Asset Managment Plan

2024 - Update

POWERco

Contents

Kia ora koutou

Our 2024 Asset Management Plan is an update to our comprehensive 2023 Asset Management Plan, published in March 2023. It outlines the work needed during the next decade to continue to provide the safe, reliable, and resilient electricity network our customers will increasingly rely on for more of their energy needs. We know our work is fundamental to facilitating Aotearoa New Zealand's decarbonisation and adaptation journey and realising its net-zero emissions targets by 2050.

An ambitious New Zealand can leverage its extraordinary natural endowment of clean energy to Grow to Zero – to grow the economy, at least in relative terms, while meeting net-zero 2050 targets. Growth is critical to fund our climate mitigation and adaptation efforts.

At Powerco, we worry that we are at risk of a relative shrinking of our economy as we attempt to meet our emissions targets. The continued drift of production overseas will reduce our economic base, our economic and social resilience and, consequently, our capacity to fund adaptation. It will very likely increase global emissions as production moves to higher-emitting energy systems.

New Zealanders will be the recipients of climate change impacts driven by much larger economies, and the outlook is not great. Global targets (public and private) are yet to align with 1.5°C or net-zero 2050, and global action is even further behind. So, while we must continue our mitigation efforts to maintain our international market access, we must also confront the reality that global action is too slow. We must adapt to worse outcomes and that needs to be funded.

The good news is we are the new 'lucky country' thanks to our extraordinary endowment of renewable energy. As businesses around the world seek to reduce their emissions by decarbonising their supply chains, we see an opportunity for New Zealand to leverage its natural endowment of clean energy to Grow to Zero – attracting investment and fostering economic growth while meeting net-zero 2050 targets.

Our role at Powerco is to ensure electricity infrastructure is in place to attract and support that future. Timely and adequate investment is crucial. Targeting 'just in time' investment in infrastructure risks being too late. And aiming for 'just enough' investment risks delivering too little. Our no-regrets plan favours progress over perfection to meet the required infrastructure build and support customers to invest with confidence.

The resilience of our network and, in fact, all infrastructure, is taking on greater importance. At the time of the publication of our 2023 AMP, the country had just experienced the terrible impact of Cyclone Gabrielle. Although our network stood up well, and our Powerco whānau responded quickly and efficiently, many of our customers were without power for days. Our gas network played a key role in supporting customers in hard-hit areas such as Hawke's Bay. We have used the past 12 months to learn from this experience and to enhance our plans for resilience investments in our electricity network. This is an important update in this 2024 AMP.

We have completed our climate scenarios assessment and adopted a data-driven approach to further advance our understanding of climate hazards and asset vulnerabilities. Key areas examined included coastal and inland inundation, landslips and wind speed. From these insights, we've initiated resilience programmes to improve our management of these risks, including establishing alternative power supplies for several community hubs in remote rural areas. In mid-2024, we plan to publish our first Climate Resilience and Adaptation Plan and this work will be ongoing as we seek to balance resilience risks and affordability.

Our forward-looking network hinges on enhanced data and digital capabilities, facilitating cost-effective integration of increasing electrification, demand response, network visibility, and the management of distributed energy resources.

Central to these initiatives are our people, whose dedication, diverse experiences and perspectives are pivotal in making this future-ready network a reality. Developing new digital skills and expertise in new technologies, particularly related to low-voltage network management, is paramount. Additional staff will be required to support the build ahead of us. We will need to train and develop more people, as well as attract new talent to the energy industry if we, as an industry, are to fulfil our obligation to support New Zealand's mitigation and adaptation needs. The investment in data and digital technologies and the development of our people's capability and capacity are key changes in this 2024 AMP Update.

During the past few years, escalating costs driven by the global inflationary environment have also posed challenges. We are aware that cost of living pressures continue to impact Kiwis as the economy struggles. We continue to strive to improve our cost efficiency and lift productivity but do acknowledge that some costs have inevitably increased, and we have reflected this in our updated forecasts in this 2024 AMP Update. The core principle of delivering value for our customers and communities now and in the long term is at the heart of what we do and is an area where we remain focused. It can be tempting to defer investment to manage the short-term pressures, but the costs of deferral are greater than ever. Our investments in modern technology will reduce spend over time, as will our investments in resilience. To enable the lowest cost transition, we need to continue to invest now and our AMP demonstrates this.

Our 2024 AMP Update is a well-prepared plan focused on delivering for our customers now and in the long term. While our plans will inevitably evolve, the imperative is to act now to secure Aotearoa's energy future, and help New Zealand Grow to Zero.

Ngā mihi nui
James Kilty
Chief Executive Officer

Introduction

1. Introduction

1.1 Purpose

Powerco is Aotearoa New Zealand's second-largest electricity distribution company by customer numbers, supplying about one of every six residential customers in the country. We have the largest supply territory by area and the largest overall network length. Our networks stretch across the North Island from the Coromandel to the Wairarapa.

We provide an essential service to more than 356,000 homes and businesses, serving approximately one million customers. The electricity distribution assets we manage have long lives and are capital-intensive to create and maintain. We consider ourselves long-term asset stewards, providing effective and efficient asset planning and investment for current and future generations.

In March 2023, we published a comprehensive Asset Management Plan, which is available on our website www.powerco.co.nz. This Asset Management Plan Update (AMP Update) is limited to providing updates on material changes to the previous AMP, the latest information on our forecasts, and our long-term strategy for managing our electricity assets. We are experiencing some major shifts in our operating environment, requiring some substantial changes to our previously published plans and forecasts. These trends and our plans to respond are also highlighted in this AMP Update.

The 2024 AMP Update relates to the electricity distribution services supplied by Powerco and covers the planning period from 1 April 2024 to 31 March 2034.

1.2 Information disclosure requirements

Clause 2.6.3 in the Electricity Distribution Information Disclosure Determination 2012 requires Powerco to complete and publicly disclose, before 1 April 2024, an AMP Update.

Clause 2.6.5 states that the AMP Update must:

- Relate to the electricity distribution services supplied by the electricity distribution business (EDB).
- Identify any material changes to the network development plans disclosed in the last AMP (or AMP Update) per clause 11 of attachment A.
- Identify any material changes to the lifecycle asset management (maintenance and renewal) plans disclosed in the last AMP (or AMP Update) per clause 12 of attachment A.
- Provide the reasons for any material changes to the previous disclosures in the Report on Forecast Capital Expenditure set out in Schedule 11a and Report on Forecast Operational Expenditure set out in Schedule 11b.
- Identify any changes to the asset management practices of the EDB that would affect Schedule 13 Report on Asset Management Maturity disclosure.

In addition, Clause 2.6.6 requires each EDB to publicly disclose the following reports before the start of each disclosure year:

- The Report on Forecast Capital Expenditure in Schedule 11a.
- The Report on Forecast Operational Expenditure in Schedule 11b.
- The Report on Asset Condition in Schedule 12a.
- The Report on Forecast Capacity in Schedule 12b.
- The Report on Forecast Network Demand in Schedule 12c.
- The Report on Forecast Interruptions and Duration in Schedule 12d.

If an EDB has sub-networks, it must also complete the Report on Forecast Interruptions and Duration set out in Schedule 12d for each sub-network.

1.3 Structure

This AMP Update has been structured to meet disclosure requirements and is in a similar format to our previous AMP updates. In the interests of brevity, we have not attempted to duplicate detailed explanations where these are already available in our previous, comprehensive AMP. We encourage readers to refer to our previous AMP if a greater level of detail is required.

Section 2 discusses our view of our emerging operating environment and how Powerco intends to position itself in this.

Section 3 provides commentary on the changes to the planned construction, operational, and maintenance plans of our previous AMP, as necessitated by our customers' evolving requirements, and the changes we see in our future operation.

Section 4 provides an overview of aggregate forecast expenditure and outlines the changes that have materially affected our forecasts. It also provides information on material changes to the schedules since our previous disclosure.

Section 5 contains Schedules 11a-12d, and 14a to meet information disclosure requirements.

Section 6 addresses the certification requirements for this disclosure.

Context and strategy

2. Context and strategy

2.1 Introduction

In our 2023 AMP, we discussed a number of forecast trends we expected would have a major bearing on our long-term network planning and operations. Chief among these was the expected increase in future electricity demand, as New Zealand's decarbonisation drive will rely heavily on electrification.

Despite having seen a small reduction in electricity demand during 2023, all external indications still suggest that this significant demand uplift will be inevitable, as the need for decarbonisation is only intensifying. We have reviewed our demand forecasts and concluded that the underlying assumptions still hold true. Accordingly, we have not materially changed these from the previous AMP.

A major emerging factor in our network planning is the need to increase the resilience of energy supplies. This was highlighted by the major flooding and cyclones experienced in early 2023. We see these events as early examples of some of the potential impacts of climate change on New Zealand. In our 2023 AMP, which was completed before these events occurred, we noted that the impact of these types of events and their influence on our future planning was likely to be material, but had not yet been factored into our expenditure forecasts and investment plans.

During 2023, we conducted a detailed review to identify assets vulnerable to flooding, bushfire and other climate-related risks. As we foresaw, this review has resulted in a material increase in forecast resilience expenditure, as reflected in this AMP Update.

We also note our emerging view that energy resilience is a prerequisite for effective electrification. Customers considering switching their transport, heating or process needs from carbon-based sources to electricity will need the reassurance that their electricity supply will be sufficiently resilient to avoid extended interruptions. This is a further major driver behind the planned increase in resilience expenditure.

2.2 Electricity consumption trends

During 2023, we saw a marginal decrease in coincident peak electricity demand on our networks, contrasted with a marginal increase in energy consumption. The trends, updated till the end of calendar year 2023, are shown below.

This pause in demand growth appears somewhat contrary to the generally agreed need for electrification because of factors such as the increased uptake of electric vehicles during 2023, as shown below.

Figure 2.1 Energy Consumption over Powerco's network since 2010

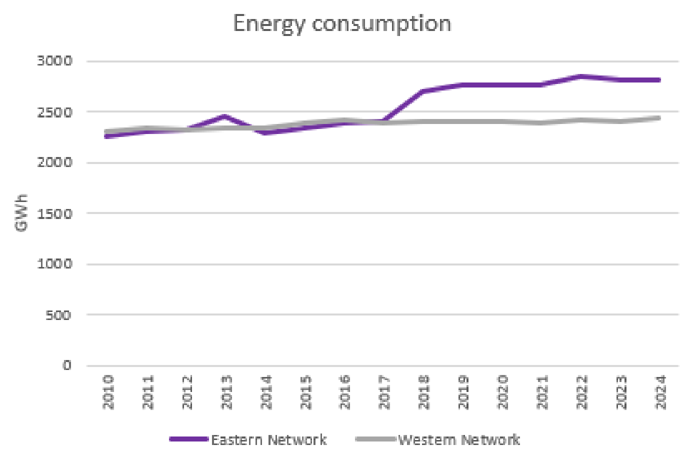


Figure 2.2 Coincident maximum demand on Powerco's network since 2010

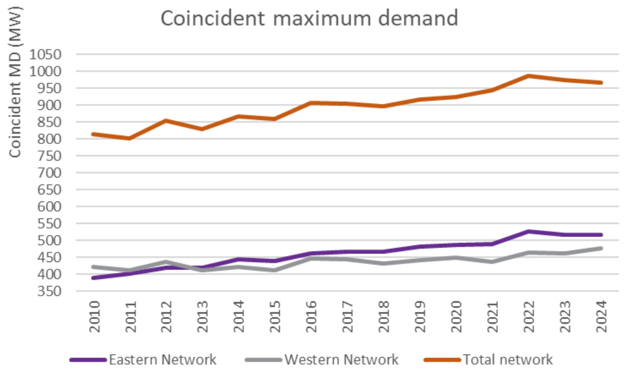
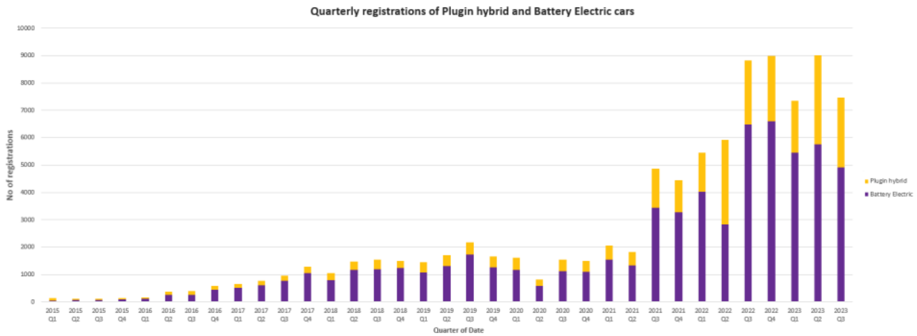


Figure 2.3 Quarterly registration of Plugin Hybrid and Battery Electric cars since 2015



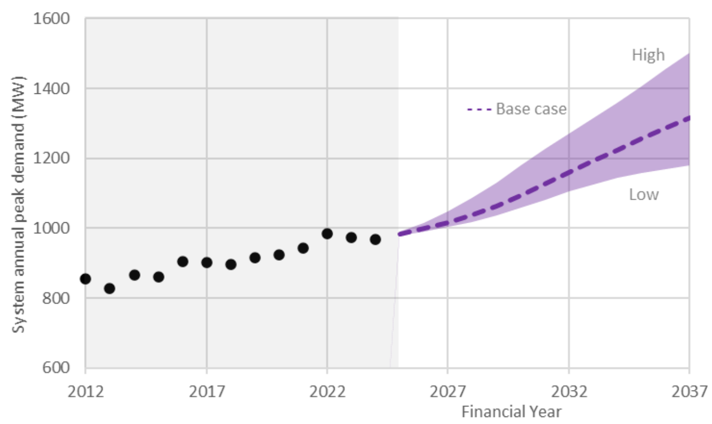
However, electricity demand is notably highly sensitive to the weather. Given the relatively mild 2023-24 summer and 2023 winter, a small demand decrease is not surprising. Such fluctuations are not uncommon, as evidenced by historical trends showing intermittent plateaus amid an overall upward trajectory in demand.

Our longer-term demand forecast, as shown below, is therefore consistent with our previous AMP forecasts. The longer-term investment forecasts in this AMP Update are based on the base case forecast below.

The major components driving our long-term demand forecast are illustrated below. As in the past, we see the major growth factors being:

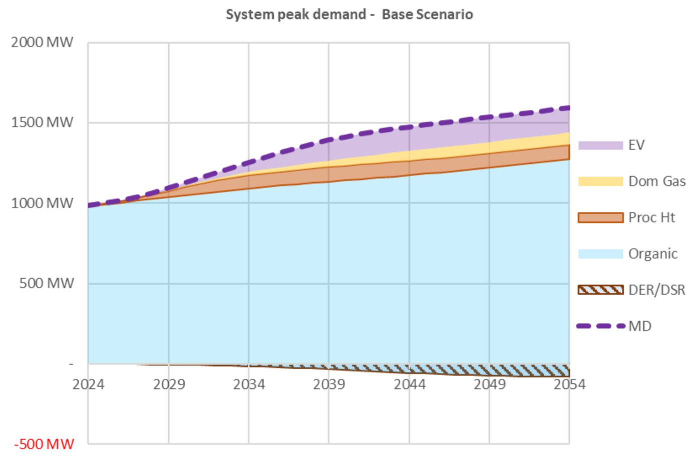
- Organic growth, based on increasing installation control point (ICP) numbers.
- Increased uptake of electric vehicles (with the underlying assumption that we will exert a level of control in terms of when these will be charged)[1].
- Conversion of process heat to electricity, mainly for smaller loads (up to about 50MVA) to be connected to the distribution network.
- The future conversion of domestic gas networks to electricity.

Figure 2.4 System annual peak demand, 2012- 2037



[1] Based on this assumption, we've allowed an average peak demand contribution of 0.6kVA ADMD per electric vehicle.

Figure 2.5 System peak demand, base scenario project until 2054



Conversely, we anticipate a reduction in peak demand as flexibility services (demand management, energy storage etc) on the network increase. The eventual impact is still highly uncertain, so the forecast reduction is conservative.

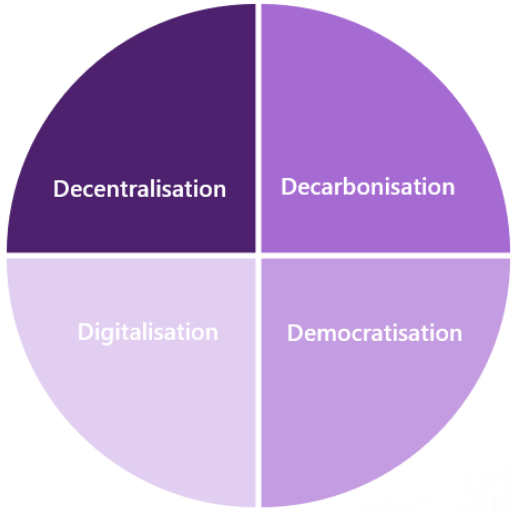
2.3 Strategy: Future-ready Networks

The modern electricity distribution network will have many of the original features of our existing network. At its core, the purpose of our network is to deliver electricity to our customers safely, reliably, and affordably. Not surprisingly, therefore, these outcomes still occupy most of our resources and will continue to do so for the foreseeable future.

However, the future electricity network will also be very different from our network of today. At the heart of these changes sits evolving customer requirements, the need to reduce New Zealand's carbon footprint, and the ongoing emergence of new technology that allows us to improve the service we offer. Powerco's Future-ready Networks strategic priority is based on the '4D' model, which is a widely used view of the future requirements of the electricity network. Its four elements are:

Decentralisation – new ways of designing and operating networks. This encompasses aspects such as increased levels of automation and the use of 'intelligent' devices (Internet of Things-enabled). These will operate in an increasingly autonomous mode, reducing the need for operator intervention, and providing functions such as self-healing or self-optimising networks. Real-time sensing of local operating conditions and risk exposure will form a central part of this ability.

Digitalisation – a data-centric world where information drives decisions and operations, and there will be an increasing role for artificial intelligence supporting optimal solutions. It will feature high volumes of information flow, with associated processing, visualising, and automated decision-making. A digital twin of our network will offer significant scope for improving customer and operational response and lowering costs to customers through maximising asset utilisation and network flexibility. High-quality data and well-integrated systems will be key to achieving this.



Decarbonisation – electricity will play a key role in helping New Zealand reach its carbon reduction goals. To support this, we are developing an open-access electricity network.

This initiative will empower our customers to easily and effectively access the network as they transition into prosumers or engage in other energy trading activities, thereby enhancing their decarbonisation goals. Our objective is to minimise constraints to connecting renewable energy or alternative energy sources.

Democratisation – bringing customers 'into' our business. We build electricity networks for customers, and their needs and preferences are reflected in all our decision-making and operations. Providing customer choice and flexibility, while driving energy costs down, will be key features of our future network. We also see customers (including independent third parties) becoming an integral part of energy solutions, as flexibility markets and optimised energy use solutions become part of our day-to-day business.

Our Future-ready Networks objective is supported by a set of three network strategies and a Data and Digital Strategy, as well as a set of enabling strategies relating to our people and enterprise.

Delivering these strategies makes up a major part of our Asset Management Plan, as reflected in the expenditure forecasts.

2.4 Modernised Network Architecture Strategy

Our Modernised Network Architecture Strategy commitment to our customers sets out what we plan to achieve with our future electricity network. This requires us to modernise the network to make it more efficient and resilient, adopting the benefits of new technology and emerging market opportunities.

Our commitment

A thriving, modern society relies on easy access to cost-effective energy, with electricity playing a major part. We will continue to upgrade our electricity network to provide a modern, efficient system that meets customers' increased capacity needs (as accelerated by electrification in support of decarbonisation), supports customer energy flexibility, accommodates extensive distributed generation and flexibility services, while continuing to perform reliably and safely.

Looking further into the future, we will continue to provide a cost-effective, highly valued service to our customers that will remain an important component of the overall energy supply system. Our network will be run as an accessible, open-access platform, over which customers and third parties can conduct energy transactions, while we will ensure its appropriate power quality and stability.

We foresee the following factors, in particular, as contributing to the need for a modernised network architecture:

- Rapid advancement in technology offers more effective ways of managing our network, leveraging real-time data, automation and dynamic response for better asset performance and customer outcomes.
- In New Zealand, decarbonisation will rely heavily on electrification. A large proportion of energy use will move from fossil fuels to electricity,

significantly increasing overall electricity demand and the load on our network. To minimise the burden of additional infrastructure requirements on our customers, we must meet this need in the most cost-effective manner possible. A modernised network architecture, facilitating flexibility services and optimising asset utilisation, is key to achieving this.

- With increased reliance on electricity as a primary energy source, the underlying resilience of our network becomes increasingly important. This resilience will be further tested by the impacts of climate change.
- Increased electrification will involve more distributed generation from variable sources, such as solar PV and wind. Integrating this and avoiding potential power-quality issues, will require increasingly sophisticated network visibility and management, down to the low voltage (LV) level.
- In the longer term, a distribution level electricity market is foreseen, with customers, prosumers and suppliers trading energy and related services. The distribution network will be the platform for this market, and it will eventually require a distribution system operator (DSO) function to ensure energy balance and stability.

Key elements of our Modernised Network Architecture Strategy include:

- Modernise our planning approach and technology to match our customers' evolving needs.
- Improve asset utilisation, allowing more energy to be conveyed without equivalent network cost increases.
- Expand customers' energy options, by incorporating flexibility offerings in our forward plans, and ensuring future technologies are applied as appropriate.
- Ensure our networks will enable decarbonisation and enhance resilience, recognising that we have a very diverse network environment that will require varying architecture and standards.
- Use materials that are ethically sourced and environmentally sustainable to the greatest extent possible.
- Ensure our material selection and future designs are suitable for operation in a changing climate.
- Improve our operational response through better communication with customers and automating our networks and decision-making.

2.5 Energy Resilience Strategy

This AMP Update reflects a much-heightened focus on energy resilience than previous plans. This has been brought about, in part, by the increased awareness of the impact of climate change on electricity networks, following a series of major climate events at the start of 2023. It also reflects our view of how important it is to give our customers confidence in the resilience of their supply, as we encourage them to switch from alternative fuels to electricity.

Our commitment

A thriving, modern society relies on easy access to cost-effective energy, with gas and electricity playing a major part. As we work towards New Zealand's goal of net-zero carbon emissions, which involves switching from other energy sources to electricity, and converting to renewable gas, the role of our distribution networks will grow ever more critical. At the same time, our operating environment is increasingly exposed to severe external events, much of it driven by climate change impacts. A heightened emphasis on the resilience of energy supplies is therefore essential.

We will cooperate with other critical service providers to help ensure appropriate levels of energy resilience for our customers and communities. We will reflect our customers' requirements, while balancing the trade-off between criticality of supply, the needs of other critical service providers, customers' cost and service level preferences, our assessed risk to energy supplies and the cost to mitigate these.

Although our focus is predominantly on electricity and gas distribution networks, we will also pursue other means of achieving energy resilience.

Resilience often refers only to the ability of the physical gas or electricity networks to absorb or recover from shocks or changes. The broader concept, 'energy resilience', also includes non-network options for energy supply and reflects customers' varying degrees of self-resilience or tolerance of energy interruptions. In addition to network resilience, these factors, including understanding the value our customers place on energy resilience, are key parts of our strategy.

Energy resilience is particularly pertinent in severe conditions that extend well beyond localised, routine faults. Here we often see multiple coincident outages, impacting broad areas. It also highlights interdependencies in the infrastructure that serves communities, for example restoring electricity supplies requires roading access.

Key elements of our Energy Resilience Strategy include:

- Develop appropriate measures to monitor and report on energy resilience delivery.
- Work with customers to determine their resilience requirements and their willingness to pay to achieve these.
- Identify critical service providers and essential community needs that require levels of energy resilience exceeding normal supply levels.
- Based on our customer intelligence and understanding of the evolving risks to networks and assets, we'll establish targeted levels of energy resilience to work to. As the factors that influence this differ between communities and various parts of our networks, the targets will vary across our network and customer types.
- Include these resilience targets in our asset management plans, to inform our investment planning. Our resilience solutions will consider network hardening as well as non-network solutions.
- Develop operational response plans to ensure appropriate emergency response and recovery capability.
- Continually adapt our resilience targets and measures to reflect evolving threats or customer needs.

2.6 Community Decarbonisation Strategy

Powerco has a roadmap for achieving a net-zero carbon emissions goal. However, we recognise that the benefits we can achieve by reducing our own emissions are dwarfed by the contribution we could make to help our customers achieve their decarbonisation goals and, through that, contribute to New Zealand's decarbonisation aspirations. Developing our networks to help our customers with this is the focus of our Community Decarbonisation Strategy.

Our commitment

To achieve New Zealand's goal of net zero carbon emissions will require energy users to switch from other energy sources to (renewable) electricity or converting to renewable gas. Our distribution networks will play a central role in facilitating this switch. We will achieve this by ensuring the provision of safe, reliable, and affordable gas and electricity distribution services, that will provide the capacity needed by customers and will evolve to keep up with their changing energy expectations.

Our electricity network will be run on open access principles, to allow customers maximum flexibility in how and what they connect to it, or as a platform over which energy transactions can be conducted. In time, we see our network evolving to support a distribution system operator function. Our gas network will in future be used to transport increasing volumes of biogas. We will support the formation of a market for procuring sufficient biogas supplies for our customers and ensure that our customers can seamlessly transition to this.

At its heart, our Community Decarbonisation Strategy aims to make it easy and attractive for customers to use our networks to support their own decarbonisation, and for us to work with them on pursuing optimal energy solutions.

Key elements of our Community Decarbonisation Strategy include:

- Build cost-effective networks that are safe, resilient, reliable and provide the capacity and functionality our customers need for electrification.
- Work with customers to optimally match their energy use to available network capacity, reducing the need for additional capacity and associated costs[2].
- Develop pricing and commercial structures that incentivise demand management by our customers or allow us to reduce or shift peak demand.
- Where feasible, support customers in developing alternative, low-carbon, energy solutions that could minimise greenhouse gas emissions.
- Operate our networks on an open-access basis, facilitating customer choice and providing a stable platform for customer or third-party energy trading and flexibility markets. While ensuring safe operation within technical regulatory limits (power quality), we will accommodate any reasonable electrical generation, storage, or load, along with the resulting power flows.
- As far as practical, ensure cost equity through tariffs that reflect the actual extent to which customers use our assets and services.

2.7 Data and Digital Strategy

The key to unlocking a sustainable future, rests in the investment in data and digital, guided by a singular vision: To establish an open-access, resilient network capable of meeting the formidable challenges of decarbonisation.

In this network, our customers are no longer consumers of energy, but active participants in an energy ecosystem. This open-access, resilient network serves future generations who expect real energy options that are easily accessible via digital interfaces anywhere and anytime, while still reflecting affordable future costs, and the value of their energy resources.

Visibility is power – the imperative for enhanced asset utilisation necessitates vastly improved visibility of the network's state, together with the operational capability to dynamically reconfigure the network and dispatch instructions to distributed flexible resources with precision.

Complementing this, customers and markets will need long-term forecasts of network capacity, congestion, network investment plans and ensuing price signals. The heaviest impacts of mass electrification are expected to occur on the LV network, where visibility is poorest. The LV network has low diversity (averaging effect), so operating close to network limits with highly dynamic demand will require high-quality data delivered in near real-time, from potentially multiple devices at each connection.

The requirement to optimise flexibility across multiple industry stakeholders, further requires automated modelling, communications, and control. Ensuring high-quality data is critical to support commercial decisions. This entails not only investing in higher quality devices and data management, but also automated systems of verification, reliable communications, and inter-business system interfaces. Information must be securely managed and easily accessible to deliver value to all aspects of our business, and for our customers.

High-quality data collection primarily relies on various types of sensors and automated systems. Equally important is the platform to house this data, enabling real-time access to the information needed to ensure a safe network,

[2] Additional capacity is still likely to be required in many cases, but we will work with customers to limit the extent of this.

without impacting system operation and efficiency. Our business digital systems and processes need to be resilient and responsive, enabling adaptation to environmental trends and disruptions.

This vision has highlighted the need for a concerted push to lift digital skills, develop a culture of data stewardship, and re-engineer and align business processes to enable automation and integration. We require a bird’s-eye view of every part of our network. This is enabled by data and digital capabilities.

Boston Consulting Group the future is electric: A smarter, more flexible electricity system will save about $10 billion on a Net Present Value (NPV) basis by 2050, incorporating demand response, smart electric vehicle (EV) charging, and distributed energy resources. Investment in new technologies, such as distribution network visibility and coordination, will unlock many of these measures, enabling at least 2 GW of demand-side flexibility by 2030 and 5.8 GW of demand-side flexibility by 2050.

Our 2024 Asset Management Plan Update

3. Our 2024 Asset Management Plan Update

3.1 Introduction

This Asset Management Plan Update (AMP Update) provides a refresh of key planning outputs for the next 10 years. Our Asset Management Plan is an essential part of our long-term asset planning and investment framework. The AMP Update is primarily informed by our 2023 Asset Management Plan, which we published one year ago.

The drivers of this AMP Update are largely consistent with our previous Asset Management Plan. Notably, our focus on investments to address anticipated demand increases driven by electrification remains pivotal. Three notable areas exhibiting substantial changes from the previous AMP, owing to refinements and enhanced strategies, are:

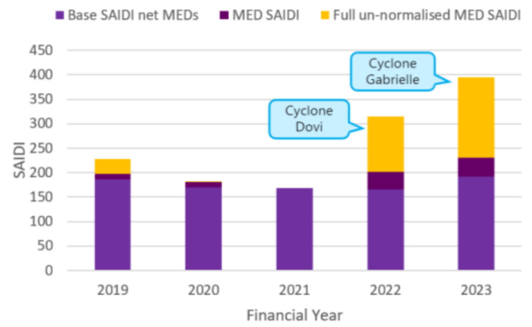
- **Climate resilience**: The effects of climate change, including sea-level rise and storm severity, are increasingly impacting our networks and our ability to restore supply to our customers. Through geospatial analysis, we are improving our ability to anticipate vulnerability to climate hazards and apply risk-based investment decisions.
- **Data and digital**: We have refreshed our strategy for this AMP Update. Our Data and Digital Strategy aims to establish the framework, supporting data, and digital capabilities that allow our organisation to maintain digital agility, seek growth opportunities, and meet our customers' evolving information needs. Simultaneously, it supports resilience and decarbonisation.
- **Workforce capability and capacity:** To deliver our expenditure forecasts and meet the resilience and decarbonisation expectations, we require additional resources and different skill sets within the organisation.

A brief overview of our strategy and the reasons for changes across these areas is provided below.

3.2 Climate resilience

The natural environment already presents considerable risk to our network, and Climate projections through the century indicate worsening impacts, potentially affecting our ability to sustain supply during severe weather. Cyclones Dovi and Gabrielle illustrate the widespread and devastating consequences of extreme weather events to our communities.

Figure 3.1: Unplanned SAIDI showing the impact on customers during recent Cyclone Dovi and Cyclone Gabrielle, primarily driven by trees, wind damage and flooding.



Our climate scenarios provide useful information on our network's exposure to natural hazards during the next century.

For example, our SSP5 8.5 scenario (Shared Socioeconomic Pathway, International climate scenario 5) - aligned with the ICCP Shared Socioeconomic Pathway, NIWA data shows that by 2100:

Extreme precipitation is expected to increase by +5 to +15% across our footprint, with a +20 to +25% increase in some coastal areas and the Coromandel.

Dry days are expected to increase by +5% to +20% across our footprint, with a +25% increase possible for our Wairarapa networks.

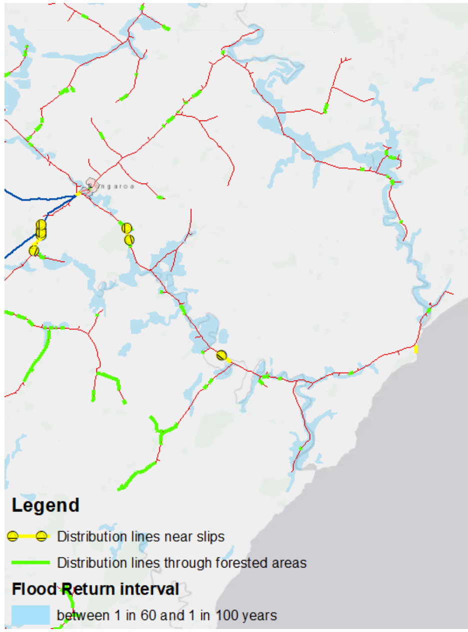
In addition to the escalating climate impacts, the ongoing energy transition, which is driving greater customer reliance on electricity, emphasises the importance of enhancing network resilience. As the transition progresses, disruptions to supply are expected to have a more significant impact on both the New Zealand economy and the communities relying on electricity networks for their energy supply.

Improving network resilience

Recognising the heightened importance of network resilience, we are formulating strategies to ensure the optimal resilience of our networks. We are looking at how we can reduce vulnerability to major outages; this includes avoiding outages from major events, restoring supply quickly, and efficiently recovering following major events.

Figure 3.2: Road damage to our remote communities greatly impacts our ability to repair network damaged by storms, such as the road washout of Coast Road to Ākitio during Cyclone Gabrielle (image from NZ Herald).

Figure 3.3: Our GIS mapping shows significant risks to supply during storm events, including where lines pass through forestry, active slips, and river flooding hazards.

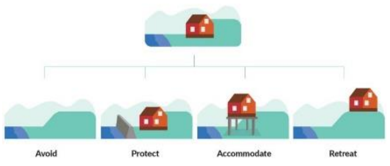


To enhance our understanding of our network's vulnerability to natural hazards, during 2022-23 we worked with local councils and acquired scientific data to integrate hazard datasets into our Geographical Information System (GIS). We have also carried out wide-area regional assessments under certain hazard scenarios. These include:

1) Regional council flood maps
2) Sea-level rise to SSP1 2.6, SSP2 4.5 and SSP5 8.5
3) Active geological slips and slip-prone soils
4) Native and planted forest areas
5) Fault lines

We maintain ongoing engagement with science authorities, such as GNS Science and NIWA, to ensure access to the latest hazard exposure information. This data is consistent with that used by regional and national authorities, fostering a common understanding of community risks. Core to improving our resilience is data sharing on both hazards and critical infrastructure interdependencies, so that adaptation occurs in a coordinated fashion.

The National Adaptation Plan[3] outlines a proactive and adaptive strategy for addressing climate hazards during the next three decades. Approaches include:



- **Avoid** – e.g., develop away from hazard-prone areas
- **Protect** – e.g., improve flood defence
- **Accommodate** – e.g., raise properties
- **Retreat** – e.g., managed retreat

Table 3.1 shows Powerco’s asset adaptation strategies.

Table 3.1: Powerco’s climate change adaptation strategies

Strategy	Description
Do nothing	Climate change is not considered a threat to this asset class.
Organic	The rate of renewal through age or condition is sufficient to allow adaptation with minor evolutionary changes to asset specifications, marginally affecting costs.
Proactive	Due to risk, climate change-related threats require proactive action in the near future.
Remediation	The asset is already at risk. Improvements can be justified against current climate conditions.
Redevelopment	While climate impacts to existing assets are minor, land use or other public infrastructure changes may drive the need to replace the asset. For example, road raising, or relocation works to allow for adaptation to sea level rise.

[3] https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/adapting-to-climate-change/national-adaptation-plan/

Our current plan focuses on targeted proactive measures and remediation strengthening of our critical assets. For instance, seismic reinforcement of substation buildings and the relocation of key line routes threatened by landslips are already in progress. Additionally, organic adaptation, as depicted in Figure 3.4, may provide sufficient resilience in the long term for some assets.

Figure 3.4: Example of organic adaptation. Standard LV pillars (left) are vulnerable to coastal inundation as they are not waterproof. A newer submersible design (right).

In this AMP Update, we have revised our investment forecasts to execute more risk reduction, and readiness and response investments. This includes:

- **Risk reduction:** Strengthening vulnerable river crossings, relocating key structures exposed to landslips or tree fall-in, and implementing flood mitigation measures for critical assets located in flood areas.
- **Readiness and response:** Preparedness via acquiring additional zone substation spares, investing in our community emergency hubs, and continued rollout of our Advanced Distribution Management System (ADMS).

Critical infrastructure interdependencies

An important aspect of assessing resilience is enhancing our understanding of the interdependencies between our energy networks and other critical infrastructure, such as roading, healthcare, water, communication networks and cloud services, among others. These infrastructure providers often have significant overlaps and interactions with each other, suggesting that a significant event in one of these networks could trigger cascade failures across multiple providers of critical infrastructure and essential services. Such failures would have a significant impact on the health and wellbeing of New Zealanders.

As such, we are working to extend our understanding of these inter-linkages, leveraging the work already carried out by Lifelines Groups. Central to this effort is ongoing collaboration with other infrastructure providers. This involves effectively communicating network vulnerabilities, the projected duration of an outage during significant events, and service requirements, including the level of self-resilience. Additionally, we aim to align our initiatives with the climate-related infrastructure investments being undertaken by other organisations, particularly where there are shared risks, or hotspots. For instance, for a bridge servicing multiple utilities, a joint risk mitigation strategy may be the most efficient approach.

In some cases, the most prudent investment will involve local or self-resilience measures, such as backup generators. In other cases, network strengthening may be economic.

We continue to integrate climate adaptation into our asset management processes. Understanding our network's exposure to natural hazards allows us to effectively incorporate adaptation into our investment strategies and decisions. During the planning period, we intend to undertake the following actions to increase resilience and adapt to climate change:

- Enhance risk mitigation through continued development of our GIS and LiDAR spatial platforms, allowing for visual representation of climate risk exposure and vulnerability.
- Continue sharing information with regional lifelines to develop a better understanding of cascade failure risks to critical infrastructure and essential services.
- Develop system interventions based on risk, quantifying resilience improvement.
- Progressively review and, where necessary, revise equipment specifications, standards, and designs to accommodate projected climate change impacts.

- Utilise new equipment specifications, standards and designs in capital and maintenance works processes.

We plan to publish a Climate Adaptation and Resilience report this year. This report will provide detailed information on our strategy, current findings, and outline the next steps in our climate adaptation and resilience efforts.

3.3 Data and digital

Investment in data and digital is at the foundation of the network of the future. Our Data and Digital Strategy, as outlined in Chapter 2, will see us focus on essential enabling areas during the next few years. These areas, which are driving our increase in non-network investment, are:

Information management

- Reset our information architecture, data quality and records management capabilities to ensure that we collect and keep good data.
- Ensure effective information quality governance structures are in place, fully recognising the growing value of information as an asset.
- Limit our data needs (especially considering privacy laws), to a fit-for-purpose approach. This is to ensure that we do not fall into the trap of data gluttony.
- The ability to exchange information between systems and apply meaningful security boundaries will be central in deciding on any future solution.

Data platform infrastructure

- Expand the Business Warehouse capability for structured analysis, while also expanding the Data Lake to support further innovation in predictive Machine Learning (ML) and Artificial Intelligence (AI).
- Develop an effective digital network twin that would support control applications, such as ADMS and network visibility, improve our network planning and risk management, and allow higher network utilisation rates without having to take on undue risks.
- Adopt systems and approaches that facilitate the seamless exchange of data, ensuring it is timely, traceable, and useful in the context of its consumption.
- Develop fit-for-purpose and well-integrated data consumption platforms to push the data to the devices or platforms where decisions are made.

Data consumption and quality

- Maximise the utility of data to improve ‘citizen’ analysis capabilities, ensuring that the right data and insights are served to the right person at the right time, wherever they need it.
- Publish relevant data for easy access by our delivery partners and customers. Extend the network and operational information made available to our customers, enabling as far as practicable, informed decisions while avoiding the need to request support.
- Raise data and digital literacy to gain maximum value from our data and technology solutions, while minimising risk.
- Ensure ease and effectiveness of accessing our data and using our applications.

High-performance programme

- Eliminate unnecessary double-handling of information, or manual processing.
- Continue to explore and develop emerging technologies that would improve our ability to support our communities and operations.
- Keep abreast of customers’ emerging technology expectations as well as advances in AI and ML.
- ‘Slow is the new broken’. Expand the systems performance monitoring programme by defining metrics for our high-usage business and critical

network systems. Remediate or replace systems that do not perform as required, to ensure real-time data and/or high availability, redundancy, and operational continuity.

Rationalisation of application architecture

- Implement solutions that have the experience and expectations of our customers and our own people in mind.
- Our approach will ensure we a have fit-for-purpose 'System of Record' and 'System of Innovation', with guardrails that balance control, agility, and delivery speed when needed. This will see a shift to Software as a service (SaaS), and an increase in opex costs.
- Keep pace with modern communications technology to support the increased rollout of decentralised devices across our network footprint and to allow real-time or semi-real-time network monitoring and control.

The enabling data and digital capabilities are transformational, not incremental. Overall, while the upfront costs of investing in data and digital capabilities may be substantial, the long-term benefits, in terms of improved operational efficiency, enhanced customer experience, customer choice on engagement and options, and sustainable growth, justify the expenditure. Faced with evolving regulatory mandates, technological advancements that are moving faster than we can adopt, and market dynamics, such investments are increasingly becoming essential for maintaining competitiveness, customer experience, and a reliable and resilient network.

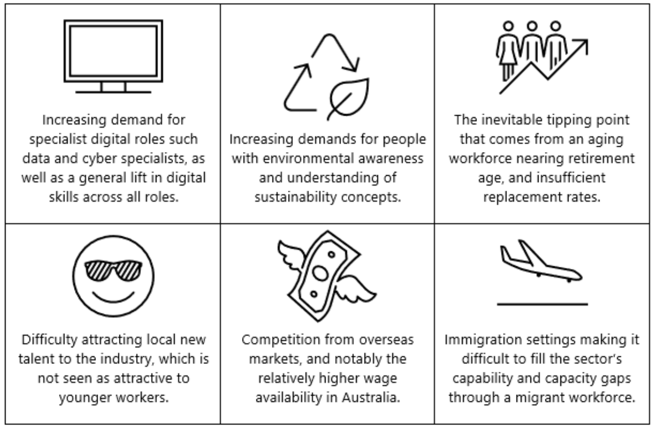
3.4 Workforce capability and capacity

> *A significant increase in the skilled workforce across the electricity value chain is required to deliver electrification.*
>
> **BOSTON CONSULTING GROUP: THE FUTURE IS ELECTRIC REPORT**
> OCTOBER 25, 2022

This AMP Update outlines the considerable investment and work that is required to address anticipated demand increases driven by electrification. Delivering additional work will require additional people and new skill sets within the organisation.

Boston Consulting Group corroborates this view in their 2022 report, "The Future is Electric", which emphasises some of these workforce challenges and shifts expected during the energy transition.

Figure 3.5: Workforce challenges expected during the energy transition



Overview of workforce growth

Our internal workforce will need to grow by ~20% to deliver the ~30% growth in core investment forecast during the 10-year AMP period.

We are forecasting the following workforce growth:

- +52 Fulltime employees (FTE) to support electricity growth
- +23 FTE to support data, digital and future network capability
- +16 FTE to support customer engagement and service
- +12 FTE for business support functions

We are also proposing to expand our graduate programme and offer technician training to create more entry pathways into the industry. This approach has dual benefits – it offers career opportunities to people in the communities we serve, while also being a cost-effective alternative to recruiting experienced and high-cost workers from offshore.

We have provided further details on our workforce growth below.

Electricity growth: This category relates to workforce requirements driven by the changing demands on our network. This reflects the organic increase in headcount to plan, manage and deliver works because of increased network investment.

Data, digital and future networks growth: This category represents skill sets that are emerging or will be required as we move to a more digitally driven model. Examples of these emerging skill sets include managing an LV network with high Distributed Energy Resource (DER) penetration and developing flexibility solutions to manage peak demands.

Customer engagement and service growth: To support our communities as they decarbonise, we will need to increase the number of Powerco representatives on the ground engaging with people and businesses. We also propose to change our smaller customer works model, taking more responsibility for customer experience (which is currently at arm's length).

Business support growth: This category represents the need for an uplift in business support and back-office staff, notably in Information Technology, Finance, People Support and Legal, to assist with the administration of increased throughput and complexity.

Graduate programme growth: The electricity industry faces many challenges in the coming decades, one of which is the availability of skilled labour. Relying on the market to provide the required skills when we need them is a gamble. To mitigate this risk, our updated strategy emphasises the proactive development of more young professionals within the electricity industry. We want to mentor more young professionals, particularly those from the communities that we serve, to ensure there is a growing skill set available for the industry's future needs.

Powerco has run a successful, award-winning graduate programme for many years. Traditionally, we have welcomed three to four new electrical engineering graduates annually, engaging them in a three-year training programme where they work in different areas of the Powerco electricity business. Looking ahead, we intend to enhance the graduate programme, starting in 2026. We aim to increase the graduate intake to accommodate up to 10 graduates per year, spanning diverse disciplines/skill areas, such as electrical, mechanical, and civil engineering, and data science.

Technician training: The future electricity network will increasingly rely on smart technology, communications, and control systems. Field technicians will play a pivotal role in the configuration, commissioning, and maintenance of these smart devices. Recognising this, Powerco intends to establish a technician training programme, placing trainees with our service provider partners to ensure skilled people are developed. We anticipate six trainees every two years.

Material changes

4. Material changes

Schedules 11a-12d are included in Section 5. This section provides an overview of the rationale for changes to our forecasts since last year and the information provided in these schedules, as well as material changes to network development plans, asset lifecycle plans and asset management practices.

4.1 Network development plans

4.1.1 Major projects

Changes in network development forecasts are driven primarily by updates of to major and minor projects planned at zone substations and on the sub-transmission network, based on updated planning inputs. This is part of our regular planning processes.

Of particular note are the changes to timing and scope regarding the investment required to enable additional supply to the Bay of Plenty from Transpower. Although investment forecasts for this work were included in AMP23, this plan has continued to be refined during the past 12 months. The Powerco Network Planning team is working closely with Transpower to finalise the project's plans, which will deliver a generational improvement in the security of supply to this region of New Zealand.

We have also observed large increases in construction costs on our major projects, particularly the cost of constructing substation buildings. This cost increase is reflected in our updated forecast.

As we move towards a decarbonised economy, it is vital we build new substations, upsize existing ones, and ensure sufficient supply to substations to meet customer demand. This AMP Update forecast incorporates changes in delivery plans for certain substation developments and sub-transmission investments because of shifts in the timing for investing in additional capacity, based on changes in customer needs. Some projects have been accelerated, while others have been deferred.

Investment in growth on our 11kV distribution network remains the same as AMP23. We believe the assumptions made in AMP23 are still valid, and the augmentation of our network in response to decarbonisation demand will require significant investment.

4.2 Lifecycle asset management plans

Following the devastating impacts of cyclones Dovi and Gabrielle, we initiated work to assess the potential impacts of climate change on our network. This AMP Update includes increased expenditure on resilience and climate change adaptation.

For assets determined to be less susceptible to resilience risks, there have been no material changes in lifecycle asset management plans.

4.3 Asset management practices

There have been no material changes to the asset management practices and ongoing improvement plans that underpinned our previous AMP.

We continue to refine our asset health and risk models using our value-based decision tool, Copperleaf. Through ongoing refinement, Copperleaf gives us the best information possible to inform risk-based investment decisions. The evolution of this tool will strengthen our AMP process, empowering us to make more informed decisions and deliver better outcomes for our customers through data-driven asset lifecycle business cases.

4.4 Schedules 11a and 11b: Forecast capital and operating expenditure

4.4.1 Capex

Resilience: The forecast presented in this AMP Update reflects our best current estimates for increased network hardening to strengthen the resilience of our networks against weather events. We have taken a data-driven approach to understanding climate change vulnerability and prudent investment. Using updated natural hazard geospatial data, we've conducted modelling at a more detailed level than previously, to better model current and future worsening climate hazards (linked to Powerco scenarios).

This modelling has led to several new resilience programmes. These include:

- Flood protection investment across critical subtransmission circuits and 11kV river crossings.
- Potential relocation of zone substations where flooding risk is high.
- Strengthening and storm-hardening parts of the network that are vulnerable to extreme wind speeds.
- Relocating overhead lines situated within active and slip-prone areas.
- Establishing community hubs to allow off-grid supply in hard-to-serve areas during major events.

We will continue to improve our modelling and work with central and local government and other utility providers to coordinate investment.

Unit costs: Like many industries, we have experienced significant cost increases across our delivery portfolios. We undertake annual unit rate reviews and update our unit cost inputs accordingly.

Although we have seen cost increases in all asset types, the two most notable areas are overhead line and substation building construction.

The cost of crossarms materials and traffic management are the main contributors to the increased cost of overhead line construction. The broader rise in civil construction costs across the economy has impacted the cost of constructing substation buildings, which house critical switchgear and protection devices. Shipping costs and global metal prices have also affected the cost of our larger transformers and switchboards.

Facilities and leases: The forecast in this AMP Update includes an estimate for the construction of a second network operating centre. This investment would complement the resilience enhancements being undertaken across our network. This cost has been forecast in the second half of the regulatory period.

We are also experiencing increasing costs relating to the hosting lease agreements of our ERP system. We have included these recent increases and predicted future increases in this AMP Update.

4.4.2 Opex

Network maintenance: Inspection programmes have identified an increase in material defects, particularly in overhead assets through the poletop photography programme. This has led to an increase in the backlog of Amber defects. Managing this increase in defects will require additional asset replacement and renewal expenditure, although expenditure is still broadly in line with historical levels.

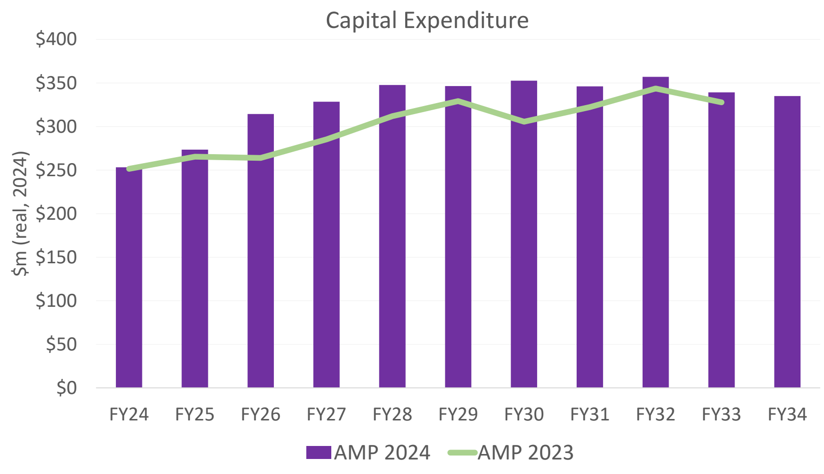
Vegetation management: To move from a reactive to proactive vegetation response we have proposed an expenditure forecast that ensures we can complete our cyclic regulatory clearance programmes while also carrying out a separate out-of-zone cutting programme based on risk-based prioritisation. LiDAR capture has revealed the extent to which prioritisation of out-of-zone (reactive) faults has delayed our cyclic programmes.

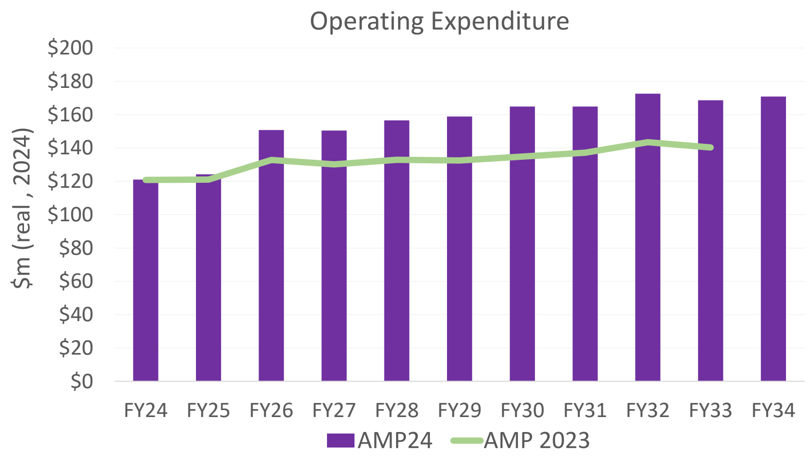
System operations and network support, and business support: In Chapter 3 of this document, we highlighted that our workforce capability and capacity will need to grow and evolve to deliver the considerable investment and work that is required during the energy transition. This is an area of substantial change relative to AMP23.

We have also included an increase in our data and digital opex forecast. This uplift represents the data capture and data management arrangements we will need to enable our customers' future energy choices. For example, new data and analytics capabilities to effectively manage the LV network. These arrangements are increasingly SaaS and, as such, are required to be forecasted as operating expenditure.

These cost increases are grounded in the need to support our people, and the data and digital strategies that are required to enable our Future-ready Networks vision. We firmly believe that this initiative will unlock benefits far exceeding the additional costs incurred.

Figure 4.1: AMP24 capital and operating expenditure forecasts





4.5 Schedule 12a: Asset condition

There have been no material changes to the approach for completing Schedule 12a since AMP23.

4.6 Schedule 12b: Forecast capacity

There have been no material changes to the approach for completing Schedule 12b since AMP23.

4.7 Schedule 12c: Forecast network demand

There have been no material changes to the approach for completing Schedule 12c since AMP23.

4.8 Schedule 12d: Forecast interruptions and duration

There have been no material changes to the approach for completing Schedule 12d since AMP23.

Schedules

5. Schedules

5.1 Schedule 11a

		Company Name	**Powerco**
		AMP Planning Period	**1 April 2024 – 31 March 2034**

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. Also required is a forecast of the value of commissioned assets (i.e., the value of RAB additions)

EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).

This information is not part of audited disclosure information.

sch ref			Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
7													
8		for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**	**31 Mar 30**	**31 Mar 31**	**31 Mar 32**	**31 Mar 33**	**31 Mar 34**
9		**11a(i): Expenditure on Assets Forecast**	**$000 (in nominal dollars)**										
10		Consumer connection	84,985	88,358	94,385	96,397	107,646	118,934	128,542	139,782	152,805	168,528	187,263
11		System growth	93,162	92,000	106,419	127,528	148,040	143,608	148,551	134,233	154,133	129,405	126,866
12		Asset replacement and renewal	89,184	110,117	138,144	146,716	156,108	155,934	159,060	170,093	179,041	180,996	184,168
13		Asset relocations	3,657	2,908	2,106	2,157	2,205	2,249	2,294	2,341	2,389	2,438	2,488
14		Reliability, safety and environment:											
15		Quality of supply	11,591	14,181	22,470	23,298	23,790	24,505	25,149	26,531	27,740	28,312	28,897
16		Legislative and regulatory	2,229	3,099	-	-	-	-	-	-	-	-	-
17		Other reliability, safety and environment	5,454	7,026	11,081	12,721	12,356	15,070	15,386	14,452	10,958	7,207	6,071
18		**Total reliability, safety and environment**	19,274	24,306	33,551	36,019	36,146	39,575	40,535	40,983	38,698	35,519	34,968
19		**Expenditure on network assets**	290,262	317,689	374,605	408,817	450,145	460,300	478,982	487,432	527,066	516,886	535,753
20		Expenditure on non-network assets	11,451	17,469	19,655	16,748	13,205	16,064	18,752	18,074	9,219	14,965	11,305
21		**Expenditure on assets**	301,713	335,158	394,260	425,565	463,350	476,364	497,734	505,506	536,285	531,851	547,058
22													
23	*plus*	Cost of financing	2,078	2,129	2,129	2,129	2,129	2,129	2,129	2,129	2,129	2,129	2,129
24	*less*	Value of capital contributions	48,484	49,556	52,021	57,947	64,478	70,924	76,587	83,225	90,923	100,215	111,283
25	*plus*	Value of vested assets	-	-	-	-	-	-	-	-	-	-	-
26													
27		**Capital expenditure forecast**	255,307	287,731	344,368	369,747	401,001	407,569	423,276	424,410	447,491	433,765	437,904
28													
29		Assets commissioned	242,300	277,757	315,630	350,231	403,953	416,189	441,270	419,722	452,187	443,436	457,314
30			*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
31		for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**	**31 Mar 30**	**31 Mar 31**	**31 Mar 32**	**31 Mar 33**	**31 Mar 34**
32			**$000 (in constant prices)**										
33		Consumer connection	84,985	85,120	88,432	88,433	96,690	104,757	111,010	118,332	126,785	137,051	149,260
34		System growth	93,162	87,527	97,670	113,968	129,130	122,855	124,450	110,027	123,702	101,705	97,598
35		Asset replacement and renewal	89,184	104,632	126,581	130,741	135,795	132,894	132,806	139,077	143,390	142,018	141,470
36		Asset relocations	3,657	2,799	1,971	1,971	1,971	1,971	1,971	1,971	1,971	1,971	1,971
37		Reliability, safety and environment:											
38		Quality of supply	11,591	13,457	20,517	20,630	20,538	20,726	20,841	21,539	22,064	22,064	22,065
39		Legislative and regulatory	2,229	2,961	-	-	-	-	-	-	-	-	-
40		Other reliability, safety and environment	5,454	6,669	10,151	11,338	10,752	12,852	12,852	11,826	8,789	5,653	4,665
41		**Total reliability, safety and environment**	19,274	23,087	30,668	31,968	31,290	33,578	33,693	33,365	30,853	27,717	26,730
42		**Expenditure on network assets**	290,262	303,165	345,322	367,081	394,876	396,055	403,930	402,772	426,701	410,462	417,029
43		Expenditure on non-network assets	11,451	17,044	18,811	15,714	12,163	14,523	16,630	15,718	7,860	12,509	9,264
44		**Expenditure on assets**	301,713	320,209	364,133	382,795	407,039	410,578	420,560	418,490	434,561	422,971	426,293
45													

Subcomponents of expenditure on assets (where known)

Energy efficiency and demand side management, reduction of energy losses											
Overhead to underground conversion	1,768	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750
Research and development											

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**	**31 Mar 30**	**31 Mar 31**	**31 Mar 32**	**31 Mar 33**	**31 Mar 34**
Difference between nominal and constant price forecasts	**$000**										
Consumer connection	-	3,238	5,953	7,964	10,956	14,177	17,532	21,450	26,020	31,477	38,003
System growth	-	4,473	8,749	13,560	18,910	20,753	24,101	24,206	30,431	27,700	29,268
Asset replacement and renewal	-	5,485	11,563	15,975	20,313	23,040	26,254	31,016	35,651	38,978	42,698
Asset relocations	-	109	135	186	234	278	323	370	418	467	517
Reliability, safety and environment:											
Quality of supply	-	724	1,953	2,668	3,252	3,779	4,308	4,992	5,676	6,248	6,832
Legislative and regulatory	-	138	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment	-	357	930	1,383	1,604	2,218	2,534	2,626	2,169	1,554	1,406
Total reliability, safety and environment	-	1,219	2,883	4,051	4,856	5,997	6,842	7,618	7,845	7,802	8,238
Expenditure on network assets	-	14,524	29,283	41,736	55,269	64,245	75,052	84,660	100,365	106,424	118,724
Expenditure on non-network assets	-	425	844	1,034	1,042	1,541	2,122	2,356	1,359	2,456	2,041
Expenditure on assets	-	14,949	30,127	42,770	56,311	65,786	77,174	87,016	101,724	108,880	120,765

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**

11a(ii): Consumer Connection

*Consumer types defined by EDB**	**$000 (in constant prices)**					
All Consumers	84,985	85,120	88,432	88,433	96,690	104,757
**include additional rows if needed*						
Consumer connection expenditure	84,985	85,120	88,432	88,433	96,690	104,757
less Capital contributions funding consumer connection	46,761	47,027	48,857	53,438	58,462	63,185
Consumer connection less capital contributions	38,224	38,093	39,575	34,995	38,228	41,572

11a(iii): System Growth

Subtransmission	8,124	9,767	10,889	28,373	27,987	30,749
Zone substations	43,040	36,382	40,853	42,787	55,332	31,866
Distribution and LV lines	7,673	7,824	8,509	9,099	10,245	11,530
Distribution and LV cables	7,964	8,023	9,169	10,266	10,997	13,193
Distribution substations and transformers	1,096	1,822	3,907	2,030	1,472	1,778
Distribution switchgear	6,577	6,629	6,851	7,421	7,917	8,877
Other network assets	18,688	17,080	17,492	13,992	15,180	24,862
System growth expenditure	93,162	87,527	97,670	113,968	129,130	122,855
less Capital contributions funding system growth	-	-	-	-	-	-
System growth less capital contributions	93,162	87,527	97,670	113,968	129,130	122,855

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29

11a(iv): Asset Replacement and Renewal

		$000 (in constant prices)					
	Subtransmission	3,442	4,333	5,899	7,990	10,405	10,164
	Zone substations	17,210	21,825	22,456	19,757	20,117	14,208
	Distribution and LV lines	41,063	45,679	61,901	63,465	64,661	65,067
	Distribution and LV cables	6,056	10,298	12,150	14,163	15,699	17,661
	Distribution substations and transformers	8,761	8,810	8,802	9,493	9,504	9,520
	Distribution switchgear	12,208	13,244	13,890	14,435	14,360	15,446
	Other network assets	444	443	1,483	1,438	1,049	828
	Asset replacement and renewal expenditure	89,184	104,632	126,581	130,741	135,795	132,894
less	Capital contributions funding asset replacement and renewal	-	-	-	-	-	-
	Asset replacement and renewal less capital contributions	89,184	104,632	126,581	130,741	135,795	132,894

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29

11a(v):Asset Relocations

	*Project or programme**	$000 (in constant prices)					
	Waka Kotahi undergrounding (SH2 TGA to Katikati)	1,573	756	-	-	-	-
	**include additional rows if needed*						
	All other project or programmes - asset relocations	2,084	2,043	1,971	1,971	1,971	1,971
	Asset relocations expenditure	3,657	2,799	1,971	1,971	1,971	1,971
less	Capital contributions funding asset relocations	1,722	1,323	932	932	932	932
	Asset relocations less capital contributions	1,935	1,476	1,039	1,039	1,039	1,039

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29

11a(vi):Quality of Supply

	*Project or programme**	$000 (in constant prices)					
	Open-access networks - network visibility	-	-	-	-	-	-
	**include additional rows if needed*						
	All other projects or programmes - quality of supply	11,591	13,457	20,517	20,630	20,538	20,726
	Quality of supply expenditure	11,591	13,457	20,517	20,630	20,538	20,726
less	Capital contributions funding quality of supply	-	-	-	-	-	-
	Quality of supply less capital contributions	11,591	13,457	20,517	20,630	20,538	20,726

11a(vii): Legislative and Regulatory

	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29
*Project or programme**		$000 (in constant prices)					
Secondary systems (relay replacement for extended reserves)		2,229	2,961	-	-	-	-
**include additional rows if needed*							
All other projects or programmes - legislative and regulatory							
Legislative and regulatory expenditure		2,229	2,961	-	-	-	-
less Capital contributions funding legislative and regulatory		-	-	-	-	-	-
Legislative and regulatory less capital contributions		2,229	2,961	-	-	-	-

11a(viii): Other Reliability, Safety and Environment

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29
*Project or programme**		$000 (in constant prices)					
**include additional rows if needed*							
All other projects or programmes - other reliability, safety and environment		5,454	6,669	10,151	11,338	10,752	12,852
Other reliability, safety and environment expenditure		5,454	6,669	10,151	11,338	10,752	12,852
less Capital contributions funding other reliability, safety and environment		-	-	-	-	-	-
Other reliability, safety and environment less capital contributions		5,454	6,669	10,151	11,338	10,752	12,852

11a(ix): Non-Network Assets

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29
Routine expenditure							
*Project or programme**		$000 (in constant prices)					
ICT capex		7,654	12,283	10,843	8,778	8,093	9,616
Facilities		736	2,917	1,649	1,226	1,522	1,099
Leases		2,934	1,294	2,091	4,442	1,914	2,540
**include additional rows if needed*							
All other projects or programmes - routine expenditure							
Routine expenditure		11,324	16,494	14,583	14,446	11,529	13,255
Atypical expenditure							
*Project or programme**							
ICT capex		-	-	-	-	-	-
Facilities		127	550	4,228	1,268	634	1,268
**include additional rows if needed*							
All other projects or programmes - atypical expenditure		-	-	-	-	-	-
Atypical expenditure		127	550	4,228	1,268	634	1,268
Expenditure on non-network assets		11,451	17,044	18,811	15,714	12,163	14,523

Company Name	Powerco
AMP Planning Period	1 April 2024 – 31 March 2034

SCHEDULE 11b: REPORT ON FORECAST OPERATIONAL EXPENDITURE

This schedule requires a breakdown of forecast operational expenditure for the disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms.

sch ref

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
8	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29	31 Mar 30	31 Mar 31	31 Mar 32	31 Mar 33	31 Mar 34
9	**Operational Expenditure Forecast**	**$000 (in nominal dollars)**										
10	Service interruptions and emergencies	8,971	9,348	11,285	11,617	11,919	12,223	12,535	12,854	13,184	13,519	13,865
11	Vegetation management	12,354	13,014	16,265	17,292	18,040	18,487	17,170	17,603	18,047	18,502	19,612
12	Routine and corrective maintenance and inspection	20,044	20,512	32,406	28,697	30,560	31,911	33,557	34,605	42,893	37,719	39,225
13	Asset replacement and renewal	11,488	11,817	15,111	16,384	16,373	16,797	17,231	17,676	18,132	18,601	19,082
14	**Network Opex**	52,857	54,691	75,067	73,990	76,892	79,418	80,493	82,738	92,256	88,341	91,784
15	System operations and network support	22,183	25,443	34,433	38,195	42,702	45,251	48,919	52,313	54,869	56,679	59,068
16	Business support	45,971	48,451	50,948	51,435	53,993	55,033	60,581	58,776	60,016	61,284	62,463
17	**Non-network opex**	68,154	73,894	85,381	89,630	96,695	100,284	109,500	111,089	114,885	117,963	121,531
18	**Operational expenditure**	121,011	128,585	160,448	163,620	173,587	179,702	189,993	193,827	207,141	206,304	213,315
19		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
20	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29	31 Mar 30	31 Mar 31	31 Mar 32	31 Mar 33	31 Mar 34
21		**$000 (in constant prices)**										
22	Service interruptions and emergencies	8,971	8,919	10,393	10,442	10,491	10,541	10,591	10,641	10,692	10,742	10,793
23	Vegetation management	12,354	12,416	14,979	15,542	15,879	15,943	14,507	14,571	14,636	14,701	15,267
24	Routine and corrective maintenance and inspection	20,044	19,534	29,750	25,682	26,757	27,376	28,207	28,502	34,616	29,825	30,391
25	Asset replacement and renewal	11,488	11,253	13,874	14,660	14,336	14,410	14,485	14,558	14,631	14,708	14,783
26	**Network Opex**	52,857	52,122	68,996	66,326	67,463	68,270	67,790	68,272	74,575	69,976	71,234
27	System operations and network support	22,183	24,824	32,956	35,837	39,334	40,908	43,384	45,493	46,781	47,377	48,406
28	Business support	45,971	47,272	48,762	48,260	49,735	49,751	53,726	51,114	51,169	51,226	51,188
29	**Non-network opex**	68,154	72,096	81,718	84,097	89,069	90,659	97,110	96,607	97,950	98,603	99,594
30	**Operational expenditure**	121,011	124,218	150,714	150,423	156,532	158,929	164,900	164,879	172,525	168,579	170,828
31	**Subcomponents of operational expenditure (where known)**											
32	Energy efficiency and demand side management, reduction											
33	of energy losses	-	-	969	2,028	3,200	4,492	5,893	7,397	8,054	8,773	9,554
34	Direct billing*											
35	Research and Development											
36	Insurance	2,147	2,147	2,147	2,147	2,147	2,147	2,147	2,147	2,147	2,147	2,147

38 * *Direct billing expenditure by suppliers that direct bill the majority of their consumers*

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
41	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29	31 Mar 30	31 Mar 31	31 Mar 32	31 Mar 33	31 Mar 34
42	**Difference between nominal and real forecasts**	**$000**										
43	Service interruptions and emergencies	-	429	892	1,175	1,428	1,682	1,944	2,213	2,492	2,777	3,072
44	Vegetation management	-	598	1,286	1,750	2,161	2,544	2,663	3,032	3,411	3,801	4,345
45	Routine and corrective maintenance and inspection	-	978	2,656	3,015	3,803	4,535	5,350	6,103	8,277	7,894	8,834
46	Asset replacement and renewal	-	564	1,237	1,724	2,037	2,387	2,746	3,118	3,501	3,893	4,299
47	**Network Opex**	-	2,569	6,071	7,664	9,429	11,148	12,703	14,466	17,681	18,365	20,550
48	System operations and network support	-	619	1,477	2,358	3,368	4,343	5,535	6,820	8,088	9,302	10,662
49	Business support	-	1,179	2,186	3,175	4,258	5,282	6,855	7,662	8,847	10,058	11,275
50	**Non-network opex**	-	1,798	3,663	5,533	7,626	9,625	12,390	14,482	16,935	19,360	21,937
51	**Operational expenditure**	-	4,367	9,734	13,197	17,055	20,773	25,093	28,948	34,616	37,725	42,487

5.3 Schedule 12a

Company Name	**Powerco Limited**
AMP Planning Period	**1 April 2024 – 31 March 2034**

SCHEDULE 12a: REPORT ON ASSET CONDITION

This schedule requires a breakdown of asset condition by asset class as at the start of the forecast year. The data accuracy assessment relates to the percentage values disclosed in the asset condition columns. Also required is a forecast of the percentage of units to be replaced in the next 5 years. All information should be consistent with the information provided in the AMP and the expenditure on assets forecast in Schedule 11a. All units relating to cable and line assets, that are expressed in km, refer to circuit lengths.

sch ref

sch ref	Voltage	Asset category	Asset class	Units	H1	H2	H3	H4	H5	Grade unknown	Data accuracy (1–4)	% of asset forecast to be replaced in next 5 years
7					Asset condition at start of planning period (percentage of units by grade)							
8												
9												
10	All	Overhead Line	Concrete poles / steel structure	No.	0.34%	4.69%	5.50%	66.34%	23.12%	-	4	5.91%
11	All	Overhead Line	Wood poles	No.	1.35%	9.08%	23.24%	64.52%	1.81%	-	3	6.91%
12	All	Overhead Line	Other pole types	No.	-	-	65.38%	28.28%	6.33%	-	3	3.14%
13	HV	Subtransmission Line	Subtransmission OH up to 66kV conductor	km	0.33%	2.23%	11.21%	73.51%	12.69%	-	4	4.78%
14	HV	Subtransmission Line	Subtransmission OH 110kV+ conductor	km	-	-	-	-	100.00%	-	4	-
15	HV	Subtransmission Cable	Subtransmission UG up to 66kV (XLPE)	km	-	0.77%	6.67%	-	92.56%	-	3	3.60%
16	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Oil pressurised)	km	-	-	100.00%	-	-	-	4	60.01%
17	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Gas pressurised)	km							N/A	-
18	HV	Subtransmission Cable	Subtransmission UG up to 66kV (PILC)	km	-	-	-	24.45%	75.55%	-	3	-
19	HV	Subtransmission Cable	Subtransmission UG 110kV+ (XLPE)	km	-	-	-	-	100.00%	-	N/A	-
20	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Oil pressurised)	km							N/A	-
21	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Gas Pressurised)	km							N/A	-
22	HV	Subtransmission Cable	Subtransmission UG 110kV+ (PILC)	km							N/A	-
23	HV	Subtransmission Cable	Subtransmission submarine cable	km							N/A	-
24	HV	Zone substation Buildings	Zone substations up to 66kV	No.	5.04%	28.78%	18.71%	33.09%	14.39%	-	2	8.44%
25	HV	Zone substation Buildings	Zone substations 110kV+	No.							N/A	-
26	HV	Zone substation switchgear	22/33kV CB (Indoor)	No.	-	0.42%	-	1.27%	98.31%	-	3	-
27	HV	Zone substation switchgear	22/33kV CB (Outdoor)	No.	-	14.95%	14.43%	6.19%	64.43%	-	3	20.65%
28	HV	Zone substation switchgear	33kV Switch (Ground Mounted)	No.	-	-	-	-	100.00%	-	2	-
29	HV	Zone substation switchgear	33kV Switch (Pole Mounted)	No.	0.68%	6.41%	44.07%	11.32%	37.52%	-	3	8.50%
30	HV	Zone substation switchgear	33kV RMU	No.	-	-	-	-	100.00%	-	3	-
31	HV	Zone substation switchgear	50/66/110kV CB (Indoor)	No.							N/A	-
32	HV	Zone substation switchgear	50/66/110kV CB (Outdoor)	No.	-	29.41%	5.88%	17.65%	47.06%	-	3	-
33	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (ground mounted)	No.	-	1.17%	6.30%	17.72%	74.81%	-	3	23.84%
34	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (pole mounted)	No.	-	-	-	2.86%	97.14%	-	3	-
35												

	Voltage	Asset category	Asset class	Units	H1	H2	H3	H4	H5	Grade unknown	Data accuracy (1–4)	% of asset forecast to be replaced in next 5
35												
36					Asset condition at start of planning period (percentage of units by grade)							
37												
38												
39	HV	Zone Substation Transformer	Zone Substation Transformers	No.	1.54%	10.26%	22.56%	18.97%	46.67%	-	4	10.28%
40	HV	Distribution Line	Distribution OH Open Wire Conductor	km	0.15%	10.95%	25.88%	52.89%	9.92%	0.21%	3	9.65%
41	HV	Distribution Line	Distribution OH Aerial Cable Conductor	km							N/A	-
42	HV	Distribution Line	SWER conductor	km	-	4.85%	28.03%	58.23%	8.89%	-	3	-
43	HV	Distribution Cable	Distribution UG XLPE or PVC	km	-	9.66%	14.20%	0.22%	75.93%	-	3	-
44	HV	Distribution Cable	Distribution UG PILC	km	-	-	2.44%	11.29%	86.27%	-	3	-
45	HV	Distribution Cable	Distribution Submarine Cable	km	-	-	14.50%	-	85.50%	-	3	-
46	HV	Distribution switchgear	3.3/6.6/11/22kV CB (pole mounted) - reclosers and sectionalisers	No.	0.28%	-	0.14%	0.14%	99.44%	-	3	4.78%
47	HV	Distribution switchgear	3.3/6.6/11/22kV CB (Indoor)	No.	-	7.41%	15.23%	13.58%	63.79%	-	3	14.04%
48	HV	Distribution switchgear	3.3/6.6/11/22kV Switches and fuses (pole mounted)	No.	1.51%	2.89%	11.52%	19.04%	65.04%	-	3	7.50%
49	HV	Distribution switchgear	3.3/6.6/11/22kV Switch (ground mounted) - except RMU	No.	0.35%	1.41%	16.99%	28.43%	52.82%	-	3	11.38%
50	HV	Distribution switchgear	3.3/6.6/11/22kV RMU	No.	0.44%	0.30%	6.09%	8.19%	84.98%	-	3	5.17%
51	HV	Distribution Transformer	Pole Mounted Transformer	No.	2.11%	2.12%	7.89%	13.69%	74.18%	-	3	6.76%
52	HV	Distribution Transformer	Ground Mounted Transformer	No.	1.14%	1.24%	4.91%	8.78%	83.93%	-	4	2.29%
53	HV	Distribution Transformer	Voltage regulators	No.	1.87%	-	0.62%	0.31%	97.20%	-	3	0.66%
54	HV	Distribution Substations	Ground Mounted Substation Housing	No.	1.17%	1.22%	4.87%	8.52%	84.22%	-	2	0.61%
55	LV	LV Line	LV OH Conductor	km	0.00%	13.92%	48.30%	28.79%	2.71%	6.27%	2	16.23%
56	LV	LV Cable	LV UG Cable	km	1.06%	0.95%	7.94%	22.05%	68.01%	-	2	0.36%
57	LV	LV Streetlighting	LV OH/UG Streetlight circuit	km	2.34%	5.16%	34.38%	17.21%	38.21%	2.69%	2	5.83%
58	LV	Connections	OH/UG consumer service connections	No.	1.41%	6.37%	61.54%	1.41%	29.26%	-	2	0.14%
59	All	Protection	Protection relays (electromechanical, solid state and numeric)	No.	-	23.09%	4.54%	26.20%	46.18%	-	3	4.15%
60	All	SCADA and communications	SCADA and communications equipment operating as a single system	Lot	-	32.96%	17.73%	6.93%	42.38%	-	2	6.00%
61	All	Capacitor Banks	Capacitors including controls	No.	-	-	-	1.92%	98.08%	-	3	-
62	All	Load Control	Centralised plant	Lot	-	-	60.00%	40.00%	-	-	3	-
63	All	Load Control	Relays	No.	37.88%	1.55%	1.57%	7.90%	51.11%	-	1	-
64	All	Civils	Cable Tunnels	km							N/A	-

5.4 Schedule 12b

Company Name	**Powerco Limited**
AMP Planning Period	**1 April 2024 – 31 March 2034**

SCHEDULE 12b: REPORT ON FORECAST CAPACITY

This schedule requires a breakdown of current and forecast capacity and utilisation for each zone substation and current distribution transformer capacity. The data provided should be consistent with the information provided in the AMP. Information provided in this table should relate to the operation of the network in its normal steady state configuration.

sch ref

7 **12b(i): System Growth - Zone Substations**

8	Existing Zone Substations	Current Peak Load (MVA)	Installed Firm Capacity (MVA)	Security of Supply Classification (type)	Transfer Capacity (MVA)	Utilisation of Installed Firm Capacity %	Installed Firm Capacity +5 years (MVA)	Utilisation of Installed Firm Capacity + 5yrs %	Installed Firm Capacity Constraint +5 years (cause)	Explanation
9	Coromandel	5	1	N-1	1	4.545856972	6	78%	No constraint within +5 years	Single 66kV circuit. Distributed generation project for backup.
10	Kerepehi	10	-	N-1 SW	6	-	-	-	Subtransmission circuit	Single 66kV circuit. Some increase in 11kV backfeed capacity in the short term with routine projects.
11	Matatoki	5	-	N	2	-	-	-	Subtransmission circuit	2nd transformer will improve Tx firm capacity. Single subtransmission circuit remains constraint.
12	Tairua	10	8	N	-	1.273271972	8	130%	Transformer	Tx firm capacity constraint remains as Whenuakite substation has been deferred indefinitely.
13	Thames T1 & T2	12	-	N-1	2	-	-	-	Subtransmission circuit	Deferral of Kopu-Kauaeranga project keeps Thames on N security.
14	Thames T3	2	7	N-1 SW	7	0.217391304	7	22%	No constraint within +5 years	Customer agreed security. No load increase indicated.
15	Whitianga	19	19	N-1 SW	3	0.964199698	16	124%	Transformer	Whenuakite project deferral results in Tx firm capacity constraint in the future.
16	Paeroa	8	11	N-1	2	0.789300757	10	88%	No constraint within +5 years	Transformer feeder arrangement restricts firm capacity to transformer capacity. Risk managed operationally in the interim.
17	Waihi	19	21	N-1	1	0.89126246	21	149%	Transformer and Subtransmission circuit	Customer agreed security. Proposed OceanaGold substation will eventually offload Waihi substation and resolve firm capacity constraint.
18	Waihi Beach	6	3	N-1 SW	3	1.951543422	6	115%	Subtransmission circuit	Single 33kV cct. 2nd Transformer commissioned. Proposed backup distributed generation post-2025. Removal of tee near Waihi improved subtrans reliability.
19	Whangamatā	12	6	N	3	1.912849575	6	195%	Subtransmission circuit	11kV link to Tairua for backup commissioned. Both transformers will be upgraded.
20	Aongatete	5	2	N	2	1.916197498	5	99%	No constraint within +5 years	Transformers have both failed at the substation. Ex-Matua unit deployed. Operating as a single transformer substation until renewal of Aongatete substation.
21	Bethlehem	12	8	N	8	1.506874804	24	55%	No constraint within +5 years	Single transformer substation - 2nd Tx proposed 2025.
22	Hamilton St	11	21	N-1	12	0.538960981	21	58%	No constraint within +5 years	
23	Katikati	12	14	N-1 SW	5	0.882610293	14	100%	No constraint within +5 years	
24	Kauri Pt	3	2	N-1	2	1.775881284	2	128%	Transformer and Subtransmission circuit	Single Tx and subtransmission circuit. Reliant on 11kV backfeed strengthening.

25	Matua	10	-	N-1	8	-	21	46%	No constraint within +5 years	Second transformer and conversion of 11kV feeder to 33kV subtransmission second circuit.
26	Ōmokoroa	13	13	N-1 SW	3	0.948336496	13	109%	Transformer	Proposed Pahoia substation to offload Ōmokoroa substation.
27	Ōtūmoetai	15	14	N-1 SW	11	1.105080376	14	114%	Transformer	Minor constraint - managed operationally. Bethlehem second transformer project will offload Ōtūmoetai and reduce its MD.
28	Pyes Pa	18	24	N-1	8	0.746887967	24	110%	Transformer and Subtransmission circuit	Possible constraint depending on the rate of commercial/industrial growth. New customer-driven Belk Road substation planned to offload Pyes Pa.
29	Waihi Rd	21	24	N-1	10	0.854057289	24	88%	No constraint within +5 years	
30	Welcome Bay	25	21	N	4	1.154902135	21	123%	Transformer and Subtransmission circuit	Managed operationally. New Waitaha substation proposed to relieve constraints at Welcome Bay.
31	Matapihi	13	24	N-1	14	0.557520064	24	57%	No constraint within +5 years	
32	Omanu	13	24	N-1	12	0.539225733	24	57%	No constraint within +5 years	
33	Papamoa	17	21	N-1	10	0.799412303	21	84%	No constraint within +5 years	11kV offload with new feeders from Wairakei substation.
34	Te Maunga	12	10	N	10	1.157527205	10	126%	Transformer	Proposed Te Maunga 2nd transformer lifts N-1 Tx capacity.
35	Triton	21	21	N-1	10	0.982672532	21	104%	Subtransmission circuit	Transformers upgraded but limiting constraint is subtrans line rating.
36	Wairakei	12	24	N-1	6	0.515370936	24	77%	No constraint within +5 years	
37	Atuaroa Ave	10	-	N	7	-	-	-	Subtransmission circuit and Transformer	2nd transformer 2025 and second 33kV circuit 2030.
38	Paengaroa	7	4	N-1 SW	4	1.825590542	15	89%	No constraint within +5 years	Second transformer and second 33kV circuit proposed for the future.
39	Pongakawa	5	1	N-1	1	3.843942734	4	150%	Subtransmission circuit	Single 33kV circuit, limited 11kV backfeed capacity increase.
40	Te Puke	25	23	N-1 SW	11	1.08047015	23	176%	Transformer and Subtransmission circuit	Proposed Rangiuru Business Park will offload Te Puke load.
41	Farmer Rd	7	-	N	3	-	-	-	Subtransmission circuit & transformer	Customers' planned load growth will exceed existing transfomer capacity and overload existing 33kV subtranmission circuit. Proposed WIEL substation.
42	Inghams	4	-	N	-	-	-	-	Subtransmission circuit & Transformer	Customer agreed security.
43	Mikkelsen Rd	12	19	N-1	4	0.639634861	19	66%	No constraint within +5 years	
44	Morrinsville	9	11	N-1 SW	2	0.840530668	11	93%	No constraint within +5 years	Morrinsville 33kV bus and proposed Avenue Road North substation will reduce Morrinsville load.
45	Piako	15	18	N-1	7	0.832124291	18	100%	No constraint within +5 years	
46	Tahuna	6	1	N-1 SW	1	7.93895372	5	125%	Subtransmission circuit	Single 33kV circuit. Risk mitigated operationally via increased 11kV backfeeds.
47	Tatua	7	-	N	-	-	-	-	Subtransmission circuit and Transformer	Transformer upgrade planned. Customer agreed security.
48	Waitoa	12	19	N-1	-	0.650453333	19	65%	No constraint within +5 years	
49	Walton	5	-	N	2	-	-	-	Transformer	Single Transformer. Risk managed operationally.
50	Browne St	12	11	N-1 SW	7	1.105618498	11	127%	Transformer	Very minor, low risk. Managed operationally.
51	Lake Rd	6	5	N-1 SW	2	1.282837903	5	136%	Transformer	11kV backfeeds to manage risk operationally.
52	Tīrau	9	9	N-1 SW	-	1.071687678	17	76%	No constraint within +5 years	Transformer upgrade to increase Tx firm capacity.
53	Putāruru	12	17	N-1	1	0.70417239	17	95%	No constraint within +5 years	
54	Tower Rd	8	17	N-1	5	0.503531297	17	52%	No constraint within +5 years	
55	Waharoa Nth	4	3	N	-	1.439025443	-	-	No constraint within +5 years	

56	Waharoa Sth	5	-	N	-	-	-	-	No constraint within +5 years	Customer agreed security.
57	Baird Rd	11	19	N-1	7	0.551563577	19	63%	No constraint within +5 years	
58	Midway / Lakeside	4	-	N	-	-	-	-	Subtransmission circuit & Transformer	Customer agreed security at both substations.
59	Maraetai Rd	9	19	N-1	7	0.474933457	19	81%	No constraint within +5 years	
60	Bell Block	16	25	N-1	9	0.644646609	25	68%	No constraint within +5 years	Load transfer planned post 2024.
61	Brooklands	19	24	N-1	7	0.809612466	24	94%	No constraint within +5 years	
62	Cardiff	2	3	N-1 SW	3	0.68724332	3	71%	No constraint within +5 years	
63	City	16	20	N-1	12	0.820812996	20	86%	No constraint within +5 years	Capacity upgrade planned post 2027.
64	Cloton Rd	10	13	N-1	1	0.785609563	13	81%	No constraint within +5 years	
65	Douglas	1	2	N-1 SW	2	0.830526292	2	85%	No constraint within +5 years	Single circuit. Very low risk. Most load can be backfed.
66	Eltham	10	11	N-1 SW	3	0.845837894	15	64%	No constraint within +5 years	Transformer upgrade ~2024.
67	Inglewood	5	6	N-1 SW	3	0.884178553	6	92%	No constraint within +5 years	Load transfer planned post 2025.
68	Kaponga	3	3	N-1 SW	2	1.04987493	3	108%	Transformer	Low risk of failure. Operationally managed.
69	Katere	15	24	N-1	11	0.636705519	24	67%	No constraint within +5 years	
70	McKee	1	-	N	-	-	-	-	Transformer and Subtransmission circuit	
71	Motukawa	2	1	N	1	1.218429965	1	126%	Transformer	Single transformer. Most load can be backfed.
72	Moturoa	19	24	N-1	7	0.793388488	30	66%	No constraint within +5 years	New 33kV circuits and transformers 2019/20.
73	Ōākura	4	-	N	-	-	20	20%	Subtransmission circuit	Single cct & Tx. 11kV backfeed adequate.
74	Waihapa	1	2	N-1 SW	2	0.5	2	50%	No constraint within +5 years	
75	Waitara East	5	6	N-1	4	0.865058891	6	91%	No constraint within +5 years	
76	Waitara West	7	6	N-1 SW	8	1.066502354	10	70%	No constraint within +5 years	Transformer upgrade planned reusing Pohokura units.
77	Cambria	15	17	N-1	5	0.872028482	17	89%	No constraint within +5 years	Transformer & Subtrans upgrade planned ~2026.
78	Kāpuni	6	11	N-1	4	0.520015335	11	99%	No constraint within +5 years	
79	Livingstone	3	3	N-1 SW	1	0.91075399	5	56%	No constraint within +5 years	Transformers scheduled for replacement ~2025 (higher cap).
80	Manaia	6	5	N	5	1.113864714	5	114%	Transformer	Single Tx bank (after renewal).
81	Ngāriki	3	4	N-1 SW	4	0.660856385	4	68%	No constraint within +5 years	
82	Pungarehu	3	5	N-1	2	0.698272859	5	73%	No constraint within +5 years	
83	Tasman	6	6	N-1 SW	3	1.041157593	6	107%	Transformer	Low risk - operationally managed (e.g. backfeeds).
84	Mokoia	3	3	N-1 SW	4	1.061837519	3	110%	Transformer	Low risk - managed operationally through backfeeds.
85	Beach Rd	10	16	N-1	3	0.638920122	16	65%	No constraint within +5 years	
86	Blink Bonnie	3	3	N-1 SW	3	0.948499653	3	97%	No constraint within +5 years	Low risk of failure. Security upgrades planned post 2026.
87	Castlecliff	10	9	N-1 SW	5	1.179286043	13	87%	No constraint within +5 years	Transformers to be upgraded.
88	Hatricks Wharf	10	-	N	6	-	10	101%	Transformer	Single transf, but 11kV bus tie (Taupō Quay) mitigates risk.
89	Kai Iwi	2	1	N	1	2.109627235	1	218%	Subtransmission circuit	Single 33kV cct & single Tx. Also N security GXP.
90	Peat St	15	-	N-1	6	-	-	-	Transpower	GXP on N-security.
91	Roberts Ave	5	6	N-1 SW	6	0.790059102	6	80%	No constraint within +5 years	
92	Taupō Quay	6	-	N-1 SW	8	-	10	60%	Transformer	Transformer upgrade lifts capacity.
93	Wanganui East	6	3	N	3	1.734837011	3	175%	Subtransmission circuit	Single 33kV cct and Tx. Reliant on backfeeds.
94	Taihape	4	1	N	1	5.497831048	10	45%	Transformer	2nd Transformer and new switchboard.
95	Waiouru	3	1	N	1	5.15674749	1	514%	Transformer and Subtransmission circuit	N secure GXP, 33kV & Tx.
96	Arahina	10	3	N	3	3.384947622	24	65%	No constraint within +5 years	N secure GXP, second Arahina 33kV circuit.
97	Bulls	6	2	N	2	2.779685075	2	287%	Transformer	~2023 2nd 33kV. Post 2024 2nd transformer.
98	Pukepapa	5	2	N	2	2.528569633	25	100%	Transformer and Subtransmission circuit	New Putāruru 33kV circuit.

99	Rata	3	1	N	1	4.084973002	1	416%	Subtransmission circuit	Single 33kV cct and Tx. Post 2028 plan for 11kV Upgrade.
100	Feilding	23	24	N-1 SW	2	0.991484702	24	103%	No constraint within +5 years	Re-rate transformers 2023 and post 2023 33kV upgrade and new zone substation.
101	Ferguson St	11	24	N-1	15	0.474531188	24	48%	No constraint within +5 years	
102	Kairanga	19	19	N-1 SW	8	0.976178831	24	85%	No constraint within +5 years	
103	Keith St	19	22	N-1 SW	-	0.853340907	22	96%	No constraint within +5 years	
104	Kelvin Grove	17	17	N-1 SW	5	1.000923414	24	135%	Transformer and Subtransmission circuit	Offload to proposed North East Industrial substation.
105	Kimbolton	3	1	N	1	2.16987143	1	224%	Subtransmission circuit	Single 33kV circuit & single transformer. Remote Sub.
106	Main St	18	17	N-1	13	1.05775178	25	74%	No constraint within +5 years	New Fergusson sub & 33kV cables address ex. high risk constraints.
107	Milson	16	18	N-1 SW	5	0.902529292	19	95%	No constraint within +5 years	Possible TX and subtransmission upgrade post 2023.
108	Ōhakea	5	-	N	1	-	-	-	Transformer	Single 33kV circuit & single transformer. 2nd 33kV circuit in 3 years.
109	Pascal St	15	17	N-1	12	0.877968544	25	62%	No constraint within +5 years	New Fergusson sub & 33kV cables address ex. high risk constraints.
110	Sanson	9	-	N-1 SW	4	-	11	86%	No constraint within +5 years	33kV backfeed secures load. New Sanson-Bulls 33kV link and new Ōhakea Sub.
111	Turitea	14	-	N-1	5	-	-	-	Subtransmission circuit	Switched 33kV security - Second 33kV circuit and TX upgrade post 2025.
112	Alfredton	1	1	N	0	0.388571429	1	39%	No constraint within +5 years	Single Transf. but adequate backfeed.
113	Mangamutu	13	13	N-1	1	0.984744652	13	100%	Transformer	Major customer largely determines security requirements.
114	Parkville	2	-	N	-	-	-	-	Transformer	Single transformer.
115	Pongaroa	1	3	N	1	0.256226377	3	26%	No constraint within +5 years	
116	Akura	13	9	N-1 SW	7	1.476078085	15	92%	No constraint within +5 years	Txs replaced & 33kV circuits upgrade planned.
117	Awatoitoi	1	3	N	1	0.339076825	3	35%	No constraint within +5 years	
118	Chapel	14	14	N-1	5	0.991042212	23	61%	No constraint within +5 years	Upgrade short section of 33kV cable.
119	Clareville	11	9	N	1	1.122311173	17	89%	Transformer	Transformer and 33kV upgrade post 2024.
120	Featherston	4	7	N-1	0	0.558095917	7	58%	No constraint within +5 years	
121	Gladstone	1	1	N	0	0.623034361	1	64%	No constraint within +5 years	
122	Hau Nui	0	-	N	-	-	-	-	Subtransmission circuit & Transformer	Generation site. Not economic to provide higher security.
123	Kempton	5	0	N	0	12.14891296	0	1,271%	Transformer and Subtransmission circuit	Post 2024: 2nd 33kV supply & upgraded 2nd transformer, 2025 new sub to increase transfer capacity.
124	Martinborough	5	0	N	0	46.511227	0	4,885%	Transformer and Subtransmission circuit	Single transformer. 2nd Tx planned post 2024, 2025 new sub to increase transfer capacity.
125	Norfolk	6	11	N-1	4	0.611155727	18	47%	No constraint within +5 years	Future 33kV circuits upgrade.
126	Te Ore Ore	8	7	N	7	1.175926833	7	121%	Transformer	Single transformer. Risk is managed operationally and acceptable.
127	Tīnui	1	1	N	1	0.64982954	1	67%	No constraint within +5 years	Reliant on 11kV backfeeds.
128	Tuhitarata	3	-	N	-	-	1	343%	Subtransmission circuit	Single 33kV circuit & single transformer, 2025 New Sub to increase transfer capacity.

[1] Extend forecast capacity table as necessary to disclose all capacity by each zone substation

5.5 Schedule 12c

Company Name	**Powerco Limited**
AMP Planning Period	**1 April 2024 – 31 March 2034**

SCHEDULE 12C: REPORT ON FORECAST NETWORK DEMAND

This schedule requires a forecast of new connections (by consumer type), peak demand and energy volumes for the disclosure year and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumptions used in developing the expenditure forecasts in Schedule 11a and Schedule 11b and the capacity and utilisation forecasts in Schedule 12b.

sch ref							
7	**12c(i): Consumer Connections**						
8	*Number of ICPs connected in year by consumer type*	**Number of connections**					
		Current Year					
9		*CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
10	for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**
11	*Consumer types defined by EDB**	**RY24**	**RY25**	**RY26**	**RY27**	**RY28**	**RY29**
12	Small	4,855	4,855	4,855	4,855	4,855	4,855
13	Commercial	62	62	62	62	62	62
14	Industrial	19	19	19	19	19	19
15							
16							
17	**Connections total**	4,936	4,936	4,936	4,936	4,936	4,936
18	**include additional rows if needed*						
19							
20							
21							
22	**Distributed generation**						
23	Number of connections	1,870	1,920	2,090	2,250	2,420	2,590
24	Installed connection capacity of distributed generation (MVA)	6	45	75	47	48	49
25	**12c(ii) System Demand**						
		Current Year					
26		*CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
27	**Maximum coincident system demand (MW)** for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**
28	GXP demand	868	856	868	883	900	922
29	*plus* Distributed generation output at HV and above	99	127	131	135	139	142
30	**Sch 12c Maximum coincident system demand [MW]**	967	983	999	1,018	1,039	1,064
31	*less* Net transfers to (from) other EDBs at HV and above	-	-	-	-	-	-
32	**Demand on system for supply to consumers' connection points**	967	983	999	1,018	1,039	1,064
33	**Electricity volumes carried (GWh)**						
34	Electricity supplied from GXPs	4,721	4,800	4,878	4,967	5,071	5,195
35	*less* Electricity exports to GXPs	121	124	126	128	131	134
36	*plus* Electricity supplied from distributed generation	718	731	742	756	772	791
37	*less* Net electricity supplied to (from) other EDBs						
38	**Electricity entering system for supply to ICPs**	5,318	5,407	5,495	5,595	5,713	5,851
39	*less* Total energy delivered to ICPs	5,041	5,126	5,209	5,304	5,416	5,547
40	**Losses**	277	281	286	291	297	304
41							
42	**Load factor**	63%	63%	63%	63%	63%	63%
43	**Loss ratio**	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%
44							

5.6 Schedule 12d

Company Name	**Powerco**
AMP Planning Period	**1 April 2024 – 31 March 2034**
Network / Sub-network Name	**Powerco - combined**

SCHEDULE 12d: REPORT FORECAST INTERRUPTIONS AND DURATION

This schedule requires a forecast of SAIFI and SAIDI for disclosure and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumed impact of planned and unplanned SAIFI and SAIDI on the expenditures forecast provided in Schedule 11a and Schedule 11b.

sch ref

			Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
8								
9		for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**
10	**SAIDI**							
11		Class B (planned interruptions on the network)	108.9	105.2	106.3	105.0	103.4	105.0
12		Class C (unplanned interruptions on the network)	198.1	195.4	197.3	198.5	198.5	198.5
13	**SAIFI**							
14		Class B (planned interruptions on the network)	0.44	0.43	0.43	0.42	0.41	0.42
15		Class C (unplanned interruptions on the network)	1.79	2.26	2.28	2.31	2.31	2.31

Company Name	**Powerco**
AMP Planning Period	**1 April 2024 – 31 March 2034**
Network / Sub-network Name	**Powerco - Eastern Region**

SCHEDULE 12d: REPORT FORECAST INTERRUPTIONS AND DURATION

This schedule requires a forecast of SAIFI and SAIDI for disclosure and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumed impact of planned and unplanned SAIFI and SAIDI on the expenditures forecast provided in Schedule 11a and Schedule 11b.

sch ref

			Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
8								
9		for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**
10	**SAIDI**							
11		Class B (planned interruptions on the network)	108.9	105.2	106.3	105	103.4	105
12		Class C (unplanned interruptions on the network)	198.1	195.4	197.3	198.5	198.5	198.5
13	**SAIFI**							
14		Class B (planned interruptions on the network)	0.44	0.43	0.43	0.42	0.41	0.42
15		Class C (unplanned interruptions on the network)	1.79	2.26	2.28	2.31	2.31	2.31

Company Name	**Powerco**
AMP Planning Period	**1 April 2024 – 31 March 2034**
Network / Sub-network Name	**Powerco - Western Region**

SCHEDULE 12d: REPORT FORECAST INTERRUPTIONS AND DURATION

This schedule requires a forecast of SAIFI and SAIDI for disclosure and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumed impact of planned and unplanned SAIFI and SAIDI on the expenditures forecast provided in Schedule 11a and Schedule 11b.

sch ref

			Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
8								
9		for year ended	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**	**31 Mar 28**	**31 Mar 29**
10	**SAIDI**							
11		Class B (planned interruptions on the network)	108.9	105.2	106.3	105	103.4	105
12		Class C (unplanned interruptions on the network)	198.1	195.4	197.3	198.5	198.5	198.5
13	**SAIFI**							
14		Class B (planned interruptions on the network)	0.44	0.43	0.43	0.42	0.41	0.42
15		Class C (unplanned interruptions on the network)	1.79	2.26	2.28	2.31	2.31	2.31

5.7 Schedule 14a

Company Name	**Powerco**
For Year Ended	**31 March 2024**

Schedule 14a mandatory explanatory notes on forecast information

1. This Schedule requires EDBs to provide explanatory notes to reports prepared in accordance with clause 2.6.6.

   This Schedule is mandatory – EDBs must provide the explanatory comment specified below, in accordance with clause 2.7.2. This information is not part of the audited disclosure information, and so is not subject to the assurance requirements specified in section 2.8.

Commentary on difference between nominal and constant price capital expenditure forecasts (Schedule 11a)

2. In the box below, comment on the difference between nominal and constant price capital expenditure for the current disclosure year and 10-year planning period, as disclosed in Schedule 11a.

Box 1: Commentary on difference between nominal and constant price capital expenditure forecasts
Our approach involves applying different cost escalators to our constant price expenditure forecasts. Our escalators have been developed using:

- Independent forecasts of input price indices that reflect the various costs that we face, including material and labour components.
- Weighting factors for asset types, such as transformers, that are made up of a range of inputs.

We have used the above inputs to develop tailored cost escalators for our cost categories. These are then applied to our constant price capital expenditure forecasts to produce the forecasts in nominal dollars for schedule 11a.

Commentary on difference between nominal and constant price operational expenditure forecasts (Schedule 11b)

3. In the box below, comment on the difference between nominal and constant price operational expenditure for the current disclosure year and 10-year planning period, as disclosed in Schedule 11b.

Box 2: Commentary on difference between nominal and constant price operational expenditure forecasts
Our approach involves applying different cost escalators to our constant price expenditure forecasts. Our escalators have been developed using:

- Independent forecasts of Producers Price Index (PPI), Labour Cost Index (LCI) and Consumer Price Index (CPI).
- Weighting factors for opex cost categories.

We have used the above inputs to develop tailored cost escalators for our cost categories. These are then applied to our constant price operating expenditure forecasts to produce the forecasts in nominal dollars for Schedule 11b. We have used the NZIER December 2012 PPI and CPI forecasts up to March 2026 with assumed long-term rates of 2% and NZIER LCI forecast up to March 2025 with an assuming long-term rate of 2.1%

Directors' certificate - 2024 AMP

Certificate for year beginning disclosures

Pursuant to clause 2.9.1 of Section 2.9

We, Michael Cummings and John Loughlin being directors of Powerco Limited certify that, having made all reasonable enquiry, to the best of our knowledge:

a) The following attached information of Powerco Limited prepared for the purposes of clauses 2.6.1, 2.6.6, and 2.7.2 of the Electricity Information Disclosure Determination 2012 in all material respects complies with that determination.

b) The prospective financial or non-financial information included in the attached information has been measured on a basis consistent with regulatory requirements or recognised industry standards.

c) The forecasts in Schedules 11a, 11b, 12a, 12b, 12c and 12d are based on objective and reasonable assumptions which both align with Powerco's corporate vision and strategy and are documented in retained records.

Director	Director
21 March 2024	21 March 2024
Date	Date

POWERCO