

16<sup>th</sup> December 2022

**Ben Woodham**

*Electricity Distribution Manager  
Commerce Commission, New Zealand*

Delivered by email: [infrastructure.regulation@comcom.govt.nz](mailto:infrastructure.regulation@comcom.govt.nz)

Dear Ben,

**RE: Request for feedback – Expenditure forecasting by electricity distribution businesses and areas of focus for the 2025 default price-quality path reset**

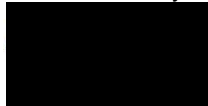
Thank you for providing us the opportunity to provide feedback on expenditure forecasting by electricity distribution businesses and areas of focus for the 2025 default price-quality path reset (DPP).

Horizon Energy Distribution Limited (Horizon Networks) is a small trust-owned Electricity Distribution Business (EDB) serving over 25,000 consumers in the Eastern Bay of Plenty region. As a trust-owned EDB, we have a strong consumer focus and seek to benefit both our Shareholder Trust Horizon and the communities it serves.

We recognise the importance of transparent, accurate forecasting and the impact this has on the upcoming DPP reset.

Please find our response to the questions raised in the request for feedback in Attachment A below.

Yours sincerely



Jonathon Staite

**Regulatory Manager**

**Attachment A: Response to Commerce Commission’s Series of Questions.**

Area 1 Confidence in Forecast Requirements	
<b>Primary Question</b>	<b>How are EDBs obtaining confidence in establishing the requirements they are forecasting to meet, including but not limited to demand, resilience, and reliability?</b>
<b>Response</b>	Horizon Energy Distribution Limited (Horizon Networks) has confidence that our forecasts reflect the needs of consumers through a quality assurance process that focuses on verifying the inputs and assumptions used in our models. We also validate the outputs of our modelling against our peers to ensure our assumptions align with other local and national forecasts. Our response below for Question 1. i. and Question 1. ii. provides details of our inputs for our modelling.
<b>1. i.</b>	<b>Are EDBs intending to change the inputs used in forecasting expenditure given key drivers of forecasts may have changed – particularly in the following areas:</b> <ul style="list-style-type: none"> <li>• <b>Connection growth (e.g., new connections from development, green fields and brown fields)</b></li> <li>• <b>Large capacity growth, (e.g., decarbonisation, industrial growth)</b></li> <li>• <b>Incremental demand growth (e.g., EVs, residential technology)</b></li> <li>• <b>Legislative change</b></li> </ul>
<b>Response</b>	<p><b><u>Methodology Applied to Prior AMPs and AMP 2023-2033</u></b>  Horizon Networks’ expenditure forecast for growth is based on the historical growth of the Network and known step change that has a degree of certainty. Our current inputs include the following:</p> <ol style="list-style-type: none"> <li>1. Analysing growth trends of our EHV, Substation, and HV feeder growth and forward forecast the growth for the next 20 years.</li> <li>2. Customer engagement with our current and potential future industrial and commercial customers to better understand their needs. This customer engagement will inform the step-changes that we forecast in the Network.</li> </ol> <p><b><u>Changes to Forecast Methodology due to Decarbonisation</u></b>  Horizon Networks intends to change our demand forecasting methodology to consider additional inputs to our forecasts, as New Zealand is moving to a net zero-carbon economy in the next few decades. The new forecast methodology that we aim to implement from AMP 2024-2034 will be forward-looking, considering inputs such as:</p> <ol style="list-style-type: none"> <li>1. Changes to planning or zoning law by the local government including infill growth. This data is available from the local council. We will attempt to integrate the data into our planning functions.</li> <li>2. Process heat conversion by our major customers once the major customers’ survey is completed - this would be included as a step change to our current demand forecast</li> <li>3. Scenario analysis of <ol style="list-style-type: none"> <li>a. different EV adaptation rates and charging &amp; discharging characteristics. <ul style="list-style-type: none"> <li>• We intend to extrapolate the data available from NZTA and estimate EV uptake on a substation/HV feeder basis</li> </ul> </li> <li>b. domestic heat conversion (gas cooking, water heating and space heater) <ul style="list-style-type: none"> <li>• We intend to analyse gas consumption data and forecast locations where we expect a high rate of heat conversions.</li> </ul> </li> <li>c. domestic PV <ul style="list-style-type: none"> <li>• We intend to improve the accuracy of the forecast for the area where we expect higher uptake of PV – based on observable historical PV penetration area and the localised socioeconomic activities</li> </ul> </li> </ol> </li> </ol>
<b>1. ii.</b>	<b>With a potentially increased need for resilience-related investment, what are the key inputs for EDB resilience forecasting?</b>
<b>Response</b>	<p><b><u>Climate Change Adaptation</u></b>  In FY22, in conjunction with the Bay of Plenty Lifelines Group (BOPLG), Horizon Networks has undertaken a regional Climate Change Risk Assessment (CCRA). The</p>

Area 1	Confidence in Forecast Requirements
	<p>CCRA will support our journey to better understand climate change's impacts now and in the future.</p> <p>This CCRA has looked at what climate change means for Horizon Networks regarding impacts on our assets. The following hazards were assessed for likelihood:</p> <ul style="list-style-type: none"> <li>• Fluvial/pluvial (river / surface) flooding</li> <li>• Coastal inundation (inc. sea level rise)</li> <li>• Coastal erosion</li> </ul> <p>We are continuing to refine the methodology and understand our Network's risk, including quantifying the risk imposed on our assets – this will provide input to identify resilience-related investments</p> <p><b><u>Resiliency Against High Impact Low Probability (HILP) Events</u></b></p> <p>The Electricity Engineer Association (EEA) published a Resilience Maturity Guide in November 2020. Since the publication of this guide, Horizon Networks has completed two self-assessments, where the gap identified from the self-assessment's triggers work programs.</p> <p>Our Resilience Maturity self-assessments suggest we are currently in the developing<sup>1</sup> stage. Our current focus is identifying the risks of HILP events to the Network. Our focus includes reviewing our Event Management Procedure, Disaster Recovery Plan, arranging contractual agreements with Generators and external contractors, and performing a Detailed Seismic Assessment (DSA) program on our Zone Substation Assets.</p> <p>Our current expenditure forecast, which will be disclosed as part of AMP 2023-2033, includes the risk identification works, including the DSA of our zone substation assets.</p> <p>However, as we do not have a complete understanding of our Substation seismic conditions, the outcome of our DSA will inform the impact and risk to the Network. Thus, potential Network CAPEX may be required to maintain the resiliency of the Network.</p> <p>We plan to include the expenditure forecast of seismic strengthening in AMP 2024-2034.</p>
1. iii.	<p><b>What forms of assurance will EDBs use (e.g., external verification) to provide confidence in forecasts, particularly where new forecasting inputs are used?</b></p>
Response	<p><b><u>Current Practices to AMP 2023-2033</u></b></p> <p>Horizon Networks benchmarks our biggest spending category, the <i>Asset Replacement and Renewal</i> expenditure, against the following:</p> <ul style="list-style-type: none"> <li>• A replacement model from the Australian Energy Regulator termed the Replacement Expenditure (REPEX) model; and</li> <li>• The New Zealand Industry Calibrated Replacement (ICRM) Model, which we commissioned an independent external consultant Hyland McQueen Ltd that perform the benchmarking exercise.</li> </ul> <p>The outcome of the benchmarking exercise is disclosed as part of Horizon Networks' Asset Management Plan (AMP). Please refer to Section 12 of AMP 2022-2032.</p>

<sup>1</sup> The EEA has developed the *Resilience Management Maturity Assessment Tool* (RMMAT). The scoring system for the RMMAT tool is based on a zero-to-four-point scoring bases, 0 – Unaware, 1 – Aware, 2 – Developing, 3 – Competent, and 4 – Excellent. Horizon Networks' average score is 2.84.

**Area 1 Confidence in Forecast Requirements**

**Validation of Expenditure Forecast Driven by Decarbonisation**

Horizon Networks plans to validate the changes for decarbonisation through comparison to industry available information such as:

1. Transpower's Whakamana I Te Mauri Hiko
2. Boston Consulting Group's Report – The Future is Electric: A Decarbonisation Roadmap for New Zealand's Electricity Sector
3. Electricity Network Association's (ENA) Scenarios to 2050 (this is yet to be completed)

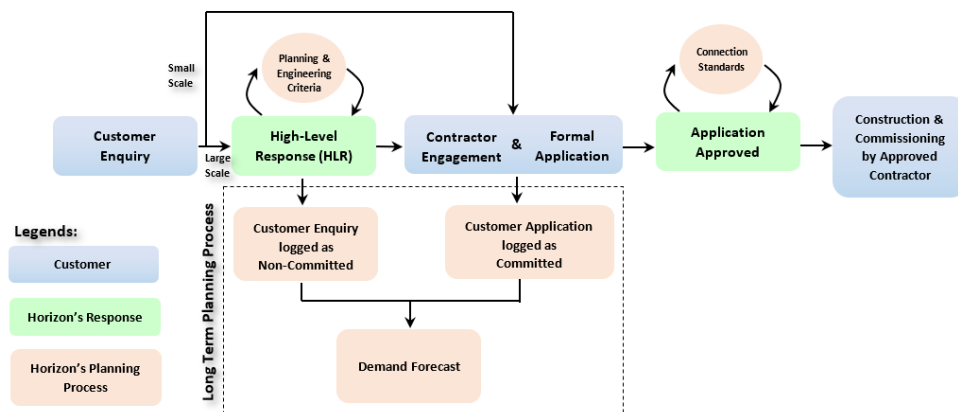
This work is planned to be part of our AMP 2024-2034 planning cycle. We may engage an external consultant to verify our forecast if further assurance is required.

Area 2 Step Changes and Scenarios	
<b>Primary Question</b>	<b>Are there specific events or metrics that can be forecast and then observed that indicate that a step change in expenditure is required or an alternate scenario is playing out?</b>
<b>Response</b>	<p>Horizon Networks is looking at the following items as a trigger for alternate scenarios:</p> <ol style="list-style-type: none"> <li>1. Legislative changes that encourage large uptake of EV, PV, heat conversion, and changes to zoning law.</li> <li>2. Government funding to support decarbonisation initiatives – we carefully observe government funding from the Provincial Growth Fund (PGF), Government Investment in Decarbonising Industry Fund (GIDI) and EECA funding for the region</li> <li>3. Cost or affordability for EV, PV, and home battery</li> </ol>
<b>2. i.</b>	<b>What forms of information do EDBs use to build scenarios on the different forecast areas?</b>
<b>Response</b>	<p><b><u>Horizon Networks’ Current Practices as per AMP 2023-2033</u></b>  Horizon Networks’ current AMP considers two scenarios that form our ‘single-point’ expenditure forecast.</p> <p>Our forecast is based on the historical growth trend of our substation and HV feeders, and potential step-changes in the area (only once the developer has committed to the works).</p> <p>We then consider the following types of scenarios (also known as sensitivity analysis):</p> <ol style="list-style-type: none"> <li>1. Variation of organic growth as much as +/- 0.5%</li> <li>2. ‘Scenario Based step changes in the area.</li> </ol> <p>These inform the potential investment requirements to enable future customer connections. However, our plans disclosed in previous AMPs and AMP 2023-2033 do not include the abovementioned scenarios to provide a ‘single-point’ investment plan for our stakeholders.</p> <p><b><u>Future Improvements planned for AMP 2024-2034</u></b>  We plan to include the following as input into our decarbonisation scenarios:</p> <ol style="list-style-type: none"> <li>1. Relevant information from available industry information such as Transpower’s Whakamana I Te Mauri Hiko, Boston Consulting Group’s Roadmap to Decarbonisation, and ENA’s Scenario Analysis.</li> <li>2. Gas information for our region to have a robust analysis forecast for process heat conversion by both industrial and domestic customers</li> <li>3. Available EV uptake information from NZTA</li> <li>4. Rooftop solar application trends</li> <li>5. Horizon Networks’ Customer survey</li> </ol>
<b>2. ii.</b>	<b>What are the underlying drivers where EDBs are forecasting a potential significant step change in expenditure requirements compared to previous levels?</b>
<b>Response</b>	<p>The underlying drivers for potential step change are:</p> <ol style="list-style-type: none"> <li>1. Customer Connections and Step Changes of Load and Generation</li> <li>2. Increasing costs in labour, material, traffic management, Health &amp; Safety (H&amp;S) and compliance</li> </ol> <p><b><u>Customer Connection and Step Changes of Load and Generation</u></b>  Horizon Networks issues a high-level response (HLR) to step-change enquiries. Based on our recent experience with the HLR process, we have seen an increased industrial &amp; commercial load and large-scale generation enquiries.</p>

**Area 2 Step Changes and Scenarios**

The information we gained from the HLR process informs the potential step-change (in the form of load), thus, new investment requirements and plans for the area. At this stage, the step-change is considered as 'non-committed'.

However, our current forecast published in AMP only includes committed step-change. This is done to provide a 'single-point' expenditure forecast. We define 'committed' step change as the customer submits a formal connection application (NC1 connection). The figure below shows a general connection process.



**Inflated Cost**

In FY23, we revised the expenditure forecast for the major substation works. This revision in cost is mainly driven by the inflated procurement cost we experienced over the past 6-12 months.

**2. iii. Are there trigger points where increased certainty on level of spend required may be obtained?**

**Response** Horizon Networks uses the following as trigger points for increased certainty:

1. When a step-change has become committed to the connection (see our response to Question 2. ii. above on the definition of commitment)
2. Once a project moves into the detailed design stage, the accuracy of the expenditure forecast will improve. This forecast is typically disclosed in the AMP 1-year or 2-year before the implementation of the project.

**2. iv. What are the key dependencies or risks EDBs have identified which may impact forecast scenarios?**

**Response** Horizon Networks has identified the following as risks to EDBs that may impact our expenditure forecast:

- Uncertainty around the timing and size of a step change from commercial and industrial connections.
- Uncertainty about the location of the new connections.
- Uncertainty of government policies that affect the uptake of new technology, decarbonisation projects, and EDB priorities
- Post-COVID recession may affect consumer uptake of new technology
- Electricity market-driven changes and market conditions. The uptakes of Time-of-Use pricing or Spot Pricing may influence forecast scenarios.
- Timely access to resources such as supply chain and skilled labour that is driving cost increases well above CPI and forecasts that the Commerce Commission may use
- Changes in consumer behaviour

Area 2 Step Changes and Scenarios	
2. v.	<b>Do EDBs consider that the expenditure required to address different scenarios may usefully follow proxies or will these be disjointed and Network characteristic and network design specific increases?</b>
<b>Response</b>	<p>Horizon Networks' view is that the overall expenditure may follow as similar nationwide trajectory. However, we may see some variance in different EDBs due to the following:</p> <ol style="list-style-type: none"> <li>1. Different network characteristics, where the expenditure of EDBs varies according to their asset condition and network topologies.</li> <li>2. The differences in demographic and socioeconomic characteristics of a region will impact different uptake of edge technologies.</li> </ol>
2. vi.	<b>What is the sensitivity of the expenditure plan to out-turn differences in requirements like incremental demand growth, resilience, decarbonisation, and connection growth?</b>
<b>Response</b>	<p>The expenditure plan may be very sensitive to:</p> <ol style="list-style-type: none"> <li>1. Location of new load and generation</li> <li>2. Size of the load and generation</li> <li>3. Timing of new load and generation</li> <li>4. Network characteristics</li> </ol> <p><b><u>Decarbonisation Scenario Analysis for AMP 2024-2034</u></b>            We intend to consider the abovementioned factors as part of the improved scenario analysis for AMP 2024-2034.</p>

Area 3 Confidence in Expenditure Plan	
<b>Primary Question</b>	<b>How are EDBs obtaining confidence that their proposed expenditure plan is the most effective and efficient solution for the forecast level of demand, resilience requirements, and reliability levels?</b>
<b>Response</b>	<p>Horizon Networks' current practice is benchmarking our expenditure with an external tool or consultant to gain confidence in our expenditure forecasts. This is an annual exercise that Horizon Networks commissions as part of the development of the Asset Management Plan (AMP). The benchmarking exercise focuses on the <i>Asset Replacement &amp; Renewal</i> category, as this expenditure category has historically been our largest spend category.</p> <p>Internally, we perform sensitivity analysis on the investment requirements in the planning period. This includes variations in organic growth rate and asset degradation rates.</p> <p><b><u>Building Confidence in Decarbonisation</u></b>            For AMP 2024-2034, we intend to seek external support to complete our scenario analysis. Once the analysis is completed, we intend to do an internal validation before we proceed to the optioneering and expenditure forecasting stages.</p> <p>We intend to use Boston Consulting Group's: Decarbonisation Roadmap as a sense check.</p>
<b>3. i.</b>	<b>In which categories of expenditure do EDBs have greater levels of confidence than others?</b>
<b>Response</b>	<p>Horizon Networks' view is that our <i>Asset Replacement and Renewal</i> category has the greatest level of confidence when compared to the expenditure profiles of other categories. Since FY21, we have commissioned an Asset Risk Modelling tool that considers an asset's Probability of Failure (Health) and its Consequence of Failure (Criticality). This modelling informs our replacement and renewal plans for our distribution assets.</p> <p>The key inputs to the probability of failure include age, condition (through our inspection program), and corrosion-aging rate modifier. Our criticality framework considers public safety, worksite safety, service levels, and the environment. This approach is aligned with UK's DNO Common Network Asset Indices Methodology and EEA Health and Criticality Guides.</p>
<b>3. ii.</b>	<b>Where new sources of uncertainty exist related to potential increases in expenditure requirements, is there a particular driver of the uncertainty?</b>
<b>Response</b>	<p>Horizon Networks sees that the following are the driver of uncertainty:</p> <ul style="list-style-type: none"> <li>• Location, timing and size of new load</li> <li>• Legislation changes to               <ul style="list-style-type: none"> <li>○ Zoning law enabling infill growth</li> <li>○ The incentive for Electric Vehicle uptakes</li> <li>○ The incentive for decarbonisation/electrification</li> <li>○ Cost inflation due to various reasons</li> </ul> </li> <li>• Supply chain disruption</li> <li>• Labour market leading to costs increases</li> </ul>
<b>3. iii.</b>	<b>How are EDBs accounting for the uncertainty of timing of when non-network solutions may become available or viable (due to technological developments or scale) and able to defer network investment requirements?</b>
<b>Response</b>	<p>Horizon Networks seek to be 'fast-follower' of innovation. We have explored several non-network solutions over the last two years for addressing network needs. However, most of the business cases we developed for non-network solutions were unsuccessful due to the current economics that only provide limited network investment deferral.</p>



Area 3 Confidence in Expenditure Plan	
	<p><b><u>Non-Network Considerations as Part of the Planning Process</u></b></p> <p>Horizon Networks consider the viability of non-network solutions for our system constraints as part of the development of our annual Network Development Plan. The optioneering stage of the Planning Process assesses these solutions' technical and economic feasibility and ensures the solution of the least-regret option is chosen.</p> <p>Based on the type of constraints our networks are experiencing, the non-network options are seen to be complementary to a traditional network solution. We now face the challenge of balancing the risk of re-work and timing or availability of non-network solutions. An example of this challenge is installing smaller capacity equipment in anticipation of non-network solutions that may or may not come.</p>
3. iv.	<b>What forms of assurance do EDBs use, including external verification / challenge to provide confidence in the appropriateness of expenditure plans?</b>
Response	<p>Horizon Networks is conducting our annual benchmarking of our expenditures against the following items to provide confidence in our investment plans:</p> <ul style="list-style-type: none"> <li>• The <i>Total expenditures (TOTEX)</i> are benchmarked against the industry peers. Every year, we commission an independent external consultant Hyland McQueen Ltd to perform the benchmarking exercise</li> <li>• Our Asset Risk Modelling tool, which informs our <i>Asset Replacement and Renewal expenditures</i> (our largest spend category), is being validated by an external consultant. We are only reviewing the key asset fleets.</li> <li>• The forward-looking <i>Asset Replacement and Renewal</i> expenditure are benchmarked against the following: <ul style="list-style-type: none"> <li>○ A replacement model from the Australian Energy Regulator termed the Replacement Expenditure (REPEX) model; and</li> <li>○ The New Zealand Industry Calibrated Replacement (ICRM) Model, which we commissioned an independent external consultant Hyland McQueen Ltd to perform the benchmarking exercise.</li> </ul> </li> </ul>

Area 4 Deliverability	
<b>Primary Question</b>	<b>How are EDBs getting confidence that their expenditure plans are deliverable, particularly if they involve a significant increase from historic levels?</b>
<b>Response</b>	As part of our planning process, we consult with Horizon Services Limited (HSL) and external suppliers to assess and plan for the resource requirements on the work planned in the Asset Management Plan (AMP). We generally forward order long lead-time material for the following financial year by December to ensure successful delivery
<b>4. i.</b>	<b>How are EDB forecasts accounting for availability of materials and skilled staff to deliver programmes of work if there are significant increases in expenditure forecasted?</b>
<b>Response</b>	<p>Horizon Networks uses its subsidiary business Horizon Services Limited (HSL) for works delivery.</p> <p>As part of our planning process and the development of the Asset Management Plan (AMP), we consult with HSL on our annual works program and resource requirements for the upcoming planning period.</p> <p>The resourcing analysis informs the level of resources (i.e., linesman, technicians, engineers, project manager, material and equipment) in the form of manhours and costs for the entire 10-Year planning period. As a result of the analysis, HSL, can forecast the resource requirements to deliver the work set out in the AMP. HSL has a very clear resource plan that is made of increased apprenticeships, external recruitment from local and offshore markets and where required partnering with other contractors.</p> <p>Throughout FY23, HSL has been actively recruiting skilled staff within New Zealand and overseas. We see that this approach is more sustainable in ensuring the availability of skilled staff for the region and New Zealand as a nation.</p>
<b>4. ii.</b>	<b>What are the trade-offs between asset renewal / replacement and significant new connection work that EDBs make in forecasting, particularly where a step change in expenditure is forecasted?</b>
<b>Response</b>	<p>Horizon Networks is price quality regulated by the Commerce Commission. The default price-quality path (DPP) sets limits on the expenditure we can recover from consumers. Our expenditure on <i>Asset Replacement and Renewal</i>, and <i>System Growth</i>, are the two largest expenditure categories.</p> <p>When the timing of a step-change is forecast to accelerate we will have to make a trade-off between allocating expenditure to <i>System Growth</i> and <i>Asset Replacement and Renewal</i>. We will utilise our Asset Risk Modelling to inform any deferment of asset replacement that may be required. This includes considering:</p> <ol style="list-style-type: none"> <li>1. The immediate risk of an asset failing on the Network, informs the minimum expenditures required in the near term (1-Y to 3-Y)</li> <li>2. Long-term (10-Y and 50Y) asset risk profile that informs an alternate spending profile on asset replacements whilst maintaining asset risk at an acceptable level.</li> </ol> <p>The movement of projects may or may not have material impact on the resource requirement depending on the nature of the work, as part of our current process, we will work closely with HSL, to manage the risk of resource availability.</p>
<b>4. iii.</b>	<b>How do EDBs assess achievability of delivery under different scenarios and forecasts?</b>
	<p><b><u>Current Practices for AMP 2023-2033 and Previous AMPs</u></b></p> <p>Horizon Networks' expenditure forecast in the AMP is a 'single-point' forecast. After the 'single-point' forecast is produced, we consult and work closely with HSL. The forecast is then adjusted to meet a common point between Network's needs and resource availability.</p>

Area 4	Deliverability
	<p data-bbox="363 338 1059 367"><b><u>Decarbonisation Scenario Analysis for AMP 2024-2034</u></b></p> <p data-bbox="363 371 1390 492">Horizon Networks intend to identify resource requirements for each scenario. We intend to work closely HSL, to develop the resource plan considering different scenarios. This exercise will assure the business that the delivery of the investment requirements is achievable if an alternate expenditure scenario is triggered.</p> <p data-bbox="363 524 1358 553">We do not envisage any shortfall in capacity to deliver an increased works program.</p>