



EDB Default Price-Quality Path

Comment on 2023 Issues Paper

NZIER report to MEUG

14 December 2023

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Key points

Low-cost regulation is difficult to achieve when there is wide disparity in the scale and density of electricity distribution business (EDB) operations or where they face different step changes in market conditions and are adopting different investment responses to those changes.

The limited quantification of the issues underlying the consultation questions for topics such as the drivers of capital and operating expenditure plans and the impact of the default price-quality path (DPP) on consumer bills makes it difficult to allocate effort to the questions that have the greatest impact on achieving the objectives of DPP process.

More detailed quantification of the issues, indication of the expected timing of major changes and more detailed consideration of the differences between EDB are necessary in the workshops to ensure the DPP reset for the next four to five years from 1 April 2025 (DPP4) has sufficient flexibility to accommodate the expected changes in the electricity distribution sector.

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1 Scope

1.1 Comment on Issues Paper

This report comments on the consultation questions set out in Commerce Commission's the 'Default price-quality paths for electricity distribution businesses from 1 April 2025: Issues paper'¹, referred to in this report as the Issues Paper. The main focus of this report are the following questions:

- Q1 'Context' the Commission's problem definition
- Q2 to Q7 Forecasting capital expenditure
- Q8 to Q9 Forecasting operating expenditure
- Q26 to Q28 Setting revenue allowances
- Q29 Consumer bill impacts.

A brief comment on the other questions is provided in Appendix B.

1.2 EDB context

The DPP process is designed to deliver low-cost regulation of EDB price and quality to promote the long-term benefits of consumers by promoting outcomes consistent with competitive markets. Achieving low-cost regulation relies on applying a common building block approach to all regulated² EDBs that are trying to deliver similar services in areas with different geographical attributes and different density of connections. Low-cost regulation is difficult to achieve when there is wide disparity in the scale and density of EDB operations or where they face different step changes in market conditions and are adopting different investment responses to those changes.

Table 1 below provides an indication of both the diverse size of the EDB subject to price quality path regulation and the difference in their proposed investment response. In particular:

- The three largest EDBs Vector, Powerco and Orion account for 63.4 percent of the regulated asset base (RAB) and the next three largest EDBs -Wellington Electricity, Unison Networks and Aurora Energy account for a further 18.7 percent of the RAB.
- The planned expenditure on assets reported in the 2023 Asset Management Plans (AMP) for the six largest EDBs for the years 2023 and 2024³ varies between 7.5 percent and 15.3 percent of their 2022 RAB.
- ¹ 'Default price-quality paths for electricity distribution businesses from 1 April 2025, Issues Paper, Date of publication: 2 November 2023' published by the Commerce Commission. Available at: https://comcom.govt.nz/__data/assets/pdf_file/0025/332944/Default-price-quality-paths-for-electricity-distribution-businesses-from-1-April-2025-Issues-paper-2-November-2023.pdf

² Consumer owned EDBs are exempt from price- quality regulation. Centralines was subject to the 2020 to 2025 DPP regulation but became completely consumer owned in July 2021 and will not be subject to DPP4.

³ These years give an indication of the variation in the starting point for the AMP. The number for 2023 is actual expenditure for the year ended 31 March 2023 while the number for 2024 is a projection for the year ended 31 March 2024 presumably informed by actual spending between the 1 April 2023 and the filing of the AMP.

 Aurora Energy is on a customised price-quality path (CPP) which enables expenditure on assets above the levels permitted under the DPP. However, the planned 2024 expenditure on assets as a proportion of 2022 RAB for Vector, Powerco and Unison is close to the proportion for Aurora Energy.

EDB	Regulated asset base (RAB) 2022			Expenditure on assets		
			20	23	20	24
	Value	Share of EDB	Value	Share of RAB (2022)	Value	Share of RAB (2022)
Vector Lines	3,642	31.9%	409	11.2%	495	13.6%
Powerco	2,286	20.0%	287	12.6%	294	12.9%
Orion NZ	1,308	11.5%	113	8.7%	154	11.8%
Wellington Electricity	744	6.5%	55	7.5%	62	8.3%
Unison Networks	740	6.5%	84	11.3%	88	11.9%
Aurora Energy	645	5.7%	98	15.3%	93	14.4%
EA Networks	322	2.8%	13	4.2%	17	5.3%
Top Energy	320	2.8%	14	4.3%	22	6.8%
The Lines Company	251	2.2%	25	10.0%	25	9.9%
OtagoNet	240	2.1%	20	8.2%	19	7.8%
Alpine Energy	238	2.1%	25	10.6%	34	14.4%
Network Tasman	192	1.7%	14	7.1%	24	12.3%
Eastland Network	188	1.6%	15	8.1%	15	7.9%
Horizon Energy	151	1.3%	9	5.7%	10	6.9%
Electricity Invercargill	100	0.9%	7	6.5%	6	5.7%
Nelson Electricity	46	0.4%	2	4.1%	2	4.2%
Total	11,413		1,190	10.4%	1,359	11.9%

Table 1 Regulated asset base and forecast expenditure on assets All values in \$ million

Source: NZIER

The Issues Paper generally describes the 'issues' in qualitative rather than quantitative terms and refers to EDBs in aggregate as a group. When it does report indicators for individual EDB such as the percentage increase in capital expenditure⁴ reports the median which suggests each EDB is given equal weight despite marked differences in scale and density.

⁴ Issues Paper, paragraph E69, page 150.

The limited quantification of the issues underlying the consultation questions for topics such as the drivers of capital and operating expenditure plans and the impact of the DPP on consumer bills makes it difficult to allocate effort to the questions that have the greatest impact on achieving the objectives of the DPP process. The treatment of the EDBs either as an aggregate group or a group of similar individuals is not consistent with:

- The concentration of the majority of assets and spending with three EDBs (Vector, Powerco and Orion) that each have different density and growth rates of connections.
- That six out of the 16 EDBs subject to price-quality path regulation account for more than 82 percent of the RAB of this group.

These statistics suggest that the EDBs are not just different sized versions of the same business model but that they are differentiated by the spatial location of their customers. These differences will be amplified by the step changes required for management of climate change adaptation, electrification, and distributed energy resources. (Climate change adaptation is a complex step change because it requires planned risk mitigation to be managed in parallel with disaster recovery. Electrification and distributed energy resources are complex step changes because adoption rates are hard to predict and EDBs do not have a direct relationship with consumers.)

This suggests more detailed quantification of the issues, indication of the expected timing of major changes and more detailed consideration of the differences between EDBs are necessary in the workshops to ensure the DPP4 reset for 2025 to 2023 has sufficient flexibility to accommodate the expected changes in the electricity distribution sector.

2 Problem definition

Question 1. We are interested in your views on whether we have properly understood the changing industry context as it relates to the DPP4 reset.

The Issues Paper lists 'decarbonisation driven electrification', 'climate change resilience' and 'distributed energy resources' as areas of investment uncertainty that need to be considered in EDB investment planning but notes that there is little clarity about the timing and type of investment that EDBs need to make. The consultation question asks for views on whether the Issues Paper has properly understood the changing industry context as it relates to the DPP 4 reset.

The Issues Paper description could be improved by considering the following observations:

 The asset management plans for the next five years for the major EDB are still dominated by renewal of existing assets and accommodating growth in connections.⁵

⁵ Issues Paper 'Figure E3 Breakdown of expenditure on assets', page 141

- Expenditure on 'System growth' shows the largest increase of any of the 'Expenditure on assets' categories but the Issues Paper does not describe the nature of the System growth. System growth⁶ does appear to be a major area of increase for Powerco and Orion but not for Vector or many of the smaller companies.
- Decarbonisation and electrification mainly affect EDB through the electrification of process heat (large readily identifiable loads) and the take-up of EVs. Forecasts of the take-up rates for both of these technologies have been made by the Climate Change Commission⁷. Electricity Authority (EA) Market Development Advisory Group (MDAG) and Transpower in its RCP4 and Net Zero Grid pathway applications to the Commerce Commission. It would be useful if the Issues Paper commented on how the Transpower forecasts in particular compared to the EDB modelling and how both of these forecasts compared to the recent take-up rates electrification of process heat (which seem to have been much slower than forecast) and EV (where the impact on EDB is networks is uncertain because of the potential demand for day-time public fast charging as opposed to at-home overnight charging.).
- Describing the principles that the Commerce Commission might apply to assessing the need for and appropriate timing of:
 - 'Climate change resilience' investment given the recent experience of Orion CPP following the Christchurch earthquakes and the Wellington Electricity 'mini CPP to improve earthquake resilience after the Kaikoura earthquakes.
 - 'Distributed energy resources' given the
 - 'Slightly faster than linear' growth in the installation of distributed solar panels (with limited information on how many of these systems are combined with batteries). A chart (Figure 10) of the growth in distributed solar capacity is included in A.4.
 - Uncertainty about the take-up of EV and where and what time of day they will be connected to the network either for charging or as an energy resource.
 - Ambiguity around the market structures that could be used to co-ordinate distributed resources to manage peak demands let alone the allocation of roles in this nascent market between EDB and electricity retailers.

⁷ For example, the Climate Change Commission in '2023 Advice on the direction of policy for the Government's second emissions reduction plan, 22 November 2023' states 'there is risk that the government has overestimated how quickly emissions reductions from process heat can be achieved' see page 155 and describes supply constraints and limited access to public charging as potential constraints on electric vehicle take-up – see pages 319 to 321.

⁶ Some of the variation may be due to differences between the EDBs in the interpretation of the definition of 'System growth' : in relation to expenditure, means expenditure on assets where the primary driver is a change in demand or generation on a part of the network which results in a requirement for either additional capacity to meet this demand or additional investment to maintain current security and/or quality of supply standards due to the increased demand.' See Electricity Distribution Information Disclosure Determination 2012 (consolidated July 2023), page 43.

3 Forecasting capital expenditure

Question 2. We are proposing to adapt our approach to capex for DPP4 based on feedback from EDBs, that past expenditure is not a good starting point for considering future spend.

This proposition needs to be tested more rigorously by explaining specifically the nature, size and commonality of the breakpoints between EDB recent and planned expenditure on assets. The analysis of planned expenditure on assets (constant dollars) in Figure E3 of the Issues Paper shows that most of the expenditure seems to be similar to past patterns and that only 'system growth' and 'reliability, safety and environment' differ substantially from recent history.

The comparison of expenditure on assets in Appendix A suggests a more varied picture for the similarity between historical and planned expenditure:

- Vector's planned expenditure on assets has an immediate step-up from 2021 and 2022 planned levels but then its path has the same gradual decline as the 2021 and 2022 plans (see Figure 3).
- Orion is the only one of the large EDBs that is forecasting a steady and large increase in expenditure on assets compared to 2021 and 2022. The increase is driven by increased consumer connections and system growth⁸ (see Figure 5).
- Aside from Powerco and Wellington Electricity, the expenditure on assets in constant dollars for the other EDBs is generally not materially different from their 2021 and 2022 AMP forecasts.

Question 3. We are proposing to apply the capital goods price index to forecast capex allocations

The comment on this proposal in Attachment E is much less detailed and considered than the sectoral analysis of inflation for operating expenditure in paragraphs D51 to D71. A more detailed comparison of the elements of EDB asset expenditure with the components of the proposed index would be helpful is in assessing how well the proposed index reflects EDB costs. It would also be useful to compare the cost indexes forecast by the EDB (nominal expenditure divided by expenditure in constant dollars) with the proposed index and check for both consistency and volatility. Figure 9 shows that this measure of capital expenditure inflation varies widely across the four largest EDBs with the index for Vector consistently 10 percentage points above the index for Orion while the indexes for Powerco and Wellington Electricity gradually fall toward the index for Orion.

Question 4. We have concerns about the challenges in delivering increased programmes of work given current labour market, supply chain and economic challenges in New Zealand.

This should be an area of focused discussion in the workshops. Over the submission period it can only be based on analysis of the 2023 AMP and will not be informed by the independent review by the Commissions independent experts – IAEngg. It would be helpful

,⁸

The increase in Orion and Wellington Electricity in 'system growth' expenditure for the period 2026 to 2030 in the 2023 AMP compared with the 2021 and 2022 AMP is larger than for any of the other EDB.

if the IAEngg analysis also consider how the EDB investment plans can be co-ordinated with Transpower's grid investment as this question is likely to be raised in the workshops.

The analysis of planned expenditure on assets in reply to Question 2 above suggests two different types of deliverability risk:

- The feasibility of an immediate large step change that is then sustained over the AMP period as implied by Vector's AMP
- The feasibility of a sustained rapid increase in asset expenditure over the AMP period and the outlook for expenditure on assets at the end of the expansion phase.

Question 5. We will be using a s 53ZD notice to collect information about how EDBs have reflected resilience in their expenditure forecasts.

It would be helpful if the Issues Paper outlined what information was being sought, what framework was being used to assess climate resilience risk and mitigation, and how the information can be formally submitted on as part of the Issues Paper workshops in February 2024 to April 2024 along with the review by IAEngg.

Question 6. We intend to consider how potential changes in capital contributions policies could be accommodated in DPP4.

It would be helpful if the Issues Paper could give an indication of the materiality of the potential changes.

Question 7. We are interested to understand if EDBs are assessing investments driven by expected pace of change which may not be consistent with choices otherwise made under a least-cost lifecycle basis.

Agreed. It would be helpful if the Issues Paper summarised the assumptions EDB have made about the scope and speed of network change. The AMPs show a wide variation across EDBs in the level of expenditure on assets (relative to RAB), the timing of expenditure and allocation of expenditure between 'existing' assets, 'growth' and 'hazard response'. However, without an agreed framework for identifying the core assumptions that drive the AMP forecasts, it is difficult to allocate the variations in AMP between differences in EDB starting point/view of the future and differences in EDB approach to these issues.

4 Forecasting operating expenditure

Question 8 We are considering amending our approach to forecasting opex input price escalation to better reflect the mix of inputs EDBs face.

The Issues Paper provides a description of the approach and the results of regression analysis of the explanatory power of different variables. However, a refence to a spreadsheet that shows the data inputs used and how the calculations were made would enable submitters to make much better-informed comments.

The discussion of the proposed options should also compare the proposed indexes to the bottom-up forecasts prepared by the EDBs. The Issues Paper expresses the view that a *''bottom-up' forecasting approach based on the activities EDBs propose to undertake and*

their associated costs' is not appropriate in section 53K terms or workable⁹. However, the analysis of the AMP asset and operating expenditure plans highlights that EDB have different expectations for cost inflation and different exposure to cost pressures due variations in expenditure for timing. Imposing a common index on all EDBs does not address this issue but forces EDB to make an adjustment elsewhere.

Question 9 We are considering revising our approach to scale growth trend factors, to better reflect EDBs increasing focus on investing to meet growth and renewal needs.

Support discussion. Not clear if the effect of the proposal (using capital expenditure to model non-network expenditure) would be material.

5 Setting revenue allowances

Question 26 We are proposing to retain our approach of setting a 'default' X-factor of 0% (before considering price shocks or supplier financial hardship)

New evidence on the productivity gains achieved by EDBs will not be available before the end of the submission period.

Question 27 Our emerging view is to assess price shocks for consumers using the real change in aggregate distribution revenue from year-to-year, with a particular focus on the change between regulatory periods.

The analysis should begin with the nominal change in prices faced by consumers. The results can be compared to increases in the consumer price index or other inflation indicators.

It would be helpful if the Issues Paper included an estimate of the expected price shocks based on the information provided by the EDBs. This would help to focus submission comments on possible reasons for the Commission to exercise its discretion to set an alternative rate of change (paragraphs H37-H39).

The comment in paragraph H39 which refers to the ability of 'different EDBs' consumer bases' ability to absorb price increases' requires further discussion. This identification is a very difficult task and even if the estimation were correct, does not guarantee retailer pricing will reflect the EDB structure.

Question 28 Our emerging view is that financial hardship will be 'undue' only where it is to such an extent that it is inconsistent with the long-term benefit of consumers.

The decision has to balance financial hardship for consumers and suppliers. Minimising financial hardship relies on finding the least cost solution to deliver the required service standard.

6 Consumer bill impacts

Question 29. Previously we have forecasted indicative consumer bill impacts from information disclosed by EDBs. We are interested in understanding what other information may help refine our approach.

The estimation of consumer bill impacts could be enriched by commentary on the recent practice of major retailers in passing on EDBs charges in their retail pricing plans.



A.1 Step change in capital spending in constant dollars– Issues Paper

The Issues Paper describes a step change in forecast capital expenditure from 2026 for the 2023 asset management plans (AMPs)¹⁰ and highlights increases in expenditure on 'System growth' and 'Reliability safety and environment' as drivers of the step change¹¹. This aggregate analysis does not reveal the relative contribution of individual EDBs to projected capital spending or the differences in the timing of proposed expenditure on assets by EDBs.

A.2 Contribution of EDBs to projected capital spending in constant dollars

Six¹² of the sixteen EDBs that will be subject to price quality path regulation accounted for 82 percent of the RAB in 2022 of \$11.4 billion and account for a similar proportion of the total forecast asset management spending by this group. The planned expenditure for the six largest EDBs in 2022 is shown in Figure 1 and in 2023 is shown in Figure 2. Comparison of the two figures:

- Suggests the 'step-up' of total planned capital expenditure begins in 2024 and then accelerates. This is a marked change from previous AMP in which planned capital expenditure remained flat or declined after the first two years in previous AMP.
- Highlights the contribution of Vector, Powerco, Orion NZ, and Wellington Lines to the increase in forecast capital spending.



Figure 1 Six largest EDB capital spending forecasts 2022

- ¹¹ Issues Paper, paragraph E21 and Figure E3 Breakdown of expenditure on assets' page 141
- ¹² Vector Lines, Powerco, Orion NZ, Wellington Electricity, Unison Networks and Aurora Energy

Source: NZIER

¹⁰ Issues Paper, paragraph E20 and 'Figure E2 Comparison of capital expenditure forecasts from EDB AMPs forecasts', page 140





Source: [text]

A.2.1 Difference in large EDB asset plans

Comparison of the asset spending plans by each of the six largest EDBs highlights that the plans for the Vector, Powerco, Orion and Wellington Electricity are markedly different from both their past plans and each other. In particular:

- Vector follows the usual pattern of step-up in the first two years followed by a gradual decline. However, the step change in the 2023 AMP is much greater than in previous years.
- Powerco and Orion AMP differ from Vector in that they both have small step changes between their 2023 and 2022/21 AMP but forecast steady increases in expenditure on assets during each year of the AMP. The increase forecast by Orion is the highest of the six largest EDBs and is a key driver observation in the Issues Paper of a step change from 2026. The AMP forecasts that Vector, Powerco and Orion will have about the same level of expenditure on assets from 2030 onwards.
- Wellington Electricity forecast expenditure on assets in the 2023 AMP is similar to the 2021/22 forecasts until 2026 to 2029 when it is roughly double the previous AMP.
- Unison and Aurora 2023 AMP are similar to their AMP for 2021/22.







Source: NZIER



Figure 4 Powerco 10 year forecast expenditure on assets

Source: NZIER





Source: NZIER



Figure 6 Wellington Electricity 10 year forecast expenditure on assets

Source: NZIER



Figure 7 Unison 10 year forecast expenditure on assets

Source: [text]



Figure 8 Aurora Energy 10 year forecast expenditure on assets

Source: NZIER

A.3 EDBs asset expenditure cost inflation

The AMPs of the four EDBs with the highest project expenditure on assets (in constant dollars) also have different expectations of cost increases over the AMP forecast period as shown in Figure 9 below.



Figure 9 Expenditure on assets – Nominal divided by constant dollar

Source: NZIER

A.4 Distributed solar capacity

As at 30 September 2023 total installed solar capacity was:

- 222 MW from systems with less than 10 kW capacity almost entirely residential. The average growth rate in capacity was about 4 MW per month over the past year-around 20 to 25 percent year on year.
- 81 MW from systems with more than 10 kW. Only about 12 MW of this capacity is residential. The average growth rate in capacity was about 1.7 MW per month over the past year.



Figure 10 Residential solar – installed capacity

Source: NZIER

The growth rates in distributed solar capacity have increased recently due to:

- A near doubling of the average number of installations per month since mid-2021 supported by an increase in the average capacity of new installation of 15.4 percent (from about 4.6 kW to 5.3 kW) for installations with capacity less than 10 kW.
- A doubling of the average number of installations per month since mid-2021 supported by an increase in the average capacity of new installation of 9.6 percent (from about 40.1 kW to 44.0 kW) for installations with capacity more than 10 kW.

The growth rates established after mid- 2021 seem to be stabilising rather than accelerating.

Appendix B Brief comments on out-of-scope questions

Table 2 Forecasting operating expenditure

Chapter 3 and Attachment D

Question	Comment
10 EDBs have identified that insurance costs have been increasing at a greater rate than other costs they face.	Secondary issue.
11 Given the possibility of a greater need for step changes in opex in a context of industry transition, we have clarified further how we are thinking of applying the step-change criteria and the supporting evidence we expect.	Clarifies existing process.

Source: NZIER

Table 3 Quality standards

Chapter 3 and F19 to F109, F113 to F114

Comment
Need to understand how this approach is co-ordinated with the response to climate change resilience and the combined impact of these factors on the AMP.
Secondary issue to the questions around climate change risk mitigation.
Agreed.
Agreed.

Source: NZIER

Table 4 Other issues

Chapter 3 and F110 to F112, Attachment G

Comment
Agreed
The arguments in favour of continuing with a 5-year regulatory period stated in G12 outweigh the uncertainty issues described in G14 - decarbonisation investment.) (The DPP Issues Paper considers other measures to address the decarbonisation investment incentive.)
Secondary issue.
Secondary issue. The primary issue was the introduction of accelerated depreciation, but that is not the issue considered here.

Source: NZIER

Table 5 Quality incentives

Chapter 4 and F115 to F149

Question	Comment
20 Our initial view for DPP4 is to retain revenue-linked quality incentives for both planned and unplanned SAIDI, with targets, caps, collars, incentive rate and revenue at risk set on a consistent basis with DPP3.	Secondary issue. The main issue is the complexity of the linkages between EDB network decisions and maintaining outages within the accepted limits.
21 Caution around treatment of non-performance of less proven solutions may create a reticence by EDBs to implement these types of solutions and result in a focus on more proven established technologies, typically, capex investments. Our intention is that the compliance with the quality standards and penalties under the QIS do not act as a potential impediment to innovation.	Secondary issue. The discussion in paragraphs F97 to F101 does not provide examples of the type of outages that would be excluded.

Source: NZIER

Table 6 Innovation

Table 4.3

Question	Comment
22 The regime's baseline incentives may be insufficient to support innovation, such that we consider it is appropriate to have an innovation (and/or non- traditional solutions) incentive scheme.	Secondary issue given both the variation in AMPs across EDBs and the impending pressures of climate change risk mitigation and electrification. The Commission may run a workshop on 'innovation and non-traditional solutions' in 2024.
23 We are interested in feedback on our initial thinking about how to design an incentive scheme to encourage innovation and/or non-traditional solutions in DPP4.	Secondary issue. Need to discuss what type and scale of innovation the scheme would encourage and how its effects could be reliably measured given the variation in AMPs across EDBs.

Source: NZIER

Table 7 Energy efficiency, demand-side management, energy loss reduction Table 4.4

Question	Comment
24 Our initial view is that a specific incentive for demand-side management and energy efficiency is not required for DPP4.	Default X-Factor is a secondary issue as new evidence on the productivity gains achieved by EDBs will not be available before the end of the submission period.
25 We are not proposing to implement a QIS for line losses. We believe EDBs improved visibility of low voltage performance and improvements to the energy efficiency of distribution transformers should drive improvements in DPP4 without explicit incentives.	Agree that improved visibility of low voltage network performance is required.

Source: NZIER