

Grow to zero

Clean energy can be
Aotearoa New Zealand's
competitive advantage
for economic growth

Introduction

Grow to zero offers a vision for Aotearoa New Zealand.

It hinges on using our abundance of renewable energy as a competitive advantage, enabling goods and services to be produced in a low-emissions way – an increasingly attractive proposition as economies around the world seek to decarbonise.

It's also a call to action, to ensure the energy transition delivers the best future for Kiwis – enabling us to grow our economy relative to others as we transition, so that we can afford to adapt to what is coming. Our energy system must be truly sustainable. It must be secure, affordable and maintain its global leadership position environmentally, and it must support Aotearoa to increase, rather than reduce, production – to grow our economy as we become net-zero by 2050. Given our renewable energy advantage, that is good for the globe and good for New Zealand.

Unless we're ambitious, we will not create enough wealth to have the first world infrastructure and lifestyle we want for ourselves, our tamariki, and our mokopuna as we confront the impacts of a changing climate.

We can't wait. Climate change is accelerating – 2023 was the globe's warmest year¹ and New Zealand's most expensive year for costs from weather events². The reality is that New Zealand is the recipient of a climate delivered by larger countries with bigger economies and, so far, they're not moving fast enough.

We must adapt ahead of worsening climate outcomes, and we need to pursue growth as a key path to funding our adaptation. Utilities and energy infrastructure face physical risks from climate hazards, but also present unmatched opportunities³.

This white paper makes the case for leveraging New Zealand's abundant low-carbon energy resources to foster a robust economy capable of withstanding the challenges posed by a changing climate⁴. It also details how Powerco is doing its part to support customers to grow to zero, and the policy action that can help.

It's acknowledged that more work is required to identify the industries and businesses that can be attracted to New Zealand to leverage our clean energy system. The first step, however, is alignment – that Aotearoa offers an international advantage that should be leveraged for the benefit of all New Zealanders.

¹ WMO confirms that 2023 smashes global temperature record

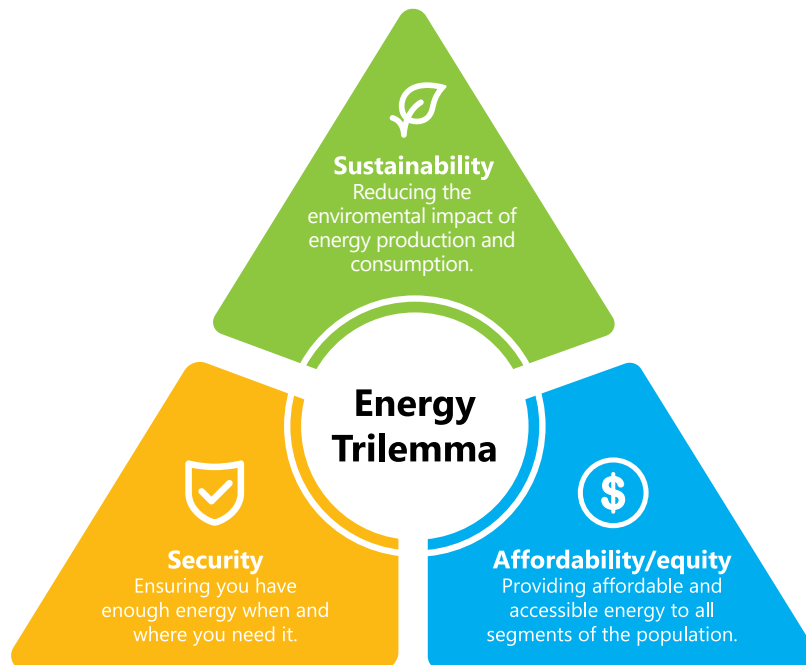
² NZ's weather crises in 2023 were among most expensive globally, Aon New Zealand says | [interest.co.nz](https://www.interest.co.nz)

³ Utilities face greatest threat as climate risks intensify | S&P Global Market Intelligence ([spglobal.com](https://www.spglobal.com))

⁴ Energy represents 37% of New Zealand's gross greenhouse gas emissions, industry processes products create 5.7%, while waste uses 4.5%. Agriculture contributes 53%. Source: [New Zealand's Greenhouse Gas Inventory 1990–2022: Snapshot](#) | Ministry for the Environment. This white paper concentrates on the energy component and touches on waste.

The energy trilemma

The success of an energy system to meet the needs of the communities it serves is measured by what's called the 'energy trilemma'. It's all about balance. Focusing too much on one, can negatively affect the others.



Sustainability: If you only focus on this, energy could become too expensive and unreliable, with communities not being prepared to transition from carbon-producing fuels.

Security: If you only focus on security, energy may become too expensive, and you may miss out on renewable resources.

Affordability: If you only focus on this, there's a risk of reduced security of supply and delays to the adoption of sustainable energy.

How does New Zealand measure up?

The World Energy Trilemma Index ranks New Zealand among the world's top performers on country context⁵.

New Zealand's overall balanced score has held up in international rankings in recent years – in 2023 we ranked ninth in the world with a AAA rating in the World Energy Council's trilemma assessment⁶. Despite the headwinds we've faced with declining gas availability and high spot electricity prices negatively impacting our energy security and affordability score, during the past decade our energy sustainability score has steadily improved with increased renewable energy.

Thanks to our hydro, geothermal, and growing wind and solar generation, we already have a clean energy system compared to most other countries. Almost half of all energy we use in New Zealand is renewable⁷, compared with less than 15% internationally⁸. Energy for transport, however, is still almost entirely powered by carbon-producing fuels.

⁵ World Energy Trilemma 2024 Evolving with Resilience and Justice

⁶ World Energy Council Trilemma New Zealand profile 2023

⁷ Ministry of Business, Innovation and Employment – Energy in NZ 2024

⁸ Our World in Data, Renewable Energy

Our electricity system is already almost 90% renewable⁹ and tracking to 95%+ by 2035¹⁰, and our electricity is largely secure, and relative to most OECD countries, affordable.

New Zealand may have a comparative head-start by having one of the cleanest energy systems in the world, but we could easily lose that competitive advantage if we don't act to leverage it by growing existing industries and attracting new industries.

Historically, thanks to our productive offshore and onshore gas fields and the industries that support them, we've had a good balance of supply and demand of natural gas that has enabled electricity affordability and security. However, our failure to maintain a secure gas supply recently has impacted this and we need to resolve that.

Intentionally or otherwise, we've been reducing our domestic energy production and our domestic industry, while importing energy and products from higher emitting sources. In doing so, we are reducing our energy and economic resilience in an increasingly fractured world. In addition, while we need to attract inward investment to leverage our clean energy system, international investors rank us last (38th out of 38 countries) for openness to investment¹¹.

Over the coming three decades, electrification of transport and electrification of low temperature and ultimately industrial process heat, combined with underlying growth, is expected to result in a major increase in demand for electricity¹².

To meet this increase in demand, New Zealand's renewable electricity generation will need to roughly double by 2050 and, by doing so, will be a major contributor to achieving our net-zero 2050 target.

Meeting this growth will require increased investment in new generation and related services – running into tens-of-billions of dollars. This investment must be efficient to deliver reliable electricity supply at lowest possible cost to consumers¹³ and to grow and attract business in New Zealand.

There will be trade-offs that we, as a country, will need to accept to enable growth and the transition to net-zero.

Wind turbines, more geothermal plants, more solar farms, more batteries, more poles, wires, pipes and new industries, will be the trade-offs we need to make to enable Aotearoa to be truly sustainable and leverage our relative international energy advantage.

⁹ Energy in New Zealand 2023

¹⁰ Page 10, Whakamana i Te Mauri Hiko, Empowering our Energy Future

¹¹ Overseas investment changes to get New Zealand off the bench | Beehive.govt.nz

¹² Government policy statement on electricity – October 2024: Transpower's base case estimate is 68% above current levels of demand. A range of factors could mean that increase in demand is even higher. See also MBIE's [Electricity Demand and Generation Scenarios: Results Summary, July 2024](#). Electricity is expected to become a much larger proportion of New Zealand's total energy requirement, up from around 25% in 2020 to around 60% in 2050. Households are likely to use less energy, but much more electricity.

¹³ Government policy statement on electricity – October 2024

Energy sector's role in growing to zero

How do we successfully keep in balance energy affordability, security of supply and environmental outcomes as we deliver an energy system that enables the growth needed to meet Kiwis' needs?

International and local investment are key, and we need a welcoming environment for investment in new businesses and in energy infrastructure to support those businesses.

We need to continue to invest in large scale energy facilities and infrastructure, while increasingly also investing in local infrastructure and new technology for energy storage and control.

For generations, energy supply in New Zealand has been based on economies of scale, representing a significant proportion of our national infrastructure – producing energy in large quantities, in large facilities, and then transporting it to wherever it is used.

- We have a gas transmission system that connects the natural gas fields on and offshore Taranaki to the rest of the North Island.
- The National Grid transports electricity from all over the country – much originating at the hydro power stations in the South Island and being transported via a cable below Cook Strait to the North Island.
- Local electricity distribution businesses (such as Powerco) then take that gas and electricity from the transmission systems to businesses and households.

One of the keys to enabling our low carbon future and ability to grow to zero, is to plan, invest and work beyond large infrastructure projects.

In the coming years, alongside more large and centralised energy sources with economies of scale, we'll increasingly see locally-based energy sources – from biogas produced at landfills across the country, to renewable electricity generated on rooftops, at community-based wind and solar farms, and harnessed in large battery energy storage systems – ready to be released when demand requires it, and offering increased resilience against a changing climate.

These local energy producers will generally connect to the local distribution networks (29 electricity and five gas businesses throughout Aotearoa, including Powerco). They are everywhere energy consumers are.

The magic is that, although those networks were built to connect users rather than suppliers of energy, energy networks can use them to harvest local energy sources at lower cost than building new.

How Powerco is investing to grow to zero

In order to achieve an energy system that supports net-zero by 2050, it's been estimated that electricity distributors alone need to invest \$22 billion before 2030, another \$25b before 2040 and another \$24b before 2050¹⁴ – more than the estimated investment required in either generation or transmission.

As New Zealand's second largest electricity and gas distribution utility with over 900,000 customers (across 473,000 connections) connected to its networks, Powerco's focus is to enable Aotearoa to transition to a low carbon future in an affordable and secure way.

We're doing this by:

- Ramping up investment in our electricity networks to meet growing demand for renewable electricity.
- Attracting low-cost capital to make the transition affordable, by creating financial instruments specifically targeted at the transition to net-zero. We're the first Electricity Distribution Business (EDB) in the country to execute a Climate Bonds Initiative-certified green loan under the scheme's 'Electrical Grids and Storage' criteria¹⁵. The \$300m, seven-year loan has been financed by institutions locally and abroad. Powerco anticipates executing three more green certified loans by the end of FY25.
- Developing the smart and resilient networks of the future, by investing in data and digitalisation to enable customers to reduce their carbon emissions and become part of the energy system. This includes enabling customers to use our networks in new ways – generating and selling electricity and biogas rather than only consuming it.
- Bringing together the energy, agricultural, water and waste sectors to capture and use biogas to reduce our overall emissions. We're working to develop the market, supply chain and influencing the regulatory framework needed to bring renewable natural gas to Kiwis. The economic and environmental benefits of biogas go beyond the energy sector, with potential for the agricultural, waste, water treatment and manufacturing sectors to reduce their emissions and the amount of waste produced, while making use of the byproducts of the biogas-to-biomethane process such as CO₂ and natural fertiliser. In March 2024, we announced our first two biogas initiatives to explore the feasibility of producing biogas for our network¹⁶.
- Through our dedicated Energy Solutions team, we're making it easier for developers of distributed generation and electric vehicle charging infrastructure, as well as enabling commercial and industrial customers, to invest in the energy transition. An important part of this is giving customers access to quality electricity data, such as network capacity data via an interactive webmap¹⁷. With this map, we aim to provide an improved customer experience and create efficiencies – to enable a sustainable energy transition that supports connecting developments to electricity network wherever possible. In the future, we plan to provide more granular capacity data, such as variable or time-based capacity and forecasted capacity, and potentially also forecasted congestion. Additionally, providing information about network planning, capital contribution and pricing models or tools will enable the customer to make time/price/service trade-offs.
- With recently announced regulatory changes, we're exploring further investment in small scale generation and energy storage.

¹⁴ BCG The Future is Electric, pg 6, summary document

¹⁵ Powerco secures first climate bonds initiative certified green loan, [powerco.co.nz](https://www.powerco.co.nz)

¹⁶ Powerco announces renewable natural gas development initiatives, [powerco.co.nz](https://www.powerco.co.nz)

¹⁷ New high voltage demand capacity map, [powerco.co.nz](https://www.powerco.co.nz)

Policy action to grow to zero

To successfully deliver an energy system that supports New Zealand to grow to zero, it's imperative that, as a country, we take policy action that enhances confidence and certainty in investment.

This should include a durable energy strategy that provides clarity on the long-term direction for New Zealand's energy system and the role of energy in supporting our net-zero 2050 target. Stable direction and policy settings provide the critical foundations to encourage investment, enable innovation and reduce any perception of sovereign risk. Key elements are:

- A goal to support the transition to net-zero 2050 affordably and securely, measured by the internationally accepted energy trilemma.
- Policy to be fuel and technology agnostic – the goal is economy-wide emissions reduction, not energy industry emissions reduction. Our energy system is the solution, not the problem.
- No arbitrary cliff-face targets. This is a transition, and the pace of the transition must be set by customers and markets competing in a global context to keep New Zealand competitive.
- Encourages using domestic resources for energy resilience.
- Allows well-governed markets to innovate to meet customers' needs, while maintaining an ability to intervene if security of supply and affordability threaten to impair our international competitiveness.
- Establish a climate change adaptation objective for energy regulators to support investment levels needed in energy expansion and resilience.
- Ensure an enabling international investment environment.
- Resource Management Act streamlining for energy infrastructure activities. This is about an enabling environment for routine or low impact activities, protection for existing energy infrastructure, and a fast-track consenting regime for energy projects. A National Policy Statement (NPS)/National Environmental Standards (NES) for distribution remains a gap.
- Infrastructure financing tools available for large load customers requiring significant network upgrades for connection (eg EV charging hubs).

Conclusion

We're the lucky country. We have an extraordinary endowment of renewable energy resources that we can leverage to produce goods and services in a low-emissions way, while remaining internationally competitive, and growing our economy.

The opportunity is real. Capital markets – businesses – around the world are looking for clean, green energy sources in which to invest, so they can reduce their emissions and meet their own targets.

Here, in New Zealand, we have the solutions all around us. We have everything we need to attract investment here, while reducing global emissions and tracking New Zealand towards its own international targets.

The rest of the world will catch up with renewable energy, but we have the chance to get ahead of the game. To afford to both mitigate, adapt and self-insure in an uncertain future, we need to attract capital and customers to New Zealand, leveraging our renewal resources to grow our economy.

The end game of the transition is a balance in the energy trilemma for all Kiwis – having an affordable and secure energy system, which is also environmentally sound.

Let's be ambitious for Aotearoa New Zealand and grow to zero together.

Contact the Powerco team

If you would like to discuss renewable investment opportunities with Powerco, please contact General Manager Customer Stuart Dickson, stuart.dickson@powerco.co.nz.

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