

Trends in local lines company performance



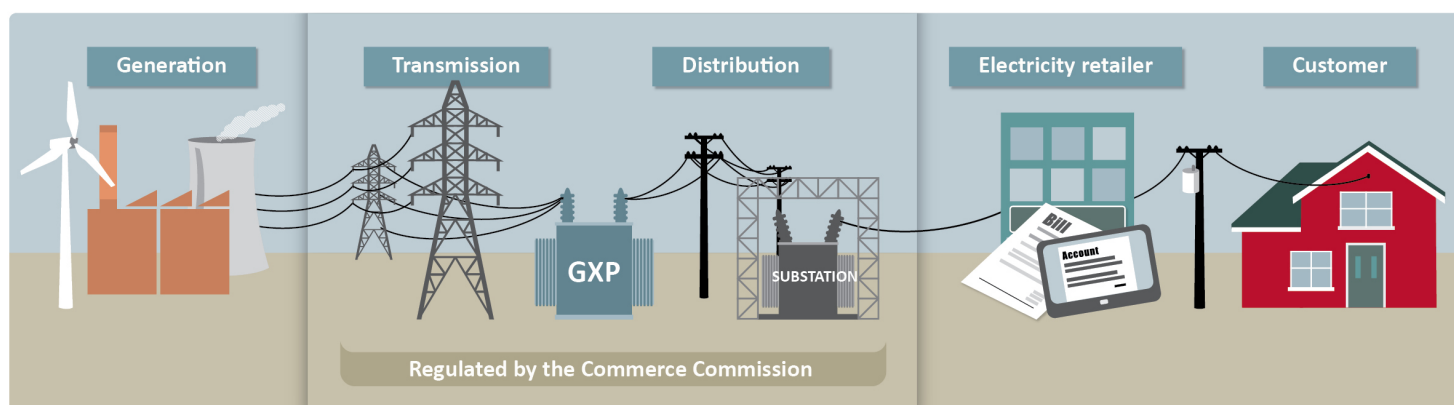
Local lines companies' performance trends

This fact sheet is a snapshot of revenue, profitability, and service reliability trends for local electricity lines companies in New Zealand. Local lines companies provide electricity 'distribution' services. They own the poles and wires around cities, towns and rural areas which deliver electricity from the high-voltage transmission system, as well as local generators, to households and businesses.

Profitability has not been excessive

We regulate certain companies in electricity, gas pipelines, telecommunications, and airports sectors because they operate in markets where there is little or no competition (and little prospect of competition).

In the electricity sector, we regulate 29 local lines companies and our national transmission network operator, Transpower. Transmission and distribution lines charges combined make up approximately 38% of the average consumer electricity bill. We require local lines companies to disclose information on their performance and, for 16 of them, we also set maximum revenue limits and minimum quality standards every 5 years.



Lines charges increased over 2008–2018 and have fallen since 2018

Lines charges increased in the 10 years to 2018 to pay for significant investment in the transmission network, growth in distribution networks, and replacing aging distribution assets.

Lines charges have decreased since then, mainly because of slower inflation and cheaper finance. They fell most noticeably in 2021, as our reset of maximum revenue limits came into effect for 17 of the 29 lines companies for the period 2021–2025 ensuring consumers benefit from lower interest rates.

The chart below shows a breakdown of lines charges.

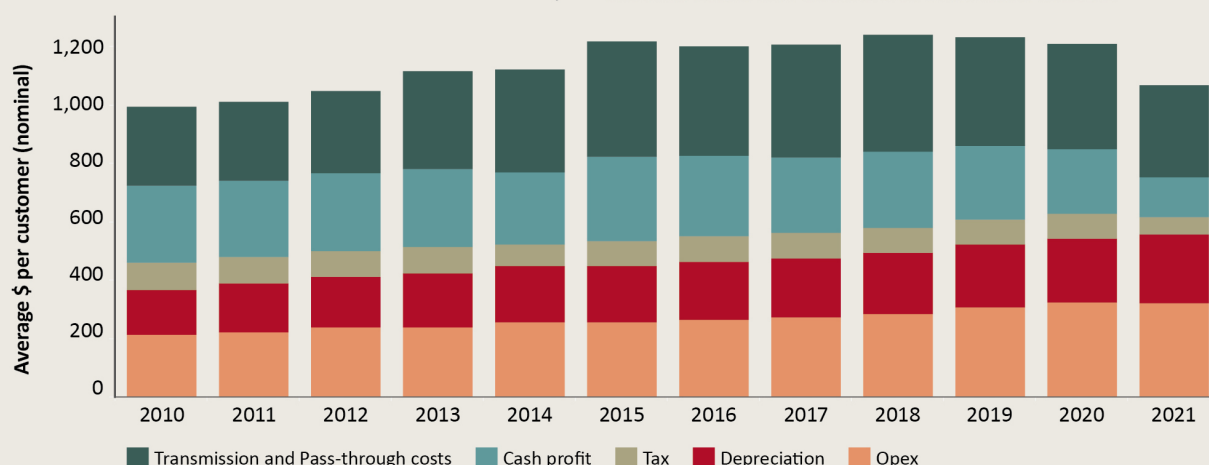
Local lines companies have grown since 2010

Industry	Size in 2021	Avg. yearly growth
Network connections	2.2M	↑ 0.9%
Peak system demand	6,718 MW	↑ 0.6%
Revenue	\$2.3B	↑ 2.4%
Investment	\$956M	↑ 6.8%*

Size in 2021 gives network connections, peak system demand (megawatts), revenue (\$ billions) and investment expenditure (\$ millions). The \$ values include the effect of inflation.

Average yearly growth gives the percentage that these measures grew each year on average using a trend line.

*Excludes Vector sale & leaseback transaction in 2020.



Little change to reliability

The average number and duration of outages that each customer experiences has remained similar over time. While there are more outages in total, each outage tends to affect fewer customers on average, but lasts slightly longer.

Outages are categorised as planned (and notified in advance) or unplanned. Planned outages allow work to be done on the network, while unplanned outages are caused by external factors like weather events. Almost all lines companies have had more frequent and longer planned outages. This reflects the high levels of investment to improve and replace assets and may also reflect changes to health and safety practices that can cause longer planned outages to improve the safety of line workers. The trends for unplanned outages are different across lines companies because of many varied factors.

Vector and Aurora lines companies have previously been penalised in Court for significantly worsening reliability. We continue to investigate other lines companies where we are concerned about poor reliability outcomes.

Average number of outages
per customer per year

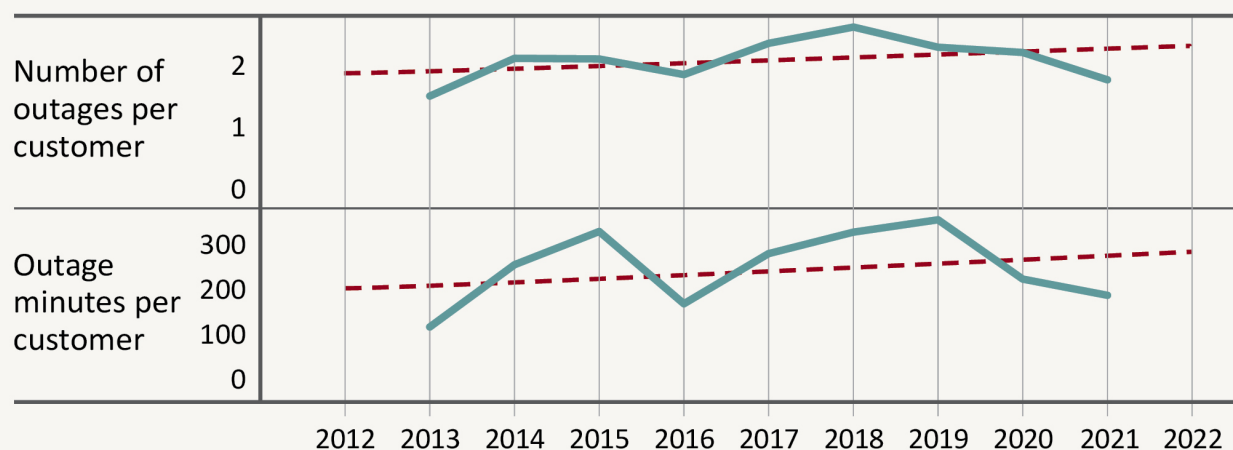
1.9

The long term trend is an annual
increase of **0.3%** per year

Average total length of outages
per customer per year

195 minutes

The long term trend is an annual
increase of **2%** per year



Profitability has generally been lower than a reasonable return

We estimate a reasonable return on investment for local lines companies and use it when we set maximum revenue limits. Our return estimate has decreased since 2010, mainly because of slower inflation and lower finance costs (we estimated 7.8% for 2010–2015, 6.4% for 2016–2020, and 4.2% for 2021–2025).

The return on investment across the industry has generally been around 5% to 6% between 2013 and 2020 and decreased in 2021 for all price-quality regulated companies, and for most of the other companies. Profitability has been generally lower than our estimate of a reasonable return on investment, although it varies between companies.

You can learn more about the industry and your local lines company in our updated dashboard and in our report



Why did the Commerce Commission conduct this analysis?

Part of our role is to require the lines companies to disclose information about their performance and for us to share our analysis of that performance. This analysis looks at the changes in prices over time and explores the causes of those price changes. It also assesses the changes in reliability over time.

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The accompanying paper titled '[Approach to trend analysis of local lines companies](#)', describes the technical detail of the analytical approaches we have used and the legislative context of our analysis.

Chapter 1 – Introduction

Purpose of this report

The purpose of this report is to help people better understand how and why the price and quality of services provided by local electricity lines companies have changed over time. We aim to give insight into the issues affecting local lines companies, which can then help inform a clearer impression of their performance.

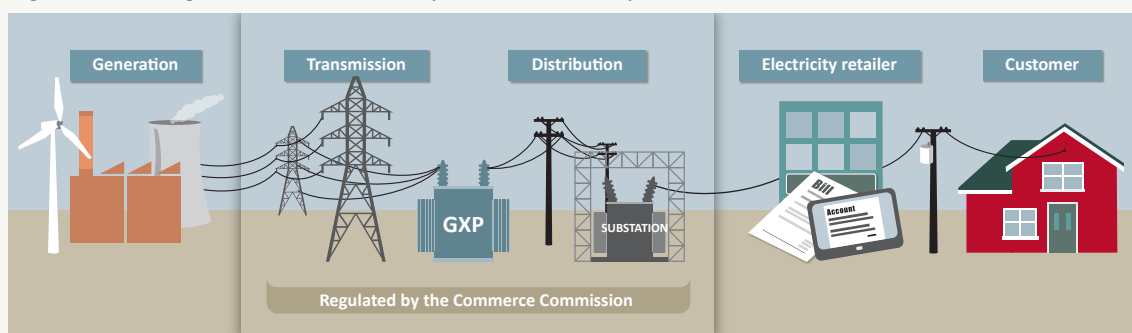
This report presents and discusses analysis we have undertaken to identify past trends in local lines companies' revenue and reliability, and examines the underlying drivers of those trends. It gives a high-level picture of these trends at an industry and individual company level and helps identify areas that warrant deeper examination in future pieces of performance analysis.

Local lines companies provide electricity 'distribution' services. They own the poles and wires around cities, towns and rural areas, which deliver electricity from the high-voltage transmission system, as well as local generators, to households and businesses.

Local lines companies pay Transpower, the owner of the high-voltage transmission system, for its delivery of electricity. The trends in this report on the revenue of local lines companies therefore include a component of the revenue that is passed on to Transpower.

We are responsible for regulating electricity transmission and distribution services (or 'electricity lines services') under Part 4 of the Commerce Act 1986. We regulate local lines companies by setting maximum revenue limits and minimum quality standards (price-quality paths), and requiring companies to disclose information on their performance.¹ Our responsibilities under the Act are described in the associated paper ['Approach to trend analysis of local lines companies'](#). Many local lines companies also supply services that are unregulated, such as electricity contracting services.

Figure 1: We regulate local lines companies and Transpower under the Commerce Act



We use the term 'customers' to mean the entities connected to the local lines company, which can be households or businesses. Most customers do not have a direct relationship with their local lines company. Rather, they will engage with an electricity retailer to which they pay their bill. A portion of each customer's electricity bill is made up of 'lines charges'—around 38 percent for a typical household—which the retailer passes on to local lines companies to cover the costs of both transmission and distribution services. Lines charges make up almost all local lines companies' regulated revenue, which is the revenue received from the supply

1. [Our website has more information on our role in electricity lines.](#)

of electricity distribution services. By analysing changes in local lines companies' (regulated) revenue, we can improve understanding about those businesses, the impact that their activity has had on customers through paying lines charges, and the effectiveness of our regulations.

Our analysis draws on information that New Zealand's 29 local lines companies disclosed under information disclosure (ID) requirements from 2008 to 2021 (years ending 31 March).² It considers the local lines companies' revenue and costs, and the quality of electricity distribution services they provided over that period.

We expect that this analysis will be of interest to all stakeholders. Electricity sector stakeholders need to have confidence that the prices electricity customers pay to local lines companies reflect an industry that is working efficiently, and for their long-term benefit. This analysis will be an important input into assessments of the performance of local lines companies and the effectiveness of our regulation.

We have published other summary materials alongside this report

We intend this to be a regular report that we will update as new data becomes available, and to build in fresh analysis and insights. This report was first published in December 2020, and has now been updated with data from 2021 information disclosures.

This report is supported by further materials that highlight our key findings and allow stakeholders to interrogate the data behind them. These materials give stakeholders easy access to the data, at a level of detail they choose, and allow them to view updated analysis as new data becomes available. These materials include:

- A paper titled '[Approach to trend analysis of local lines companies](#)', which describes the technical detail of the analytical approaches we have used and the legislative context in which we undertake this approach.
- A fact sheet highlighting some of the key findings of our analysis.
- An online interactive dashboard that will walk users through the key findings and allow them to look further into the results if they choose.

2. All years discussed in this report are years ending 31 March unless otherwise specified.

This report and the supporting materials add to our existing suite of summary and analysis

The analysis presented in this report and supporting materials add to an existing suite of summary and analysis of ID data that we have undertaken over time, which can be found on our website.³

We publish and update the following range of summary and analysis on a regular basis:

- *A database of the ID data* – this groups the raw data disclosed by each local lines company into a single, manipulatable repository in Microsoft Excel.
- *The Performance Accessibility Tool* – this is an online portal that visualises the ID data, including profitability and revenue, capital and operating expenditure, asset condition and age, and reliability data. The tool is interactive, allowing the data to be interrogated and summarised at various levels.⁴
- *Annual ‘one-page’ performance summaries* – these summaries provide high-level statistics on each local lines company’s performance, including measures such as profitability, capital and operating expenditure, asset condition, line charge revenue and reliability. They are updated each year as new data becomes available:⁵

We also produce in-depth pieces of analysis across the range of performance areas. We have published:

- A review of local lines companies’ forecast expenditure and the drivers of that expenditure.⁶ This review took place in 2013 and helped to inform our approach to setting price-quality paths.
- An initial snapshot report providing a high-level picture of the revenue, reliability, and expenditure of local lines companies between 2008 and 2011.⁷
- An assessment of local lines company profitability.⁸ This 2016 publication helped to answer the frequently asked and important question of whether the average level of local lines company profit is appropriate. We considered this work a high priority, as customer confidence is dependent on the extent to which excessive profit is limited, and we wanted to also be sure that profits are sufficient to support necessary investment.
- A report of our observations from our review of local lines companies’ 2016 and 2017 asset management plans.⁹ This report built on engagement with local lines companies and other stakeholders about whether local lines companies are managing their assets for the long-term benefit of consumers.

3. See <https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data>

4. See <https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data/performance-accessibility-tool-for-electricity-distributors>

5. See <https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data/performance-summaries-for-electricity-distributors>

6. See <https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data/summary-and-analysis-of-information-disclosed-by-electricity-distributors>

7. See https://comcom.govt.nz/_data/assets/pdf_file/0011/63110/Overview-of-electricity-distributors-performance-from-2008-2011-chapters-1-4-of-full-analysis-updated-5-February-2013.pdf

8. See <https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data/profitability-of-electricity-distributors>

9. See <https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data/review-of-asset-management-practices/review-of-asset-management-plans>

- An external report on the level of risk preparedness shown in the local lines companies' asset management plans.¹⁰ This was published in 2019 and was intended to further the conversation on risk and resilience with regards to information that is readily available for interested stakeholders.
- A review of local lines companies' asset management reporting, completed in 2021.¹¹ This review aimed to encourage improved asset management by ensuring that asset management plans include a high standard of communication to stakeholders about issues relating to reliability, and local lines companies' planned response to addressing such issues. The resulting report highlighted examples of best practice reporting, as well as instances where we considered the discussion insufficient.
- A further review of local lines companies' asset management planning in relation to decarbonisation, also completed in 2021.¹² The report aimed to summarise and understand local lines companies' readiness for the impact of decarbonisation on network services.

We also have work underway to consider potential changes to the information that local lines companies are required to disclose to us. This began in 2021 with our Open Letter seeking views on emerging issues for electricity networks, as well as gas networks and airports as they relate to our responsibilities under Part 4.¹³ In March 2022 we published the Process and Issues Paper for our targeted review of ID requirements for local lines companies. Our focus for this review is on information on quality, decarbonisation and asset management, as well as aligning our ID requirements with other regulatory rules.

10. See <https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data/review-of-asset-management-practices/review-of-electricity-distribution-businesses-asset-management-practices?target=documents&root=153861>

11. See <https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data/review-of-asset-management-practices/potential-improvements-in-reporting-of-asset-management-practices-by-edbs>

12. See <https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data/review-of-asset-management-practices/review-of-electricity-distribution-businesses-2021-asset-management-plans-in-relation-to-decarbonisation>

13. See <https://comcom.govt.nz/regulated-industries/electricity-lines/projects/targeted-information-disclosure-review-for-electricity-distribution-businesses>

Chapter 2 – Our key findings

Purpose of this chapter

This chapter discusses the key findings across our range of trend analysis. These key findings are based on the nation-wide averages, although we have also provided some detail on individual local lines companies. The experience will also be different for different customers, as the averages cover all customers from small residential customers to large industrial customers.

- On average, we have found that the amount of profit that lines companies receive from each customer remained roughly the same for the period 2008-2020. However, this profit has been declining since a 2015 peak to a low in 2021. Overall, local lines companies do not appear to have made excessive profits over the period.
- Despite the profit-per-customer declining since 2015, rising costs mean customers are paying \$290 more per year now than in 2008, or \$85 if adjusted for inflation, rounded to the nearest \$5.¹⁴ This is equivalent to an increase of 30% in nominal terms, and 7% after adjusting for inflation. The increase was greatest from 2008 to 2015 then slowed for a variety of reasons including lower inflation and lower finance costs through to 2020, before dropping back to near-2012 levels in 2021.
- Of this increase of \$290, nearly half (\$140) relates to cost increases that local lines companies have passed on to customers from other parties—most notably Transpower, which is recovering the costs of large investments it made in the transmission network.
- The rest of the increase in what customers pay allowed local lines companies to recover their own higher costs. On average, local lines companies recovered \$80 more from each customer so they could recover the costs of increased investment that they made to support growth and maintain their assets. Local lines companies are spending more on running their businesses and operating their electricity networks too, resulting in a \$100 average increase per customer since 2010.
- The average number of unplanned power outages per customer across the industry has remained similar over this time. However, most local lines companies have had more planned outages, and these tended to last longer than they used to. Planned outages are generally less inconvenient to customers than unplanned outages and are required for the local lines companies to undertake important maintenance and investment. One of the reasons for longer and more frequent planned outages have been the changes that lines companies made to their health and safety practices, such as undertaking more work under power outages, rather than working on live power lines. We discuss changes in outage trends in more detail later in this report.

Except where we refer to single-year figures, or state that a figure is absolute, our analysis refers to the growth implied by the trend, rather than the absolute increase in dollars or dollars-per-customer, for the reasons explained in our associated report [‘Approach to trend analysis for local lines companies’](#) regarding our use of trend analysis.

Unless otherwise stated, the charts and figures for monetary data are given in nominal terms – ie, they have not been adjusted to exclude the impact of inflation.

14. The components do not add up to the total because of rounding.

Customers on average pay local lines companies \$290 per year more than they did 13 years ago

Local lines company revenue has increased faster than networks have grown

In aggregate, local lines companies' revenue grew by 47 percent in nominal terms between 2008 and 2021, and 30% on a per-customer basis due to the growth in the number of customers being served.¹⁵ The revenue growth is shown in Figure 2.

The number of customers connected to a local lines company, and the energy and peak power supplied to those customers have all grown over the same period - by 12 percent, 10 percent and 9 percent in total, respectively.¹⁶ However, revenue has increased faster than these drivers of network growth, meaning customers on average have experienced an increase in price. In 2021, customers paid, on average, approximately \$290 more than in 2008 (in nominal terms).¹⁷ This is shown in Figure 3.

We have principally used the number of customers to represent growth in demand in this report. We estimate the number of customers by the number of installation control points (ICPs), which are the metered connections to the network.

The trends would be largely the same if we had instead used energy (kWh) or peak (power) demand (kW) as measures of growth.¹⁸



15. Our analysis refers to the growth implied by the trend, rather than the absolute increase in dollars or dollars per customer between 2008 and 2021.

16. Energy and power are closely related but are not the same physical quantity. Energy can be measured in watt-hours (or kWh, MWh, GWh etc); power is the rate of producing or demanding energy, and is measured in watts (or kW, MW, GW etc).

17. New customers may also have paid an upfront amount to help fund their connection to the network, as we discuss later.

18. We have chosen to use ICPs in preference to kWh or kW, though variation in the energy used by each customer will mean this does not allow a full appreciation of the rate of change in the 'use' of a network in all cases.

Local lines company revenue decreased in 2021 under our regulation

Figure 2 and Figure 3 show that local lines companies' annual revenue has decreased noticeably in 2021. Both total revenue and average revenue per customer fell by more than 10% from 2020 to 2021. This is mainly because of the maximum revenue limits set out in our price-quality paths, which generally decreased for 2021 after we reset default price-quality paths for 15 of the 29 companies.¹⁹ We set lower maximum revenue limits largely due to lines companies having access to cheaper finance under low interest rates. Most customers experienced a reduction in lines charges in 2021 as a result. This is discussed in further detail on page 40. Distribution charges will generally increase in line with inflation over the remaining four years of the price-quality path period to 2025.

Figure 2: Total revenue and trend for all local lines companies, 2008-2021

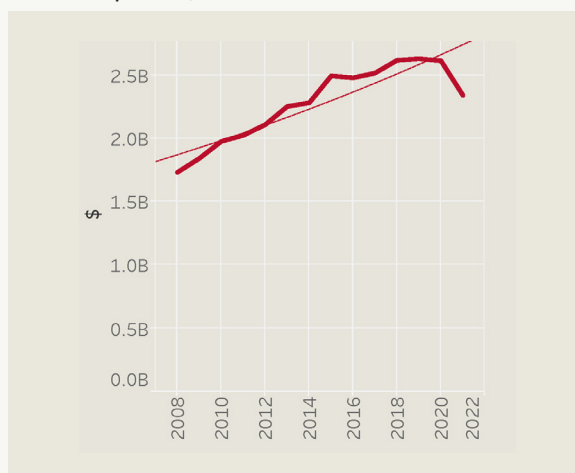
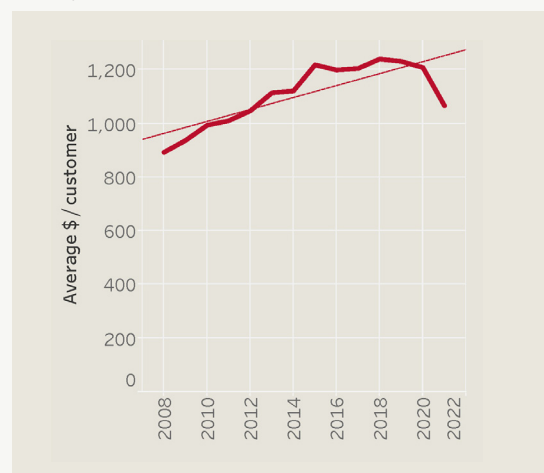


Figure 3: Average revenue per customer and trend, 2008-2021



Local lines company revenue has increased nearly twice as fast as inflation

Some of the nominal increase in revenue reflects general price pressures that impact across the whole economy. Local lines companies' annual revenue grew by 47 percent in total, or by \$290 per customer, in nominal terms. After adjusting for inflation using the consumer price index, revenue increased by 20 percent in total, or \$85 per customer over this period. For customers, this means that network prices have, on average, increased at close to twice the rate of inflation.²⁰

Figure 4 and Figure 5 highlight that customers on average will have experienced nominal price increases that have slowed over time. This is both because of lower inflation, and slower growth in the revenue recovered by local lines companies.

Inflation has varied over time but was higher in the first half of our data period than in the latter half. This is shown in Figure 4, which gives the annual rate of inflation, as described by Stats NZ's consumer price index.

19. More information on price-quality regulation—including which local lines companies are covered by it—is provided on our website.

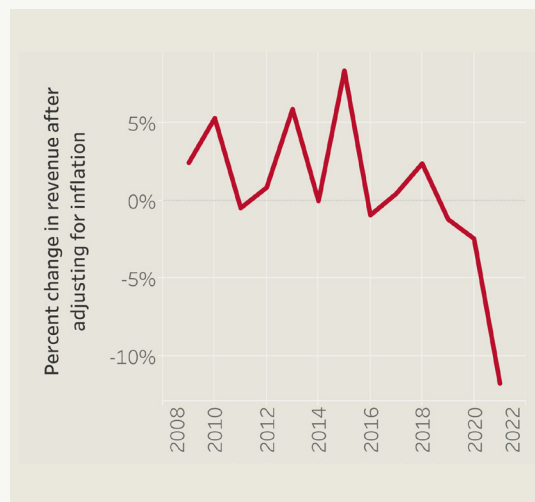
20. In accounting for inflation, we have used the historic consumer price index as provided by Statistics New Zealand.

Figure 5 shows the rate of change in local lines company revenue after removing the effects of inflation. This shows that the rate at which underlying local lines company revenue has changed has fluctuated significantly from year-to-year. The percentage change in revenue has decreased over the period, and revenue fell sharply between 2020 and 2021.

Figure 4: Annual rate of inflation



Figure 5: Change of local lines company revenue adjusted for inflation



We first set price-quality paths for price-quality regulated local lines companies in 2010 and reset them again in 2013 and 2015.²¹ Step-ups in revenue are evident in each of these years, as we had sought to allow each supplier's forecast revenue to align with their reasonable forecast costs. We typically allow for any significant realignment in the first year of the regulatory period, with only changes in line with inflation allowed in subsequent years in the period. While the values in Figure 5 include local lines companies that are exempt from price-quality regulation, the price-quality regulated local lines companies dominate the results because they include the largest companies. The price-quality regulated local lines companies earned 81 percent of the total revenue earned by all local lines companies between 2008 and 2021.

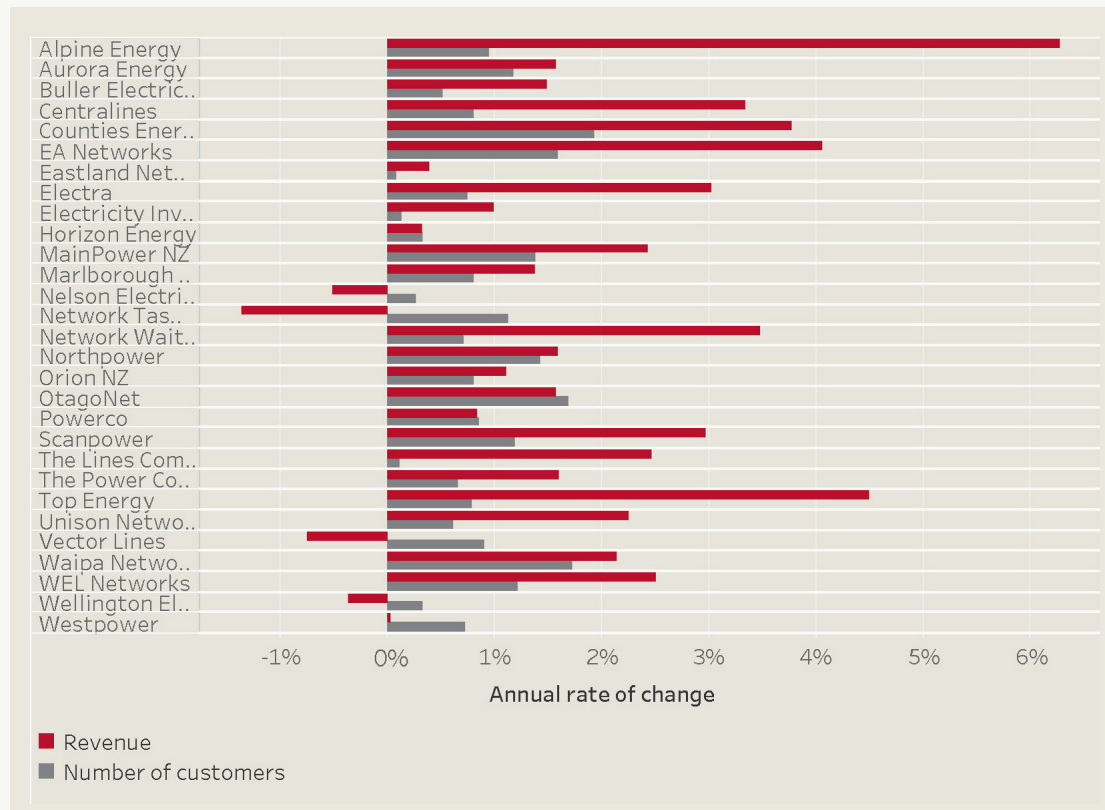


21. More information on price-quality regulation—including which local lines companies are covered by it—is provided on our website.

Changes vary across local lines companies

After excluding the effect of inflation, nearly all individual local lines companies have had increases in revenue that are faster than their customer growth. However, each local lines company's rate of revenue growth has differed quite significantly. This is shown by Figure 6, which shows the annual rate of revenue growth in constant 2021 dollar terms (red bars), along with the rate of annual customer growth (grey bars).²² It covers a shorter period (2010-2021) due to data limitations.²³

Figure 6: Annual rates of change of revenue (adjusted to remove impact of inflation) and customers by local lines company, 2010-2021



22. The annual rate of revenue growth refers to the average annual change in the trend rather than the average of each annual change.

23. This analysis uses the period from 2010 rather than 2008 because Vector's sale of assets to Wellington Electricity affects the results for those businesses.

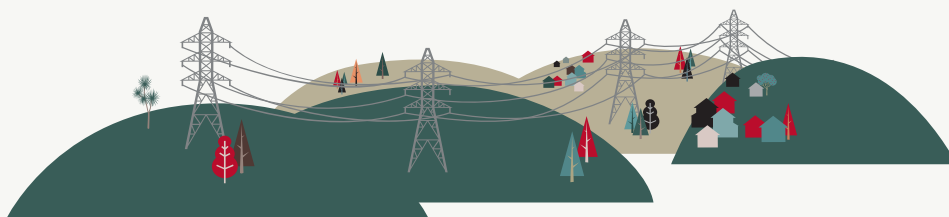
This figure shows that the annual average revenue growth (adjusted to remove the impact of inflation) has ranged from 6.3 percent for Alpine Energy (grew by 95 percent over the 10 years since 2010) through to an annual decrease of 1.4 percent for Network Tasman (down 14 percent over the ten years since 2010). It also demonstrates that there is little relationship between revenue growth and connection growth, though seven local lines companies (Nelson Electricity, Network Tasman, OtagoNet, Powerco, Vector Lines, Wellington Electricity and Westpower) have had revenue grow at a lower rate than connections.²⁴

For price-quality regulated local lines companies, the rates of growth reflect the maximum revenue limits we imposed. For example, we allowed the increase for Alpine Energy to allow for a normal return and because of their need for revenue to fund a significant investment programme due to growth on their network. Similarly, the decrease by Vector Lines is reflective of significant restraints on revenue that we introduced in 2013 to limit excessive profits.

Local lines company revenue funds four primary components

Line charges provide local lines companies with revenue that allows them to recover five high-level components:

- Costs for services provided by other parties—most notably Transpower. The local lines companies ‘pass-through’ or recover these costs by bundling them into line charges and passing on the funds they receive from customers (via retailers) to the parties providing the services, without any mark-up.²⁵
- Operational expenditure— which are costs that are borne by the local lines company and relate to the services that the company provides using its assets;
- Depreciation— which represents the recovery of capital expenditure invested in the local lines company over the assets’ lifetimes;
- A component they retain as a cash profit;²⁶ and
- Tax, which is primarily driven by taxable profit.²⁷



24. Nelson Electricity, Network Tasman, Vector Lines, and Wellington Electricity had revenue decrease on average over 2010-2021, so their rate of change is negative.

25. As well as the costs of transmission services, these also recover costs for services provided by the system operator, rates, and various levies, amongst other ancillary items.

26. In this report, the term ‘cash profit’ does not strictly refer to cash, but is used to refer to profit excluding non-cash gains that are made from the increase in value of assets due to inflation. These non-cash gains are termed ‘revaluations’ in our regulations, and are a significant component of total profit.

27. Our analysis only identifies the corporate income tax owed by the local lines companies. It does not include taxes paid by Transpower or other parties on any funds passed through to them, nor does it include the GST component of customer bills.

Figure 7 and Figure 8 show, for all local lines companies in aggregate, the breakdown of revenue into these high-level components, and how those components have varied over time in nominal terms.

Figure 7: Breakdown of revenue, 2008-2021

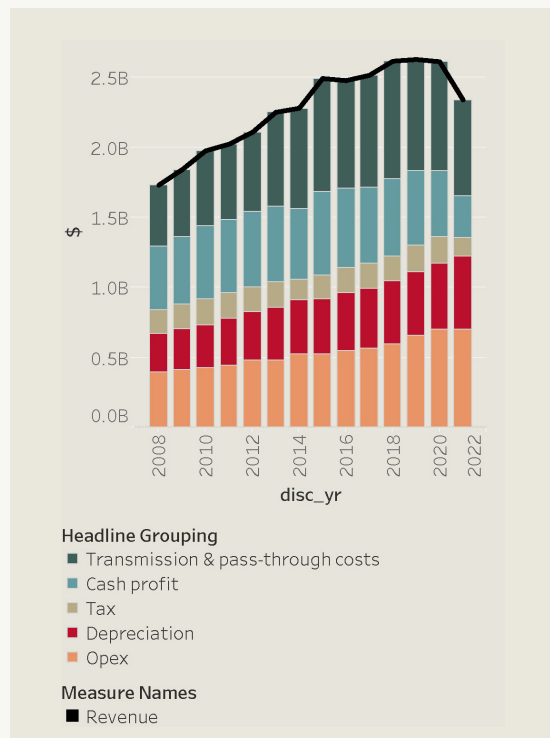
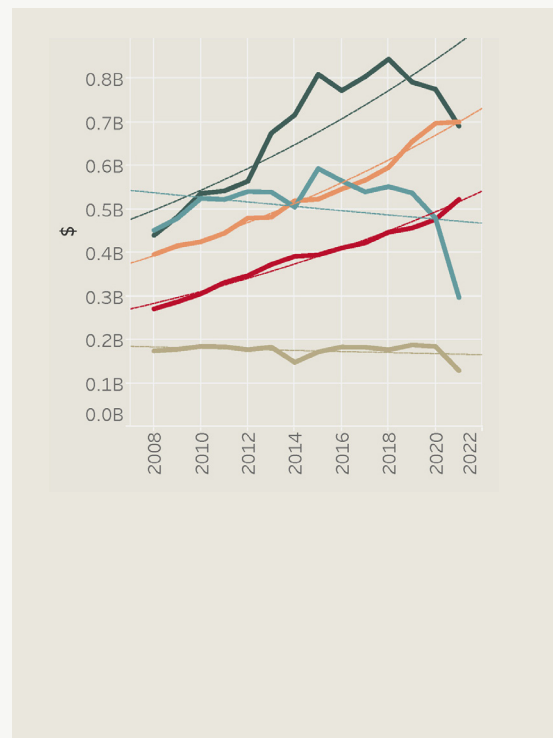


Figure 8: Change in components and trends, 2008-2021



These figures highlight that local lines companies' depreciation is the fastest growing component of revenue, increasing at an annual rate of 4.6 percent in nominal terms between 2008 and 2021, reflecting capital expenditure on new assets during that period.²⁸ Around 17 percent of all revenue over the period went towards depreciation. Over the 13 years since 2008, depreciation has risen by around 80 percent or \$233 million.

Transmission and other pass-through costs were the largest component of local lines companies' revenue between 2008 and 2021—around 30 percent. Trending up at an annual rate of 4.4 percent, or by \$380 million over the 13 years since 2008.

Operational expenditure was a smaller proportion of total costs over the period, with around 23 percent of all revenue going toward operational expenditure. Operational expenditure has increased consistently over the period at an annual rate of 4.5 percent in nominal terms, or around \$338 million in total over the 13 years since 2008.

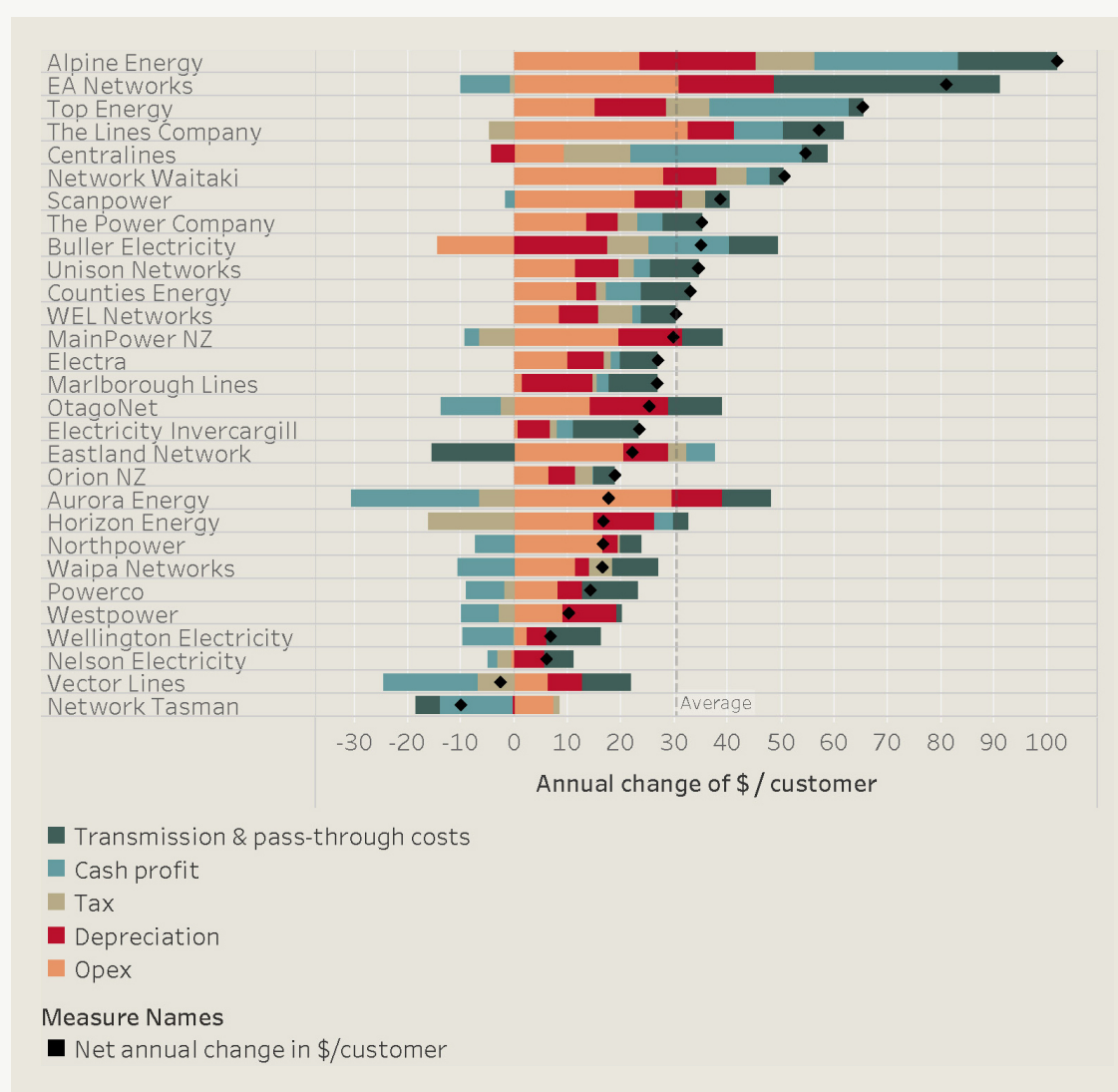
Cash profit has declined at an annual rate of 0.95 percent, falling by \$75 million over the 13 years since 2008.

28. Changes in capital expenditure are discussed in more detail from page 23.

Tax has declined at an annual rate of 0.7 percent, falling by \$16 million over the 13 years since 2008, reflecting the changes in profit combined with reductions in the corporate tax rate.²⁹

The particular components exerting cost pressure differ for individual local lines companies. This is shown in Figure 9 for 2010-2021. This figure gives the average annual per-customer increase in revenue for each local lines company.³⁰ This is broken down into the same components as the previous graphs. The figure shows that those local lines companies that have experienced the greatest rate of revenue growth have tended to have had increases in each cost component, shown by a stacked bar extending to the right. Other local lines companies have had average annual increases in some components (bars extending right) offset by decreases in others (bars extending left). The net annual average increase in revenue per customer is given by the black diamond.

Figure 9: Trend in key cost categories in dollars per customer by local lines company, 2010-2021



29. The corporate tax rate was reduced from 30 percent to 28 percent from the 2011 tax year (i.e., also ending 31 March).

30. The annual rate of revenue growth refers to the annual change inherent in the trend rather than the average of each annual change.

Around half the increase in network prices is due to cost increases for transmission services

Around 30 percent of local lines companies' revenue has paid for the costs of services provided by other parties. These costs, which the local lines companies pass-through to customers without any mark-up, are responsible for close to half the total increase in average revenue per customer. In 2021, customers on average paid around \$140 per year more towards these costs than they did in 2008.³¹

Around 89 percent of these pass-through costs are from Transpower. Transpower owns and operates the transmission network. Like local lines companies, we regulate how much revenue Transpower can earn, sufficient to recover its reasonable costs and receive a fair return on the capital it employs. Transpower collects this revenue by charging its transmission customers—its customers are local lines companies and a handful of very large industrial electricity users like New Zealand Steel. The local lines companies then pass these costs on to their customers.

A further 7 percent of pass-through costs are from distributed generation.³² These costs are payments that local lines companies make under contract to some generators that are connected to their networks, relating to transmission charges the generator helps the local lines company to avoid. From a customer's perspective, these costs are a de facto transmission cost.

The remaining 4 percent of pass-through costs are split amongst several other parties.³³

Between 2008 and 2018, the costs that local lines companies have passed on from Transpower for transmission services increased from \$415 million per year to over \$753 million per year. More recently, transmission pass-through costs have decreased, as shown in Figure 10.



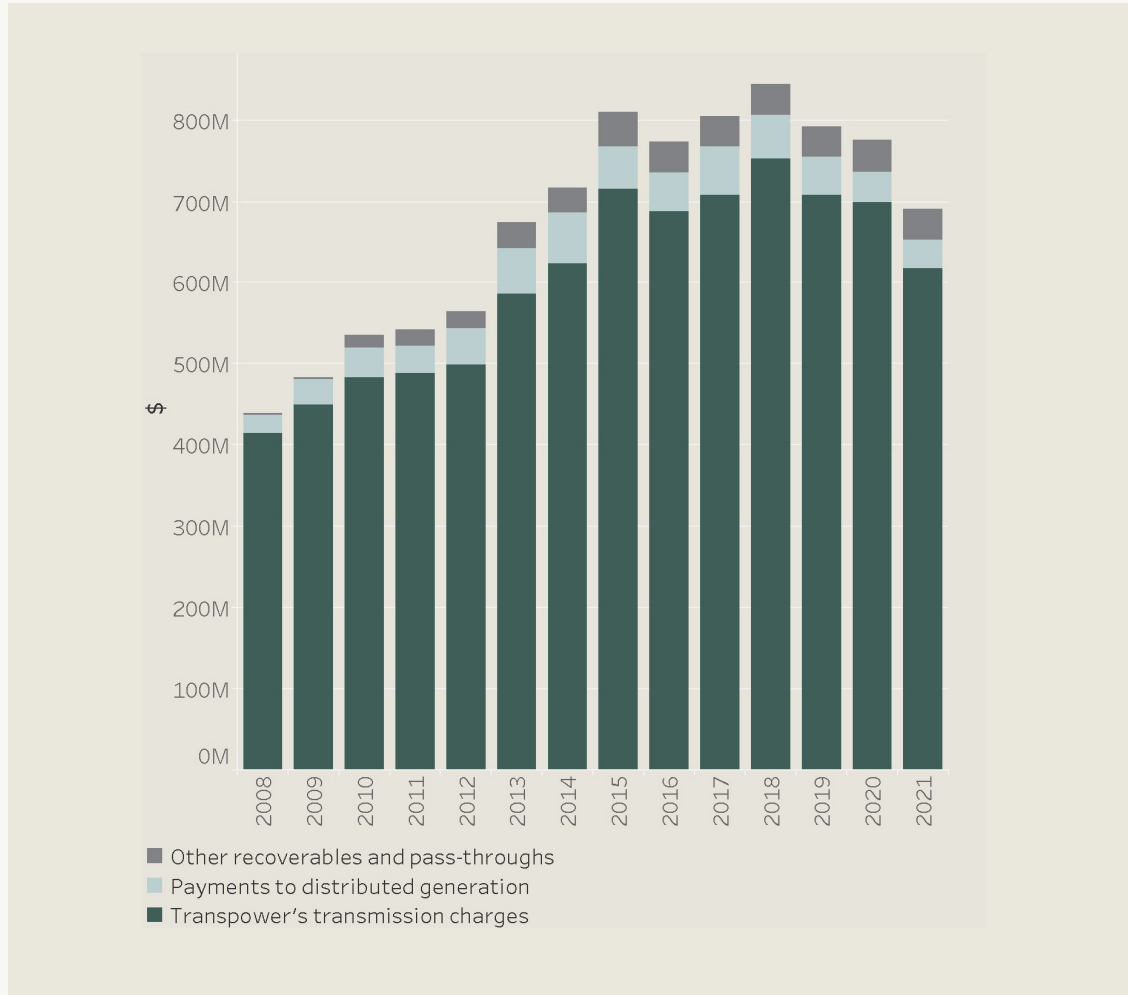
31. The average increase in annual costs per customer is based on the trend in costs rather than a direct comparison of 2008 and 2021. This approach, described at paragraph 16, is detailed within the accompanying 'Approach to trend analysis for local lines companies' paper.

32. Distributed generation is generation that is connected to a local lines company's network, as distinct from generation that is connected directly to the transmission network. Distributed generation tends to be relatively small-scale.

33. These include costs for services provided by the system operator, rates, various levies including those applied under the Commerce Act, amongst other ancillary items.

Figure 10 also shows that payments to distributed generators increased materially from \$22 million in 2008 to over \$60 million in 2014, but have since steadily decreased to \$35 million in 2021.³⁴

Figure 10: Total transmission, distributed generation and other pass-through costs, 2008-2021



34. Some of this decrease reflects intervention by the Electricity Authority, who assessed that the payments did not always relate to avoided economic costs, and rather shifted transmission charges to customers on other networks. In December 2016, the Electricity Authority decided to amend the Electricity Industry Participation Code 2010 so that distributed generation that does not efficiently defer or reduce grid costs (i.e., economic costs) would no longer receive these payments under regulated terms.

The increase in costs passed through from Transpower allowed Transpower to pay for several major capital projects that it carried out during the period (up to 2018). These projects were approved by the Electricity Commission, after a period of low investment and in anticipation of increasing or shifting generation and demand.³⁵

- the 'North Island Grid Upgrade' project cost around \$900 million and was approved in 2007 and commissioned in late-2012;
- the 'HVDC pole 3' project cost \$670 million and was approved in 2008 and commissioned in mid-2013; and
- the 'North Auckland and Northland' project cost \$470 million and was approved in 2009 and commissioned in early-2014.

In total, between 2008 and 2021 the value of Transpower's regulated asset base more than doubled—increasing by around \$2.9 billion in nominal terms.^{36 37}

Some parts of the transmission network have a discernible customer, and Transpower charges those customers directly for the relevant assets. However, the majority of Transpower's costs—including the costs of the major capital projects listed above—relate to the shared transmission network. During the analysis period the costs of shared assets were allocated across transmission customers based on their contribution to periods of peak demand on the transmission network.³⁸ Because Transpower's increased costs were shared broadly across local lines companies, the average customer represented by each local lines company will have been impacted similarly.

However, it will not have been an even impact because there have been changes in the extent to which local networks rely on the transmission system when it is experiencing peak demand. Peak demand on the transmission system has remained broadly the same through-out the data period, but increased contributions to peak demand from some local lines companies have been offset by decreased contributions from others.³⁹ Changing contributions will depend on:

- changes in demand from customers, for example, due to the number and type of customer connections and disconnections, changes in energy efficiency, and changes in incentives or disincentives to use electricity at times of peak demand; and
- changes in the amount of distributed generation on local networks, which reduces the need for electricity to be delivered by the transmission system. This may have reduced the transmission costs that a local lines company attracts but may also have increased their payments to distributed generation.

35. The Electricity Commission was disestablished in 2010, with the Commerce Commission taking over responsibility for setting an individual price-quality path for Transpower, and assessing and approving major capex proposals.

36. The regulated asset base, also known as RAB, is an accumulation of the value of assets that are employed by a regulated company in the provision of the regulated service.

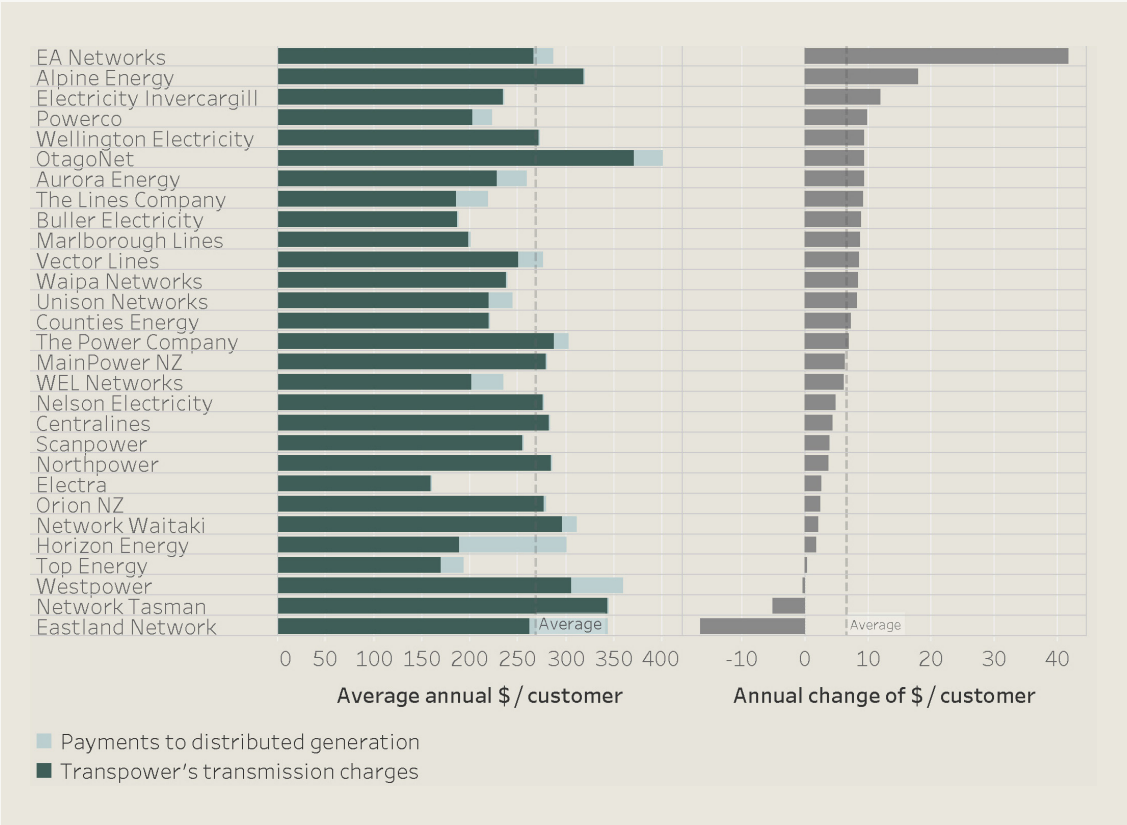
37. This calculation is based on Transpower's own reporting, which operates on a June year-end, whereas the other analysis in this report is based on a March year-end.

38. The specific approach to charging changed during the period. Until 2016, Transpower's costs were allocated based on the 12 highest peak demand periods in each of four sub-national regions. In 2016, Transpower started allocating costs based on the highest 100 peak demand periods in each of two sub-national regions. Further changes will occur in the future, because this year the Electricity Authority adopted a new transmission pricing methodology which Transpower will implement from April 2023.

39. Based on Transpower's reporting of New Zealand peak grid demand. See section 3.1 of <https://www.transpower.co.nz/sites/default/files/publications/resources/Transmission%20Planning%20Report%202019.pdf>

Figure 11 shows the average cost of transmission services—including Transpower charges and payments to distributed generation—for each local lines company between 2010 and 2021 (left-hand side). It also shows the annual rate of change in these costs (right-hand side) implied by the trends over 2010-2021.⁴⁰ The chart on the right-hand side presents the annual change in dollars per customer rather than percentage change and the other annual-change charts in this report do the same unless we explicitly state otherwise.

Figure 11: Average transmission cost per customer, and change in that cost over time by local lines company, 2010-2021



The left-hand side of Figure 11 highlights that there is generally a relatively low level of variation in the average cost per customer for transmission services across the local lines companies.

Figure 11 also shows two companies have had notable decreases in costs per customer over the period. Both Network Tasman and Eastland have purchased connection assets from Transpower and no longer pay Transpower's charges specific to those assets. However, these decreases will be offset by increases in local network costs, as the local lines companies will now incur the costs of owning and maintaining those assets.

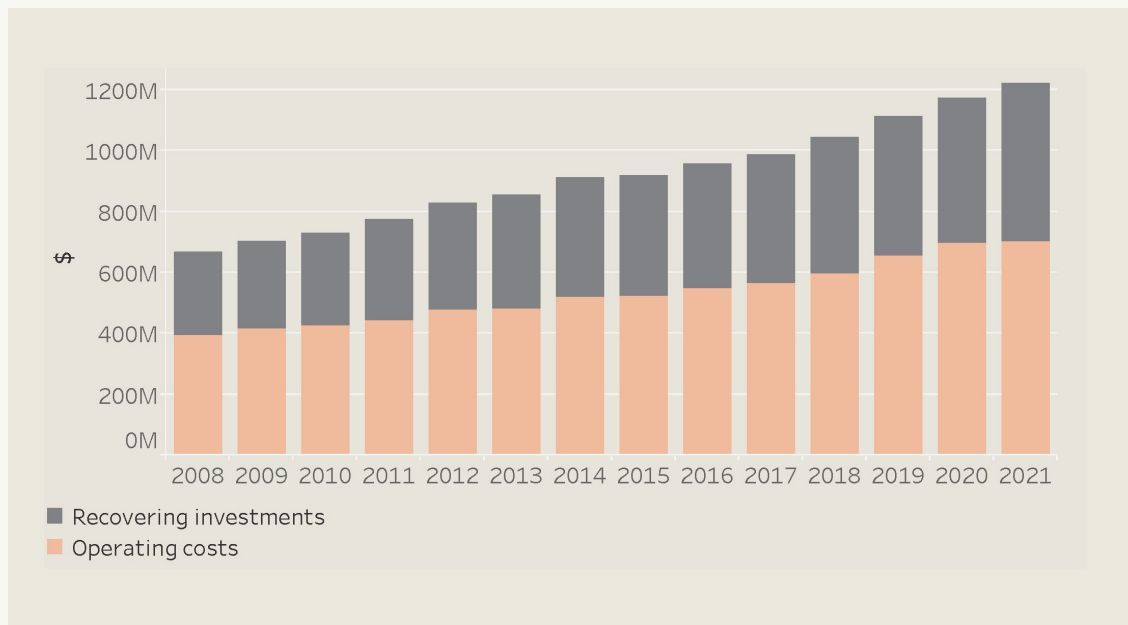
40. We have excluded other types of costs that are passed on from third parties ('recoverable and pass-through costs') from this further analysis because they are not subject to the same cost drivers and are a minor component of total recoverable and pass-through costs.

Customers are paying more to cover the cost of increased investment

Around 17 percent of local lines companies' revenue was required to recover the companies' costs of investing in their networks to support growth and maintain their assets. Local lines companies recover the cost of their investments over the life of their assets through depreciation, and this is what is reflected in the lines charges paid by customers.⁴¹

The change in depreciation over time is shown in Figure 12.

Figure 12: Aggregate network costs by sub-component, 2008-2021



41. Depreciation does not allow for a return on the capital cost of investments, which is captured in profit, discussed later.

Depreciation is higher because of increased investment in local networks

The total value of local lines companies' regulated asset base reached \$13.5 billion in 2021, having increased by \$5.5 billion since 2010.⁴²

This increase reflects \$9.0 billion of new assets that were commissioned (including purchased assets) and gains in the value of assets of \$1.9 billion, partially offset by \$4.9 billion of depreciation of the asset base over time.⁴³

Local lines companies need to invest in new assets to support network growth and maintain their networks. There are sub-categories of capital expenditure that fit within these broad descriptions, which we have mapped in Table 1. Figure 13 shows the expenditure that local lines companies have made under these categories since 2010.⁴⁴

Table 1: Mapping of categories and purpose of expenditure

Category used	Capital expenditure category in ID	Purpose of expenditure
Maintain networks through replacement and improvement	Asset replacement and renewal	Ensure asset integrity and quality of supply
	Reliability, safety and environment	Improve network reliability or safety or to mitigate the environmental impacts of the network
Support network growth	Customer connection	Connect new customers or alter connections of existing customers
	System growth	Increase capacity because of changes in demand or generation on part of the network
Non-network	Non-network	Support distribution services but not part of the network itself
Other	Asset relocations	Moving existing assets in response to a request
	Costs of financing and value of vested assets	Technical adjustments

Depreciation has remained at a fairly consistent proportion of the total regulated asset base since 2010, as shown by the line in Figure 14. This suggests there is no significant industry-level change in the accounting life of the assets within the asset base. Therefore, higher depreciation reflects that there are more assets to recover the costs of, rather than substantially different ones.⁴⁵

42. Based on 2021 data as disclosed, including a significant change to disclosed asset value from a related-party sale and lease-back transaction by Vector Lines.

43. Plus minor changes for asset disposals, lost and found assets and reallocated assets.

44. This is a shorter period due to data limitations, as not all capital expenditure was allocated to a category in 2008 and 2009.

45. This includes assets that might have been fully depreciated within the regulatory accounts for some time, and have been subsequently replaced with new assets.

The increase in depreciation has been faster than customer connection growth. Based on the trend, each customer on average pays around \$75 more per year now than they did a decade ago for local lines companies to recover investment costs. Figure 14 gives the average amount of depreciation recovered per customer.

Figure 13: Investment in assets, 2010-2021⁴⁶

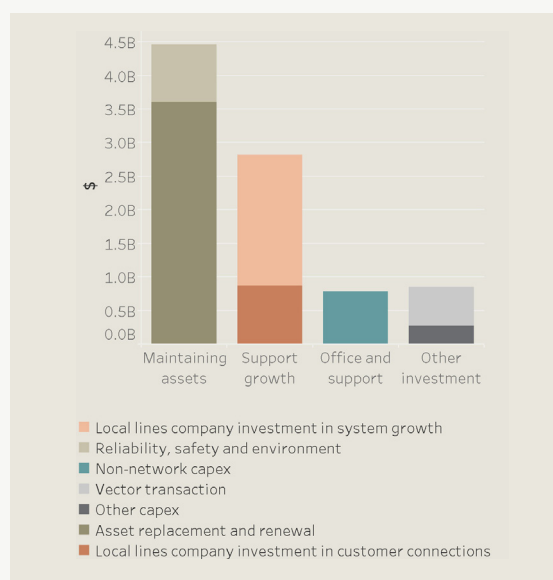
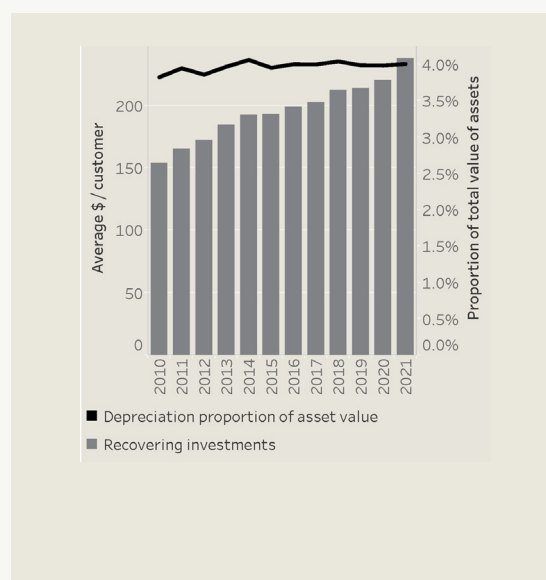
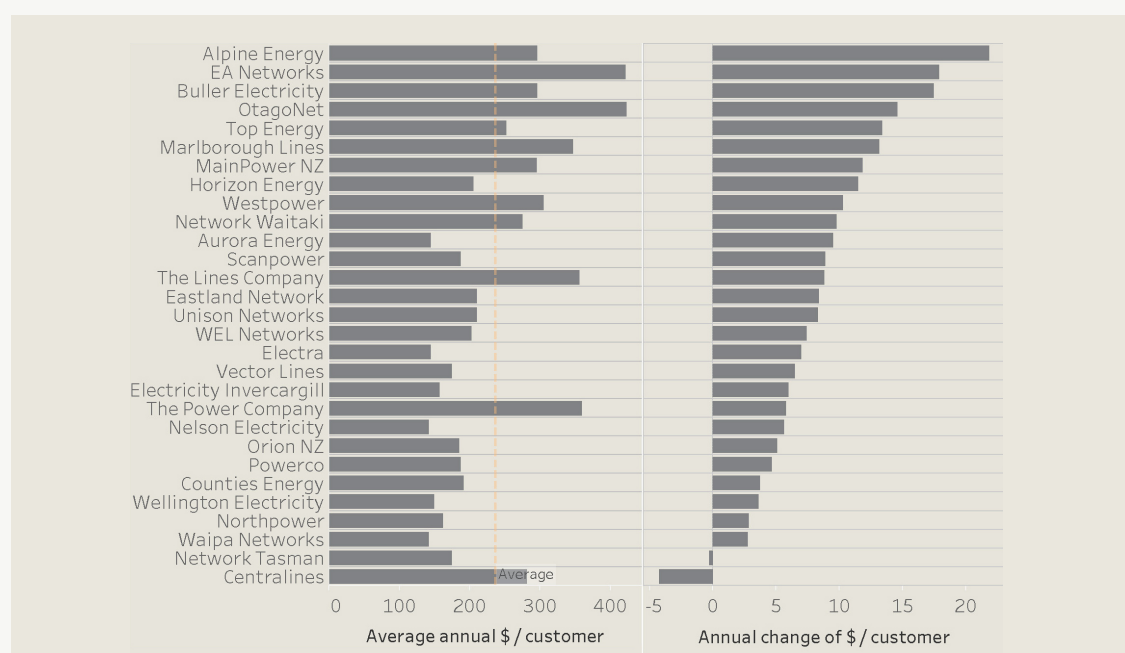


Figure 14: Total depreciation per customer and as a proportion of total value of assets, 2010-2021



Almost all networks have been recovering more in depreciation. However, the increase has been significantly greater for some local lines companies than others. This largely reflects that some have been investing more in new assets than others. It also reflects the different characteristics and age of each network. Figure 15 shows, for each local lines company, the average depreciation cost per customer between 2010 and 2021 (left-hand side), and annual change in this metric implied by the trend (right-hand side).

Figure 15: Trend in depreciation in \$/customer by local lines company, 2010-2021



46. Local lines company investment totalled \$8.9 billion between 2010-2021.

Figure 13 showed that just under a third (\$2.8 billion) of the investment that local lines companies made in their assets between 2010 and 2021 was for supporting network growth. Customers themselves invested a further \$1.1 billion to partially cover the costs of the assets needed for them to connect to the local network or increase their demand.⁴⁷ Local lines companies are allowed to require customers to contribute financially to the capital costs of connecting them to the network. However, local lines companies cannot earn any profit on the assets that customers fund, and they are required under ID to disclose their methodology for determining the level of contribution.

Expenditure to support network growth includes two categories of capital expenditure – ‘customer connection’ expenditure (the direct costs of connecting new customers) and ‘system growth’ expenditure (costs associated with growing use of the network).

Figure 16 shows aggregate expenditure on customer connections since 2010, and the proportion made up by capital contributions made by customers.⁴⁸ Figure 17 also shows these same costs spread across the new connections that were added.⁴⁹

Figure 16: Customer connection expenditure and customer contributions, 2010-2021

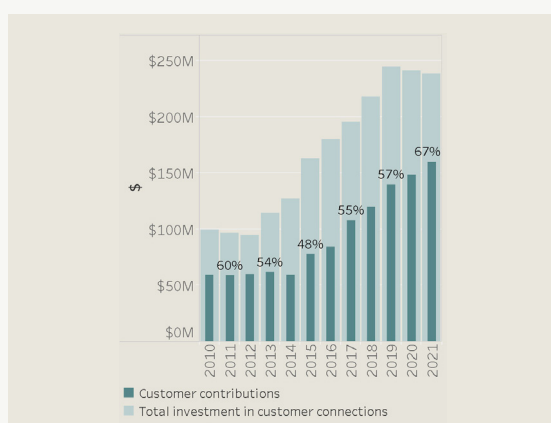


Figure 17: Customer connection expenditure and customer contributions per new connection, 2010-2021



The graphs show that customer connection expenditure has ramped up progressively since 2012. This appears to be driven by an increase in activity, given that the average total cost of new connections has remained roughly the same during that period of growth.

Upfront customer contributions generally cover around half of the direct costs of connection on average – a proportion that has increased slightly over time. However, this will vary by local lines company depending on their own policies.⁵⁰ Figure 18 shows that there is a wide variation between local lines companies in the proportion of customer connection investment that is covered by direct contributions from customers. We require local lines companies to publish their capital contributions policies on their websites.

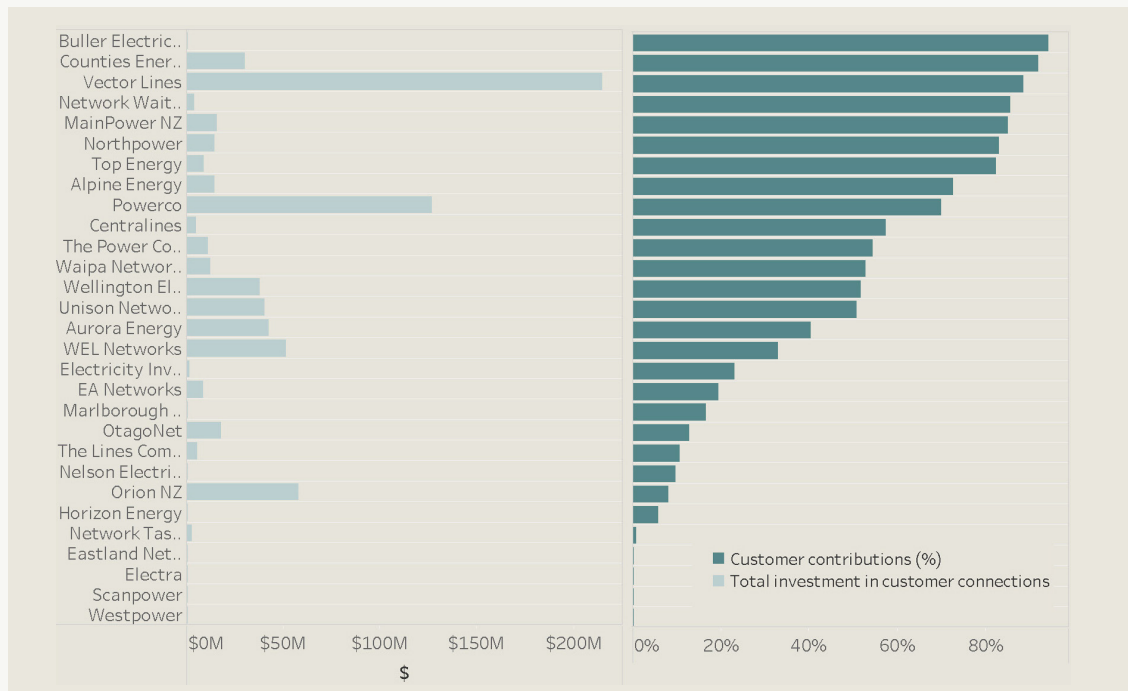
47. They may face further costs for assets on their own property that are not owned by their local lines company.

48. We have estimated the share of the investment met by capital contributions for all local lines companies between 2010 to 2012, assuming that the proportion of total capital contributions that are for customer connection has remained consistent throughout the data period. The same approach has been applied to the investment met by capital contributions in 2013 for Alpine Energy, Buller Electricity, Horizon Energy, Vector Lines, and Westpower only.

49. Figure 16 and Figure 17 present total investment in customer connections and total customer contributions across the industry over 2010-2021. The percentages are calculated by dividing the second by the first after aggregating to an industry level. On the other hand, Figure 18 presents average annual percentages for each local lines company over 2019-2021, ie, calculating the percentage for each year then calculating the average over multiple years. We used two different approaches in order to give a high level picture of the industry in Figure 16 and Figure 17, and present the variation between local lines companies in Figure 18.

50. Capital contributions are treated in the regulatory accounts as a reduction in the associated asset values. This means that the return on assets and depreciation components of revenue are lower than they would be without capital contributions.

Figure 18: Total investment in customer connections and average % customer contribution, 2019-2021⁵¹



Demand growth and new connections can cause a need to reinforce parts of the network, which may require investment in assets that are used by large numbers of customers. Figure 19 and Figure 20 show the local lines companies' 'system growth' expenditure in total and per new connection.⁵²

These graphs highlight a 'bubble' of expenditure for system growth between 2013-2016, with another rise peaking more recently in 2020. Around 60 percent of this expenditure was invested in zone substations and sub-transmission assets.

Figure 19: System growth expenditure and customer contributions, 2010-2021

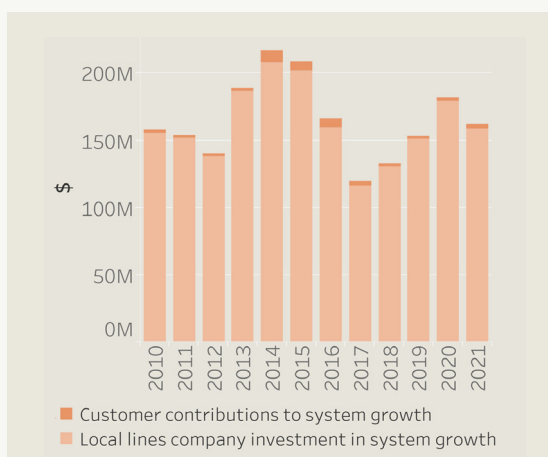
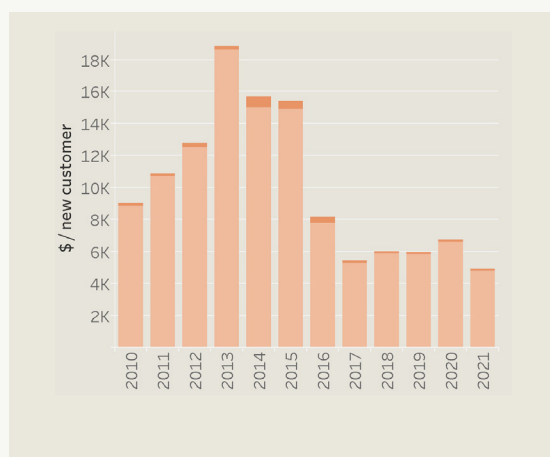


Figure 20: System growth expenditure and customer contributions per new connection, 2010-2021



51. Some EDBs have customer connection expenditure that is too low to be visible in Figure 18. Total investment in customer connection expenditure was: Buller Electricity (\$215k), Nelson Electricity (\$150k), Horizon Energy (\$570k), Eastland Network (\$165k), Electra (\$115k), Scanpower (\$140k), Marlborough Lines (\$410k), Westpower (\$520k). Four EDBs disclosed 0% customer contributions over 2019-2021: Eastland Network, Electra, Scanpower, Westpower.

52. We have excluded from this analysis a significant related-party sale and lease-back transaction that was disclosed by Vector Lines under ID in 2020 in order to observe long-term trends.

Most local lines companies will experience occasional periods of higher investment in system growth. This reflects the big step-changes in capacity that sub-transmission assets typically provide, and the high costs of those investments.

Figure 21 shows, for each local lines company, their combined investment in network growth if attributed only to new connections.

Figure 21: Capital expenditure for customer connection and system growth per additional connection, between 2010-2021

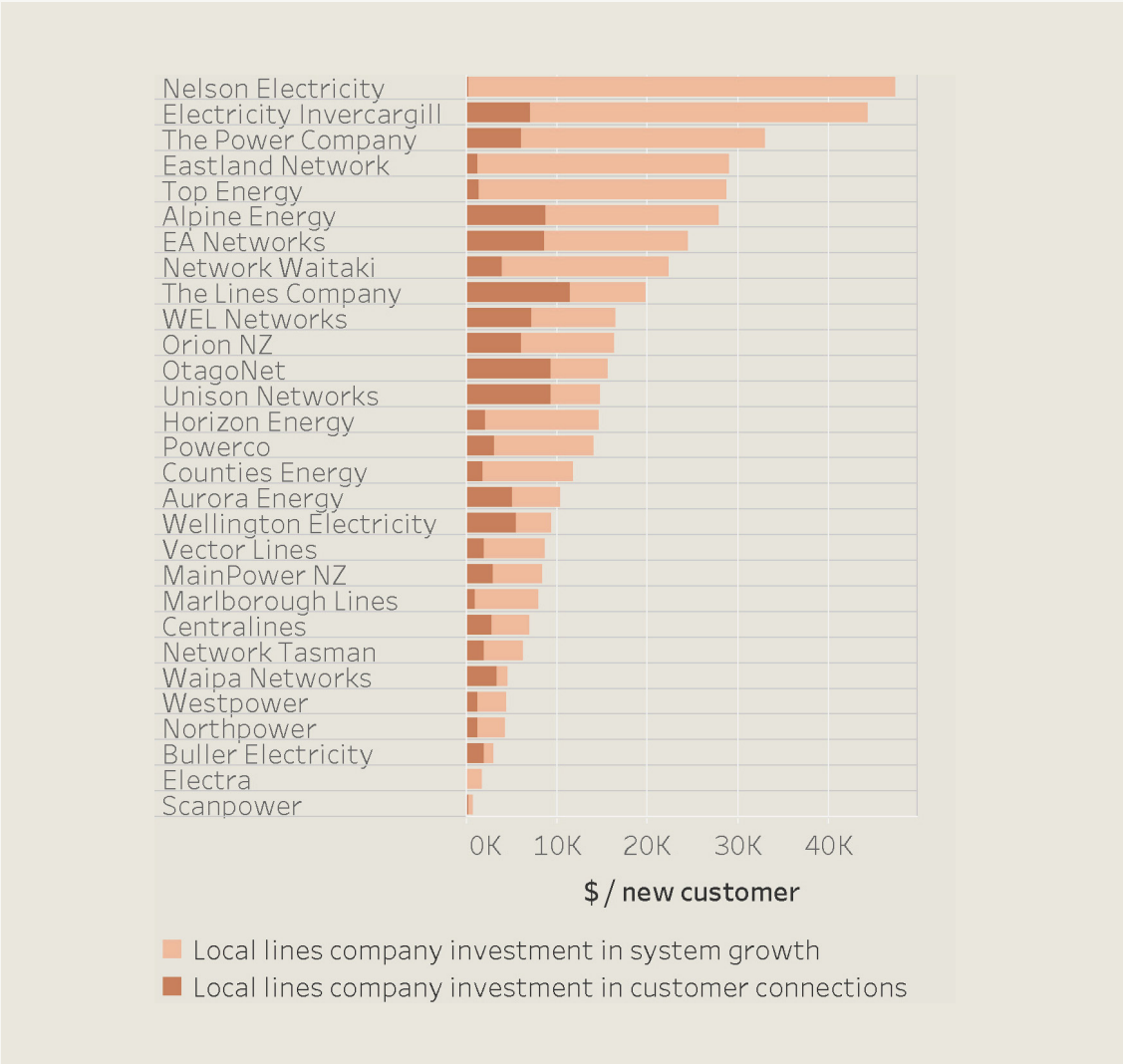


Figure 21 highlights that several local lines companies had significant expenditure on system growth relative to that for additional connections. This suggests they had been in a period of reinforcing shared assets that had been nearing capacity.

System growth investment may have been necessary due to general growth in demand by all customers, increased demand from a subset of customers, or because of new customer connections.⁵³ New individual customers may not always cover the full incremental costs of their additional demand, which may instead be shared quite broadly. Investment increments tend to be much larger than the increment in demand that necessitated them. Also, local lines companies may not always be able to identify specifically which customers benefit from or cause a need for network reinforcement.

As an example, Nelson Electricity invested in a new connection to the transmission network—a very large investment that is unlikely to be repeated for the foreseeable future. Further, several rural local lines companies feature near the top of the graph. Network Waitaki, Alpine Energy and EA Networks are understood to have experienced growth in high-capacity connections associated with the dairy industry, necessitating broader reinforcement of those networks at a cost that may exceed the cost that is recovered from the new connections themselves.

Network growth also appears to have driven investment in non-network assets. These are assets that do not directly relate to delivering electricity, and generally covers things like offices, vehicles and IT infrastructure. Non-network assets are a small proportion of the overall regulated asset base but have increased materially over time. This is shown across all local lines companies in Figure 22. The jump in non-network asset values in 2013 appears to reflect a combination of significant investments by some companies, and changes in the way others categorised assets when we updated our ID requirements.

Figure 22: Value of non-network assets within regulated asset base for all local lines companies, 2008-2021

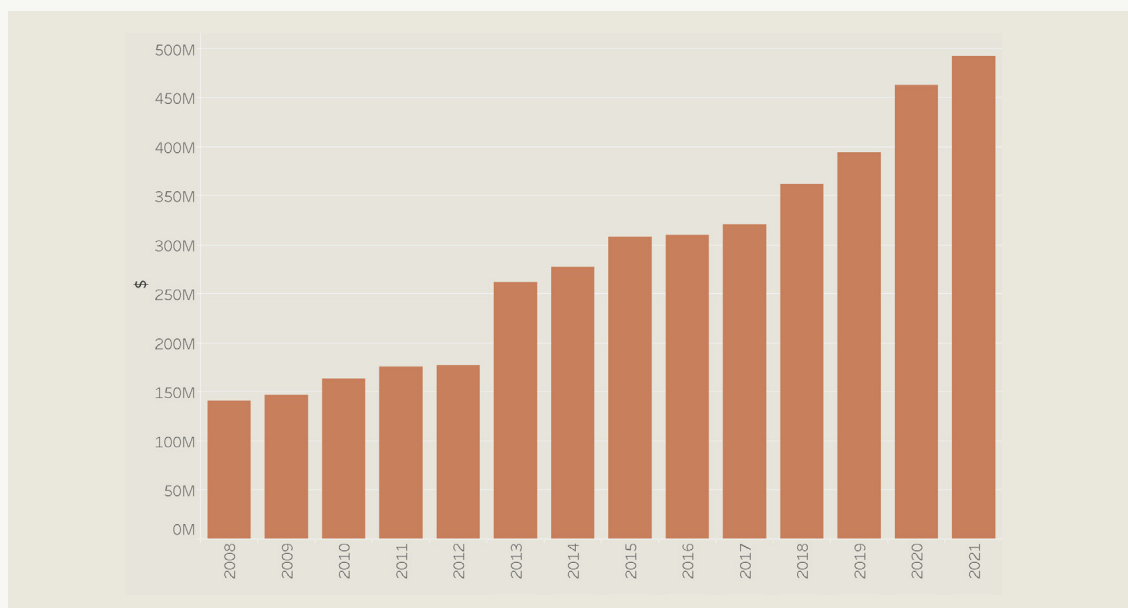


Figure 22 shows that the overall value of assets deemed to be non-network assets has increased in absolute terms by around \$352 million since 2008, or close to 250 percent. Some of the increases in from 2018 onwards may be due to the capitalisation of some operating leases by some lines companies in response to a change to the accounting standards.

53. Based on information disclosure data, consumers in New Zealand have used an average of 15,900 kWh of energy and 3.1 kW of power since 2010 – figures that have remained virtually static over time.

Figure 23 shows the investment made in non-network assets by local lines companies between 2013 and 2021. It uses dollars per customer for easier comparison between local lines companies and breaks the expenditure down further into categories of assets.⁵⁴

Figure 23: Average capital expenditure on non-network assets by local lines company and asset category, 2013-2021

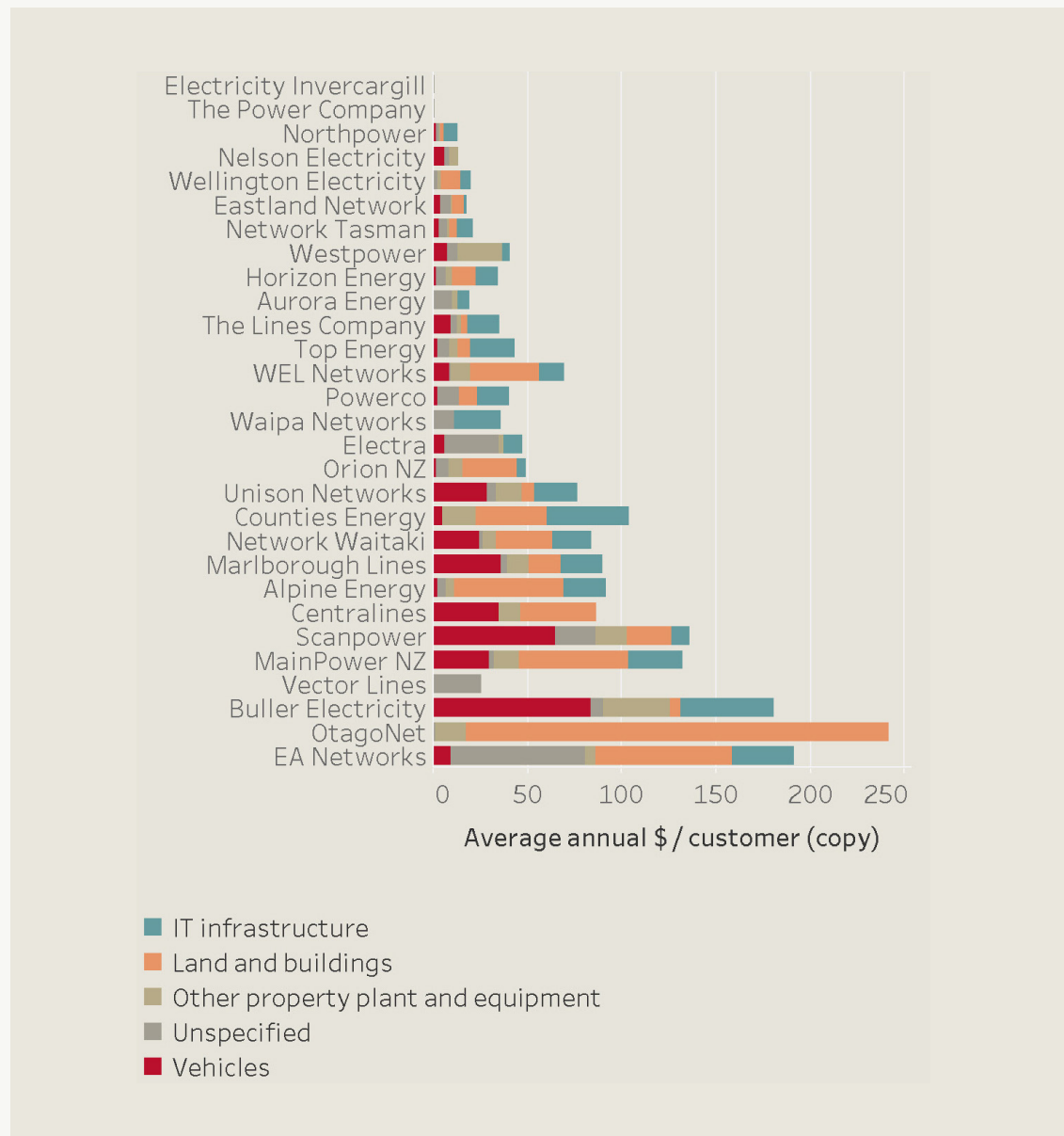


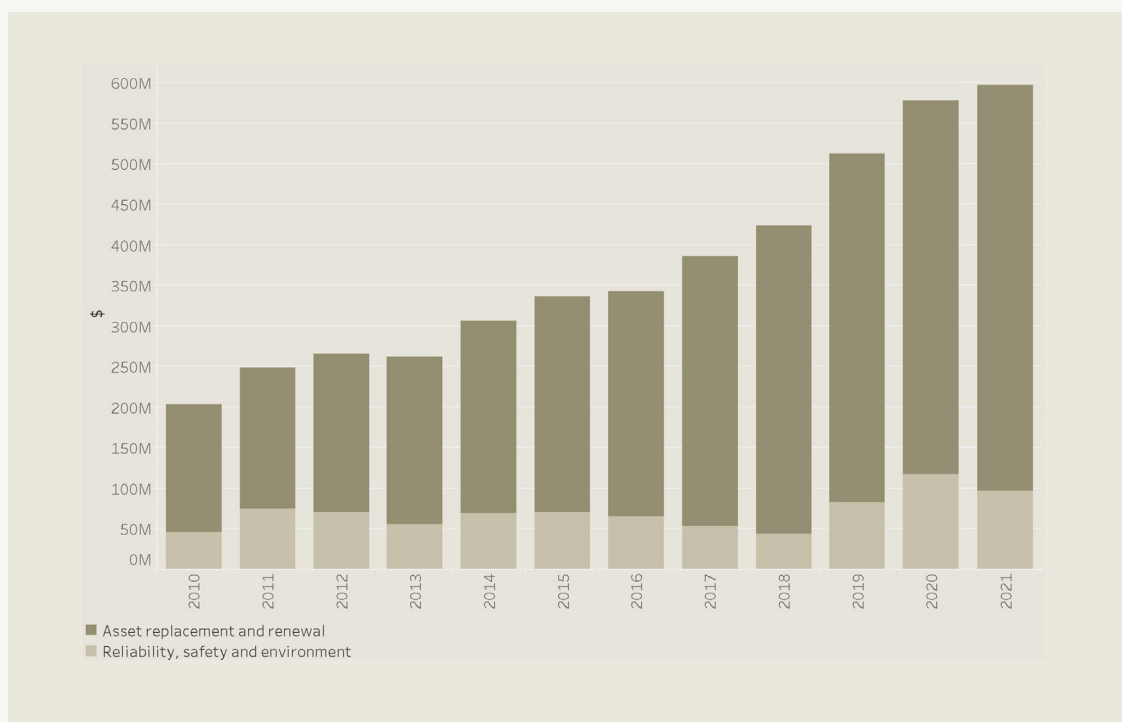
Figure 23 highlights that some local lines companies have made big investments relative to their size in non-network land and buildings, which is identifiable because the chart is given in expenditure per customer. This may mean they have been reacting to growth in their overall business size and capabilities. In some of these cases these may be one-off investments that are unlikely to be repeated in the foreseeable future.

54. Local lines companies are required to specify the project or programme to which the expenditure relates as a free text entry. We have split the expenditure into key categories by searching for relevant words within the programme / project title. This means the categorisation is imperfect.

Local lines companies have been investing to maintain assets

About half (\$4.5 billion) of the investments that local lines companies have made in new assets between 2010 and 2021 were to replace or improve their existing assets to ensure they remain safe and fit-for-purpose.⁵⁵ This investment occurred at an accelerated rate over the period. This is shown in Figure 24.

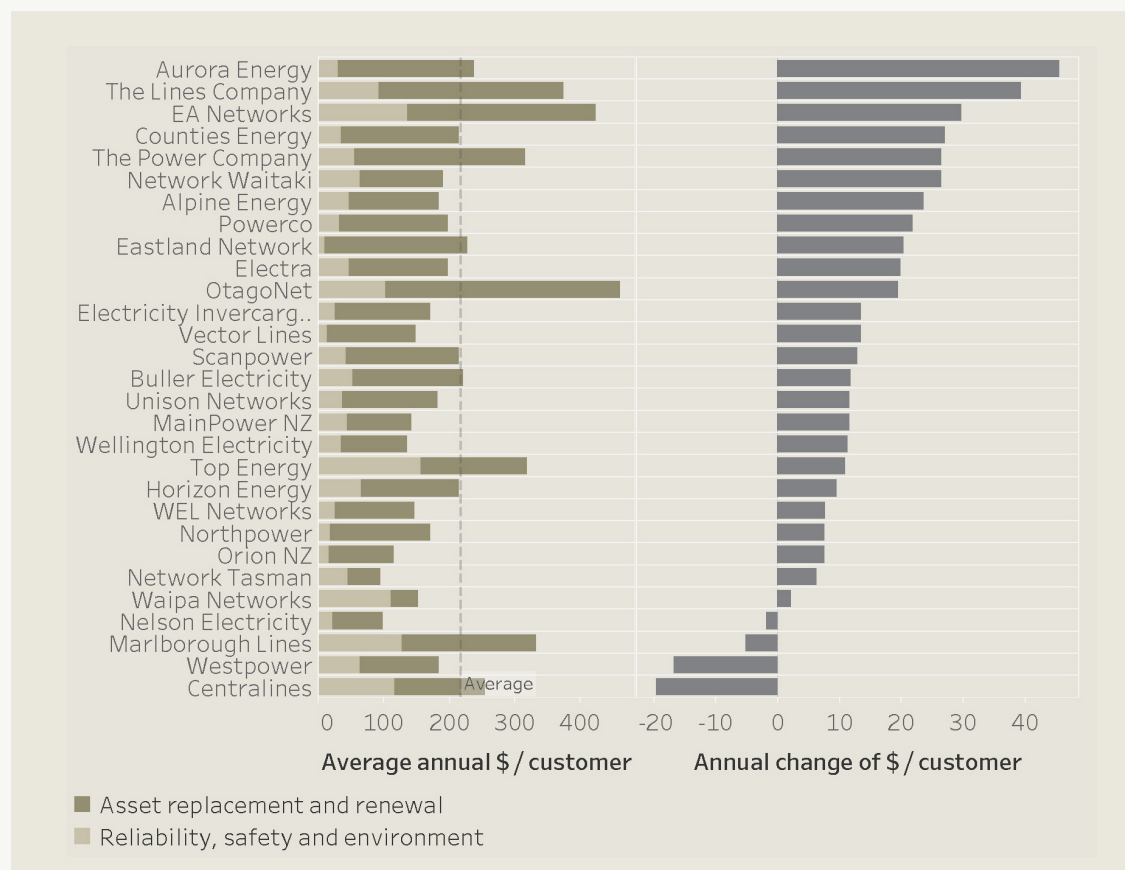
Figure 24: Capital expenditure to replace and improve existing assets for all local lines companies, 2010-2021



55. We have combined 'asset replacement and renewal' expenditure and 'reliability, safety and environment' expenditure in this section, as there is a blurred line between these categories, and variation in how individual local lines companies categorise them. Collectively we refer to them as expenditure to 'replace and improve' assets.

Almost all local lines companies have increased their spending to replace and improve their assets since 2010. The rate of increase has been very high for some local lines companies. This is shown in Figure 25, which gives the average replacement and improvement expenditure per customer for each local lines company between 2010 to 2021 on the left-hand side. The right-hand side shows the rate of change in this expenditure implied by the trend.

Figure 25: Average annual capital expenditure on replacement and improvement per customer, and rate of change, 2010-2021



The left-hand side of the graph shows significant variation between local lines companies in terms of their average expenditure on replacing and improving their assets. Variation between local lines companies over this kind of timeframe is expected because different networks will have different numbers and types of assets coming up for replacement – particularly noting the relatively short time series compared to the long life of assets such as poles, cables and transformers.

The right-hand side of the graph shows expenditure to replace and improve assets increased at an annual rate of \$40 and \$45 per customer for The Lines Company and Aurora Energy respectively. A further seven increased at an annual rate greater than \$20 per customer per year. Many local lines companies increased this expenditure over the period since 2010 as they prioritised work to replace and improve assets. For example, Counties Energy completed a network reliability study in 2019 and accelerated its replacement and renewal of ageing assets as a result, driving a significant increase in this expenditure. Aurora significantly ramped up capital expenditure over 2018-2021 to replace failing infrastructure and bring the network up to standard.⁵⁶

56. Aurora applied for a customised price-quality path which we granted in April 2021 to enable it to continue a higher level of asset replacements. Its capital expenditure began ramping up before the beginning of the customised price-quality path.

The Commission has had concerns about the sufficiency of some local lines companies' replacement and improvement programmes. This was heightened following issues raised with Aurora Energy and further engagement with local lines companies.⁵⁷ Recent increased investment is unsurprising and may be of long-term benefit to customers. Our reviews of asset management plans have identified a welcome trend of more local lines companies moving toward a systemised and objective approach to their asset replacement programmes.

Figure 25 also shows four local lines companies whose renewal spending per customer has declined over the period. Based on further inspection of the data, both Centralines and Westpower appear to be coming off the back of replacement and improvement spending programmes early in the period. This is suggested by their annual average expenditure being broadly in line with the industry average, despite the declining trend.

Information on renewal spending is useful to understand efficiency but it has limited value if it is too high-level to compare to asset information. We gather a lot of information from local lines companies about the age and condition of their assets through ID. However, the detailed nature of the asset category data, compared to the less-detailed expenditure data, makes it challenging to understand the relationships between expenditure and cost drivers, and therefore efficiency. We consider this is a potential subject of future work. This would support our priority for the sector of improving understanding about investment levels and associated incentives.⁵⁸

57. See <https://comcom.govt.nz/regulated-industries/electricity-lines/projects/aurora-energy-independent-review-of-the-state-of-the-network>

58. We discussed our priorities for the sector in a November 2017 open letter. See https://comcom.govt.nz/_data/assets/pdf_file/0019/59311/Open-letter-on-our-priorities-for-the-electricity-sector-for-201718-and-beyond-9-November-2017.PDF

Customers are paying more because local lines companies have spent more on running their businesses

Around 58 percent of local lines companies' own costs (ie depreciation and operational expenditure) allowed them to run their businesses and operate their networks day-to-day.

As shown in Figure 26, annual operating expenditure by all local lines companies reached \$701 million in 2021, having increased from \$396 million in 2008. The trend shows local lines companies are recovering around \$120 more per customer to fund this expenditure.

There are several defined categories of operating expenditure. Changes in disclosure requirements and inconsistencies in how local lines companies have categorised costs over time makes it difficult to meaningfully assess changes prior to 2013. We therefore focus most of our discussion on changes between 2013 and 2021, which accounts for approximately 70 percent of the total increase in operating costs.⁵⁹ The changes are shown in Figure 27 for the following categories:

*Table 2: Operational expenditure categories and purpose of expenditure*⁶⁰

Category	Purpose of expenditure
System operations and network support	Control centre and office-based operations such as network planning
Business support	Corporate activities such as human resources, legal and information technology
Service interruptions and emergencies	Reactive work to respond to unplanned outages
Asset replacement and renewal	Maintain asset integrity to ensure quality of supply
Routine and corrective maintenance and inspection	Testing and general maintenance
Vegetation management	Trimming of trees around overhead power lines

59. As 2013 was the first year of new information disclosure requirements, it may include some incorrect allocation of operating expenditure to the different categories. For example, vegetation management appears to be artificially low in 2013.

60. For more specific definitions, see https://comcom.govt.nz/_data/assets/pdf_file/0025/78703/Electricity-distribution-information-disclosure-determination-2012-consolidated-3-April-2018.pdf

Figure 26: Breakdown of operating expenditure, 2008-2021

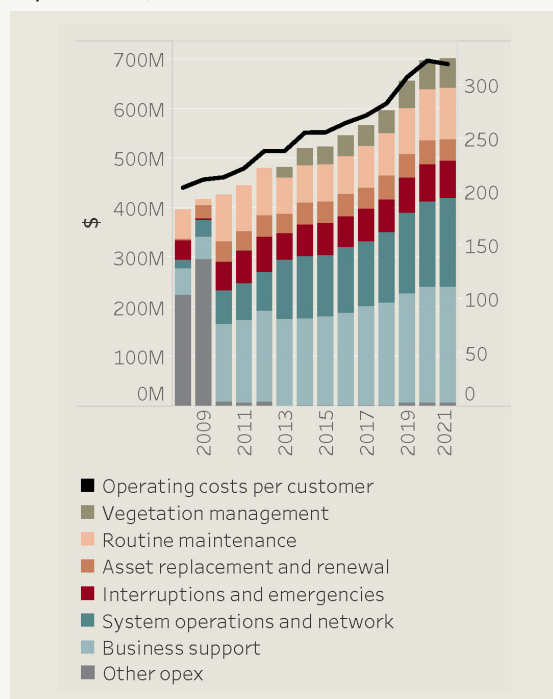


Figure 27: Components of operating expenditure and trends, 2013-2021

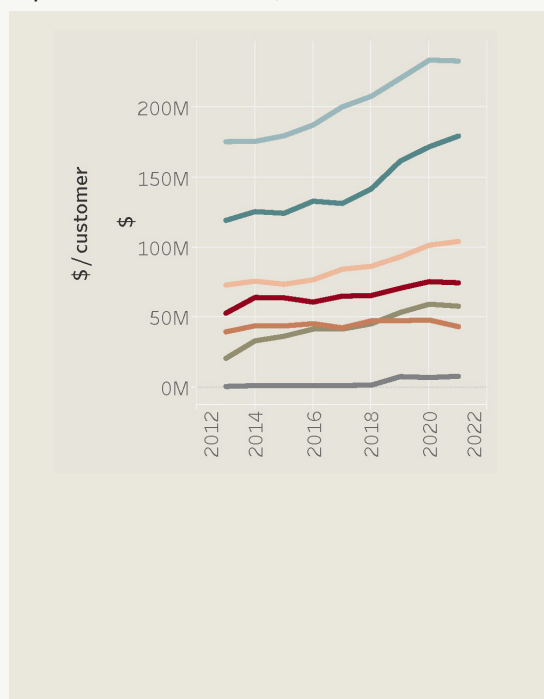


Figure 26 highlights that the increase in operating costs has been consistent over the full data period, and notably faster than network growth resulting in higher per-customer costs on average.

When we set price-quality paths for the local lines companies that are subject to price-quality regulation, we consider their likely operating costs. We do not analyse each of the individual components of operating costs, but in aggregate, we expect operating costs to:

- scale with the forecast number of customers and the total length of power lines, as operating costs tend to increase with the size of the network;
- increase with forecast inflation, to reflect general economy-wide pressures that affect local lines companies' input costs, including labour;⁶¹
- change with expectations of industry-wide changes in productivity; and
- increase for specific significant and uncontrollable step-changes in costs.

Between 2015 and 2021, the aggregated operating costs of the local lines companies that are price-quality regulated were broadly in line with what we had anticipated when we set revenue limits for that period. However, the factors driving higher operating costs were not completely the same as we anticipated. Inflation turned out lower than forecast between 2015 and 2020, meaning that economy-wide cost pressures would not have driven higher costs to the extent we thought. However, other factors more than offset those savings.⁶²

Figure 27 highlights that there were increases in the three biggest components of operating cost – being business support, system operations and network support, and routine maintenance. Vegetation management has also increased significantly in recent years, though it is a smaller contributor to total operating costs.

61. For setting the price-quality paths we used a combination of the Producer Price Index and Labour Cost Index to reflect inflationary pressure on local lines companies' operating costs.

62. See Attachment A of https://comcom.govt.nz/_data/assets/pdf_file/0020/191810/Default-price-quality-paths-for-electricity-distribution-businesses-from-1-April-2020-Final-decision-Reasons-paper-27-November-2019.PDF.

Figure 28 shows that the change in operating costs has differed significantly for different local lines companies, suggesting cost pressures were not experienced consistently. The figure shows the average annual per-customer change in operating costs for each local lines company implied by the trend over the 2013-2021 period. This change is broken down into the same components as Figure 27. Increases in operating costs for a category extend to the right, while decreases in costs extend to the left. The net change per customer on average is indicated by the black diamond.

Figure 28: Trend in operating expenditure categories in cost-per-customer by local lines company, 2013-2021

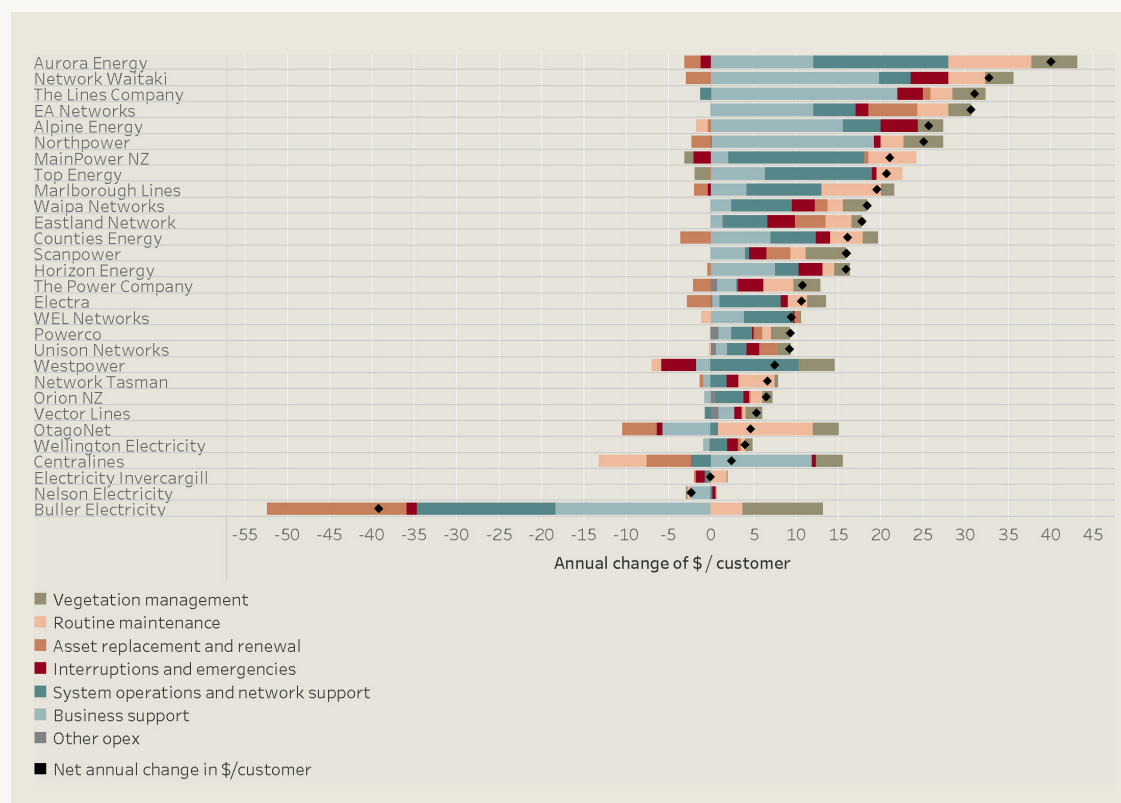


Figure 28 shows that all but three local lines companies have been spending more on operating their businesses day-to-day. Aurora Energy's operating costs increased the fastest, at a rate of over \$40 per customer each year.⁶³ Conversely, Buller Electricity's operating costs declined by around \$40 per customer each year, which we understand reflects a restructuring following the loss of revenue from a large customer.

The graph also shows that, while the categories driving changes in costs differ for each local lines company, 'business support' and 'system operations and network support' feature particularly strongly. Both categories are considered 'non-network', in that they do not immediately relate to providing electricity distribution services.

63. This is at least partially related to Aurora's move to a customised price path in April 2021 and separation between the lines company and its contracting arm. Its opex began ramping up before the beginning of the customised price-quality path.

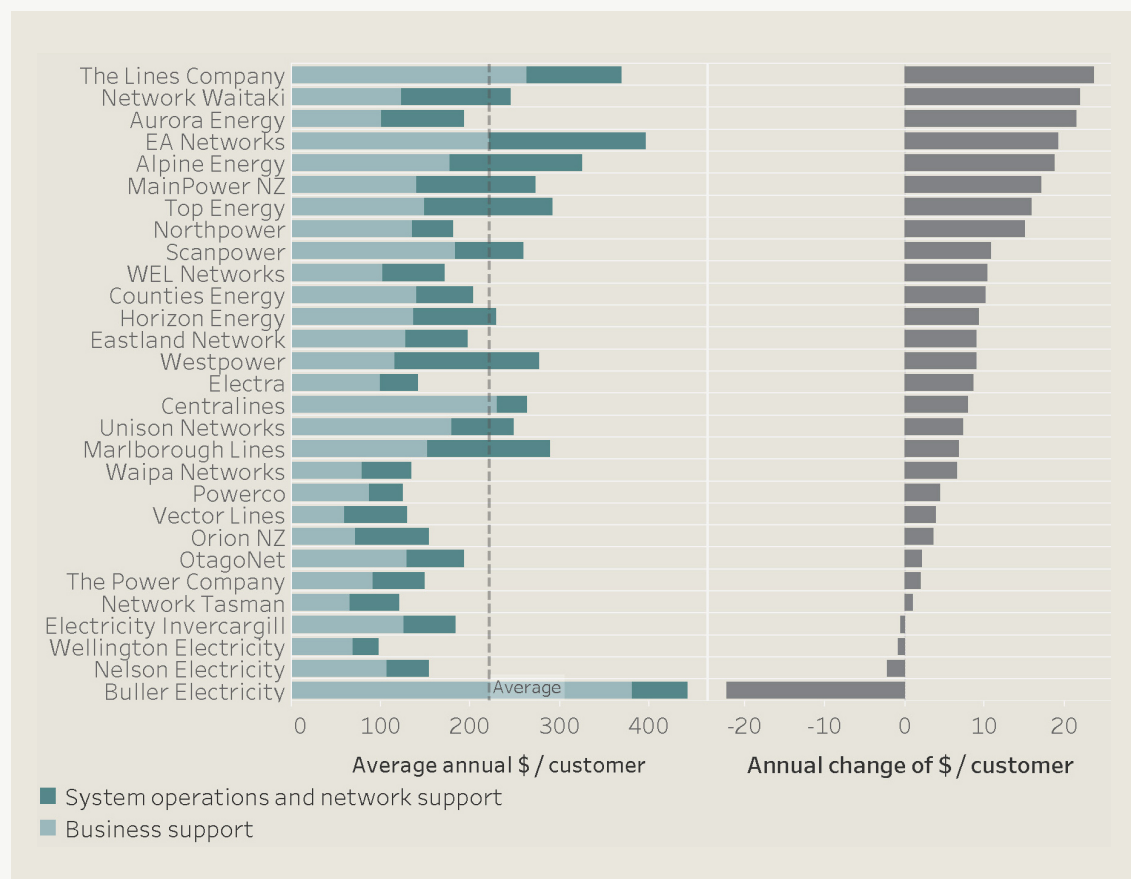
Local lines companies have spent more on non-network operating expenditure

The two largest components of local lines companies' operating expenditure are for 'business support' and 'system operations and network support' – both considered non-network expenditure. These components respectively comprised around 34 percent and 24 percent of total operating expenditure from 2013 to 2021.

Business support operating expenditure relates to general corporate activities. Systems and network support operating expenditure relates to the design, management, and planning of the network, as well as interaction with customers. These categories of operating costs have been increasing at annual rates of 4.2 percent and 5.3 percent respectively since 2013. Overall, in 2021 customers on average paid around \$48 more than they did in 2013 to support this expenditure.

All but three local lines companies have had increases in non-network operating expenditure, though there is a wide variation in changes. This is shown in Figure 29, which gives the average non-network operating cost per customer for each local lines company (left-hand side), and the annual rate of change in that cost (right-hand side) based on the trend since 2013.

Figure 29: Average annual non-network operating expenditure and rate of change in that expenditure by local lines company (2013-2021)



ID does not provide a further breakdown of these expenditure categories, and we are unable to readily analyse what specific factors caused them to increase.⁶⁴

Higher insurance costs are one factor that has affected local lines companies' non-network operating expenditure, and we explicitly allowed for an increase in insurance costs within price-quality paths when we reset them in 2010.

Local lines companies have suggested several other factors that may have been placing pressure on non-network operating expenditure, including:

- increasing regulatory requirements—notably including the need to meet stricter health and safety requirements—and an increased need to engage with regulators;
- changing customer demands;
- changes in technology, including industry-specific technology such as smart meters and network monitoring equipment, as well as information technology and technology services; and
- labour shortages.⁶⁵

Local lines companies have also suggested factors that may place pressure on non-network operating expenditure in future, including:

- cybersecurity;
- emerging technology, including non-network alternatives, electric vehicles, and distributed generation; and
- the impacts of climate change.

Given the significance of these costs, we consider that gaining a greater understanding of their drivers and scope for efficiency should be an area of future work. We may consider changes to our ID requirements to support this work as part of our ongoing review of ID requirements for local lines companies.⁶⁶



64. Some of this (e.g. staffing) would likely be found in corporate reports, but we have not looked into these as part of this analysis.

65. When we reset the price-quality paths for 2020, local lines companies submitted that several such issues were sufficient to justify 'step-changes' in the operating expenditure allowance we gave local lines companies. However, we note that these issues did not meet the threshold required to be specifically included within allowances. See https://comcom.govt.nz/_data/assets/pdf_file/0020/191810/Default-price-quality-paths-for-electricity-distribution-businesses-from-1-April-2020-Final-decision-Reasons-paper-27-November-2019.PDF, page 164.

66. We are considering potential changes to the information that local lines companies are required to disclose under Part 4 of the Commerce Act 1986. We published our Process and Issues Paper in March 2022.

Local lines companies have been spending more to maintain their assets

Network assets require regular maintenance, including replacement parts.⁶⁷ Local lines companies must also keep lines free of vegetation to avoid unplanned outages. Figure 30 and Figure 31 show that local lines companies have been spending more on these activities since 2013.

Figure 30 shows ‘routine maintenance’ and ‘asset replacement and renewal’ operating expenditure in total for all local lines companies (bars), and as a proportion of the value of the total asset base (line). Figure 31 shows total vegetation management expenditure (bars) and this expenditure per kilometre of power line (line).

Figure 30: Total operating expenditure on routine maintenance, and proportion of asset base, 2013-2021⁶⁸

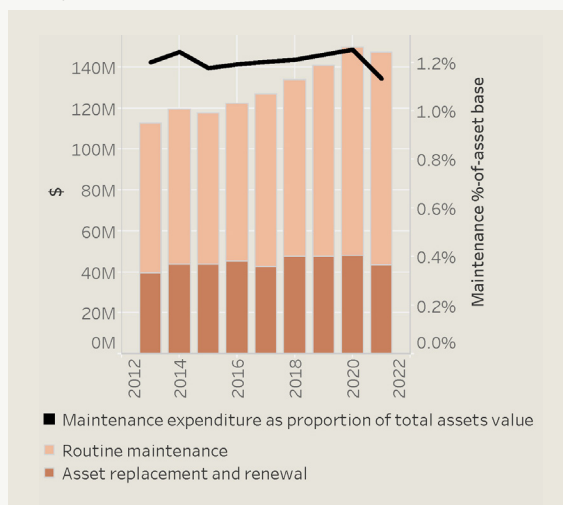


Figure 31: Total operating expenditure on vegetation management, and per km of power line 2013-2021



Figure 30 suggests that replacement and renewal operating expenditure has been flat, but routine maintenance spending has increased by around \$31 million in absolute terms since 2013. This combined expenditure has remained relatively consistent with the general growth in the asset base. While not shown, there is variation between individual local lines companies.⁶⁹ Most spend between 0.5-2.0 percent of the value of their asset base on these expenditure categories, with some increasing their proportional spend and others decreasing it.

The bars of the chart in Figure 31 show that expenditure on vegetation management has increased by around \$37 million or 134 percent since 2013. However, we note that reported expenditure on vegetation management may be artificially low in 2013 due to incorrect categorisation of expenditure in that year, which likely occurred because it was the first year of new categorisation requirements under ID. The line shows that this growth reflects an increase in cost per kilometre of power line, rather than being caused by an increase in the total length of power lines.⁷⁰ In conducting our ongoing analysis of asset management practices and asset management plans, we assessed that the major driver of this higher spending is likely to be that local lines companies have been engaging in more comprehensive management of vegetation in the vicinity of existing lines, and thus devoting more resources toward it.

67. For the purposes of this discussion, we have grouped ‘asset replacement and renewal opex’ and ‘routine and corrective maintenance and inspection opex’, as these both relate to maintaining existing assets.

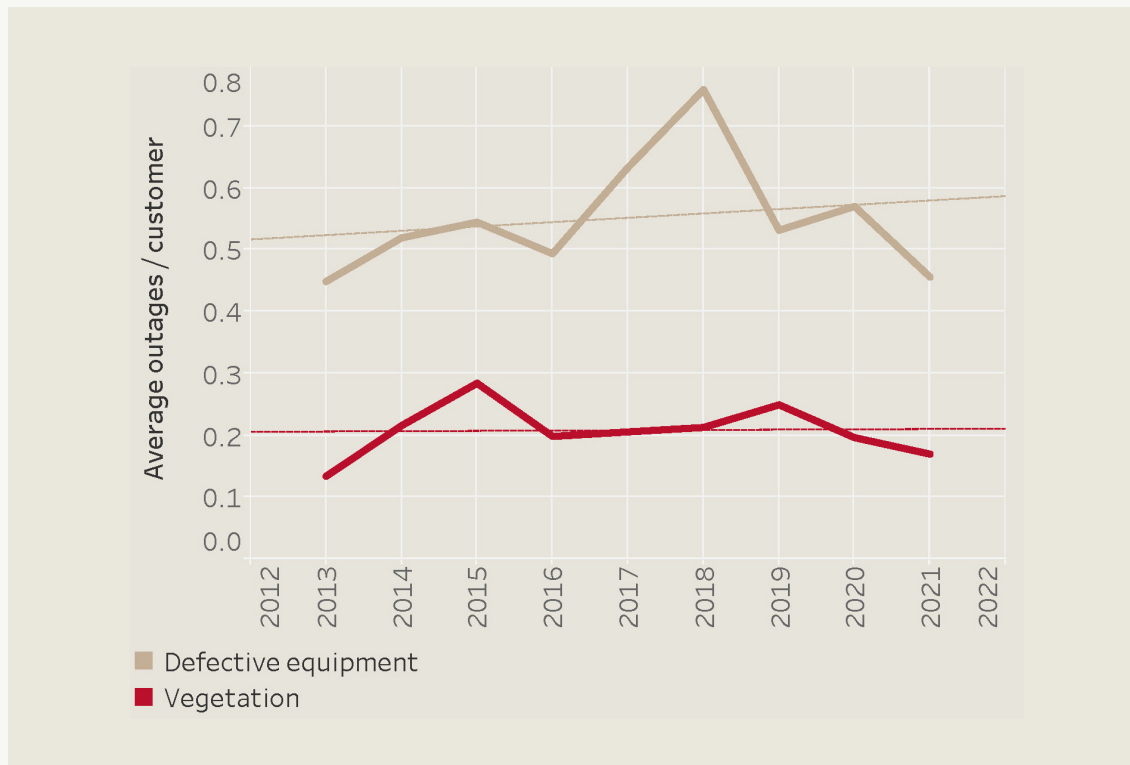
68. Value of the asset base at the start of the year.

69. This is available on the Performance Accessibility Tool.

70. Local lines companies disclose the length of power lines on their network that specifically requires vegetation management. However, this data is of varying quality, so we have chosen not to rely on it in our analysis.

Despite the increased spending on both vegetation management and routine maintenance since 2013, there has only been a minor improvement in the average number of outages per customer that were caused by vegetation interfering with power lines. Further, the average number of outages per customer caused by defective equipment has been worsening. This is shown in Figure 32. However, this is influenced by a particularly high average number of outages per customer in 2018, and in recent years has been trending back down towards 2013 levels. We also note that the data series here is short relative to the likely period over which we might observe the benefits of improved vegetation management and maintenance. Further, external events and the quality of reporting may have influenced these trends.

Figure 32: Average outages experienced by customers that were caused by defective equipment and vegetation, 2013-2021



These deteriorating aggregate trends also disguise a more positive trend in the performance of many of the individual local lines companies. This is shown by Figure 33, which shows the average number of interruptions per customer due to vegetation and defective equipment for each local lines company (left-hand side). The rate of change implied by the trend in this metric is shown on the right-hand side, where an increase in the number of outages is represented by a bar extending to the right, and vice versa.

Figure 33: Average annual number of outages per customer and annual change in outages per customer caused by defective equipment and vegetation, by local lines company, 2013-2021

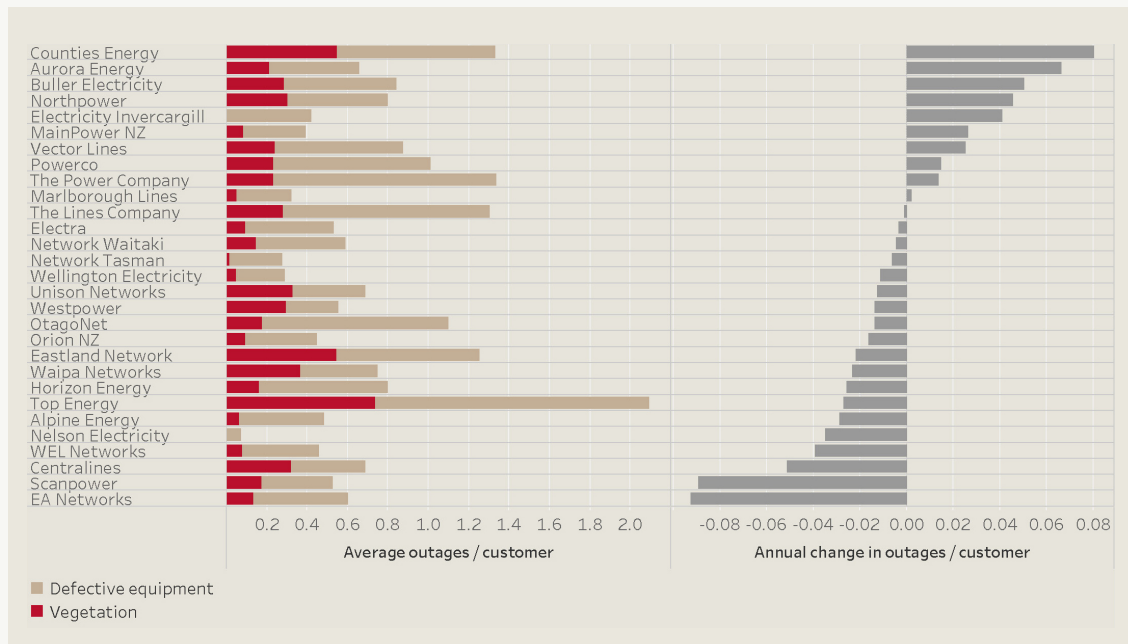


Figure 33 shows that around half of local lines companies have had a steady or declining number of outages per customer attributed to vegetation and defective equipment. However, increases by some large local lines companies influence the overall effect on customers seen in Figure 32—most notably, Vector and Aurora Energy who have both faced Court-imposed penalties for breaches of the reliability standards we have set. Conversely, the local lines companies that have shown improvements in the number of outages per customer are comparatively small.

While not shown in the graph, in analysing the data we did not see an obvious relationship between changes in each individual local lines company's expenditure and the number of outages per customer for either vegetation or defective equipment. This seems counter-intuitive, but may reflect:

- limitations of the data – including that the data series is relatively short;
- that there is a mixture of preventative and reactive expenditure;
- that outages caused by vegetation or defective equipment may be exacerbated by transitory external events such as storms; and/or
- that other network characteristics influence both outages and expenditure in a way that clouds any expected relationship.

Further, expenditure on assets for replacement and improvement will also impact the incidence of outages by defective equipment and may potentially be a stronger driver of reliability outcomes.

We note there may be future changes to requirements for vegetation management expenditure. The Ministry of Business, Innovation and Employment is currently reviewing the Electricity (Hazards from Trees) Regulations 2003, which cover the trimming of trees near power lines, from both a safety and reliability perspective. The review is being progressed because, while tree owners consider the regulations work well, those involved in vegetation management consider they do not work well, for several reasons. While it is too soon to speculate on the outcomes of the review, they may change the extent, allocation of responsibility for, and costs of vegetation management.

The costs to restore power after an outage have declined

The number of unplanned power outages has trended upwards at an industry level since 2010 (discussed further later). However, the costs of restoration have changed much less quickly. This is shown in Figure 34, which gives the total operating costs for ‘emergencies’ across the industry (bars), and the total number of unplanned outages (line). Combined, this means the restoration costs-per-outage have trended down until 2018 where they have since been increasing, as shown in Figure 35.

Figure 34: Total operating expenditure for emergencies versus unplanned outages, 2010-2021

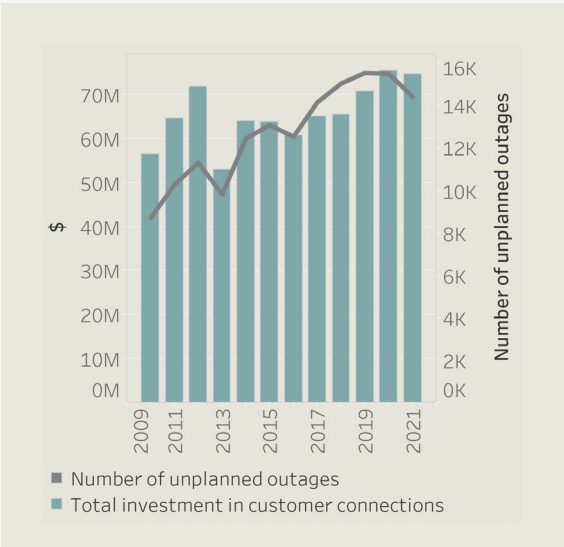


Figure 35: Average emergency opex per unplanned outage, 2010-2021

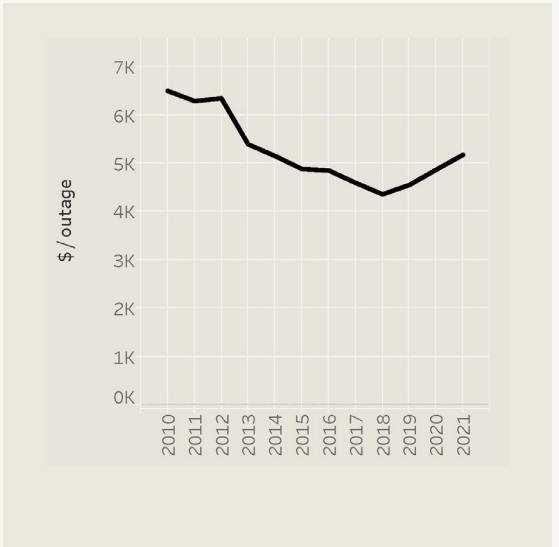


Figure 36 shows how the average restoration costs have changed for each individual local lines company. The colour of the bars indicates the total number of unplanned outages across the full period, with a darker bar indicating relatively more outages.

Figure 36: Rate of change of per-outage expenditure on ‘emergencies’ by local lines company, shaded by number of outages, 2010-2021

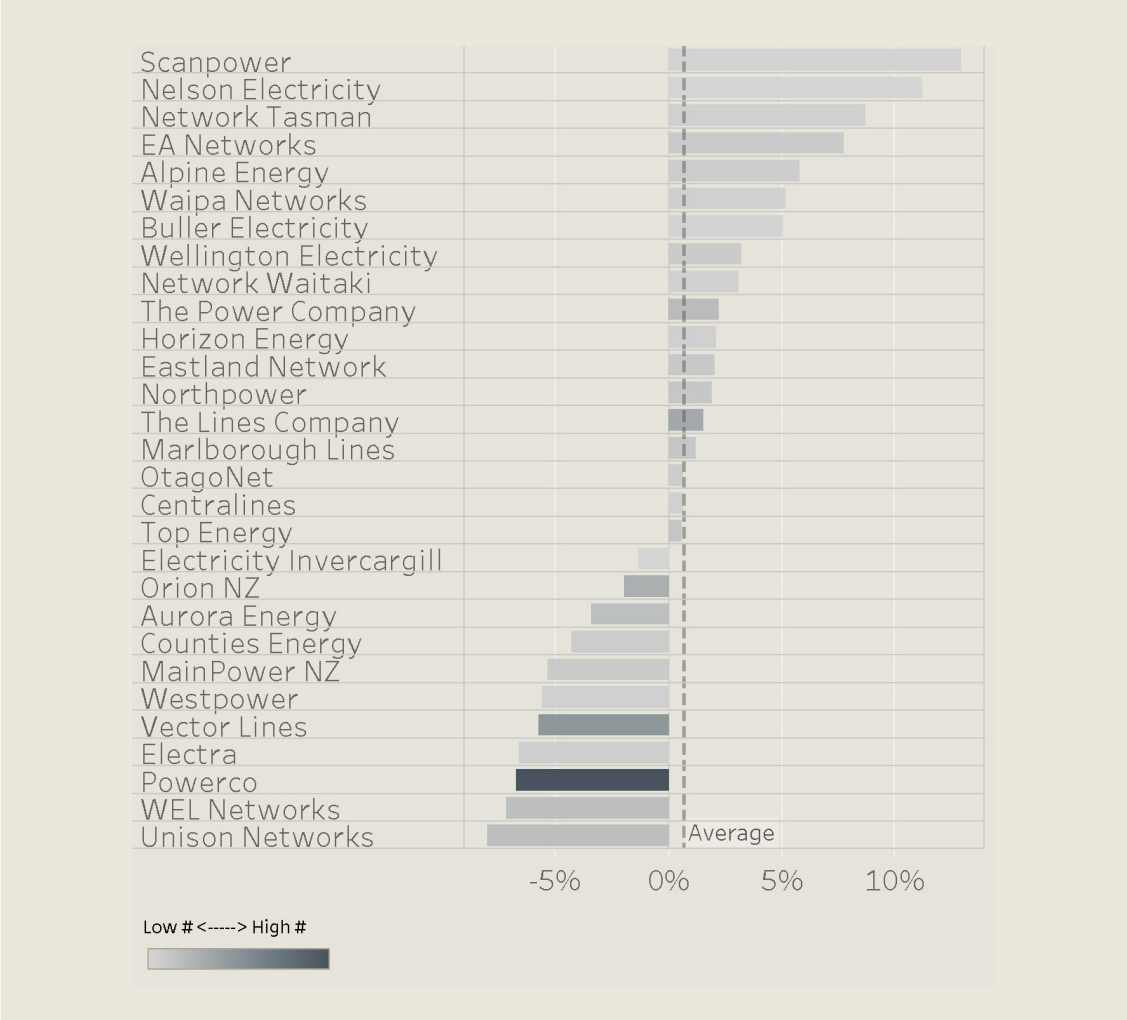


Figure 36 shows that the trend of decreasing outage restoration costs is not universal across local lines companies, with some local lines companies showing significant cost increases and others, significant declines. However, the larger local lines companies have tended to have costs decline, and these local lines companies also contribute the most to total outages (largely because of their size). This explains the overall industry trend. The decline in costs for these local lines companies may reflect an increase in investments in ‘self-healing networks’, which allow for more automated restoration, but may have longer-term impacts on the number of outages.

Customers on average pay the same amount toward local lines companies' profit which was not excessive

Collectively, local lines companies earned \$493 million in total regulatory profit after tax in 2021. This is the total profit we recognise under our regulatory rules as reported under ID requirements. Regulatory profit excludes any profit the local lines company might earn from unregulated business interests. The profit in 2021 consisted of:

- \$297 million in cash profit
- \$196 million of non-cash asset revaluation gain (in line with inflation).⁷¹

The change in profit and the breakdown over time is shown in Figure 37.

Figure 37: Total regulatory profit after tax for all local lines companies, 2008-2021

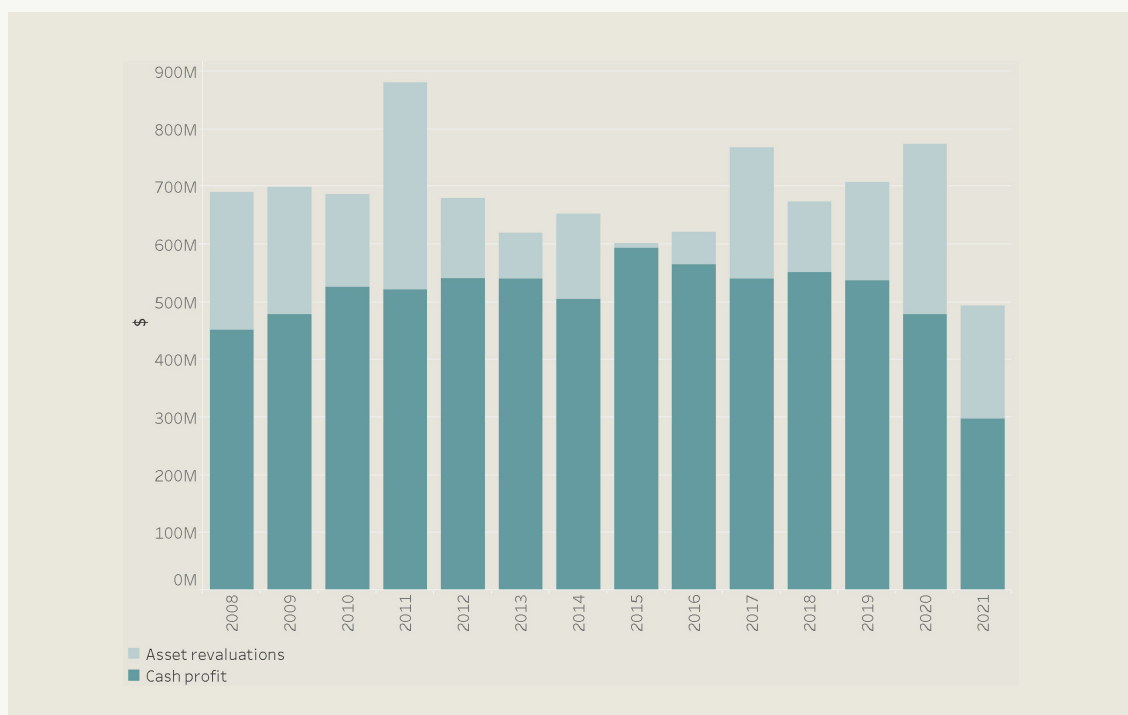


Figure 37 shows that the overall trend in total profit was relatively flat between 2008 and 2020. However, there was a significant dip in 2021.

In general, much of the variation in total profit is driven by the annual revaluation of assets at the rate of inflation, which does not have an immediate impact on customers' bills.

Figure 37 shows that cash profit (the teal bars) trended gradually upwards at an industry level between 2008 and 2015 before declining towards an all-time low in 2021.

71. This is a capital gain that ensures local lines companies asset values do not degrade in real terms. The local lines companies do not receive an immediate monetary benefit from asset revaluations. Rather, these are added to the value of the regulatory asset base and are recovered slowly over time in future years through depreciation.

There are three key factors that have driven the level of cash profit:

- As explained earlier, local lines companies have increased their investment in new assets. Local lines companies are incentivised to invest because they can earn a return on their investments, which is their cash profit. Inflation has also further increased the value of assets.
- Offsetting this, reductions in interest rates meant the cost of capital to invest reduced, which we reflected in the return we allowed price-quality regulated local lines companies to earn on their investments—especially in 2021. This meant that cash profit in later years did not need to be as high to ensure appropriate compensation to local lines companies for their investments.
- Multiple local lines companies that are owned by their customers have recently changed the discounts they provide to customers from being discretionary discounts to being discounts in their scheduled prices. Doing this means that the discounts are now considered to be a reduction in regulatory revenue, whereas previously they were akin to a dividend. Of these companies, most made the change in 2020, though some did so earlier.

The net result of the above factors is that the level of cash profit decreased by around 1.0 percent per year, or 34 percent over the 13 years since 2008.

While outside the period of this analysis, we note that further declines in interest rates significantly affected the revenue we set for price-quality regulated local lines companies under the price-quality paths that apply from 1 April 2020 to 31 March 2025. However, we note that as interest rates increase again, as they have recently, these will flow through to a higher cost of capital. A higher cost of capital would allow price-quality regulated local lines companies higher cash profit, placing upward pressure on prices.

The non-cash gains from asset revaluations (the light bars in Figure 37) represents the increase in the value of assets due to inflation, which is significant for local lines companies because the local lines companies' assets have a high value. This profit will be realised in cash by the local lines companies in future years through lines charges to customers.⁷² Over the period since 2008, the revaluation of assets has been variable but consistent with measured inflation.⁷³

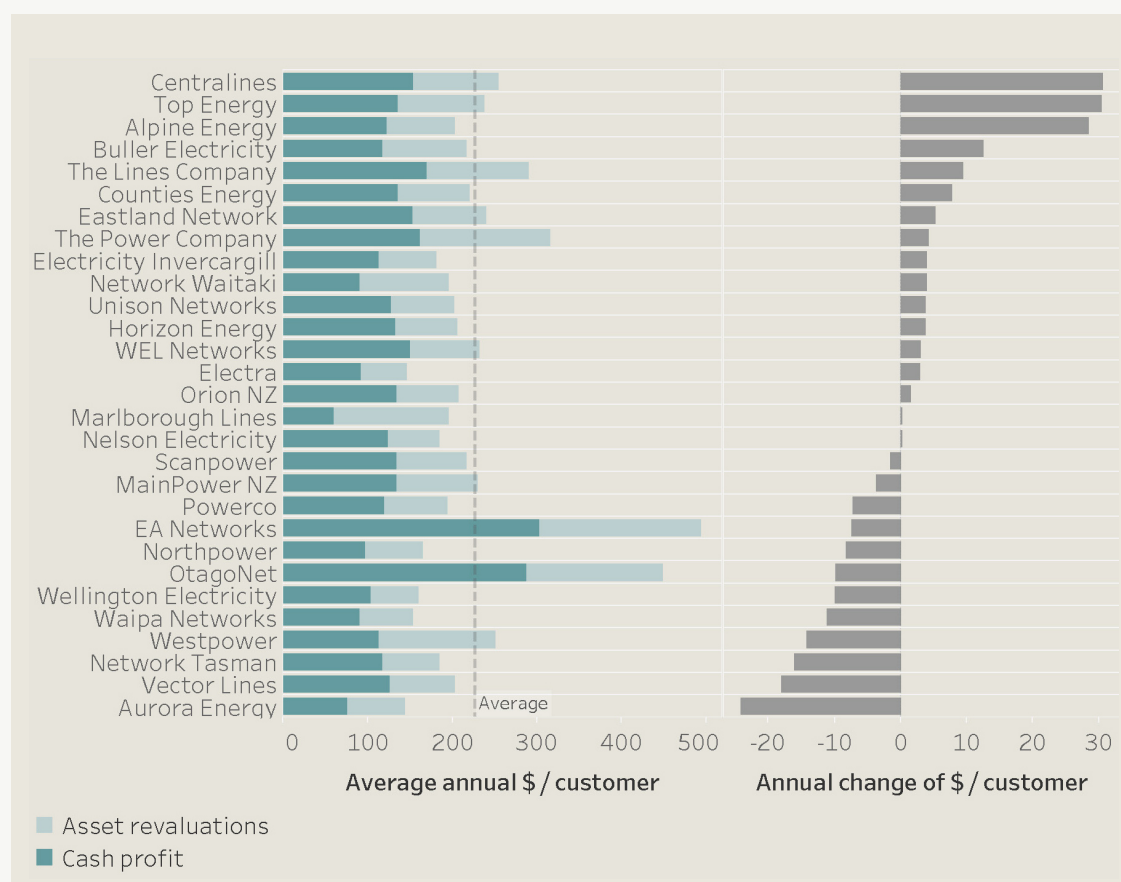
Despite total profit having declined over the period at a total industry level, there are differences in results between different local lines companies. Figure 38 shows the average annual profit per customer, using the same breakdown as in Figure 37 (left-hand side). It also shows the annual change in total regulatory profit after tax over time implied by the trend for each local lines company (right-hand side).



72. This is because line charges are set with regard to the value of the asset base, to provide for a recovery of investment through depreciation and also a return on that investment.

73. We note the inflation index used to revalue assets is calculated differently from that shown in Figure 4 under our input methodologies.

Figure 38: Average annual total profit after tax and rate of change by local lines company, 2010-2021



The left-hand graph highlights that there is variation in the average profit per customer earned by local lines companies around the country. To some extent, this variation reflects that some local lines companies have an asset base that has a comparatively high value relative to the number of customers on their network due to low density or high-demand customers. For example, EA networks had total assets of \$15,000 per customer in 2021, while Wellington Electricity had total assets per customer of \$4,000.

The right-hand graph shows that three local lines companies have had their total profit after tax trending up by more than \$25 per year on a per-customer basis. We set price-quality paths for each of these companies. The price-quality paths we set for them in 2015 allowed for revenue to increase above inflation to reflect significant investments in their networks and to allow for normal returns.

On the other hand, two price-quality regulated local lines companies, Aurora Energy and Vector, have seen their total profit after tax trend down by more than \$25 and \$20 respectively per customer per year. Aurora identified safety issues on its network after we had already set maximum revenue limits in 2020 so heavy investment in over 2018-2021 ate into profits. Aurora has recently moved to a customised price path in 2021 to enable it to continue a higher level of investment.⁷⁴

Vector's 2010 price-quality path (reset in 2012) required a reduction in its allowable revenue to better align it with its actual costs.

74. [Our website has more information on Aurora's customised price-quality path.](#)

Local lines companies have been effectively limited in their ability to earn excessive profit

Figure 39 shows the total regulatory profit after tax expressed as a percentage of the total value of assets between 2013 and 2021.⁷⁵ This is given for price-quality regulated local lines companies, exempt companies, and all companies, weighted by the value of their asset base.

Total profit as a proportion of the value of assets is a measure of profitability known as the return on investment. By comparing this with a company's required rate of return – the level of return demanded by its investors – it is possible to assess whether companies are making excess profit. A company's required rate of return is also known as its weighted average cost of capital.

We have not included these graphs for each local lines company in this report. However, these are available on our interactive dashboard.

Figure 39: Weighted average return on investment based on total value of local lines company assets, 2013-2021⁷⁶

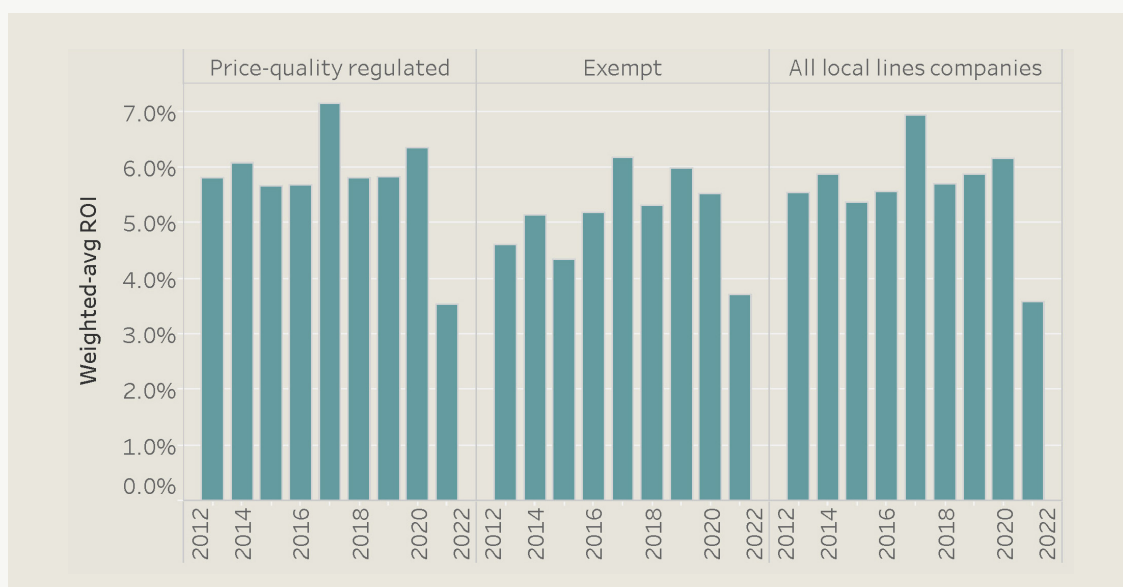


Figure 39 shows that return on investment had been increasing slightly for the total industry before dropping significantly in 2021.

The local lines companies that are exempt from price-quality regulation have had gradually increasing returns over the period until 2021, but because the majority of the industry (in terms of asset value) consists of price-regulated local lines companies—which had stable returns over the period—the total industry result is generally reflective of the price-quality regulated businesses.

75. The period of this analysis begins in 2013 given changes in the ID requirements which make earlier comparisons challenging.

76. This calculation uses the opening value of the regulatory asset base, and the post-tax return on investment disclosed by local lines companies, covering all revenue received.

Our estimate of the weighted average cost of capital that we used to set price-quality paths for price-quality regulated local lines companies was 7.8 percent for 2011 to 2015, 6.4 percent for 2016 to 2020, and 4.2% for 2021 to 2025.⁷⁷ The industry returns were generally lower than these levels, suggesting that local lines companies were not collectively making excessive returns.⁷⁸

Customers of many local lines companies have experienced some reduction in unplanned outages and restoration costs have declined

As well as looking at trends in the revenue and expenses of local lines companies, we have also analysed how the quality of the service they provide to customers has changed over time.

Figure 40 shows, for the whole country between 2008 and 2021, three key statistics that help to describe the quality of the electricity distribution service provided by local lines companies:

- the total number of outages that occurred;
- the typical number of outages that each customer experienced on average; and
- the total amount of time that each customer tended to have their power out for.

The graphs separately identify outages that are planned by the local lines company, which customers may be given advance notice about, and those that are unplanned. Unplanned outages can occur for a variety of reasons, including because of:

- adverse weather and lightning;
- defective equipment;
- human error; and
- third party, wildlife or vegetation interference.

We have excluded outages caused by some major events from the analysis, such as the Canterbury earthquakes and particularly severe storms.⁷⁹

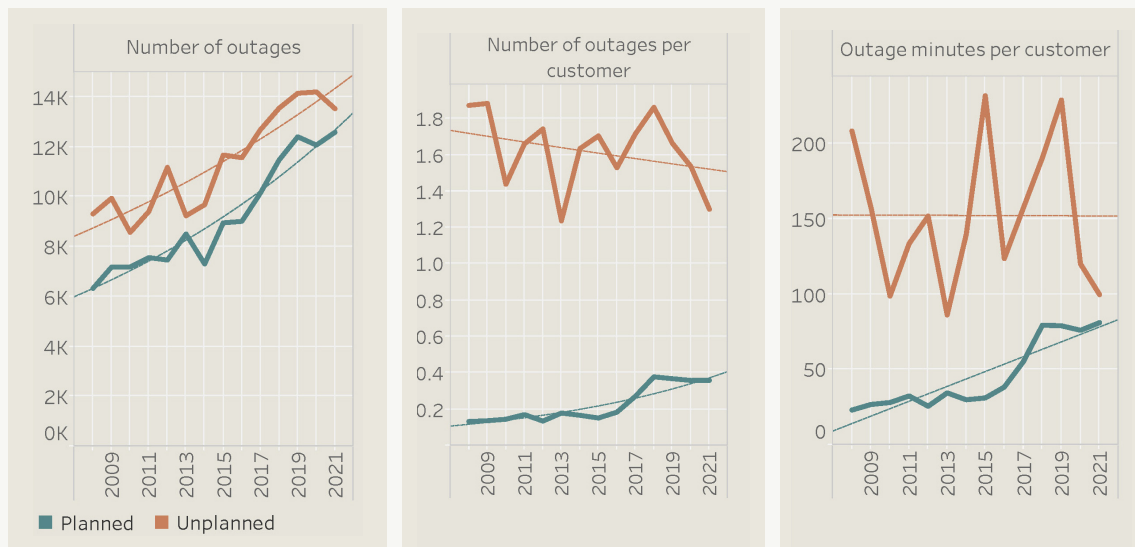


77. Based on our estimate of the equivalent post tax weighted average cost of capital. For 2010 to 2015 we used the 75th percentile of our estimate, while for 2016 to 2020 and 2021 to 2025 we used the 67th percentile. Our decision to use a lower percentile point of our estimate was explained in the relevant reasons paper on our website. See https://comcom.govt.nz/_data/assets/pdf_file/0029/88517/Commerce-Commission-Amendment-to-the-WACC-percentile-for-price-quality-regulation-Reasons-Paper-30-October-2014.PDF

78. This is a high-level analysis of returns, which is a complex subject. We undertake more detailed analysis in other publications such as our 2016 report on local lines company profitability.

79. The observations we make generally hold whether we adjust for these events or not. However, we exclude them because such events can make it more difficult to distinguish other observable trends that relate to issues more reasonably within the control of local lines companies.

Figure 40: Statistics of planned and unplanned outages including trends, 2008-2021



From Figure 40 we can make three observations:

- There have recently been materially more outages from local lines companies than there used to be—both planned and unplanned.
- The average customer experienced more planned outages but slightly fewer unplanned ones—combined, they experienced slightly more outages overall.
- Outages have been more likely to last longer than they used to.

Combined, these observations suggest that outages tend to be longer but smaller in scope, affecting fewer customers at a time. They are also increasingly likely to be planned rather than unplanned outages.

We have identified two significant reasons why outages are lasting longer on average:

- Vector and Aurora Energy have both faced Court-imposed penalties for breaches of the reliability standards we have set, and their customers make up a substantial proportion of the total customer base. Powerco was moved to a customised price-path for 2018-2023 which permitted a higher level of planned and unplanned SAIDI to allow for major network upgrades.
- Some local lines companies have recently implemented a range of operational changes to reduce health and safety risks, such as reducing the extent to which they work on power lines when they are still live. These changes may mean it can take longer to restore power after an outage.

These factors imply that service quality can vary significantly depending on the local lines company that a customer is connected to.

Figure 41 shows the trend in these same three metrics for each individual local lines company, for planned (left-hand side) and unplanned (right-hand side) outages between 2008 and 2021. The local lines companies are separated into those subject to price-quality regulation and those that are exempt, and then ordered from largest to smallest based on the number of customers on each local lines company.

Figure 41: Rate of change of number, frequency and duration of outages by local lines company, 2008-2021

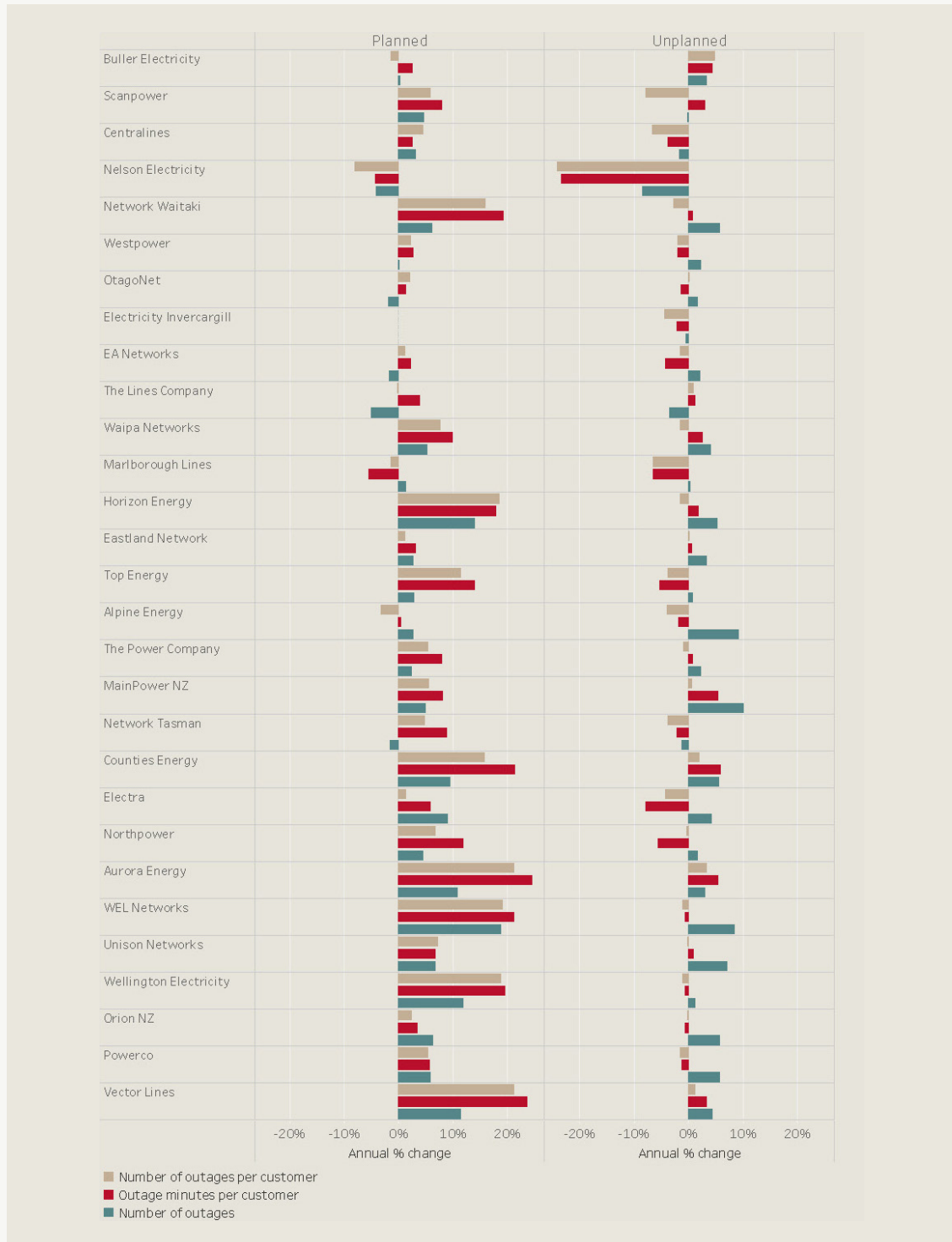


Figure 41 shows that most local lines companies have seen increases in the number, frequency and duration of planned outages. With the exception of Powerco, the larger price-quality regulated local lines companies have also tended to have increases for unplanned outages. However, several smaller local lines companies have a reduced number, frequency or duration of unplanned outages.

