



ISBN no. 978-1-869455-88-0
Project no. 14.20/13107

Public version

Explanatory notes to one-page performance summary of electricity distributors

Date: 31 May 2017

CONTENTS

PURPOSE OF THIS EXPLANATORY DOCUMENT	3
PURPOSE OF THE ONE-PAGE SUMMARIES	3
GENERAL INFORMATION.....	3
PRICE INDICES.....	4
FEEDBACK.....	4
DISCLAIMER.....	4
OUTLINE	4
SUMMARY STATISTICS	6
LINE CHARGE REVENUES.....	6
NETWORK RATIOS.....	7
COMPANY DETAILS.....	7
RAB CHANGES	7
CAPITAL EXPENDITURE.....	7
OPERATING EXPENDITURE	8
RELIABILITY	9
ASSET CONDITION	9

Purpose of this explanatory document

1. The purpose of these explanatory notes is to provide guidance on the interpretation of our one-page summaries of electricity distributors' performance.

Purpose of the one-page summaries

2. The summaries are designed to promote a better understanding of each lines companies' performance by providing high level statistics on measures such as profitability, capital and operating expenditure, asset condition, line charge revenue and network reliability, on one page.
3. These one-page summaries are available as a PDF page for each electricity distributor or an Excel workbook. These are located on our [website](#).

General information

4. The information compiled for the one-page summaries is derived from publicly available data.¹ Most of the data has either been audited and/or certified by the directors of the businesses. However, we cannot guarantee that there are no errors in the data provided. The 2016 one-page performance summaries cover the period up to 31 March 2016.
5. The data we have highlighted presents a snapshot in time and is not intended to represent a thorough picture of performance, but it does suggest some differences between the performance of different lines companies, such as the health of assets including poles, lines and substation equipment in some lines companies. In cases of apparent poor performance, we will follow up with the companies to better understand their circumstances and we are likely to undertake further detailed analysis in the future.
6. All 29 individual electricity distribution businesses have been aggregated together to provide a snapshot of the industry. Generally sums or weighted averages are used. However, for reliability and return on investment measures the simple average of the distributors has been used.
7. When assessing an electricity distribution business against the industry average or other businesses it is important to note where there may be differences in the nature of their networks, for example, whether it is in a predominantly rural or urban area or whether the network consists of overhead power lines and poles or underground cables.

¹ The Commission annually publishes an Excel database of information disclosure data provided by electricity distributors. The latest database is located on our [website](#).

Price indices

8. The one-page summary expresses financial terms in constant dollars.
 - 8.1 Historical data is converted to constant dollars using price indices obtained from Statistics New Zealand.
 - 8.1.1 Capital expenditure data is converted to constant prices using the capital goods price index (CGPI);
 - 8.1.2 Operating expenditure data is converted to constant prices using a weighting of the labour cost index (LCI, 60%) and the producer price index (PPI, 40%); and
 - 8.1.3 Other financial data is converted to constant prices using the consumer price index (CPI).
 - 8.2 Forecast capital and operating expenditure uses the constant price forecasts provided by the electricity distributor. However, older forecasts are adjusted to reflect the constant prices of the current year.
9. The one exception to the use of constant prices is the information on changes to the regulated asset base (RAB) which are expressed in nominal dollars because revaluations capture the inflationary effects.

Feedback

10. We welcome feedback on the one-pager or this document for future consideration. Please send feedback to regulation.branch@comcom.govt.nz with “One-page summary of EDBs – feedback” as the subject.

Disclaimer

11. While all reasonable care and diligence has been used in processing, analysing, and extracting the data and information included in the one-page performance summaries, we give no warranty the data is error free. We accept no legal liability whatsoever arising from, or connected to, the use of or reliance on any material contained in these one-pagers.

Outline

12. The following page has an outline of the performance summaries with sections broken down into boxes. Please refer to the hyperlink for further detail on that section.

Drop down to change business drop-down to change company Explanatory documentation: [Link](#) Summary database: [Link](#)

Summary statistics

	2016 value	5 year trend	3 year CAGR	Rank
Regulatory asset base	\$10,554m		+2.2%	
Regulatory profit	\$621.2m		-0.8%	
Return on investment	6.29%			
Line charge revenue	\$2,482.4m		+2.6%	
Other income	\$21.7m		-11.4%	
Customer connection			+0.7%	
Energy delivered	31,785 GWh		+0.8%	
Peak demand	6,571 MW		+1.8%	
Network capacity	21,055 MVA		+1.8%	
Capital expenditure	\$776.8m		+2.2%	
Operating expenditure	\$544.0m		+3.3%	
Capital contributions	\$114.6m		+9.2%	
Related party transaction	\$370.0m		+10.0%	
Line length	152,148km		+0.8%	
Outages - SAIDI	192 minutes		+9.8%	
Outages - SAIFI	2.03 faults		+4.4%	

Capital expenditure

3 year ratios

Total capex / asset base	Total capex / depreciation	Total capex / depreciation
7.8% Rank: 392	Rank: 392	2.01 Rank: 392

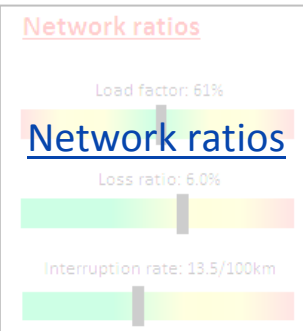
Capex by expenditure category

Category	Average (2014-2016)	5 year trend	% of capex
Asset replacement & renewal	\$270.6m		33.7%
System growth	\$203.5m		25.3%
Consumer connection	\$160.5m		20.0%
Reliability, safety & environment	\$74.7m		9.3%
Non-network assets	\$58.2m		7.2%
Asset relocations	\$36.0m		4.5%
Total capital expenditure	\$803.5m		100.0%
Related party transactions	\$177.8m		22.1%

Line charge revenues

Proportion of revenue	Charges per unit	Rank
Average daily charge: 20.6%	65.4c/ICP	
Peak based: 19.8%	\$72/kW	

Line charge revenues



Company details

PQ Regulated? -

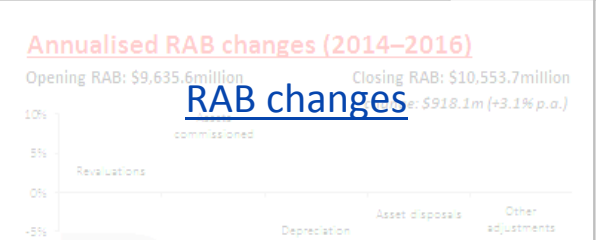
CEO: -

Ownership: [Company details](#)

Head Office: New Zealand

Phone number: -

Website: -



Lines and cables

Estimated state of the assets	Distribution & LV O/H lines	Distribution & LV U/G cables	Subtransmission lines and cables	Poles
Quantity	99,301km	41,149km	11,619km	1,346,408
RAB Value	\$2,149.8m	\$2,583.7m	\$1,250.4m	*
Average grade	3.17	3.17	3.17	3.38
Grade 1 / 2	4.5% / 3.0%	3.3% / 1.0%	2.4% / 5.2%	1.5% / 5.1%
Unknown grade	7.9%	2.9%	8.5%	5.9%
Average age	35 years	34 years	34 years	32 years
Over expected life	7,036km (7.1%)	425km (1.0%)	1,055km (9.1%)	148,223 (11.0%)
Unknown age	3.7%	1.9%	3.1%	4.1%
5yr replacement req (est)	7.4%	1.0%	4.9%	4.0%
5yr planned replacement	4.1%	0.9%	2.9%	4.9%
Forecast repex (ave)	\$123.6m +14%	\$29.0m +34%	\$27.0m +21%	*
Repex series				

* RAB and expenditure on poles is included within Distribution and LV lines

Operating expenditure

3 year ratios

Network opex / mva	Non-network opex / mva	Total opex / mva
\$1.46 Rank: 151	Rank: 151	\$82 Rank: 151

Opex by expenditure category

Category	Average (2014-2016)	5 year trend	% of opex
Business support	\$181.0m		34.2%
System operations & network support	\$128.1m		24.2%
Routine & corrective maintenance	\$75.7m		14.3%
Service interruptions & emergencies	\$63.2m		11.9%
Asset replacement & renewal	\$44.5m		8.4%
Vegetation management	\$37.2m		7.0%
Total operating expenditure	\$529.5m		100.0%
Related party transactions	\$151.5m		28.6%

Switchgear and transformers

Estimated state of the assets	Distribution transformers	Distribution switchgear	Zone-substation transformers	Zone-substation switchgear
Quantity	186,813	213,391	1,261	11,958
RAB Value	\$1,409.8m	\$712.5m	<----- \$1,254.8m ----->	
Average grade	3.20	3.20	3.20	3.24
Grade 1 / 2	3.0% / 4.2%	2.7% / 4.0%	2.7% / 8.3%	3.9% / 6.2%
Unknown grade	4.7%	7.0%	0.2%	1.8%
Average age	24 years	24 years	24 years	24 years
Over expected life	27,210 (14.6%)	51,644 (24.2%)	489 (38.8%)	3,704 (31.0%)
Unknown age	0.4%	6.1%	0.2%	2.5%
5yr replacement req (est)	5.0%	5.0%	6.8%	7.1%
5yr planned replacement	6.0%	7.3%	6.4%	7.0%
Forecast repex (ave)	\$37.3m +14%	\$38.4m +42%	\$49.0m +15%	
Repex series				

Reliability

	Unplanned	Planned	Trend	SAIDI causes	SAIFI causes
Interruptions	11,568	9,016		Equipment & human error	Equipment & human error
SAIDI	133.1	58.5		Obstruction	Obstruction
SAIFI	1.76	0.26		Unknown	Unknown
CAIDI	75.4	223.5		Planned	Planned



Summary statistics

13. For various high-level parameters there are four columns representing:
 - 13.1 the actual value for 2016;
 - 13.2 a small graph showing the 5 year trend (the mini-graphs can be hovered over in Excel to see the actual values for the time series);
 - 13.3 the three year compound annual growth rate (CAGR); and
 - 13.4 the rank relative to other EDBs in 2016 where for:
 - 13.4.1 most measures, 1 = the largest value and 29 = the smallest value;
 - 13.4.2 reliability measures, 1 = most reliable and 29 = least reliable.

Line charge revenues

14. Line charges have been disseminated into fixed, delivery, and peak charges based on the data provided in Schedule 8 of the information disclosures.² From this there are three columns:
 - 14.1 the proportion of total revenue sourced from each charging category for the latest year
 - 14.2 the average charge per unit based on the applicable quantity:
 - 14.2.1 for fixed charges, the average daily charge per customer;
 - 14.2.2 for delivery charges, the average charge per kilowatt hour of electricity delivered to customers; and
 - 14.2.3 for peak charges, the average charge per kilowatt of peak demand on the network.³
 - 14.3 the rank of the average charge per unit relative to other EDBs where 1 = the lowest per unit charge and 29 = highest per unit charge.
15. The bar graph illustrates the proportion of revenue from each charging category for the latest year and three years prior. This is intended to indicate any changes in the charging categories, such as a tariff restructure.

² The charges have been manually allocated to the best of our knowledge based on the tariff data provided by the electricity distributors. All line charges in the one-page summaries include pass-through and recoverable costs (such as transmission costs).

³ Peak demand on the network is at a single point in time. However, peak based charges for consumers are usually based on peak consumption applicable to each consumer which will be at different times of the year. Furthermore, peak charges may only be applicable to a subset of consumers.

16. Electricity distributors can have very different tariff structures, both between distributors and between customer groups. Caution is required when interpreting this section and all three types of charges should be looked at in combination rather than in isolation.

Network ratios

17. There are three network ratios to provide indicative measures of efficiency and reliability on the network. These are placed on a red-yellow-green colour scale to show how each area is performing. The network ratios are:
- 17.1 Load factor—the average electric load on the system as a percentage of the maximum electric load. Generally this ratio falls between 50 and 70 percent.
 - 17.2 Loss ratio—the percentage of electricity lost on the network from entering supply to being delivered to the end consumer. Generally these losses fall between 4 and 8 percent. Electricity losses higher than this may raise concerns and will fall in the red zone.
 - 17.3 Interruption rate—the total number of interruptions on the network for every 100km of lines or cables. This is derived from only planned (Class B) and unplanned (Class C) interruptions directly attributable to the network. Generally there are around 10 to 20 interruptions per 100km of lines and cables per year.⁴

Company details

18. This section provides general information about the electricity distributor as at the publication date.

RAB changes

19. This section summarises the change in the value of each business' assets (known as the regulatory asset base) over the last three years in nominal dollars, and the breakdown of that change.

Capital expenditure

20. The main graph shows historic actual capital expenditure with a solid line and forecast capital expenditure with a dashed line. There are also references to the forecast from the previous two years (where known) so that one can compare previous forecasts with actual capital expenditure.

⁴ This differs from the interruption rate disclosed in information disclosure as that includes interruptions caused outside of their network, such as interruptions on the transmission lines.

21. Three ratios are provided along with the distributors ranking relative to the rest of the industry. To account for lumpy expenditure the ratios are over the most recent three years.⁵ These ratios are:
- 21.1 total capex over asset base – the percentage of capital expenditure relative to the regulatory asset base.
 - 21.2 average capex per connection – the amount of capital expenditure spent per consumer.
 - 21.3 total capex over depreciation – the ratio of capital expenditure to the depreciation during the period which is intended to assess whether the distributor is replacing the value lost through depreciation (although the capex will include some expenditure to manage growth in addition to replacement of old degraded assets).
22. Capital expenditure is broken down into the categories contained in information disclosure, and the amount of capital expenditure that is spent through related parties is also shown. The three columns are:
- 22.1 ‘Average (2014-2016)’—the average capital expenditure over the last three years;
 - 22.2 ‘5 year trend’—a small graph showing the 5 year trend (the mini-graphs can be hovered over in Excel to see the actual values for the time series); and
 - 22.3 ‘% of capex’—the percentage that category makes up of the total capital expenditure.

Operating expenditure

23. The main graph shows historic actual operating expenditure with a solid line and forecast operating expenditure with a dashed line. There are also references to the forecast from the previous two years (where known) so that one can compare previous forecasts with actual operating expenditure.

⁵ The capital expenditure rankings are in ascending order: 1 = the smallest ratio and 29 = the largest ratio

24. Three ratios are provided along with the distributors ranking relative to the rest of the industry. Consistent with capital expenditure, these ratios are over the most recent three years.⁶ These ratios are:
- 24.1 network opex over line length—the amount of operating expenditure spent on the network per kilometre of lines and cables;
 - 24.2 non-network opex per connection—the amount of operating expenditure spent on non-network activities per consumer; and
 - 24.3 total opex over GW—the amount of operating expenditure spent per gigawatt of peak demand.
25. Operating expenditure is broken down into the categories contained in information disclosure, and the amount that is spent through related parties is also shown. The three columns are:
- 25.1 ‘Average (2014-2016)’—the average operating expenditure over the last three years;
 - 25.2 ‘5 year trend’—a small graph showing the 5 year trend (the mini-graphs can be hovered over in Excel to see the actual values for the time series); and
 - 25.3 ‘% of opex’—the percentage that category makes up of the total operating expenditure.

Reliability

26. This section has a summary of the reliability statistics for the network and therefore includes only Class B (planned) and Class C (unplanned) interruptions. The arrows show the general direction of that reliability measure over the last five years.
27. CAIDI shows the average amount of time it takes to restore a fault to a consumer. It is calculated as SAIDI divided by SAIFI.
28. The reliability measures used in the performance summaries have not been adjusted for any major event days which can have a significant impact on the electricity distributor (for example, extreme weather events).

Asset condition

29. There are two sections on asset condition covering eight asset categories including switchgear, transformers, lines and cables, and poles.
30. For each of these asset categories a dial is used to indicate the condition of these assets. On the dial green is indicatively good, yellow is appears OK, and red is a potential risk.⁷

⁶ The operating expenditure rankings are in ascending order: 1 = the smallest ratio and 29 = the largest ratio

31. A formulaic approach has been used to determine where each of the asset dials are located and judgement has been applied on how much weighting to give grade 1, grade 2, unknown grade, and old assets. For indicative purposes:
- 31.1 over 15% of assets being classed as grade 1 will put that asset into the red zone;
 - 31.2 over 60% of assets being grade 2, unknown grade, or over its life expectancy will put that asset into the red zone; or
 - 31.3 some combination of the above.
32. Also for each of the asset categories there is some summary data relating to quantity, age, grading, and replacement intentions. For further clarification:
- 32.1 Over expected life—the number of assets that exceed the life expectancy in accordance with the optimised deprival value (ODV) lifetimes previously published by the Commission.⁸
 - 32.2 5 year replacement required—our estimation of the proportion of assets requiring replacement over the next five years and is based on the number of grade 1 (100%) and grade 2 (50%) as disclosed by the distributor.
 - 32.3 5 year planned replacement—the percentage that the distributor intends to replace over the next five years. Concerns may be raised if this differs significantly from our estimation above.
 - 32.4 Forecast repex—the forecast average annual expenditure on asset replacement and renewal associated with this asset for the next five years, which is disclosed in their asset management plan. And how this compares to their historical spend.
 - 32.5 Repex series—a time series of actual and forecast asset replacement and renewal expenditure associated with the asset.

⁷ Note that we have removed the dials for Northpower for 2016 as they informed us that their asset condition data was not compliant. They have assured the Commission that they will resupply corrected data in time for the 2017 edition.

⁸ Commerce Commission “Handbook for Optimised Deprival Valuation of System Fixed Assets of Electricity Lines Businesses” (30 August 2004). [Link](#)

33. Our treatment of asset grades is guided by definitions provided in the information disclosure determination and replicated in the Table 1 below. There is scope for electricity distribution businesses to apply judgement when assigning a grade to their assets. Consequently, some distributors' assets may appear worse than they are in reality.⁹

Table 1: Definitions of asset grades

Grade 1	means end of serviceable life, immediate intervention required
Grade 2	means material deterioration but asset condition still within serviceable life parameters. Intervention likely to be required within 3 years.
Grade 3	means normal deterioration requiring regular monitoring
Grade 4	means good or as new condition
Grade unknown	means condition unknown or not yet assessed

⁹ In some cases we are aware of electricity distribution businesses that have inappropriately used asset age as a proxy for assigning grades which we intend to investigate further.