

Observations from our review of Electricity Distribution Businesses' 2016 and 2017 Asset Management Plans

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Associated documents

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9 November 2017	N/A	Open letter on our priorities for the electricity sector for 2017/18 and beyond

Commerce Commission
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Chapter 1 Introduction

Why we have published this paper

- 1.1 This paper continues an ongoing conversation with electricity distribution businesses (EDBs) and other stakeholders about how EDBs are managing their assets for the long-term benefit of consumers.
- 1.2 We have published this paper to help interested persons to assess whether the purpose of Part 4 of the Commerce Act 1986 is being met regarding the way EDBs manage their networks, and also to:¹
 - 1.2.1 explain the Commission's interest in asset management, and the context which has led to us publishing this paper;
 - 1.2.2 make general comments about how EDBs are addressing the topics we require them to disclose under information disclosure (ID); and
 - 1.2.3 highlight examples of practices, initiatives or innovations in how EDBs manage their assets, which other EDBs and interested parties may want to consider.

What this paper contains

- 1.3 Chapter 1 introduces the paper and provides some context for the review. It also indicates future work we propose doing on asset management, and how you can provide your views.
- 1.4 Chapter 2 lays out the framework we have used to review asset management practices, including the source material we have relied on and the topics we have addressed.
- 1.5 Chapter 3 contains the detailed questions we have asked under each topic, our general observations about how suppliers are responding to this issue, and any examples of EDB practices which we consider noteworthy or illustrative of broader industry practice.
- 1.6 For ease of access, Attachment A includes links to each supplier's 2016 and 2017 Asset Management Plans (AMPs) or AMP update (the primary source documents for our review).

¹ Commerce Act 1986, sections 52A and 53B

Context in which we have published this paper

- 1.7 Our open letter regarding our priorities for the electricity distribution sector for 2017/18 and beyond highlighted asset management as a key focus area for our work this year and beyond.² We see effective asset management as crucial for EDBs. Sound asset management is an integral part of ensuring that EDBs improve efficiency and provide services at a price and quality that reflects the demands of electricity consumers.³
- 1.8 Our open letter also set out some of the questions we expect EDBs to be increasingly focusing on as their asset management practices continue to mature.
- 1.9 The AMP is a core document which forms an essential part of managing a distribution network. As such, we require all electricity EDBs to publicly disclose their AMPs at regular intervals. This allows the Commission and other interested parties to review and scrutinise EDBs' asset management practices.
- 1.10 We undertook this review and report as part of our work to analyse and publish summaries of information disclosed by regulated businesses for the purpose of promoting greater understanding of the performance of individual regulated suppliers.⁴

Publication and review of the 2018-2028 EDB AMPs

- 1.11 EDBs were required to disclose their AMPs for 2018-2028 by 31 March 2018.⁵ We anticipate undertaking a review of these AMPs later in 2018 that will be more thorough than the 2016/17 review. We are currently determining the exact nature and scope of this review.
- 1.12 We are shifting our emphasis from AMP compliance to the value AMPs provide to consumers and other stakeholders. Previous reviews focused on compliance with the ID AMP requirements.⁶ This was appropriate at that earlier stage in the development of the ID regime and was intended to incentivise improvements in the standard of AMPs.

² Commerce Commission "Our priorities for the electricity distribution sector for 2017/18 and beyond", 9 November 2017

³ Commerce Act 1988, section 52A(1)(b)

⁴ Commerce Act 1986, section 53B(2)(b)

⁵ Subject to specific exemptions granted to any suppliers

⁶ Parsons Brinckerhoff on behalf of the Commerce Commission, "2011 Asset Management Plan Reviews" (26 August 2011)

- 1.13 The AMP requirements for EDBs have remained consistent for many years. This has given companies the opportunity to become experienced and proficient in completing their AMPs in a way that is focused on the fundamentals of managing key infrastructure assets.
- 1.14 Consistent with this, we are now focusing on the asset management practices embodied by the AMPs, rather than the preparation of the documents themselves.
- 1.15 Given that we have reviewed some aspects of the AMPs, we thought it was worthwhile sharing our overall impressions of EDB performance, and identifying specific EDB practices, initiatives, or innovations which may be useful for other EDBs to consider as they continue to develop their asset management practices. We acknowledge and see the benefit in the number of existing initiatives, forums or working arrangements where EDBs are already sharing asset management practices.

How you can provide your views

- 1.16 We are not seeking formal submissions in response to this paper. However, we are interested in further engaging with EDBs to better understand their asset management practices. We intend for this paper to be only one step in an ongoing dialogue about asset management.
- 1.17 We are interested in your feedback and comments on how we have approached the review and our observations, if you would like to discuss anything raised in this paper, please contact:

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Chapter 2 Framework and scope

Purpose of this chapter

- 2.1 This chapter sets out the framework we have applied to reviewing asset management practices, and the scope of material we have applied this framework to.

Review framework

- 2.2 This section sets out the framework we have applied to review EDBs' AMPs, and how this framework links to the EDB ID requirements and to Part 4 of the Commerce Act.

Points to consider when reading this paper

- 2.3 Before discussing the topics that we address in some detail, this section covers three broad points which should be borne in mind when reading this paper:
- 2.3.1 We are not prescribing a specific approach to asset management which we require EDBs to follow.
 - 2.3.2 The ID requirements for AMPs set minimum standards about the content of AMPs, and we have used these requirements to inform and structure our review.
 - 2.3.3 Our review was not intended to be comprehensive, and this paper only provides some of the highlights from our review.

We have not prescribed a specific approach to asset management

- 2.4 Rather than assessing whether suppliers have applied any specific approach or complied with any standard when managing their assets we have instead chosen broad topics which we expect any sound AMP to address.
- 2.5 We consider these broad topics are appropriate because:
- 2.5.1 we have observed a wide range of asset management approaches across different EDBs, many of which may be valid responses to a particular EDB's circumstances;
 - 2.5.2 it is not our role to prescribe any one particular methodology – we are focused on the outcomes that EDBs' asset management practices create for their consumers; and
 - 2.5.3 we are still building our understanding of EDBs' asset management performance, and we do not want to prematurely close off what may be reasonable options without further analysis.

Performance analysis under Part 4 of the Commerce Act

- 2.6 We are required to publish a summary and analysis of the information disclosed by EDBs under our regulations.⁷ The purpose of summary and analysis is to promote greater understanding of the performance of EDBs, their relative performance, and the changes in performance over time.⁸ Publishing summary and analysis therefore helps ensure that sufficient information is readily available to interested persons to assess whether the purpose of Part 4 is being met.⁹
- 2.7 The specific focus of this report is on asset management. Asset management practices underpin the range of investment and operational activities EDBs undertake.¹⁰ This means there are several ways in which publishing summary and analysis of EDBs' asset management disclosures helps interested persons to assess whether the purpose of Part 4 is being met. These include better enabling interested parties to assess EDBs in several of the interdependent performance areas, including:
- 2.7.1 operating and investing in assets efficiently, as observed in workably competitive markets;
 - 2.7.2 innovating where appropriate; and
 - 2.7.3 providing services at a quality that reflects consumer demand.¹¹
- 2.8 Helping interested parties to answer these questions in assessing the Part 4 purpose drove our original decision to include information on network management in the ID requirements.¹²

We have structured our review using the ID AMP requirements

- 2.9 Our ID determination sets requirements for the material which EDBs must include in their AMPs. These requirements have informed the set of questions we address in this review.

⁷ Commerce Act 1986, section 53B(2)(b)

⁸ Ibid.

⁹ Commerce Act 1986, section 53A

¹⁰ 'Interested persons' are referred to in the section 53B purpose of Information Disclosure regulation, and may include: regulated suppliers, consumers and consumer groups, retailers and generators, central and local government authorities, other regulatory agencies, investors and their advisors, or the Commission.

¹¹ Commerce Act 1986, section 52A(1)(a) and (b)

¹² Commerce Commission, "Information Disclosure for Electricity Distribution Businesses and Gas Pipeline Businesses: Final Reasons Paper", 12 October 2012, Chapter 5, page 75

2.10 The formal requirements for AMPs are set out in Attachment A of the ID determination.¹³ The table below sets out how where in Chapter 3 we address each of the major ID requirements. Given the narrower scope of this review, not all requirements have been addressed.

ID AMP requirements (Attachment A)		Chapter 3 topics	
Clause 1-2	AMP design		<i>Addressed throughout other topics</i>
Clause 3	Contents of the AMP	Topic 1	Purpose and corporate strategy
		Topic 2	Information management and inspections
Clause 4	Assets covered		<i>Not addressed</i>
Clause 5-10	Service levels	Topic 3	Service levels and customer engagement
Clause 11	Network development		
Clause 12	Lifecycle asset management	Topic 4	Investment
Clause 13	Non-network development		
Clause 14	Risk management	Topic 5	Risk management
Clause 15	Evaluation of performance	Topic 6	Evaluation of performance
Clause 16	Capability to deliver		<i>Not addressed</i>

2.11 Similarly, the Asset Management Maturity (AMMAT) self-assessment questions in Schedule 13 of the ID determination have informed some of the questions we have asked in this review. Again, these have been referenced where appropriate.

This review is not intended to be all-encompassing

2.12 Within each of the six broad topics, we have asked a series of questions to further focus our analysis. These questions are set out in Chapter 3, along with illustrative or noteworthy examples.

2.13 The citations in Chapter 3 are intended as examples only.

2.13.1 On the one hand, the inclusion of a particular example does not imply that the EDB demonstrates good practice across all areas of asset management.

2.13.2 On the other, the exclusion of a business does not imply poor practice in that area.

2.14 For the sake of brevity, we have generally limited ourselves to a maximum of two or three examples per question.

¹³ Electricity Distribution Information Disclosure Determination 2012, Attachment A

- 2.15 Finally, we are not applying a ‘good practice’ or ‘best practice’ standard. The practices we cite are examples which we consider may promote the long-term benefit of EDB consumers, and which other EDBs may want to consider. There may be ways in which the practices we cite in this paper could be developed and improved, as asset management occurs within a framework of continuous improvement.

Material we have relied on for this review

- 2.16 The principal method we have relied on for this review is a desktop survey of the 2016 and 2017 AMPs and AMP updates, which each EDB must disclose under our ID regulations.¹⁴
- 2.17 However, as the purpose of this review is to review EDBs’ asset management practices as a whole, and not simply the quality and presentation of their AMPs, we have referenced a broader range of sources. For all EDBs, this has included:
- 2.17.1 the 2016 AMPs and 2017 AMP updates;
 - 2.17.2 statements of corporate intent and annual reports prepared under the Electricity Companies Act 1992 (where publicly available); and
 - 2.17.3 relevant observations from ID data, available via our Performance Analysis Tool.¹⁵
- 2.18 Additionally, where we have visited an EDB as part of our ongoing site visit programme, we have relied on information and examples gathered during these visits.
- 2.19 Lastly, for Powerco and Wellington Electricity, who have each applied for customised price-quality paths (CPP) recently, we have referred to relevant examples from their CPP application material where appropriate.

¹⁴ For ease of access, we have included links to these documents in Attachment A

¹⁵ The Performance Analysis Tool is available on our website at: <http://comcom.govt.nz/regulated-industries/electricity/performance-analysis-and-data-for-distributors/performance-accessibility-tool-for-electricity-distributors/>

Chapter 3 Observations from our review

Purpose of this chapter

- 3.1 This chapter sets out the observations we made when reviewing the AMPs, and during the site visits.
- 3.2 Based on the AMP requirements in Attachment A of the EDB ID determination, we identified six broad topics which were used to structure our review and to frame the questions we have asked. These topic areas are:
 - 3.2.1 Topic 1 – Purpose and corporate strategy;
 - 3.2.2 Topic 2 – Information management and inspections;
 - 3.2.3 Topic 3 – Service levels and customer engagement;
 - 3.2.4 Topic 4 – Investment;
 - 3.2.5 Topic 5 – Risk management; and
 - 3.2.6 Topic 6 – Evaluation of performance.

Topic 1: Purpose and corporate strategy

- 3.3 Regardless of the specific asset management approach an EDB takes, we expect that it must be underpinned by and deliver on a coherent plan covering a 10 year planning period. This plan also needs to take into account the medium term needs of stakeholders, while simultaneously remaining aware of longer term changes in the business environment that may affect the EDB.¹⁶
- 3.4 The purpose of Topic 1 is to test the linkage between the EDB’s overall corporate mission or vision and the specific asset management approach it deploys to meet the needs of its consumers and the expectations of its investors.¹⁷
- 3.5 Specifically, we have reviewed the AMP and other strategy documents with a view to understanding how EDBs are generally responding to any changes in their business or planning environments.

¹⁶ Electricity Distribution Information Disclosure Determination 2012, Schedule 13, Question 10.

¹⁷ Ibid. Attachment A, clause 1.3, 3.3.2, and 3.3.5

Question 1.1	Comment
<p>Does the EDB discuss specific examples of how its corporate mission and asset management strategies are responding to a changing environment, or only discuss the need to develop such a response?</p>	<p>This environment could change due to a variety of factors including demand growth that needs to be funded in a different way to encourage connection, or a change in customer demand patterns for example, due to the uptake of emerging technology like electric vehicles (EVs).</p>

General observations

As we noted in Chapter 2, our review and site visits have revealed a wide range of asset management practices between different EDBs.

In part, this is driven by EDBs with different corporate missions that are responding to different environments. What we were looking for in this question was examples of these missions actively informing the asset management and investment decisions EDBs make.

The AMPs indicate many suppliers carry out environmental scanning and openly discuss potential changes in their business environment such as demand growth, generation potential, and irrigation developments that may affect network investment. We observed a number of AMPs discussing the potential effects of solar photovoltaics (PV) and EV uptake affecting demand patterns and network loading, demonstrating an increasing awareness of emerging technology as a potential disruptor.

Network Waitaki	Comment
<p>Network Waitaki states its corporate mission as:</p> <p>“To be a locally-owned and operated electricity distribution company that provides the benefits of local consumer trust ownership by:</p> <ul style="list-style-type: none"> • owning and operating a safe, reliable and efficient distribution system that meets the evolving needs of its consumers, in accordance with the Asset Management Plan; • supporting the economic growth and wellbeing of the community it serves.” <p><i>2017 SCI, page 3</i></p> <p>We have seen this strategy informing Network Waitaki’s asset management in the way it has responded to irrigation demand in the region.</p> <p>The company has rebuilt and upgraded a significant part of its network using some innovative commercial approaches. These have given their major irrigation customers commercial incentives, providing choice about how the network expansion is undertaken.</p> <p><i>Materials discussed during the Commission’s site visit on 28 Sep 2017</i></p>	<p>Like other EDBs in their region, Network Waitaki has seen significant growth in irrigation demand over the past decade. Their asset management and commercial decisions in response to this change in circumstances appear consistent with their strategy of supporting the economic growth of the community.</p> <p>Network Waitaki worked with the irrigation load developer to arrive at a commercial arrangement which enables the development, and at the same time minimises existing customers’ exposure to new investment and asset stranding.</p> <p>This has resulted in an outcome which is beneficial to the irrigator but has not required substantial levels of investment by the EDB and adds benefit to the network.</p>

Vector	Comment
<p>Vector's strategic vision is to "create a new energy future".</p> <p><i>2016 AMP, page 2</i></p> <p>Vector is a pro-active researcher in the emerging technology area as it might impact network planning, design and operation.</p> <p>In the 2017 AMP update, Vector discusses the use of energy storage devices in the network for peak shaving and back-up supply. Vector is forecasting that there may be a significant disruption on the demand-side of their network due to emerging technology.</p> <p><i>2017 AMP Update, page 5 and Section 6 page 4</i></p>	<p>Vector's focus on the future of energy is clearly driving the technology investment decisions it is making.</p> <p>Emerging technology may not be solely used as a means to improve efficiency, perform peak shaving and back-up supply; it might also have the potential to disrupt traditional network loading patterns.</p> <p>The Commission is aware of these emerging technology developments in industry, and are keen to see EDBs understand their potential impact.</p> <p>To build this understanding, the Commission has an active programme of work gathering information from EDBs about what technologies EDBs are investing in, what effect they are having on the sector, and how they are being accounted for within the Part 4 regime.</p>

Topic 2: Information management and inspections

- 3.6 Accurate information about the condition of an EDB's network is a necessary (albeit not sufficient) condition for robust decision making. Under Topic 3, we have looked for examples of EDBs who appear to have consistent and robust systems in place for collecting and managing asset-related data that are not just reliant on the knowledge of particular individuals.
- 3.7 A particular focus within this topic was the inspection and recording practices which underpin asset data, as well as any initiatives being taken to improve the quality of information collected; whether in the form of building staff capability, expanding the scope of data collected, or investment in asset management systems.¹⁸
- 3.8 We reviewed the AMPs with four questions that attempted to reflect these ideas.
- 3.8.1 Is the EDB committed to improving or maintaining their asset data quality systems?
- 3.8.2 Is there a systematic asset data collection process and how the condition data observed in the field is tracked through to the expenditure forecasts?
- 3.8.3 How is the EDB applying industry-standard tests to its assets to assess asset condition and remaining asset life?

¹⁸ Ibid. Attachment A, clauses 2.9, 3.11-3.13; and Schedule 13, question 26

3.8.4 Are there examples of an asset criticality framework (ACF) and understanding, and how is such a framework being used to inform decision making, such as decisions to refurbish or replace an asset?

Question 2.1	Comment
<p>If asset condition data accuracy in an asset class is poor, is there a clear achievable commitment to rectify this situation with urgency?</p> <p>If information is satisfactory, is there clear evidence of an organisational commitment to maintain the present standard moving forward?</p>	<p>We consider asset inspection, data collection and asset condition assessment processes to be the cornerstone of good asset management practice.</p> <p>We were seeking examples where organisations that have identified this importance and also those that are seeking to continuously improve these processes.</p>
<p>General observations</p>	
<p>We observed a range of practices in this area. Most EDBs have disclosed that they held the highest accuracy condition data for assets that had the biggest impact on consumers (for example, for assets with voltages higher than 415V), but less so for low voltage (LV) assets. This may need to change if LV networks need to be better understood and monitored if there is large scale EV uptake in the future for example.</p> <p>The general impression in reviewing the AMPs, with this question focus, is that the need to have accurate asset condition data appears to be well understood but the actual asset condition and the systems for recording are still a work in progress for a number of EDBs.</p>	
Unison	Comment
<p>Unison report quite high levels of condition data accuracy in most of their asset classes. Where they report a low level of knowledge of asset condition (e.g. such as for distribution LV overhead lines) they generally disclose why this is an issue and how they might improve this.</p> <p><i>2016 AMP, Section 5.16.6 page 5-61</i></p>	<p>Unison discusses the reasons why they cannot be more accurate about defining asset condition for certain assets, such as the testing methods being immature and inconclusive.</p>
Northpower	Comment
<p>Northpower are currently undertaking a thorough review of how their asset condition data is graded. This review was prompted by a realisation that their current age-based condition grading was producing incorrect results.</p> <p><i>Discussed during Commission site visit on 15 Nov 2017</i></p>	<p>We support this awareness and willingness to re-visit existing systems. Using asset age as a means to define asset condition can only provide the asset manager with an indicative insight into the actual asset condition, and we will continue to monitor how this improves Northpower's asset IDs.</p>

Question 2.2	Comment
<p>Are there processes in place to systematise the collection of condition and other data, from collection in the field through to expenditure forecasts?</p>	<p>We consider the systematisation of field data collection to be an important aspect of asset management. There are two parts to this question we are interested in. The first is whether asset field condition data is trackable through to the expenditure forecast, and the second is the consistency of asset condition assessment across the EDB network.</p>
<p>General observations</p>	
<p>We observed a number of EDBs moving towards installing systems (usually geographic information system (GIS) based) that would allow field engineers to directly access and modify asset condition data on-site, with this information automatically tracking through into the financial planning software. However there are only a handful of EDBs explicitly stating they are doing this.</p> <p>However in our review it was difficult to ascertain if EDBs had adequate systems in place to ensure that asset condition assessments were being consistently carried out across their networks when different engineers make asset condition judgements.</p>	
Powerco	Comment
<p>Powerco state in their CPP proposal and 2017 AMP that their GIS tool development will allow field engineers to directly access and update asset condition data in the field. Powerco in its CPP proposed that this information will be trackable through to the financial forecasts once it has deployed its new Enterprise Resource Tool.</p> <p><i>2017 AMP, page 259</i></p>	<p>The ability to have condition assessment data feeding into an asset management tool that can track the financial implications through to expenditure forecasting appears to be of significant value. We note though that there are intermediate decision making steps such as whether to refurbish or replace an asset, and when that decision needs to be made within this framework.</p>
Unison	Comment
<p>Unison has developed mobile applications to electronically capture some of the high volumes of data generated by field inspections. These smartphone applications allow data to be uploaded directly into Unison's core business applications.</p> <p><i>2016 AMP page 5-11</i></p>	

Question 2.3	Comment
<p>Is there evidence of the use of industry-standard procedures for testing assets to determine their condition and remaining life?</p>	
General observations	
<p>In general we observed most EDBs using internationally accepted practices for testing assets such as the use of oil testing for power transformers and cable sheath testing for high voltage cables. However while many EDBs state they use standard procedures and testing practices, these seemed inconsistently applied. For example there were a range of wooden pole testing strategies employed across industry and we are interested to understand if this is because these testing methods are inconclusive or not appropriate. We are also interested to know whether standard testing methods need to be specified as guidance to industry or whether this is unnecessary.</p>	
WEL Networks	Comment
<p>WEL have implemented a Condition Based Risk Management (CBRM) approach to the management, renewal and upgrade of their assets. WEL use a range of approaches to test asset condition such as cable and circuit breaker partial discharge testing, dissolved gas analysis of power transformer oil, contact resistance testing for switchboard bus bars, gamma ray imaging for wooden poles to test wood density and condition, and thermal imaging to test overhead conductor and joint integrity.</p> <p><i>2016 AMP, section 8.4 pages 154-161</i></p>	<p>WEL Networks have explicitly linked their asset testing and condition procedures into their CBRM process which appears to assist in making refurbishment vs replacement decisions and their timing.</p> <p>We are interested to explore the CBRM concept further with industry and how this is informed by asset condition results. One of our key focus areas in the EDB sector is asset criticality informed by asset condition, which is central to the CBRM concept.</p>
Powerco	Comment
<p>Powerco have a comprehensive suite of standards and policies that reference international standards for procurement and asset testing.</p> <p>Powerco also plan to be fully compliant with the asset management standard, ISO 55000, by 2020.</p> <p><i>2016 AMP, pages 5-11</i></p>	<p>During the 2017 Powerco CPP assessment process Powerco stated that they make their suite of standards and policies, which covers asset condition testing guidelines, available to other EDBs to use.</p>

Question 2.4	Comment
<p>Is there evidence of some form of ACF in place to identify the most important assets in terms of their customer outage impact and to prioritise replacement and renewal?</p>	<p>The use of ACF by EDBs is a key focus area for us. We see this is a key aspect of informed asset management practice as it can assist EDBs prioritise asset expenditure and estimate the quality impact of investment strategies.</p>
<p>General observations</p>	
<p>We observed some EDBs formally recognising that an ACF had merit. Some EDBs had a partial or full asset criticality understanding in place to inform their investment strategy.</p> <p>We believe that a well-functioning ACF should contain considerations of asset health, customer outage impact, and have some analytical means to provide refurbishment vs replacement investment decisions to be made and the likely timing of these decisions. Ideally a well-functioning ACF should provide asset managers with an estimate of likely quality outcomes for different asset investment strategies. We have noticed that this type of analytical thinking is starting to be implemented by various EDBs.</p>	
Horizon	Comment
<p>Horizons appear to have a comprehensive ACF in place and consider the following inputs to identifying and assessing criticality, stating:</p> <p>"Assets critical to sustained performance:</p> <p>How critical the assets are to system operations;</p> <p>Conducting of failure analysis (root cause analysis, failure mode analysis);</p> <p>Determining the probability of failure and listing assets by failure type, and analysing failure and consequence;</p> <p>Using asset decay curves; and reviewing and updating system's vulnerability assessment".</p> <p><i>2016 AMP, Section 8.4, pages 154-161</i></p>	<p>The Horizon's ACF appears to contain all the working inputs and aspects of the CBRM framework.</p> <p>The use of failure probability appears to be a key input in judging asset failure consequence, which could be either customer cost based on the Value of Lost Load or a probabilistic view of SAIDI and SAIFI outcomes.</p>
Wellington Electricity (WE*)	Comment
<p>WE* has implemented an ACF for each asset class. The framework defines an Asset Criticality Index (ACI) for each asset that comprises considerations of connected load type, number of consumers served, bus configuration at the zone substation, and availability of 11kV backfeeds. Each asset ACI score is used in conjunction with the Asset Health Index (AHI) to create an asset health/criticality matrix, and inform maintenance priority and investment decision making.</p> <p><i>2017 AMP, pages 124-126</i></p>	<p>WE* has implemented a bespoke ACF which is useful to rank critical assets within an asset class.</p> <p>To assess asset criticality across the entire fleet asset outage probabilities would need to be applied and used to calculate either a probabilistic lost load cost from the customer perspective, or an expected asset SAIDI or SAIFI.</p> <p>Using these measures asset criticality could be normalised across the entire asset fleet.</p>

Topic 3: Service levels and customer engagement

- 3.9 Ultimately, our interest in how EDBs manage their assets comes from our statutory responsibility to promote the long-term benefit of consumers, with incentives to provide electricity distribution services at a level that reflects consumer demands.¹⁹
- 3.10 A comprehensive AMP based on effective engagement with consumers is a core part of ensuring this aspect of the section 52A purpose is met. AMPs must contain a description of stakeholder (including consumer) interests, and clearly identify a set of performance indicators which reflect these interests.²⁰
- 3.11 As such, Topic 3 focuses on how EDBs:
- 3.11.1 are using innovative approaches to engage with their customers and whether these engagements are attempting to discuss specific issues;
 - 3.11.2 display a clear commitment to and evidence of interactions with customers to discuss network improvements and upgrades;
 - 3.11.3 turn customer feedback into meaningful and measurable service targets;
 - 3.11.4 communicate effectively with customers and update them on outages and outage restoration; and
 - 3.11.5 are taking innovative approaches to improve customer reliability.

¹⁹ Commerce Act 1986, section 52A

²⁰ Electricity Distribution Information Disclosure Determination 2012, Attachment A, clauses 3.6 and 5-10

Question 3.1	Comment
<p>What processes and strategies are in place to engage regularly with consumers, and to what extent are these strategies targeted at specific issues?</p>	<p>Seeking customer views about the prices they pay and the quality they receive, and reflecting on those views, should be a key aspect of the EDB business strategy.</p>
<p>General observations</p>	
<p>In general customer engagement is an area that might be developed further. Most EDBs have some form of regular customer engagement, either by survey, print media, website information, or at public events. We recognise the difficulty of meaningfully engaging about technical matters with the public, we are keen to understand how different forms of engagement are able to be employed effectively with customers.</p>	
Mainpower	Comment
<p>Mainpower has been increasing its presence in the community with regular information feeds in local newspapers and a strategic direction that is focused on making their engagement with their customers more straight forward.</p> <p>The Kaikoura supply review is one such customer focussed initiative.</p> <p>Kaikoura Supply Review MainPower New Zealand Limited September 2017</p>	<p>Mainpower had significant and specific network issues to deal with after the Kaikoura earthquake in November 2017.</p> <p>Mainpower developed a targeted network upgrade options paper to circulate to affected parties that clearly explained the issues, the options that were being considered to resolve the issues, and the likely costs associated with each of these.</p>
Vector	Comment
<p>Vector considers its customer focus to be one of five pillars of its strategic vision. One innovative customer engagement strategy includes the inception of a Customer Advisory Board.</p> <p>Vector states that the Customer Advisory Board consists of "diverse representation of our customers and key stakeholders to help define and test evolution of our customer relationships, strategies, services and standards. Vector is using this Board, along with results of the surveys conducted, to drive services to meet customer expectation".</p> <p><i>2016 AMP, section 4, page 4</i></p>	<p>Using a customer advisory board is an interesting idea, and we would like to understand how effective this has been in shaping Vector's AMPs and future network developments.</p> <p>We are interested in understanding:</p> <ul style="list-style-type: none"> • whether this longer term, smaller sample-size approach is any more effective than traditional methods such as media and surveys at capturing public input into the EDB business practices; • what has and has not worked; and • whether other businesses would benefit from such an arrangement.

Question 3.2	Comment
<p>Is there any evidence of innovative approaches to interact with customers via print, social media, events, or public meetings to discuss proposed network improvements and upgrades?</p>	<p>Seeking and acting on customer input about what upgrades and improvements they might be paying for should be an important and transparent part of an EDB's decision making process.</p> <p>We understand the difficulty of doing so in a meaningful way so we were interested in highlighting any novel and innovative approaches being taken. This may be a novel approach to engaging with the public, or a new way of presenting the information on customer choice.</p>
General observations	
<p>We identified some interesting strategies to try and effectively gather customer input about network enhancements and developments. With the decline of print media, we generally observed some EDBs taking a more pro-active approach at public events and in public places to engage in surveys (such as malls, supermarkets and agricultural field days). We also identified some examples where EDBs had taken a new approach to gathering price/quality preferences from customers.</p>	
Powerco	Comment
<p>Powerco has a comprehensive customer engagement strategy outlined in Chapter 4 of the 2017 AMP which details the survey results.</p> <p>Powerco proposed a community event at Whangamata during a day when the power was intended to be off in the afternoon due to 33kV overhead line repairs.</p> <p>http://www.powerco.co.nz/news/power-out-party-planned-during-power-cut-for-whangamata/</p>	<p>The Powerco customer engagement process is highly developed and was recently used to underpin support for their recent CPP proposal.</p> <p>One interesting Powerco initiative was the community event during the power outage for the Whangamata 33kV line repair, prior to the full line upgrade.</p> <p>Powerco have engaged extensively with this community about the options to upgrade supply into the township, including an option to install peaking diesel. In the end the local customer feedback resulted in Powerco proposing a hybrid battery solution to defer line upgrade capital costs.</p>
Waipa Networks	Comment
<p>Waipa Networks pose some interesting questions in its annual customer survey, such as how customers value reliability (a price-quality trade-off) in a general sense, and how they want urban vs rural pricing to be allocated.</p> <p>They also hold public meetings to discuss network performance, new investments, tree trimming and means to improve network reliability.</p> <p><i>2017 AMP, pages 33 and 45</i></p>	<p>We are interested in what information Waipa Networks gathered, and how they used it when they sought customer input about the value of reliability and the urban vs rural pricing structure.</p> <p>While customers may not fully understand the technical issues, we are interested in innovative approaches EDBs are taking to obtain consumer views regarding price and quality.</p>

Question 3.3	Comment
<p>How has the EDB turned customer and other stakeholder feedback into measurable performance indicators?</p>	<p>Clearly defined performance indicators are a key link between the needs of customers and the investment behaviour of EDBs.</p>
General observations	
<p>Generally, EDBs address traditional quality indicators (SAIDI and SAIFI) well. However, we were interested in what other measure beyond this EDBs are using to track the performance of their networks, any innovative ways of expressing SAIDI or SAIFI, and how this information was presented.</p> <p>Additionally, we were encouraged by the number of EDBs who include health and safety indicators as key indicators or performance.</p>	
Marlborough Lines	Comment
<p>Marlborough Lines have introduced key performance indicator (KPI) based performance criteria that look at long duration and multiple interruptions. These events which usually adversely affect more remote customers are not captured by the averaging effect of SAIDI and SAIFI, and can have significant effect on the customers and their associated activities.</p> <p>One of these KPIs indicates that Marlborough Lines have set a target of less than 10% of their customers seeing nine or more outage events per year.</p> <p><i>2016 AMP, page 96</i></p>	<p>We have observed many EDBs use their internal KPI processes to target a range of business issues and this is a good example of a KPI targeted at a network reliability issue.</p>
Alpine Energy	Comment
<p>Alpine Energy present target tables of the expected outages that various customer classes can expect each year. This communicates very clearly to customers the likely quality effects of the service they are paying for.</p> <p><i>2017 AMP, Table 4-8 page 96-97</i></p>	<p>While the information presented by Alpine is targeted at expected unplanned outages and their expected duration per year, it is worth highlighting the approach.</p> <p>Each class of customer connected to the Alpine network can identify their outage risk exposure in each year, allowing them to plan back-up supply strategies if needed.</p>

Question 3.4	Comment
<p>Are there processes and tools in place to communicate planned outage to customers in a timely fashion and update them on planned and unplanned outage restoration?</p>	<p>We believe that a strategy to keep customers informed about outages, upcoming outages, and outage restoration times, is an essential aspect of EDB business practice.</p>
General observations	
<p>We noted a range of practices employed by EDBs to notify customers of planned outages and likely outage restoration times. Many EDBs use web-based applications and social media to communicate this information but it is unclear how effective this approach is when compared to traditional methods like print media advertisements and mail or leaflet drop campaigns for planned outages in particular.</p> <p>We are interested to understand how effective these strategies are, and if affected customers have suggestions in this area. The recent outage issues experienced by Vector after the 11 April 2018 storm event stress-tested their online outage notification system and EDBs should consider how their outage notification systems would deal with similar events.</p>	
Orion	Comment
<p>Orion have been using a web-based application to display details of planned, current and past outages, but it needs to be updated manually.</p> <p>Orion has stated in its 2016 AMP, that it plans to replace this manual notification system with a real-time automatic reporting tool linked to their internal outage management system. This will be developed and link to an outage map for the public.</p> <p><i>2016 AMP, page 56</i></p>	<p>Automation has a lot of merit, especially during situations where there may be many outages happening at the same time within a network, and where a manual notification updates may not be efficient.</p>

Question 3.5	Comment
<p>Are there any innovative approaches being used to improve customer reliability?</p>	<p>We understand that some fundamentals of networks are unlikely to change in the foreseeable future. While they will continue to require transformers, switchgear, overhead lines and cables for example, innovative technologies can be used to improve reliability by either reducing outage frequency or minimising outage durations.</p>
<p>General observations</p>	
<p>We noted a range of innovative strategies and technologies being employed by EDBs to improve customer reliability. One technology is the incipient fault waveform recognition technology, which analyses network pre-fault waveforms and diagnoses network faults before they occur. This technology purports to reduce the number of asset-related outages and their duration by identifying likely fault locations quicker. We know of two EDBs trialling this technology and are keen to understand the outcome of the trials.</p> <p>Other innovative approaches to improving customer reliability we have observed include devices to restrict fault impact and provide more fault discrimination, and SCADA based network switching to restore backfeed supply following fault events.</p>	
Powerco	Comment
<p>Powerco have proposed a number of new and innovative solutions to improve customer reliability as evidenced in their 2017 CPP proposal and discussed in the 2017 AMP.</p> <p>These include the use of fuse-savers, single-phase sectionalisers, SCADA controlled network switchgear, ground fault neutralisers; and a waveform recognition trial, which is proposed to help detect potential network faults before they occur.</p> <p><i>2017 AM, page 137</i></p>	<p>The solutions detailed by Powerco are an example of the use of technology to improve customer quality outcomes without the need to install additional network capacity.</p> <p>Instead these devices attempt to improve fault discrimination effects by isolating only faulted assets, maximise the use of latent network backfeed capability, and use new analysis techniques to detect potential fault issues.</p>
Vector	Comment
<p>Vector has updated its security of supply standards to include consideration of High Impact Low Probability (HILP) events and also to enable the use of batteries as network capacity upgrade deferral options, provide network support during outages and for voltage support.</p> <p><i>2017 AMP update, page 6</i></p>	<p>This demonstrates how emerging technology is being used in conjunction with traditional network solutions to provide a range of solutions to improve or maintain customer reliability.</p>
Orion	Comment
<p>Orion discuss in its AMMAT assessment a number of measures that can help improve customer such as ground fault neutralisers (GFNs), a new outage management system, and the introduction of CBRM.</p> <p><i>2016 AMP, page 322</i></p>	<p>CBRM is an asset management tool that can help inform EDB investment replacement or renewals decision making in a systematic way. We have noted a few EDBs discuss the use of CBRM tools in their AMPs.</p>

Topic 4: Investment

- 3.12 Asset management practices must eventually result in investment and expenditure decisions.²¹
- 3.13 We reviewed the AMPs with the questions that reflect these ideas;
- 3.13.1 qualitative considerations of hazard control and how this links to prioritising renewals expenditure;
 - 3.13.2 how EDBs consider innovative solutions to defer traditional capacity investment and how alternatives are assessed;
 - 3.13.3 how EDBs were consulting their customers about price and quality trade-offs, and how these preferences had been taken into account in investment planning;
 - 3.13.4 the use of load control in industry, the extent to which it is considered important, and what the future plans for load control schemes are in general;
 - 3.13.5 vegetation management strategies, how these compared, and whether EDBs were actively monitoring the need to modify these strategies due to any environmental changes.

²¹ Ibid. Attachment A clause 3.8; and Schedule 13, question 31

Question 4.1	Comment
<p>Is hazard control a key consideration in asset renewals decision making, and how is it qualitatively factored into renewals prioritisation?</p>	<p>We are seeking to understand how the use of a formal and analytical framework to identify, categorise and systematically resolve network hazard exposures could be used to affect EDB renewals forecasting and investment prioritisation.</p>
<p>General observations</p>	
<p>Similar to HILP event exposure analysis, a systematic framework that underpins network hazard control is generally an area we believe should be more formally discussed with reference to specific issues and how these are resolved.</p> <p>While many EDBs are well aware of their network hazards and embed hazard control strategies into network design, the formal discussion of hazard control and how this is accounted for in the design process appears to be limited.</p> <p>We have identified some EDBs who discuss their hazard control strategies with reference to actual identified risks and one EDB in particular who is using the As Low As Reasonably Practicable (ALARP) principle to identify and resolve safety exposures in their network systematically.</p> <p>The ALARP framework is one in which risks are identified, ranked, and mitigation strategies tested to a level of risk that is considered As Low As Reasonably Practicable. This type of risk mitigation framework provides asset owners the ability to quantify hazard risks and compare these across the entire network in order that the full suite of asset and network hazards can be understood and systematically mitigated to a level that is practicable.</p>	
Unison	Comment
<p>Unison consider network operational and safety risks under the ALARP framework.</p> <p>Unison state that “Utilising the cause and effect methodology, detailed descriptions of identified risks covering Unison’s network assets (spanning their entire lifecycle) have been collated into individual sheets. Controls for these identified risks have been developed, documented and implemented”</p> <p><i>2016 AMP, page 7-11</i></p>	<p>The ALARP risk mitigation framework provides asset owners with the ability to quantify hazards and compare these across the entire network.</p> <p>In this way the full suite of hazards can be compared on the same basis, and systematically mitigated to a level that is both reasonable and practicable, and economic.</p>
Network Tasman	Comment
<p>Network Tasman has separately identified the significance of 11kV conductor clash as it affects conductor failure, conductor ground contact incidents and early replacement, due to clashing affecting conductor strength.</p> <p><i>2017 AMP update, page 91</i></p>	<p>While not specifically mentioned as part of a wider hazard and risk identification framework, the approach and recognition of a safety issue like this is welcomed.</p> <p>Conductor clashing incidents on overhead line assets can develop into safety exposures and so is important for EDBs to consider.</p>

Question 4.2	Comment
<p>How have innovative solutions been considered as an alternative to traditional capacity investment, and how have alternatives been considered in general?</p>	<p>A reasonable consideration of demand-side and generation alternatives, alongside traditional network options, to determine the most economic supply solution is in the best interest of consumers.</p>
General observations	
<p>In the AMPs we observed a variety of detail about how EDBs considered alternative options when capacity investment was identified as necessary. Some EDBs are very explicit about how they presented their alternative considerations, for example with high level costs and investment timings of options, while others only mention briefly that different traditional network options have been considered.</p> <p>The advent of newer storage technologies has seen an increase in the discussion and use of these types of devices in combination with traditional generation sources to provide hybrid supply solutions for either stand-alone supplies, or as a means to provide traditional capacity investment deferral.</p>	
WE*	Comment
<p>WE* extensively discuss significant network capacity upgrade options and the alternatives that have been considered.</p> <p>For example in the 2017 AMP, WE* presents Network Development and Reinforcement Plans (NDRPs) for the southern, north-western and north-eastern network areas.</p> <p>These NDRPs include a discussion on the network area capability, identified issues and security network constraints at each zone substation using load duration curves, potential solutions to resolve these constraints, consideration of non-network alternatives and preliminary capital cost comparisons of the alternative options.</p> <p><i>2017 AMP, sections 7.3-7.6</i></p>	<p>The information and discussion provided by WE* of its network capacity issues is well presented and provides consumers with a useful level of detail of the forthcoming issues and plans.</p> <p>We consider this level of information will greatly improve the usefulness of the consumer consultation process when WE* decide on their preferred investment plans.</p>
Powerco	Comment
<p>Powerco has been investing in stand-alone power supply solutions for remote rural supplies facing costly maintenance costs.</p> <p>They are also trialling the use of a hybrid battery/generation solution at Whangamata to defer network capacity investment and alleviate maintenance outage impacts.</p> <p>Powerco states that:</p> <p>"it is proposed to install a hybrid battery storage and diesel generation solution which will target critical loads in the commercial centre of the town. This is a temporary solution to minimise the impact of outages on the town's economy until such time as we can construct the second circuit"</p> <p><i>2017 AMP, page 144-145 and page 342</i></p>	<p>Powerco has been an early adopter of alternative supply options to replace or defer the need for traditional network renewals or network capacity increases.</p>

Question 4.3	Comment
<p>Where investments are made with the objective of improving, maintaining or reducing quality of service, have consumers been consulted about the price-quality trade-off?</p>	<p>Understanding the consumer opinions of the quality of service they receive, and the price linkage to that quality, is a key aspect of the price/quality regime.</p>
<p>General observations</p>	
<p>We observed a range of consumer consultation practices in our review. While many EDBs tested their consumers using a variety of strategies about their quality of service and other matters, there was no EDB that appeared to explicitly make the analytical linkage between investment and quality outcomes, and present their consumers with clearly quantified options regarding price and quality trade-offs.</p> <p>When an EDB has been maintaining assets beyond depreciated life there will inevitably be a point where these need to be replaced. In some cases we have observed some EDBs with large cohorts of fully depreciated assets with similar age profiles that will inevitably have to be replaced, maybe at or near the same time.</p> <p>We have a question whether consumers are aware, or have been consulted with, that they will need to fund a possible step change in investment at some point to replace aging assets that may need to be replaced within a similar timeframe versus a more staged investment approach.</p> <p>In addition, in our November 2017 open letter to the EDB industry, we signalled that asset criticality, which underpins the analytical price-quality trade-off understanding, will be a key focus area for us.</p>	

Question 4.4	Comment
<p>Is load control seen as an important aspect of ongoing network operation, and if not then what alternatives are being used to manage network load peaks?</p>	<p>Load control has been used in the past as an efficient means to manage network loads and defer capacity investment. We are keen to understand how EDBs view this technology, its future use and what alternatives exist to manage load peaks.</p>
<p>General observations</p>	
<p>In the AMPs we observed a variety of discussions about the continued use of load control. While previous thinking was that smart meter uptake would supersede the need for a centralised load control management systems to inject ripple signals into networks and control water heating load for example, we have not seen evidence that smart meters are being used for this purpose.</p> <p>As a consequence we have observed many EDBs signalling that they need to invest in their existing load control management systems. The alternative is to invest in additional network capacity which may not be in the best interest of consumers.</p>	

Network Tasman	Comment
<p>Network Tasman includes a calculation to justify its investment in load control. This calculation could be considered a high level estimate of long-run marginal costs, suggesting that the cost per kw of peak demand is about \$234 per kw per year excluding Transpower costs. This estimate excludes the delaying effect of network upgrades.</p> <p><i>2017 AMP, page 75</i></p>	<p>Network Tasman's explicit cost-benefit calculation demonstrates how the value of the load control management system in their network can be tested and compared with the long-run marginal cost of network upgrade options to meet peak demand.</p>

Orion	Comment
<p>Orion continues to use its load control system and considers that "demand-side management (DSM) has been successful in flattening the load curve in recent years".</p> <p>Orion highlights the importance of promoting night-rate tariffs and load control via the ongoing installation and maintenance of ripple receivers. It states that it: "...maintain[s] and operate[s] an efficient water cylinder load control system so that significant loads can be shifted away from peak times to less expensive off peak times – at minimal inconvenience to customers".</p> <p><i>2016 AMP, page 22 and 70</i></p>	<p>While Orion have not explicitly discussed the cost-benefit analysis they have used to justify maintaining and investing in their load control system, they infer that this is still a very cost effective solution to minimise the cost effects of traditional peak demand periods.</p>

Question 4.5	Comment
<p>What vegetation management strategies are in place and how do these compare with other EDBs' strategies?</p>	<p>EDB vegetation management can have a significant impact on the consumer quality experience. We are keen to see strategies that prioritise high-impact assets, are cyclical based on observed growth rates and are pro-active.</p>

General observations

Vegetation management is one of the key expenditure items that can have an almost immediate impact on consumer quality outcomes. We have observed a range of practices in this topic area, from the cyclical non-prioritised approach based on historical expenditure, to an asset criticality based approach to target higher impact assets, and a strategy that has been modified based on observed increased vegetation growth rates.

We believe that, given the impact vegetation can have on consumer quality outcomes that vegetation management approaches should be pro-active, be informed by an understanding of asset criticality, and change if there are changes to the local environment.

Unison	Comment
<p>Unison have implemented a Vegetation Prioritisation Tool (VPT) in their business planning, stating that: "a decision support framework used to identify where UCSSL's vegetation resources should be deployed to maximum effect, liaison with landowners who have trees close to Unison's overhead lines to identify a mutually acceptable course of action, and trimming or felling of trees".</p> <p><i>(2016 AMP, page 165)</i></p>	<p>The goal to pro-actively attempt to maximise the effect of vegetation management is a clear indication that the use of an asset criticality understanding can also inform the vegetation management strategy.</p>

Waipa Networks	Comment
<p>Waipa Networks has an active vegetation management strategy in place and have had to modify their future expenditure forecasts based on observed increased vegetation growth rates stating: “vegetation management expenditure is not sufficient for the high tree growth rates experienced”.</p> <p><i>2016 AMP, page 79</i></p>	<p>We commend the approach to constantly review the approach to vegetation management and amend existing strategies based on observed changing growth rates or environment observations.</p>

Topic 5: Risk management

- 3.14 Asset risk management is a core component of an EDB’s overall risk management strategy, focusing on the risks to assets and to maintaining service levels. The focus should be on credible low probability, high-impact risks. Risk evaluation may highlight the need for specific development projects or maintenance programmes.
- 3.15 We reviewed the AMPs with a single question to reflect these ideas; whether EDBs were considering risk to network operation not just from a generalised viewpoint, but whether specific risks to multi-asset network operation were being addressed. We were interested to see whether EDBs had a cogent strategy to mitigate specific identified risks and whether this strategy also informed the approach to network spares.

Question 5	Comment
<p>Exposure to specific HILP events can create outage risk across multiple network assets. How is HILP risk recognised and considered in the AMP, and is it linked with a coordinated network asset spares strategy?</p>	<p>We consider that network resilience to HILP events is a key aspect of good asset management practice. New Zealand is exposed to many types of HILP events in different locations, so understanding these and developing strategies to mitigate their effect is essential.</p>

General observations

In their AMPs most EDBs apply the generalised risk/consequence matrix approach to HILP events. This framework on its own does not adequately deal with specific HILP exposures or inform economic decision making about levels of redundancy, network backfeed capability, mobile substations or a spares strategy for example.

We were looking to see if EDBs had an understanding of specific HILP event return periods, and the likely impact of each identified HILP event from a network outage perspective. In this way customer outage costs can be estimated and in conjunction with HILP event return periods, enable the calculation of annualised HILP event risk exposure, which can be used in a net- present value (NPV) analysis.

An economic approach could underpin decisions about where to invest; such as to plan whether network redundancy or backfeed is economic, and judge an economic level of spares that should be carried. These strategies work together to form a strategy to try and minimise the impact of HILP events should they occur.

Orion	Comment
<p>Orion has identified an extensive list of key HILP exposures and mitigations such as strategic spares, temporary overhead line supply routes, asset emergency ratings, and seismic strengthening of zone substation buildings.</p> <p>Orion also outlines examples of historical HILP events and how these have informed their present strategy.</p> <p><i>2016 AMP page 258</i></p>	<p>Orion is one EDB that has endured a specific HILP event in the recent past, and their detailed description of specific HILP event mitigations is comprehensive.</p> <p>The value of previously strengthening their zone substation buildings has been highlighted in their AMP, alongside the discussion on how they now consider asset spares and have plans for temporary overhead line routes in key load areas in case there is cable damage.</p>
WE*	Comment
<p>WE* has a focussed consideration of HILP risk and resilience for its network. This has informed a recent CPP proposal that targets investments to improve network resilience to a major earthquake event.</p> <p>The 2017 AMP identifies zone substation buildings requiring seismic strengthening and areas where cables are likely to be damaged in an earthquake due to liquefaction, and outlines a plan to install emergency 33kV overhead lines to mitigate for loss of cable integrity after a major event.</p> <p>WE* has also itemised a list of spares it would need to hold to reduce the outage duration after a major event, such as cable joint equipment, switchgear and distribution transformers.</p> <p><i>(Sections 2.8 and 5.10 2017 AMP)</i></p>	<p>We are interested to understand other EDBs who are applying similar approaches, or different to the WE* approach to identifying and calculating the economic loss costs of a specific HILP event.</p> <p>WE* have used information that indicates earthquake return period (RP) in the Wellington region have reduced after the Kaikoura event. WE* have used the RP change to estimate network outage costs based on network outage scenario analysis and used these costs in an NPV analysis to economically test a range of mitigation strategies.</p>

Topic 6: Evaluation of performance

- 3.16 Good asset management practice requires a process of constant, incremental improvement. Evaluating current practices and ways in which they might be improved is critical for achieving positive outcomes for consumers in the long-term.²²
- 3.17 As part of Topic 6, we have looked for examples of EDBs who have either:
- 3.17.1 made comparisons between forecast expenditure and actual expenditure, and reflected critically on the reasons for any differences as part of an evolutionary learning and/or continuous improvement processes;²³ or
 - 3.17.2 compared themselves with comparator EDBs across a range of metrics.

²² Ibid. Schedule 13, Question 113

²³ Ibid. Attachment A, clause 15

Question 6.1	Comment
<p>Is actual expenditure over the disclosure year compared to the forecast, and is consideration given to understanding over- or under-expenditure?</p>	<p>A review of forecast expenditure versus actual expenditure in a financial year, and a critique of why that might be significantly different may help to identify areas for improvement, and may lead to efficiencies over the long-term.</p>

General observations

In general there were few examples of EDBs openly discussing the differences between their forecast and actual expenditure and providing reasons for these differences. We believe that this type of analysis is useful, and an input into refining expenditure forecast information so that interested parties can rely on those forecasts.

We note that EDBs are required to disclose information comparing forecasts to actual expenditure under Schedule 7 and within Schedule 14 of the EDB ID requirements, both of which are disclosed at a different time and separately to the AMP disclosures.

Unison	Comment
<p>Unison discusses any expenditure variances at a category level throughout their 2016 AMP and in summary table form.</p> <p>For example in Table 8-9 a category level capex summary table compares the previous financial year forecast expenditure with the actual expenditure. This variance is then discussed in the relevant section in the AMP if it is a significant variance.</p> <p><i>2016 AMP, page 8-18</i></p>	<p>Unison provides a good level of detail of identified expenditure variances at both a category level and at a consolidated level. This allows interested parties to easily understand the reasons for those differences.</p> <p>Analysis that self-reflects on the forecasting process by using actual expenditure provides consumers and interested parties with a greater level of visibility on the accuracy of past forecasts.</p>

Question 6.2	Comment
<p>Does the AMP provide a discussion and comparison with other EDBs on a wide range of indices?</p>	<p>Testing business performance and comparing with others over a wide range of metrics and indices is a good way for EDBs to judge how they compare with their peers.</p>

General observations

We observed a range of analysis practice in answer to this question.

While comparing EDB performance is not a specific requirement of AMP content in the ID determination at present, presenting this information to interested parties and internal decision makers is a transparent means to judge how the EDB performance compares with industry peers.

The Commission has recently published the EDB performance summaries and the Performance Accessibility Tool to allow interested parties to better understand how the sector is performing.

Orion	Comment
<p>Orion provides industry average comparisons for a range of indices over the FY14-FY15 period, such as capex and opex p.a. per customer MWh, and opex p.a. per ICP.</p> <p><i>2016 AMP, page 279</i></p>	
Otago JV	Comment
<p>To gauge its performance, Otago JV benchmarks its performance (including reliability) against other networks that it considers to be equivalent, namely Alpine, Marlborough, EA, The Lines Company and The Power Company.</p> <p><i>2016 AMP, page 68-74</i></p>	

Attachment A Links to EDB AMPs

EDB	2016 AMP	2017 AMP/AMP Update
Alpine Energy	2016 AMP	2017 AMP
Aurora Energy	2016 AMP	2017 AMP Update
Buller Electricity	2016 AMP	2017 AMP Update
Centralines	2016 AMP	2017 AMP Update
Counties Power	2016 AMP	2017 AMP Update
Eastland Network	2016 AMP	2017 AMP
Electra	2016 AMP	2017 AMP Update
Electricity Ashburton	2016 AMP	2017 AMP Update
Electricity Invercargill	2016 AMP	2017 AMP Update
Horizon Energy	2016 AMP	2017 AMP Update
MainPower NZ	2016 AMP	2017 AMP Update
Marlborough Lines	2016 AMP	2017 AMP Update
Nelson Electricity	Available on Commission website	
Network Tasman	2016 AMP	2017 AMP
Network Waitaki	2016 AMP	2017 AMP Update
Northpower	Available on Commission website	
Orion NZ	2016 AMP	2017 AMP Update
OtagoNet	2016 AMP	2017 AMP Update
Powerco	2016 AMP	2017 AMP
Scanpower	2016 AMP	2017 AMP Update
The Lines Company	2016 AMP	2017 AMP Update
The Power Company	2016 AMP	2017 AMP Update
Top Energy	2016 AMP	2017 AMP Update
Unison Networks	2016 AMP	2017 AMP Update
Vector Lines	2016 AMP	2017 AMP Update
Waipa Networks	2016 AMP	2017 AMP
WEL Networks	2016 AMP	2017 AMP Update
Wellington Electricity	2016 AMP	2017 AMP
Westpower	2016 AMP	2017 AMP