COMMERCE COMMISSION
NEW ZEALAND
Te Komihana Tauhokohoko

ISBN no. 978-1-869456-19-1

Project no. 14.17/16453

Public version

Powerco's proposal to customise its prices and quality standards

Draft decision

Date of publication: 16 November 2017

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Executive summary

Purpose of this paper

X1 This paper sets out our draft decision on, and reasons for, setting a customised price-quality path **(CPP)** for Powerco Limited **(Powerco)** that promotes the long-term benefit of consumers.

X2 We seek your views on our draft decision by 15 December 2017. Cross-submissions are due 19 January 2018.

X3 Our final decision is expected 29 March 2018 and will set the maximum revenues and minimum required quality standards that will apply to Powerco between 1 April 2018 and 31 March 2023.

Powerco has applied for a customised price-quality path

X4 Powerco owns and operates the second largest electricity distribution network in New Zealand. Its network provides electricity lines services to over 330,000 consumer connections in the major centres of Tauranga, New Plymouth, Palmerston North and their surrounding regions.

X5 As Powerco does not face competition, we set the maximum revenues it can earn from its consumers and set the minimum required standards its services must meet under a price-quality path. Powerco is currently subject to the default price-quality path **(DPP)** set in 2014 which applies to 16 electricity distributors across New Zealand.[1]

X6 Powerco no longer considers the DPP meets its needs and submitted a CPP application to us on 12 June 2017. Powerco's proposal argues that an uplift in investment is required to replace ageing and obsolete assets and meet growing demand on its network.

[1] For information on the DPP for electricity distributors please visit: http://comcom.govt.nz/regulated-industries/electricity/electricity-default-price-quality-path/

Key features of Powerco's proposal

- Powerco proposed to spend $1.32 billion over the five-year CPP period from 1 April 2018 until 31 March 2023, compared with $937 million for the previous five years.[2]
- In order to fund this expenditure, Powerco requested that we allow it to recover this expenditure from its customers. Powerco proposed this would be recovered via an initial increase in revenue of 5.7%, after which it would be indexed to inflation for the remainder of the CPP period.[3]
- Powerco also proposed that the quality standards associated with unplanned interruptions should be maintained at historical levels, and that planned interruptions should be removed from its quality standard so as not to constrain delivery of its investment programme.

X7 Powerco's full proposal can be found at www.yourenergyfuture.co.nz

Our assessment of Powerco's proposal

X8 On 7 August 2017 we accepted Powerco's CPP application as compliant with the rules and processes for CPP applications, and we must now set it a CPP within 150 working days from that date (by 29 March 2018).[4]

Framework

X9 Our starting point for determining Powerco's CPP is the purpose of Part 4 of the Commerce Act **(the Act)** – to promote the long-term benefit of consumers.[5]

X10 The Act also requires us to set rules and processes for CPPs – these rules and processes are referred to as input methodologies.

X11 The input methodologies we have previously set relating to CPPs include the requirements that must be met by the applicant for information, verification, audit and consumer consultation, as well as the criteria that we must use to evaluate a CPP proposal.[6]

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2 For presentation purposes, all values in this paper are reported in real $2016 unless otherwise stated.

3 The IMs do not require Powerco to consult on the long-term impact of its proposal. As we discuss in Attachment I, Powerco's proposal would also likely result in a further increase in prices in the subsequent regulatory period when the full extent of newly commissioned assets enter the regulatory asset base.

4 The timeframes for determining a CPP are set out in s53T of the Commerce Act 1986.

5 Commerce Act 1986, s 52A.

6 *Electricity Distribution Services Input Methodologies Determination 2012* [2012] NZCC 26, Part 5.

X12 We have conducted a thorough evaluation of Powerco's proposal against the criteria in our input methodologies. In particular, we have considered whether the operating expenditure **(opex)** and capital expenditure **(capex)** proposed by Powerco reflect the efficient costs that a prudent supplier of electricity lines services would require to meet or manage expected demand for its services, at appropriate service standards. We refer to this as the expenditure objective.

Process we followed

X13 The CPP process comprises two formal stages of review: an upfront review of the proposal undertaken by the independent Verifier prior to submission of the CPP application; and the Commission's review undertaken following the formal submission of the CPP application.

X14 Our process began with ensuring we had an appropriately qualified and independent Verifier – Farrier Swier Consulting of Melbourne – who was well suited to reviewing Powerco's proposal.

X15 We then tested the robustness of the Verifier's review process and its findings to determine the extent to which we could rely on them.

X16 Having been satisfied that the Verifier's report was robust we used the findings to target our own review. We aimed to be proportionate and adjusted the level of detail of our assessment depending on our concerns and any concerns expressed by the Verifier, as well as the materiality of any proposed expenditure.

X17 Our review sought further information from Powerco in many areas and relied on our internal expertise, experience and skills as well as advice from a specialist engineering consultant in some areas.

Our draft decision

Powerco's proposal addresses specific needs and an uplift is justified

X18 Powerco has satisfied us that an uplift in expenditure is required to provide a safe, reliable network for its consumers, and allowing for the uplift now is prudent to manage network reliability in both the short and long term.

X19 Our view is consistent with the Verifier, whose overall findings concluded:[7]

> Powerco is addressing specific network needs, is on an asset management journey, and is considering the future evolution of its network. This means that:
>
> - increased capex and opex spend is required to stabilise asset performance through addressing a rising number of asset defects as assets wear out and to support good practice asset management such as on systems to provide better quality information and analysis, which are expected to reduce expenditure needs in the longer term
>
> - while Powerco intends to implement good asset management practices, in the immediate term its expenditure forecasts reflect, at least in part, current practices and information
>
> - Powerco has an increased focus on managing and reducing risk; this is consistent with prudent practice. In some areas, however, current activities and expenditure is arguably below that associated with prudent practice, and some catch-up is required.

X20 Our assessment has led us to propose that we allow for 96% or $1.27b of the total expenditure proposed by Powerco. If finalised, this would result in an initial 4.4% increase in Powerco's allowed revenues, to be adjusted annually for CPI over the CPP period.

Table X1 Breakdown of total expenditure

	Powerco's proposal	**Our draft decision**
Opex	$455m	$446m
Capex	$873m	$825m
Total expenditure	**$1.32b**	**$1.27b**

X21 In the years following the CPP period we expect the capex investment will place continued upwards pressure on prices due to new assets being entered into the regulatory asset base. We estimate this effect on revenues to be around 10% under certain assumptions – this estimate is subject to some uncertainty as it requires forecasting a number of variables, including those dependent on market conditions, and Powerco's actual and forecast expenditure.

[7] Farrier Swier "Final Verification Report for Powerco" (7 June 2017), p 12.

X22 In terms of impact on the average monthly residential consumer's bill, we estimate the impact to be around $2.73 within the CPP period. We estimate an additional increase in the order of $6 in the subsequent period, which is also subject to some uncertainty as it relies on the revenue estimates for that period.

We propose to allow a slightly higher amount than the Verifier was able to verify

X23 Our draft decision is slightly higher than the total amount the Verifier was able to verify (96% vs 91%).

X24 The increase relates to Powerco's overhead conductors and structures, growth and security reliability programmes, and corporate opex. After further discussions with Powerco and subsequent analysis, we concluded that these expenditures could be justified against the expenditure objective.

X25 The impact of these increases are offset slightly by reductions to the verified amounts for network evolution capex expenditure, and secondary systems capex renewals where we were unable to be satisfied they met the expenditure objective.

Over the long-term Powerco should be required to target an improvement in reliability

X26 We have also proposed separate quality standards to apply to Powerco during the CPP period for planned and unplanned interruptions. Powerco's planned and unplanned interruptions should not exceed the limits we have specified.

X27 For unplanned interruptions, we propose that the quality standard at the start of the CPP period be based on the 10-year average of unplanned interruptions, with a gradual reduction (corresponding to an improvement in quality) over the CPP period.

X28 For planned interruptions we propose the quality standard be based on Powerco's forecasts.

Reflecting on customer preferences in reaching our draft decision

X29 We are conscious our draft decision would result in a price increase for consumers, and requires a modest improvement in reliability where some consumers may prefer no improvement in order to reduce costs.[8]

[8] For example, MEUG "Submission on Powerco CPP Issues paper" (22 September 2017), page 3.

X30 Having reflected on this, we consider our draft decision is appropriate and in the long-term interest of consumers as:

X30.1 Considered as a whole, our draft decision provides for a reduction of $131 million in expenditure and a modest improvement in reliability when compared to the proposal Powerco first consulted with its consumers in January 2017.

X30.2 We consider that much of the expenditure proposed by Powerco meets the expenditure objective and addresses specific needs – in particular stabilising network reliability over the long term. Given the value that Powerco's customers place on avoiding a deterioration in the reliability, our view is that a modest improvement in Powerco's quality standards is reasonable.

X30.3 There are practical difficulties in directing and fine-tuning expenditure across a substantial and varied investment programme to meet a specific overall quality outcome. We consider programmes that could be specifically singled-out as driving reliability improvements – such as the growth and security reliability programme ($17 million) – are a small proportion of expenditure and, in our judgement, represent significant value to consumers delivering reliability benefits over the long term.

Delivery and improvements to asset management practices

X31 Our assessment, consistent with the Verifier's, has not found any obvious deficiencies in Powerco's delivery plan for the proposed investments during the CPP period, and we have not reduced or removed any investments based on delivery concerns.

X32 The investment programme is still significant and will require careful management to ensure it is delivered. We have therefore proposed Powerco be required to produce an annual delivery report explaining progress against what was forecast during the CPP period. Powerco would also be required to hold annual stakeholder events to present and explain its progress to increase transparency around the delivery of what it has promised. Powerco supports this and has provided an example of what the delivery report could look like.[9]

[9] See: http://comcom.govt.nz/regulated-industries/electricity/cpp/cpp-proposals-and-decisions/powercocpp/powerco-customised-price-quality-path-proposal/

X33 The delivery report would include a section on Powerco's asset management practices. This is an area identified for improvement by the Verifier and a key priority for the Commission in the electricity distribution sector.[10] Powerco has planned improvements in this area and we will monitor these closely as we see this area as important for the safe and reliable operation of the network, and the reduction of costs over the long term.

[10] See: http://comcom.govt.nz/regulated-industries/electricity/our-priorities-in-electricity-distribution/

Chapter 1 Introduction

Purpose of this paper

1. This paper sets out our draft decision on, and reasons for, setting a customised price-quality path (**CPP**) for Powerco Limited (**Powerco**) that promotes the long-term benefit of consumers.

Powerco proposed to increase its revenue and change its quality standards

2. Powerco submitted a CPP proposal on 12 June 2017, seeking to increase its allowable revenue and alter its minimum quality standards for the five-year period from 1 April 2018.[11]

Key features of Powerco's proposal

- Powerco proposed to spend $1.32 billion over the five-year CPP period from 1 April 2018 until 31 March 2023, compared with $937 million for the previous five years.[12]
- In order to fund this expenditure, Powerco requested that we allow it to recover this expenditure from its customers. Powerco proposed this would be recovered via an initial increase in revenue of 5.7%, after which it would be indexed to inflation for the remainder of the CPP period.[13]
- Powerco also proposed that the quality limits associated with unplanned interruptions should be maintained at historical levels, and that planned interruptions should be removed from its quality standard so as not to constrain delivery of its investment programme.

3. Powerco explains its proposal is designed to address three main issues facing its business:[14]

> - **Safety and reliability**: In recent years, we have seen clear and material degradation of our network operating position and condition, evidenced across a range of leading indicators (e.g. asset health). In-service asset failures are rising, and condition is degrading across a range of asset fleets, particularly in our overhead network. This requires us to focus on the underlying condition of our network (rather than focusing on short-term reliability alone) and to maintain and replace equipment in a prudent and timely way.

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11 Powerco's proposal and supporting documents can be downloaded at the following link: http://www.comcom.govt.nz/regulated-industries/electricity/cpp/cpp-proposals-and-decisions/powercocpp/powerco-customised-price-quality-path-proposal/

12 For presentation purposes, all values in this paper are reported in real $2016 unless otherwise stated.

13 The IMs do not require Powerco to consult on the long-term impact of its proposal. As we discuss in Attachment I, Powerco's proposal would also likely result in a further increase in prices in the subsequent regulatory period when the full extent of newly commissioned assets enter the regulatory asset base.

14 Powerco "Customised price-quality path (CPP): Main proposal" (12 June 2017), p ix.

- **Supporting communities**: We play a critical role in facilitating economic growth in the regions we serve. We support diverse communities across the north island of New Zealand by providing a secure, cost-effective and reliable electricity supply. The communities we serve continue to experience strong economic growth driven by population growth, and enhanced commercial and industrial activity. To meet the needs this poses, we have to increase our levels of investment to provide sufficient capacity, and appropriate supply security.

- **Network evolution**: New technology and service offerings combined with increasing consumer willingness to take control of their energy options are leading to changing asset management requirements. Opportunities for more cost-effective network solutions are also emerging. To stay abreast of these developments, and to ensure the continued stability and efficiency of our network, we need to invest in trials and pilot schemes of new solutions. This will be key to ensuring the long-term interests of customers.

4. On 7 August 2017 we accepted Powerco's CPP application and we must now set it a CPP within 150 working days from that date (by 29 March 2018).[15]

Our draft decision follows review of Powerco's proposal by an independent verifier and submissions from interested parties

5. We have now reviewed Powerco's proposal and made a draft decision setting out the amount of revenue and level of quality that will apply to Powerco for the five years from 1 April 2018 to 31 March 2023. This follows:

   5.1 Consultation from Powerco with its own consumers.[16]

   5.2 A two stage verification process aimed at ensuring Powerco's proposal is of sufficient standard for the Commission's review, and identifying areas for further review by the Commission.[17]

   5.3 Submissions from interested persons on Powerco's final proposal and issues identified by us in our August Issues paper.[18]

We want to hear and consider your views

6. Before we make our final decision, we want to hear and consider the views of consumers and other stakeholders. We welcome submissions on our draft decision on the maximum revenues and quality standards that would apply to Powerco.

7. To give us time to consider submissions and meet our statutory timeframes for this process, we ask that we receive emailed submissions by 15 December 2017 and cross-submissions by 19 January 2018.

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15 Commerce Act 1986, s 53T(2).

16 Powerco "Customised price-quality path (CPP): Consultation report" (12 June 2017).

17 Farrier Swier "Powerco's customised price path application: Final verification report for Powerco" (7 June 2017).

18 Our Issues paper and submissions in response are available at: http://comcom.govt.nz/regulated-industries/electricity/cpp/cpp-proposals-and-decisions/powercocpp/

8. We will consider all submissions received by this date in reaching our final decision on the maximum revenues and required quality standards that will apply to Powerco.

9. Please email your submission to powercocpp@comcom.govt.nz with 'Powerco CPP draft decision' in the subject line of your email. All submissions will be published on our website.

Structure of this paper

10. The remainder of this paper is set out into three key parts:

    10.1 **Chapter 2: Our draft decision** sets out the prices, expenditure forecasts and quality standards that our draft decision proposes. It also acts as a road map pointing to where more detailed reasons for each of the draft decisions can be found in the paper.

    10.2 **Chapter 3: Our evaluation** explains the high level framework we applied to evaluating Powerco's CPP proposal, and the approach we took to making our draft decision.

    10.3 **Attachments A-L** which provide further detail of our decisions set out in Chapter 2.

We have taken all submissions into account in reaching our final decision. We have not specifically addressed all submissions in this paper (to do so would not have been practical), although we have addressed some submissions as we have considered necessary.

Chapter 2 Our draft decision

Purpose of this chapter

11. This chapter sets out our draft decision on Powerco's CPP including:

    11.1 expenditure allowances that we have provided for;

    11.2 Powerco's price path – the maximum revenues that Powerco will be able to recover;

    11.3 quality standards that will apply to Powerco; and

    11.4 an annual delivery report that Powerco will be required to provide.

12. It also explains where further discussion of these draft decisions can be found in this paper.

Summary of our draft decision

Key features of our draft decision

- The maximum allowable revenue Powerco can recover from consumers will increase by about 4.4% in the first year of the CPP, and then in line with inflation.[19]
- In reaching this increase in revenue we have forecasted total expenditure of $1,271 million made up of:
  - $825 million total capital expenditure (**capex**)
  - $446 million total operating expenditure (**opex**)
- Powerco will be subject to a quality standard for unplanned interruptions that requires a modest improvement in the level of unplanned interruptions over the CPP period. The quality standard expects a 10% improvement in unplanned System Average Interruption Duration Index **(SAIDI)**, and a 5% improvement in unplanned System Average Interruptions Frequency Index **(SAIFI)**, by the end of the CPP period. We have also set a separate quality standard for Powerco's planned interruptions in line with its forecasts.
- Powerco will also be required to provide an annual delivery report which will detail its progress on delivering its work programme and give reasons for any areas where it has not delivered as expected.

Powerco's proposal addresses specific needs and an uplift in expenditure is justified

13. Powerco has satisfied us that an uplift in expenditure is required to provide a safe, reliable network for its consumers, and allowing for the uplift now is necessary to manage network reliability and minimise the cost of investment over the long term.

[19] In practice, Powerco may not recover all of this revenue increase in the first year of the CPP. The impact of our decision on prices is discussed further in Attachment I.

14. Our view is consistent with the Verifier whose overall findings concluded:[20]

> Powerco is addressing specific network needs, is on an asset management journey, and is considering the future evolution of its network. This means that:
>
> - increased capex and opex spend is required to stabilise asset performance through addressing a rising number of asset defects as assets wear out and to support good practice asset management such as on systems to provide better quality information and analysis, which are expected to reduce expenditure needs in the longer term
>
> - while Powerco intends to implement good asset management practices, in the immediate term its expenditure forecasts reflect, at least in part, current practices and information
>
> - Powerco has an increased focus on managing and reducing risk; this is consistent with prudent practice. In some areas, however, current activities and expenditure is arguably below that associated with prudent practice, and some catch-up is required.

15. In aggregate our assessment has led us to propose that we allow for 96% or $1.27 billion of the total expenditure proposed by Powerco. If finalised this would result in an initial 4.4% increase in Powerco's allowed revenues to be adjusted annually for CPI over the CPP period.

16. In the years following the CPP period we expect the capex investment will place continued upwards pressure on prices due to the full value of the investments being entered into the regulatory asset base. We estimate this effect on revenues to be around 10% under certain assumptions – this estimate is subject to some uncertainty as it requires forecasting a number of variables, including those dependent on market conditions, and Powerco's actual and forecast expenditure.[21]

17. In terms of impact on the average monthly residential consumer's, we estimate the impact to be around $2.73 within the CPP period. We estimate an additional increase in the order of $6 in the subsequent period, which is also subject to some uncertainty as it relies on the revenue estimates for that period.

We propose to allow a slightly higher amount than the Verifier was able to verify

18. Our draft decision is slightly higher than the total amount the Verifier was able to verify (96% vs 91%). The increase relates to Powerco's overhead conductors and structures, and growth and security reliability programmes, where, after further discussions with Powerco and subsequent analysis, we concluded that some of this expenditure could be justified against the expenditure objective.

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[20] Farrier Swier "Powerco's customised price path application: Final verification report for Powerco" (7 June 2017), p 12.

[21] This is discussed further in Attachment I

18.1 For overhead conductors and structures, we sought further information from Powerco and tested the likely reliability benefits of Powerco's proposed approach to dealing with the 'type issue' it had identified in its conductoring. We were satisfied the safety and reliability benefits of replacing the 'type issue' conductor outweighed the costs and the investment could be justified.

18.2 For the growth and security reliability programme, our view was that investment would deliver significantly higher and immediate benefits in network reliability that outweighed the cost of the programme.

18.3 For corporate opex, the delivery of the CPP work programme will require additional corporate support. The uplift in corporate FTEs seems moderate compared to the uplift in activities. We would expect to see a decrease in ICT related FTEs in subsequent pricing periods when the implementation of the Enterprise Resource Planning **(ERP)** system has been completed

19. The impact of these increases are offset slightly by reductions to the verified amounts for network evolution capex expenditure, and secondary systems capex renewals.

19.1 For network evolution capex, we consider Powerco needs to provide more tangible justification underpinning how consumers are likely to benefit from the specific projects it is proposing to undertake. We encourage Powerco to further develop its network evolution strategy, and to focus on demonstrating the benefits customers will receive from these initiatives and when these can be expected.

19.2 For secondary systems capex renewals, we are not persuaded that Powerco's proposal to allow $10 million for the purchase of ripple receivers in the Tauranga region meets the expenditure objective. This is because we do not consider all alternative options for achieving the desired outcomes have been sufficiently explored by Powerco.

Over the long term Powerco should be required to target an improvement in reliability

20. We have also proposed separate quality standards to apply to Powerco during the CPP period for planned and unplanned interruptions. Powerco's planned and unplanned interruptions should not exceed the limits we have specified.

21. For unplanned interruptions, we propose that the quality standard at the start of the CPP period be based on the 10-year average of unplanned interruptions, with a gradual reduction (corresponding to an improvement in quality) over the CPP period.

21.1 This reduction reflects the expected improvement in reliability as a result of the proposed investment over the CPP period. We propose that the quality standard for unplanned SAIFI reduce by 5% by the end of the CPP period and that the quality standard for unplanned SAIDI reduce by 10% by the end of the CPP period.

21.2 We propose to retain the revenue-linked quality incentive scheme for unplanned outages that operates under the current default price-quality path. This will provide Powerco with incentives to improve network reliability beyond that required by the quality standard for unplanned interruptions where it is cost-effective to do so.

22. For planned interruptions we propose the quality standard be based on Powerco's forecasts.

22.1 This takes into account the level of planned interruptions that are forecast to be required for Powerco to undertake the CPP work programme, and retains an incentive for Powerco to undertake the CPP work efficiently.

22.2 Our draft decision to set a quality standard for planned interruptions differs from Powerco's proposal. Powerco proposed that planned interruptions should be excluded from the quality standard.

22.3 At this stage, we do not propose to apply a revenue-linked quality incentive scheme to planned interruptions during the CPP period. In our view, applying a revenue-linked quality incentive scheme to the planned interruptions required to undertake the CPP work programme would not be appropriate, as it would create a financial incentive to delay or otherwise reduce the CPP work programme.

Reflecting on customer preferences in reaching our draft decision

23. We are conscious our draft decision would result in a price increase for consumers, and proposes a modest improvement in reliability where some consumers may prefer no improvement in order to reduce costs.

24. Having reflected on this, we consider our draft decision is appropriate and in the long-term interest of consumers as:

24.1 Considered as a whole, our draft decision provides for a reduction of $131 million in expenditure and a modest improvement in reliability when compared to the proposal Powerco first consulted on with its consumers in January 2017.

24.2 We consider that much of the expenditure proposed by Powerco meets the expenditure objective and addresses specific needs – in particular stabilising network reliability over the long term. Given the value that Powerco's customers place on avoiding a deterioration in the reliability of Powerco's network, our view is that a modest improvement in Powerco's quality standards is reasonable.

24.3 There are practical difficulties in directing and fine-tuning expenditure across a substantial and varied investment programme to meet a specific overall quality outcome. We consider programmes that could be specifically singled-out as driving reliability improvements—such as the growth and security reliability programme ($17 million)—are a small proportion of expenditure and, in our judgement, represent significant value to consumers delivering reliability benefits over the long term.

We consider that our draft decision is consistent with the evaluation criteria

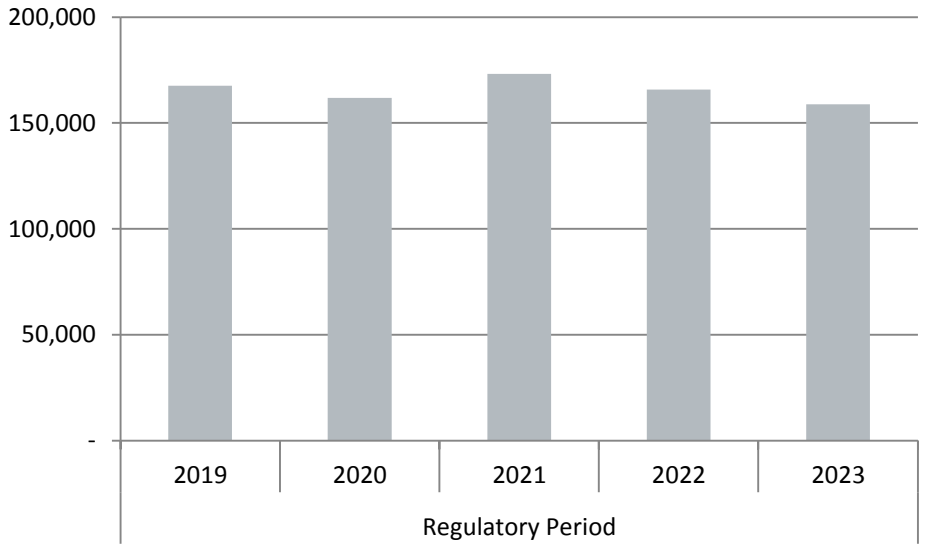
25. We consider that our draft decision on Powerco's CPP is consistent with the evaluation criteria and promotes the long-term benefit of consumers. This includes assessment of Powerco's capex and opex forecasts against the expenditure objective.

Draft decision on Powerco's capex forecasts

26. Capital expenditure is recovered over the life of the asset, so while only a small proportion of it will be recoverable through the price path during the CPP period, its impact on prices will extend beyond the CPP period, with the full impact on pricing becoming transparent when we set prices for the subsequent regulatory period.

27. Powerco proposed a total of $873 million of capex over the CPP period. Our draft decision is to provide for $825 million of capex over the five-year CPP period.

Figure 2.1 Total capital expenditure ($000)



28. Table 2.2 below breaks this expenditure down into categories.

Table 2.2 Overview of capital expenditure

Expenditure programme	Powerco proposal	Verified amount	Draft decision
Asset renewals	$450m	$378m	$426m
Network growth and security	$286m	$271m	$281m
Other network capex	$73m	$65m	$55m
Non-network capex	$63m	$63m	$63m
TOTAL	$873m	$777m	$825m

Note that the Verifier selected a sub-set of asset renewals programmes to review. The verified amount for asset renewals is therefore not directly comparable to the amounts shown as 'Powerco proposal' and our 'Draft decision', as these relate to all the expenditure categories.

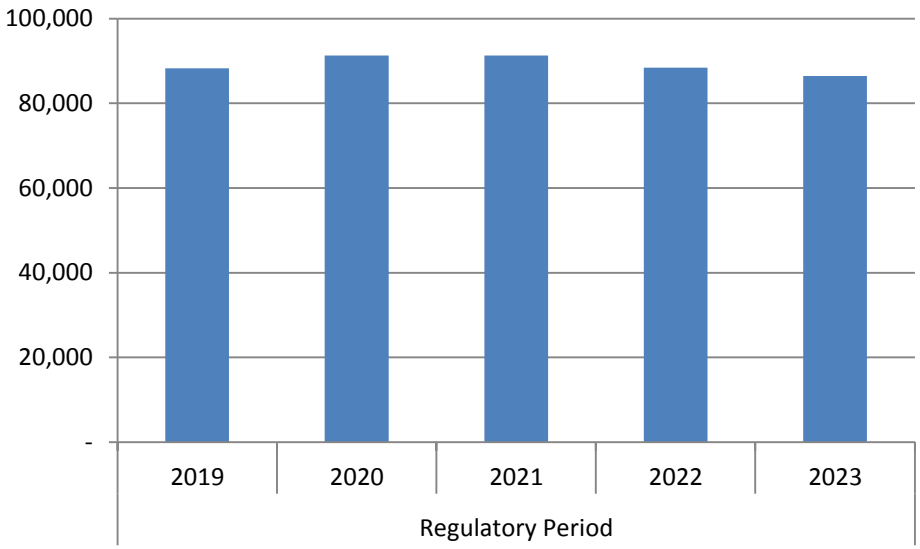
Draft decision on Powerco's opex forecasts

29. The opex forecast that we use for Powerco's CPP directly impacts on the price path, as Powerco will be able to fully recover this amount during the CPP period.[22]

30. Powerco proposed a total of $455 million of opex for its CPP period. Our draft decision is to provide for $446 million over that 5 year period.

[22] This being said, to the extent that Powerco does not spend its entire opex allowance, any underspend will be shared between consumers and Powerco due to the application of the incremental rolling incentive scheme.

Figure 2.2 Overview of total opex ($000)



31. Table 2.3 below breaks this expenditure down into categories.

Table 2.3 Breakdown of opex

Expenditure programme	Powerco proposal	Verified amount	Draft decision
Preventative Maintenance	$59m	$59m	$59m
Corrective Maintenance	$66m	$66m	$66m
Systems operations and network support	$82m	$74m	$74m
Vegetation Management	$46m	$46m	$46m
Corporate	$116m	$98m	$116m
Reactive Maintenance	$37m	$37m	$37m
ICT	$28m	$28m	$28m
Insurance	$11m	Not verified	$11m
Facilities	$10m	Not verified	$10m
TOTAL	**$455m**	**$427m**	**$446m**

Draft decision on Powerco's price path

32. Our draft decision is to allow Powerco to increase its prices by 4.4% in the first year of the CPP period, and by CPI for each subsequent year of the CPP period. The CPP period will be from 1 April 2018 until 31 March 2023. This will likely also result in a further price increase in subsequent regulatory periods as the capex spent in the CPP period enters into Powerco's regulated asset base, which it earn a return on, and is recovered through depreciation.

33. Table 2.4 below shows the impact of this increase on Powerco's maximum allowable revenue, as well as the subsequent increases in line with CPI over the remainder of the CPP period.

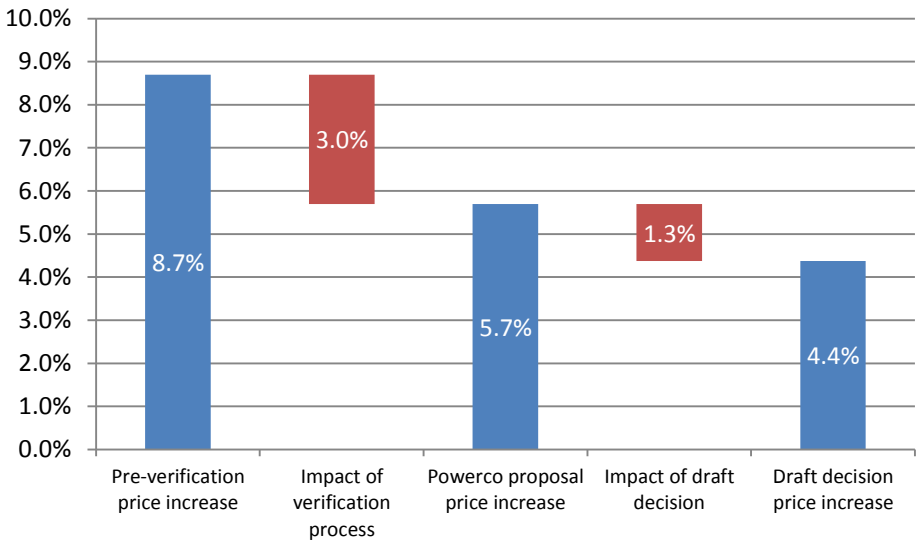
Table 2.4 Nominal maximum allowable revenue before tax ($m)

	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023
Powerco's proposal	282	288	294	300	306
Our draft decision	279	285	291	296	302
Difference	-4	-4	-4	-4	-4

34. Powerco's price path is constructed using a building blocks approach, which builds up the expected costs to the business (such as tax, opex, depreciation and the cost of capital), and is then smoothed across the CPP period as a price path. This process is explained in more detail in Attachment I.

35. Figure 2.3 below shows the impact that our draft decision will have on Powerco's distribution network charges. It shows the difference in initial price increase between Powerco's CPP proposal prior to verification, Powerco's final CPP proposal, and our draft decision.

Figure 2.3 Impact on distribution network charges



Draft decision on Powerco's quality path

36. We have also proposed separate quality standards to apply to Powerco during the CPP period for planned and unplanned interruptions. Powerco's planned and unplanned interruptions should not exceed the limits we have specified.

Planned interruptions

37. Our draft decision to set a quality standard for planned interruptions differs from Powerco's proposal. Powerco proposed that planned interruptions should be excluded from the quality standard.

38. Our draft decision is to set a quality standard for planned interruptions based on Powerco's forecasts. This option takes into account the level of planned interruptions that are forecast to be required for Powerco to undertake the CPP work programme. The draft quality standard retains an incentive for Powerco to undertake the CPP work efficiently in line with our CPP decision.

Table 2.5 Our proposed Quality Standard for Planned Interruptions

	2019	2020	2021	2022	2023
Planned SAIDI [23] (minutes)	71.034	75.446	82.017	87.213	88.190
Planned SAIFI [24] (outages)	0.314	0.338	0.359	0.378	0.378

[23] System Average Interruption Duration Index.
[24] System Average Interruptions Frequency Index.

39. Under our proposed quality standard for planned interruptions, Powerco would be deemed to be non-compliant if it exceeds the planned SAIDI or SAIFI limits in a given year and one of the two preceding years. This provides Powerco with some flexibility to reallocate planned work across consecutive years, as compliance would not be assessed for each year in isolation.

Unplanned interruptions

40. For unplanned interruptions, we propose that the quality standard at the start of the CPP period be based on the 10-year average of unplanned interruptions, with a gradual reduction (corresponding to an improvement in quality) over the CPP period. This reduction reflects the expected improvement in reliability as a result of the proposed investment over the CPP period. We propose that the quality standard for unplanned SAIFI reduce by 5% by the end of the CPP period and that the quality standard for unplanned SAIDI reduce by 10% by the end of the CPP period.[25]

41. We consider that this expected reduction in the frequency and duration of unplanned interruptions reflects the reliability improvements resulting from the expenditure that we have allowed for in our draft decision.

Table 2.6 Our proposed Quality Standard for Unplanned Interruptions

	2019	2020	2021	2022	2023
Unplanned SAIDI Limit (minutes)	191.477	187.484	183.575	179.747	175.999
Unplanned SAIDI Target (minutes)	169.592	166.056	162.594	159.203	155.884
Unplanned SAIFI Limit (outages)	2.285	2.262	2.239	2.216	2.194
Unplanned SAIFI Target (outages)	2.116	2.094	2.073	2.052	2.031

Revenue-linked quality incentive mechanism

42. At this stage, we do not propose to apply a revenue-linked quality incentive scheme to planned interruptions during the CPP period. Powerco has argued that including

[25] Under our proposed quality standard, the unplanned SAIFI quality limit at the end of the CPP period would be 5% lower than at the start of the CPP period, and the unplanned SAIDI quality limit at the end of the CPP period would be 10% lower than at the start of the CPP period.

planned interruptions would create an incentive for Powerco to reduce or delay the CPP work programme in order to gain financially.

43. In our view, applying a revenue-linked quality incentive scheme to the planned interruptions required to undertake the CPP work programme, and thereby creating a financial incentive to delay or otherwise reduce the CPP work programme, would not be appropriate. We propose to exclude planned interruptions from the revenue-linked incentive scheme.

44. Our draft decision is to retain a revenue-linked quality incentive scheme for unplanned interruptions. This will provide Powerco with incentives to improve network reliability beyond that required by the quality standard for unplanned interruptions where it is cost-effective to do so.

Table 2.7 Our proposed revenue-linked quality incentive scheme (SAIDI)

Unplanned SAIDI

	2019	2020	2021	2022	2023
Unplanned SAIDI Cap (minutes)	191.477	187.484	183.575	179.747	175.999
Unplanned SAIDI Target (minutes)	169.592	166.056	162.594	159.203	155.884
Unplanned SAIDI Collar (minutes)	147.708	144.628	141.612	138.660	135.768
Revenue at risk ($000)	$1,396	$1,396	$1,396	$1,396	$1,396
Incentive rate ($/SAIDI minute)	$63,767	$65,125	$66,512	$67,928	$69,375

Table 2.8 Our proposed revenue-linked quality incentive scheme (SAIFI)

Unplanned SAIFI

	2019	2020	2021	2022	2023
Unplanned SAIFI Cap (outages)	2.285	2.262	2.239	2.216	2.194
Unplanned SAIFI Target (outages)	2.116	2.094	2.073	2.052	2.031
Unplanned SAIFI Collar (outages)	1.946	1.926	1.907	1.887	1.868
Revenue at risk ($000)	$1,396	$1,396	$1,396	$1,396	$1,396
Incentive rate ($/SAIFI outage)	$8,227,599	$8,312,438	$8,398,151	$8,484,749	$8,572,239

Draft decision to require Powerco to produce an annual delivery report

45. We have also introduced a separate requirement for Powerco to provide an annual delivery report, using our powers under s 53ZD of the Commerce Act.[26]

46. We have introduced this requirement to ensure customers have transparency as to how Powerco is progressing in delivering the investment set out in our CPP decision.

47. We are also proposing that Powerco should convene an annual stakeholder event, in each of its Eastern and Western zones, to present the report. This will provide customers and wider stakeholders with the opportunity to question Powerco on the progress of its CPP works programme.

48. We also intend to hold an annual 'technical' meeting with Powerco. This will be a detailed question and answer session with Powerco and will allow us to better understand the progress it has made in delivering the proposed programme of works.

49. Powerco's annual delivery report is discussed in more detail in Attachment K.

[26] Under s 53ZD of the Commerce Act the Commission may require a supplier to produce certain information.

Chapter 3 Our evaluation approach

Purpose of this chapter

50. This chapter explains the approach we have taken to evaluate Powerco's CPP proposal and make our draft decision. It starts by explaining, at a high level, the framework that we have applied in order to make a decision that delivers long-term benefits to consumers. The latter part of the chapter sets out the process we have used to apply this framework.

The Commerce Act guides our determination of Powerco's CPP

51. Our starting point for determining Powerco's CPP is the purpose of Part 4 of the Commerce Act – to promote the long-term benefit of consumers.[27]

The purpose of Part 4 of the Commerce Act

52A purpose of Part 4

(1) The purpose of Part 4 is to promote the long-term benefit of consumers in markets referred to in section 52 by promoting outcomes that are consistent with outcomes produced in competitive markets such that suppliers of regulated goods or services—

(a) have incentives to innovate and to invest, including in replacement, upgraded, and new assets; and

(b) have incentives to improve efficiency and provide services at a quality that reflects consumer demands; and

(c) share with consumers the benefits of efficiency gains in the supply of the regulated goods or services, including through lower prices; and

(d) are limited in their ability to extract excessive profits.

52. The Act also required us to set rules and processes for CPPs – these rules and processes are referred to as input methodologies.

53. The input methodologies we have previously set relating to CPPs include the requirements that must be met by the applicant for information, verification, audit and consumer consultation, as well as the criteria that we must use to evaluate a CPP proposal.[28, 29]

[27] Commerce Act 1986, s 52A.

[28] *Electricity Distribution Services Input Methodologies Determination 2012* [2012] NZCC 26, Part 5

[29] As required by the Commerce Act 1986, s 52T.

The CPP evaluation criteria

54. The criteria that we must use to evaluate a CPP are set out in EDB input methodologies.[30] These criteria are intended to ensure that our determination of a CPP promotes the long-term benefit of consumers.

Evaluation criteria for customised price-quality path proposals

The Commission will use the following evaluation criteria to assess each CPP proposal:

a) whether the proposal is consistent with the input methodologies;

b) the extent to which the proposal promotes the purpose of Part 4 of the Act;

c) whether data, analysis, and assumptions underpinning the proposal are fit for the purpose of determining a CPP;

d) whether the proposed capital and operating expenditure meet the expenditure objective;

e) the extent to which any proposed changes to quality standards reflect what the applicant can realistically achieve taking into account statistical analysis of past SAIDI and SAIFI performance; and/or (ii) the level of investment provided for in proposed; and

f) the extent to which the CPP applicant has consulted with consumers on its CPP proposal; and the proposal is supported by consumers, where relevant.

55. We briefly explain each of the evaluation criteria below.

Whether the proposal is consistent with the relevant input methodologies

56. Powerco's proposal must apply or adopt all relevant input methodologies **(IMs)**.[31] The IMs establish the key rules, requirements and processes of regulation.

57. Our evaluation of Powerco's proposal included assessing whether the proposal was consistent with the IMs. This included an assessment, prior to accepting the proposal, of whether the proposal met the CPP process and content IM requirements; as well as an assessment of whether the proposal met the substantive IMs for determining a CPP.

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30 *Electricity Distribution Services Input Methodologies Determination 2012* [2012] NZCC 26, clause 5.2

31 Commerce Act 1986, s 53Q(2)(d).

The extent to which the proposal will promote the purpose of Part 4

58. To satisfy the evaluation criteria the proposal must promote the purpose of Part 4 of the Act, outlined above. The Act sets out objectives in s 52A(1)(a)-(d) which are integral to promoting the long-term benefit of consumers, and reflect key areas of supplier performance that we would expect in markets with workable competition.

Whether the information in the proposal is fit for purpose

59. The information in a proposal must be sufficient in detail and quality to allow us to undertake our assessment.[32] The assumptions used must also be robust. Where we considered further information was necessary to establish it was fit for purpose, we requested this from Powerco. Where we had doubts about the appropriateness or robustness of an assumption, we sought further explanation for the assumption or used a more appropriate assumption.

Whether the proposed expenditure reflects the expenditure objective

60. The expenditure objective was included in the IMs as a specific evaluation criterion for the assessment of capital expenditure and operating expenditure.[33]

61. The expenditure objective requires us to assess Powerco's proposed capital expenditure and operating expenditure on the basis that it reflects the efficient costs that a prudent supplier subject to price-quality regulation would require to:

    61.1 meet or manage the expected demand for electricity distribution services, at appropriate service standards, during the customised price-quality path regulatory period and over the longer term; and

    61.2 comply with applicable regulatory obligations associated with those services.[34]

62. The assessment of forecast expenditure is not a mechanistic process – it necessarily involves the exercise of judgement supported by expert advice.

63. The assessment of forecast expenditure focusses on the CPP regulatory period. However, Part 4 of the Act has as its central purpose the long-term benefit of consumers, so we also considered circumstances beyond the period of Powerco's customised price-quality path.[35]

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[32] Commerce Commission "Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper" (22 December 2010), para 9.4.8.

[33] Commerce Commission "Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper" (22 December 2010), para 9.4.10.

[34] *Electricity Distribution Services Input Methodologies Determination 2012* [2012] NZCC 26, clause 1.1.4.

[35] Commerce Commission "Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper" (22 December 2010), para 9.4.12.

Whether the proposed quality standard variation is realistically achievable

64. Powerco's existing quality standards under the DPP only concern network reliability.[36] The evaluation criteria requires us to assess the extent to which the proposed quality standard variation better reflected the realistically achievable performance of Powerco over the customised price-quality path regulatory period than Powerco's quality standards under its existing DPP.

65. We have considered the realistically achievable performance of Powerco's network over the CPP period through statistical analysis of past SAIDI[37] and SAIFI[38] performance, as well as a consideration of the level of investment provided for throughout the CPP period.[39]

66. Powerco also proposed to remove the quality standard on planned interruptions for the duration of the CPP period, as part of its quality standard variation. In reaching our policy decision on this proposal we have considered, more widely, the purpose of Part 4.

The extent of Powerco's consultation with consumers and support from Powerco's consumers

67. A CPP path must promote the long-term benefit of consumers. While consumers are best placed to understand what they value in terms of price and quality trade-offs, we acknowledge that a supplier should have a better understanding of the required network investment to meet those preferences than its consumers. Accordingly, consumer agreement to the proposed customised price-quality path is not required. However, we took into account the extent of support (or opposition) for the matters that were raised by Powerco in its consultation with consumers on its proposal.[40] We also took into account feedback we received from customers on the issues we raised in our Issues Paper.

68. Consumer feedback is likely to be particularly relevant where an EDB seeks to justify proposed investments or changes to quality on the basis of consumer demands.[41]

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36 Network reliability is the term used to refer to the extent that a network provides consumers with a continuous, uninterrupted supply of electricity.

37 System Average Interruption Duration Index (SAIDI).

38 System Average Interruption Frequency Index (SAIFI).

39 *Electricity Distribution Services Input Methodologies Determination 2012* [2012] NZCC 26, clause 5.4.5.

40 Commerce Commission "Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper" (22 December 2010), para 9.4.16.

41 Commerce Commission "Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper" (22 December 2010), para 9.4.15.

If a CPP proposal does not satisfy the evaluation criteria then we must set a CPP that does

69. If we had concluded that the proposal fully satisfied the evaluation criteria, then setting the customised price-quality path would have been relatively straightforward.

70. While we consider that large parts of Powerco's proposal did satisfy the evaluation criteria, some parts did not. This means that further work was required to determine a CPP that satisfies the evaluation criteria. We consider that our draft decision satisfies the evaluation criteria.

71. The depth and extent of our analysis for this second step will vary for different customised price-quality path proposals, depending on the robustness and quality of the proposal (as reflected in our evaluation conclusions from step one). Other factors such as the size and complexity of the proposal will also affect the amount of analysis required in step two.

Our evaluation of Powerco's proposal against the evaluation criteria

72. The starting point for our assessment was the review undertaken by the independent Verifier of Powerco's proposal.

We have had regard to the findings of the independent Verifier

73. The CPP process required Powerco to have its CPP proposal reviewed by an independent Verifier.[42]

74. The verification process is intended to add value to the quality of CPP proposals and to our decision making by testing, in advance of submission, the assumptions that underpin forecast information on major capital projects, operating expenditure, and energy demand.[43]

Farrier Swier Consulting acted as the Verifier for Powerco's CPP

75. In December 2016 we agreed with Powerco to appoint Farrier Swier Consulting as the independent Verifier for Powerco's CPP proposal. Powerco undertook a request-for-proposal process to identify a suitable Verifier. We reviewed Farrier Swier's proposal for the work and we were satisfied that Farrier Swier's extensive experience (in Australia and abroad), coupled with expert assistance from WSP Australia, suitably qualified it to verify Powerco's CPP proposal. We were also satisfied that Farrier Swier was independent and could provide an impartial view on Powerco's proposal.

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[42] The requirements for CPP proposals to be verified are set out in the IMs. See: *Electricity Distribution Services Input Methodologies Determination 2012* [2012] NZCC 26, Schedule G

[43] The role of the Verifier was discussed in more detail in the 'Verification requirements' chapter of our recent IM review decision paper on the CPP requirements. This paper can be downloaded at the following link: http://comcom.govt.nz/dmsdocument/15107

76. Farrier Swier signed a deed with us and Powerco requiring it to verify Powerco's proposal in line with the rules set out in the IMs. The deed provided that Farrier Swier had an overriding duty to assist the Commission as an independent expert with relevant matters within Farrier Swier's areas of expertise.

77. Farrier Swier produced a verification report, which drew on a five-month period of information review and iterative analysis. During this time Farrier Swier attended a workshop with Powerco and the Commission in December 2016, conducted site visits to Powerco's Wellington and New Plymouth offices, hosted Powerco staff in Melbourne on three occasions, and formally submitted questions to Powerco, resulting in over 350 responses. You can download a version of the verification report by following this link: http://www.comcom.govt.nz/dmsdocument/15550

78. As a result of the verification process Powerco has reduced its proposed capex forecasts by $51 million (a 5.6% reduction), and opex forecast by $23 million (a 4.8% reduction).

We consider the Verifier's findings are robust

79. Following Powerco's submission of its CPP proposal, we have critically reviewed the verification report and the techniques and methods the Verifier has used to test Powerco's proposal. This included a two-day workshop with the Verifier in June to test the Verifier's findings.

80. We were very pleased with the rigour of Farrier Swier's analysis and we consider its review of Powerco's proposal to be thorough and undertaken to a high standard.

81. To satisfy ourselves that the CPP verification process met the IM requirements, we requested that Strata Energy Consulting (**Strata**) undertake a high level review of the Verifier's Report and report back to us on the extent to which we should rely on the conclusions and recommendations of the Verifier.

82. Strata concluded that the approach taken by the Verifier was aligned with the IM requirements for CPP verification. Strata also considered that an appropriate level of rigour had been applied by Farrier Swier in undertaking its verification functions, and that the Verification Report itself was well constructed. Strata also noted some further aspects that we may want to consider.

83. In our further analysis of Powerco's CPP proposal we have endeavoured to address these recommendations. For instance, we consider that Powerco's forecasts do not include for expenditure not spent in previous price periods (referred to as 'roll-outs'), and that proposed investments meet the expenditure objective for the CPP period. This has included engaging Strata to assist in identifying aspects of Powerco's major growth and security projects that require further assessment by us and prior to making our draft decision.

84. As a result of our review of Farrier Swier's analysis, we were confident that we could place increased weight on the views in its verification report regarding Powerco's proposed levels of expenditure when making our own determination of the CPP. We asked for your views on this proposed approach as part of our consultation on our Issues Paper and received general support for this approach in submissions.

Our review of Powerco's CPP proposal

85. Where the independent Verifier was unable to establish whether parts of Powerco's proposal satisfied the evaluation criteria, we undertook our own, more detailed, review of Powerco's proposal.

86. For example, where the link between expenditure and the benefits the expenditure was intended to deliver was unclear, or the expenditure did not appear justified, we undertook a more detailed analysis of the assumptions and forecasts built into Powerco's proposal. We reviewed material assumptions, and assessed the sensitivity of the proposed expenditure to changes in assumptions.

87. On a number of occasions we requested further information from Powerco, such as cost-benefit analyses of different options, and met with Powerco staff to better understand the justification for what they had proposed. This included site visits over five days in the Tauranga, New Plymouth and Palmerston North regions.

88. In line with the proportionate scrutiny principle, the level of detail of our assessment varied depending on our concerns and any concerns expressed by the independent Verifier, as well as the materiality of any proposed expenditure.[44]

89. In reaching decisions on appropriate levels of expenditure for Powerco's CPP, Commissioners have had the benefit of the verification report, the advice of Strata and the expertise of appropriately qualified Commission staff.

[44] The principle that the level of scrutiny applied should generally be commensurate with the price and quality impact on consumers of the tailoring being sought.

The use of cost-benefit analysis – submissions by MEUG and ERANZ

Submissions on the use of cost-benefit analysis

90. A number of submitters on our issues paper suggested that we also employ a cost-benefit analysis to assist our determination of the appropriate levels of expenditure to allow for Powerco's CPP.

91. TDB Advisory (**TDB**) on behalf of Electricity Retailers Association of New Zealand (**ERANZ**) submitted:[45]

> Our assessment is that the Powerco application and the accompanying verifier's report need to be complemented by Commission analysis to test whether the proposed CPP optimises the price-quality trade-off for consumers. Without such a cost-benefit analysis (based on a proper specification of the counterfactual) of the proposed additional spending, it is not evident that the proposed CPP or a variation of it is in the best interests of consumers

92. As part of its submission for the Major Electricity Users Group **(MEUG)**, New Zealand Institute of Economic Research (**NZIER**) have produced a high-level quantitative analysis of the potential benefits and costs of Powerco's CPP proposal. The NZIER analysis compares the incremental uplift in revenue under Powerco's proposed CPP (compared with the DPP), against the estimated value of the improved reliability that Powerco expects as a result of its increased expenditure under a CPP.

93. NZIER submit:[46]

> Cost benefit analysis could be used to assess the net benefit of the proposal by comparing the proposed investment with the next best alternative or 'what would happen' (the counterfactual). A cost benefit analysis would help to estimate the net value of the different benefits from these two alternatives. A key element of the Powerco CPP is that the increase in capital and operating expenditure along with an increase in planned outages will deliver a more reliable network.

Our views on the use of cost-benefit analysis to determine appropriate expenditure levels

94. As outlined above, the criteria that we must use to evaluate a CPP are set out in the input methodologies applying to EDBs.[47] These criteria are intended to ensure that our determination of a CPP promotes the long-term benefit of consumers. Our view is that cost-benefit analyses, and various other techniques like engineering assessments, can have a role to play within the current framework to inform our assessment of a CPP proposal. For example, to assess whether elements of a proposal are likely to promote the long-term benefit of consumers.

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45 TDB Advisory on behalf of ERANZ "Submission on Powerco CPP Issues paper" (22 September 2017), para 1.2.

46 NZIER "Powerco CPP application: Advice to MEUG for Commerce Commission submission" (22 September 2017), page 1.

47 Commerce Commission "Electricity Distribution Services Input Methodologies Determination 2012" (15 November 2012), clause 5.2.1.

95. However, the current framework does not require us to undertake a cost-benefit analysis of Powerco's full CPP proposal in order to approve or reject it.

96. We do not consider it appropriate to add a new evaluation consideration at this stage of the process. We have recently considered the framework that is applied to assess CPPs, as part of our input methodology review, and the use of cost-benefit analysis was not raised during that review. The use of cost-benefit analyses in this way is an issue that can be raised again for consideration in submissions at the time of the next review of the input methodologies.

97. The purpose of setting and reviewing the input methodologies was to promote certainty and predictability around the rules to be applied in the context of Part 4 regulation. In our view, introducing additional evaluation considerations into the frameworks and criteria developed during the input methodologies review would risk undermining the certainty and predictability which the input methodologies are designed to achieve.

98. We note that the expenditure objective was developed as one of the criteria for assessing whether a CPP proposal promotes the long-term benefit of consumers. This involves an assessment of the efficient costs that a prudent supplier would require in order to meet expected demand for electricity distribution services at appropriate service standards, and to comply with applicable regulatory obligations. Expected demand at appropriate service standards will reflect the value that consumers attach to electricity distribution services supplied at a particular level of quality. A requirement to assess proposed expenditure against the expenditure objective should ensure that consumer demand and relevant regulatory obligations are met at minimum cost. Expenditure that satisfies this objective would promote the long-term benefit of consumers.

99. We would expect that where expenditure associated with a CPP proposal meets the expenditure objective, an appropriately specified and robust analysis of the benefits and costs associated with that proposal would broadly support that finding. However, we also note that there is likely to be considerable uncertainty around the quantification of some of the potential benefits and costs, particularly those associated with long-term investment programmes.

100. This has been evident in our review of the analysis undertaken by NZIER of the potential benefits and costs of Powerco's CPP proposal. We have identified a number of weaknesses with the scope of the analysis and the underlying assumptions used by NZIER. For these reasons, we are not satisfied that NZIER's cost-benefit analysis represents a sufficiently robust approach to justifying Powerco's CPP expenditure, nor that it is achievable to remedy these weaknesses.

101. More specifically, we have tested the sensitivity of NZIER's results to a range of the modelling assumptions of the NZIER cost-benefit model. The main concerns that we have with the NZIER analysis are discussed below.

102. First, the NZIER model does not adequately take into account all of the relevant benefits that should be considered when assessing expenditure against the expenditure objective. The model is focussed on the reliability benefits of Powerco's proposed expenditure. However, the expenditure objective is not focussed solely on reliability. Compliance with regulatory requirements (such as replacing assets for health and safety reasons), the ability to meet future growth in customer connections and improvements in operational efficiency should all be considered in assessing the proposed expenditure against the expenditure objective. In other words, NZIER's analysis takes into account all of the costs associated with the CPP, but only takes into account one of the benefits.

103. Second, the NZIER analysis only considers the potential benefits and costs over a timeframe of nine years (2018-2017). Many of the proposed investments that are part of Powerco's CPP programme are long-lived investments, and the benefits associated with these investments are likely to emerge and increase beyond the timeframe used by NZIER. For example, the incremental benefits in terms of lower unplanned SAIDI and SAIFI under the CPP compared to the DPP increase over the period to 2027.

104. Third, there are a number of other uncertainties involved in modelling the costs and benefits arising from the CPP proposal and those to be expected if Powerco continued to be on a DPP. A number of specific modelling assumptions used by NZIER have a significant impact on the net benefits generated by the NZIER model. These include:

    104.1 in estimating the incremental cost to consumers under the CPP, NZIER applies a nominal growth rate to DPP and CPP revenues. However, in estimating the benefits of improved reliability, NZIER use a flat (i.e. real) forecast of the value of lost load (**VoLL**). Allowing the VoLL to increase in nominal terms has the effect of increasing the net benefits to consumers under the CPP scenario;

    104.2 NZIER assumes that opex would remain flat if Powerco remained on the DPP. This is unlikely where assets reaching the end of their useful life are not replaced. Increasing opex under the DPP scenario has the effect of increasing the net benefits to consumers under the CPP scenario;

    104.3 related to the preceding sub-paragraph, increasing opex under the DPP is likely to result in higher planned interruptions under the DPP, as more work is required to maintain older assets; and

    104.4 NZIER has modelled reliability using Powerco's forecasts of unplanned SAIDI. Our view is that Powerco's forecasts of unplanned SAIDI are likely to understate the reliability improvements expected under the CPP.

105. We have tested the sensitivity of the NZIER model with respect to the above assumptions and have found that in the longer term, the NZIER model can generate positive net benefits for consumers.

106. On balance, given the uncertainties in attempting to quantify the potential benefits and costs of Powerco's CPP at this time, we do not think that such analysis would add significant value in our evaluation of Powerco's CPP. This is also, in part, because Powerco have not provided sufficient information to allow us to construct a suitably robust economic analysis, and is not expressly required to provide this information under the existing input methodologies.

107. In order to robustly model the full costs and benefits of various expenditure profiles, significant work would be required on the part of the CPP applicants. If we were to require this modelling, the information requirements for this should be set out in the input methodologies applicable to CPP proposals. In this sense, MEUG and ERANZ's submissions would have been more suitably considered as part of the input methodologies review, where we considered more broadly the approach that we take to evaluating and determining CPPs.

108. We acknowledge that our regime is still evolving. With better asset management practices, it may turn out to be possible for EDBs to better model the reliability impact of specific investments and we could potentially look to developing a cost-benefit approach for assessing CPPs in the future. Cost-benefit analysis is potentially an important part of our toolkit and we will continue to consider how we use it in our work going forward.

Attachment A Overview of Powerco's capex proposal

Purpose of this attachment

109. This attachment outlines Powerco's capex proposals for the CPP period, and provides a high level summary of our draft decision in respect of those proposals.

Summary of our draft decision

110. We propose to accept $825 million of the $873 million Powerco has proposed in its CPP application. We consider this proposed expenditure meets the expenditure objective.

111. We propose to reject $48 million of Powerco's proposed capex as we are not satisfied this expenditure meets the expenditure objective.

Powerco's proposed capex and our draft decisions

112. Powerco has requested a total of $873 million that includes proposals to undertake a significant investment programme for renewals, growth and security, other network capex and non-network capex. This represents a 50% increase of $292 million for capex expenditure when compared to the five years leading up to the CPP period (2014-2018).

113. Powerco's capex proposals include the following:

    113.1 Renewals – $450 million for renewals that include overhead structures (such as poles and cross-arms), overhead conductors, cables, zone substations, distribution transformers, distribution switchgear and secondary systems (such as protection relays, communication devices and metering that is usually located within zone substations). We are proposing to allow $426 million for Powerco's renewals investment in our draft decision;

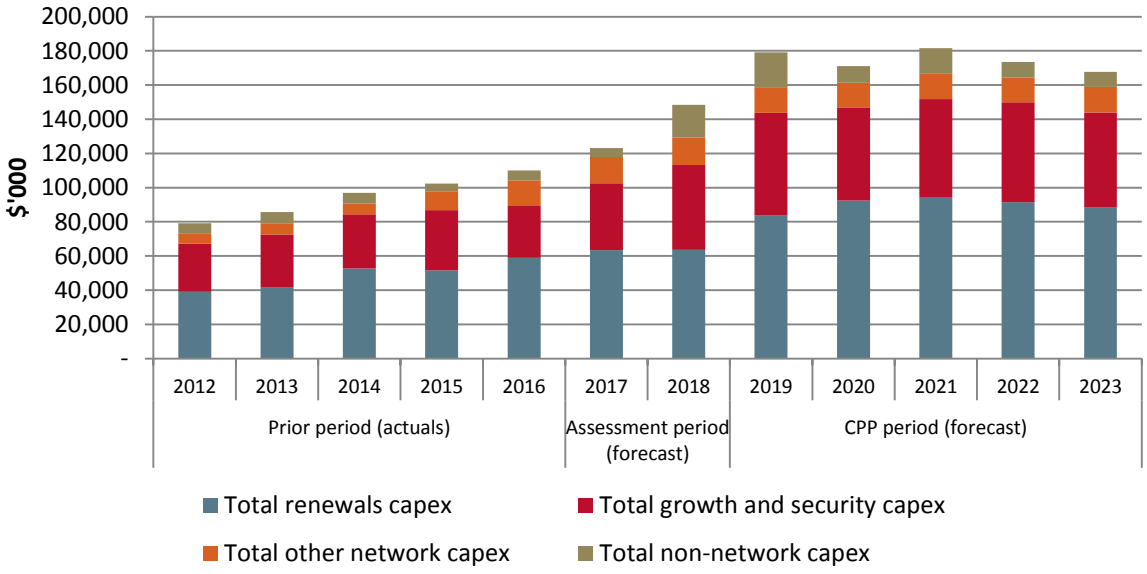
    113.2 Growth and Security – $286 million for growth and security projects to meet peak demand at appropriate levels of reliability. We are proposing to allow $281 million for Powerco's growth and security projects in or draft decision;

    113.3 Other network capex – $73 million for other capex projects and programmes such as connections, asset relocations and network evolution. We are proposing to allow $55 million for Powerco's other capex projects in our draft decision; and

    113.4 Non-network capex – $63 million for non-network capex such as IT systems (ICT) and facilities. We are proposing to allow all of Powerco's proposal for non-network capex in our draft decision.

114. Powerco's proposed capex during the CPP period is illustrated in Figure A1 below:[48]

Figure A1 Overview of Powerco's Capex proposals



115. A detailed description of each capex category, including what Powerco proposes within each capex category and the reasons for our draft decision, are included in the subsequent Attachments B-G.

The Verifier's views on Powerco's proposed capex

116. Powerco initially proposed capex of $924 million, which was a 59% increase of $343 million. However, as a result of the verification process, Powerco adjusted its capex forecast downward by $51 million.

117. The Verifier noted there is a need for Powerco to manage deteriorating network condition, energy at risk and future network growth. These factors, combined with Powerco's need to improve its asset management practices, lead the Verifier to the view that an increase in expenditure from current levels may be warranted.

118. The Verifier considered Powerco:

118.1 has, and appears to apply, a comprehensive range of policy and planning standards;

118.2 generally applies forecasting methodologies and models that do not appear inappropriate; and

[48] The assessment period, for the purposes of these tables, is the two years directly prior to the CPP period, where Powerco provided forecasts because actual information for these years was not available.

118.3 applies assumptions to its forecasts that do not appear to be unreasonable.[49]

119. However, the Verifier highlighted areas where some of Powerco's forecasts do not meet the expenditure objective. This led to the Verifier considering that $95 million of Powerco's proposed capex could still not be verified.

120. Under a CPP, the input methodologies allow the Verifier to nominate up to twenty projects or programs for detailed review. For Powerco's CPP proposal, the Verifier selected fifteen projects and programs based upon the requirements of Schedule G4 of the IMs. Ten of these were capex and five were opex projects or programs.

121. A three step approach was adopted for identifying projects or programs based upon:

121.1 Materiality: 5% or more of total expenditure or a 30% increase greater than $1 million);

121.2 Drivers: where a particular project or program is a key risk to Powerco's business; and

121.3 Identification: where demonstration against the expenditure objective is necessary, significant price increases may arise and there is a link to quality standards.[50]

122. This resulted in a number of capex categories not being reviewed by the Verifier, and this included customer connections, asset relocations and facilities.

123. The Verifier made recommendations for us to undertake further analysis to satisfy ourselves that all aspects Powerco's proposed capex meets the expenditure objective.[51] We have undertaken the further analysis in each area of capex recommended by the Verifier, and our findings and reasons for reaching our draft decisions in each of these capex areas are explained in Attachments B-G of this paper.

Our approach to assessing Powerco's proposed capex

124. We have adopted a thorough approach in determining appropriate capex allowances for Powerco over the CPP period. This has included:

124.1 Reviewing Powerco's proposal and the report by the Verifier on it to identify the key issues for us to consider, including issues highlighted for our attention by the Verifier.

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[49] Final Verification Report for Powerco, Farrier Swier (7 June 2017), page 41.

[50] More detail on the selection process adopted by the Verifier can be found on pages 126-131 of the Verification Report.

[51] Final Verification Report for Powerco, Farrier Swier,(7 June 2017), page 43.

124.2 Assessing the extent to which we could rely on the analysis and conclusions of the Verifier. This included a lengthy workshop with the Verifier to probe the approach and conclusions of the Verifier, and discuss the issues identified by the Verifier and ourselves.

124.3 Publishing an Issues Paper and providing an opportunity for interested persons to express their views on Powerco's proposed opex and the Verifier's conclusions.

124.4 Raising additional questions to Powerco and also meeting with Powerco staff on various occasions. In these questions and discussions, we particularly focussed on understanding Powerco's justification for capex step changes in growth and security programmes, overhead conductor renewals and network evolution proposals.

124.5 Our staff then made recommendations to Commissioners on the appropriate levels of capex allowances to be included in Powerco's proposed price path. Commissioners' decisions on these recommendations are reflected in this draft decision.

125. The specific analysis we have undertaken for each category of Powerco's proposed capex is explained in detail in the subsequent chapters of this paper.

Attachment B Proposed allowance for renewals capex

Purpose of this attachment

126. This attachment outlines our draft decisions on the renewals capex that Powerco will be able to recover from its customers in the CPP period.

Summary of our draft decision for renewals capex

127. We propose to accept $426 million of the $450 million renewals capex proposed by Powerco as satisfying the expenditure objective.

128. We propose to reject $24 million of renewals capex as we are not satisfied that these expenditures meet the expenditure objective.

Powerco's proposed renewals capex

129. Powerco has proposed to spend $450 million of renewals capex over the CPP period, an increase of $160 million (55%) on the five years leading up to the CPP period. Of the total renewals capex proposed by Powerco,

    129.1 $55 million relates to the replacement of overhead conductors (an increase of 202% on the five years prior to the CPP period);

    129.2 $178 million relates to the replacement of overhead structures (an increase of 60% on the five years prior to the CPP period);

    129.3 $72 million relates to the replacement of zone substations (an increase of 99% on the five years prior to the CPP period);

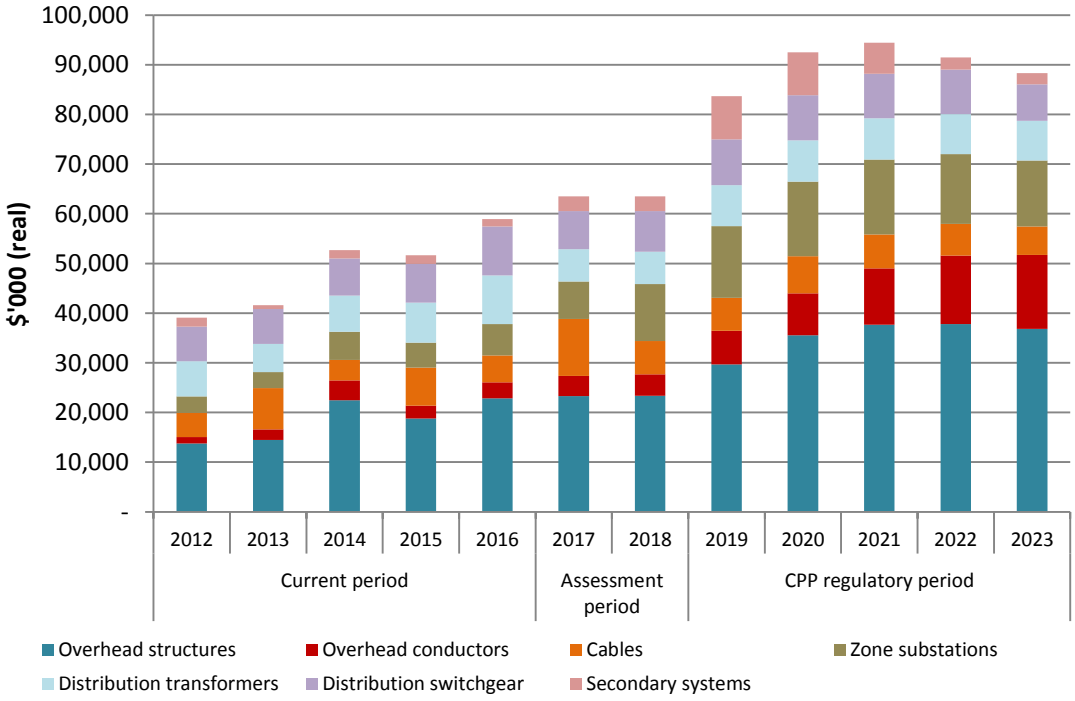
    129.4 $28 million relates to secondary systems (an increase of 160% on the five years prior to the CPP period);

    129.5 $85 million relates to the replacement of distribution transformers and switchgear (an increase of 7% on the five years prior to the CPP period); and

    129.6 $33 million on the replacement of cables (a decrease of 6% on the five years prior to the CPP period).

130. An overview of Powerco's proposals for renewals capex over the CPP period, along with Powerco's historical expenditure, is provided in Figure B1 below

Figure B1 Powerco's historical and forecast renewals capex



131. Powerco has claimed that it is experiencing a clear deterioration in the overall health and condition of its distribution network, as evidenced by key indicators such as declining asset health, increasing defect volumes, and increasing fault rates. According to its CPP proposal, Powerco's increased renewals investment will focus on the following areas:

131.1 replacing assets to maintain overall asset health, particularly where there is an increased likelihood of failure in critical locations;

131.2 reducing backlogs of defected assets to steady state levels to manage safety risk and fleet health, particularly for wooden poles;

131.3 increasing the volume of distribution conductor renewals to address increasing failure rates and public safety risks;

131.4 addressing 'type issues' and known asset problems that pose a risk to field staff or the public;[52] and

131.5 ensuring compliance with electricity market rules and seismic standards.[53]

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[52] A 'type issue' is where a manufacturing or installation defect has resulted in an asset having a reduced expected life and/or significantly higher risk of failure than other similar assets.

[53] Powerco "Customised price-quality path (CPP) Main Proposal" (12 June 2017), page 79.

132. Powerco stated that:[54]

> Expanding our renewals Capex work programme in this way will enable us to maintain network performance and mitigate public and worker safety risk in line with what customers expect from a prudent operator. By addressing issues in a timely manner, we will also avoid the higher future costs of reactive replacement.

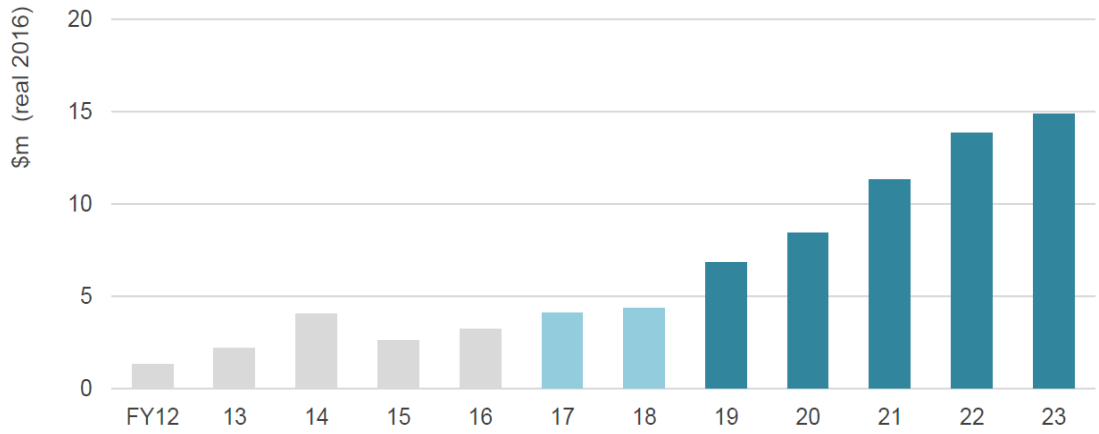
133. Powerco provides a detailed outline of its proposed renewals capex in Chapter 11 of its CPP Main Proposal, which we summarise below.

Overhead conductors

134. Powerco's overhead conductor portfolio is comprised of subtransmission, distribution and low voltage conductors (the latter including overhead service connections and fuse assemblies).

135. Powerco proposes to spend a total of $55 million on the renewal of overhead conductors during the CPP period, a 202% increase on historic levels of expenditure (which amounted to a total of $18 million in the five years prior to the CPP period). Figure B2 below shows Powerco's proposed renewals capex on overhead conductors over the CPP period, compared to historic expenditure.

Figure B2 Powerco's proposed renewal capex – overhead conductors



Source: Powerco "Customised Price Quality Path (CPP) Main Proposal" (12 June 2017), Figure 11.5, page 99.

136. Powerco notes that the main drivers for its proposed increase in overhead conductor renewals capex are to address known type issues with its conductor fleet, and to address concerns around asset health.

137. The most significant increase proposed by Powerco is in relation to the renewal of distribution conductors. Powerco is experiencing an increasing trend in distribution conductor fault rates, with the underlying trend doubling over the 10 years to 2016.

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[54] Powerco "Customised price-quality path (CPP) Main Proposal" (12 June 2017), page 79.

Powerco has been increasing the level of replacement of distribution conductors over the past five years, although Powerco's analysis indicates that without further increases in replacement levels, failure rates will continue to increase, resulting in increased safety risks and reduced reliability.

138. Under Powerco's proposal, capex on the replacement of distribution conductors would increase from $14 million in the five years prior to the CPP period, to $39 million during the CPP period. This proposed increase in conductor renewals involves installing heavier conductor types, which are more resilient than small diameter conductors. The installation of heavier conductors has a direct bearing on overhead structures (resulting in an additional $29 million of overhead structures renewals).

139. Powerco claims that its proposed increase in distribution conductor renewals capex will enable it to reduce conductor failure rates to acceptable levels.

140. There is also a significant increase in the replacement of low voltage conductors proposed by Powerco, from $2 million in the five years prior to the CPP period, to $13 million over the CPP. According to Powerco, although the health of its low voltage conductor fleet is generally good, 8% of the fleet is likely to require replacement within the next 10 years, and the proposed increase in expenditure will allow a more proactive approach to this replacement. Powerco also intends to replace low voltage service fuse assemblies on a proactive planned basis in order to reduce the number of device failures and to avoid customer disruption during periods of high demand.

141. In terms of its subtransmission conductor fleet, Powerco is proposing to increase renewals capex from $2 million in the five years prior to the CPP period, to $3 million over the CPP period. According to Powerco, this increased expenditure is primarily directed towards its copper conductors.[55] Although copper only represents 5% of Powerco's subtransmission conductors, most of the copper conductors will require replacement within the next 10 years. Powerco has also identified a type issue with a small number of its aluminium subtransmission conductors, where the protective coating has been compromised, resulting in corrosion damage to the steel cross-section of the conductor.

Overhead structures

142. Powerco's overhead structures portfolio is comprised of approximately 265,000 poles, and the cross-arm assemblies that support the conductor insulators. Overhead structures represent a significant expenditure portfolio, both in absolute terms as well as in terms of Powerco's proposed increase.

143. Powerco proposes to spend a total of $178 million on the renewal of poles and cross-arms over the CPP period, which is a 60% increase on historic levels of expenditure

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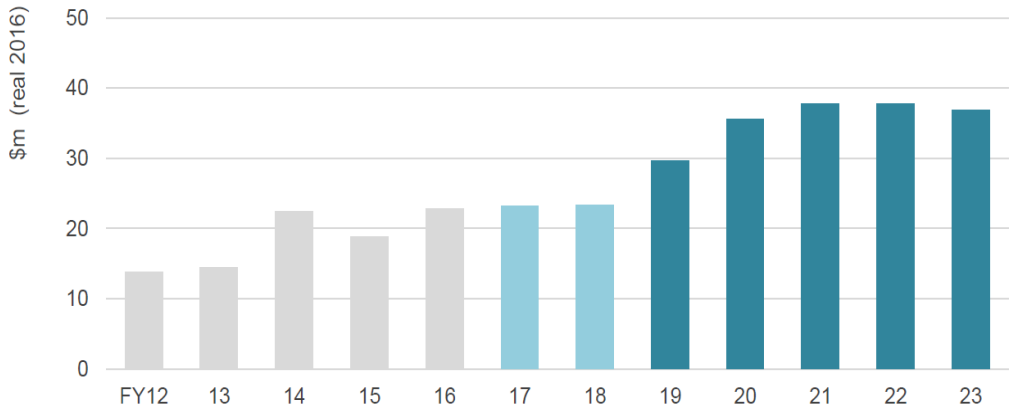
[55] The health of Powerco's aluminium conductor in its subtransmission fleet is generally good, with only 3% requiring replacement in the next 10 years.

(which amounted to a $111 million in the five years prior to the CPP period). Figure B3 below shows Powerco's proposed renewals capex on overhead structures over the CPP period, compared to historic expenditure.

Figure B3 Powerco's proposed renewal capex – overhead structures



Source: Powerco "Customised Price Quality Path (CPP) Main Proposal" (12 June 2017), Figure 11.7, page 91.

144. Powerco states that managing the health of its fleet of overhead structures is a key driver for its proposed renewals capex. Powerco has built up a large backlog of 'amber' pole defects, which represents a level of defect severity such that the pole should be replaced within 12 months. Defect poles can represent a serious safety risk to the public as well as Powerco's field workforce. According to Powerco, an increase in renewals volumes is required to reduce this backlog back to targeted levels in order to mitigate operational and safety risks.

145. Powerco has identified approximately 12% of its wooden poles as requiring replacement within one year, and nearly half requiring replacement within ten years.[56] There is less concern around Powerco's concrete poles, with around 7% expected to require replacement in the next ten years.

146. Powerco also notes that poles and cross-arms often have to be replaced where there is a need to replace overhead conductors (as the new heavier conductor may require stronger poles).

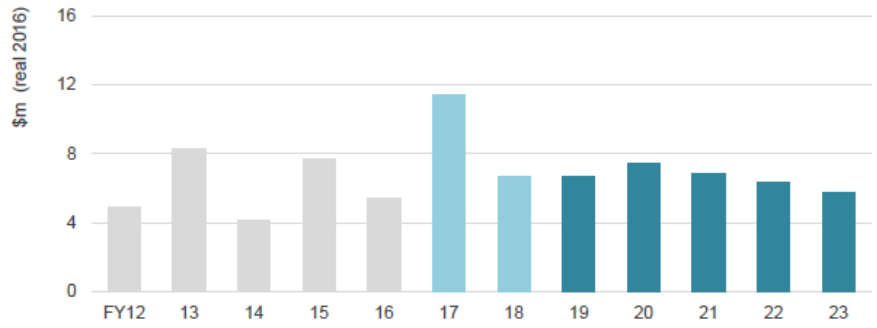
Cables

147. Powerco's proposed capex on cable renewals covers three categories of cables, namely subtransmission, distribution, and low voltage cables (including pillar boxes). At a portfolio level, Powerco's proposed capex on cable renewals over the CPP period ($33 million over the five years) is less than historic levels of expenditure ($35 million over the five years prior to the CPP period). Figure B4 below shows

[56] Wooden poles make up 15% of Powerco's total pole population.

Powerco's proposed capex on cable renewals over the CPP period, compared to historic levels of expenditure.

Figure B4 Powerco's proposed renewal capex – cables

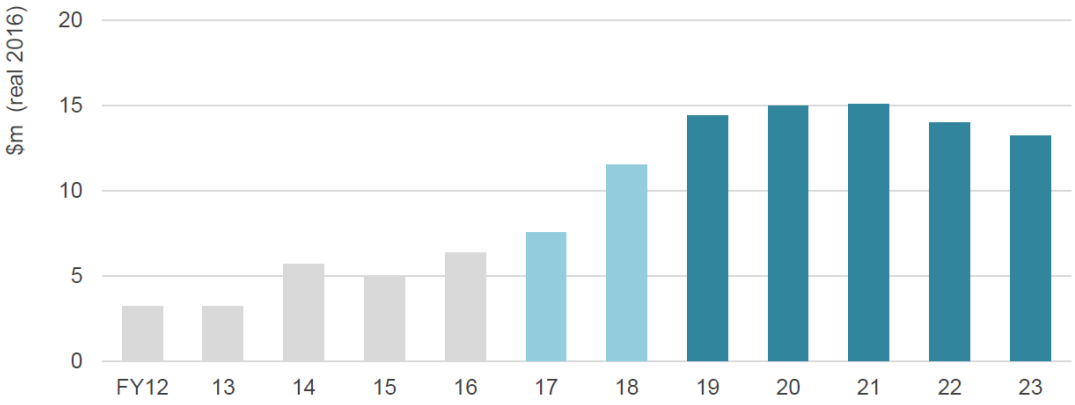


Source: Powerco "Customised Price Quality Path (CPP) Main Proposal" (12 June 2017), Figure 11.18, page103.

Zone substations

148. Powerco's proposed renewals capex on zone substations represents a significant increase in expenditure over historic levels. Figure B5 below shows the profile of Powerco's proposed increase in expenditure.

Figure B5 Powerco's proposed renewal capex – zone substations



Source: Powerco "Customised Price Quality Path (CPP) Main Proposal" (12 June 2017), Figure 11.22, page 111.

149. Zone substations play a critical role in supplying electricity to end users, and are comprised of a few key assets, which are summarised in Table B1 below along with Powerco's proposed renewals capex over the CPP period, and historical levels of expenditure. In aggregate, Powerco proposes to approximately double its renewals capex on zone substations during the CPP period.

Table B1 Powerco's proposed renewals capex – zone substations (five-year totals, real 2016)

Fleet	Proposed	Historic	Change
Power transformers	$24m	$9m	177%
Indoor switchgear	$33m	$15m	121%
Outdoor switchgear	$6m	$5m	16%
Buildings	$2m	$0.4m	345%
Load control injection	$4m	$6m	-38%
Other zone substation assets	$3m	$1m	334%
TOTAL	**$72m**	**$36m**	**99%**

150. The majority of Powerco's proposed increase in this category relates to capex on power transformers and indoor switchgear. Powerco has identified 14 power transformers in need of replacement, based on asset health and criticality.[57] The proposed increase in renewals capex on indoor switchgear is driven primarily by safety risk, with approximately one-third of its 11kV switchboards posing a higher than acceptable risk.[58]

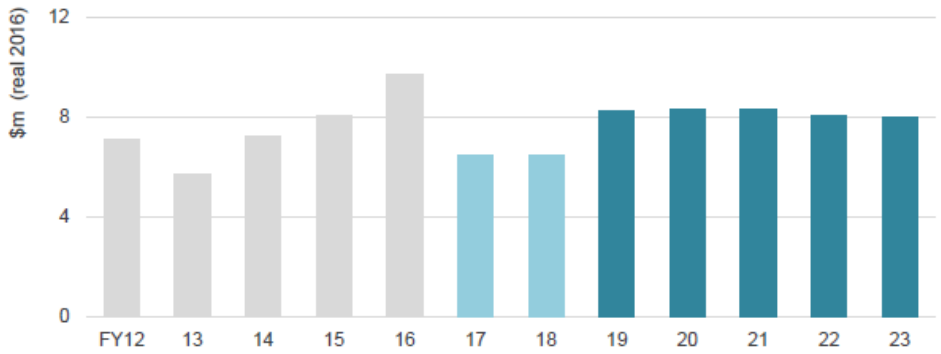
Distribution transformers

151. Powerco's portfolio of distribution transformers is comprised of pole-mounted and ground-mounted transformers, as well as other transformers such as voltage regulators and capacitors.

152. As shown in Figure B6 below, Powerco's proposed capex on distribution transformer renewals over the CPP period ($41 million over the five years) is in line with historic levels of expenditure ($38 million over the five years prior to the CPP period).

[57] Powerco "Customised price-quality path (CPP) Main Proposal" (12 June 2017), page 105.
[58] Powerco "Customised price-quality path (CPP) Main Proposal" (12 June 2017), page 106.

Figure B6 Powerco's proposed renewal capex – distribution transformers



Source: Powerco "Customised Price Quality Path (CPP) Main Proposal" (12 June 2017), Figure 11.25, page 116.

153. Powerco's proposed expenditure during the CPP period is intended to bring pole-mounted transformers up to current seismic standards, by either converting large pole-mounted units to ground-mounted equivalents or by strengthening the associated poles to meet the seismic codes.[59]

154. In addition, Powerco is proposing to continue a programme of installing LV fuses on older pole-mounted distribution transformers, which will protect against downstream faults and allow any conductor faults to be cleared more quickly. This programme will be completed by the end of the CPP period.[60]

155. Powerco is also proposing to maintain the current asset health profile of its ground-mounted transformers, and to standardise access and security for these assets.

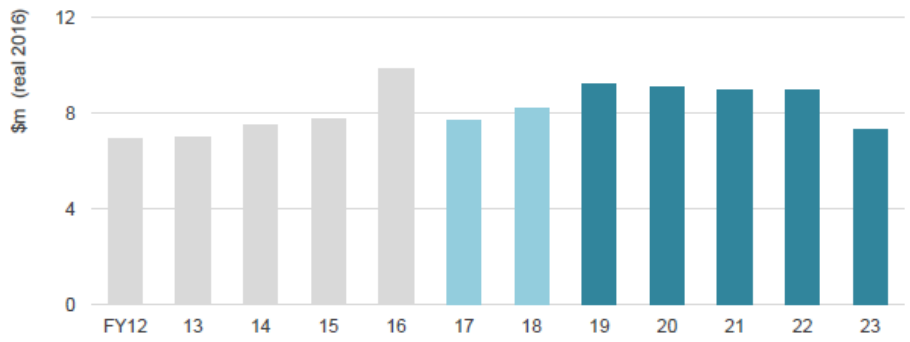
Distribution switchgear

156. Powerco's distribution switchgear covers ground-mounted switchgear, pole-mounted fuses and switches, and assets used in automation schemes (circuit breakers, reclosers, and sectionalisers).

157. Powerco's proposed capex on distribution switchgear over the CPP period ($44 million over the five years) is in line with historic levels of expenditure ($41 million over the five years prior to the CPP period).

[59] Powerco "Customised price-quality path (CPP) Main Proposal" (12 June 2017), page 113.
[60] Powerco "Customised price-quality path (CPP) Main Proposal" (12 June 2017), page 113.

Figure B7 Powerco's proposed renewal capex – distribution switchgear



Source: Powerco "Customised Price Quality Path (CPP) Main Proposal" (12 June 2017), Figure 11.30, page 121.

158. Powerco's proposed expenditure is intended to reduce safety risks associated with pole-mounted switches, by replacing air break switches **(ABS)** with vacuum insulated and SF_6 gas insulated isolators. This will also result in decreased maintenance costs and improved reliability.

159. Powerco has also identified a type issue with cast resin switchgear located in fog-prone areas of Taranaki, Thames Valley, and Waikato, resulting in surface condensation which has degraded assets and reduced reliability, Powerco plans to replace the affected switchgear during the CPP period.

160. The asset health of Powerco's distribution circuit breaker fleet is relatively poor, with Powerco expecting that over 50% of the fleet will require replacement over the next 10 years. Powerco has identified a large number of older circuit breakers at its Kinleith site which require replacement. Powerco is proposing to direct new investment in this area to improve asset health and to manage safety and reliability risks.

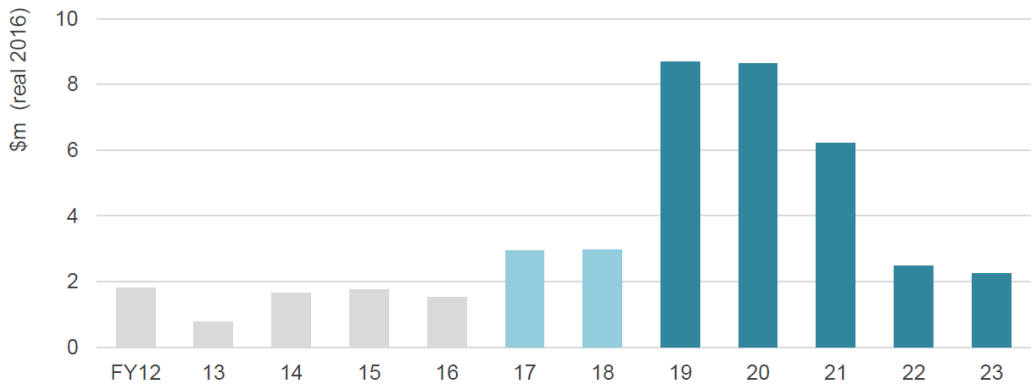
Secondary systems

161. Powerco's secondary systems includes the following asset fleets:

- Powerco's SCADA and communications network (comprised of radio, microwave, and fibre optic assets), which provides visibility and remote control of Powerco's network
- Protection devices, which detect and isolate network faults
- DC supplies, which provide back-up power to zone substations and communications sites
- Metering assets, including Grid Exit Point **(GXP)** and high voltage metering units, and ripple receiver relays which provide load control capability

162. Powerco proposes to significantly increase secondary systems renewals capex during the CPP period, by 160% compared to historical levels of expenditure. Powerco's proposed expenditure on secondary systems is shown in Figure B8 below.

Figure B8 Powerco's proposed renewal capex – secondary systems



Source: Powerco "Customised Price Quality Path (CPP) Main Proposal" (12 June 2017), Figure 11.31, page 125.

163. The most significant increases proposed by Powerco are in the areas of protection and metering.[61] Powerco intends to increase the replacement of older electromechanical and static protection relays with modern numerical protection relays which offer protection and additional functionality. In addition, Powerco needs to replace and re-programme relays at approximately 100 substations to comply with the Electricity Authority's new requirements for extended reserves (from 2019).

164. According to Powerco, Trustpower, who owns ripple receiver relays in Tauranga, is considering withdrawing ongoing maintenance and support of approximately 35,000 relay units, which could jeopardise Powerco's ability to control load in the area. To address this, Powerco is proposing to take ownership of these relays from Trustpower, at a cost of just under $10 million, as well as coordinating the replacement of old relays with new smart meters.

The Verifier's views on renewals capex

165. In reviewing Powerco's proposal, the Verifier focussed on four capex renewals programmes proposed by Powerco. These four capex renewals programmes were selected by the Verifier on the basis of programme selection criteria relating to materiality, expenditure drivers,[62] and other considerations.[63]

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[61] Of the total increase in secondary systems renewals capex proposed by Powerco (over the five years of the CPP period, compared to the five years prior to the CPP period), 96% is attributed to the proposed increase in capex on protection and metering.

[62] These include whether the proposed expenditure addresses a key risk to Powerco's business.

166. For example, regarding materiality, the Verifier selected programmes where Powerco's proposed expenditure represents 5% or more of total expenditure, or where Powerco's proposed expenditure represents a material increase (of 30% or more in real terms and greater than $1 million).[64]

167. The four capex renewals programmes that were selected and reviewed by the Verifier are as follows:[65]

167.1 Overhead conductor renewals programme.

167.2 Overhead structure renewals programme.

167.3 Zone substation renewals programme.

167.4 Secondary systems renewals programme.

Overhead conductors

168. The Verifier considered that Powerco's proposed expenditure on subtransmission and low voltage conductor renewals does not appear unreasonable.[66]

169. However, the Verifier concluded that Powerco's proposed expenditure on the renewal of distribution conductor was overstated and had not been clearly justified. The Verifier identified a number of issues with Powerco's modelling of distribution conductor replacement, including the following:[67]

169.1 Powerco has not adequately modelled the risk of conductor failure including probability of failure, likelihood of damage and injury

169.2 A number of assumptions in Powerco's replacement model did not appear to be supported, such as the target fault rate

169.3 The data set used to calculate the conductor ageing curve appears to include conductor failures due to type issues, and a single conductor ageing curve has been applied to all conductor types in the distribution conductor fleet

169.4 Total network reliability has not been considered in setting the target fault rate for distribution conductors

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63 These other considerations include alignment with Powerco's rationale for the CPP, and links with a proposed quality standard variation.

64 Farrier Swier Consulting "Powerco's Customised Price Path Application" (7 June 2017), pages 128-129.

65 Farrier Swier Consulting "Powerco's Customised Price Path Application" (7 June 2017), page 130 (Table 15).

66 Farrier Swier Consulting "Powerco's Customised Price Path Application" (7 June 2017), page 146.

67 Farrier Swier Consulting "Powerco's Customised Price Path Application" (7 June 2017), pages 146-147.

170. The Verifier requested Powerco to model the impact of holding the distribution conductor forecast fault rate steady at current levels rather than aiming for an improvement. Powerco indicated that if the distribution conductor fault rate was to be maintained at current levels, the renewals capex required for the distribution conductor fleet would be reduced by $29 million over the CPP period.[68]

171. The Verifier concluded that only $10 million of the proposed $39 million of distribution conductor renewals capex could be properly verified.

Overhead structures

172. The Verifier's view was that Powerco's proposed programme for the renewal of overhead structures is overstated and as such, not all of the proposed expenditure could be verified. The portion of unverified expenditure was up to $38 million over the CPP period.

173. Of this, $29 million was attributed to Powerco's conductor programme, which the Verifier found was not likely to be prudent (see section above). The remaining $9 million of unverified expenditure was due to Powerco's modelling, which the Verifier viewed as being conservative and likely to result in early replacement. For example, the Verifier noted that Powerco's "survivor modelling assumes that all poles identified as green defects are replaced in three years. This does not appear to be appropriate as information was provided stating replacement is often deferred when re-inspected during the project design phase."[69] The Verifier also noted that "the inclusion of green defects in the survivor curve modelling is likely to lead to a conservative model and overstatement of replacement requirement."[70]

Zone substations

174. The Verifier scrutinised Powerco's proposal for zone substation renewals, and concluded that most of Powerco's proposed expenditure does not appear unreasonable.[71] In particular, the Verifier found that Powerco's forecast replacement of indoor switchgear was based on a prudent assessment of asset health and safety risks.

175. However, the Verifier was not satisfied that Powerco had justified the proposed renewal of five of its power transformer assets.[72] The Verifier noted that two of the transformers which Powerco proposed to replace within the CPP period have good asset health indices, and that Powerco had unnecessarily brought forward the replacement of another transformer. The Verifier also found that the replacement of two other transformers could be deferred.

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[68] There would be a further reduction of $29 million over the CPP period for renewals capex on overhead structures.

[69] Farrier Swier Consulting "Powerco's Customised Price Path Application" (7 June 2017), page 137.

[70] Farrier Swier Consulting "Powerco's Customised Price Path Application" (7 June 2017), page 137.

[71] Farrier Swier Consulting "Powerco's Customised Price Path Application" (7 June 2017), page 153.

[72] Farrier Swier Consulting "Powerco's Customised Price Path Application" (7 June 2017), page 154.

176. As a result, the Verifier concluded that $5 million of Powerco's proposed renewals capex on zone substations could not be verified.

Secondary systems

177. The Verifier concluded that the majority of Powerco's proposed secondary systems renewal capex does not appear to be unreasonable.

178. The Verifier noted that the proposed expenditure associated with the extended reserves scheme was to comply with an external driver (specifically, the Electricity Authority's new requirements for extended reserves), and that the other forecast expenditure appeared to be reasonable to meet the expenditure objective.

179. The Verifier did question the inclusion of a 10% contingency allowance (amounting to $926,000).

Our draft decision for renewals capex

180. Our draft decision is to accept $426 million of the $450 million Powerco has contained in its CPP proposal for renewals capex.

181. In undertaking our assessment of Powerco's proposed renewals capex, we have had regard to the Verifier's assessment of Powerco's proposed expenditure and whether it is likely to meet the expenditure objective. In addition to the Verifier's report, we have requested and received further information from Powerco.

    181.1 In some cases, this has led us to accept some of the renewals capex proposed by Powerco but that the Verifier could not confirm as meeting the expenditure objective (such as in relation to overhead conductor renewals and overhead structure renewals).

    181.2 In other cases, the level of renewals capex that we have accepted is less than the level that was accepted by the Verifier (such as in relation to secondary systems capex).

    181.3 In the case of zone substations, our draft decision is to accept a level of renewals capex that is in line with the Verifier's recommendation.

182. Although the Verifier did not review the remaining renewals programmes for cables, distribution transformers, or distribution switchgear, we have undertaken a high level assessment of these renewals programmes, taking into account Powerco's proposed expenditure compared to historical levels as well as asset health indicators.

183. We have also taken into account the views expressed by interested persons in submissions on our Issues Paper. In our Issues Paper, we provided an overview of Powerco's proposal, and noted that Powerco's proposal included a significant capex programme that is largely aimed at replacing and upgrading ageing assets.

184. In Table B2 below, we summarise our draft decisions on renewals capex for the CPP period.

Table B2 Renewals capex during CPP period (five-year totals, real 2016)

Renewals programmes	Proposed	Verified	Draft decision	Draft decision as % of Proposed
Overhead conductors	$55m	$26m	$55m	100%
Overhead structures	$178m	$140m	$168m	95%
Cables	$33m	n/a	$33m	100%
Zone substations	$72m	$67m	$67m	93%
Distribution transformers	$41m	n/a	$41m	100%
Distribution switchgear	$44m	n/a	$44m	100%
Secondary systems	$28m	$27m	$18m	63%
TOTAL	**$450m**	**$260m**	**$426m**	**94%**

185. In the remainder of this section, we explain our draft decision for each of the renewals capex programmes.

Overhead conductors

186. Our draft decision is to accept Powerco's proposed $55 million capex on the replacement of overhead conductors during the CPP period.

187. We agree with the Verifier's findings on Powerco's proposed renewals capex in relation to subtransmission and low voltage overhead conductor. Powerco's proposed expenditure on subtransmission overhead conductor is directed at addressing 'type issues' with its aluminium conductor and the health of its copper-based conductor, while its proposed expenditure on its low voltage overhead conductor is to allow a more proactive approach to replacing low voltage conductor and fuse devices.

188. In its assessment of the distribution conductor expenditure, the Verifier was not convinced that Powerco's modelled target fault rate was reasonable, and set the verified amount in this category based on the presently observed fault rate across the distribution conductor fleet.

189. We sought more information from Powerco about the observed fault rates of the 'type issue' conductor. The Powerco data demonstrated that considerably higher conductor drop incidents were occurring with 'type issue' conductors.

190. We are satisfied that Powerco's modelling approach, which uses the expected fault rate of 'non-type issue' conductor as a target to aim for over time, is a reasonable modelling approach to identify which 'type issue' conductor section to replace first.

191. We have also tested the likely reliability benefit of replacing the 'type issue' conductor with the modern equivalent conductor, and when considerations of safety mitigation as it relates to ALARP[73] principles are taken into account, we consider that Powerco has:

191.1 been prudent in identifying the 'type issue' conductor in their fleet; and

191.2 systematically demonstrated which 'type issue' conductor sections to replace first, based on age related deterioration modelling and proximity to more corrosive coastal environments.

192. For the purposes of our draft decision, and on the basis of the additional information provided to the Commission, we are satisfied that Powerco's proposed $55 million capex on overhead conductor renewals meets the expenditure objective.

Overhead structures

193. Our draft decision is to accept $168 million of Powerco's proposed $178 million capex on the replacement of overhead structures during the CPP period.

194. We generally agree with the Verifier's conclusions in relation to the majority of Powerco's proposed overhead structures renewals capex. However, as discussed above, we consider that Powerco's proposed expenditure on its overhead conductor programme meets the expenditure objective. As a result, we have included the portion of unverified expenditure attributable to the conductor programme as it affects the overhead structures program.

195. However we are unconvinced by Powerco's modelling of green defects and how these may be affected by decisions to extend the serviceable life of green defect assets.[74] While Powerco has indicated that more accurate field assessments may change the requirement to fully replace an asset, we have seen no evidence in the forecast modelling to reflect this.

196. For the purposes of our draft decision, we are satisfied that $168 million of Powerco's proposed $178 million capex on overhead structure renewals meets the expenditure objective.

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[73] The Verifier concluded that while Powerco had stated that replacement of the 'type issue' conductor was a safety issue, it had not attempted to quantify the risk to the public nor undertaken an assessment based on ALARP principles. ALARP is 'As Low As Reasonably Practicable' and relates to a framework where identified safety risk is weighed against the means to control that risk. The residual risk of any mitigation should be ALARP and further investment should be judged against the disproportionality of that risk exposure.

[74] The Verifier defines a green defect as a condition assessment of an asset that requires replacement within three years: Farrier Swier Consulting "Powerco's Customised Price Path Application" (7 June 2017), page 62.

Cables

197. Our draft decision is to accept Powerco's proposed $33 million capex on cable renewals during the CPP period.

198. We note the following with respect to Powerco's cable renewals programmes:

198.1 Four oil-filled subtransmission cable circuits in the Palmerston North CBD are in poor condition with a history of oil leaks. Powerco is currently planning to replace these cables prior to the CPP period

198.2 Although the health of the overall distribution cable fleet is good, type issues have been identified in some batches of Powerco's 11kV distribution cables, with some cable sheaths becoming brittle and allowing water ingress[75]

198.3 Powerco expects renewals of low voltage cables to continue in line with historic trends, with a slight increase during the CPP period to account for ageing of the low voltage cable fleet

198.4 A key driver for replacement of low voltage boxes is managing safety risk. This is critical as low voltage boxes are easily accessible by the public. Powerco is proposing to increase the rate of renewal of low voltage boxes that have been identified as having safety-related risks

199. In our view, Powerco has adequately justified its proposed expenditure on cable renewals. This is because the main increase in Powerco's proposed expenditure relates to the replacement of low voltage boxes in order to manage safety-related risks.

200. We also note that Powerco's proposed overall expenditure on cable renewals ($33 million over the CPP period) represents a reduction compared to historic levels of expenditure ($35 million in the five years prior to the CPP).

201. For the purposes of our draft decision, we are satisfied that Powerco's proposed capex on cable renewals meets the expenditure objective.

Zone substations

202. Our draft decision is to accept $67 million of Powerco's proposed $72 million capex on the replacement of zone substations during the CPP period.

[75] Powerco considers that over 80% of its distribution cable fleet is unlikely to require replacement in the next 20 years.

203. Having reviewed Powerco's proposal, we agree with the Verifier's findings that the majority of Powerco's proposed expenditure on zone substations is justified. In our view:

203.1 Powerco's forecast replacement of indoor switchgear is based on prudent assumptions for safety and hazard control;

203.2 Powerco's forecasts for replacement of load control injection plant and other zone substation assets appear to be reasonable;

203.3 Powerco's proposed replacement of buildings has been assessed against new standards for buildings and foundations; and

203.4 the Verifier has justifiably concluded that the replacement of five transformers should be deferred.

204. For the purposes of our draft decision, we are satisfied that $67 million of Powerco's proposed $72 million capex on zone substation renewals meets the expenditure objective.

Distribution transformers

205. Our draft decision is to accept Powerco's proposed $41 million capex on the replacement of distribution transformers during the CPP period.

206. In our view, Powerco has justified the additional capex required to bring pole-mounted transformers up to current standards, and to address asset health concerns around ground-mounted transformers.

207. Powerco's proposed renewals capex in this category ($41 million over the CPP period) is also consistent with historical levels of expenditure ($38 million in the five years prior to the CPP).

208. For the purposes of our draft decision, we are satisfied that Powerco's proposed capex on distribution transformer renewals meets the expenditure objective.

Distribution switchgear

209. Our draft decision is to accept Powerco's proposed $44 million capex on the replacement of distribution switchgear during the CPP period.

210. In our view, Powerco has justified the additional capex on distribution switchgear for safety and maintenance grounds, and to address type issues with cast resin switchgear.

211. Powerco's proposed renewals capex in this category ($44 million over the CPP period) is also consistent with historical levels of expenditure ($41 million in the five years prior to the CPP).

212. For the purposes of our draft decision, we are satisfied that Powerco's proposed capex on distribution switchgear renewals meets the expenditure objective.

Secondary systems

213. Our draft decision is to accept $18 million of Powerco's proposed $28 million capex on the replacement of secondary systems during the CPP period. Our draft decision would represent an increase of $7 million (64%) compared to the five years leading up to the CPP period. We note that accepting Powerco's entire proposed capex on secondary systems would result in an increase of $17 million (160%) compared to the prior five years.

214. We are not persuaded that Powerco's proposal to allow $10 million for the purchase of ripple receivers in the Tauranga region meets the expenditure objective.[76] This is because we do not consider all alternative options for achieving the desired outcomes have been sufficiently explored by Powerco.

215. In its submission on our Issues Paper, Contact also questioned Powerco's assumption that continuing to invest in and maintain ripple equipment is the most efficient solution for Powerco's network. Contact submitted that "this assumption may be outdated and is a question the Commission should look into."[77]

216. Contact also raised concerns about the competitive implications of Powerco's proposed investment in 'behind the meter' load control assets. "… we believe Powerco's investment in 'behind the meter load control assets' is in direct competition to potential third party service providers, and will effectively maintain exclusivity of a potential network services market in the area."[78]

217. We accept and agree that improved ripple control capability would enable Powerco to better control demand across its network in Tauranga, but consider other options should be considered. In particular options that may not require the purchase and renewal of these assets in a way that affects the value of the regulated business. For example, most modern advanced meters have a relay included the meter. The advanced meters are owned by metering equipment providers and rented to retailers who then include this cost in the retail rates provided to customers. Metering equipment providers compete for contracts with retailers.

218. While one option is for Powerco to take over ownership of the present equipment, we have not been presented with evidence that this is the only option or the best option for the future. Specifically, after the purchase of the existing stock, Powerco then proposes to set up a communications network which it will own and then renew all of the purchased relays in the Tauranga area. The presented documents are not clear on how this investment would integrate with the existing investment Powerco has in existing ripple control injection communication equipment in the Tauranga area. We are aware of other technologies and providers that are able to provide some or all of this service and thus consider that Powerco has not

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[76] This is referred to as the Tauranga Information Initiative in Powerco's main CPP proposal.

[77] Contact Energy "Submission on Powerco CPP Issues paper" (22 September 2017), page 8.

[78] Contact Energy "Submission on Powerco CPP Issues paper" (22 September 2017), page 8.

demonstrated that the approach presented in the CPP application would be the most cost effective for the long-term benefit of customers.

219. We would encourage Powerco to explore and demonstrate to us that all available options for load control have been considered in its Tauranga network. This is required to meet the requirements of the expenditure objective.

220. We have therefore excluded $10 million of Powerco's proposed secondary systems renewals capex. This relates to Powerco's proposal regarding the proposed acquisition of ripple receiver relays in Tauranga.

221. For the purposes of our draft decision, we are satisfied that $18 million of Powerco's proposed $28 million capex on secondary systems renewals meets the expenditure objective.

Attachment C Proposed allowance for growth and security capex

Purpose of this attachment

222. This attachment outlines our draft decisions on the growth and security capex that Powerco will be able to recover from its customers in the CPP period.

Summary of our draft decision for growth and security capex

223. We propose to accept $281 million of the $286 million growth and security capex proposed by Powerco as satisfying the expenditure objective.

224. We propose to reject $5 million of growth and security reliability capex as we are not satisfied this expenditure meets the expenditure objective.

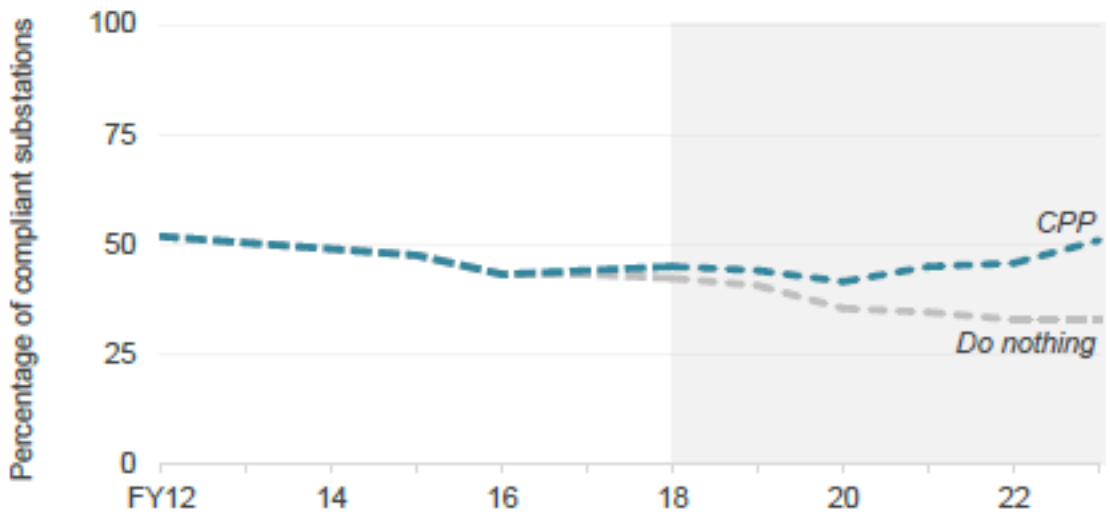
Powerco's proposed growth and security capex

225. Powerco has requested a total of $286 million to improve security of supply, support growth in electricity demand and improve reliability across its network in the CPP period. This represents approximately 35% of Powerco's proposed total network capex over the CPP period, and is a significant proportion of its entire CPP proposal.

226. The primary drivers identified by Powerco for requesting this expenditure are to reduce load at risk by addressing security standard shortcomings across some of Powerco's critical assets and to meet new growth, especially in its Eastern region.

227. By way of example, Figure C1 below illustrates Powerco's view that the percentage of compliant substations against its own standard across its network will continue to significantly reduce without increased investment during the CPP period.

Figure C1 Forecast performance against Powerco security standard



Source: Customised Price Quality Path (CPP) Main Proposal, Powerco, 12 June 2017; Figure 12.4, page 131

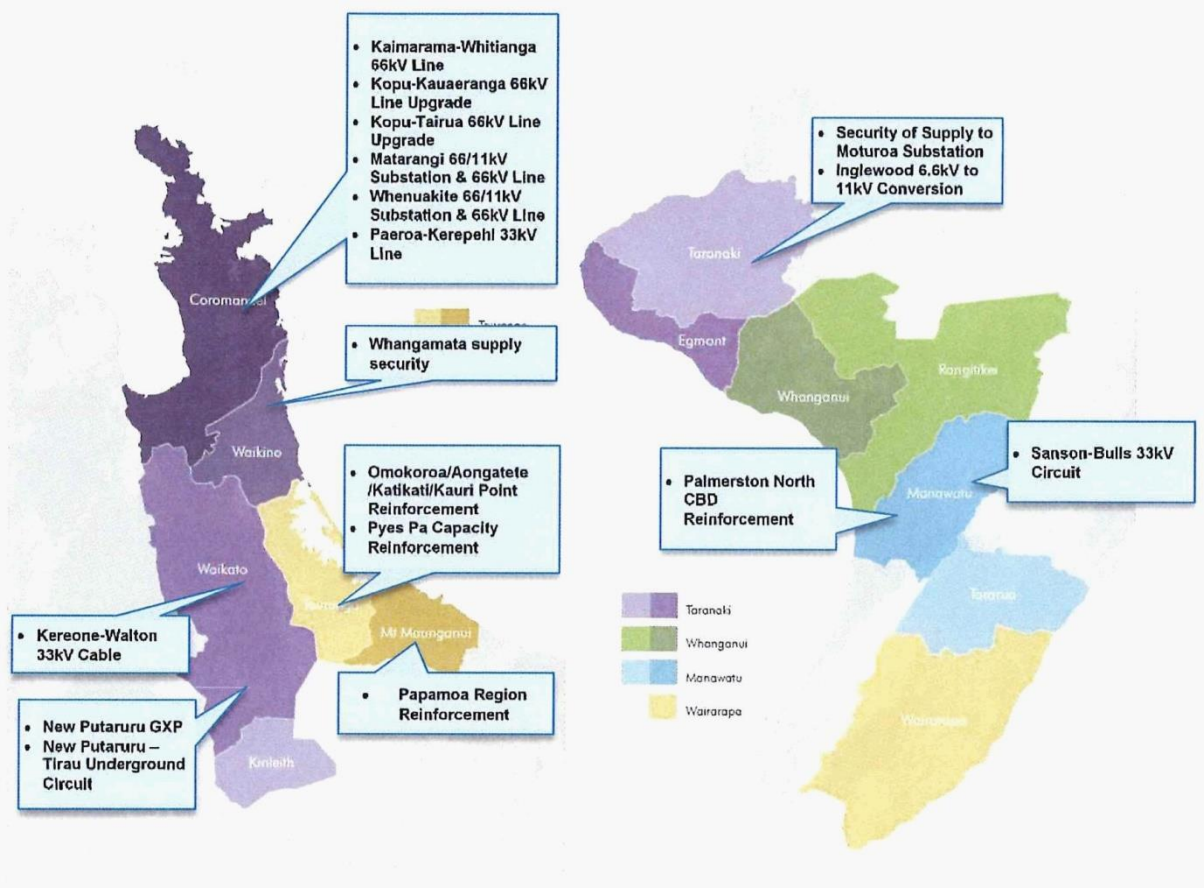
228. Powerco's CPP application defines three key areas of growth and security capex. These are major projects, minor growth and security works and reliability.[79]

Powerco's proposed major growth and security projects

229. Major projects are those growth and security projects with a total required investment above $5m.

230. Powerco has proposed that seventeen major growth and security projects are required in the CPP period. Twelve of these major projects are in Powerco's Eastern region, with the remaining five major projects located within Powerco's Western region. Powerco's proposed major projects are illustrated in Figure C2 below:

Figure C2 Powerco's proposed major growth and security projects



Source: Powerco

231. Powerco proposes to increase its investment on major projects over the CPP period by 182% when compared to historical expenditure.

[79] A detailed description of Powerco's proposed major, minor and reliability growth and security projects can be found in pages 127-145 of Powerco's Main CPP Proposal. Further information can also be found in Chapters 11 & 12 of Powerco's Electricity Asset Management Plan 2017.

Powerco's proposed minor growth and security projects

232. Minor growth and security works include minor projects with total required investment between $1m – $5m, and routine projects where investment required is below $1m. This category of capex also includes supporting investments in field communications systems.

233. Powerco proposes to increase its investment on minor growth and security projects by 8% when compared to historical expenditure. Therefore, over the CPP period forecast expenditure for minor projects is mainly consistent with historical expenditure levels.

Powerco's proposed reliability growth and security projects

234. Reliability projects include investments in network automation and Powerco proposes to increase levels of expenditure to improve reliability performance. This generally includes work to improve the resilience of Powerco's network in an efficient and cost effective way.

235. The reliability capex proposed by Powerco represents an increase of 29% against historical costs.

236. This expenditure will mainly be focussed in its Western region as historically, Powerco has focussed its expenditure under this category in its Eastern region. It includes proposed investment for assets such as SCADA controlled reclosers, line fault indicators, fuse-savers and a proposed $2.1 million on Earth Fault Neutralisers in the Eastern region, and an innovative waveform recognition trial; a technology that may improve asset management by identifying incipient asset faults.

237. Powerco notes in its CPP proposal that these projects are important in mitigating the overall impact on customers of asset failures on its network, especially in remote areas.

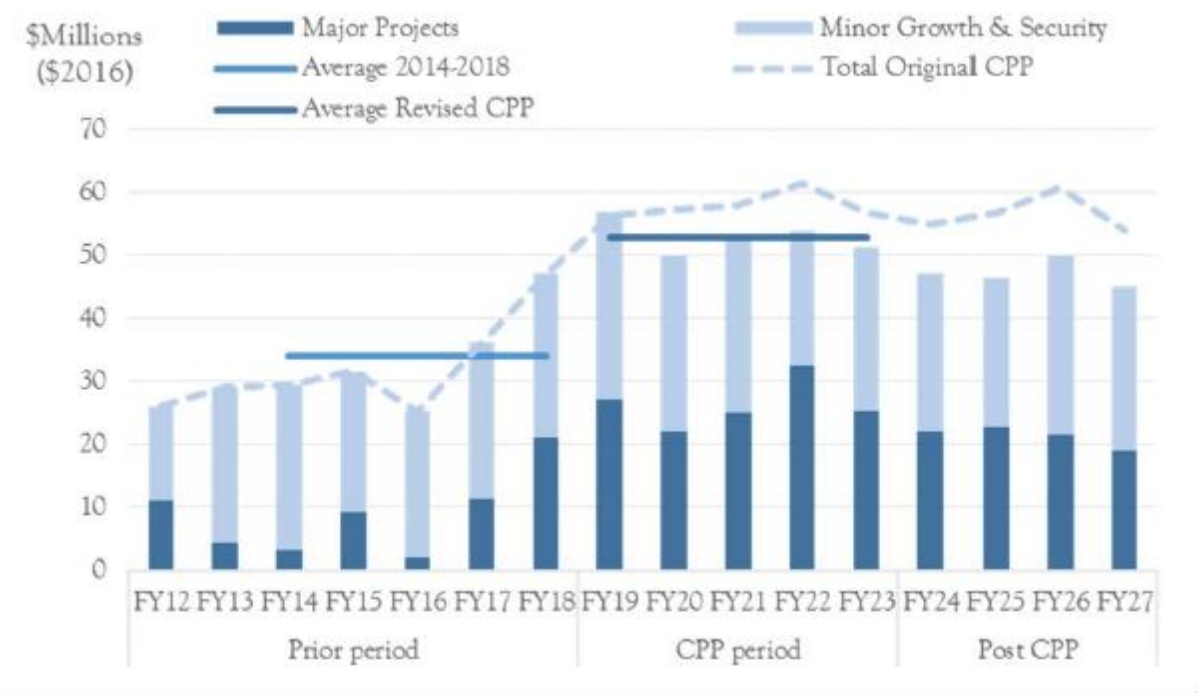
The Verifier’s views on growth and security capex

Major and minor project growth and security capex

238. Powerco initially forecast to spend $290 million on its major projects and minor growth and security works during the CPP period. Following challenge and review by the Verifier, Powerco's final CPP proposal in these categories of expenditure was reduced to $265 million.

239. The impact of this adjustment is illustrated in Figure C3 below.

Figure C3 Growth and security major projects and minor works



Source: Final Verification Report for Powerco, Farrier Swier, 7 June 2017; Figure 19, page 162

240. Following reviewing the verification process, Powerco adjusted downwards its proposed CPP period expenditure for major projects and minor growth and security by $25 million. This reasons for this adjustment are important and worthy of further explanation.

241. The Verifier considered Powerco has comprehensive policy and planning documents that are of the quality required to meet the expenditure objective.

242. However, the Verifier also identified instances where some of these documents and practices could be improved, and this led to a potential degree of uncertainty as to the appropriateness of some of Powerco's major project expenditure forecasts and, to a lesser extent, its minor project proposals.

243. Specifically, the Verifier considered that some of the investments in this category would lead to a full N-1 security standard with no load at risk for the failure of a single asset.[80] This could result in higher costs for consumers when compared to accepting some risk of loss of supply in the event of an asset failure. For this reason the Verifier considered there was uncertainty about the need to undertake these projects within the CPP period.

[80] N-1 refers to Normal Minus one, where no consumer load would be placed at risk for the loss of a single item of network infrastructure.

244. While the approach adopted by Powerco to planning security investment is consistent with current practices in New Zealand, the Verifier noted this is not the case when compared to other international jurisdictions that apply probabilistic standards. This was the primary reason Powerco downwardly adjusted its forecasts in response to challenges from the Verifier on this point. Network capacity investments of the type proposed by Powerco do result in step changes to reliability levels for a period of time, as investments involve step changes in capacity and are not incremental.

245. While the approach adopted by Powerco to planning security investment is consistent with current practices in New Zealand, the Verifier noted this is not the case when compared to other international jurisdictions that apply probabilistic standards. This was the primary reason Powerco downwardly adjusted its forecasts in response to challenges from the Verifier on this point.

246. The downward adjustment of expenditure was mainly achieved by deferring some projects until a probabilistic planning standard has been fully developed and deployed across Powerco's network. We discuss how Powerco intends to improve its asset management frameworks within the CPP period, including a move towards a comprehensive probabilistic approach to asset management, in Attachment L.

247. The Verifier reviewed Powerco's two largest major growth and security projects (in financial terms) proposed in the CPP period. These are the Palmerston North reinforcement project and the Putaruru GXP substransmission project with a combined value of $37 million.

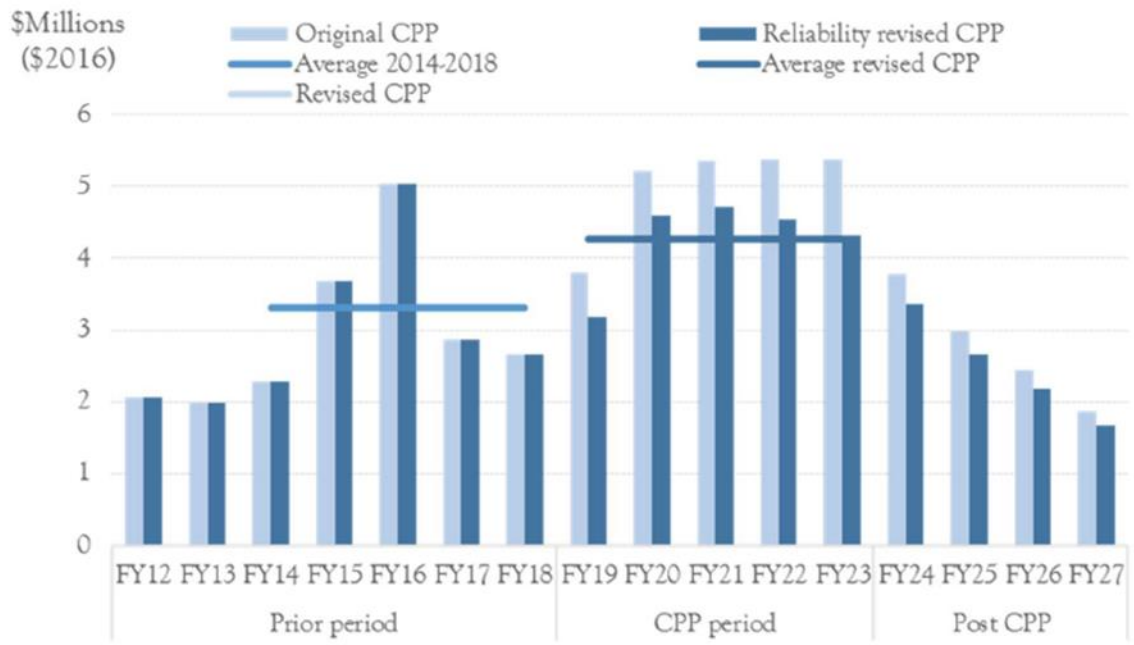
248. Based on its review, the Verifier considered forecast expenditure associated with these projects to be prudent, but recommended we undertake further work to satisfy ourselves around the appropriateness of the remaining $95 million associated with Powerco's other major projects, and a sample of the minor growth and security projects proposed during the CPP period. However, no specific issues were identified by the Verifier in this regard.

Reliability growth and security capex

249. A concern of the Verifier was that Powerco could not demonstrate the forecast decline in reliability. Without this evidence, the Verifier considered it is not possible to confirm what, if any, reliability improvements are required during the CPP period, and the appropriate level of expenditure required to meet the expenditure objective.

250. The Verifier therefore concluded that Powerco's expenditure forecast was overstated, and based upon this proposed that $15 million of the $21 million proposed by Powerco could not be verified.

Figure C4 Reliability historical and forecast expenditures



Source: Final Verification Report for Powerco, Farrier Swier, 7 June 2017; Figure 21, page 167

251. The Verifier also suggested we undertake further analysis on this category of expenditure to satisfy ourselves Powerco's proposals were fit for purpose and met the expenditure objective.

Our draft decision for growth and security capex

252. Based upon the analysis we have undertaken following the findings of the Verifier, we propose to accept $281 million of the $286 million Powerco has proposed in its CPP proposal.

253. Of the $281 million we propose to accept, $132 million relates to major growth and security projects, $133 million is for minor growth and security projects, and $17 million is for reliability related growth and security projects.

254. We consider we should reject $5 million of reliability growth and security capex, as we are not satisfied that all expenditure in this category meets the expenditure objective.

Major and minor growth and security projects

255. Following the work of the Verifier, we have invested significant time in further reviewing Powerco's major growth and security projects to better understand the modelling and approach that underpins Powerco's proposed investments in the CPP period.

256. We considered this important given the proportion of proposed expenditure in this category of capex, and the materiality of the uncertainty raised by the Verifier for

these items of capex. The Verifier considered the level of this uncertainty to be $95 million.

257. As a result of the recommendations made by the Verifier, we have undertaken technical site visits, with Powerco staff, to a number of the proposed major and minor projects in the Tauranga, Coromandel, Taranaki and Manawatu areas that form part of Powerco's network. This has enabled us to witness first-hand the particular condition circumstances of existing assets, the need for these projects and to question at length Powerco staff on the timing of these proposed projects within the CPP period.

258. We have discussed the specific need for each of these projects with Powerco, and we have asked for further evidence that demonstrates to us these projects are required within the CPP period.

259. As a result of those discussions, we requested and analysed the Project Overview Documents (PODs) for each of Powerco's major projects and a limited selection of its minor projects. The PODs are important documents in that they set out the detailed proposals for each project, the problem it is seeking to address, the options that have been considered and the costs of each of these options.

260. Further to analysing the PODs, we then also requested that Powerco provides us with an Options Analysis and Economic Evaluation Tool (OAEET) for each of its proposed major projects. The OAEET calculates the estimated costs for each project that feed into the PODs.

261. The OAEETs include all capex and opex costs, an assessment of the value of reliability (energy not served), unit costs, electrical losses and load distribution curves that feed into the POD and ensure that Powerco's proposal is the least cost option for addressing security standard and growth needs of each proposed project.

262. We have undertaken a detailed review of the PODs and a large number of the OAEETs for Powerco's proposed major projects. We have also considered a sample of Powerco's minor projects that predominantly link to its proposed major projects. We have concluded these are generally fit for purpose in assessing whether the proposed expenditure met the expenditure objective.

263. We consider both the PODs and OAEETs for each of Powerco's projects provide an assessment of the merits of each proposed project, and that the costs and methodologies applied by Powerco are appropriate.

264. The PODs provided by Powerco are available on our website at http://comcom.govt.nz/regulated-industries/electricity/cpp/cpp-proposals-and-decisions/powercocpp/. The OAEETs that we have requested from Powerco can be provided and explained on request.

265. The analysis of Powerco's PODS and OAEETs has led us to the conclusion that the proposed expenditure in this category is appropriate and meets the expenditure objective.

266. We consider this has been significantly enhanced by the work of the Verifier in challenging and reviewing Powerco's previous assumptions and practices. In our opinion, this has led to Powerco producing a better quality proposal in relation to its major and minor projects.

267. We have not identified any significant issues or concerns with Powerco's proposals. In our view, there is clearly a need for this investment to occur to safeguard security of supplies, enable better hazard control and meet growth in demand in Powerco's Eastern region.

Reliability

268. Following the work and recommendations of the Verifier, we have also further reviewed Powerco's reliability proposals.

269. We have specifically focussed on the area identified as a concern by the Verifier, namely the modelling that underpins Powerco's proposed reliability investment in the CPP period.

270. We requested further clarification from the Verifier about how it reached the verified amounts contained in its report. The Verifier confirmed that:

    270.1 the Eastern region appeared to be saturated with respect to installation of auto-reclose devices and further installations could result in issues with the grading of protection;

    270.2 the Western region had a lower number of existing connections and therefore the auto-reclose devices would have a lower benefit and lower impact on overall network reliability; and

    270.3 the network reliability model identified that the other programs of work proposed by Powerco would provide reliability improvement/maintenance. As a result, it could not be certain that a dedicated reliability improvement program would be required or that customers were prepared to pay for improved reliability.

271. Automated switching devices, and other available technologies, will allow Powerco to reconfigure its network remotely and isolate faults, minimise the numbers of cases of fuses blowing and potentially find faults ahead of protection operating. The Verifier could not confirm such expenditure was needed because Powerco had already shown unplanned reliability could be maintained without these additional devices.

272. While Powerco has not made an explicit linkage between the expenditure uplift and reliability outcomes, or provided a cost-benefit analysis for the investments, we consider that maintaining historical levels of expenditure (across the financial year period 2012-2016) in the auto-reclose program is a reasonable approach. This will also help Powerco to maintain and improve current levels of reliability.

273. We acknowledge that, while there may be an improvement in network reliability with these new technology devices, it is difficult for either ourselves or Powerco to predict this with any certainty.

274. As a result of our further analysis, we consider it is unreasonable to reject all of the unverified amount identified by the Verifier.

275. Primarily this type of expenditure promotes the type of technical network operating strategy we would encourage a prudent EDB to undertake. On this basis, we consider that it is appropriate to accept the historical level of expenditure (based on the financial year period 2012-2016) for the auto-reclose automation devices over the CPP period and accept the new technology investments such as earth fault neutralisers, fuse-savers and line fault indicators, which the Verifier agreed was reasonable, and single phase sectionalisers. We consider the growth and security reliability capex illustrated in Table C1 below should be approved for the CPP period. Future improvement reductions relate to the level of efficiencies that can be expected through the roll-out of the other reliability categories. Powerco has included an allowance for future improvements in its modelling, such as asset management improvements, which start to affect the cost of the program from FY22 onwards.

Table C1 Overview of proposed reliability draft decision

Real $2016, thousands	**CPP proposal**	**Verified amount**	**Draft decision**
SCADA Controlled reclosers, sectionalisers or DA Switches **(ACRs)**	15,292	0	10,443
Line Fault Indicators (non SCADAised)	1,427	1,427	1,427
Fuse-Savers (SCADAised)	2,525	2,525	2,525
Single phase sectionalisers	642	0	642
Earth fault neutraliser	1,729	1,729	1,729
HiZ waveform recognition trials	371	371	371
Future improvements reduction	641	141	515
Total	**21,345**	**5,911**	**16,731**

Attachment D Proposed allowance for network evolution capex

Purpose of this attachment

276. This attachment outlines our draft decision on the capex that Powerco proposes to spend on network evolution in the CPP period.

Summary of our draft decision for network evolution capex

277. We propose to reject the $18 million of network evolution capex proposed by Powerco. At this stage, we are not satisfied that these expenditures meet the expenditure objective.

278. As we explain in this chapter, we are generally of the view that investment in network evolution can be in the long-term benefit of consumers. However, we consider Powerco needs to develop and finalise its network evolution strategy, and provide more tangible justification underpinning how consumers are likely to benefit from the specific projects it proposes to undertake.

279. We propose to allow capex for a range of innovative investments that would directly benefit consumers in the growth and security reliability capex program.[81] We also propose to allow for a non-traditional innovative supply solution for Whangamata (a diesel genset and inverter with a battery hybrid solution) in our draft decision. We explain our respective decisions in respect of these initiatives in more detail in Attachment C as they do not form part of Powerco's network evolution proposals.

Powerco's proposal for network evolution capex

280. Powerco's CPP proposal includes $18 million of capex on network evolution projects.[82] The proposed capex represents at least a 370% uplift compared with the respective expenditure in the five years leading up to the CPP period.[83]

281. Powerco explains in its proposal that these projects are intended to support the transition to a more flexible, dynamic network that will respond quickly and efficiently to changing load patterns and can be tailored to customer requirements.

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81 Such as earth fault neutralisers, fuse savers, line fault indicators, single-phase sectionalisers, and the waveform recognition trial.

82 A list of the main network evolution programmes Powerco has identified can be found in Box 13.4 on page 156 of Powerco's main proposal.

83 This is illustrated in figure 22 on page 171 of the Verifier's report. We note that the five years leading up to the CPP period include three years of actual (2014-2016) and two years of forecast expenditure (2017-2018). Actual capex in this period is negligible, ie, the only significant capex on network evolution in the five years leading up to the CPP period is still based on a forecast of future spend.

282. In its submission to our Issues Paper, Powerco summarises the justification for this capex as follows:[84]

> We have adopted a corporate objective to evolve to a distribution system integrator to prepare our network for the customer-led changes we expect will occur in the electricity market, as well to maximise the potential benefit from technology developments.
>
> To achieve this, we have proposed a programme of investments to trial new network technologies. These investments have a distribution network focus, and include programmes that will deliver automatic fault detection and location, real time asset rating, advanced asset condition monitoring, increased visibility of network performance, self-healing networks and integrating energy storage to defer other network investments.
>
> Being ready to effectively manage the implications of the changes occurring in the customer requirements, particularly keeping our network stable in the face of two way power flows, rapidly varying local generation levels and potential significant short-term peak load increases, will avoid significant costs when these arise. This will be from our ability to substitute innovative, enhanced network (and non-network) solutions for large-scale conventional network reinforcements.
>
> Emerging technology also poses many opportunities to enhance the manner in which we build and operate our networks. Higher asset utilisation and longer asset lives lead to reduced investment requirements, and enhanced monitoring could enhance network reliability without increased costs.

283. We note that in its Electricity Asset Management Plan 2017, Powerco explains it has not yet initiated the development and publication of a formal network evolution strategy. In particular, Powerco outlines that:[85]

> While we have been evolving with technology developments to date, this has been somewhat ad hoc – driven by direct needs. One of our core goals for the coming year is to develop and publish a formal network evolution strategy. The strategy will also contain a detailed roadmap of how we intend to transform ourselves to ensure our readiness for the future. Given that our operating environment is anticipated environment is anticipated to continue to change, this will only be the first step – the roadmap will have to continuously evolve.

The Verifier's views on network evolution capex

284. During the engagement process with the Verifier, Powerco downwardly adjusted its network evolution capex proposal by $9 million.[86] However, the Verifier concluded in its final verification report that:

> Powerco's proposed expenditure for network evolution is overstated.[87]

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84 Powerco "Submission on Powerco CPP Issues paper" (22 September 2017), page 14.

85 Powerco "Asset Management Plan 2017" (12 June 2017), page 144.

86 This was largely achieved by moving projects from network evolutions to the system renewals portfolio.

87 Farrier Swier "Final Verification Report for Powerco" (7 June 2017), page 173.

285. The Verifier also identified some inconsistencies in Powerco's reasoning across some of its planned investments. In particular, the Verifier highlighted that:

> Powerco stated elsewhere that 'uptake rates of solar PV, energy storage devices and EVs on the network is extremely low and, at current growth rates, will not have a material impact within the next ten years'. This statement is at odds with the plan to invest considerable capex during the CPP in this area.

286. It is the Verifier's view that capex of $2 million (accumulating to $10 million across the CPP period) would be more appropriate.[88] However, when talking to us, the Verifier explained that such an amount is rather an informed estimate based on what EDBs spend on network evolution in Australia than the result of an evidence based analysis.

Submitter's views on network evolution capex

287. Submissions to our Issues Paper on this subject were clearly divided. EDBs supported customer funding for future network projects such as those Powerco included in its proposal. Retailers and user groups, on the other hand, did not support any explicit funding in that regard.

288. Transpower, for example, concluded that:

> regulatory funding for innovation is an established construct in comparable jurisdictions to New Zealand, and the rationale for separate funding recognises that there are limited incentives for R&D expenditures in regulated environments.[89]

289. Transpower explained that Powerco, being one of the largest EDBs:

> Will generate learnings for all lines companies and their stakeholders

and that:

> Sharing information about suitable approaches should happen as early as possible.[90]

290. Powerco, as outlined in its submission on the Issues Paper, is open to such initiatives suggesting the industry should collaborate extensively and share the experience with peers.[91]

291. Orion also supported Powerco's proposal. It explained that:[92]

> Many EDBs are considering network evolution expenditure in the near future. EDBs already collaborate on many fronts and opportunities for sharing of innovation will continue.

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88 Farrier Swier "Final Verification Report for Powerco" (7 June 2017), page 173.

89 Transpower "Submission on Powerco CPP Issues paper" (22 September 2017), page 1.

90 Transpower "Submission on Powerco CPP Issues paper" (22 September 2017), pages 2-3.

91 Powerco "Submission on Powerco CPP Issues paper" (22 September 2017), para 67.

92 Orion "Submission on Powerco CPP Issues paper" (20 September 2017), para 21.

> Regulators should be open to allowances for network evolution expenditure to support EDB continual improvement, system evolution and efficient delivery of the distribution service.

292. MEUG, on the other hand, did not support the proposal because in the normal course of providing lines services Powerco should be continuously improving and evolving their service (price, quality dimensions and other terms and conditions). MEUG noted:[93]

> [network evolution] expenditure should be part of planned operating and capital programmes. This proposed work programme relates to how Powerco might position themselves longer-term for technology driven changes that will affect both customers and all parts of the supply chain. The output of this work will have strategic value to the owners of Powerco but it's not clear that the pay-back to customers will fully reflect the fact they will underwrite all the costs.
>
> MEUG notes that the regulated WACC for EDB is at the 67th percentile. This bias above the expected mid-point, according to the Commission, adds certainty to incentivise investment including investment for innovation. This begs the question of why a separate building block allocation is needed for network evolution capex.

293. TDB Advisory Ltd, on behalf of ERANZ, focussed its submission on the importance of constraining the allowance we may consider including in our draft decision to activities that fall within regulated services. It explains that:

> It would be prudent to ensure that network-evolution capex that is included in the RAB is confined to areas that do not encroach on services that could be supplied by competitive markets, as otherwise more competitive suppliers may be squeezed out of the market.[94]

294. Fonterra put emphasis on the precedent setting nature of our decision and considered the CPP is an opportunity:

> To be more efficient and for knowledge to be shared across EDBs to avoid duplicated costs falling upon consumers across New Zealand.[95]

295. Contact supported parts of Powerco's proposed network evolution, but also noted it was concerned that:[96]

> Powerco's planned network evolution capex appears to be primarily focused 'internally', on testing and developing new Powerco non-network solutions, rather than engaging externally to leverage services delivered by a competitive market.

296. Contact also noted it has two key areas of concern with Powerco's network evolution capex proposals. These areas include:

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93 MEUG "Submission on Powerco CPP Issues paper" (22 September 2017), paras 2.32-2.33.

94 TDB Advisory on behalf of ERANZ "Submission on Powerco CPP Issues paper" (22 September 2017), paras 6.5-6.6.

95 Fonterra "Submission on Powerco CPP Issues paper" (22 September 2017), para 5.3.

96 Contact "Submission on Powerco CPP Issues paper" (22 September 2017), section 3, page 5.

296.1 absence of investment in control systems which will facilitate usage of third party network support resources; and

296.2 the development of Powerco's non-network solutions, and the perceived direct competition issues with potential energy service providers across Powerco's network.

Our draft decision for network evolution capex

297. We propose to reject the $18 million of capex on network evolution that Powerco has contained in its CPP proposal. At this stage, we are not satisfied that this expenditure meets the expenditure objective.

298. As we explain in this section, we are aware that investment in network evolution can be to the long-term benefit of consumers. However, we consider Powerco needs to provide more tangible justification underpinning how consumers are likely to benefit from the specific projects it is proposing to undertake. In particular, we consider that:

298.1 Powerco has not developed a joined-up network evolution strategy that identifies how and where all of the projects fit together or why they are needed now;

298.2 The benefits to consumers, and when these can be expected, are not sufficiently identified or articulated in Powerco's individual business cases for each of the network evolution projects it proposes; and

298.3 The CPP proposal appears to rely on the assumption that consumers are the only funding source for this programme. However, the programme is likely to offer benefits to stakeholders other than consumers and we would expect to see those other stakeholders also contribute to the cost.

Emerging technologies have the potential to deliver significant benefits to consumers

299. In last year's review of the IMs, we acknowledged the potential for significant change to arise from the combination of falling costs, improving performance and increasing capabilities of some new technologies, new business models (especially in the spaces currently occupied by EDBs, electricity retailers and generators), and evolving consumer preferences. We also noted that

these developments present opportunities and challenges for EDBs, and have the potential to deliver significant benefits to consumers. [97]

300. We continue to be of the view that the provision of a reliable supply of electricity can be achieved in many ways, beyond using traditional lines-based solutions. We

[97] Commerce Commission "Input methodologies review decisions: Topic paper 3 – The future impact of emerging technologies in the energy sector" (20 December 2016), para X4.

encourage EDBs to consider non-traditional solutions as they may promote greater benefits to consumers than the more traditional solutions. We have:

300.1 required EDBs to consider such alternatives through the long-standing requirement for the AMPs to evaluate non-network solutions;

300.2 highlighted previously some of the ways EDBs have already deployed newer approach and technologies to the benefit of their consumers;[98] and

300.3 through the IM review, sought to ensure that our rules and regime more generally do not discourage suppliers (or others) from using new technology and new business models for their and consumers' benefit.[99]

301. In our recent review of the IMs we gave extensive consideration to emerging technologies and the IM requirements which may affect the deployment of new technologies and approaches. Some submitters in that process (retailers in particular) sought to constrain EDBs from fully using (ie, owning and operating) new technologies, in particular by restricting the inclusion of certain assets classes into the regulated asset base **(RAB)**. We did not accept that approach as, among other reasons, we considered there were:[100]

301.1 potential benefits to consumers in the form of economies of scope; and

301.2 transaction and coordination cost efficiencies from EDBs being able to own and operate such assets as part of their operations.

302. In the IM review we also considered whether incentives ought to be introduced to encourage the greater use of emerging technologies. We declined to do so as:[101]

302.1 we considered that the Part 4 regime provides adequate incentives on EDBs to innovate; and

302.2 we are not convinced that further explicit innovation incentive mechanisms, funded by consumers, are likely to be in their interests.

Wider implications of our draft decision

303. In reaching this draft decision we are mindful too that our approach in regards to the network evolution spend may be seen as setting a precedent for other such

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98 Commerce Commission "Input methodologies review decisions: Topic paper 3 – The future impact of emerging technologies in the energy sector" (20 December 2016), para 66.

99 Commerce Commission "Input methodologies review decisions: Topic paper 3 – The future impact of emerging technologies in the energy sector" (20 December 2016), para X7 and Chapters 3-4.

100 Commerce Commission "Input methodologies review decisions: Topic paper 3 – The future impact of emerging technologies in the energy sector" (20 December 2016), paras 188-212.

101 Commerce Commission "Input methodologies review decisions: Topic paper 3 – The future impact of emerging technologies in the energy sector" (20 December 2016), paras 62-66.

expenditure assessments, including through future CPPs and DPPs. As with Powerco's proposal, we encourage network businesses to consider questions of the kind outlined above before committing significant expenditure in this area, or seeking additional line charge revenue to fund fully the cost of these initiatives.

304. Our draft decision on the network evolution programme does not mean Powerco will not progress its deployment of non-traditional solutions. This is because:

304.1 Powerco is an established leader in non-lines solutions for remote communities through its basepower initiative and will likely continue to seek opportunities to deploy such technology where appropriate and possible;

304.2 the expenditure allowance includes full expected costs for the Whangamata initiative, and Powerco has financial incentive to seek further such solutions where they are more efficient than more traditional solutions;

304.3 the expenditure allowance includes the costs for a range of innovative network investments that will directly benefit consumers in the Growth and Security- Reliability capex program;[102]

305. The overall CPP draft decision package provides Powerco with a significant increase in aggregate line charge revenue, and will allow an increased level of expenditure by Powerco on its network. Powerco will prioritise its expenditure opportunities and decide which initiatives and projects it should undertake before others.

306. We encourage Powerco to further develop its network evolution strategy and focus upon the areas we have highlighted above.

[102] Such as earth fault neutralisers, fuse savers, line fault indicators, single-phase sectionalisers, and the waveform recognition trial.

Attachment E Proposed allowance for ICT capex

Purpose of this attachment

307. This attachment outlines our draft decisions on the ICT capex that Powerco will be able to recover from its customers in the CPP period.

Summary of our draft decision for ICT capex

308. We propose to accept the $53 million of ICT capex proposed by Powerco as satisfying the expenditure objective.

Powerco's proposed ICT capex

309. Powerco has requested a total of $53 million to improve its ICT capability over the CPP period.

310. Powerco's ICT capex includes proposals for two main items of expenditure, these being business as usual ICT activities and a new ERP solution.

311. Business as usual activities include for the provision and replacement of computers, electronic notebook devices, servers, printers, mobile devices and networking equipment. It also includes business as usual software and information system. Powerco forecasts this expenditure to be approximately $30 million over the CPP period.

312. The ERP solution is a specific one-off project that seeks to replace Powerco's core IT systems. Powerco considers that its existing systems are due for renewal within the CPP period, and that a bespoke ERP system that is specifically tailored for the needs of EDBs is the best long-term option for customers, and will enable Powerco to support the delivery of its wider investment program. Powerco forecasts ERP expenditure to be approximately $23 million over the CPP period.

313. The primary drivers identified by Powerco for requesting this expenditure are identified as being:[103]

    313.1 Lifecycle renewals: maintaining existing capabilities;

    313.2 Enabling efficient work volume growth: ERP systems providing future flexibility to scale-up to meet changing transaction volumes;

    313.3 Lifting asset management capability: supporting the achievement of ISO 55000 certification through having a platform in place that raises asset management capability, and better integrates financial and non-financial data. This will facilitate better asset management decision making in future;

[103] More details on ICT investment drivers and overall ICT proposals can be found on pages 162-165 of Powerco's Main Proposal document.

313.4 Efficient ICT costs: retaining the current point solution approach, with escalating ongoing maintenance costs, is not considered cost effective in the longer term;

313.5 Information integrity and analysis: an ERP solution will provide better data and information; and

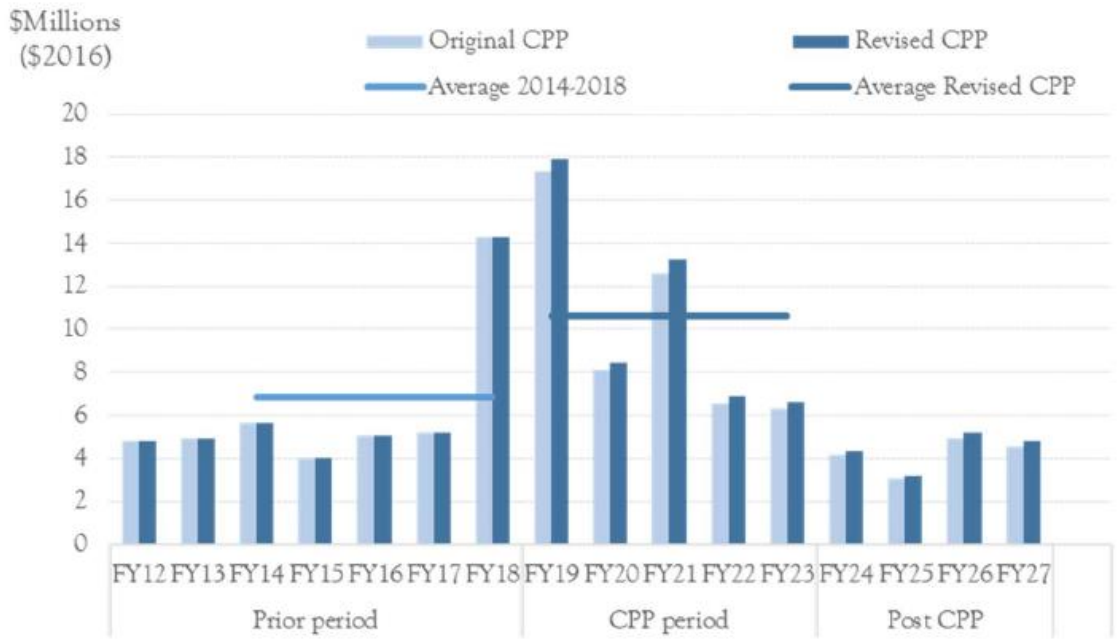
313.6 Delivering new capabilities: including systems to make increasing use of distributed energy resources that are capable of providing better customer service.

The Verifier's views on ICT capex

314. Powerco's ICT capex has historically remained stable at or around $5 million per annum. However, given the initial phases of ERP implementation are due to begin in 2018, expenditure is forecast to increase based on historical levels until the ERP implementation has been completed by the end of 2021.

315. Powerco initially forecast to spend $51 million on its ICT capex during the CPP period, but adjusted this forecast upwards following a change in its allocation between its gas and electricity businesses. This is illustrated in Figure E1 below:

Figure E1 ICT historical and forecast expenditures



Source: Final Verification Report for Powerco, Farrier Swier, 7 June 2017; Figure 23, page 175

316. The Verifier concluded that Powerco's ICT capex proposals are well justified and meet the expenditure objective.

317. This is because Powerco has demonstrated that renewal of equipment is to be undertaken consistent with historical performance and is in line with common industry practice. Furthermore, the Verifier considered the need for replacement of ICT assets is required, and that the ERP planning process has been undertaken in an efficient manner that has been well documented.

318. We note the Verifier's findings that between 83.27% and 86.99% of expenditure in this category will be allocated to Powerco's electricity business. The exact allocation will vary from year to year as the relative share of Powerco's electricity business increases in proportion to others, such as Powerco's gas business. We agree with the Verifier that this is appropriate, and provides assurance that Powerco is not receiving multiple funding for this capex through both its gas DPP and electricity CPP revenue allowances.

319. The Verifier also noted Powerco has prepared a counterfactual that demonstrated a different replacement strategy would result in additional costs of $2.7 million ($ nominal).

320. In the view of the Verifier, Powerco should be able to deliver its proposed ICT program in the CPP period as forecast, and no concerns were raised by the Verifier in this regard.

Our draft decision for ICT capex

321. Based upon the further analysis we have undertaken and further to the findings of the Verifier, our draft decision is to accept Powerco's proposed $53 million for ICT capex in the CPP period.

322. Following the work of the Verifier, we have reviewed the supporting business cases submitted by Powerco in support of its ICT capex proposals. We have not identified any abnormalities in Powerco's proposals that would suggest this investment is not required or is not appropriate in the CPP period.

323. As part of a series of technical site visits to Powerco, we also held further discussions with key Powerco staff concerning their ICT proposals. We felt this was necessary as we wanted to assure ourselves that this investment is needed, that Powerco has sufficiently considered its future ICT needs and that a comprehensive plan exists to achieve the successful implementation of the proposed ICT capex over the CPP period.

324. We also considered it important to satisfy ourselves that Powerco has adequately identified all of its future business needs in respect of its proposed ERP solution. We considered this important given that Powerco is requesting an additional $23 million for the implementation of this solution.

325. We initially had concerns that not all of Powerco's business needs had been identified for inclusion within the ERP solution but, as a result of the further questions we asked Powerco, we were satisfied these had been considered and that Powerco had taken all reasonable steps to assure itself this had be done to an appropriate standard.

326. We considered this was important in minimising the need for Powerco to make subsequent changes to the design and construct of the ERP solution at a later date, as this may lead to less optimal outcomes for consumers who may be expected to bear these costs of any subsequent changes or system modifications in future.

327. As a result of our further review and questioning of Powerco staff, we agree with the Verifier that $53 million of expenditure is appropriate for the CPP period in relation to ICT capex.

Attachment F Proposed allowance for customer connections, asset relocations and facilities capex

Purpose of this attachment

328. This attachment outlines our draft decisions for other capex contained within Powerco's CPP proposal that is not included in a specific chapter within this draft decision paper.

329. These other capex categories include customer connections, asset relocations and facilities.

Summary of our draft decision for customer connections, asset relocations and facilities capex

330. We propose to accept the $65 million capex proposed by Powerco for the CPP period as satisfying the expenditure objective.

331. This represents $51 million for customer connections, $4 million for asset relocations and $10 million for facilities capex.

Powerco's proposed customer connections, asset relocations and facilities capex

332. Powerco has requested a total of $65 million across these three capex categories during the CPP period.

Customer connections

333. Customer connections are part of Powerco's network capex for the CPP period, and includes expenditure required to facilitate timely and efficient connections to Powerco's network. It also includes works associated with upgrading supplies to customers.

334. This expenditure is largely driven by demographic growth, such as new residential developments, and changes in the wider economy such as growth in commercial activity.

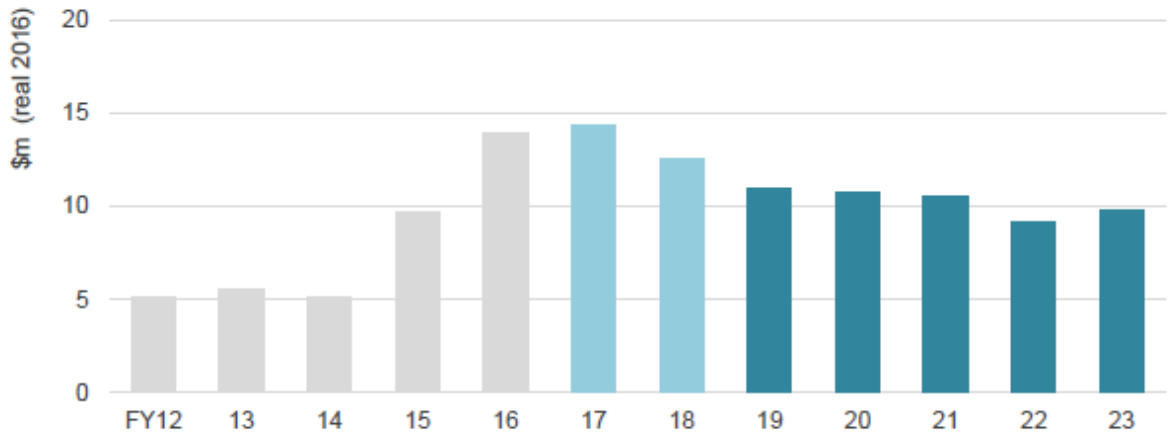
335. Similar to most utility companies, customer connection investments are largely externally driven and are not within the direct control of Powerco. For these reasons, Powerco’s forecasts are based on historical activity and adjusted to reflect forecast growth or decline.

336. Powerco proposes $51 million for customer connections in the CPP period. It is important to recognise that capital contributions are generally required to offset the costs of connections, and in the majority of cases customers pay the bulk of the costs. Therefore, the $51 million proposed by Powerco over the CPP period does not include customer capital contributions.

337. Powerco has assured us that it generally requires capital contributions for connecting customers, and that in most cases the requesting customer pays the majority of the costs.[104]

338. Figure F1 below also illustrates that Powerco's forecast for customer connections in the CPP period is less than recent levels of expenditure.

Figure F1 Proposed consumer connections Capex (net of contributions)



Source: Customised Price Quality Path (CPP) Main Proposal, Powerco, 12 June 2017; Figure 13.3, page 149

Asset relocations

339. This category of expenditure relates to those activities where Powerco is required to relocate its assets as a result of other infrastructure requirements, such as the construction on new roads and other utility services.

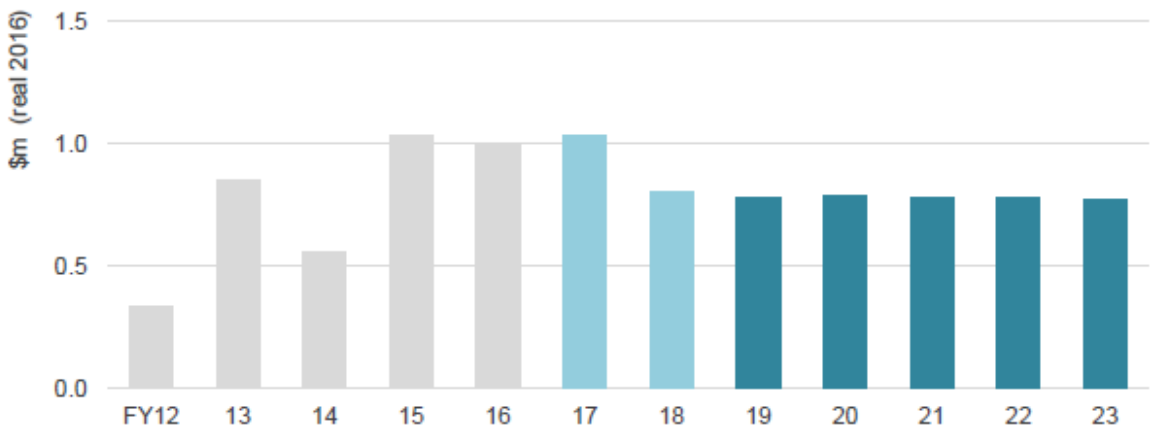
340. Historically, Powerco estimates that it carries out between 75-125 relocation projects each year.

341. As is the case with customer connections, Powerco requests capital contributions from third parties who request existing assets to be moved, and therefore capex net of contributions is the basis for Powerco's forecasts during the CPP period.

342. As can be seen from Figure F2 below, this is a small amount of capex over the CPP period of just $4 million.

[104] Powerco's guidance that explains how it determines the level of contribution can be found at http://www.powerco.co.nz/media/1389/electricity-capital-contribution-guide-vf.pdf

Figure F2 Proposed asset relocations Capex (net of contributions)



Source: Customised Price Quality Path (CPP) Main Proposal, Powerco, 12 June 2017; Figure 13.4, page 151

Facilities

343. Powerco's facilities capex relates to expenditure on property assets to accommodate staff and other resources. This includes offices, operational depots and storage facilities.

344. Powerco has a number of facilities located across the various parts of its network to meet operational requirements, and also leases some office space where required.

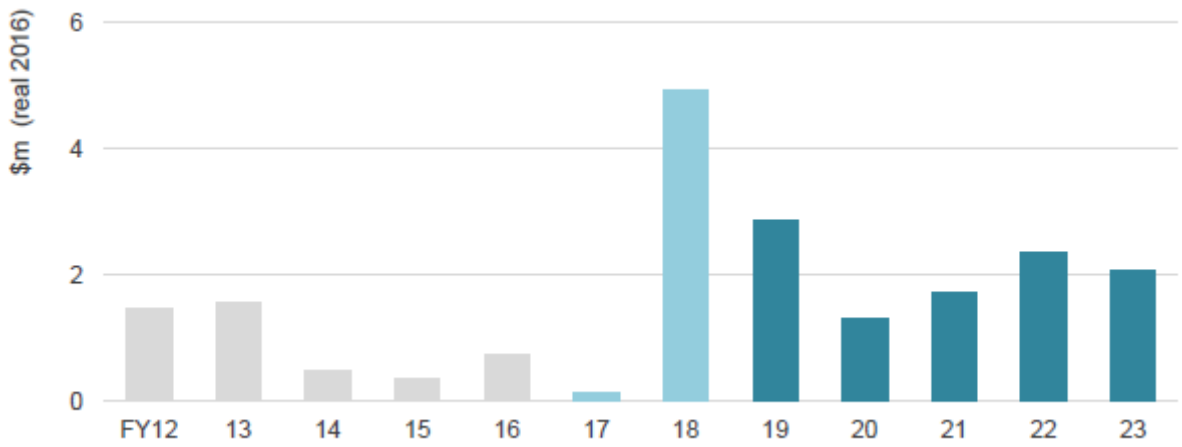
345. In its CPP proposal, Powerco suggests that its current facilities are already operating at capacity, and that these facilities cannot accommodate the increased numbers of employees and contractors that will be required to deliver the significant investment program it proposes over the CPP period.

346. Powerco has identified two particular areas where increased facilities investment is required. This includes the need for a new Network Operations Centre and new office space located in New Plymouth.

347. For each of these two investments, Powerco has based its forecasts on initial tender submissions supported by reviews undertaken by building services consultants and quantity surveyors.

348. Figure F3 below illustrates Powerco's forecast facilities capex over the CPP period and is reflective of the fact that planning and execution of this investment has already commenced.

Figure F3 Proposed facilities Capex



Source: Customised Price Quality Path (CPP) Main Proposal, Powerco, 12 June 2017; Figure 14.4, page 166

The Verifier did not offer any views on Powerco's proposed customer connections, asset relocations and facilities capex

349. Under a CPP, the input methodologies allow the Verifier to nominate up to 20 projects or programs for detailed review.

350. For Powerco's CPP proposal, the Verifier selected 15 projects and programs based upon the requirements of Schedule G4 of the IMs. 10 of these were capex and five were opex projects or programs.

351. A three step approach was adopted for identifying projects or programs based upon:

351.1 Materiality: 5% or more of total expenditure or a 30% increase greater than $1 million);

351.2 Drivers: where a particular project or program is a key risk to Powerco's business; and

351.3 Identification: where demonstration against the expenditure objective is necessary, significant price increases may arise and there is a link to quality standards.

352. More detail on the selection process adopted by the Verifier can be found on pages 126-131 of the Verification Report.

353. This resulted in a number of capex categories not being reviewed by the Verifier, and this included customer connections, asset relocations and facilities. We therefore consider it is appropriate for us to undertake our own analysis of Powerco's proposals in these categories, and we discuss our draft decisions below.

Our draft decision for customer connections, asset relocations and facilities capex

354. Based upon the further analysis we have undertaken, we propose to accept the $65 million Powerco has proposed in its CPP proposal.

355. Of the $65 million we propose to accept, $51 million relates to customer connections, $4 million is for asset relocations, and $10 million is for facilities capex.

Customer connections

356. We agree with Powerco that much of the expenditure under this category is externally driven and is subject to uncertainty given the often short lead times for connections and the inherent difficulty this presents in providing accurate forecasts.

357. We agree with the approach Powerco has taken to forecast its customer connections and note that, because a significant proportion of these costs are likely to be recovered from the connecting customers, the impact on the maximum allowable revenue **(MAR)**, and therefore customer impacts, is likely to be minimal.

358. We are also proposing that Powerco should provide additional transparency regarding the level of capital contributions it receives compared to forecast in the annual delivery report discussed in Attachment K of this paper.

359. Due to the likely minimal impact on customers during the CPP period, we have applied proportionate scrutiny in only undertaking a limited review of Powerco's customer connections forecast.

Asset relocations

360. Given the relatively small amounts of capex associated with this category, coupled with the fact that Powerco proposes a decrease in the CPP period when compared to historical expenditure, we have only undertaken a limited review of Powerco's forecast.

361. From our review, we have concluded Powerco's proposals are appropriate. We therefore consider that $4 million should be allowed over the CPP period.

Facilities

362. We have undertaken a review of Powerco's proposed facilities capex over the CPP period. Despite the comparatively small amounts of capex associated with this category of expenditure, we considered further review was necessary to satisfy ourselves that the proposed increase in historical expenditure is justified and meets the expenditure objective.

363. We also visited some of Powerco's planned new facilities as part of our technical visits to Taranaki, and we noted that work is already well underway in constructing a new control centre in New Plymouth.

364. It is clear to us that Powerco employees will require new facilities given the significant increase in workloads proposed for the CPP period.

365. As a result of our further review, we are satisfied that the proposed facilities capex is justified, and meets the expenditure objective. We therefore propose to allow $10 million for the CPP period.

Attachment G Proposed allowance for opex

Purpose of this attachment

366. This attachment outlines our draft decisions on the opex that Powerco will be able to recover from its customers in the CPP period.

Summary of our draft decision for opex

367. We propose to accept $446 million of the $455 million Powerco proposed for opex as satisfying the expenditure objective.

368. We propose to reject $9 million of opex as we are not satisfied that these expenditures meet the expenditure objective.

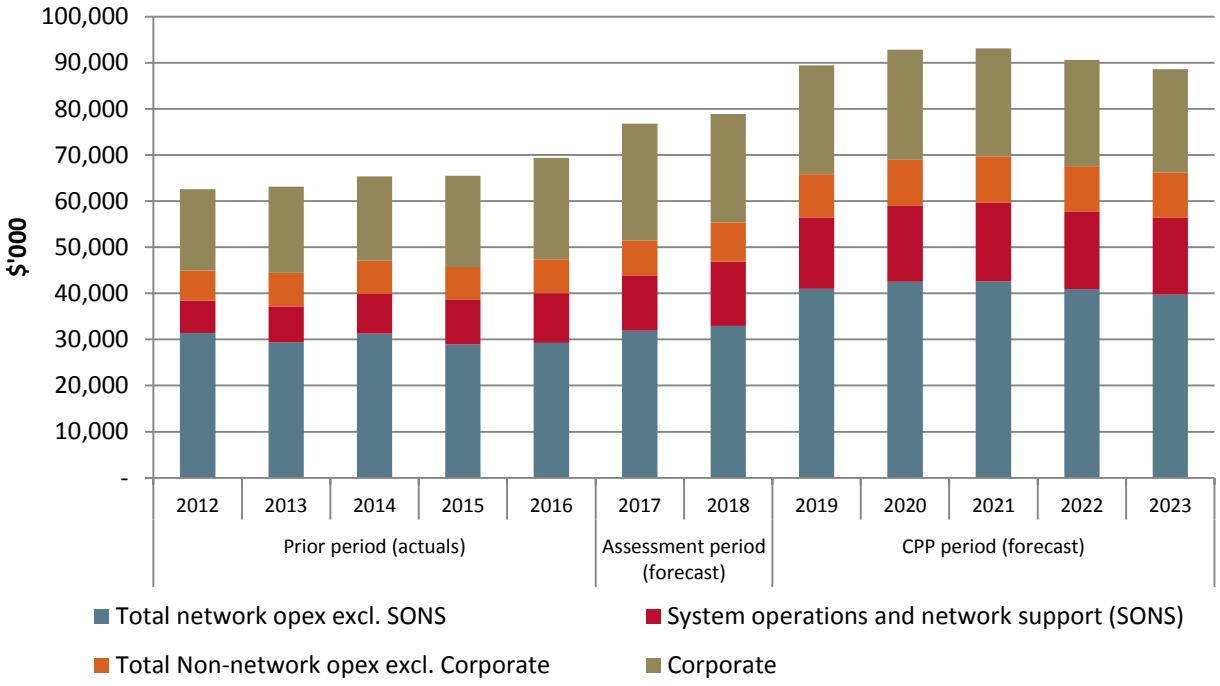
369. We note that by accepting $446 million of opex, Powerco will be able to recover these costs entirely from the users of its electricity distribution network in the CPP period. Under the incremental rolling incentive scheme **(IRIS)**, Powerco will have to share with its customers any actual over- or under-spends during the subsequent pricing period.

370. We acknowledge our draft decision means Powerco will be able to recover almost its entire proposed spend for opex. However, as discussed in Attachment K, we propose that Powerco should provide more transparency about how it is delivering the proposed programme of works and levels of expenditure during the CPP period. We propose Powerco will achieve this by publishing a CPP Annual Delivery Report. How Powerco performs in delivering the outputs associated with these proposed opex allowances will be monitored in that report.

Powerco's proposed opex

371. Powerco has proposed to recover $455 million of opex over the CPP period, an increase of $99 million (28%) on the five years leading up to the CPP period. Of the total opex proposed, $289 million relates to network activities such as preventative, reactive & corrective maintenance, vegetation management and systems operations and network support **(SONS)**. A further $165 million relates to non-network activities including corporate, ICT and facilities opex. An overview of Powerco's opex forecast over the CPP period can be seen in Figure G1 below.

Figure G1 Powerco's historical and forecast opex



372. Powerco suggested that its current investment rates under the DPP have led to a backlog of maintenance and vegetation work, and it is experiencing an increasing number of asset failures and network faults. The proposed increase in opex over the CPP period is driven by Powerco's desire to correct the backlog of maintenance defects it has accrued, improve asset inspection and assessment practices, supporting its increased capex programme and transitioning to a more proactive vegetation management approach.

373. Below, we provide a brief summary of the activities under network and non-network opex that Powerco has included in its opex forecast. Powerco provides a more detailed outline of its opex proposal in its CPP Main Proposal, Chapters 14 and 15, that is available on our website.[105]

Network opex – Preventative maintenance

374. In its CPP Main Proposal, Powerco explained preventative maintenance is:[106]

> Undertaken on a scheduled basis to ensure the continued integrity of our asset fleets, and to compile condition information for analysis and Capex and maintenance planning. It is our most regular asset intervention process and is a key source of feedback to our asset management and operational teams. If we don't have a comprehensive preventive

[105] Powerco's proposal and supporting documents can be downloaded at the following link: http://www.comcom.govt.nz/regulated-industries/electricity/cpp/cpp-proposals-and-decisions/powercocpp/powerco-customised-price-quality-path-proposal/

[106] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 174.

maintenance and inspection regime, our assets will deteriorate. This will result in worsening reliability and increasing safety risk.

375. Powerco has proposed to increase opex on preventative maintenance to meet current good industry practice. Powerco considers that:[107]

> Historically, we have had to constrain available network Opex, and have therefore concentrated expenditure on largely time-based maintenance (GEM-scheduled) activities. Our inspection techniques have not fully kept up with modern good practice, which limits the extent and accuracy of asset data we can collect.

376. Powerco has proposed expenditure of $59 million on preventative maintenance over the CPP period, an increase of $20 million (54%) compared to the five years leading up to the CPP period.

Network opex – Corrective maintenance

377. Powerco explained corrective maintenance involves:[108]

> Interventions to restore defective assets to their intended condition or function, to ensure assets can safely and efficiently remain in service. These works include defect rectification and repairs to correct issues noticed during earlier routine inspections, or when advised of issues by others. It also includes second response to outages (later follow-up work, after the initial activity to make a situation safe or to restore supply). Corrective maintenance is an essential activity that allows us to operate the network in an efficient manner while delivering reliable supply to our customers.

378. Powerco has proposed to increase opex on corrective maintenance in order to catch-up with its current major defect backlog. Powerco intends:

> To reduce the amber defect backlog (which should be rectified within 12 months) from the current estimated level of 3 years' work volume, to around a 6-month volume.[109]

379. Powerco has proposed expenditure of $66 million on corrective maintenance over the CPP period, an increase of $11 million (19%) compared to the five years leading up to the CPP period.

Network opex – Reactive maintenance

380. Powerco explained reactive maintenance involves:[110]

> Interventions in response to network faults and other incidents. There is no advanced scheduling of this work other than ensuring that there are sufficient resources on standby to respond to network faults. Reactive maintenance is all about safety switching and restoring the supply to customers.

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[107] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 177.
[108] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 178.
[109] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 181.
[110] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 182.

381. Powerco's proposed opex on reactive maintenance is largely in line with historical spend. Towards the end of the CPP period, Powerco expects some efficiencies (resulting in a reactive maintenance expenditure reduction) resulting from improved asset management practices and the significant asset renewal programme.[111]

382. Powerco has proposed expenditure of $37 million on reactive maintenance over the CPP period, an increase of $2 million (7%) compared to the five years leading up to the CPP period

Network opex – Vegetation management

383. Powerco explained vegetation management is:[112]

> A key activity that enables our assets to perform as expected. We undertake vegetation management to keep trees clear of overhead lines and other assets. This is necessary to minimise vegetation related outages and comply with relevant obligations.

384. Powerco has proposed to increase opex on vegetation management to arrest a rising trend in vegetation related faults and to adopt good industry practices. In particular, Powerco wants to:

384.1 adopt a 3-year cyclical inspection and trimming approach;

384.2 undertake higher work volumes to establish a sustainable vegetation management regime; and

384.3 undertake additional trimming or removal of high-risk sites.

385. Powerco has proposed expenditure of $46 million on vegetation management over the CPP period, an increase of $19 million (70%) compared to the five years leading up to the CPP period.

Network opex – SONS

386. Powerco explained SONS opex covers its:[113]

> Costs related to managing and operating our electricity network. This relates mainly to salary and associated costs, but also includes network support expenses such as professional advice, quality assurance, and utility costs. Expenditure on capital projects (including the professional advice on these), network equipment or service providers, as well as corporate costs are excluded from this portfolio.

387. Powerco has proposed to increase opex on SONS to improve asset management practices and to grow capacity to manage the additional CPP related workload. In particular, Powero considers SONS opex needs to increase to:

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111 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 183.

112 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 184.

113 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 190.

387.1 cover 46 additional FTEs to deliver increased work volumes ('volume driven FTE increases');

387.2 increase capability and skills to achieve asset management improvements ('strategy driven FTE increases');

387.3 establish an in-house call centre;

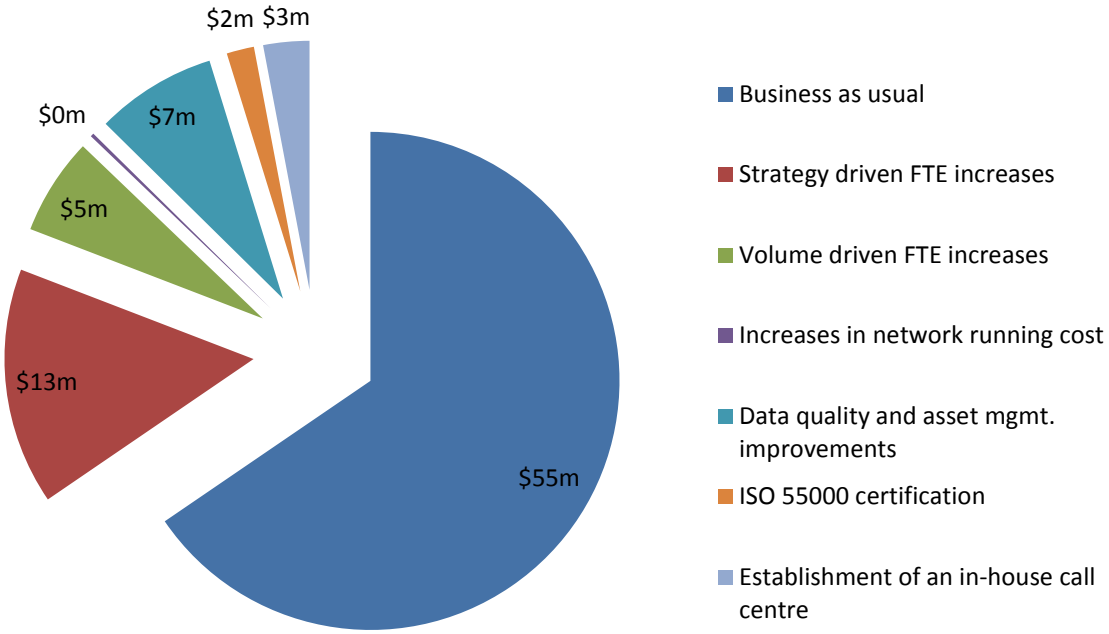
387.4 achieve ISO 55000 certification by 2020; and

387.5 deliver a data quality improvement programme.

388. Powerco has proposed expenditure of $83 million on SONS over the CPP period, an increase of $27 million (50%) compared to the five years leading up to the CPP period.

389. Figure G2 below shows a breakdown of Powerco's proposed SONS opex including the FTE-driven step changes.

Figure G2 Breakdown of SONS opex



Non-network opex – Corporate

390. Powerco explained corporate opex is driven:[114]

> By the human resource requirements of the business. It covers expenditure related to the divisions that support the electricity business (primarily the labour-related costs of staff, consultants and contractors).

391. Powerco has proposed to increase corporate opex slightly to account for additional FTEs that it considers necessary to deliver increased work volumes across the CPP period. Powerco forecast some efficiency deductions towards the end of the CPP period which contribute to minimising increases in corporate opex.

392. Powerco has proposed expenditure of $116 million on corporate opex over the CPP period, an increase of $19 million (19%) compared to the five years leading up to the CPP period.

Non-network opex – ICT

393. Powerco explained ICT opex covers costs such as software licencing, system support and maintenance, equipment leases, and outsourced services.[115] Its main components are software licencing and licencing support, data centre services, internet and data communications and customer contact technology.

394. Powerco has proposed to increase ICT opex:

394.1 as staff will increase resulting in a requirement to acquire more IT licences (number of licences are a function of headcount); and

394.2 as legacy systems need to be maintained while the new ERP system is being implemented. Powerco noted that this will result in two systems being temporarily supported in parallel.

395. Powerco has proposed expenditure of $28 million on ICT over the CPP period, an increase of $10 million (55%) compared to the five years leading up to the CPP period.

Non-network opex – Facilities

396. Powerco explained facilities opex includes a range of costs related to its offices, such as office leases, office repairs and maintenance, office utilities and rates and office consumables.[116]

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[114] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 199.
[115] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 203.
[116] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 204.

397. Powerco has proposed to keep facilities opex relatively unchanged from where it has been historically. Powerco considers that higher facilities opex associated with increasing staff numbers will be offset by other activities, such as combining the two office spaces in New Plymouth into one site.

398. Consistent with historical expenditure, Powerco has proposed facilities opex of $10 million.

Non-network opex – Insurance and governance

399. Powerco explained insurance and governance opex covers costs such as insurance premiums for its network assets, costs related to corporate governance, and activities required to ensure compliance with legal and regulatory requirements (eg, audit fees and listings fees).[117]

400. Over the CPP period, Powerco has proposed a small increase, mainly driven by increasing insurance costs from the growing asset base and employee numbers.

401. Consistent with historical expenditure, Powerco has proposed insurance and governance opex of $11 million.

The Verifier's views on opex

402. The Verifier reviewed five of the opex programmes Powerco included in its CPP proposal, namely preventative and corrective maintenance, SONS, vegetation management and corporate support. The Verifier concluded that most of Powerco's opex forecast does not appear inconsistent with the expenditure objective.[118] In particular, the Verifier considered that:

    402.1 using historical costs that include all efficient opex that a prudent EDB would incur as a base when determining forecast opex is a valid and reasonable method; and

    402.2 some of the maintenance and SONS step changes proposed by Powerco are prudent.

403. However, the Verifier considered that some of the step changes in opex relating to uplifts in FTEs in the SONS and corporate portfolio do not fully meet the expenditure objective. The Verifier explained that "these issues are likely to result in an overstatement of expenditure, up to approximately $27.3 million ($2016) over the CPP period, or approximately 6% of Powerco's forecast opex".[119]

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117 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 205.

118 Farrier Swier "Final Verification Report for Powerco" (7 June 2017), page 65.

119 Farrier Swier "Final Verification Report for Powerco" (7 June 2017), pages 65-66.

404. When we subsequently met with the Verifier, the Verifier clarified that it does not categorically consider this opex does not meet the expenditure objective. Rather it had not seen sufficient justification underpinning all of this opex.

Preventative and corrective maintenance opex

405. The Verifier did not have any issues with Powerco's forecast for preventative and corrective maintenance. It considers the change from a largely reactive to a more proactive maintenance approach is prudent.[120]

406. The Verifier said it would expect to see some reduction in reactive maintenance opex arising from increased expenditure on preventative and corrective maintenance because defects will be more frequently rectified before they require reactive work. The Verifier acknowledged that Powerco addressed this to some extent by incorporating a top-down cost efficiency reduction, but that greater cost savings incorporated in its opex forecasts could have been possible. The Verifier pointed out, however, that these would be immaterial in the context of the CPP proposal.

Vegetation management opex

407. The Verifier did not have any objections to Powerco's proposed forecast for vegetation management opex. In particular, the Verifier considers that:[121]

    407.1 transitioning to a three-year cutting cycle is consistent with good industry practice and is appropriate to meet the regulatory requirements; and

    407.2 appropriate modelling has been undertaken to determine the forecast expenditures.

408. The Verifier noted a few uncertainties around the input assumptions underpinning the forecasts (eg, estimate of work volumes, unit costs), but concluded that these uncertainties do not impact its overall view.

SONS opex

409. The Verifier view is that:[122]

> Most of Powerco's proposed SONS expenditure does not appear unreasonable. However, in our view, Powerco has not sufficiently demonstrated that the proposed increase in SONS FTEs included within the strategy-driven step changes are all needed to satisfy the expenditure objective. Although Powerco had provided us with a business case for these FTEs, there was insufficient quantification and certainty of proposed benefits for us to be satisfied about the total increase and that these benefits outweighed the $8.9 million ($2016) cost of these step changes.

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120 Farrier Swier "Final Verification Report for Powerco" (7 June 2017), page 75.

121 Farrier Swier "Final Verification Report for Powerco" (7 June 2017), pages 76-77.

122 Farrier Swier "Final Verification Report for Powerco" (7 June 2017), page 78.

410. The Verifier considered reasonable all FTE uplifts triggered by increased work volumes as a result of the work proposed for the CPP period (ie, volume driven FTE increases) in SONS opex. It questioned, however, whether those FTE uplifts triggered by Powerco's intention to increase capability and skills to achieve asset management improvements (ie, strategy driven FTE increases) were meeting the expenditure objective.

Corporate opex

411. The Verifier concluded that the corporate opex covering business as usual activities appear efficient when benchmarked against other EDBs and that some step up is reasonable to align with the increase in capital and operating activity. However, the Verifier considered Powerco provided insufficient evidence to justify the total increase in FTEs and recommended we should focus our analysis on that particular question.[123]

Our draft decision for opex

412. We propose to accept $446 million of the $455 million Powerco sought in its CPP proposal. We propose to reject $9 million of opex which we are not satisfied meets the expenditure objective.

413. In coming to this view, we took the following approach:

413.1 We reviewed Powerco's proposal and the report by the Verifier to identify the key issues for us to consider .

413.2 We assessed the extent to which we could rely on the analysis and conclusions of the Verifier. This included a lengthy workshop with the Verifier to probe its approach and conclusions , and discuss the issues identified by the Verifier and ourselves.

413.3 We published our Issues Paper and provided an opportunity for interested persons to express their views on Powerco's proposed opex and the Verifier's conclusions.

413.4 In respect of issues that were outstanding, we followed up with additional questions to Powerco and also met with Powerco staff at various occasions. In these questions and discussions, we particularly focussed on understanding Powerco's justification for opex step changes in the SONS and corporate portfolio driven by uplifts in FTEs.

413.5 We then formed a view as to the appropriate levels of opex allowances to be included in Powerco's proposed price path. Commissioners decisions on these recommendations are reflected in this draft decision.

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[123] Farrier Swier "Final Verification Report for Powerco" (7 June 2017), pages 78-79.

414. Based on the approach outlined above, we consider that most of Powerco's opex forecast is reasonable and meets the expenditure objective. This is because it reflects the efficient costs that a prudent EDB would require to deliver Powerco's proposed work programme during the CPP period. Where we consider this not to be the case, or where we have not seen sufficient evidence suggesting the proposed expenditure meets the expenditure objective, our draft decision provides for a lower opex than Powerco sought.

415. In assessing Powerco's opex forecasts, we took a similar approach as the Verifier by focussing our efforts on the five highest value opex programmes. This included opex relating to preventative and corrective maintenance, SONS, vegetation management and corporate support.

416. Consistent with our approach to reviewing Powerco's capex proposals, we focussed our efforts on areas the Verifier concluded did not fully meet the expenditure objective. However, in addition to the review the Verifier had undertaken, we also undertook a high level review of the outstanding four minor programmes – comprising reactive maintenance, ICT, insurance and facilities.

417. How our draft decision relates to the various opex programmes is outlined in Table G1 below.

Table G1 Opex during CPP period

Programmes	Proposed	Unverified	Draft decision	% difference
Preventative Maintenance	$59m	$0m	$59m	0%
Corrective Maintenance	$66m	$0m	$66m	0%
SONS	$83m	Up to $9m	$74m	-11%
Vegetation Management	$46m	$0m	$46m	0%
Corporate	$116m	Up to $18m	$116m	0%
Reactive Maintenance	$37m	$0m	$37m	0%
ICT	$28m	$0m	$28m	0%
Insurance and governance	$11m	$0m	$11m	0%
Facilities	$10m	$0m	$10m	0%
TOTAL	$455m	Up to $27m	$446m	-2%

418. In the remainder of this section, we explain our draft decision for each of the opex programmes separately.

Preventative and corrective maintenance opex

419. Our draft decision is:

419.1 to accept Powerco's proposed spend of $59 million on preventative maintenance over the CPP period, an increase of $20 million (54%) compared to the five years leading up to the CPP period; and

419.2 to accept Powerco's proposed spend of $66 million on corrective maintenance over the CPP period, an increase of $11 million (19%) compared to the five years leading up to the CPP period.

420. Powerco has built up a significant backlog of preventative and corrective maintenance issues. These are at unacceptably high levels and need to be remedied in the CPP period.

421. We consider the proposed spend meets the expenditure objective because:

421.1 it is reflective of efficient business as usual expenditure levels when compared to other EDBs in New Zealand; and

421.2 the proposed step changes from historical spend are prudent as they will enable Powerco to move from a maintenance approach that is largely reactive to being more proactive.

422. Over the long term, we consider this is likely to result in overall cost savings across the maintenance portfolio. Although any net benefits are unlikely to occur in the short term, Powerco has made a general efficiency adjustment in the CPP period across the other maintenance programmes.

SONS opex

423. Our draft decision is to accept $74 million of Powerco's proposed spend of $83 million on preventative maintenance over the CPP period. This would be an increase of $19 million (34%) compared to the five years leading up to the CPP period. Powerco explained the step change in SONS opex is largely required to allow for additional FTEs that are necessary to increase capability and skills to achieve asset management improvements (strategy driven FTE increases) and to deliver increased work volumes (volume driven FTE increases).

424. Having undertaken our own review and analysis, we agree with the Verifier's view that the proposed SONS opex relating to:

424.1 business as usual activities are reasonable, as they reflect what Powerco used to spend historically;

424.2 non FTE-driven strategy step changes (eg, Data quality and asset management improvements, ISO 55000 certification) are appropriate steps to undertake; and

424.3 the establishment of an in-house call centre, despite not being underpinned by a cost-benefit analysis, is justifiable given there is consumer support including willingness to pay for it.

425. The strategy driven FTE increases cover four areas including future networks, network analytics, investment optimisation and operations capability. The Verifier concluded, and we agree, that the $4 million relating to increase in operations capability is justified as it is related to managing the day-to-day operations of the electricity network, especially in the face of increasingly more instances that result in network outages and switching.

426. With regards to the remaining $9 million of strategy driven step changes (ie, future networks, network analytics and investment optimisation), the Verifier concluded that Powerco did not provide sufficient quantification and certainty that the proposed benefits outweigh the associated costs.

427. In response to the Verifier's finding, Powerco explained that the uplift in FTEs will result in delivering future efficiencies. In particular, Powerco explained that:[124]

> Achieving these efficiencies is not costless. Without the planned improvements in our asset management capability, our ability to expand our focus beyond current business practices will be seriously compromised, and the scope for efficiencies will be lower than reflected in our CPP forecast.

428. We agree that delivering future efficiencies will be in the long-term benefit of the consumer. We are confident that under our draft decision, Powerco will still be able to deliver these efficiencies. This is because:

428.1 our draft opex allowance covers 98% of Powerco's proposed expenditure which should give Powerco sufficient headroom to recruit new staff and deliver its work programme;

428.2 Powerco demonstrated through the work it had undertaken in preparing the CPP proposal, that it has sufficient network analytics and investment optimisation capability in-house already and that only moderate additional funding above the business as usual levels seems necessary to account for the loss in capability as some staff with fixed-term contracts have left or will be leaving Powerco shortly.

429. Our draft decision not to allow SONS opex to cover improvements in Powerco's future networks capability is consistent with our draft decision on network evolution capex outlined in Attachment D.

430. Consistent with our reasoning above, we have not seen any additional evidence justifying these step changes, and therefore we propose to exclude $9 million from Powerco's SONS opex allowance. Despite our views about Powerco's ability to

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[124] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 56.

deliver future efficiencies, we do not consider these costs to be unreasonable but, in order to provide an allowance for these in the CPP, we consider Powerco needs to provide more evidence as to how they meet the expenditure objective. This could include information on:

430.1 how the quantum of 18 additional FTEs has been determined in order to increase capability and skills;

430.2 how these FTEs link to the additional expenditure proposed in the areas of future networks, network analytics, investment optimisation and operations capability;

430.3 how the future efficiencies Powerco is aiming to achieve link to this uplift in FTEs;

430.4 how customers are likely to benefit from this increase in expenditure (in addition to the above mentioned efficiencies); and

430.5 whether there are any consequences to the network.

Vegetation management opex

431. Our draft decision is to accept Powerco's proposed spend of $46 million on vegetation management over the CPP period, an increase of $19 million (70%) compared to the five years leading up to the CPP period.

432. When we met with Powerco, we discussed in detail the proposed changes to its approach to vegetation management with a view to understand the significant uplift of 70% in this area. During various site visits, we inspected the extent to which vegetation has become a problem to Powerco's network.

433. It is apparent to us that the backlog of outstanding vegetation management work needs some immediate action in order to reduce these unacceptable levels and that a change to Powerco's approach is required to sustain these in the longer term.

434. We therefore consider the proposed spend meets the expenditure objective because it is aimed at:

434.1 reducing the rise in the related fault trend;

434.2 undertaking higher work volumes to establish a sustainable vegetation management regime; and

434.3 transitioning to a more cost intensive three-year cutting cycle is consistent with good industry practice and is appropriate to meet regulatory requirements.

435. We note the Verifier also concluded that appropriate modelling had been undertaken to determine forecast expenditures, but that there are some limitations around uncertain work volumes and unit cost economies of scale. We acknowledge these uncertainties and the effect they can have on the expenditure allowances but, at this stage, have not made any changes to Powerco's forecasts.

436. This is because we have undertaken a review of Powerco's forecasted volumes and consider these to be reasonable. We also note the unit rates Powerco used to determine vegetation management opex are at the higher end of what we consider appropriate. However, we propose to accept them as they do not appear unrealistic from the further analysis we have undertaken.

Corporate opex

437. Our draft decision is to accept Powerco's proposed spend of $116 million on corporate opex over the CPP period, an increase of $7 million (7%) compared to the five years leading up to the CPP period. Historical costs, however, include some non-recurrent expenditure such as the cost of preparing for the CPP application. Once these have been netted off, the step change from historical costs is $19 million (19%) over the CPP period.

438. The main drivers of this step change are an increased number of FTEs and, to a lesser extent, the need for more professional advice aimed at growing capability to meet expanding activity levels, and providing business support for networks that are growing.

439. The Verifier concluded that the corporate opex covering business as usual activities appear efficient when benchmarked against other EDBs and that some step up is reasonable to align with the increase in capital and operating activity. However, the Verifier considered Powerco provided insufficient evidence justifying the total increase in FTEs and recommended we should focus our analysis on that particular question.

440. Powerco disagreed with the Verifier's view. In particular, Powerco explained that:[125]

> In our view we provided sufficient information. We provided the justification for all FTE increases, based on an assessment of the increase in activity for each area, and using the judgement and expertise of each business unit manager to determine the most efficient method to deliver the result (eg, balancing internal versus external resourcing). Each FTE was costed using the job description to be filled and our remuneration policy.

[125] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 56.

441. We reviewed the information Powerco had provided and met subsequently with Powerco various times to discuss this aspect of its CPP proposal. It is apparent to us that the delivery of the CPP work programme requires additional corporate support. The uplift in corporate FTEs seems moderate compared to the uplift in activities. This is also underpinned by the fact that 10 of the additional 21 FTEs will be employed in the ICT department which will be responsible for the roll-out of the new ERP system. We would expect to see a decrease in ICT related FTEs in subsequent pricing periods when the implementation of the ERP system has been completed.

442. We note that we have also reviewed the proposed salaries of Powerco employees and which we consider to be reasonable.

Reactive maintenance opex

443. Our draft decision is to accept Powerco's proposed spend of $37 million on reactive maintenance over the CPP period, an increase of $2 million (7%) compared to the five years leading up to the CPP period.

444. We consider the proposed spend meets the expenditure objective because it is broadly in line with what Powerco has spent on reactive maintenance in previous periods.

445. We consider it prudent, as suggested by Powerco, to move from a largely reactive to a more proactive maintenance approach as this is likely to result in lower cost across all maintenance activities. We therefore expect reactive maintenance costs to decrease significantly from current levels in subsequent pricing periods.

ICT opex

446. Our draft decision is to accept Powerco's proposed spend of $28 million on ICT opex over the CPP period, an increase of $10 million (55%) compared to the five years leading up to the CPP period.

447. We consider the proposed step change in ICT opex meets the expenditure objective because it is aimed at supporting the roll-out of the new ERP system. As outlined in Attachment E, we support the capex Powerco included in the CPP proposal relating to the ERP system, as this will support Powerco's shift to simplified data transition and integration with a view to enhance future decision making.

448. We expect ICT opex to fall back to historical levels in subsequent pricing periods when the new ERP system has been implemented and any legacy systems have been disestablished (ie, when any ICT opex covering licence cost for legacy systems are not required any further).

Attachment H Quality standards applying to Powerco

Purpose of this attachment

449. This attachment outlines our draft decisions on the quality standards that will apply to Powerco during the CPP period. We also set out our draft decisions on the revenue-linked quality incentive scheme.

Summary of our draft decision on quality standards and revenue-linked incentive scheme

450. We propose to set separate quality standards for planned interruptions and unplanned interruptions during the CPP period.

451. We also propose that a revenue-linked quality incentive mechanism apply to the quality path for unplanned interruptions.

Planned interruptions

452. For planned interruptions, we propose to set a quality standard based on Powerco's forecast of planned interruptions, as measured by the planned SAIDI, and the SAIFI.[126] This option takes into account the level of planned interruptions that are forecast to be required for Powerco to undertake the CPP work programme. It also retains an incentive for Powerco to undertake the CPP work efficiently in line with our CPP decision, as Powerco would have to comply with the planned interruptions quality standard.

453. Our draft decision to set a quality standard for planned interruptions differs from Powerco's proposal. Powerco proposed that planned interruptions should be excluded from the quality standard.

Unplanned interruptions

454. For unplanned interruptions, we propose that the quality standard at the start of the CPP period be based on the 10 year average of unplanned interruptions, with a gradual reduction (corresponding to an improvement in quality) over the CPP period, to reflect the expected improvement in reliability as a result of the proposed investment over the CPP period.

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[126] Planned SAIDI represents the average duration (in minutes) of planned interruptions experienced by each customer, and planned SAIFI represents the average number of planned interruptions experienced by each customer.

455. We propose that the quality standard for unplanned SAIFI reduce by 5% by the end of the CPP period and that the quality standard for unplanned SAIDI reduce by 10% by the end of the CPP period.[127] We propose different reductions for SAIDI and SAIFI, as we consider that its CPP expenditure will enable Powerco to improve SAIDI to a greater degree than SAIFI.

456. Our draft decision to set a quality standard for unplanned interruptions which gradually reduces over the CPP period differs from Powerco's proposal, which is to maintain the quality standard for unplanned interruptions at historical levels.

Revenue-linked quality incentive mechanism

457. We propose to retain a revenue-linked quality incentive scheme for unplanned interruptions. This will provide Powerco with incentives to improve network reliability beyond that required by the quality standard for unplanned interruptions where it is cost-effective to do so. Powerco has proposed to retain this revenue-linked quality incentive scheme for unplanned interruptions in its CPP proposal.[128]

458. At this stage, we do not propose to apply a revenue-linked quality incentive scheme to planned interruptions during the CPP period. Powerco has argued that including planned outages would create an incentive for Powerco to limit planned outages in order to gain financially. In our view, applying a revenue-linked quality incentive scheme to the planned interruptions required to undertake the CPP work programme, and thereby creating a financial incentive to delay or otherwise reduce the CPP work programme, would not be appropriate. We propose to exclude planned interruptions from the revenue-linked incentive scheme.

What are quality standards and why are they important?

459. Along with setting the maximum revenues that Powerco can recover from its consumers, we must also set the minimum quality standards that Powerco must deliver during the CPP period.

460. Quality standards are an important part of setting a CPP. They represent the minimum obligations that must be met in terms of quality of service, and provide an incentive for regulated suppliers such as Powerco to provide an appropriate level of quality that reflects consumer demands.

461. The quality standards require the regulated supplier to deliver a level of quality that reflects the investment provided for in the maximum allowable revenue of the CPP. Quality standards provide protection against regulated suppliers cutting costs or deferring expenditure if this would place service quality at risk. Where a supplier breaches its quality standards it may face enforcement action.

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[127] Under our proposed quality standard, the unplanned SAIFI quality limit at the end of the CPP period would be 5% lower than at the start of the CPP period, and the unplanned SAIDI quality limit at the end of the CPP period would be 10% lower than at the start of the CPP period.

[128] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 219.

What quality measures should be included in the CPP

462. Powerco has proposed that the quality standards for the CPP be based on two quality measures which reflect the reliability of Powerco's electricity distribution network. These measures are SAIDI and SAIFI.[129]

463. In the Issues Paper, we noted that reliability appears to be a key attribute valued by customers, and that Powerco's proposal to use SAIDI and SAIFI as the basis for the quality standards for the CPP may be reasonable, given the increased reporting proposed by Powerco.[130] However, we also noted that Powerco's customers may value a range of service attributes that extends beyond the frequency and duration of interruptions. We sought views on whether SAIDI and SAIFI are by themselves sufficient measures of quality, or whether we should consider introducing further quality standards.

464. Powerco responded that it is difficult to incorporate other measures, beyond SAIDI and SAIFI, into a quality path, "as any new measures either risks introducing unintended incentives, require robust, audited data to set an appropriate standard, or have no useful precedent (particularly non-technical issues)."[131] Powerco also noted that it intends to work with the Commission "to agree a suite of "customer service" reporting metrics (outside of the formal quality path) with the aim of providing transparency of our annual performance in this important area."[132]

465. Other parties supported the use of other measures to track Powerco's performance in delivering its planned CPP work programme, although several suggested that a reporting obligation may not provide a sufficient incentive for Powerco.[133] A number of submissions also emphasised the importance of Powerco communicating timely information around both planned and unplanned interruptions, including, in the case of planned interruptions, sufficient advanced notification of the outage.[134]

466. We have set out our views on the importance of monitoring Powerco's delivery of the CPP work programme in Attachment K of this draft decision. We have developed an annual delivery report which is designed to track Powerco's progress during the CPP period towards its planned CPP work programme. The reporting framework will also monitor Powerco's performance against key customer service metrics in relation to planned and unplanned interruptions.

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129 A higher SAIDI or SAIFI represents poorer reliability performance.

130 Commerce Commission "Invitation to have your say on Powerco's proposal to change its prices and quality standards" (18 August 2017), para 90.

131 Powerco "Submission on Powerco CPP Issues paper" (22 September 2017), para 34.

132 Powerco "Submission on Powerco CPP Issues paper" (22 September 2017), para 32.

133 See for example TDB Advisory on behalf of ERANZ "Submission on Powerco CPP Issues paper" (22 September 2017), para 3.39; MEUG "Submission on Powerco CPP Issues paper" (22 September 2017), paras 2.7-2.8; Fonterra "Submission on Powerco CPP Issues paper" (22 September 2017), para 1.9.

134 Trustpower "Submission on Powerco CPP Issues paper" (22 September 2017), section 3.4; Fonterra "Submission on Powerco CPP Issues paper" (22 September 2017), para 1.5.

What level of quality do customers want?

467. Powerco has stated:[135]

> our customers advise us that they do not expect improved reliability where this comes at a cost (other than in poor performing pockets of the network). However, they would not accept deteriorating performance. Our proposed CPP investments reflect this, by seeking to arrest deteriorating asset performance and stabilise network SAIDI and SAIFI at present levels.

468. Powerco's consultation as part of preparing its CPP proposal indicates that service quality matters greatly to customers, and that deteriorating service levels would not be acceptable. Powerco notes that during its core consultation on its preliminary CPP proposal in early 2017, its customers said that current reliability should be maintained or improved.[136]

469. In order to maintain or improve reliability, it may be necessary to increase the level of planned interruptions to allow maintenance and construction work to be undertaken. This creates a trade-off between planned and unplanned interruptions. Powerco noted that its business customers in particular, and to a lesser extent its residential customers, are prepared to accept a higher level of planned outages in return for reduced levels of unplanned outages. "Business customers are happy to trade reduced unplanned outages for more planned outage, while residential customers place a lower value on this trade-off but it is still evident."[137]

470. According to Powerco's consultation, 87% of business customers and 81% of residential customers agree/strongly agree with the statement that unplanned power cuts are worse than planned power cuts.[138] In addition, customers are typically notified in advance of planned outages, which reduces the inconvenience of planned interruptions compared to unplanned interruptions.

471. In summary, although Powerco's customers are likely to hold a range of views with respect to quality, it appears that Powerco's customers are generally supportive of maintaining or improving current supply reliability levels, and that unplanned power cuts are worse than planned outages.

Powerco's proposal for quality

472. Powerco's proposed quality standard is broadly based on the existing approach used in the 2014 Electricity Distribution Business Default Price-Quality Path **(2014 EDB DPP)**, which sets quality standards based on historical measures of network reliability. Under the 2014 EDB DPP, SAIDI and SAIFI are used as the measures of reliability for the purposes of setting the quality standards.

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135 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 208.

136 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 46.

137 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 47.

138 Powerco, "Full results from consumer survey: Survey results for Powerco", PwC report, page 39.

473. According to Powerco, it is appropriate to retain SAIDI and SAIFI as the basis for setting quality standards for the CPP, for the reasons set out in the 2014 EDB DPP decision. These reasons include that reliability is considered by consumers to be the most important aspect of quality, and there is a significant amount of historical data available on SAIDI and SAIFI.

474. In the 2014 EDB DPP:

474.1 The SAIDI and SAIFI limits are set at one standard deviation above the 10-year historical average to allow for some variability in reliability performance;

474.2 The SAIDI and SAIFI are 'normalised', which limits the impact of extreme events;

474.3 Unplanned interruptions are included with a 100% weighting and planned interruptions are included with a 50% weighting, to recognise that customers are less inconvenienced by planned interruptions;

474.4 An EDB is deemed non-compliant if it exceeds the limit in a given year and one of the two preceding years. This is to allow for one-off poor performing years.

475. The main difference between the 2014 EDB DPP approach and Powerco's proposal is that Powerco proposes to exclude planned interruptions from the quality standard that would apply during the CPP period. As a result, Powerco proposes that the quality standard for the CPP would be based only on unplanned SAIDI and SAIFI.

476. Table H1 below summarises Powerco's proposed parameters for the CPP quality standard.

Table H1 Powerco's proposed quality standard parameters for unplanned SAIDI and SAIFI

	SAIDI	SAIFI
Cap/Limit	195.9	2.31
Target	173.3	2.14
Collar	150.6	1.97

Source: Powerco Main Proposal, Table 17.4.

477. Powerco notes that its proposed unplanned SAIDI target for the CPP is "marginally higher than the historical target level, while the SAIFI target will be lower than the historical value."[139]

478. The 2014 EDB DPP also contains a revenue-linked incentive mechanism, which rewards EDBs (in the form of an increased revenue allowance in recoverable costs) for providing a higher level of reliability and penalises EDBs (in the form of a reduced revenue allowance in recoverable costs) for providing poorer reliability. The maximum amount an EDB's revenue can increase or decrease under this incentive mechanism is +/-1% of the starting price maximum allowable revenue.[140]

479. Powerco proposes that the revenue-linked incentive mechanism be retained for unplanned interruptions.

Planned interruptions

480. Powerco notes that due to the increase in planned construction and maintenance work associated with its proposed CPP programme, it would not be able to operate within its current reliability limits set in the DPP. That is, to undertake the programme of planned works under the CPP, Powerco's customers will experience a significantly higher level of planned interruptions than they have experienced in recent years.

481. This can be seen by comparing Powerco's forecasts of planned interruptions under the proposed CPP programme with historical planned interruptions, as shown in Figure H2 below in the case of planned SAIDI minutes, and Figure H3 below in the case of planned SAIFI interruptions.[141]

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[139] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 220.

[140] In Powerco's proposed CPP, the starting price MAR (2019) is $288 million. Powerco would stand to gain or lose $2.88 million under the existing 'cap and collar' parameters.

[141] Powerco's forecasting of the level of planned interruptions required to undertake the CPP work programme includes an allowance for live line work. Powerco notes that the actual amount of work that will be carried out on live lines in the future is uncertain, and the level of live line work is under review. Powerco has assumed that the proportion of live line work will reduce during the CPP period. Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 215.

Figure H2 Powerco forecast Planned SAIDI

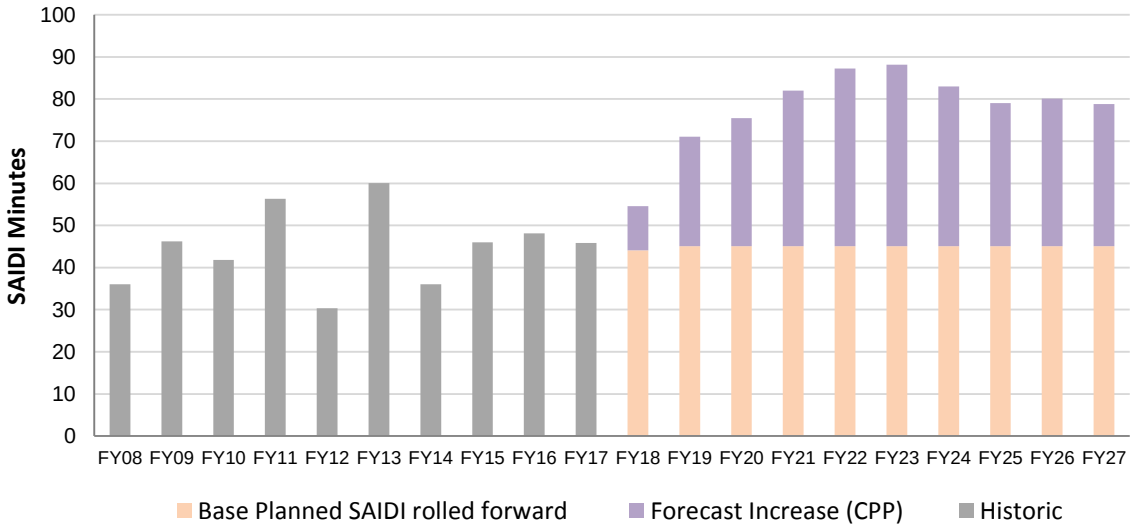
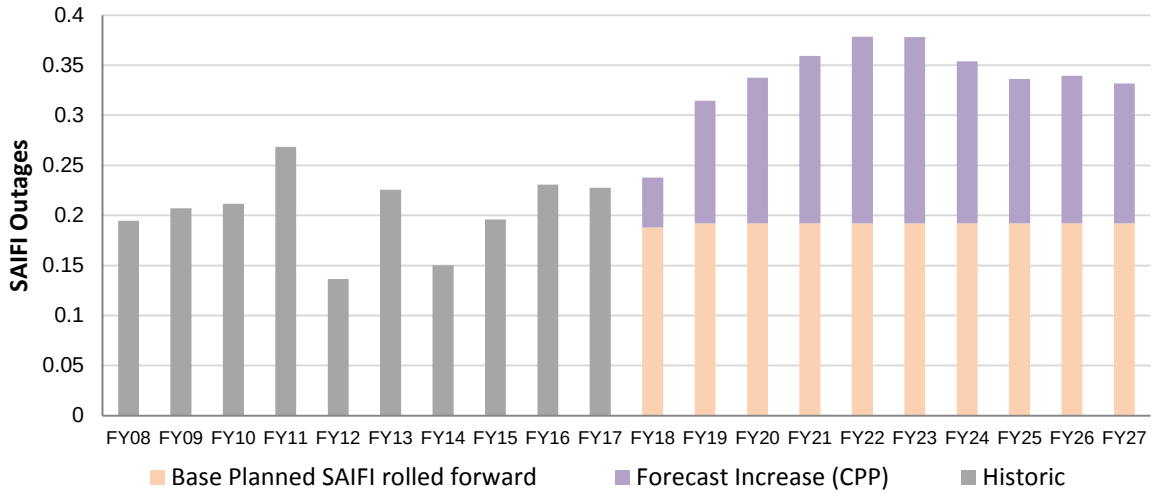


Figure H3 Powerco forecast Planned SAIFI



Source: Powerco "Planned SAIDI_SAIFI forecast – final_020617".xls (Ansarada 10.21).

482. According to Powerco's forecasts, planned interruptions under the CPP programme would increase from 71.0 SAIDI minutes per customer in the first year (2019) to 88.2 SAIDI minutes in the fifth year (2023) of the CPP period.[142] Customers would experience an average of 0.314 planned SAIFI interruptions in the first year of the CPP, increasing to 0.378 SAIFI interruptions by the end of the CPP period.

483. Powerco also notes that including planned interruptions in the quality standard would create a potential incentive to not undertake the CPP work, in the event that Powerco was to limit planned interruptions in order to avoid exceeding the quality cap or to pursue a revenue bonus. For example, Powerco notes that in years with high unplanned SAIDI figures (as occurs in years with severe weather events), Powerco reduces planned interruptions in order to avoid exceeding the reliability limit. According to Powerco, this behaviour creates a counterproductive cycle, as it results in reduced maintenance and renewal, adding more pressure on unplanned interruptions.[143]

484. For the above reasons, Powerco proposes that "planned outages should be removed from compliance as the current historical-based approach would prevent the efficient delivery of the CPP programme."[144]

Unplanned interruptions

485. Powerco proposes to apply the DPP approach to unplanned interruptions only. Under Powerco's proposal, the quality standard for the CPP would be set using the historical average of unplanned SAIDI and SAIFI over the 10-year period to 31 March 2017. The 'cap and collar' calculations for the revenue-linked incentive mechanism would also be based on this period.

486. Powerco notes that its customers have informed it that:

    486.1 they have little appetite for improved reliability if this would involve additional cost, and

    486.2 deteriorating performance would not be acceptable.[145]

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[142] Powerco's forecast planned interruptions over the CPP period are comprised of a base level of interruptions (historical average rolled forward), plus a forecast of the additional outages required to undertake the increased maintenance and construction work proposed under the CPP. At the end of the CPP period, Powerco forecasts some reduction in the level of planned interruptions, though not back to pre-CPP levels. This is due to expected higher ongoing levels of scheduled work, for example due to the more proactive programme of vegetation management.

[143] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 212.

[144] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 219.

[145] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 208, 209. However, at page 46 of its Main Proposal, Powerco summarised customer feedback as being that current reliability should be maintained or improved, indicating some demand for improved reliability.

487. Powerco claims that its CPP programme reflects this, and seeks to stabilise network reliability at current levels.

488. Powerco's proposal includes some modelling it has undertaken of forecast unplanned SAIDI and SAIFI outcomes. This indicates that under DPP expenditure levels, Powerco expects that recent deteriorating trends in network performance and fault rates will persist, translating into increasing SAIDI and SAIFI. In contrast, with the proposed CPP investment, Powerco expect SAIDI and SAIFI to stabilise and potentially improve slightly towards the end of the CPP period.[146]

489. Powerco cautions that such modelling of unplanned interruptions is intrinsically complex and subject to multiple assumptions, and it cannot accurately forecast quality outcomes in a specific year.

The Verifier's views on quality

490. The Verifier was generally comfortable with Powerco's approach to forecasting planned outages.

> The proposed step changes to planned SAIDI and SAIFI service levels are well explained in the documents provided to us and appear justified, provided that the increase in renewal, maintenance and vegetation management activity is also justified and the increase is temporary to align with the increase in activity. It is reasonable to assume that a material step up in this type of activity will lead to more planned outages.

491. However, the Verifier raised a number of concerns with Powerco's proposal for unplanned outages. Using backward-looking historical averages of SAIDI and SAIFI risks overlooking expected improvements in reliability resulting from the significant increases in expenditure proposed under the CPP. The Verifier noted that:[147]

> Powerco forecasts that normalised unplanned SAIDI and SAIFI will remain at current levels over the CPP period. We would, however, expect the significant increase in capex and opex would have a positive impact on normalised unplanned SAIDI and SAIFI.

492. The Verifier concluded that if the Commission is concerned that the expenditure initiatives proposed by Powerco are likely to improve unplanned SAIDI and SAIFI over the CPP period, the Commission may wish to consider determining quality targets that pick up these improvements.[148]

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146 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 216.

147 Farrier Swier "Final Verification Report for Powerco" (7 June 2017), page 26.

148 Farrier Swier "Final Verification Report for Powerco" (7 June 2017), page 38.

Our draft decision for quality

How we have assessed Powerco's proposal

493. Powerco's proposed quality standard for the CPP differs from the existing quality standards under the 2014 EDB DPP, as Powerco proposes to exclude planned interruptions from the quality standard that would apply during the CPP period. As a result, Powerco proposes that the quality standard for the CPP would be based only on unplanned SAIDI and SAIFI.

494. In evaluating Powerco's proposed quality standard variation for the CPP, we have used the evaluation criteria set out in the EDB IMs. Under the criteria set out in the EDB IMs Determination, we must assess the extent to which Powerco's proposed quality standard variation better reflects the realistically achievable performance of Powerco over the CPP period, based on either or both of:

    494.1 statistical analysis of past SAIDI and SAIFI performance;

    494.2 the level of investment provided for in the proposed maximum allowable revenue.[149]

495. As discussed below, our draft decision for planned interruptions is forward-looking, reflecting the work that Powerco proposes under its CPP programme. For unplanned interruptions, our draft decision is based on an updated analysis of Powerco's past performance.[150] We have also taken into account the level of investment proposed during the CPP period.

Our draft decision on planned interruptions

496. Our draft decision is to include a quality standard for planned interruptions, based on Powerco's forecast of planned SAIDI and SAIFI during the CPP period.

497. Our main concern with Powerco's proposal to exclude planned interruptions from the quality standard is that it weakens incentives to undertake the CPP work efficiently and to minimise disruptions to customers. Similar concerns were raised by a number of parties in their submissions on the Issues Paper. For example,

    497.1 in a submission on behalf of ERANZ, TDB Advisory recommended against granting Powerco a full exemption from the planned SAIFI/SAIDI quality standard in order to protect consumers from undesirable outcomes with regard to quality. TDB suggested that the quality limit that applies to planned SAIFI and SAIDI could be increased. According to TDB, this would acknowledge the practical reality that Powerco will have to increase planned

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149 *Electricity Distribution Services Input Methodologies Determination 2012* [2012] NZCC 26, clause 5.4.5.

150 This includes the use of an updated historical average of unplanned SAIDI and SAIFI, as well as updated statistical parameters to set the quality limits and the parameters required for the revenue-linked incentive scheme (referred to as the 'cap' and 'collar').

outages in order to undertake the proposed investment, while simultaneously protecting consumers from excessively adverse quality outcomes.[151]

497.2 According to Fonterra, Powerco's proposal to exclude planned outages may weaken incentives for Powerco to minimise planned outages and their disruption to customers while undertaking the proposed CPP work program.[152]

497.3 Trustpower struggled to see how excluding planned outages could be in the best interests of consumers. Trustpower noted that although consumers are more comfortable with planned outages "this may start to wear thin after multiple planned outages over a prolonged period of time."[153] Trustpower's solution is to consider decoupling planned and unplanned outages, with separate measures for each.[154] Trustpower noted that the quality standard for planned outages could be guided by forecasts.[155]

497.4 MEUG noted that planned outages are not costless to consumers, and that Powerco had not provided a rationale for removing planned outages from performance monitoring. MEUG submitted that retaining planned outages in the quality path would likely lead to Powerco exploring innovative options to minimise the cost of planned outages.[156]

498. In its submission on the Issues Paper, Powerco reiterated its view that excluding planned outages from the CPP quality path was the most pragmatic approach.[157] Powerco submitted that other options, including using forecasts of planned SAIDI and SAIFI, could introduce perverse incentives to reduce planned outages and limit the delivery of the CPP programme.

499. Powerco also indicated that while its preferred option is to exclude planned SAIDI and SAIFI, it is open to exploring alternatives, as long as they "do not add unnecessary cost or complexity and impact on our incentive to deliver the work required."[158]

500. In our view, a better approach than excluding planned interruptions altogether would be to set separate quality standards for planned interruptions and unplanned

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151 TDB Advisory on behalf of ERANZ "Submission on Powerco CPP Issues paper" (22 September 2017), para 3.40.

152 Fonterra "Submission on Powerco CPP Issues paper" (22 September 2017), para 1.4.

153 Trustpower "Submission on Powerco CPP Issues paper" (22 September 2017), para 3.2.1.

154 Trustpower "Submission on Powerco CPP Issues paper" (22 September 2017), para 3.1.4.

155 Trustpower "Submission on Powerco CPP Issues paper" (22 September 2017), para 3.2.3.

156 MEUG "Submission on Powerco CPP Issues paper" (22 September 2017), para 2.5.

157 Powerco "Submission on Powerco CPP Issues paper" (22 September 2017), para 30.

158 Powerco "Submission on Powerco CPP Issues paper" (22 September 2017), para 31.

interruptions, with planned interruptions based on Powerco's forecasts of planned SAIDI and SAIFI.

501. As noted above, the Verifier was generally comfortable with Powerco's forecasts of planned outages. Powerco has also noted that (relative to forecasting unplanned SAIDI and SAIFI),[159]

> … planned SAIDI and SAIFI modelling is less subject to variance and actual works can be better predicted. These models are therefore more straightforward and accurate, although still subject to a degree of uncertainty.

502. Setting separate quality standards for planned and unplanned interruptions during the CPP period, with the former based on Powerco's forecasts of planned SAIDI and SAIFI, has a number of advantages:

502.1 Retaining planned SAIDI and SAIFI within the CPP quality standard maintains incentives for Powerco to undertake the CPP work efficiently in accordance with our CPP decision;

502.2 Such an approach would be forward-looking, reflecting the work that Powerco proposes under its CPP programme, and so addresses Powerco's concern about the use of backward-looking historical data to set a quality path for planned interruptions during the CPP period;[160]

502.3 Such an approach also addresses Powerco's concern that in bad weather years, unplanned interruptions crowd out planned interruptions (ie, an increase in unplanned outages would result in deferring planned work in order to avoid exceeding the quality limits).

503. Powerco has also raised a potential issue around incentives to defer or reduce planned work in order to increase revenues under the DPP incentive mechanism. We note that these incentives exist under the DPP and do not appear to be specific to the CPP. However, we propose to address this by removing the revenue-linked incentive mechanism from planned interruptions for the purposes of the CPP.

504. As Powerco notes, forecasts for planned outages will remain subject to a degree of uncertainty, in particular in relation to variations from one year to the next. We have

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[159] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 214.

[160] For example, if historical data were to be used, the updated 10-year average (2008-2017) of planned SAIDI would be 44.7 minutes, and 0.205 interruptions for planned SAIFI (see Powerco "CPP quality path – calc and output – final_020617" (worksheet "Annual and 10-year average", cells C43, C44)). By comparison, Powerco forecasts that in order to undertake the CPP work, planned SAIDI would increase from 71.0 SAIDI minutes per customer in the first year (2019) to 88.2 SAIDI minutes in the fifth year (2023) of the CPP period; and planned SAIFI would increase from 0.314 planned SAIFI interruptions in the first year of the CPP to 0.378 SAIFI interruptions by the end of the CPP period. As a result, a SAIDI limit set on the basis of historical levels of planned interruptions would not make sufficient allowance for the increased work under the CPP.

recognised this by allowing some flexibility in the quality standard for planned interruptions over the CPP period. We propose that potential non-compliance will only occur if the limit is exceeded in a given year and one of the two preceding years. This allows Powerco some freedom to reallocate planned work across consecutive years, as compliance would not be assessed for each year in isolation.

505. We do, however, note that the use of a 2-out-of-3 year rule for planned SAIDI and SAIFI may create an opportunity for Powerco to increase the level of its planned interruptions every third year without breaching its quality path. An alternative approach which could provide Powerco with some flexibility with respect to planned interruptions would be to set the quality limits at a margin above Powerco's forecasts of planned SAIDI and SAIFI, and to remove the 2-out-of-3 year rule. This would mean that Powerco's performance on planned interruptions would be assessed against its quality limit on an annual basis. We welcome any views of interested parties on which approach is preferable.

506. In summary, we propose to set a quality standard for planned interruptions based on Powerco's forecast of planned SAIDI and SAIFI. This takes into account the level of planned interruptions that are forecast to be required for Powerco to undertake the CPP work programme. It also retains an incentive for Powerco to undertake the CPP work efficiently in line with our CPP decision, as Powerco would have to comply with the planned interruptions quality standard.

507. Table H2 below summarises our proposed quality standard for planned interruptions during the CPP period.

Table H2 Proposed quality standard for planned interruptions

	2019	2020	2021	2022	2023
Planned SAIDI (minutes)	71.034	75.446	82.017	87.213	88.190
Planned SAIFI (outages)	0.314	0.338	0.359	0.378	0.378

Source: Powerco "Planned SAIDI_SAIFI forecast – final_020617".xls (Ansarada 10.21)

Our draft decision on unplanned interruptions

508. For unplanned interruptions, we propose that the quality standard at the start of the CPP period should be based on the 10-year average of unplanned interruptions, and that this should gradually reduce over the CPP period (corresponding to an improvement in quality). This reduction reflects the expected improvement in reliability as a result of the increased investment during the CPP period.

509. In our view, it is reasonable that the quality standard for unplanned interruptions be initially set on the basis of the historical average of unplanned SAIDI and SAIFI, following the approach taken in the 2014 EDB DPP. However, we consider that the quality standard should also reflect the expected improvement in network reliability as a result of the increase in investment during the CPP period. To allow for this, we propose to gradually reduce the unplanned SAIDI and SAIFI levels (ie, improve reliability) over the course of the CPP period. We consider that such an adjustment is warranted, given the preference of Powerco's customers that current reliability should be maintained or improved.[161]

510. A number of submissions on the Issues Paper supported an adjustment to Powerco's proposed quality targets for unplanned outages to better reflect the expected improvement in network reliability. For example, Orion submitted that targeted improvements in reliability are achievable, though external environmental conditions have the greatest impact on unplanned outages. Orion said that "[w]hile efficiencies from expenditure improvements may take time to fully reflect in SAIDI and SAIFI statistics we support incremental limit adjustment to SAIDI/SAIFI limit setting to reflect the benefits of improvement initiatives."[162]

511. Trustpower also expect that Powerco's performance on unplanned outages should improve over time as investment in the network occurs.[163] According to Trustpower,[164]

> … the minimum standard for unplanned outages should recognise that over the CPP period the network should become more resilient. This could be achieved through reducing the SAIDI and SAIFI for unplanned outages on a sliding scale over the CPP.

512. In the following sections, we first set out our proposed approach for setting the quality standard for unplanned interruptions at the start of the CPP period. We then set out how we propose to gradually reduce the quality limits during the CPP period, to recognise the expected improvements in reliability under the CPP.

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[161] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 46.

[162] Orion "Submission on Powerco CPP Issues paper" (20 September 2017), para 6.

[163] Trustpower "Submission on Powerco CPP Issues paper" (22 September 2017), para 3.31.

[164] Trustpower "Submission on Powerco CPP Issues paper" (22 September 2017), para 3.3.2.

Setting the quality standard at the start of the CPP period

513. To set the quality standard that will apply to unplanned interruptions at the start of the CPP period, we propose to follow the approach used in the 2014 EDB DPP. This is also consistent with the approach proposed by Powerco. This involves the following steps:

513.1 'normalisation' of historical data on unplanned interruptions, to limit the impact of extreme events (referred to as major event days) on the quality standards.[165] In implementing the normalisation approach, we propose to use the same triggers for major event days as we used in the 2014 EDB DPP. This involves identifying the 23rd largest SAIDI and SAIFI events over the ten year averaging period, and using the associated SAIDI and SAIFI values as a boundary value which limits the impact of such events;[166]

513.2 deriving a 10-year historical average of normalised data on unplanned SAIDI and SAIFI, calculated over the period from 2008 to 2017;[167]

513.3 setting the initial quality limit at one standard deviation above the 10-year historical average, to allow for a degree of variability in reliability performance.[168]

514. The 10-year average of normalised unplanned SAIDI is 173.20 minutes per customer per year, with a standard deviation of 22.35 minutes. Our proposed quality limit for unplanned SAIDI at the start of the CPP period (in effect, 1 April 2018) is 195.55 minutes.

515. For unplanned SAIFI, the 10-year average is 2.14 outages per customer per year, with a standard deviation of 0.17 outages. Our proposed quality limit for unplanned SAIFI at the start of the CPP period is 2.31 outages.

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165 Under the 2014 EDB DPP, the normalised data is then weighted, with a 50% weighting applied to planned interruptions. Under the CPP, we are proposing to set separate quality paths for planned outages and unplanned outages, so this weighting is not necessary.

166 Commerce Commission "Default price-quality paths for electricity distributors from 1 April 2015 to 31 March 2020 Main policy paper" (28 November 2014), paras 6.46-6.53.

167 Commerce Commission "Default price-quality paths for electricity distributors from 1 April 2015 to 31 March 2020 Main policy paper" (28 November 2014), paras 6.15-6.41. The reference period is revised from 2005–2014 to 2008–2017.

168 Commerce Commission "Default price-quality paths for electricity distributors from 1 April 2015 to 31 March 2020 Main policy paper" (28 November 2014), para 6.11.

Adjusting the quality standard for unplanned interruptions during the CPP period

516. Having determined the quality limits that will apply to unplanned interruptions at the start of the CPP period, we now consider how those limits should move during the course of the CPP period. As discussed below, our view is that the quality limits should gradually reduce (ie, reliability improve) during the CPP period. This differs from Powerco's proposal, which is to maintain the quality limits for unplanned interruptions at historical levels.

517. The Verifier refers to a number of expenditure categories proposed by Powerco, and their expected impact on unplanned interruptions. These include expenditures on asset replacement, reliability programme, preventative and corrective maintenance, and vegetation management. Table H3 below summarises historical expenditures on a number of reliability related programmes, as well as Powerco's proposed expenditures and our draft decisions.[169]

Table H3 Expenditure on renewals, preventative and corrective maintenance, vegetation management, and reliability programme

Portfolio	type	Historical *2014-2018* *($2016, M)*	CPP *2019-2023* *($2016, M)*	Draft decision *2019-2023* *($2016, M)*	Expected impact
Renewals	Capex	$290.3	$450.4	$425.4	Reduced fault rates
Reliability programme	Capex	$16.5	$21.3	$16.5	Reduced duration & number of customers per fault
Preventative maintenance and inspection	Network opex	$38.1	$58.5	$58.5	Reduced fault rates
Corrective maintenance	Network opex	$55.0	$65.6	$65.6	Reduced fault rates
Vegetation management	Network opex	$27.1	$46.0	$46.0	Reduced fault rates

Source: Powerco Main Proposal, Draft Decision.

[169] In addition to the expenditure categories shown in Table H3, other expenditure categories are also likely to influence network reliability. These include capex on major and minor growth and security projects.

518. The impact of increased expenditure on unplanned SAIDI and SAIFI will differ according to the type of expenditure.

518.1 **renewals (asset replacement) capex**: Powerco proposes significant increases, in particular around replacement of overhead structures and overhead conductors and zone substations. Such renewals expenditure is directed at addressing asset failure rates (eg defected poles, cross-arm faults, conductor faults, and switchgear failure). Our draft decision is to allow $425 million of renewals capex over the CPP period;

518.2 **reliability capex**: Powerco proposes to increase expenditure on its reliability programme over the CPP period. This involves installing network automation devices which reduce the impact and duration of outages (rather than reducing the number of outages). Our draft decision is to allow $16.5 million of reliability capex over the CPP period;

518.3 **preventative maintenance and inspection opex:** Powerco proposes to increase its scheduled maintenance and inspection activities to ensure the continued integrity of its asset fleets and to improve asset information. These activities will enable Powerco to take action to avoid faults before they occur. Our draft decision is to allow $58.5 million of preventative maintenance and inspection opex over the CPP period;

518.4 **corrective maintenance opex:** during the CPP period, Powerco's proposal includes an increase in expenditure on corrective maintenance to address a backlog of defect assets which has contributed to deteriorating asset performance. Our draft decision is to allow $65.6 million of corrective maintenance opex over the CPP period;

518.5 **vegetation management opex**: Powerco proposes to spend $46.0m on vegetation management opex over the CPP period. Powerco proposes to move from its current reactive approach to vegetation management to a cyclical approach to ensure that tree sites along Powerco's lines are regularly inspected and that trees are trimmed or removed in a planned manner. Our draft decision is to allow $46 million of vegetation management opex over the CPP period.

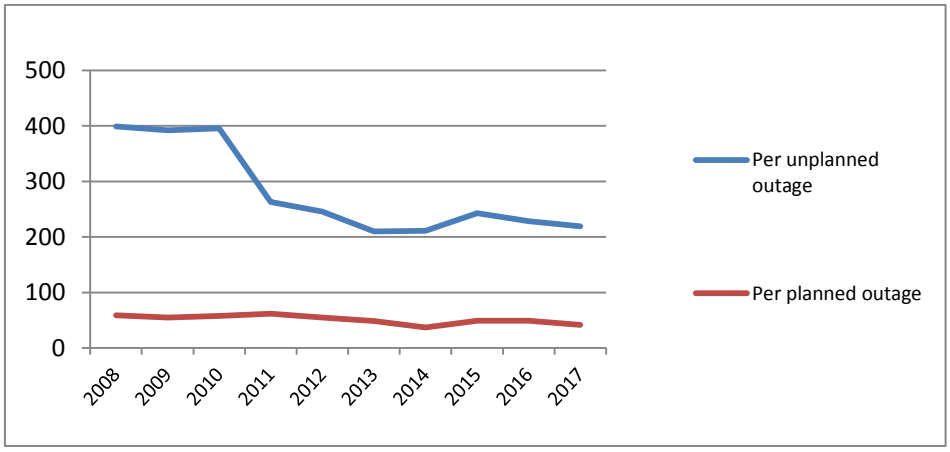
519. The impact of the proposed increase in asset replacement expenditure on unplanned SAIDI and SAIFI is likely to emerge over time in the form of a lower number of asset failures and outages than would otherwise occur. Improved opex maintenance and vegetation management practices are also likely to reduce the number of asset failures and vegetation-related faults.

520. Powerco's reliability programme relates more to limiting the impact of faults (rather than reducing the number of faults). Powerco notes that the increased expenditure on the reliability programme will enable Powerco to manage network reliability issues more quickly, by limiting the extent and duration of interruptions (rather than reducing their number). According to Powerco, its reliability programme to date has allowed it to manage network reliability cost-effectively and reasonably quickly.[170] In its 2017 Asset Management Plan, Powerco refers to the importance of its reliability programme:[171]

> Automation is an important investment area within our plans as it provides reliability improvements to be achieved reasonably quickly. This helps us stabilise reliability outcomes on our networks while we work to address and stabilise emerging asset health and network security issues.

521. Although Powerco's fault rates have been increasing, the mitigation measures that Powerco has introduced under its reliability programme (such as increased network automation and installation of more distribution feeders) have been effective in limiting the impact of unplanned interruptions. For example, based on Powerco's SAIDI and SAIFI historical database, the average number of customers affected per fault has nearly halved since 2010, as shown in Figure H4 below.

Figure H4 Average customers affected per outage



Source: calculated from Powerco historical data.

[170] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 143. Powerco discusses its reliability programme in its Main Proposal, specifically in Section 12.7.

[171] Powerco Asset Management Plan (2017), page 137.

522. In its CPP proposal, Powerco states that:[172]

> Our reliability investment in recent years have been weighted more to the eastern part of our network and, in many cases, we have now reached saturation. However, there is still scope for improvements in the western part of the network, and on some eastern feeders – which is the basis of our expenditure forecast. By the end of the CPP Period we anticipate that the large majority of feeders where automation is cost-effective and would have material benefit, will have been covered.

523. The above indicates that some improvement in unplanned interruptions could be expected over the course of the CPP. This is supported by a comparison of unplanned SAIDI and SAIFI in recent years across the Eastern and Western networks operated by Powerco.

524. In the period prior to 2010, Powerco's Eastern network performed relatively poorly compared to the Western network. For example, according to Powerco's AMP for 2007, SAIDI in the Eastern network exceeded SAIDI in the Western network in 6 out of 7 years between 2002 and 2007. This continued in 2008 and 2009, as shown in Figure H5 and Figure H6 below. However, since 2010, the Eastern network has generally performed better, which coincides with Powerco's reliability expenditure focussed on the Eastern network. For example, in the 5 years from 2013 to 2017, SAIDI and SAIFI levels for the Western network have exceeded those for the Eastern network by approximately 25%.[173]

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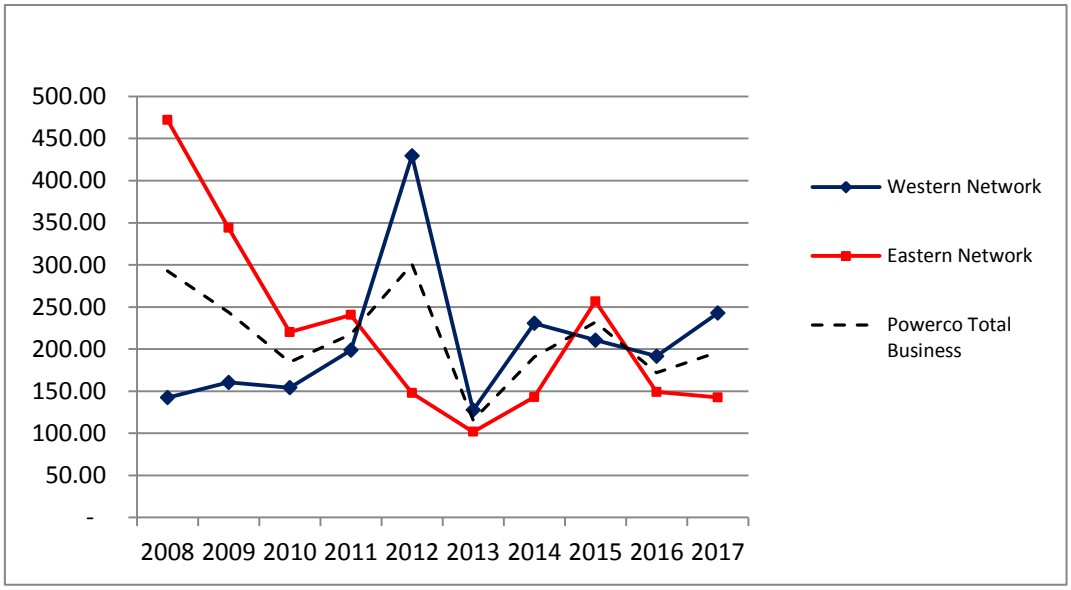
[172] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 144.

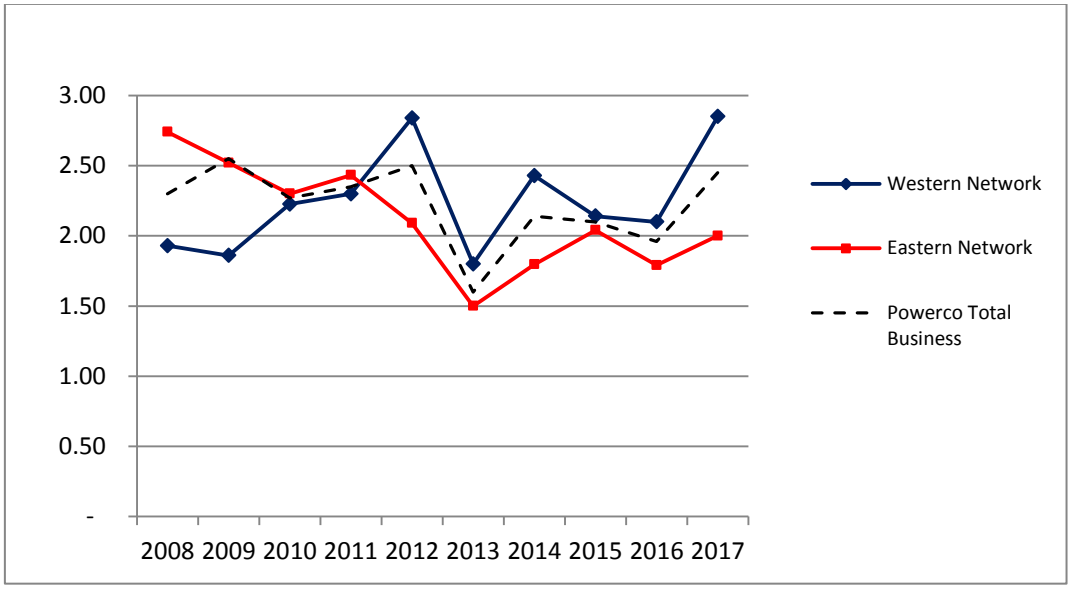
[173] The unplanned SAIDI and SAIFI for the Western and Eastern networks are taken from Powerco's Electricity Information Disclosures (available at http://www.powerco.co.nz/Publications/Disclosures/Electricity/). For the 2010 and 2011 years, the Western and Eastern network unplanned SAIDI and SAIFI appear to be incorrect (where the number and duration of faults are divided by the total Powerco ICPs, rather than the number of ICPs on each of the Eastern and Western networks). Following discussion with Powerco, we have corrected the 2010 and 2011 unplanned SAIDI and SAIFI for the Eastern and Western networks.

Figure H5 Unplanned SAIDI – Powerco Western and Eastern Networks



Source: Powerco Electricity Information Disclosures

Figure H6 Unplanned SAIFI – Powerco Western and Eastern Networks



Source: Powerco Electricity Information Disclosures

525. According to Powerco,[174]

> over the CPP Period, our investment in automation (reliability portfolio) will increase as we continue to roll out these devices to stabilise our reliability performance. This will increasingly focus on our Western Network as we approach saturation of these devices in the eastern network. These projects are an essential part of mitigating the impact of increasing asset failures on overall network reliability as they provide an effective way of limiting the number of customers effected in the event of an asset failure.

526. Such investment by Powerco in its Eastern network is likely to have contributed to increased reliability of the Eastern network. As noted above, in recent years, Powerco's unplanned SAIDI and SAIFI in its Eastern network appears to have improved relative to its Western network.

527. Powerco's plan to focus its reliability programme on the Western network during the CPP period, if strategically focussed, is capable of improving the performance of the Western network.

527.1 In recent years (2013-2017), unplanned SAIDI and SAIFI levels on the Western network have exceeded levels on the Eastern network by approximately 25%;

527.2 If unplanned SAIDI and SAIFI on the Western network were to converge over the CPP period to the levels achieved by the Eastern network in recent years, unplanned SAIDI and SAIFI across the Powerco business would improve by around 10%.[175]

528. In addition to its reliability programme, Powerco's proposal to increase preventative and corrective maintenance expenditure and vegetation management expenditure are also expected to lower faults and improve network reliability under the CPP. According to Powerco's information disclosure data, defective equipment and vegetation are the two most important known contributors to unplanned SAIDI and SAIFI.[176] Over 2013-2017, defective equipment contributed 37% to unplanned SAIFI and 40% to unplanned SAIDI; vegetation-related faults contributed 11% to unplanned SAIFI and 16% to unplanned SAIDI. A reduction in equipment- and vegetation-related faults will lead to improved outcomes for unplanned SAIDI and SAIFI.

529. We also note that Powerco's modelling of unplanned SAIDI and SAIFI indicates an improvement in unplanned SAIDI and SAIFI by the end of the CPP period. According to Powerco's final model for unplanned SAIDI and SAIFI, Powerco's forecast of unplanned SAIDI at the end of the CPP period (2023) is approximately 6% lower than at the start of the CPP period (2019), and Powerco's forecast of unplanned SAIFI is

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[174] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 128.

[175] There may be reasons why the actual impact of the reliability programme expenditure in the Western network may differ from that achieved in the Eastern network.

[176] Powerco Electricity Information Disclosure reports (2013-2017), Schedule 10 Reliability (10(ii) Class C Interruptions and Duration by Cause).

approximately 2% lower by the end of the CPP period. However, we also note that the Verifier expressed a number of concerns with Powerco's modelling of unplanned outages, in particular that it may not adequately take account of Powerco's proposed increases in renewals and reliability expenditure.[177] As a result, we consider that the reliability improvements shown in Powerco's modelling of unplanned outages are likely to be at the lower end of what might be expected under the CPP.

530. We therefore consider that it is appropriate to allow the quality standard for unplanned outages to gradually decline over the course of the CPP period, to reflect the expected improvements in network reliability that will emerge as a result of Powerco's CPP programme.

531. We consider that the reduction should be more pronounced for unplanned SAIDI, as a number of Powerco's proposed programmes are likely to reduce the duration of unplanned interruptions to a greater extent than they reduce the frequency. For example:

531.1 equipment such as mobile generators and capacitor banks, if mobilised quickly and effectively, can have a significant effect in reducing SAIDI. With this type of equipment, interruptions are often required to disconnect and reconnect to the stabilised network after repairs. As a result, SAIDI effects are minimised but SAIFI events still occur as a consequence of the interruption and reconnection process; and

531.2 an increased deployment of automated switching equipment between supply points reduces SAIDI outcomes via switching operations that are much shorter than dispatching staff into the field. However, it normally takes longer than the time interval within the definition of an interruption for a control room operator to assess the network problem and then carry out the appropriate corrective action to restore supply to the greatest number of customers possible. This means that the SAIFI impact is less significant.

532. In summary, we propose to set a quality standard for unplanned outages based on a historical average of unplanned SAIDI and SAIFI, and with gradual reductions over the course of the CPP period. We propose that by the end of the CPP period, the unplanned SAIFI limit will be 5% below the limit at the start of the CPP period, and the unplanned SAIDI limit will be 10% below the limit at the start of the CPP period.

[177] Farrier Swier "Final Verification Report for Powerco" (7 June 2017), page 216.

533. Table H4 below summarises our proposed quality standard for unplanned outages during the CPP period.

Table H4 Proposed quality standard for unplanned outages

		Year ending 31 March				
	2018	**2019**	**2020**	**2021**	**2022**	**2023**
Unplanned SAIDI limit (minutes)	195.555	191.477	187.484	183.575	179.747	175.999
Unplanned SAIDI target (minutes)	173.204	169.592	166.056	162.594	159.203	155.884
Unplanned SAIFI limit (outages)	2.309	2.285	2.262	2.239	2.216	2.194
Unplanned SAIFI target (outages)	2.138	2.116	2.094	2.073	2.052	2.031

Note: the 2018 target figures are the 10-year historical averages, with the limits including one standard deviation. The 2018 figures represent the values at the start of the CPP period (ie, 1 April 2018). By the end of the CPP period, the target and limit figures are 10% lower than at the start of the CPP period in the case of unplanned SAIDI, and 5% lower in the case of unplanned SAIFI.

534. Under our proposed quality standard for unplanned outages, Powerco would be deemed to be non-compliant if it exceeds the unplanned SAIDI or SAIFI limits in two-out-of-three consecutive years. This provides some flexibility to allow for one-off poor performing years. The quality limits are set at one standard deviation above the historical average, as discussed at above.

Our draft decision on revenue-linked quality incentive scheme

We propose to apply a revenue-linked quality incentive scheme to unplanned interruptions only

535. We propose to apply the revenue-linked quality incentive scheme from the 2014 EDB DPP to unplanned interruptions during the CPP period. This will provide Powerco with an incentive to improve reliability where it is cost-effective to do so.

536. We do not propose to apply the revenue-linked incentive scheme to planned interruptions. As Powerco has noted, including planned interruptions as part of the incentive scheme would incentivise Powerco to limit planned outages to gain additional revenue:[178]

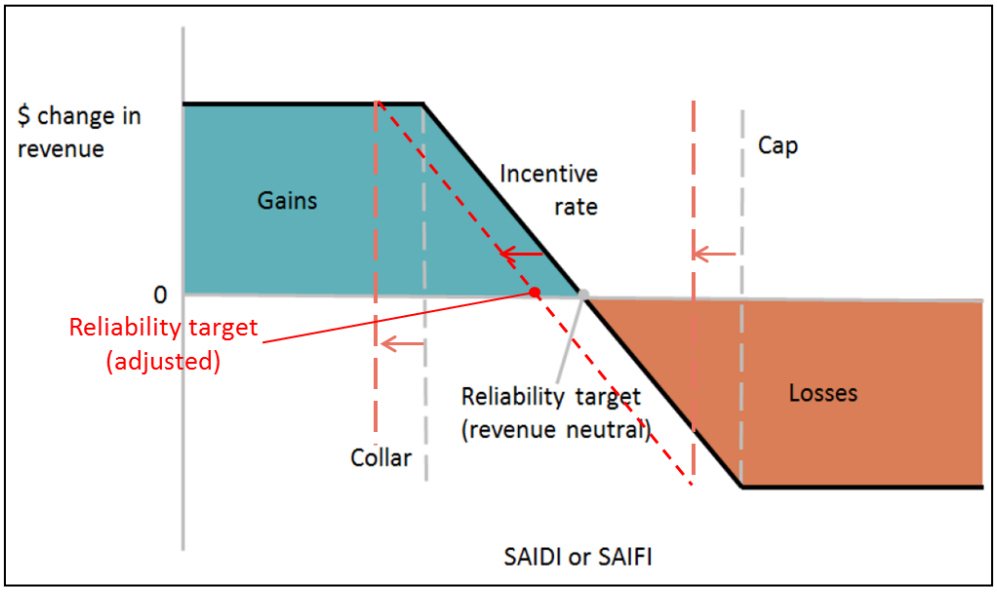
> … there should be no opportunity to gain financially by reducing planned outages to less than the proposed quality path. That would effectively mean that customers would have to fund not only the additional CPP work, but also reward us for carrying out less work.

[178] Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 218.

537. Under our draft decision, Powerco's revenue allowance will allow it to undertake a programme of work that meets the expenditure objective. In our view, applying a revenue-linked quality incentive scheme to the planned interruptions required to undertake the CPP work programme would create a financial incentive to delay or otherwise reduce the CPP work programme. We propose to exclude planned interruptions from the revenue-linked incentive scheme.

538. Figure H7 below is a stylised illustration of how the revenue-linked incentive scheme would operate in relation to unplanned interruptions.

Figure H7 Illustration of revenue-linked quality incentive scheme



539. Under the incentive scheme, Powerco's allowable revenue would decrease if it performs worse than the reliability target for unplanned interruptions, up to a maximum of 1% of its starting price maximum allowable revenue. This revenue decrease would be associated with a higher level of unplanned SAIDI or SAIFI, with the 1% maximum associated with a level known as the 'cap'. The maximum gain in allowable revenue from performing better than the reliability target would also be subject to a limit known as the SAIDI or SAIFI 'collar'.

540. Following the approach taken in the 2014 EDB DPP, we propose to set the cap and collar levels for unplanned SAIDI and SAIFI symmetrically at plus and minus one standard deviation around the reliability target. The reliability targets for unplanned interruptions are shown in Figure H7 above. Under our draft decision, the reliability targets, caps, and collars for unplanned interruptions will all gradually reduce over the CPP period.

541. The parameters for the revenue-linked quality incentive scheme are summarised in Table H5 below for unplanned SAIDI, and Table H6 for unplanned SAIFI. The revenue at risk is based on 1% of the starting price maximum allowance revenue in this draft decision, and is shared equally between unplanned SAIDI and unplanned SAIFI.[179] The incentive rates represent the change in revenue resulting from a unit change in reliability (unplanned SAIDI minute or unplanned SAIFI outage).

Table H5 Unplanned SAIDI

	Year ending 31 March				
	2019	**2020**	**2021**	**2022**	**2023**
Unplanned SAIDI Cap (minutes)	191.477	187.484	183.575	179.747	175.999
Unplanned SAIDI Target (minutes)	169.592	166.056	162.594	159.203	155.884
Unplanned SAIDI Collar (minutes)	147.708	144.628	141.612	138.660	135.768
Revenue at risk ($000)	$1,396	$1,396	$1,396	$1,396	$1,396
Incentive rate ($/SAIDI minute)	$63,767	$65,125	$66,512	$67,928	$69,375

Table H6 Unplanned SAIFI

	Year ending 31 March				
	2019	**2020**	**2021**	**2022**	**2023**
Unplanned SAIFI Cap (outages)	2.285	2.262	2.239	2.216	2.194
Unplanned SAIFI Target (outages)	2.116	2.094	2.073	2.052	2.031
Unplanned SAIFI Collar (outages)	1.946	1.926	1.907	1.887	1.868
Revenue at risk ($000)	$1,396	$1,396	$1,396	$1,396	$1,396
Incentive rate ($/SAIFI outage)	$8,227,599	$8,312,438	$8,398,151	$8,484,749	$8,572,239

[179] Commerce Commission "Default price-quality paths for electricity distributors from 1 April 2015 to 31 March 2020 Main policy paper" (28 November 2014), para 6.19.

Attachment I Proposed price path

Purpose of this attachment

542. This attachment outlines our draft decision on how we have set price path under Powerco's CPP. It comprises:

542.1 a brief explanation of how we set the price path for a CPP;

542.2 the proposed MAR that Powerco would be able to recover each year from its customers;

542.3 our views on how the short-term and long-term pricing impact of the draft decision on Powerco's proposal should be reflected in the price path;

542.4 the proposed recoverable costs and pass-through costs that Powerco would be able to recover/pass-through in addition to the MAR; and

542.5 the retention rate for the incremental rolling incentive scheme **(IRIS)** we propose applies to Powerco's capex.

How we set the price path for Powerco's CPP

543. Powerco will be the first EDB that is subject to a revenue cap form of control. In the 2016 IM review, we changed the form of control for EDBs from a weighted average price cap to a pure revenue cap. As part of this decision, we included a provision to allow for a 'wash-up' for under-recovery or over-recovery of revenue against the cap.[180, 181]

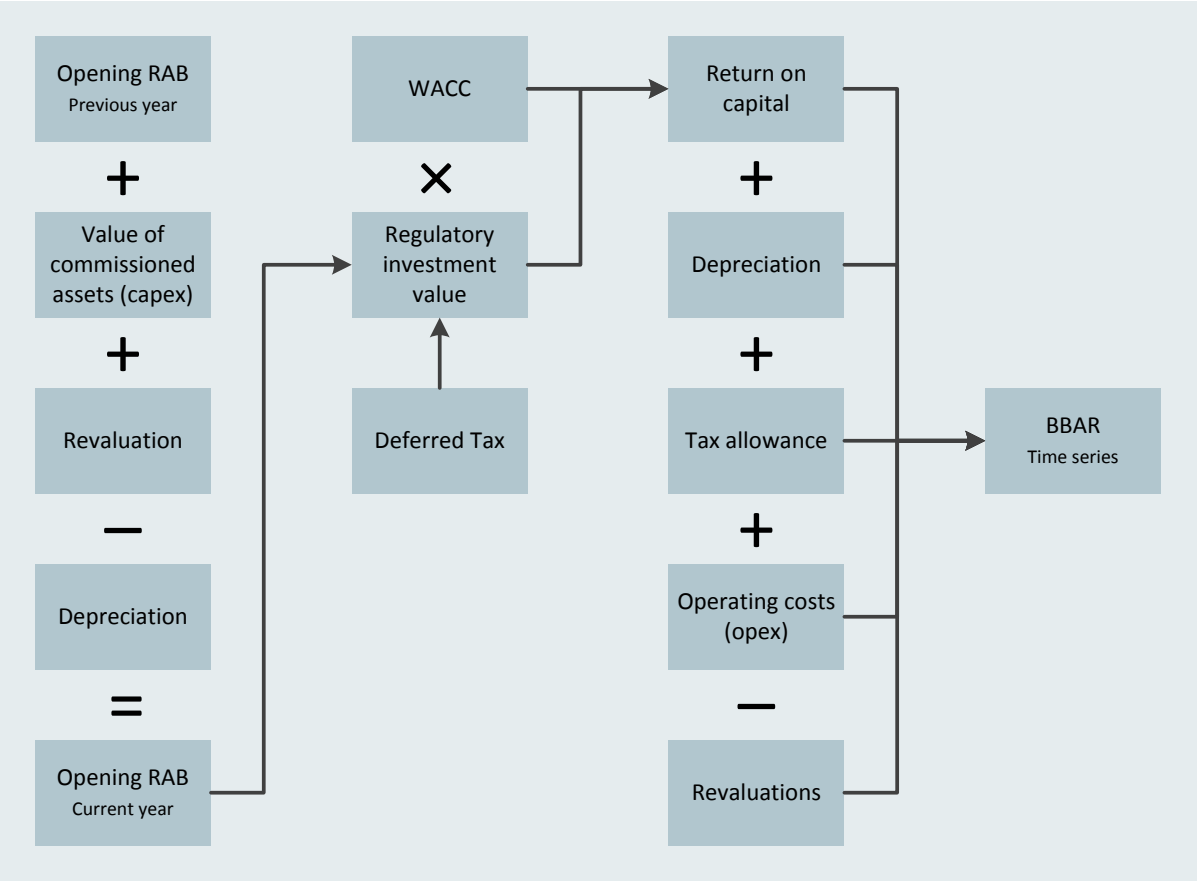
544. For Powerco's CPP we must therefore specify its MAR by setting its forecast allowable revenue equal to a forecast of its costs including the return on and of the RAB. To be able to do that, we need to determine a building blocks allowable revenue **(BBAR)** for each year of the regulatory period. At the simplest level the BBAR is calculated using separate 'building blocks' as follows:

Return on capital – Revaluations + Depreciation + Operating costs (opex) + Tax allowance

[180] Commerce Commission "Input methodologies review decisions: Topic paper 1" (20 December 2016).

[181] We note the price setting and wash-up processes are based on the approach applicable to gas transmission businesses which we discussed in detail in our reasons paper on the 2017 gas pipeline businesses DPP reset. Commerce Commission "Default price-quality paths for gas pipeline businesses from 1 October 2017" (31 May 2017), Attachment F.

Figure I1 How we calculate BBAR



545. The building block amounts vary depending on a number of factors, such as differences in the amount of capex and opex forecasts between the years. In order to derive a 'smoothed path' over the CPP period, we have then calculated the present value of BBAR over the CPP period. The discount rate used in this calculation is the weighted average cost of capital **(WACC)**.

546. We have then determined the path of revenue that would mean that Powerco would be able to recover the present value of BBAR over the CPP period taking into account forecast inflation. This 'smoothed' path involved the calculation of MAR (and forecast net allowable revenue) for each year, and:[182]

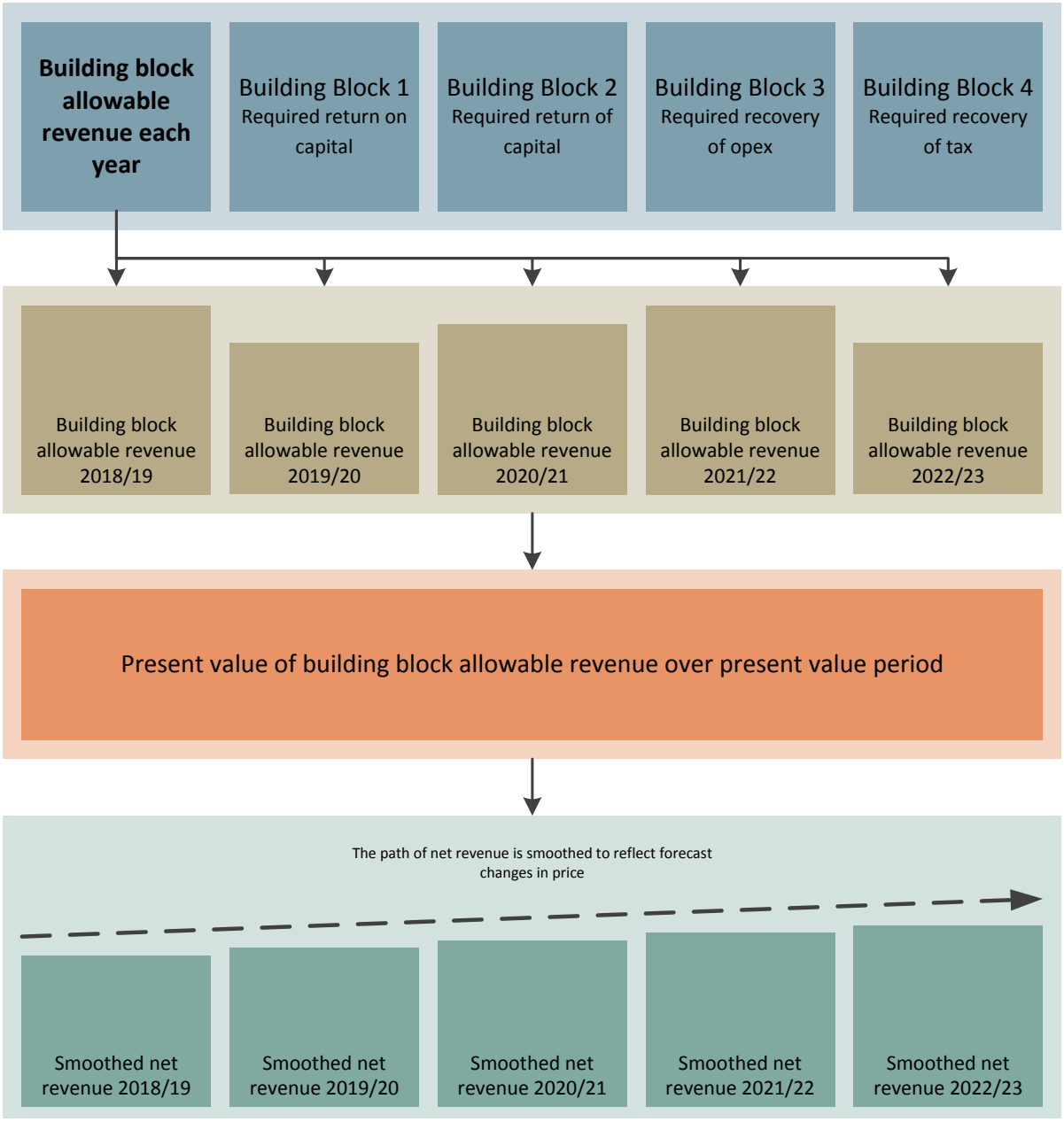
546.1 starts on 1 April 2018; and

546.2 determines the amount of revenue that Powerco can expect to recover through its electricity distribution charges between 1 April 2018 and 31 March 2023.

[182] Forecast net allowable revenue equals MAR plus forecast recoverable costs and pass-through costs.

547. Figure I2 below illustrates the approach we took in determining Powerco's BBAR and MAR over the CPP period.

Figure I2 From BBAR to MAR



548. In our 2013 Reasons Paper for Orion's CPP, we provide a comprehensive description of how we get from the expenditure forecasts to BBAR and MAR. We note that the Orion calculation also covers the application of claw-back and an X-factor other than zero to Orion's price path, which we do not intend to apply for Powerco's CPP.[183]

Our proposed MAR for Powerco

549. The total MAR over the CPP period is smoothed to determine a MAR before and after including an allowance for tax in each and every year of the CPP regulatory period. Over the five years of the CPP period, our draft decision reduces MAR by $19 million. Table I1 below sets out the initial MAR in 2018/2019, which increases with CPI over the CPP regulatory period.

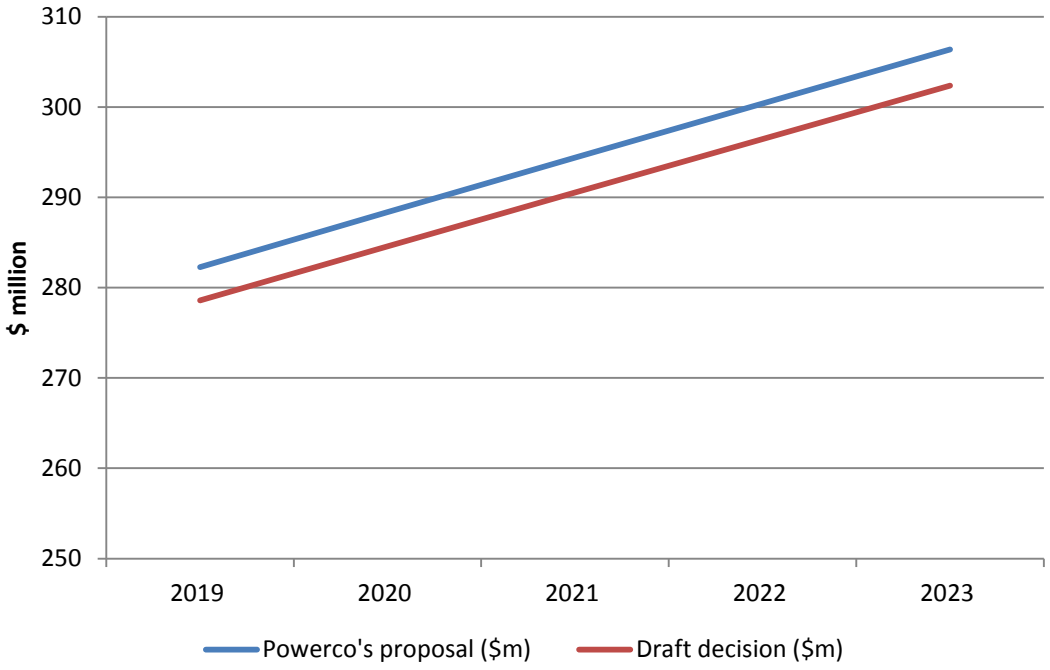
Table I1 Nominal MAR before tax ($m)

	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023
Powerco's proposal	282	288	294	300	306
Our draft decision	279	285	291	296	302
Difference	-4	-4	-4	-4	-4

[183] Commerce Commission "Setting the customised price-quality path for Orion New Zealand Limited" (29 November 2013), Chapter 4.

550. Figure I3 below compares Powerco's proposed annual MAR before tax with the one that we calculated for the draft decision.

Figure I3 Comparison of annual MAR before tax ($m)



551. We propose not to apply an X-factor ('rate of change') to the MAR series (other than zero). The rate of change in MAR impacts the value of the initial MAR and the slope of the MAR series (or price path) over the CPP period. This means, if applied, an X-factor can increase or reduce the price change:

551.1 from the year prior to the CPP period to the first year of the CPP period; and

551.2 from the last year of the CPP period to the first year of the subsequent pricing period.

552. The application of an X-factor that reduced the initial price change would, however, result in steeper year-on-year MAR increases.

553. We next outline the reasons for our draft decision not to apply an X-factor to the MAR series.

Retailers prefer a one-off price increase in the CPP period

554. In its CPP proposal, Powerco explains the impact of its expenditure forecast on MAR to be a 5.7% increase in the first year of the CPP period.[184] Our draft decision would reduce this initial distribution price increase to 4.4%, followed by smaller year-on-year increases to account for inflation ('CPI-indexing'). In a scenario with no other changes to electricity prices, the increased revenue allowed by our draft decision would translate into an initial 1.3% increase in total electricity cost for the average consumer.[185]

555. As we explain in more detail later in this chapter, we expect another distribution price increase, driven by the additional capex during the CPP period, to occur in the subsequent pricing period. We estimate this second price increase can be around 10%, in addition to the initial 4.4% increase at the beginning of the CPP period.[186]

556. Powerco consulted with its stakeholders on whether to smooth-out the MAR increase (and price increase) over the five-year period as opposed to having an initial step change increase in the first year of the CPP period. The feedback was not unanimous across all stakeholder groups. Retailers, however, preferred a one-off price increase as, according to their feedback, this was easier to administer.[187]

557. Our draft decision acknowledges the retailers' preference. We note, however, that customers will inevitably face further price adjustments (ie, in addition to CPI-indexing) during the CPP period. This is because:

    557.1 Powerco will set its electricity distribution prices in 2018/2019 (ie, the first year of the CPP period) on the basis of a MAR that is likely to be different from the MAR we will set in our final CPP decision.[188] Therefore, an adjustment to the price path later in the CPP period will be necessary to offset the impact this will have on pricing.

558. Also, as discussed in Attachment J the CPP price path will be reopened and the MAR will be adjusted for the years 2021-2023 when the DPP WACC is reset in 2019.

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184 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), Chapter 18.

185 This calculation assumes that electricity distribution costs contribute 30% to the value of total consumer bills and that all increases will be passed on to consumers by retailers.

186 For clarification, when we discuss price increases in this paper, we refer to the initial price increase at the beginning of a regulatory period – ie, not those that can occur during a regulatory period due to CPI-indexing or adjustments to the price path to account for a WACC reset.

187 Powerco "Customised Price-Quality Path – Main Proposal" (12 June 2017), page 228.

188 This is because Powerco's consultation with retailers on pricing for the 2018/2019 pricing period will start shortly and our final decision on the CPP proposal will be too late to be considered in these consultations and for the price setting in 2018/2019.

559. Due to the timing issue outlined above, Powerco considers setting its distribution prices for the 2018/2019 pricing period (ie, the first year of the CPP period) based on either:

559.1 this draft decision, resulting in an initial electricity distribution charge increase of 4.4% ; or

559.2 the current DPP, which would defer the impact of the CPP on prices to the second year of the CPP period.

560. In any event, as we outlined above, the MAR we will set in our final CPP decision is likely to be different from the assumption Powerco will use when it sets prices for the first year of the CPP period. The difference, however, will be accounted for in an NPV-neutral way through either a wash-up in the third year of the CPP period or a smoothing of the impact on pricing across the remaining three years of the CPP period.

561. We acknowledge that the initial 4.4% distribution price increase can be significant to Powerco's customers. However, in our Issues Paper, we outlined our view that we consider the long-term pricing impact of Powerco's CPP proposal to be more relevant and asked for submissions on if and how this should be addressed in our draft decision.

There is uncertainty around future price increases

562. In our Issues Paper, we explained that there is likely to be a second and more material price increase, driven by the capex spend during the CPP period, in the transition from the five-year CPP period to the subsequent pricing period.

563. In particular, we outlined that our preliminary assessment of the impact of Powerco's proposal on the MAR in a subsequent five-year pricing period indicates another step change increase of around 10% in addition to the initial step change increase of 5.7% (now 4.4%).[189] We estimated that this would translate into a further increase in total electricity cost (including generation, transmission, distribution and retail costs) of around 3% for the average consumer.

[189] In addition to the cumulative effects of CPI driven increase across the two regulatory periods.

564. We noted that this impact would largely result from the fact that the opening RAB for the subsequent pricing period will include all of the commissioned assets from the CPP period, whereas the opening RAB of the CPP period is lower and the RAB only gradually increases while new assets are being commissioned.[190] Consequently, the average RAB in the subsequent pricing period could be considerably higher than in the CPP period.[191]

565. We asked in our Issues Paper whether we should address this long-term pricing impact in the CPP period by adjusting the MAR series (through the X-factor) such that any price increases would be minimised from the CPP period to the subsequent pricing period. As an alternative to this potential solution, we sought feedback on whether we should leave the MAR series of the CPP period unchanged with a view to considering in the subsequent pricing period whether there is a price increase that should be minimised (through the X-factor) for that subsequent period.

566. We have received mixed feedback on these questions. EDBs consider we should defer any decisions to mitigate future price increases until we make actual decisions about subsequent pricing periods, since there is currently too much uncertainty as to what these will look like.[192] MEUG and ERANZ focussed in their submissions on the extent of, and transparency around, the actual price increase.[193] They did not, however, provide views as to how a potential subsequent price increase should be addressed.

567. Given the views provided in submissions, especially those from customers or customer groups, do not clearly express a preference that we should aim to minimise these MAR increases, we propose not to adjust the MAR series to minimise future price increases. Also, we share the views expressed by some EDBs, including Powerco, regarding uncertainty as to what the future price increases will be.[194]

568. In particular, the extent of the price increase in the subsequent pricing period would depend on Powerco's actual capex during the CPP period as well as the WACC rate at that time and the expenditure forecasts used when resetting prices. None of these are known or easy to forecast at this stage and could be significantly different from the assumptions we used in the preliminary analysis we did for the Issues Paper.

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190 Our analysis uses Powerco's long term asset management plan (AMP) expenditure forecasts, an estimated WACC of 6.78% from 2021 onwards, and some simplifying assumptions for capex and depreciation.

191 This is important to clarify as the return on the RAB throughout both pricing periods is likely to be the main contributor to the maximum revenues that Powerco will be allowed to make. As indicated by our preliminary analysis, a higher average RAB in the subsequent pricing period than in the CPP period is therefore likely to result in higher allowable revenues to Powerco.

192 For example, Aurora Energy "Submission on Powerco CPP Issues paper" (22 September 2017), Chapter 7.

193 For example, MEUG "Submission on Powerco CPP Issues paper" (22 September 2017), Part 2.2.

194 For example, Powerco "Submission on Powerco CPP Issues paper" (22 September 2017), para 39.

569. However, we consider it important to create transparency around the full impact the CPP will have on pricing, as this is not, as outlined correctly by MEUG and ERANZ, fully reflected in the initial price increase (ie, from the year prior to the CPP period to the first year of the CPP period). We therefore reiterate our view that the initial price increase is likely to be followed by a subsequent and more material one. Despite significant uncertainty around the extent of this second increase, we continue to be of the view that the distribution price uplift could be more substantial in the longer term due to the extent and timing of capital expenditure in the CPP period.[195]

Our analysis captures the full extent of the long-term pricing impact

570. We consider that our preliminary analysis, despite being uncertain, captures the full extent of the long-term pricing impact of Powerco's CPP.

571. ERANZ submitted, in order to make the full extent of the long-term pricing impact visible, we should attempt to model Powerco's MAR for the entire lifetime of the additional assets Powerco forecasts to create/acquire during the CPP period. We should then compare that to the MAR that Powerco would be entitled to if it continued to be on a DPP for the same period. In other words, the full extent of the long-term pricing impact of the CPP has to be calculated as the difference in MAR resulting from the additional expenditure under a CPP scenario and under continuation of the DPP regime – both modelled for the entire lifetime of the proposed additional assets.[196]

572. While it is possible that such an analysis may provide a potentially more accurate estimate, we consider the accuracy benefits are unlikely to outweigh the cost involved for us and Powerco in undertaking it. More importantly, increased accuracy in our analysis is unlikely to cause us to reach a different conclusion on our draft decision. This is because:

    572.1 as outlined below, the benefits of using the type of model suggested in our analysis are limited and carry with them uncertainty:

        572.1.1 We agree that the additional costs consumers will have to pay are the incremental opex during the CPP period and the incremental capex recovered over the life time of the assets (in net present value terms), relative to what Powerco would be able to recover if it continued to be under a DPP. The full extent of the price increase (in percentage terms), however, will be realised when the RAB has been fully updated for all additional capex in the CPP period, as the return on and of this

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[195] We note that our modelling of the subsequent distribution price increase uses the long term expenditure forecasts Powerco provided with its CPP proposal. As such, the price increase is already partially offset by Powerco's anticipation of lower opex in the subsequent pricing period (which is in line with our expectation of decreasing opex levels.

[196] TDB Advisory on behalf of ERANZ "Submission on Powerco CPP Issues paper" (22 September 2017), Chapter 4.

capex will not rise any further in later periods[197] – this addresses ERANZ's view that the analysis should be underpinned by full lifecycle modelling.

572.1.2 The initial distribution price increase of 4.4% compares the MAR Powerco would be entitled to under our CPP draft decision to the MAR Powerco expects to recover if it continued on a DPP – this addresses ERANZ's view that the long-term pricing impact should be assessed by comparing the MAR under the CPP to the MAR under a DPP.

572.1.3 Despite indicating above that rolling over the MAR to the next regulatory period the way Powerco did it is a possible option, there is uncertainty as to what the MAR under the next DPP would look like.

572.2 the costs of undertaking such an analysis for us and Powerco are likely to be high, because this would require:

572.2.1 Powerco to provide a new full life cycle CPP model (which is not an IM requirement), incorporating an assumption as to how Powerco would transition from the price path in the CPP period to the price path in the subsequent period (DPP or CPP);

572.2.2 The Commission, in order to enable Powerco to provide the above, would have to confirm to Powerco how it would transition from the price path in the CPP period to either a DPP or CPP;

572.2.3 The Commission to model a full lifecycle DPP counterfactual; and

572.2.4 Powerco would have to provide an expenditure forecast that only includes DPP capex and opex.

Pass-through and recoverable costs for the CPP period

573. The categories of pass-through costs and recoverable costs that Powerco may recover in its prices (and that are not included in the BBARs, MARs or the setting of the price path) are defined in the IMs. Although these additional costs increase the amounts payable by consumers, they are not reflected in our estimated initial MAR increase.

[197] For clarification, the RAB will be fully updated for the capex during the CPP period at the start of the subsequent pricing period – ie, this is why we consider the full extent of the price increase resulting from Powerco's expenditure during the CPP period is captured by our analysis.

574. We are required to specifically determine the following amounts in the CPP determination:

574.1 The fee payable to the Verifier for Powerco's CPP proposal is $369,286.

574.2 The auditor's costs for Powerco's CPP proposal is $375,314.

574.3 The independent engineer's fees for Powerco's CPP proposal is nil.

Financial model that demonstrates our price path draft decision

575. We have published the financial model that supports our draft decision on Powerco's CPP alongside this paper.

576. We have reviewed and used the financial model that Powerco provided with its CPP proposal. We are confident Powerco's financial model calculates an accurate and IM-compliant MAR series as:

576.1 it has been extensively reviewed by Powerco's independent auditor and us for IM compliance and mathematical correctness;

576.2 the BBAR and MAR module of the financial model is based on the financial model we created and published for Orion's CPP (and which was subject to significant scrutiny); and

576.3 historical data used in the model to determine cost input parameters such as the opening RAB were reviewed by Powerco's independent auditor.

577. We met with Powerco's independent auditor to understand the scope of its review and its approach to the review. We are satisfied the audit and assurance testing carried out by the independent auditor covered all relevant areas and was done to a professional standard.

Incremental rolling incentive scheme

Powerco's capex is subject to IRIS

578. The input methodologies set out that any capex under a CPP will be subject to an incremental rolling incentive scheme **(IRIS)**.[198]

579. This means that any over- or under- spend against Powerco's capex allowance will be shared between consumers and Powerco – ie, if Powerco under-spends against its capex allowance, it will get to keep some of that saving and some will be shared with consumers.

[198] *Electricity Distribution Services Input Methodologies Determination 2012* [2012] NZCC 26, clause 3.3.10(1)

580. The retention rate is the percentage of any over- or under- spend on capex that Powerco retains – ie, how much consumers pay of any over-spend and how much consumers save of any under-spend.

We are required to set the retention rate for Powerco's CPP

581. Under DPP the current retention rate is 15%, however the retention rate for the capex IRIS is set in the CPP determination.

582. This means that we have to specify the specific retention rate to apply to Powerco for its CPP. This includes the flexibility to set a different retention rate to the DPP—if appropriate—in order to alter its incentives to manage over- and under- spend against its capex allowance.

Our draft decision is to use the same retention rate as the DPP

583. We propose Powerco be subject to the same 15% retention rate for capex under IRIS as the DPP. We consider this appropriate because:

583.1 Powerco's work programme is substantial and will be challenging to deliver. A higher retention factor could incentivise Powerco to under-deliver, or reward it for under-delivery of the investments required to stabilise network reliability and meet capacity needs on its network. Our views on the deliverability of Powerco's work programme, are discussed further in Attachment K.

583.2 While we want to incentivise delivery of Powerco's work programme, we consider Powerco should still have some incentive to ensure its costs are efficient and the benefits of any cost savings are also shared with consumers. We consider 15% retention rate broadly achieves this, and a lower retention factor would provide a very limited incentive for Powerco to ensure its costs are efficient.

Attachment J Proposed IM variations

Purpose of this attachment

584. This attachment outlines our draft decisions on Powerco's proposed IM variations.[199] These comprise draft decisions on the:

584.1 WACC used during the CPP period; and

584.2 the definition of distributed generation allowance – ie, the treatment of avoided cost of transmission **(ACOT)** payments under the IMs that are no longer required to be made due to amendments to Schedule 6.4 of the Electricity Industry Participation Code **(Code)**.

Summary of our draft decision

WACC used during the CPP period

585. Our draft decision is to accept Powerco's proposed variation to the IMs to use:

585.1 the current DPP WACC rate (7.19%) to calculate the price path for that part of the CPP regulatory period that coincides with the current DPP regulatory period (2019-2020); and

585.2 Powerco's estimate of the DPP WACC rate (6.78%) for that part of the CPP regulatory period that coincides with the initial years of the subsequent DPP regulatory period (2021-2023).

586. We note that the IMs would require us to calculate Powerco's price path using the current DPP WACC throughout the five years of the CPP period.

587. We set out in Table J1 below a comparison of the CPP IM-compliant WACC rate for each assessment year of the CPP period and the proposed WACC rates under the IM variation.

Table J1 WACC rate options during CPP period

Option	2019	2020	2021	2022	2023
CPP IM-compliant	7.19%	7.19%	7.19%	7.19%	7.19%
Proposed IM variation	7.19%	7.19%	6.78%	6.78%	6.78%

[199] Section 53V(2)(c) of the Commerce Act allows us in determining a CPP to vary the IMs with the agreement of the supplier.

The definition of distributed generation allowance

588. Our draft decision is to reject Powerco's proposed variation to the IMs to allow it to recover any ACOT payments that were made in accordance with a connection contract which complied with the Code at the time the contract was entered into.

Proposed IM amendment to the WACC rate to be used during the CPP period

The IMs require us to reopen and update Powerco's price path for the DPP reset WACC rate

589. Following our review of the IMs last year, we changed the WACC rate that we use to determine CPPs. We now use the current prevailing DPP WACC to calculate the price path, rather than the most recent estimate.

590. The IMs then require us to reopen the CPP price path when the DPP WACC changes as a result of setting a new DPP (this will occur for Powerco on 1 April 2020 and take effect for 2021-2023).

591. A CPP price path that continues into a new DPP regulatory period will then be recalculated using the new WACC, revaluation rate and cost of debt. Accordingly, if unvaried, the IMs would require us to assume, when evaluating the CPP proposal and calculating the initial price path, that in the absence of any indication of the WACC rate that will apply from the next DPP reset, the current DPP WACC will prevail for the entirety of the five-year CPP regulatory period.[200]

Powerco's proposal

592. Powerco assumes, based on current and projected forecasts of interest rates, that the current DPP WACC is likely to be adjusted downwards when it is next reset in 2020. If this proves correct, it would mean that:

    592.1 the price path derived at the commencement of the CPP regulatory period would overstate the impact of the full eventual CPP regulatory period on prices; and

    592.2 consumers may experience more significant price changes as a consequence of the CPP: at the commencement of the CPP, and then again when the DPP WACC rate resets.

[200] Even if it is likely that the DPP WACC will decrease or increase at the next DPP reset.

593. To address this price volatility, Powerco has proposed a variation to the IMs that would allow us to:

593.1 use the current DPP WACC to calculate the price path for that part of the CPP regulatory period that coincides with the current DPP regulatory period; and

593.2 use a forecast of the DPP WACC rate for that part of the CPP regulatory period that coincides with the initial years of the subsequent DPP regulatory period.

594. The resulting CPP MAR would then produce a revenue reset that reflects the anticipated DPP WACC rate decrease in a smoothed, average path. This will minimise the likely variance between the price path that is forecast at the outset of the CPP regulatory period and the adjusted CPP price path that will ultimately result from the DPP WACC rate reset in 2020.

595. Further explanation of this issue and Powerco's proposed approach is available in Powerco's CPP application document.[201]

Our draft decision

596. Our draft decision is to accept Powerco's proposed IM variation to use the current DPP WACC rate of 7.19% in 2019 and 2020 and a forecast WACC rate of 6.78% from 2021-2023.

597. Based on the expenditure that we propose Powerco will be able to recover, this would reduce the MAR across the CPP period by $29 million (in nominal terms), which is equivalent to a decrease of 2.0%. More importantly, it results in a lower initial price increase of 4.4%, as it would otherwise be at 6.5%.

598. We share Powerco's view that the DPP WACC rate, when it is next reset, is likely to decrease from where it was at the last DPP reset and that a forecast of 6.78% is reasonable. This is based on the assumption that the risk-free rate, as the main moving part in the WACC, is likely to be lower than the prevailing rate at the next reset.[202]

599. We therefore consider it reasonable to build this assumption into Powerco's price path, as this should reduce price volatility for consumers when we reopen and update the CPP price path for the actual DPP WACC rate when it is reset in 2020. To put this into context, not accepting Powerco's proposed IM variation would mean, provided WACC is actually set at 6.78% when it is reset in 2020, that the full impact of $29 million on the price path (plus the time value of money for the over-recovery in the first two years of the regulatory period), as explained above, would have to be washed-up across the remaining three years of the regulatory period.

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[201] Powerco "Customised Price-Quality Path – Application" (12 June 2017), Chapter 8.1.

[202] The EDB DPP decision was based on a risk-free rate as of September 2014, which was 4.09%. At the time this paper was drafted, the risk-free rate was 2.46%.

600. In their submissions on our Issues Paper, both Contact Energy and MEUG favour certainty of the WACC rate over the CPP period and consider that we should set a WACC rate that is specific for the CPP period and that will cover the entire five years.[203]

601. We agree that such an approach would result in absolute certainty as to the contribution of the WACC rate to the price path over the entire regulatory period. We note, however, the IMs prevent us from doing so and we do not consider it appropriate to vary the IMs in a way that we could set a WACC specific to the CPP period. This is because we only just consulted on and changed the approach on the WACC rate as part of our IM review decisions in 2016.[204] Furthermore, a variation to the IMs would require Powerco's consent as it requires mutual agreement between us and the CPP applicant.

602. Contact Energy also has different views of what the assumptions on debt premium and risk-free rate should be that underpin Powerco's forecast of what the DPP WACC rate might be when it is next reset. In that regard, Contact Energy considers Powerco should provide more transparency so that interested parties can better engage with its proposal.[205]

603. We considered the merits of determining a forecast ourselves of what the DPP WACC rate might be when it is next reset, and have concluded there is limited value in doing so. This is because:

    603.1 we share Powerco's view that the WACC rate, when it is next reset, is likely to decrease from where it was at the last DPP reset and that a forecast of 6.78% is a reasonable forecast; and

    603.2 the cost in determining a forecast WACC rate which may, potentially, be more accurate is unlikely to outweigh the benefits, as the price path will be, when it is reopened, adjusted for the actual DPP WACC anyway. Any resulting revenue differences caused by the forecast WACC rate used when we initially set the price path will be washed-up at this stage.

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[203] Contact Energy "Submission on Powerco CPP Issues paper" (22 September 2017), page 9 and MEUG "Submission on Powerco CPP Issues paper" (22 September 2017), para 2.13.

[204] Commerce Commission "Input methodologies review decisions: Topic paper 4 – Cost of capital issues" (20 December 2016), Chapter 6.

[205] Contact Energy "Submission on Powerco CPP Issues paper" (22 September 2017), pages 10-11.

Proposed IM variation to the definition of distributed generation allowance

Some ACOT payments will not be mandated by the Code anymore

604. Schedule 6.4 of Part 6 of the Code has been amended such that EDBs are no longer required to make payments to distributed generators **(DGs)** which do not, as determined by the Electricity Authority,[206] efficiently deter or avoid transmission costs. However, some EDBs, including Powerco, have entered into connection contracts with DGs that mandate continued payments even if the Code no longer requires them.

605. Under the definition of 'distributed generation allowance', the IMs specify ACOT payments as a recoverable cost, provided they were made in accordance with Schedule 6.4 of Part 6 of the Code or the Electricity Industry Act.

Powerco's proposal

606. Powerco proposed that "it would be appropriate to clarify the definition of distributed generation allowance to confirm that it extends to ACOT payments made pursuant to contracts that were in accordance with Schedule 6.4 at the time they were entered into". If we disagreed, Powerco considers we should "amend the definition of distributed generation allowance to provide expressly for that continued treatment".

607. Powerco considers that contractually committed ACOT payments should remain recoverable, as:

> These obligations were entered into prudently and in good faith reliance on the regulatory regime that prevailed at the time. In entering into connection contracts intended to underwrite substantial long-term investments, EDBs and generators were entitled to rely on the durability of the regulatory framework for connection of distributed generation. Accordingly, exposing EDBs to unrecoverable costs in relation to contracts that were prudent and efficient at the time they were entered into would be contrary to the purpose of Part 4, as it would undermine incentives to innovate and invest.

608. Further explanation of this issue and Powerco's proposed approach is available in Powerco's CPP application document.[207]

Our draft decision

609. Our draft decision is to reject Powerco's proposal to vary the IMs in a way that would allow recovery of any ACOT payments which no longer comply with the Code, but that were made in accordance with a connection contract which complied with the Code at the time the contract was entered into.

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[206] On the recommendation of Transpower

[207] Powerco "Customised Price-Quality Path – Application" (12 June 2017), Chapter 8.3.

610. We accept that these contracts "were entered into prudently and in good faith reliance on the regulatory regime that prevailed at the time". However, we consider there should be an incentive for EDBs and Powerco to terminate those contracts that do not efficiently deter or avoid transmission costs. Continuing to allow the recovery of these ACOT payments would not be in the long-term benefit of the consumers, as this would continue to incentivise DGs to keep operating generation projects that would be considered inefficient under the amended Code.

611. Our draft decision is consistent with our 2014 amendments to the IMs, where we modified the treatment of avoided transmission charges associated with distributed generation by:

611.1 introducing a new definition of 'distributed generation allowance' in clause 1.1.4(2); and

611.2 adding a new recoverable cost term to the list of recoverable costs in clause 3.1.3(1)(f).

612. In our final reasons paper, we noted explicitly that these amendments were designed to "allow any changes implemented in accordance with the Electricity Industry Act 2010 to be accommodated".[208]

613. We explained that "the addition of a new recoverable costs term means that we can be flexible in the event of any changes to the Electricity Authority's Electricity Industry Participation Code regarding avoided transmission charges associated with distributed generation." Accordingly, we were clear that the impact of any Code changes (including amendment to Schedule 6.4) was intended to flow through immediately, and, indeed, we highlighted this potential scenario in the final reasons paper.[209]

614. We also consider that varying the IMs would be contrary to the purpose of IMs as set out in section 52R of the Commerce Act. This is because it would not promote certainty, as it requires two separate interpretations:

614.1 Post-Code amendment interpretation – to include ACOT payments by EDBs to DGs where they are approved by the Electricity Authority as being necessary to enable Transpower to meet the grid reliability standards (ie, where those payments remain within the scope of Schedule 6.4 following the recent Code amendments); and

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[208] Commerce Commission, *Input methodology amendments for electricity distribution services – Default price-quality paths* (27 November 2014), page 34 (http://www.comcom.govt.nz/dmsdocument/12724).

[209] We note that when consulting on this amendment to the IMs, we did not receive any submissions that opposed this amendment

614.2 Pre-Code amendment interpretation – to include ACOT payments by EDBs arising from contracts that were in accordance with the Code at the time those contracts were entered into, even though the EDBs would not now be required to enter into those obligations.

We disagree with Powerco's interpretation of the IMs

615. We disagree with Powerco's interpretation of the IMs. The definition of 'distributed generation allowance' refers to "amounts payable…in relation to avoided transmission charges arising from distributed generation…*in accordance with* Schedule 6.4 of Part 6 of the Electricity Industry Participation Code or the Electricity Industry Act 2010" (emphasis added). We consider that the clear meaning of these words is that in order for the definition to cover such payments, they must be required by Schedule 6.4 as it stands at the time that the payment was made (ie, incorporating any amendments).

616. Importantly, the focus of the definition is on the payment, and not on the contract or arrangements under which it is made.

617. If Powerco has entered into connection contracts with DGs that mandate continued payments, even though those payments are no longer required by Schedule 6.4, then, in our view, those payments would be made solely under the connection contract, and not 'in accordance with' the provisions of the Code or the Electricity Industry Act. These ongoing contractual payment obligations will not constitute 'amounts payable' in relation to ACOT payments made in accordance with the Code, as the Code and/or Act no longer requires such payments to be made.

Powerco's financial exposure can be substantially mitigated

618. ACOT payments will continue to be recoverable under clause 3.1.3(f) of the IMs until the Code amendments come into effect.

619. The Code amendments come into effect on a staggered basis:

619.1 1 April 2018 – the lower South Island.

619.2 1 October 2018 – lower North Island.

619.3 1 April 2019 – upper North Island.

619.4 1 October 2019 – upper South Island.[210]

[210] Clause 4 of Schedule 6.4 of Part 6 of the Code

620. Following these respective dates, ACOT payments will continue to be recoverable for those payments that are made in accordance with the Code, as amended (ie, payments by EDBs to distributed generators that are approved by the Electricity Authority as being necessary to enable Transpower to meet the grid reliability standards).

621. Any ACOT payments that fall outside the scope of the Code will cease to be recoverable under the IMs. This includes instances where the ACOT payment is outside the scope of the amended Code but continues to be required under connection agreements entered into between EDBs and distributed generators prior to the Code amendment.

622. We understand, however, that the financial exposure of some EDBs, potentially including Powerco, may reduce significantly once the Electricity Authority's new transmission pricing methodology guidelines **(TPM)** are in place and implemented by Transpower. Prior to these being published, it is unclear how to determine the quantum of the ACOT payments that will comply with the revised Code and those payments that will fall outside it. However, we expect that at least some of the ACOT payments may continue to be Code compliant and therefore will remain recoverable under the IMs.

623. For EDBs, including Powerco, with connection contracts that cannot be amended or terminated and that will no longer comply with the Code, the ACOT payments will become an operating expense and will be subject to the same incentives as other operating expenditure. Pursuant to the IRIS incentive adjustment in the IMs (Part 3, subpart 3), Powerco will be able to recover up to two-thirds (in net present value terms) of the otherwise unrecoverable ACOT expense in the subsequent regulatory period.

624. This will effectively limit Powerco's financial exposure to only one-third of the ACOT payments they would continue to be obliged to make under pre-existing arrangements.

Attachment K Delivery of CPP

Purpose of this attachment

625. This attachment outlines our draft decision on how Powerco should demonstrate it is delivering its planned works programme in the CPP period.

Summary of our draft decision

626. We propose to introduce a new compliance obligation for Powerco to provide a CPP Annual Delivery Report for each year of the CPP period using our powers under s53ZD of the Commerce Act.[211]

627. The Annual Delivery Report must be provided by 31 August each year and cover each year of the CPP period.

628. We have introduced this requirement to ensure customers have transparency as to how Powerco is progressing in delivering the investment set out in our CPP decision.

629. As we explain in this chapter, we are of the view that customers are entitled to have transparency around how Powerco is progressing in delivering the increased investment for which it is seeking additional revenues.[212]

630. We are also proposing that Powerco should convene at least one stakeholder event, in each of its Eastern and Western zones, in each year of the CPP, to formally present its CPP Annual Delivery Report. This will provide customers and wider stakeholders with the opportunity to question Powerco on the progress of its CPP works programme.

631. Furthermore, we intend to hold an annual 'technical' meeting with Powerco for each year of the CPP period. This is intended to allow us to undertake a detailed question and answer session with Powerco to better understand the progress it has made in the previous year of the CPP, and that Powerco is delivering its proposed programme of works as promised.

The need for additional transparency of CPP deliverables

632. We acknowledge that Powerco's CPP proposal represents a significant increase in expenditure compared to historical performance. Given the size, scope and scale of this expenditure, we also appreciate that securing the required resources in a market of limited size such as New Zealand can sometimes prove problematic.

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[211] Under s 53ZD of the Commerce Act the Commission may require a supplier to produce certain information.

[212] We also publish an online tool to make all electricity lines companies' performance data more accessible. This can be found at: http://comcom.govt.nz/regulated-industries/electricity/performance-analysis-and-data-for-distributors/performance-accessibility-tool-for-electricity-distributors/

633. In our Issues Paper we asked for any views as to whether stakeholders had concerns in this regard. Responses to our Issues Paper confirmed our early view that, given the nature and extent of Powerco's proposed increased work programme in the CPP, stakeholders consider we should further consider options to ensure Powerco delivers what it has set out in its CPP proposal.

634. The Major Electricity Users' Group noted that:[213]

> There is another dimension to deliverability risk due to constraints other than people and equipment. That is Powerco deciding it is constrained in order to first meet higher shareholder returns and therefore delaying works. That risk isn't just hypothetical given the experience under the DPP to date…

635. In its submission on our Issues Paper, Powerco emphasised it remains confident in its ability to deliver its proposed CPP programme of works, and set out some steps it has taken to ensure this is the case.[214]

> We support providing updates on the delivery of our CPP programme, to give assurance to stakeholders we are meeting our targets.

Our draft decision

636. Powerco seeks an increase in maximum prices to fund new investment in the network. In allowing Powerco to increase prices, we and consumers want assurance that the proposed investment does indeed occur, that it targets the necessary areas, and is effective in improving the long-term delivery of safe, efficient and reliable electricity lines services to consumers.

637. We considered linking delivery of this investment to Powerco's ability to increase prices. For instance, we could have limited Powerco's ability to increase future prices and/or clawed back price increases where the proposed investment did not in fact occur. We decided against this in the case of Powerco only because we had not previously signalled this to the industry and potential CPP applicants. However, we may consider such an approach in future and that may require future IM amendments.

638. We want to ensure Powerco is transparent about how it is delivering the proposed investment it has committed to deliver during the CPP period. Accordingly, our draft decision is to require a report on the delivery of Powerco's planned investments.

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[213] Major Electricity Users' Group response to Powerco CPP Proposal; paragraph 2.36, page 8.

[214] Response to The Commerce Commission 'Issues to explore and consider' consultation paper, Powerco, 22 September 2017; paras 89-96, page 19.

639. We consider this is best achieved through a combination of the following:

639.1 CPP Annual Delivery Report

639.2 Annual stakeholder events

639.3 Annual technical meetings with the Commission.

The CPP Annual Delivery Report

640. We consider the CPP Annual Delivery Report should be a stakeholder facing document that provides an easy to understand, annual update on Powerco's progress against the key commitments made in its CPP proposal. There are already similar requirements placed upon EDBs in other overseas jurisdictions.[215] It is very important that Powerco demonstrates how it is delivering the investment, improvements in performance and customer value it says it needs funding for in its CPP proposal, and which forms the basis for the Commission to approve allowable revenues over the CPP period 2018-2023.

641. The CPP Annual Delivery Report should be relatively short in length (10-20 pages maximum) and should be as interactive as possible through the use of infographics and other media where appropriate. The key purpose of the CPP Annual Delivery Report should be to clearly and easily demonstrate Powerco's progress in delivering its CPP commitments to a broad stakeholder audience.

642. Some of the information provided in the CPP Annual Delivery Report may already be recorded and reported on as part of the Commission's information disclosure requirements under Part 4 of the Act.[216] However, this should still be included in the CPP Annual Delivery Report for ease of reference by stakeholders.

643. We envisage the CPP Annual Delivery Report should provide sufficient information so stakeholders can assess how Powerco is progressing in delivering the key components of its CPP proposal and the commitments it has previously provided to Commissioners. This should include a combination of objective **volumetric** and more subjective **qualitative** measures that clearly demonstrate how Powerco, through the CPP regime, is delivering for customers.

644. We consider the **volumetric measures** should consist of the following:

- Financial performance of each category of Powerco's CPP proposal – renewals capex (split into CPP sub-categories), growth and security capex

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[215] For instance, EDBs in the UK are required to provide annual reports that detail their progress against the commitments made under the RIIO-ED1 price control arrangements. An example can be found at https://www.westernpower.co.uk/docs/About-us/Stakeholder-information/Performance-reporting-RIIO-ED1/Summary-Report-Business-Plan-Commitments-Report-20.aspx

[216] http://www.comcom.govt.nz/regulated-industries/electricity/information-disclosure-requirements-for-distributors/

(split into major, minor and reliability), other network capex, non-network capex (distinguish between ICT and facilities capex), network opex (corrective, preventative, reactive, vegetation management & SONS), non-network opex (corporate, ICT, facilities & other)

- Conductor Replacement – kms replaced by zone, unit cost per km replaced
- Overhead Structures – units replaced by type, unit cost per unit replaced per type
- Transformer Replacement – units replaced, unit cost per unit replaced
- Other Renewal Programmes – units completed, unit cost per unit completed
- Major Projects – description on progress of all major projects in the CPP period
- Minor Projects – description on progress of all minor projects in the CPP period
- SAIDI/SAIFI planned and unplanned – by region
- Average length of outages planned and unplanned – across voltage categories
- Worst served customers performance – including numbers of planned/unplanned outages, length of outages and restoration times
- Corrective/Preventative/Reactive backlogs – number under each category, progress on clearing backlogs
- Vegetation Management – km inspected, km cleared, rates per km
- ERP – progress of ERP against forecast
- FTEs – how many have been recruited against CPP proposal forecast and in what areas

645. We consider the **qualitative measures** should include the following:

- Introduction from Board/CEO – explains key achievements in delivering CPP commitments, why progress is as forecast, ahead or behind schedule
- What Powerco is doing to ensure CPP outcomes are achieved and rolled-out as efficiently as possible
- Innovation/Network Evolution Initiatives – projects Powerco is assessing/working on, how it is working with industry, what has it learnt, and areas Powerco sees innovation becoming more important in future

- Data Improvement/Information Quality Programmes – what programmes/initiatives have been undertaken, what has been learnt, how is this benefitting customers

- Asset Health Framework – progress in attaining ISO55000 by the end of the CPP period, development of an asset management framework that allows for condition based assessments to be linked to expenditure need and reliability

- Streamlined Works Delivery – achievements made by Powerco in this space and how this benefits customers. Should identify and discuss how this aligns to improving unit rates and any improvements this has enabled

- ERP progress against overall programme milestones – descriptive narrative on progress to date, is project still on track for successful delivery and when can customers start to see the benefits of the programme

- Stakeholder Engagement Initiatives – including what specifically Powerco is doing to actively inform customers of the CPP work programme, manage customer notifications of increased planned outages, initiatives around worst served customers, vulnerable customers, providing quicker connections (quotations and physical connections), charity work

- Safety and hazard control initiatives – both internally and for the public, specifically comment on how overall resilience of network is improving, how is overall safety of network improving

- Environment – oil losses from all sources but focus on cables and transformers, kms of undergrounded lines/cables, any work/initiatives around reducing network losses

- Customer satisfaction – response times to customer queries/complaints, percentage of customer complaints resolved within 1 day, percentage of customer complaints resolved within 1 month, work with Utility Disputes Limited

646. Since the release of our Issues Paper, we have held discussions with Powerco to further develop the content of a CPP Annual Delivery Report that we require. Powerco has indicated to us that it is committed to ensuring transparency around the delivery of its CPP programme, and with a view to maximising future benefits for customers and minimising regulatory costs.

647. A draft version of how the CPP Annual Delivery Report might look is published on our website alongside this paper. Note as a proposed draft, the actual presentation of the Annual Delivery Report may differ when published.

Annual stakeholder events

648. We consider it is important for Powerco to make its stakeholders aware of the existence of the CPP Annual Delivery Report, how Powerco is keeping to its CPP

commitments and for stakeholders to have a say on whether this is meeting their needs as customers of Powerco.

649. To achieve this, we consider Powerco should convene an annual stakeholder event in each of its Eastern and Western zones, in each year of the CPP, to formally present its CPP Annual Delivery Report. This will provide customers and wider stakeholders with the opportunity to question Powerco on the progress of its CPP works programme.

650. We consider a combination of annual stakeholder events, and prominently locating the CPP Annual Delivery Report on Powerco's website, will ensure customers are well informed of Powerco's progress against its CPP commitments.

651. Powerco should ensure its CPP Annual Delivery Report is readily available on its corporate website, and is located where it is easy for stakeholders to find. We would suggest this should be readily accessible by stakeholders with no more than three clicks from Powerco's homepage, with appropriate signposting making it clear where this can be found.

Annual technical meetings with the Commission

652. Through our current interactions with the industry, we are becoming more proactive in understanding the performance of EDBs across New Zealand and holding them to account where there are indications that current practices can be improved.[217]

653. While we expect these interactions to continue, we also consider than an annual 'technical' meeting with Powerco staff throughout the CPP period will enable us to specifically understand the detail of how it is performing under the CPP. We consider this will be important in identifying any potential issues in CPP delivery as they arise, and/or trends across the sector that may warrant further consideration in a broader Part 4 context.

654. It will be important for us to engage directly with Powerco on all aspects of delivering its CPP commitments, especially if actual progress significantly deviates from Powerco's planned investment program that could have a material impact on customers.

655. We therefore propose, as part of Powerco's CPP, to hold an annual technical meeting in each year of the CPP for this purpose.

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[217] http://www.comcom.govt.nz/regulated-industries/electricity/performance-analysis-and-data-for-distributors/

Attachment L Our view of Powerco's asset management practices

Purpose of this attachment

656. This attachment outlines our views on Powerco's assessment management practices that have underpinned its CPP application and EDB asset management practices in general.

657. This attachment does not directly affect Powerco's CPP price-quality path, but we consider it is useful context for the work Powerco is planning to undertake to develop a robust and well-functioning asset criticality management framework. For these reasons, this chapter may also be useful for other CPP applicants and EDBs more generally.

Our focus on EDB asset management practices

658. We published an open letter to the industry on 9 November 2017 to set out our 2017/18 priorities in the electricity sector. That letter includes some shorter term priorities and also some 'enduring' priorities.[218]

659. One of the key priorities in 2017/18 and beyond will be to better understand EDB network performance and how this links to EDB asset management practices. We consider that key sector issues include EDB's ability to:

    659.1 manage their assets effectively;

    659.2 maintain resilient networks; and

    659.3 deliver the above in a changing environment.

660. Good asset management is key to ensuring distributors improve efficiency and provide services at a price and service quality expected by consumers. Effective asset managers should be focussing on:

    660.1 the health and criticality of their assets;

    660.2 appropriate levels of resilience; and

    660.3 investment 'sufficiency' to ensure they are investing in assets at a prudent level.

[218] Our open letter can be found at: http://comcom.govt.nz/our-priorities-in-electricity-distribution

661. Specifically we consider prudent asset managers should be asking the following questions:

661.1 Do they understand the condition of assets, and do they have robust, systematic processes in place for collecting and managing asset-related data?

661.2 Do they understand the most critical assets affecting network operation from both a reliability and safety perspective, taking into account the probability and consequence of asset failure?

661.3 Do they understand the link between planned expenditure and consumer reliability outcomes?

661.4 Do they understand the full range of risks they are exposed to, including from High Impact Low Probability **(HILP)** events, and have an effective plan in place to mitigate for those risks?

Asset health and asset criticality

662. In our Issues Paper we highlighted that we considered that an effective EDB network asset management framework should contain two fundamental elements, namely:[219]

662.1 an effective framework, based on industry accepted practices, to systematically judge asset health and effective remaining asset life; and

662.2 an understanding of the criticality of that asset, not only in terms of its safety impact, but its impact on consumer reliability and outage costs.

663. The Verifier concluded in its verification report that not all of Powerco's practices regarding asset health were reasonable and may lead to over-forecasting of expenditure.[220]

664. The Verifier was particularly critical of Powerco's approach to modelling distribution conductor replacement and the use of the target fault rate to underpin expenditure decisions.

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[219] Available at http://comcom.govt.nz/dmsdocument/15687

[220] Available at http://www.comcom.govt.nz/dmsdocument/15550

665. We tested this issue fully with Powerco and, after further information was provided, we were persuaded that its approach was reasonable, because:

665.1 Powerco fault data between 2008 and 2012 clearly demonstrated that it had a type issue problem with at least four conductor types; [221]

665.2 while we initially asked Powerco to set the target fault rate at the industry median fault rate for distribution conductor, industry data was not available; and

665.3 the target fault rate was set at an expected fault rate of non-type issue conductor across Powerco's entire distribution conductor fleet which is approximately 20% of New Zealand's installed distribution conductor; and

665.4 the 2008-2012 data set that underpins the distribution conductor replacement model uses about 75,000 km-years of distribution conductor operational data and was used as a proxy for the expected fault rate of well performing distribution conductor.

666. The modelling approach taken by Powerco to determine replacement of distribution conductor is a "top-down" fleet wide approach (and not a bottom-up observed asset condition based approach).Powerco uses age related deterioration modelling and observed fault rates to identify conductor sections for replacement, but we still consider that, in the circumstances, it is a reasonable approach to forecast replacement of the type issue conductor problem.

667. Overhead conductor condition is difficult to monitor with any certainty, so Powerco's top-down fleet wide approach is reasonable in this case.

668. The Verifier also commented that some of Powerco's pole inspection and defecting practices may lead to over-forecasting; but apart from these two issues the Verifier had no other comment about Powerco's asset health processes across the asset fleet.

669. In the Issues Paper we explained that asset health was only part of the decision making process to replace assets before they fail.[222]

> The replacement decision should also be made with an understanding of asset criticality in mind, including safety considerations, in order that consumers obtain the best value for money, and to link asset replacement decisions to reliability outcomes.

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[221] A type issue asset problem is one where a manufacturing process or installation practice has had the effect of reducing the expected life of that asset.

[222] "Invitation to have your say on Powerco's proposal to change its prices and quality standards – Issues to explore and consider", Commerce Commission, 18 August 2017, Chapter 4, pages 28-31.

670. In its proposal Powerco stated that it planned to further develop an asset criticality framework as part of its CPP stating that:

> We will further expand and embed our existing asset criticality framework. The goal is to include criticality assessments in all asset investment planning decisions – Capex and maintenance. It will also support our risk management initiative.

671. However the Verifier concluded that Powerco considered its asset criticality framework would be focussed on taking a risk based approach to prioritising asset replacement based on safety consequence.[223]

672. We consider risk is just one consideration of an asset criticality framework, and that a well-functioning asset criticality framework should yield information about asset impact on consumers and how to prioritise expenditure, amongst other things.

673. In the Issues Paper we were keen to generally test the role of asset criticality in asset management decision making frameworks, and sought submissions on:

673.1 stakeholders' experiences with asset health and criticality analysis, and how practices have been implemented and integrated into industry asset management processes; and

673.2 views on Powerco's intention expand and embed its asset criticality framework, during the CPP period, which will apply a risk based approach to prioritising asset replacements based on safety consequence. We sought views on whether this work should be prioritised during the period

674. Some submitters felt that an asset criticality framework was necessary to understand investment prioritisation. In its submission ERANZ stated that a good prioritisation framework informed investment deferral decisions to retain optionality:[224]

> In the absence of an asset-criticality framework it is difficult to determine which assets are an immediate priority and which can be relied upon to uphold the integrity of the network until the likelihood of future demand is better understood.

675. Fonterra also made the link between asset criticality and prioritisation stating that:[225]

> Powerco should prioritise expanding and embedding its asset criticality framework to ensure that it minimises the risk of over investment. This assessment must be undertaken alongside the asset health assessments to ensure that the correct investments are made and prioritised appropriately.

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223 "Final Verification report for Powerco" Farrier Swier, page 48 available at http://www.comcom.govt.nz/dmsdocument/15550

224 Electricity Retailers Association New Zealand **(ERANZ)** Issues paper submission received on 22 September 2017

225 Response to Powerco customised price path application, Fonterra, 22 September 2017.

676. We agree with these views and consider that a well-functioning EDB asset criticality framework is integral to good asset management to ensure consumers get value for money. Asset criticality is not just about safety, although that is a key consideration.

677. Asset criticality is also about understanding the effect that individual assets have on the consumer experience if they fail and how long it takes to return those assets to service. This effect could be SAIDI and SAIFI outcomes, or business costs for larger consumers that may not necessarily be reflected in SAIDI and SAIFI measures.

678. Ideally we consider that a good asset criticality framework for key network assets should be able to inform asset managers and decision makers with the following information:

    678.1 SAIDI and SAIFI impact of the asset outage – ideally each key asset will have an asset health measure which will affect the asset outage probability with the outcome that SAIDI and SAIFI can be expressed probabilistically;

    678.2 kWh or MWh impact of the asset outage – which means that some understanding of the kW or MW outage magnitude and return to service durations are needed for each of the key assets; and

    678.3 The cost of the asset outage – which includes the consumer outage cost using VoLL,[226] and can include the potential replacement cost of the asset, and the environmental cost of asset failure (eg, such oil leakage if there was a major transformer failure).[227]

679. An understanding of the potential asset outage cost for each asset, viewed through the asset health and outage probability lens, enables an EDB to judge asset prioritisation not just within each asset class, but across the entire fleet. The use of outage cost allows the fleet expenditure program to be normalised between different asset types, with the normalisation being the asset outage cost itself.

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[226] VoLL – the Value of Lost Load

[227] These are some examples of outage cost considerations in the OFGEM DNO Common Network Asset Indices Methodology – Health and Criticality, August 2016 available at https://www.ofgem.gov.uk/publications-and-updates/decision-dno-common-network-asset-indices-methodology

680. In its response to our Issues Paper, Powerco has increased its emphasis on asset criticality and linked this to asset replacement requirements:

> We agree with the Commission's view that being able to correctly identify the most critical assets for replacement is important[228]
>
> As noted in our Proposal, we have developed a criticality framework that we are currently embedding within our systems and processes. The framework takes into account the potential impact on consumers, public safety, environment and financial outcomes. We agree with the Commission that an asset criticality framework should cover more than just safety related aspects.[229]

681. While it is not ideal that Powerco are developing their asset criticality modelling during the CPP and not prior to the CPP, we have seen sufficient evidence to convince us that there are many assets that require renewal and replacement even without a criticality tool informing decisions (such as the overhead distribution conductor with type issues).

682. It is hoped that with a well-functioning and robust asset criticality management framework, Powerco will be able to start replacing its more critical assets first. We will monitor Powerco's progress in developing its asset criticality framework over the CPP period and expect other EDBs to do likewise.

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[228] Response to Commerce Commission 'Issues to explore and consider' consultation paper, Powerco, 22 September 2017, para 54, page 13.

[229] Response to Commerce Commission 'Issues to explore and consider' consultation paper, Powerco, 22 September 2017; para 57, page 13.