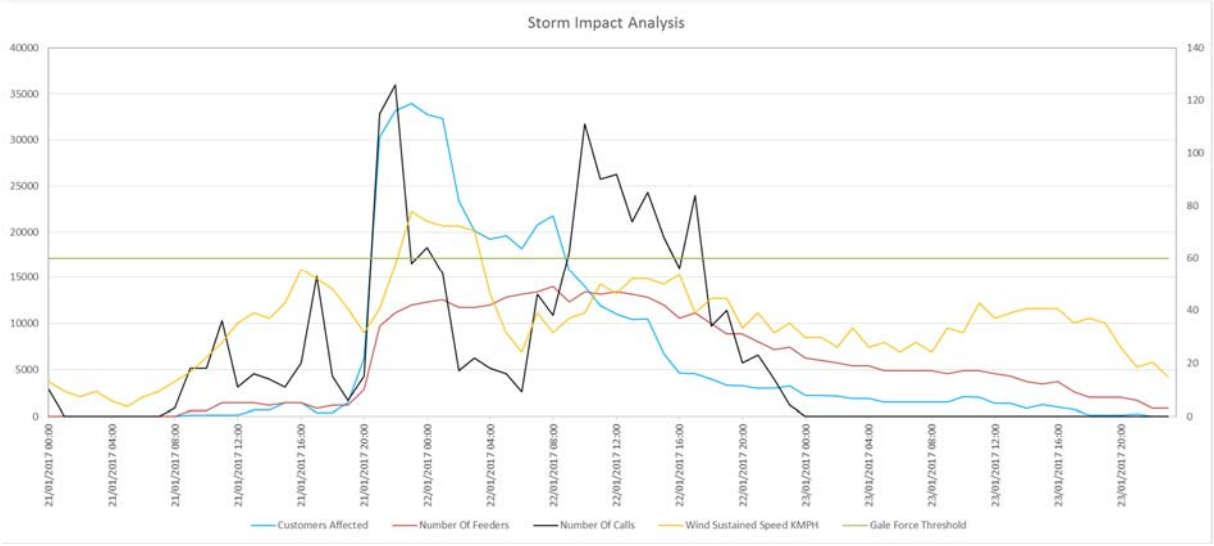


Figure 2 January Storm Event Customer Impact

On 21 January 2017 both Vector's SAIDI and SAIFI Values for Class C Interruptions exceeded the applicable SAIDI and SAIFI Unplanned Boundary Values; on 22 January 2017 Vector's SAIDI Value for Class C Interruptions exceeded the SAIDI Unplanned Boundary Value. Table 4 details the non-normalised total impact of each day. The highlighted cells show which values exceeded the Unplanned Boundary Values.

Table 4 Non-normalised SAIDI and SAIFI for 21 – 22 January 2017

Major Event Days	SAIDI	SAIFI
21/01/2017	31.270	0.071
22/01/2017	11.647	0.032

The storm resulted in a significant rise in overhead asset faults, most of which were caused by tree contact and vegetation debris as a result of the extreme wind speeds.

Vector fault crews were operating under storm response mode[4] with extended hours (relating to the HV event) to complete repair and restoration. At its peak, around 44 circuits were affected by the storm, impacting 33,193 customers.

Event Description – Storm Event: 08 March 2017

On 8 March 2017, a period of strong south-easterly flows and heavy rain began to spread across many areas of New Zealand, resulting in strong winds for the Auckland region. Wind speeds peaked at 68 km/h, resulting in vegetation faults causing loss of supply to customers.
In figure 3, the impact of the storm is graphically illustrated with customer numbers on the left-hand scale. The impact of the high wind speeds on the network performance is evident.

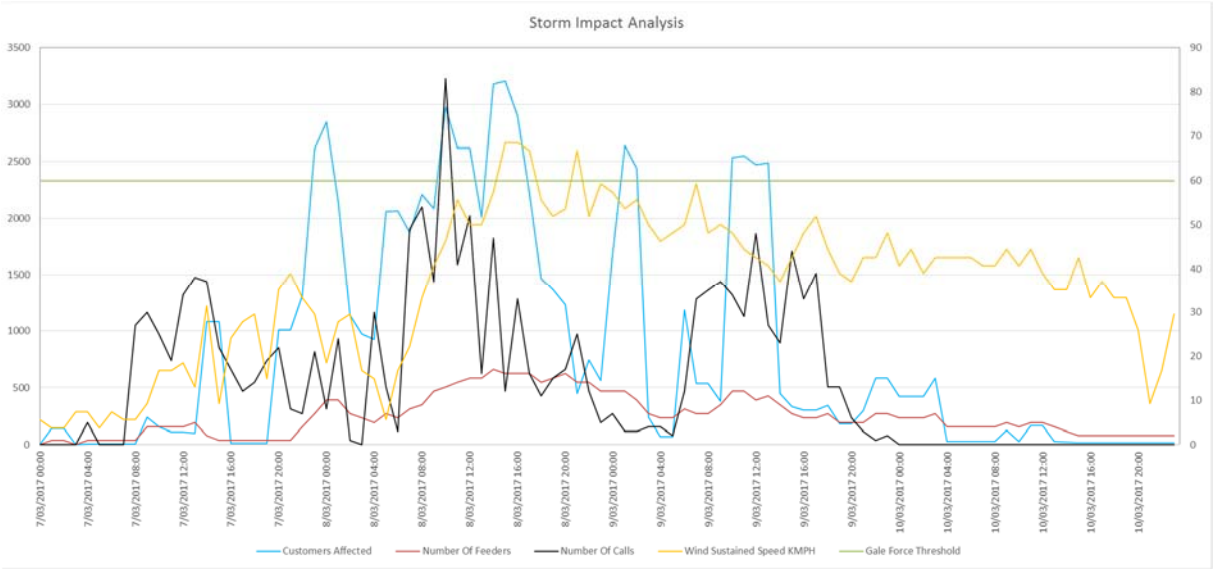


Figure 3 March Storm Event Customer Impact

Vector's SAIDI Value for Class C Interruptions exceeded the SAIDI Unplanned Boundary Value. Table 5 details the non-normalised total impact of each day. The highlighted cells show which values exceeded the Unplanned Boundary Values.

Table 5 Non-normalised SAIDI and SAIFI for 8 March 2017

Major Event Days	SAIDI	SAIFI
08/03/2017	3.606	0.019

The storm resulted in a significant rise in overhead asset faults, most of which were caused by tree contact and vegetation debris as a result of the extreme wind speeds. At its peak, around 16 circuits were affected by the storm, impacting 3,200 customers.

[4] When operating under storm response mode crews are instructed to focus solely on the event at hand and to postpone any planned work or non-critical activities.

APPENDIX 7: EXPLANATION FOR NOT COMPLYING WITH ANNUAL RELIABILITY ASSESSMENT & ACTIONS TO MITIGATE FUTURE NON-COMPLIANCE

During RY2017, Vector's SAIDI and SAIFI Assessed Values exceeded the limits specified in Schedule 4A of the Determination. This constitutes a breach of clause 9.1 of the Determination.

The primary contributing factors to the quality standards breach in RY2017 include an increase on the 10-year average used to set the limits for planned, overhead, 3rd party, isolation for safety, underground asset failures and vegetation related outages. The proportionate contributors to SAIDI and SAIFI are shown in Figure 1 below. There has been a significant change in rankings from the reference period and the primary contributor to SAIDI is now planned work, rather than the usual overhead. The top six SAIDI contributors in RY17 will be discussed in more detail below.

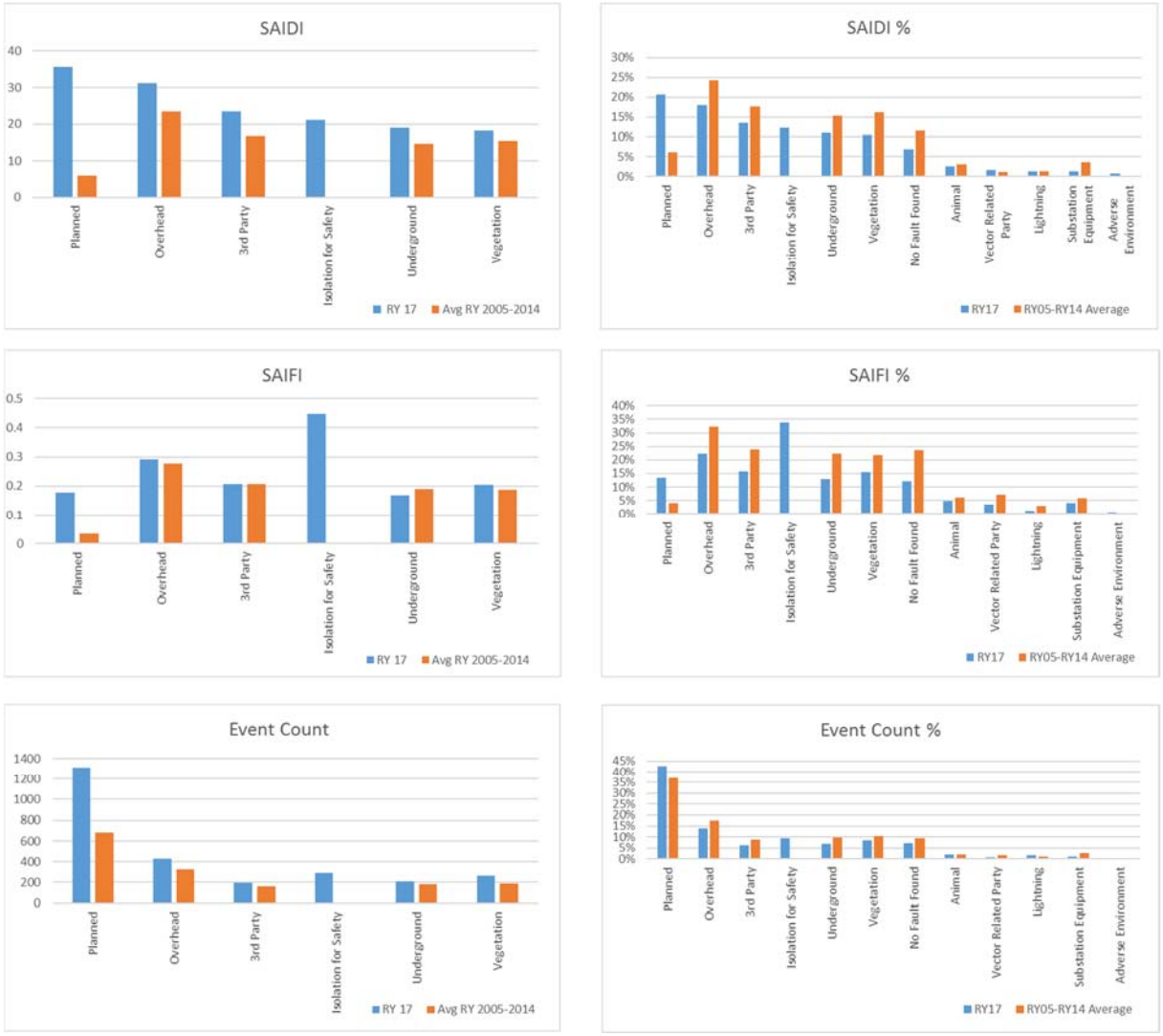


Figure 1 *Contributors to the Quality Breach*

Contributing Factors

Vector introduced new work practices and policies to better align business operations with the higher-level outcomes stipulated in the Health and Safety at Work Act 2015, to ensure compliance with the threshold of “Reasonably Practicable” for risk management and the hierarchy of controls. Two specific policies were implemented that have a direct influence on SAIDI and SAIFI.

Public Reported Low Lines - Policy

The first, addresses the response to public reported low lines. The new policy is intended to address public reported instances of low or unsafe lines by minimising the risk as soon as reasonably practicable. This has resulted in Vector de-energising the entire feeder from the zone substation remotely, or when possible, at a more localised SCADA controlled switch, on receipt of the notification from the call centre. The circuit is only re-energised after it is deemed safe to do so, after the incident has been attended by our fault person and alternative local controls put in place to isolate the risk where required. It is important to note that the majority of reported incidents are related to Non-Vector assets, which now results in spurious remote isolations.

Working De-energised - Policy

The second, addresses the ability for work to be carried out on live equipment.

For medium voltage and above, Vector’s policy is that no person shall be engaged in any work activity on or near any live line unless:

(a) It is unreasonable in all circumstances for the line to be de-energised; and

(b) It is reasonable in all circumstances for the worker to be at work on or near the conductor while it is a live line; and

(c) Suitable precautions are taken to prevent injury.

In order to carry out live line work on Vector’s high voltage electrical network, all three of the above requirements (along with the provisions of the standard EOS-006 Rev 13 including the requirements of NZECP 46:2003) must be met.

For low voltage work, the policy is that all works on Vector’s low voltage electrical network must be carried out in a de-energised state unless live work is justified by the exceptions and/ or conditions stated in the standard EOS-020-01, or a risk assessment has determined working de-energised is a higher risk than working live.

This has resulted in almost all work now being carried out on de-energised equipment. The impact of this policy is in addition to the policy introduced in 2015 requiring visible breaks and additional earths. Vector’s commitment to safety has meant that the increased direct cost of these initiatives

is being borne by the business as well as the cumulative collateral impact on SAIDI and SAIFI for both planned and unplanned events.

Restricted Operations on Distribution Switchgear

Several safety alerts have been issued by industry participants as a result of issues they have encountered relating to distribution switchgear. Vector has responded to these and restricted operations on certain types of switchgear which is consistent with industry practice. These restrictions compound the impact of the working de-energised policy described above and influence both planned and unplanned activities.

Weather Events

As described in Appendix 6, Vector has experienced three significant storm events in RY2017. These were all multi day events although the normalised result has only discounted the specific days that exceeded the threshold values. Both the frequency and severity of these events are increasing and the extreme weather conditions encountered were in many cases classified as being at or close to the extreme since records began, according to NIWA records[5] for the period.

As discussed in previous years, there is a good correlation between average daily wind speed and SAIDI. In RY16 and RY17, there were 7 and 11 days respectively, when the wind speed exceeded 60km/h, indicating an increased severity in RY17. There is a stronger correlation between Unplanned SAIDI and days when the mean wind speed is greater than 40km/h. Figure 2 below highlights the impact on Unplanned SAIDI days greater than 1 minute for RY17. The overall increased frequency, duration and severity in RY17 would also have a direct impact on Overhead and Vegetation SAIDI, and this is discussed further below.

[5] https://www.niwa.co.nz/sites/niwa.co.nz/files/Climate_Summary_Summer_2017_Final.pdf and similar

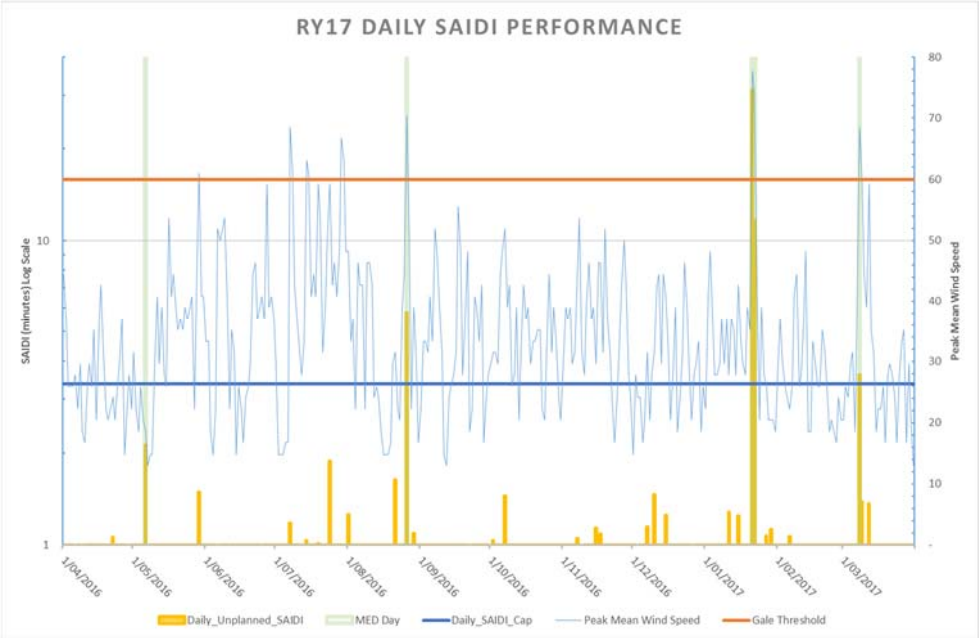


Figure 2 – *Unplanned SAIDI and Peak Mean Wind Speed*

Traffic

TomTom traffic data[6] for the Auckland Region indicates a 5% increase from 2015 to 2016 in the bespoke congestion index as well as increased travel times for morning and evening peaks at 68% and 81%, respectively. The congestion index has increased from 26% in 2008 to 38% in 2016.

In the period since 2008, vehicle numbers in Auckland also have grown by more than 207,000[7], contributing to the increased congestion. These changes have an impact on the time taken to respond to incidents as well as the time taken to complete any planned or unplanned work. Motor vehicles are also a contributor to 3rd party incidents and these are discussed further below.

Events attributed to Planned Work

In RY2017, the normalised contribution from planned work resulted in approximately 35 SAIDI minutes or 21%. This is a significant increase on the 5.9 minute, 10-year average that was used to establish the current SAIDI limit, despite there being no material changes to the volume of planned work or associated spend. Figure 3 below shows the relative change in planned SAIDI and SAIFI. Planned work is now the highest contributor to Vector's SAIDI and SAIFI.

[6] https://www.tomtom.com/en_gb/trafficindex/city/auckland
[7] http://www.transport.govt.nz/assets/CSVFiles/TV004Regionalroadvehiclefleetnumbers.csv

Figure 3 Relative Change in Planned SAIDI and SAIFI

The primary contributor to this significant change to planned SAIDI may be attributed to the pro-active implementation of the working de-energised policy described above.

There has been a similar impact on many other maintenance activities, which can now only be completed after being de-energised.

Events due to Overhead and Underground Asset Failures

The SAIDI contribution from overhead and underground asset failures were 31 minutes and 19 minutes respectively. Figure 4 below shows the relative contribution from overhead and underground incidents. The contribution from overhead asset failures is now the second highest, which is a significant change from it usually being the highest.

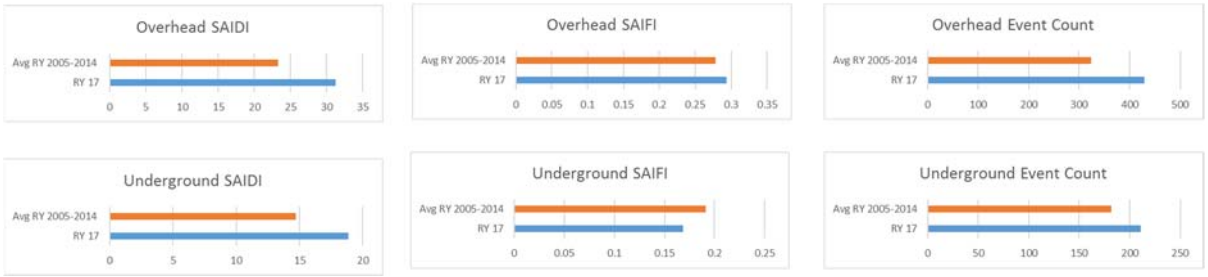


Figure 4 Contribution of Overhead and Underground Incidents to the Reliability Limits

The SAIDI minutes attributed to these asset failures is also an increase on the 10-year average used to establish the reliability limits. These would have also been impacted by the working de-energised and other contributing factors described above.

Events initiated by a 3rd Party

In RY2017, we have seen a significant increase in the SAIDI attributed to 3rd party events and a higher than average number of incidents making this the third highest contributor. Figure 5 below shows the contribution from 3rd party incidents, highlighting the increasing impact attributed to motor vehicles. This trend is consistent with the increasing population and vehicle numbers in the region causing increased congestion. In RY2017, the SAIDI attributed to motor vehicles alone was significantly greater than the 10-year average for 3rd party events.

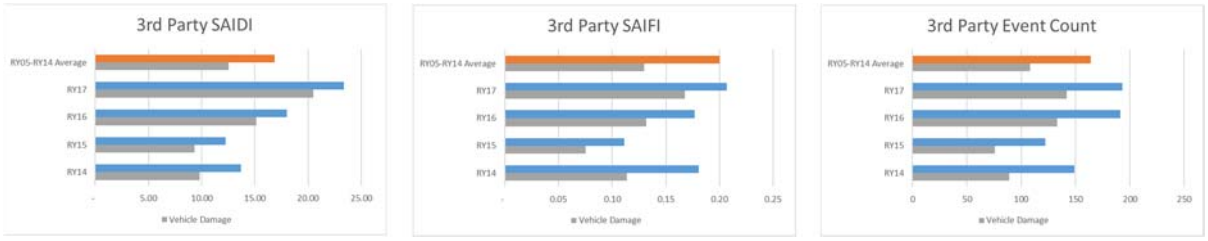


Figure 5 Contribution of 3rd Party Incidents to the Reliability Limits

The individual customer impact has also been noticeably impacted with the CAIDI for 3rd party incidents in RY2017 setting a new high. This would also have been impacted by the working de-energised policy described above.

Events due to Isolation for Safety

These incidents are primarily driven by the new isolation for safety policy described above and has attributed 21 SAIDI minutes in RY2017 making this the fourth highest contributor. This is significant in that this is now higher than the contribution from either vegetation or underground assets. Figure 6 shows the impact of isolation for safety events.

Figure 6 Contribution of Isolation for Safety to the Reliability Limits

Vector's Actions to Mitigate Non-Compliance

Since Vector first exceeded the SAIDI reliability limit in RY2014, Vector continues to put a significant focus on how the network assets and vegetation are managed. A number of initiatives have been implemented and these are likely to continue to produce improvements in time. This includes the following:

1. A focus on the Top 40 worst performing feeders;
2. Implementing a risk based prioritisation methodology;
3. Extending focus beyond the Top 40 worst performing feeders to address issues on the next tranche of worst performing feeders;
4. Developing a new strategy that will provide both short and longer term SAIDI improvement; and
5. Due to the significant operational changes that have occurred impacting on the Reliability Limits, we are seeking to have these limits amended to better align with the new operating environment.

Despite the overall contribution from vegetation still being higher than the average, the year-on-year trend as well as the performance of the top 40 feeders is improving and has decreased for the third successive year due to the focused activities mentioned above. The expectation is that this trend will continue. The improving trend here is notable despite the increased frequency, duration and severity of the adverse weather events experienced in RY2017, as described above. In addition, the impact of vegetation outside of the growth limit zones and airborne debris, continues to contribute to a significant portion of Vegetation SAIDI. The existing regulations governing vegetation do not provide Vector any rights to manage vegetation outside of the growth limit zone that presents a risk to the network. Figure 7 below shows the impact of vegetation.

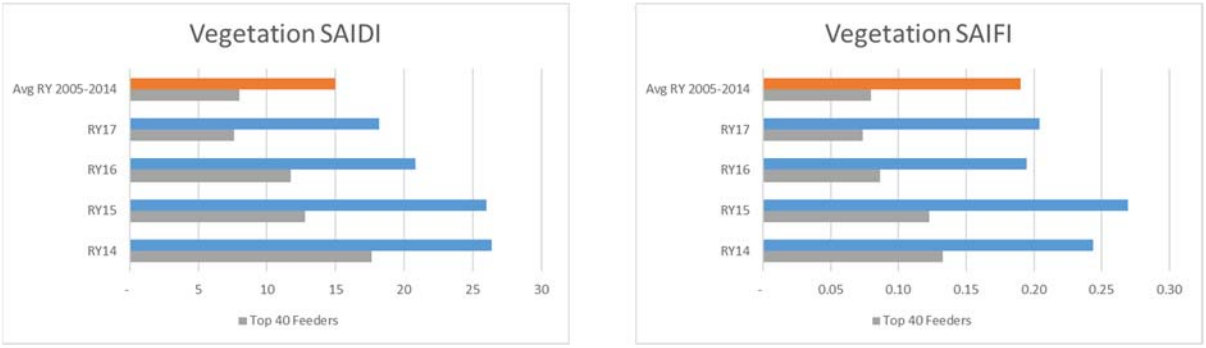


Figure 7 Contribution of Vegetation to the Reliability Limits

APPENDIX 8: PRICING METHODOLOGY

Overview of price components that Vector uses

Vector has a range of price components that apply to different price categories depending on the characteristics of a particular category and the availability of metering data. In some cases the price components for each category are historical and were inherited by Vector.

Price type	Price component	Code	Units	Description
Fixed	Daily	FIXD	$/day	Daily price applied to the number of days each consumer's point of connection is energised.
	Capacity	CAPY	$/kVA/day	Daily price applied to the installed capacity (or nominated capacity for AHVT or WHVH) of each consumer.
Variable	Volume	AICO 24UC OFPK PEAK	$/kWh	Volume price, applies to all electricity distributed to each consumer. Rate may vary depending on price category, e.g. controlled volume (AICO), uncontrolled volume (24UC), off peak volume (OFPK), or peak volume (PEAK).
	Demand	DAMD	$/kVA/day	Daily price applied to the average of the consumer's ten highest kVA demands between 8am and 10pm on weekdays each month.
	Excess Demand	DEXA	$/kVA/day	Daily price applied when the anytime maximum demand is greater than the nominated capacity and is applied to the difference between the anytime maximum kVA demand and the nominated capacity.
	Power factor	PWRF	$/kVAr/day	Daily price determined each month where a consumer's power factor is less than 0.95 lagging. The kVAr amount is calculated as twice the largest difference between the recorded kVArh in any one half-hour period and the kWh demand recorded in the same period divided by three.
	Injection	INJT	$/kWh	Volume injection price applies to all electricity injected into the network by each consumer.

How the distribution component of prices is derived

Proportion of distribution target revenue by price component for the mass market consumer group

Description	Price categories	Fixed prices Daily	Variable prices Volume
Residential, low user	ARCL, ARUL, ARGL, ARHL, WRCL, WRUL, WRGL, WRHL	14%	86%
Residential, standard	ARCS, ARUS, ARGS, ARHS, WRCS, WRUS, WRGS, WRHS	61%	39%
General[8]	ABSN, ABSH, WBSN, WBSH	40%	60%

Vector's mass market price categories predominantly have a two part charge comprising of a daily fixed price and a volume consumption price. This is largely a result of the historic availability of consumption information. As smart meters have become common, a time-of-use category has been introduced with prices that differentiate between peak and off-peak

[8] Prices between standard residential categories and the equivalent general categories are the same, however volume makes up a larger portion of revenue in the general price categories.

consumption in an attempt to reflect the costs to Vector of consumers' consumption during those time periods.

The majority of Vector's costs are fixed and sunk, so Vector has been seeking to increase the fixed portion of revenues to align the recovery of revenues with the manner in which costs are incurred. Fixed prices in the standard mass market price categories have increased from $0.98 per day to $0.99 per day.

Vector's residential prices are subject to the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004 (LFC Regulations). Vector complies with these regulations by offering price categories with a fixed price of $0.15 per day.

Volume prices are then set to recover the remainder of the revenue allocated to the mass market consumer group, while minimising rate shock to consumers. Volume distribution prices for low user price categories have increased from $0.0630/kWh to $0.0638/kWh and for standard price categories increased from $0.0252/kWh to $0.0255/kWh. These prices also ensure that consumers who use 8,000 kWh per year or less are better off on the low fixed price options, as required by the LFC Regulations.

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

Proportion of distribution target revenue by price component for the unmetered consumer group

Description	Price categories	Fixed prices	Variable prices	
			Daily	Volume
Unmetered	ABSU, WBSU		75%	25%

In line with metered general prices, Vector has a two part charge for unmetered price categories and has increased the daily fixed price from $0.14/day to $0.15/day. In order to recover the Cost of Supply Model (COSM) allocated revenue the distribution volume price for unmetered consumers has decreased from $0.0372/kWh to $0.0320/kWh.[9]

Proportion of distribution target revenue by price component for LV, TX and HV consumer groups

Description	Price categories	Fixed prices		Variable prices		
		Daily	Capacity	Volume	Demand	Power factor
Auckland TOU	ALVT, ATXT, AHVT	-	23%	55%	15%	7%
Northern TOU	WLVH, WTXH, WHVH	17%	30%	33%	13%	8%
Auckland non-TOU	ALVN, ATXN, AHVN	8%	27%	65%	-	1%
Northern non-TOU	WLVN, WTXN, WHVN	24%	21%	52%	-	3%

The rationale for Vector's price structure for its low voltage, transformer and high voltage price categories is largely historical. There were (and to a lesser extent still are) a variety of price categories with different combinations of price components and price levels.

[9] As consumers in this consumer group are not metered, they are charged primarily based on volume calculated on the basis of non-daylight hours and fitting wattages.

Current TOU price categories on the Auckland network consist of volume, capacity, demand, power factor, and (in the case of AHVT) excess demand prices. On the Northern network TOU plans also include a daily fixed price. Non-TOU plans on both networks include daily fixed, volume, capacity and power factor prices.

Vector maintains a relationship between low voltage, transformer and high voltage price categories where, with the exception of power factor prices, 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.

Vector continues to align the prices for low voltage, transformer and high voltage consumer groups between the Auckland and Northern networks. In addition, Vector continues to increase the fixed portion of revenues to align the recovery of revenues with the manner in which costs are incurred. For these reasons the capacity price has increased on the Northern network, while all prices have increased slightly on the Auckland network.

Vector includes a power factor price to incentivise end-consumers to maintain a power factor of 0.95 or higher in accordance with Vector's distribution code. Vector has reviewed consumer responses to the current level of power factor prices and are satisfied the existing prices are sufficient to incentivise consumers to correct poor power factor (if any). Accordingly Vector left the power factor price unchanged for the 2017 Assessment Period.

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.

The main component of pass-through and recoverable revenue is transmission charges. Transmission charges are allocated to Vector predominantly based on demand during Regional Coincident Peak Demand (RCPD) periods. Vector mirrors this as closely as possible by recovering through demand prices where available, or volume prices otherwise.

Proportion of pass-through and recoverable target revenue by price component for the mass market consumer group

Description	Price categories	Fixed prices	Variable prices
		Daily	Volume
Residential, low user	ARCL, ARUL, ARGL, ARHL, WRCL, WRUL, WRGL, WRHL	-	100%
Residential, standard	ARCS, ARUS, ARGS, ARHS, WRCS, WRUS, WRGS, WRHS	-	100%
General	ABSN, ABSH, WBSN, WBSH	-	100%

As mass market price categories do not have a demand price, the pass-through and recoverable revenue is recovered through volume prices as these are the closest proxy for demand prices.

For non-TOU mass market price categories, the pass-through and recoverable revenue required from the COSM for the mass market consumer group is divided by the forecast consumption (kWh) for the 2017 Assessment Period to obtain a pass-through price. Vector then implements a differential between the controlled and uncontrolled price categories to reflect the benefits arising from consumers allowing Vector to control their hot water load.

These prices remain unchanged from 2015/16 at $0.0300/kWh for controlled consumers and $0.0380/kWh for uncontrolled consumers.

For TOU mass market price categories Vector recovers the pass-through and recoverable revenue from consumption in the peak period only. Transmission charges form the bulk of pass-through and recoverable costs and recovering these during peak periods aligns with when these costs are incurred by Vector.

The peak pass-through price of $0.1000/kWh in the 2017 Assessment Period is a reduction from $0.1253/kWh in the 2016 Assessment Period. This price has been set so that for a residential consumer with a typical usage profile, total charges on the TOU price categories are aligned with total charges on the controlled price categories. Consumers who consume a greater than average portion of their energy during off-peak times i.e. they have a atypical usage profile, or who can adjust their usage patterns in order to do so, will benefit from being on a time of use price category.

Proportion of pass-through and recoverable target revenue by price component for the unmetered consumer group

Description	Price categories	Fixed prices	Variable prices
		Daily	Volume
Unmetered	ABSU, WBSU	-	100%

As unmetered price categories do not have a demand price, the pass-through and recoverable revenue is recovered through volume prices.

The calculation used for the unmetered consumer group is the same as the non-TOU mass market consumer group, that is the pass-through and recoverable revenue required from the COSM for the mass market consumer group is divided by the forecast consumption (kWh) for the 2017 Assessment Period to obtain a pass-through price.

Proportion of pass-through and recoverable target revenue by price component for LV, TX and HV consumer groups

Description	Price categories	Fixed prices	Variable prices			
		Daily	Capacity	Volume	Demand	Power factor
Auckland TOU	ALVT, ATXT, AHVT	-	-	-	100%	-
Northern TOU	WLVH, WTXH, WHVH	-	-	-	100%	-
Auckland non-TOU	ALVN, ATXN, AHVN	-	-	100%	-	-
Northern non-TOU	WLVN, WTXN, WHVN	-	-	100%	-	-

As TOU consumers have demand prices, Vector applies a pass-through and recoverable price to the demand component of prices. 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 volume pass-through and recoverable price of $0.0204/kWh and forecast consumption (kWh) for the 2017 Assessment Period) by the forecast demand (kVA) for TOU consumers for the 2017 Assessment Period. This results in a demand price of $0.2480/kVA/day, unchanged from the 2016 Assessment Period.

Non-TOU consumers do not have demand prices so pass-through and recoverable costs are recovered through volume prices. 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 the 2017 Assessment Period for these consumer groups periods to obtain a pass-through and recoverable price of $0.0204/kWh, unchanged from the 2016 Assessment Period.