



Financing Investment in New Zealand's Electricity Networks

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Foreword

Modest, steady growth has characterised Aotearoa New Zealand electricity demand over recent decades. The response has been a regulatory and investment system that incentivised just-in-time investment, not overbuilding to protect consumers that bore the costs of investment.

The need to meet legislated emission reduction targets, as well as emerging technologies and changing consumer preference, has led to a rapid acceleration in the electrification of transport and industry. Our electricity sector is currently served by a large asset base, with substantial upcoming renewal requirements. Decarbonisation, through electrification, has created a meeting of tides from a network investment perspective. New Zealand's current way of enabling investment is no longer fit to meet a challenge of this scale.

With the coalition Government looking to reduce barriers to investment for renewable energy, we cast a spotlight on a range of solutions, involving both the public and private sector, to address emerging challenges for network finance.



Electricity use will transform over the coming decades

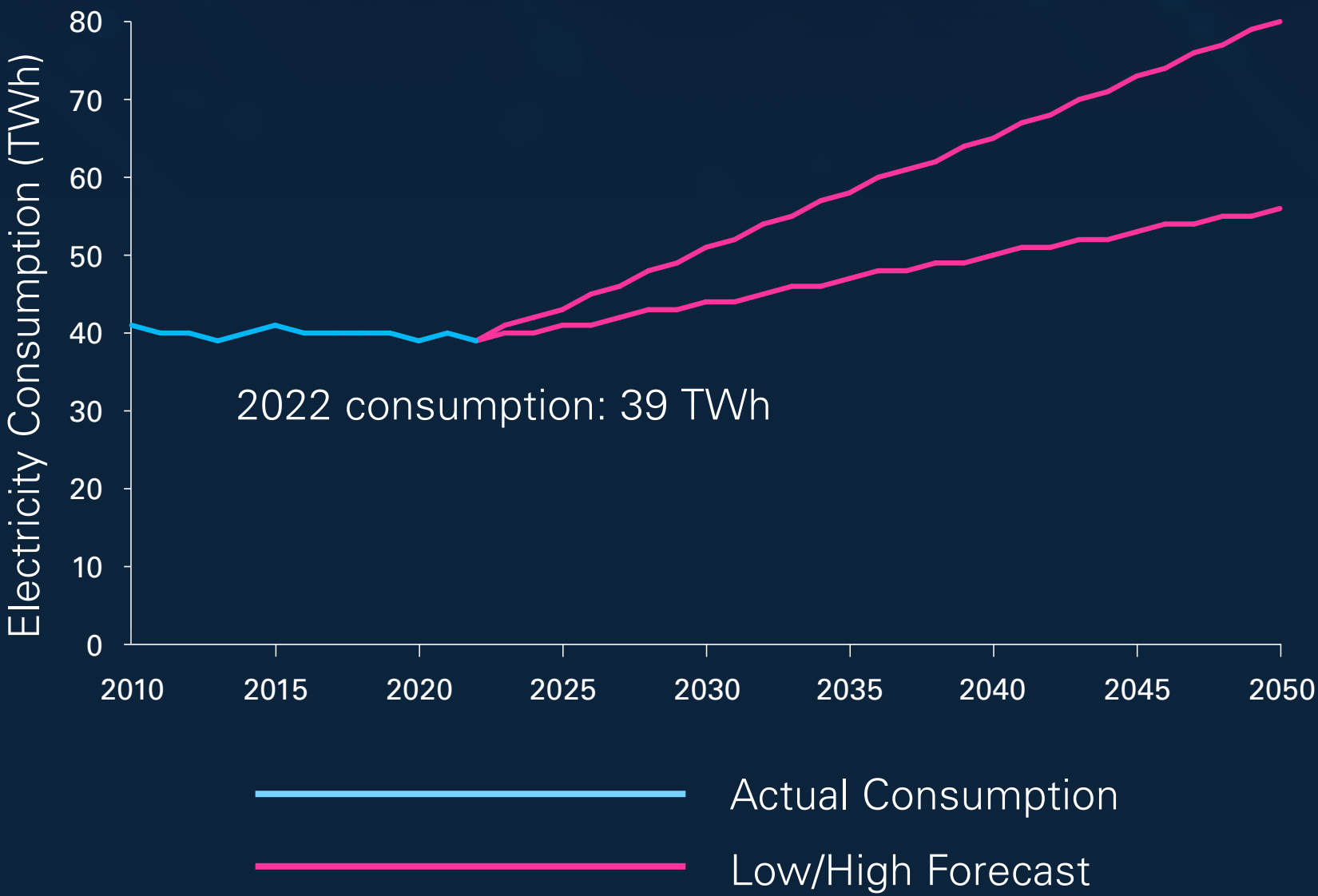
There is a tension between New Zealand’s need to affordably serve the immediate energy demands of consumers and ramping up its transition to a low-carbon resilient energy future. With 30% of total energy consumption coming from renewable sources, New Zealand is already a world-leader, but significant investment is required to reach Net Zero by 2050. Over the next 25 years the Government aims to double renewable electricity generation to serve additional load, with an enhanced network of distribution and transmission assets required to connect supply with demand.

With the proliferation of EVs and the electrification of industrial processes, the transport and industrial sectors are on the cusp of a transformation, leading to a dramatic change in our national energy mix. The battery EV fleet grew by 55% to 75,000 in the year to December 2023,¹ though MBIE estimate that the EV fleet will need to expand to 1.5 million by 2035 to meet emissions reduction targets.² While hydrogen fuel offers theoretical benefits for heavy vehicles and industry, some doubts persist over its viability at scale. On the flipside, advancements

in smart appliance technology contribute to more efficient residential electricity use, though their effect will depend on the extent of user adoption. The uptake speed for these technologies, and national and international legislative and regulatory choices, create uncertainty around the shape of the demand curve. Nevertheless, there is consensus that longer term trajectory for future electricity demand is upward.

Accelerating increase in electricity demand necessitates attention across the energy system: the fuel mix serving sources of generation, the retail solutions fulfilling consumer needs, and the networks that connect generation to retail. With increased network capacity, system resilience must also improve. As fossil fuels are phased out and our dependency on the electricity network increases, we must also ensure the network is resilient to more common extreme weather events. While technological innovation is pushing us forward, there is a missing piece of the puzzle around how investment in electricity networks will be authorised and financed.

Actual and Projected Electricity Consumption



Source: Electricity statistics | Ministry of Business, Innovation & Employment (mbie.govt.nz) and TP Whakamana i Te Mauri Hiko.pdf (transpower.co.nz). Linear growth to 2050 is shown for simplicity.

¹ Monthly Motor Vehicle Fleet, MoT

² Measures for Transition to an Expanded and Highly Renewable Electricity System, MBIE

Network businesses face barriers to investment

The risk of underinvestment in networks is driven by uncertainty over who should pay, and when they should be charged.

To recover the cost of network improvements, Electricity Distribution Businesses (EDBs), Transpower and the Commerce Commission face a difficult trade-off between over-burdening today's consumers or pushing investment into the far future. This links to the 'first mover disadvantage' problem, where prospective customers are wary of being burdened with the entire cost of a network upgrade which also benefits future users.

The underinvestment risk is coupled with the risk of inequitable outcomes across regions and generations. Inequity is a concern in locations with large industrial or national transport electrification needs. To make the investment viable, a network business may look to apportion costs across a wider region, leading to some

customers paying higher bills without seeing any direct benefit. Intergenerational disparities may result if investments with future benefits are disproportionately paid for by today's consumers, or equally, future users may be overburdened if the investment is continually deferred.

The challenge to equitably recover costs can lead to investment decision paralysis or poorly coordinated planning. Where investments are being made, network companies often prioritise the needs of their network area, and suboptimal national outcomes can result from local decisions made in isolation. As increased demand materialises, our electricity networks are at risk of not having the capacity, nor resilience, to support the proliferation of renewable generation and withstand extreme weather events.





What a successful energy transition looks like

New Zealand ranked 9th in the World Energy Council's most recent Trilemma Index, which measures the security, equity, and environmental sustainability of energy systems worldwide. Maintaining our strong position across these dimensions while growing network capacity and resilience is integral to a successful energy transition. Any solution to the challenges network companies currently face must be compatible with existing regulatory settings and give consideration to the opportunity for greater demand side energy efficiency. Early and collaborative action, bringing together discussions across policy-setting and delivery entities, can allow effective financing and investment.

As far as possible, the 'right' level of investment needs to be incentivised based on emerging demand scenarios so that the risk of material overinvestment is mitigated. Nevertheless, reasonable excess capacity is preferable to service failure due to under-capacity. Further, spare capacity may promote electrification, while an electricity network suffering from underinvestment will perpetuate the use of fossil fuels.

Possible options to stimulate network investment

We consider three overall themes of possible intervention to promote greater investment.


- 1. Within system changes**
- 2. Private capital**
- 3. Public capital**

The system must support the step change in energy use

The current regulatory system for network organisations is largely geared for just-in-time investment, delivering incremental network improvement as demand solidifies. Changes to the current settings may involve permitting greater allowable revenue, or greater flexibility to change revenue allowances.

In December 2023, the Commerce Commission released its final decision on the Input Methodologies review. For the regulated EDBs, the default position continues to be that permitted capital expenditure is a function of historical expenditure scaled for inflation. EDBs with substantial forecast demand growth therefore face the choice between, descope works to fit within their permitted expenditure envelope, or applying for the administration-heavy customised price-quality path (CPP) or default price-quality path (DPP) re-opener. Inflexibility within the current settings that favour incremental investment, mean there is a latent risk that network capability will lag escalating demand.





Recently the Commerce Commission announced that Aurora Energy had applied to re-open their CPP, to cover an extra \$46m in capital expenditure. Sector participants will view this as a test case for how efficient the CPP and reopener tools are, after Unison Networks' 2021/22 reopener took around twelve months to resolve. If the administration burden associated with the reopener application process can be reduced, then EDBs will be more accepting of this as a flexibility tool for uncertain investment.

The Commerce Commission has also considered introducing a financial 'sense check' for the DPP4 reset to determine whether a 'prudent and efficient supplier', in an EDB's circumstances, would be able to "raise and repay debt ... on reasonable terms". If approved, EDBs could mitigate some risks of not having the cashflows to support reasonable investment needs due to financeability issues.

This increased flexibility in regulation could unlock investment but user advocacy groups are concerned that the issue may be overstated. The Commerce Commission still views CPP as the best available tool in cases where proposed capital expenditure is 'large relative to the existing regulatory asset base'.

Substantive within-system changes, such as changes to the incentive rate within the incremental rolling incentive scheme (IRIS), however, are unlikely to be made before the DPP4 reset in November 2024. System-wide changes after this point would have to be done through a collaborative reopener process across the industry, which would likely be difficult and time-consuming to execute.

Private capital

Private capital could also take a larger role in electricity distribution to alleviate the risk of underinvestment. Greater involvement could take the form of traditional debt or equity raises by existing providers, or a blend of these options using Special Purpose Vehicles (SPV).

Currently, a handful of EDBs have some degree of private ownership, with the majority owned by regional trusts and/or councils. In an environment where council balance sheets are strained and regional trusts are representing communities in hardship, there is a low desire for these shareholders to increase equity or reduce dividends. Recent sales of network businesses have shown that private investor groups are attracted by predictable long term returns created by a tight regulatory framework. Greater private ownership could reduce the urgency with which EDBs need to recover invested capital, potentially reducing intergenerational and geographical inequities. Current regulatory settings favour operational reliability and efficiency, so private investors will be incentivised to invest and deliver a reliable network to the benefit of end users. Private capital can help thread the needle between investing now, ahead of demand, and avoiding the over-burdening of current consumers through higher prices.

Greater private sector lending to EDBs is possible, however EDBs may be reluctant to increase liabilities because of the negative potential impact on credit ratings and their ability to pay dividends to existing shareholders. One way to raise private debt while maintaining their core debt ratios would be for an EDB to set up an SPV for specific categories of contestable works, for example EV connections or process heat conversions, where a fair investor return could be created. The SPV would operate with assets that are not on the regulatory asset base and would therefore not be subject to the conventional maximum allowable revenue regulations. Accessing debt capital through a subsidiary structure would allow the SPV to provide upfront funding for connections and recoup returns over an extended term, unlocking investment that may not be viable under current circumstances.

A variant of this model could be for councils that own distribution businesses to establish an SPV using the Infrastructure Funding and Financing (IFF) Act. This arrangement has the potential to unlock decarbonising investment by allocating costs to beneficiaries, though reliably identifying beneficiaries who will then pay the long-term levy is just one barrier to implementation, alongside the required legislative and regulatory amendments to expand the scope of the IFF Act to include electricity network investment. The IFF option could facilitate investment by keeping debt off councils' balance sheet.



Possible role for Government

In some cases, councils have shown a preference to hold onto network assets for future generations in ways that may not be realised through private ownership. Public finance may offer a bridge across the uncertain future, with various tools available to government. The most recent approach deployed within the energy sector was the Government Investment in Decarbonising Industry (GIDI) fund, which provided grant funding to demand side participants to subsidise the cost of transitioning from fossil fuels to renewable energy sources. Any future grant funding of this type is limited under the coalition agreement, where there is a greater focus on fund recycling.

If the Crown wanted to take a role in accelerating the growth of electricity networks, then the provision of concessionary finance or guarantees could also promote investment with good overall social outcomes. The form of Crown support would depend on the extent of control the Government wishes to have over the electricity networks of the future.

Adopting the principles of the Ultra-Fast Broadband (UFB) rollout could provide the basis of a 'top-down' approach where the Crown has a more substantial role in direction setting. In contrast to this centrally led approach, Australia's recently launched 'Rewiring the Nation' initiative provides support in response to applications for funding on a more 'bottom-up' case-by-case basis.

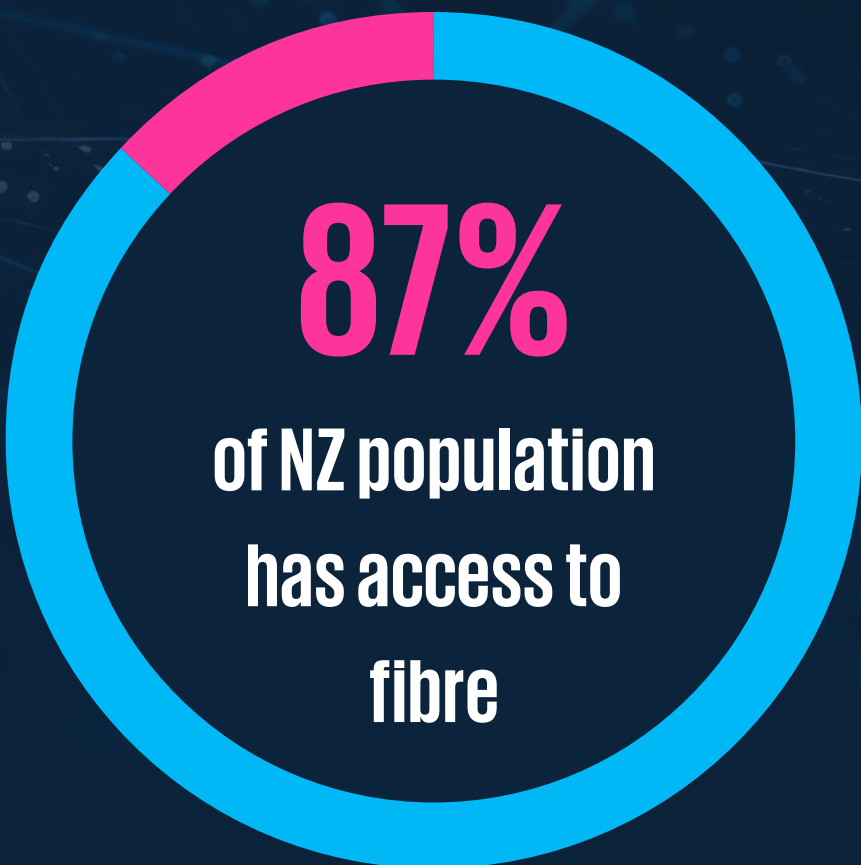


The UFB financing arrangement

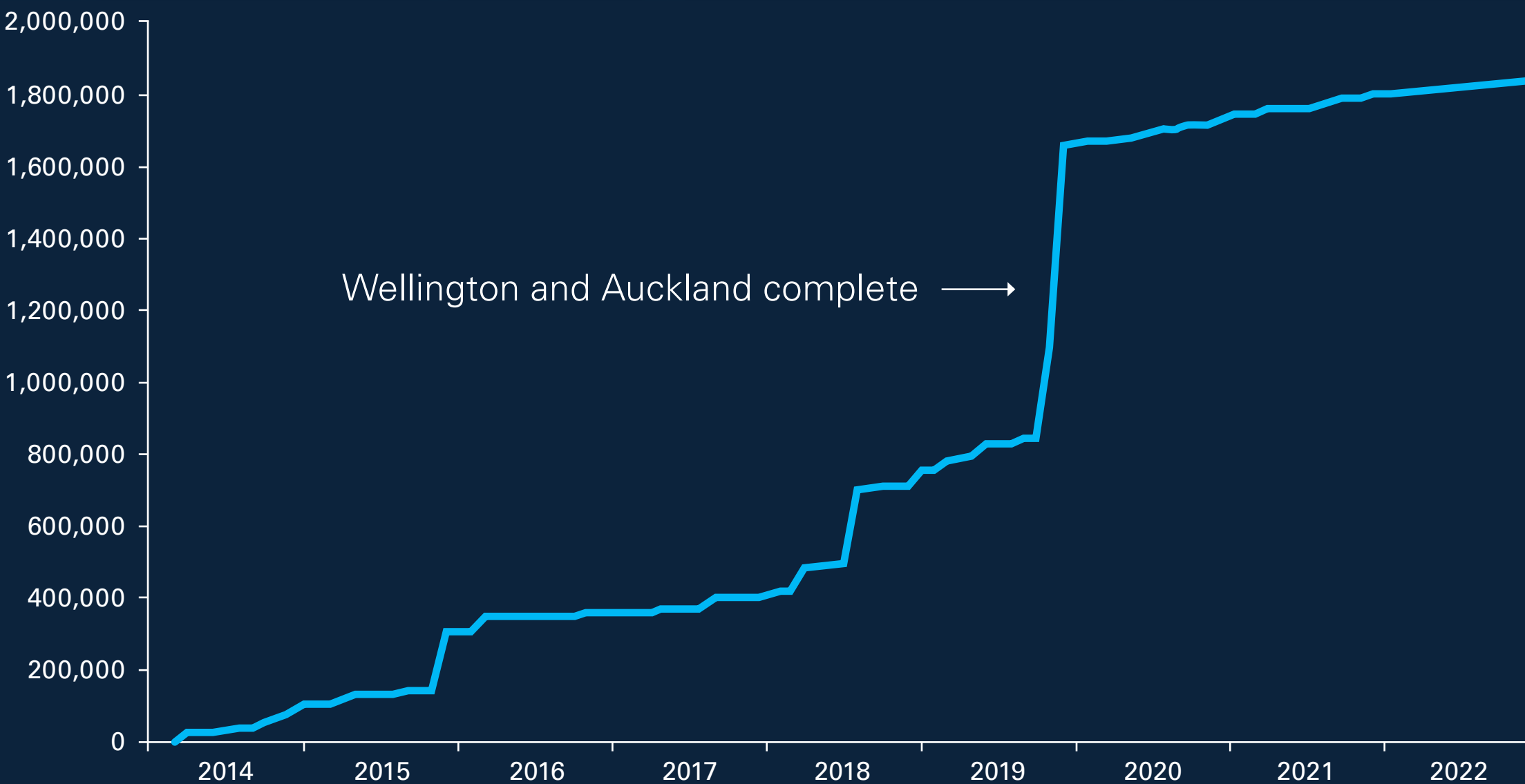
New Zealand's UFB rollout was supported by the Crown through concessionary finance, including long-term, non-interest bearing debt, as well as equity that carried no voting or (initial) dividend rights and warrants that carried a high strike price. Crown funding was released on completion of the works, and repayments by fibre companies were recycled into further network rollout as service take-up increased.

In the UFB case, the government set the strategic direction and backed it with Crown finance. As demand materialised, the fibre network and associated services were ready and promoted to end users. Some of the same logic applies to the electricity sector: Crown-financed investment could enhance network capacity and resilience, prior to demand materialising.

However, there are important differences between the fibre rollout and electricity network enhancements, which present practical design and implementation challenges. For example, the fibre rollout was based on a well-defined end state, offered clear service level improvement for users, with few design alternatives. Also, fibre regulation could evolve as new networks were built, and only a handful of network providers were selected compared to the diversity of electricity networks.



Evolution of UFB End Users
- by each area's completion date



Australia provides an alternative public finance blueprint

Australia's Rewiring the Nation (RTN) fund is taking an alternative, bottom-up approach to grid infrastructure investment. The fund will be co-invested with private and public sector entities, with investment decisions made on a case-by-case basis. This bottom-up approach means that the principal planning function remains within industry, which is often the centre of expertise to identify effective network solutions. The RTN model also retains a high degree of flexibility, which may prove useful as technology and user preferences evolve. Conversely, a case-by-case funding approach would risk continuing the pattern of uncoordinated investment across network boundaries, with unbalanced outcomes as a potential result.



The sector can navigate a way forward

Neither the electricity sector nor Government want to see the lights go out on the transition to a low carbon economy. There is a call to action to address energy efficiency improvements as well as uncertainty challenges around the shape of the future electricity demand curve. Private capital is in the market and looking for stable long-term investment options within regulated core infrastructure domains. Further, examples such as New Zealand's UFB model and Australia's Rewiring the Nation illustrate how public finance solutions can help the nation traverse demand uncertainty through a transitory period, where there is a clear value proposition and beneficiaries in sight. Whichever the mix of public and private finance, large-scale coordinated upgrades to New Zealand's electricity networks could deliver genuine value as we aim for Net Zero 2050.


In our work supporting the design and delivery of new infrastructure finance solutions in New Zealand such as Public-Private Partnerships, the Infrastructure Funding and Financing Act and private investment, we have found that financing solution design should always begin with an understanding of the underlying economic problem to be addressed. In this case, the foundation is demand uncertainty and the resulting risk is underinvestment. An improved understanding of the scale and likelihood of these risks eventuating is required to properly assess the most suitable form of private or public finance.

KPMG encourages the sector to continue to investigate these issues and the viability of the investment frameworks discussed in this paper for New Zealand electricity networks.



KPMG believes that the transition to a low carbon economy holds many opportunities for New Zealand, as well as industry collaboration to meet the challenges ahead. KPMG New Zealand is well positioned to assist organisations in navigating the path to net zero and the complex issues facing the energy sector.

In 2023, KPMG spoke with 30 energy innovators and industry leaders to paint a fascinating picture of how Aotearoa New Zealand’s energy sector might look in 2030.
Read more in our detailed report.





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