20 June 2023

Consultation: Emissions Reduction Plan 2
Climate Change Commission
PO Box 24448 Wellington 6142

Via Climate Change Commission consultation portal

Tēnā koutou,

Low-emission energy options for a managed transition

Powerco is one of Aotearoa's largest gas and electricity distributors, supplying around 340,000 (electricity) and 112,000 (gas) urban and rural homes and businesses in the North Island. These energy networks provide essential services and will be core to Aotearoa achieving a net-zero economy in 2050.

Powerco is ready for electrification and committed to its role in all options that can assist Aotearoa reach the 2050 goal. The Commission's final advice on the Government's 2026 Emissions Reduction Plan (ERP) will further increase reliance on electricity for decarbonisation. As many policy and regulatory reviews related to the energy system are already underway, the Commission's recommendations need to focus on areas where a change of direction could better enable the upscaling and/or energy options required. We comment on this further throughout this submission, which has two core themes:

A focus on resilience

- Resilient, low-carbon, affordable energy for all New Zealanders is ambitious but achievable. We need a smooth transition with a focus on resilience given energy is an essential service.
- Fuel diversity is necessary to provide resilience today, through to 2030 and beyond.
- Powerco is ready, but policy settings need to adjust to provide certainty and efficiency in upscaling electricity systems for future demand. Regulatory review is mostly in hand already but must continue to progress and err on the side of enabling investment.

Best value emissions reduction

- The focus needs to be on sectors with the highest opportunity for emissions reduction at best value: industry and transport. Resilience is a high value 'use' of energy.
- Recommendations need to be backed by cost/benefit analysis of emissions, economic and social outcomes including accounting for regional differences.
- Global and local technology and innovation is moving quickly. Policy can accelerate innovation for our future system.

The 2026 ERP will have long-term impacts, affecting the government budget and a large proportion of New Zealand's households and businesses who use energy. Getting the details right matters. We encourage the Commission to model the interdependencies and associated risks between sectors more comprehensively to ensure its final advice locks in the best options for Aotearoa to reach net-zero emissions by 2050.

The attached comments follow the draft advice structure and recommendations. There are two areas that will benefit from specific additional recommendations:

- **Infrastructure consenting** … because rapid decarbonisation will rely on distributors being able to connect generation and electrified demand at pace
- **Renewable gas potential and waste optimisation** … because the availability of biogas will only increase as more projects are delivered to an expanding population base along with advances in organic waste management practices.

Our submission to the Commission's 2021 advice provided detailed feedback on energy and technology neutrality, the complexity of interdependencies, and gas blending, alternatives. The detail in our 2021 submission remains relevant today and we encourage the Commission to review it again, particularly in reviewing the proposed gas recommendations.[1]

If you have any questions regarding this submission or would like to talk further on the points we have raised, please contact Irene Clarke (Irene.Clarke@powerco.co.nz).

Nāku noa, nā,

Andrew Kerr
Head of Policy, Regulation, and Markets
POWERCO

[1] Powerco submission to the Climate Change-Commission---Draft-advice – March 2021 (powerco.co.nz)

Response to Climate Change Commission 2023 Draft Advice

Summary of Powerco responses to points of advice and recommendations

Table 1 Summary of submission points

Draft advice topic / recommendation	Powerco response
Prioritisation framework	**Support the framework** but needs to be applied consistently. The Climate Change Commission should focus on critical gaps, and not pre-empt policy review processes already underway (eg Gas Transition Plan and Energy Strategy). Assessment of each recommendation and cumulative impacts needs further consideration and clarity in the final report.
Gross and net emissions Rec 1 – 3	**Support a continued focus on net reductions**. Complementary policies to drive gross emissions reductions is supported where loss of optionality has a low cost and the interdependencies across sectors are simple.
Equitable transition Rec 6 – 7	**Keep the Equitable Transition Strategy focused on emissions reduction**, at least to get the first strategy in place. Equity in adaptation is also important but makes it a very broad scope before a first draft Strategy has even been prepared.
Infrastructure consenting **Recommendation needed**	Make a new recommendation to **direct RMA national direction to enable electrification** (including distribution) and for NBEA national direction (NPF) to provide clear direction in balancing system outcomes and enabling electrification (including distribution). If the NPF is the primary policy measure, it could specifically enable distribution and have effect for RMA decisions.
Incentivising building retrofits Rec 11	Provide **a clearer recommendation** giving direction on the focus for type of retrofit and type of incentives to be provided. Further analysis is required of emissions reduction opportunity and cost, particularly where opportunity/cost has broader implications (eg cost of electricity network upgrades due to incentivising replacement of gas appliances vs benefits to electricity network in incentivising thermal efficiency of existing buildings).
New residential fossil gas connections Rec 12	**Provide evidence** of the implications of this - there is none provided. Our data indicates new connections are not burdening future customers. We anticipate direction and comprehensive analysis of any phase-out approach (including approaches to address resilience, best value emissions reduction, equity and complexities in an energy transition), to be part of the Gas Transition Plan, Energy Strategy and Equitable Transition Strategy. Reframe the recommendation to await the detailed work on options currently underway, and in the interim, recognise the link between current networks, new connections, and renewable gas potential, with a recommendation to support development of new technology and the ramping up in renewable gas production.
Prioritise electricity network build Rec 13	**Regulation of EDB investment needs to support the accelerated pace** of investment for electrification, and this is in hand with Commerce Commission's existing DPP process and regulatory reviews underway. Direction from the Climate Change Commission is encouraged to support high performing EDBs as a cornerstone of the investment, coordination and efficiency needed for electrification and grid resilience. **Smooth infrastructure consenting** (see above) is core to delivering build that is funded through regulated and customer investments.

Draft advice topic / recommendation	Powerco response
A smooth fossil gas transition	**A smooth gas transition is essential but complex**. Recommendation 12 does not support a smooth transition and pre-empts the transition analysis work underway. The Climate Change Commission should leave existing work programmes to progress prior to making targeted comments or recommendations about fossil gas and the transition unless there is additional evidence it can bring to bear.
Renewable gas potential and waste optimisation **Recommendation needed**	**Update the commentary on biogas** and provide confidence in the clear viability of this option in our future energy system. There is sufficient evidence around availability of biogas and this will only increase as more projects are delivered and as organic waste management advances. Initially, blended gas is a feasible option, and then increasing biogas proportions over time. The Climate Change Commission should reflect the potential opportunity for biogas in our energy system, providing confidence for gas distributors and industrial processors to continue to develop the current opportunities. The draft advice risks foreclosing options before getting to the first milestone (a blended option). The Commission could provide direction on the priority of a renewable gas certification scheme to accelerate biogas production and use through organic waste recovery, facilitating emissions reduction through both the energy and waste sectors.
Pace of process heat decarbonisation Rec 14	**Decarbonisation in process heat and other industrial processes is a priority** to rapidly reduce emissions. The Commerce Commission review of price-quality regulation for EDBs is considering electrification barriers and optimisation of timely network investment. The EA review also proposes greater transparency on capacity/constraint data which can assist customers when making connection decisions. Operating in a largely principle-based regulatory environment does allow EDB processes to more easily flex to meet the needs of customers. It also requires capability and capacity of EDBs to deliver. This may affect the ability of some EDBs to deliver at pace, so we support the Climate Change Commission providing direction to keep watch on EDB capability and capacity to deliver.
Electrifying light transport Rec 17	**Well performing and funded EDBs can support good rollout of charging infrastructure**. The processes to connect new public charging hubs to electricity distribution may not be the barrier indicated if there is: - Good communication between charging providers and EDBs in planning charging hub locations - Appropriate treatment of customer connection capex in the regulatory regime - Flexibility to work ahead for emissions reduction activities in regulatory allowances, and - Pragmatic planning and mechanisms to provide for future equipment needs. The priority action is around standardisation of smart chargers and data interface.
Waste infrastructure and data enabling biogas options Rec 19	**A more focused plan around wastewater, agriculture and organic waste infrastructure** and data to enhance biogas capture could provide critical alignment with the energy sector and fuel options necessary to reduce emissions. The Commission could broaden recommendation 19 so that there are specific regulatory and policy tools in place to encourage optimal energy options.

Part 1 Fundamentals for success

Draft advice to take cross-sector approach

We support the Climate Change Commission (the Commission) prioritisation framework and policy framework to test options and recommendations. It is not always clear that it has been applied, either by individual chapter or as a whole. We comment below where aspects of the framework could be further considered eg equity, risks, co-benefits, policy gap, clear outcomes linked to targets, and actions linked to barriers.

We support the priority on identifying and addressing critical gaps and where the pace needs to change for the 2026-30 period. It is important that all the existing ERP actions in progress can continue without interruption of new or different advice from the Commission so shortly after the release of the current ERP. For example, we concur with the following comment (page 104) and encourage the Commission to let these processes run:

> *The Government's Gas Transition Plan and National Energy Strategy, and the Commerce Commission's regulated investment framework, should provide clear strategic direction on the future of fossil gas and options for regulated cost recovery models for gas pipeline businesses which are equitable, give consumers time to transition, and support hard-to-abate industries*

A cross-sector approach is necessary, including understanding the cumulative impacts. Page 21 states that each recommendation and the balance of the whole have been assessed against the framework. However analysis is not clear for the costs and benefits of each recommendation and as a whole (and alternatives discussed), marginal emission reduction benefits/costs of options and where the costs fall.

Generally, we would support recommendations providing specific direction for government where a change from existing actions is required for the 2026 ERP to meet targets.

Gross and net emissions targets are relevant (recommendation 1-3)

We support use of pricing tools to accurately price and influence choices. We understand this is one lever alongside complementary policies, but it is a key one. A continued focus on net reductions, with complementary policies to drive gross emissions reductions would provide ongoing policy certainty, and the timeframe to enable technology development and to support investment confidence. It is not clear from the draft advice what the possible implications of the recommended changes could be for key sectors, communities and households. Careful consideration of options is required, particularly where there are interdependencies with other sectors.

Wellbeing at the centre of an equitable Transition (recommendation 6–7)

We support the wellbeing of New Zealanders being at the centre of assessment options for the transition. There needs to be clear understanding of the cost/benefit of options, recommendations and where costs fall, whether directly or indirectly.

The Equitable Transition Strategy (in progress) is the mechanism to clarify policy and responses. Extending this Strategy to also cover adaptation is possible, but could perhaps be incorporated in a later edition. It is more important to progress the Strategy and engage with the public about the costs and response to equity so emissions reduction activities do not to slow down in the critical period to 2030. Expanding the scope also seems beyond scope of this ERP advice

Access to capital can be a barrier for households to make improvements that would both reduce emissions and lead to energy savings over time. However energy wellbeing and equity in the transition is not just about the cost of capital improvements/requirements, it will also be about the regular energy cost linked to the decarbonisation investment (eg distribution network) during the transition.

We endorse Recommendation 7 for a continued focus on investment in decarbonisation activities (eg scaling up electricity networks), and using/expanding existing mechanisms to manage impacts in the short term while the Equitable Transition Strategy is fully developed and implemented.

While the draft advice promotes use of existing mechanisms to manage the risk of inequitable impacts (in general), some recommendations in Part 2 of the draft advice have equity impacts that the Commission needs to explicitly consider. For example, policy to enable a faster transition to blended/renewable gas options will reduce the existing gas network asset cost for households (with more certainty on its longer term use), whereas recommendations which remove gas too quickly will increase pace of investment/cost in electricity.

Part 2 Creating low emissions options

Built Environment

Infrastructure consenting for energy distribution needs stronger national direction to remove barriers

We support the concepts promoted in the draft advice to make use of existing infrastructure and avoiding consenting inefficiencies when infrastructure developments are necessary.

A more efficient consenting system is essential for the rapid upgrade, development and operation of electricity distribution infrastructure, in addition to renewable electricity generation and transmission. This includes upgrades or works for connection of renewable electricity generation to the distribution network; they will often be connected to the distribution system (not only transmission). Upgrades to support process heat conversions and EV charging infrastructure are also relevant to our broader energy future.[2]

[2] For example infrastructure to be developed for biogas production and injection may face consenting barriers. We comment further on biogas in the energy and infrastructure section of this submission. We are not aware of consenting barriers related to biogas infrastructure to date, but it is too early to confirm this due to the early stage of project development. It is an example where there is an opportunity for frameworks to enable new technology to be put in place ahead of time if analysis shows this would provide streamlining of potential barriers.

We are very concerned that neither the current RMA and NPS/NES, nor the NPS review (renewable energy generation and electricity transmission) nor the RM reform, will enable the rapid build required for electrification. The Commission needs to take this barrier very seriously and make new recommendations directing this to be addressed. In this case, we know that relying on current review processes will be inadequate to address barriers.

National direction is key for certainty, consistency and priority. The current review of the NPS-Electricity Transmission does not propose to enable distribution infrastructure even though EDBs have medium-high voltage (33 – 110 kV) lines between substations which run end to end with limited location options and consenting barriers in the same way as Transpower's transmission lines. Similar to Transpower, Powerco currently has over 1000 MW of generation connection enquiry which will connect new renewable generation to customers through the distribution network. Further information on our distribution network and how the NPS/NES review could facilitate distribution build for the transition is contained in our submission to the Ministry for Business, Innovation and Employment.[3]

New national direction under the NBEA's National Planning Framework is unlikely to provide the national direction needed to specifically enable the rapid build of the distribution network needed in the next 10 years. With the RMA reform, new plans under the NBEA will largely not be in place until after 2030 and consenting will continue under the RMA until then.

The Commission could make a new recommendation to:

- Direct RMA national direction to enable electrification (including distribution); and
- For NBEA national direction (NPF) to provide clear direction in balancing system outcomes and enabling electrification (including distribution). If the NPF is the primary policy measure, it could specifically enable distribution and have effect for RMA decisions.

Incentivising targeted building retrofits – recommendation 11

We concur that retrofits of existing buildings are complex, costly, and both create emissions as well as potentially reduce longer term emissions. There are inequities between consumers. Those with most opportunity to benefit from comprehensive building improvement are likely those most vulnerable and unable to make the decision about a retrofit (eg renters, low-income, apartments).

For example, work by Energy Consumers Australia assessed risks to gas consumers of declining demand, and concluded there are many factors influencing costs and benefits to consumers in switching and there are some vulnerable groups of consumers where policy and incentives will need to focus in the longer term if gas phase-out occurs. Renters, low-income households, multi-unit dwellers were found to face particular difficulties.[4]

The Commission is correct that retrofitting existing properties to replace fossil gas will require support. This is complex, costly and would likely challenge equity in the transition. For example the decommissioning of the

[3] Powerco submission to NPS-ET / NPS-REG: 20230601-powerco-nps-et-reg-submission.pdf
[4] Report for Energy Consumers Australia: 230109_Report_Risks-to-gas-consumers-of-declining-gas-demand_final.pdf (energyconsumersaustralia.com.au)

Esperance, Western Australia town gas network over 2021-23 involved a government support package of more than $27,000 per connection for replacement of appliances and related building works (average).[5] Recent work for the Gas Infrastructure Working Group has an initial estimate of $7.9 billion in consumer conversion costs for a full gas pipeline winddown by 2050.[6]

The draft advice focuses on the cost to the property for appliance replacement, without acknowledging the separate cost of electricity network upgrades required from mass property conversions, nor disruption and lost productivity if feasible at all. The link between retrofits and the energy system needs to be part of future modelling of options and to inform the focus for incentives that drive them.

As an example, Powerco has over 65,000 gas customers on the Wellington Electricity network. Wellington Electricity forecast a 260MW (52%) increase in current demand (at 98 percentile of demand) if current gas customers convert to electricity on their network. This is the largest forecast impact on the Wellington Electricity network demand, increasing rapidly from the late 2030s to 2052, with the forecast capital investment to deliver the capacity required by the ERP (transport and gas substitution) is forecast at approximately $1 billion over the next 10 years and $2 billion over 30 years to 2052.[7] In the Esperance example referenced above, this decommissioning was accompanied by a new local renewable energy hub providing 46% of the town's electricity demand through solar, wind and battery storage.

The draft advice does not acknowledge existing incentives encouraging some consumers to undertake retrofit work (eg healthy homes standard, warmer kiwi homes), nor is it clear where the Commission sees the current gap. A clearer recommendation on the focus for retrofits and for incentives would assist, if needed at all.

Direction on fossil gas assets to be reviewed – recommendation 12

The value of fuel diversity for resilience

The draft advice does not acknowledge or value the role of gas supply in community resilience. Retaining the reliability and fuel diversity benefits of natural gas, and low-carbon gas in the future, has significant value in resilience to climate impacts.

The value of the gas network for community resilience was clearly demonstrated during Cyclone Gabrielle as the Hawkes Bay case study below outlines.

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[5] 230109_Report_Risks-to-gas-consumers-of-declining-gas-demand_final.pdf (energyconsumersaustralia.com.au)

[6] This analysis is preliminary and conceptual. Although care has been taken to prepare the modelling and inputs to establish this estimate, the analysis is based on many assumptions and projections and further work is needed to better refine the modelling and inputs for more accurate estimates.

[7] Wellington Electricity Asset Management Plan 2023, page 21. 318 (welectricity.co.nz)

Case study: The value of a resilient energy option following Cyclone Gabrielle in Hawkes Bay

In February 2023, Cyclone Gabrielle caused unprecedented devastation across the North Island. Over 107,000 Powerco electricity customers were affected by power loss (33% of our network). There was significant damage to our electricity network across Coromandel, South Waikato, eastern Bay of Plenty, Taranaki, Manawatu and the Wairarapa. The significance of the damage and length of outages to Unison Network's electricity network in Hawkes Bay were even more significant.

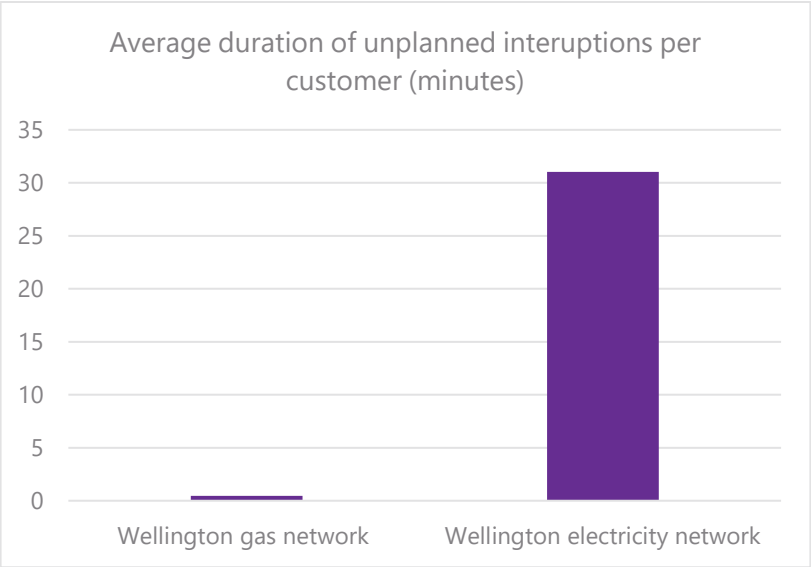
Powerco's gas network in Hawkes Bay proved high resilience and an essential lifeline for customers without electricity in the region. While our gas pipeline crossing the Ngaruroro bridge in Napier sustained damage through being pulled from the supporting structures due to flooding and slash, its integrity was maintained and gas supply was not interrupted. All other bridge crossings and underground pipes remained undamaged and there was no loss of gas supply throughout our Hawkes Bay network during this cyclone event. Gas supply for cooking and hot water provided an essential lifeline for many Hawkes Bay residents when electricity was not available.

Field crews worked in difficult conditions over several days to check and confirm the integrity and accessibility of our critical network assets ensuring they remained safe and operational, with our emergency contingency plans supporting this process. Learnings at the Ngaruroro site will help make this part of the network even more resilient in future events by relocating that pipeline to the opposite side of the bridge where it will be less susceptible to flood damage. Resilience and reliability has always been a core focus for Powerco in our planning. Learnings from this event will inform our asset management planning and our climate adaptation planning.

A clear outcome from this devasting event is that natural gas networks can be more resilient than electricity in the face of natural hazards and can continue to provide a critical energy option when electricity reinstatement may take some time. The event also highlighted that the value of resilience is much more than the economic cost of not having an energy supply. It is about the societal cost and community impact when there are long extended periods without energy amidst the other devastating consequences faced by residents during and after such an event.

In general, gas networks demonstrate high reliability compared to electricity networks due to the different risks faced by each of them. Using the Powerco 'Lower' gas network and the Wellington Electricity network for comparison the average minutes of disruption per customer in the 2022 reporting year are shown in Figure 1 illustrating a vast difference in the duration of unplanned interruptions. We have used this data for comparison noting that duration data is a priority measure for the Commerce Commission.

Figure 1 Network reliability reported for Wellington gas and electricity networks 2022[8]



Fuel diversity offers essential resilience for homes throughout New Zealand, beyond the option of piped gas. For example, 33.3% of New Zealand homes use a wood burner for heating, 6.3% use portable gas heaters and 11.7% fixed gas heaters. In the South Island, 44.1% of homes use wood for heating while only 10% use gas heating.[9]

Fuel diversity can offer critical back-up for essential services in times of energy outages. For example, from 2026 the new Wellington Wastewater sludge minimisation facility[10] will use a more resilient approach on a space-limited site to significantly reduce sludge dumped to landfill. Anaerobic digestion to break down sludge, produce biogas, and use that biogas to produce heat and electricity to process the waste. A gas connection is a critical part of that system to ensure that it can continue the process in the event of an on-site fuel issue. The interdependencies between waste treatment, fuel use, infrastructure, and resilience outcome illustrate the practicalities of real-life situations are more complex than simply focussing on fuel use (gas) alone.

A recent report for Business New Zealand Energy Council[11] undertook detailed sensitivity modelling of the TIMES-NZ models and concluded that

> *Removing fuel options from decision-makers will almost certainly increase the cost of meeting New Zealand's emissions budgets, unless low emissions options are made available (and decision-makers are confident of their availability) at a similar cost. Hence, improving resilience, meeting emissions budgets, and keeping downward pressure on costs in the face of a changing world will benefit from greater choices of, and confidence in the availability of, cost-effective, low-emissions fuel options.*
> …

[8] Source: 2022 reporting year information disclosure schedule 10, Powerco gas Master - 2022 GDB ID schedules 1-10 (excl. 5f-5g).xlsx (powerco.co.nz) and Wellington Electricity 292 (welectricity.co.nz).
[9] Census 2018 data from StatsNZ. Summary data on heating at *Environmental Health Intelligence New Zealand* (19446-Types-of-Heating-FA2 .pdf (ehinz.ac.nz)) and *Figure NZ* (Main types of heating used in New Zealand homes – Figure.NZ)
[10] Projects - Moa Point sludge minimisation facility - Wellington City Council
[11] Energy-Strategy-Deep-Dive-Using-TIMES-NZ.pdf (bec.org.nz)

From an emissions and cost perspective, our advice to policymakers is therefore to focus on enabling energy system decision-makers to respond to unexpected changes in the energy system – based on their assessment of the situation as it arises and the options available to them.

The consultation document released in June 2023 by Department of Prime Minister and Cabinet *Strengthening the resilience of Aotearoa New Zealand's critical infrastructure system*[12], also emphasises that resilience is about the critical infrastructure *system* and its strategic capability. The document highlights the dependencies and interdependencies across the critical infrastructure system, taking up the recommendation from Te Waihanga in the New Zealand Infrastructure Strategy[13] for a coordinated approach to managing risks across those dependencies and interdependencies.

The interdependencies between fuels is complex and any changes recommended by the Commission require careful analysis to ensure resilience is not reduced. A deterministic modelling approach that assumes away these interdependencies is inadequate.

A focus on residential connections needs more quantification to be robust

The draft advice is concerned that expansion of the gas asset base may be incompatible with sustainable intergenerational prosperity if households or communities are locked into a fossil gas path. Connecting to a gas network involves consumer choice and they are not always tied to it. Adding customers to an existing network is not locking them in, but rather provides for a sustainable gas network during the transition and options for affordable, resilient energy diversity.

The advice notes that the number of connections to the network continues to grow and total delivered volume is steady. Powerco is one of the largest gas distributors and we have reported a small annual growth in the total number of connections (ICPs) with a net number of additional residential connections growing at 2.5% or less. In the last three reporting years, we reported between 50 and 2080 additional residential ICP compared to the previous year. We also reported a reduction in gas conveyed, including a reduction in residential gas conveyed. These figures are provided in Table 2.

Table 2 – Change in ICPs and gas conveyed

Reporting year (Sept)	Total ICP	Residential ICP	Change from previous year	Total gas conveyed (PJ)	Residential gas conveyed (PJ)	Change from previous year
2020	111,591	82,245	+1,098	8.87	3.27	+0.14
2021	112,877	82,295	+50	9.03	3.26	-0.01
2022	113,478	84,375	+2,080	8.60	3.03	-0.23

[12] Critical Infrastructure Phase 1 Consultation - Department of the Prime Minister and Cabinet - Citizen Space (dpmc.govt.nz)
[13] Rautaki Hanganga o Aotearoa New Zealand Infrastructure Strategy, section 6.4: Strategy | Strengthening resilience to shocks and stresses (tewaihanga.govt.nz)

There is a prescriptive regulatory framework in place where Commerce Commission regulates recovery of costs for long-life assets. Powerco has a regulated revenue set by Commerce Commission (currently set to 2026). New connections provide a steady or slightly increased customer base to share the cost (revenue).

The Commerce Commission decision (reasons paper) on the gas DPP3 sets out the payback period on the regulated asset base (RAB) for all GDB subject to the DPP3 decision. The Commerce Commission reasons paper identified that Powerco residential sector assets have a payback period of 19 years.[14] This is not intergenerational payback. Rather, it aligns any new network infrastructure with the expected life of gas appliances which would be expected to service a household for (average) 20 years. The network infrastructure decisions are aligned with the other decisions the consumer is taking (if anything, conservatively).

To illustrate the benefit to existing gas customers from prohibiting new customers from joining, we have calculated the marginal impacts of adding 1,000 residential customers per year on our network (in Table 3). By 2032 the outcome of enabling these new connections is to:

- Save *all* 120,000 residential customers approximately $26 pa in distribution network cost.[15] This cost saving would continue for the further 9 years of the payback period
- Increase annual emissions by 1,753 t CO2-e assuming recent average consumption levels. Noting however, that this increase would be reduced assuming biogas or blended gas is in use by 2032.

Table 3 Example calculation to show potential differences with a ban on residential gas connections

	Cap at current ICP	Allow additional connection 1000/year over 10 years	2032 difference without ban on new connections
Residential ICP	110,462	120,462	+ 10,000 customers
Maximum allowable revenue (residential)	$39,000,000	$39,000,000 (likely understated)	
Annual revenue (cost) per residential customer	$351	$325	- $26 / customer ($3,132,012/yr for 120,462 customers)
Average GJ per residential connection	32.41 GJ	32.41 GJ	Assume no change
Average emissions per new connection	1,753 kg CO2-e	1,753 kg CO2-e	Assume no change
Total annual residential emissions	163,980t CO2-e	165,733t CO2-e	+ 1,753 t CO2-e / year (biogas blending would lower this)

The network cost and emission impact calculation over a 10-year period, provides a simple example, showing that should a ban on new connections be pursued, emissions savings over a ten or 19 year period are unlikely to

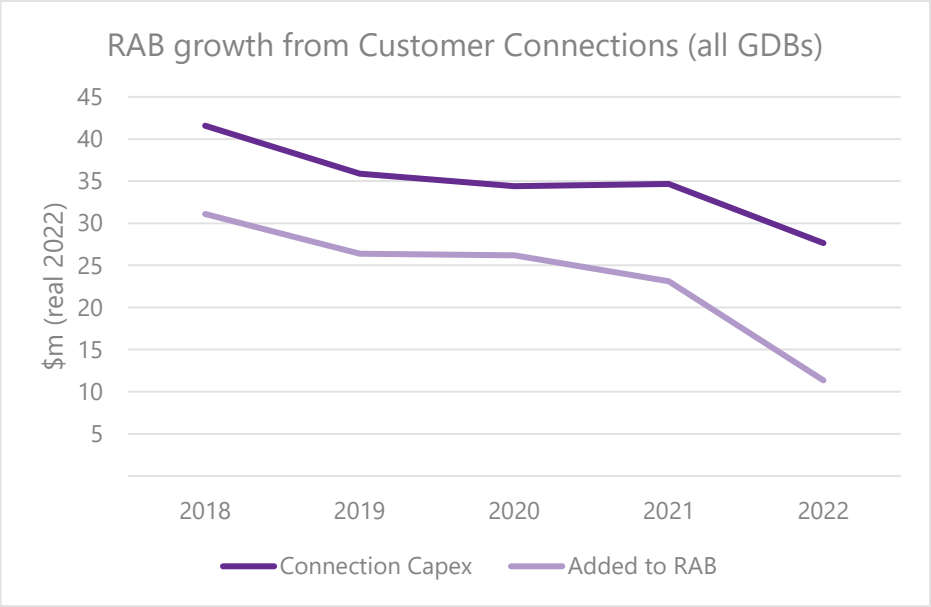
[14] Commerce Commission DPP for gas from 1 Oct 2022 final reasons paper, page 159: DPPs-for-gas-pipeline-businesses-from-1-October-2022-Final-Reasons-Paper-31-May-2022.pdf (comcom.govt.nz)

[15] It is important to note this is a theoretical example based on current data of distribution network cost only, not all costs for gas delivered to a consumer.

be justified compared to alternative emissions reduction options considering the customer network cost, alongside the complexities in removing this consumer options.

Banning new connections is not a way of safeguarding consumers, reducing the actual network, or efficiently saving emissions. Continuation of network services safeguards all new and existing consumers, and also preserves important low carbon options for the future.
Another illustration that new connections are not adding to a future burden for customers, can be drawn from the GDB disclosure data on customer connection expenditure compared to RAB growth over the last 5 years.[16] Figure 2 shows a trend that the impact on the network from customers connecting has been reducing over time as gas distributors respond to the way new connections contribute to the RAB cost to all customers. We expect this trend to continue.

Figure 2 Gas distributors responding to customer connections and impact on Regulated Asset Base (RAB)



Banning new connections is not a way of safeguarding consumers, reducing the actual network, or efficiently saving emissions. Continuation of network services safeguards all new and existing consumers, and also preserves (and makes more economic) important low carbon options for the future.

The Commission comments that households are not best placed to manage the risk of economic stranding of gas assets and also notes that households are not best placed to support continued gas use by large industry. Households, the commercial sector and industry support each other in enabling the continuation of the current gas networks and supporting infrastructure (including new connections to it), and potential future gas supply options. Any partial or full decommissioning will require very careful analysis, planning, and support. A pre-emptive recommendation targeted at households does not support a planned approach and could potentially reduce confidence for the gas distribution businesses, and the sector, to decarbonise the sector.

[16] Data drawn from combined GDB disclosure data, published by each GDB for last 5 reporting years.

Large industrial users have other cost levers to drive change (eg ETS) and some challenges in timing of alternatives. We support the Commission in not recommending change for the industrial sector due to those challenges.

There needs to be a link between how new gas connections are treated and the development of biogas. The draft advice deals with these completely separately and quickly dismisses the green gas option as more expensive. We comment on biogas further in the energy section below and note that technology is advancing quickly and we don't want to lock out options that offer both lower emissions and affordability. As noted in the Moa point waste treatment example, it is too simplistic to focus on one attribute of a customer's emissions profile.

Conclusion on recommendation 12

Recommendation 12 is not supported by evidence and it's difficult to see how the Commission's framework has been applied ie equity, risks, co-benefits, policy gap, clear outcomes linked to targets, and actions linked to barriers. We can appreciate the intent, but we think there are better options. We anticipate direction and comprehensive analysis of any phase-out approach (including approaches to address resilience, best value emissions reduction, equity and complexities in an energy transition), to be part of the Gas Transition Plan, Energy Strategy and Equitable Transition Strategy. We encourage the Commission to avoid making recommendations on a pathway or specific approach in advance of that work being completed.

Rather than recommendation 12, our suggestion is to reframe the recommendation to await the detailed work on options currently underway, and in the interim, recognise the link between current networks, new connections, and renewable gas potential, with a positive recommendation to support development of new technology and the ramping up in renewable gas production. We comment on this further in the following section.

Energy and Industry

Supporting an accelerated build in electricity generation and distribution – Recommendation 13

The draft advice notes that the Energy Strategy is in development alongside the Gas Transition Plan, the Hydrogen Roadmap, the New Zealand Battery Project and the Decarbonising industry plan. There are also a number of other policy and regulatory reviews underway relevant for the electricity sector. We encourage the Commission not to make recommendations which are already in hand with these existing work streams.

We support the conclusion that the system must be able to deliver secure, affordable and low emissions electricity for the electrification needed for decarbonisation. The system needs to support both existing and new generation, transmission, distribution and flexibility. All are required.

Consenting barriers do not just occur for generation infrastructure. We support a recommendation for stronger national direction to remove barriers for development and operation of distribution in the consenting system and have commented on the need for NPS and NPF to enable and protect distribution as an integral part of the energy system this (refer Built Environment section above).

We agree with the Commission's comment about the varying size and capabilities of EDBs and that EDBs will need to evolve to accommodate electrification and changes in how electricity is generated, managed and used. High performing EDBs will be a cornerstone of the investment, coordination and efficiency needed for electrification and grid resilience.

We support the recommendation that regulation of allowable revenues for EDBs needs to support the accelerated pace of investment for electrification. This is in hand with Commerce Commission's existing DPP process and regulatory reviews underway. To support more flexibility in regulatory allowances and enable electrification activities led by either the EDB or a customer, Powerco has recommended to the Commerce Commission that:

- Customer connection capex be excluded from the regulatory incentive regime (called IRIS) so that the difficulty for networks (and new customers) to forecast their need is not an impediment to connection costs. EDBs that are not regulated[17] do not face this same constraint
- Regulatory allowances use historical data selectively, rather than exclusively. Things can change significantly within the 5-year EDB regulatory period. This should not be a constraint on potential emissions reduction activities.

A smooth fossil gas transition

We support the Commission's comment that fossil gas plays an important role in the energy system and will continue to do so as a back-up for electricity generation. The Commission's preference for a 98% renewable energy target also reflects this. We are committed to supporting a managed reduction of fossil gas combustion *emissions* in a way that ensures the energy system can deliver an equitable transition to net zero.

We agree that removing gas too quickly could increase electricity prices and reduce reliability. The Business New Zealand Energy Council modelling referenced above[18] has clear conclusions that removing fuel options will increase the cost of emissions reductions. Confidence in availability of fuel options is a key way to keep the downward pressure on both costs and emissions.

A smooth transition is essential but complex. We have commented in the Built Environment section above that a targeted recommendation on the residential gas network is both unjustified and pre-emptive of the transition analysis work underway. We strongly encourage the Commission to leave these work programmes to progress prior to making targeted comments or recommendations about fossil gas and the transition.

[17] Commerce Commission - Consumer owned electricity distribution businesses (comcom.govt.nz)
[18] Energy-Strategy-Deep-Dive-Using-TIMES-NZ.pdf (bec.org.nz)

Supporting the renewable gas potential

We strongly encourage the Commission to review the commentary on biogas, provide confidence in the clear viability of this option in our future energy system, and include direction for tools to recognise the value of renewable gas.

Powerco is committed to setting green gas targets and delivering this though our gas network. There is sufficient availability for biogas to be used in place of some existing fossil gas uses. An application of the technology is already in place in New Zealand, along with many overseas. We see this as a critical option in New Zealand's transition. While biogas may not fully replace fossil gas or electricity, this does not mean there is not a role for biogas. We consider that biogas is viable and will be a cost-effective low carbon option, including as a blended gas.

The draft advice notes that the biogas industry is underdeveloped. There has been significant progress of the industry in the last three years. Powerco is actively pursuing biogas options and we are confident that this is a feasible energy option in the short to medium term.

The Commission states there is insufficient evidence around the future availability of biogas. There *is* sufficient evidence around availability of biogas. Potential availability will only increase as more projects are delivered and as organic waste management advances. Initially, blended gas is a feasible option, and then increasing biogas proportions over time. It is also expected to be a good option in industrial uses, as demonstrated in some landfill and agricultural sites.

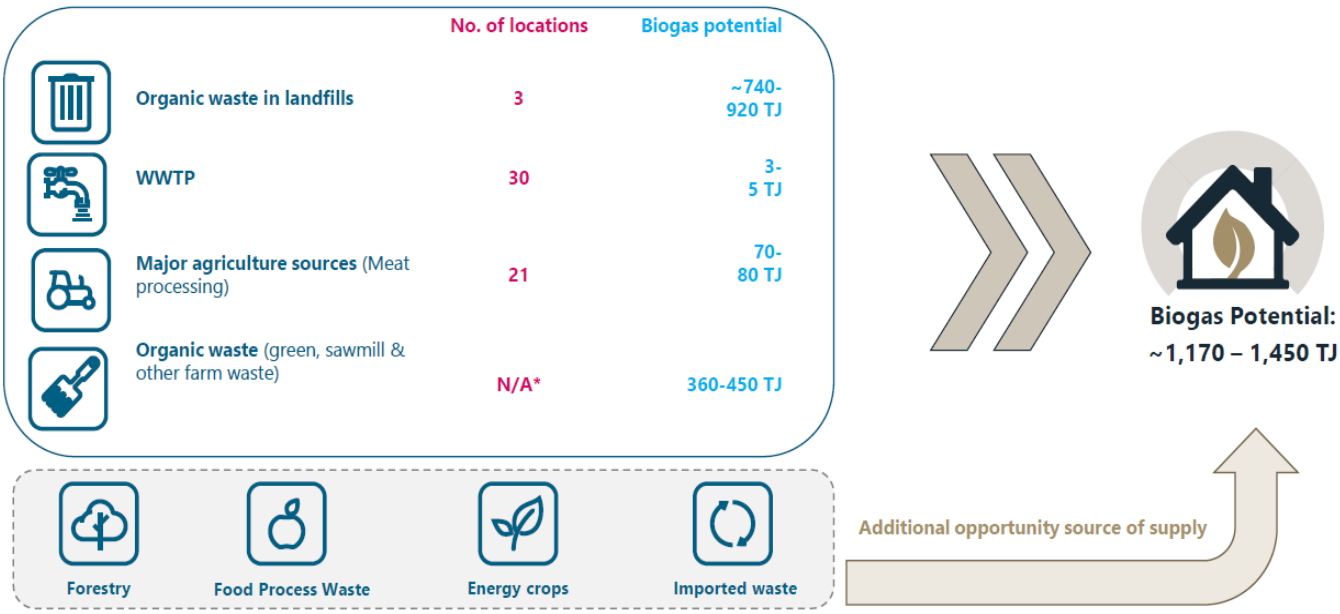
Powerco commissioned Advision/Worley in 2022 to evaluate and estimate the potential Biogas supply and impact for our gas network. As a result of this study, we are now undertaking technical and economic assessment of short-listed supply options to develop for trial. Figure 3 is a summary of the finding that **there is 1 – 1.5 PJ pa potential 'site ready' biogas from key sites accessible to the Powerco network footprint**. This is equivalent to around **50%** of our current residential gas demand.

This potential 1 – 1.5 PJ supply is focused on landfills, wastewater treatment, major agricultural processing facilities and other non-landfill green waste (such as saw mills and agriculture). Additional supply opportunity exists but was not investigated in forestry, food processing, energy crops and imported waste. The study screened out some sites as unviable for the Powerco network, but these other sites may still have biogas potential for other scenarios. In some locations, potential for aggregation of several nearby sites offers additional opportunity.

A summary of the top 10 potential sources of biogas, all with no current capture of CH4 is provided in Attachment 2. Studies have shown that wastewater treatment, landfill gas and meat processing facilities can produce more affordable biogas now (less than $20/GJ) but processes and cost comparisons will improve over time with further trials, technology development, and as the relative cost environment changes (for example costs for landfill disposal of waste, alternative energy sources). While some biogas sources are more expensive to

produce biogas (compared to today's natural gas price), this should not be a reason to dismiss all biogas potential.

Figure 3 Advisian report finds 1 – 1.5 PJ of biogas potential near the Powerco network[19]



The Commission has not considered willingness to pay in its recommendations. A customer may be willing to pay extra for a biogas option (like customers have paid for renewable electricity). Powerco knows that our residential customers love gas! Consumer perceptions about gas, preferences for gas in residential use, and willingness to pay for continued access to (blended) gas, are all areas with limited evidence in New Zealand including in the Commission's work and we would encourage further analysis on this consumer preferences topic.

As outlined in Table 2 Powerco's residential network currently conveys a total of approx. 3 PJ per annum. With an intention of initially blending up to 20% biogas with natural gas for the residential network, we consider this is available and viable for our network and are currently working on specific opportunities with Councils, meat and dairy processors.

Evidence shows that use of biogas or blended gas in our current network will not require reinforcement or replacement of pipelines, therefore providing for best use of significant existing infrastructure asset as part of a low carbon future. This outcome aligns with the challenge from the Infrastructure Commission to use existing infrastructure more efficiently.[20]

To accelerate the development and use of biogas, we strongly encourage the Commission to reflect the potential opportunity for biogas in our energy system, and provide confidence for gas distributors and industrial

[19] Advisian report for Powerco – Biogas Integration Supply Study, December 2022
[20] Energy | New Zealand Infrastructure Commission, Te Waihanga

processors to continue to develop the current opportunities. Distributors and industry need confidence that this biogas option is not being foreclosed by the Commission before getting to the first milestone with a blended option.

There is an important opportunity for government to incentivise the capture and best use of renewable gas through a recognised renewable gas certification scheme. The Commission could provide direction for the government to prioritise a certification scheme for the multiple benefits this could bring in emissions reduction, not only in incentivising best use of biogas, but also in incentivising organic waste recovery.

Upping the pace of process heat decarbonisation – Recommendation 14

We agree that decarbonisation in process heat and other industrial processes is a priority in order to rapidly reduce emissions. There are challenges in a rapid electrification, both cost barriers and non-cost barriers (as per DETA report to the Commission).

Powerco is working with many customers on decarbonisation projects, some of which require network upgrades, although a network solution is not always required. Efficient high performing EDBs need to be aware of industrial and large commercial decarbonisation impacts, and forecasting where, when, and how this will be met. If EDBs are incentivised to invest capital expenditure for future demand (ahead of modelled need) then this will help flatten the curve in the potential constraints in both supply chain and workforce. The reality is that planning to invest 'ahead of modelled need' will enable electrification and likely mean constructing assets just in time to meet the need given those constraints.

Network upgrade costs can be significant and customer understanding of capacity/ constraint and possible cost needs to be clear well in advance. Powerco's website has an interactive map of our Distributed Generation (DG) hosting capacity[21] and will soon have an interactive map with more hosting capacity information, followed later by maps of current/future congestion. The Powerco Asset Management Plan provides comprehensive description and forecasts about network capacity, forecast expenditure, and capital projects[22.] We also share information on our website for the number/size of the larger (>1 MW) connection enquiries we are fielding[23] and provide a detailed guide on the customer works process[24], all to help encourage early planning. We endorse greater transparency on EDB processes and network capacity/constraint data.

Operating in a largely principle-based regulatory environment does allow EDB processes to more easily flex to meet the needs of customers. This requires capability and capacity of EDBs to deliver and may affect the ability of some EDBs to deliver at pace. We support the Commission looking for further analysis on opportunities,

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[21] Powerco Large Scale DG Hosting Capacity (arcgis.com) - https://experience.arcgis.com/experience/2f2d3bf248b3486183d59ace9fdc13e3+

[22] 2023-electricity-asset-management-plan.pdf (powerco.co.nz)

[23] Connection enquiries (powerco.co.nz). This information is for larger enquiries (>1 MW) with standard customer requested works applications in addition to this.

[24] customer-works-process.pdf (powerco.co.nz)

including EDB consolidation to deliver the benefits of scale to consumers, as has been pursued in the water and health sectors recently.

Equity and wellbeing in energy system transformation – recommendation needed on workforce

Labour shortages need not be a barrier to energy system transformation, however further assessment of this would be welcome, and opportunities such as spreading the build to flatten the curve on workforce need (ie investing ahead). We strongly encourage a recommendation for the Equitable Transition Strategy to give confidence that adequate workforce can be available, including through upskilling for our future energy system, green listing relevant energy sector roles, and regional programmes for local workforce across transition needs.

Transport

Decarbonising the light vehicle fleet – recommendation 17

We agree that a fast transition to EVs will provide significant emissions benefits, and that this includes access to adequate charging infrastructure. The processes to connect new public charging hubs to electricity distribution does not need to be a barrier (as indicated by the Commission on page 143 and recommendation 17) if there is:

- Communication between charging providers and EDBs well in advance to plan charging hub locations and equipment requirements
- Appropriate treatment of customer connection capex in the regulatory regime (see above)
- Flexibility to respond to (or work ahead to future demand) for emissions reduction activities in regulatory allowances
- Pragmatic planning and mechanisms to provide for future equipment needs to effectively manage the supply chain.

There are long delivery times for equipment and the regulatory regime does not anticipate EDBs investing in equipment in advance.[25] There is scope for improvements in process and regulation to better align the planning and approach of both EDBs and charging providers.

We are confident that well performing EDBs can support good rollout of charging infrastructure, and this can be improved with some tweaks to current process and regulation, not just for EVs but electrification generally. Cross industry discussions are underway[26] to support improvements in process and we are committed to working with other EDBs and charging providers on options to provide for efficient connections for EV charging stations. We have commented in the section above (Upping the pace of process heat decarbonisation – Recommendation 14) about transparency in EDB processes and network capacity data and provided links to information we provide on the Powerco website.

[25] In the regulatory framework, assets can be commissioned (added to RAB) once in use. Equipment is therefore ordered when its use is assured, not in advance.
[26] Electricity Networks Aotearoa is leading work with EDBs and charging providers to identify barriers and possible responses.

Our submission to the Ministry of Transport EV charging strategy consultation in May 2023 outlines our connection process, key areas where there is scope for government to support optimal network investment across all decarbonisation needs (including EVs) and fair allocation of costs, and the immediate opportunity around standardisation of smart chargers and data interface as the priority action for EV integration.[27]

Waste and the bioeconomy

Waste infrastructure and data for encouraging optimal biogas options – recommendation 19

We agree that a more strategic approach to planning New Zealand's waste network could bring a range of advantages and opportunities. In particular, a more focused plan around wastewater, agriculture and organic waste infrastructure and data to enhance biogas capture could provide critical alignment with the energy sector and fuel options necessary to reduce emissions (as discussed above in the Energy and Industry section).

Recommendation 19 focuses on landfill gas capture systems. The draft advice focuses on having these systems at all landfills. We encourage use of regulatory and policy tools not just to have these systems in place, but for the optimal use of the captured gas as part of our energy system. For example, captured gas from waste processes could have a significantly higher value in offering resilience and lower emissions gas for residential use, compared to use on the same site as a fuel for processing waste (compared to use of electricity for this purpose).

Development of organic waste and biogas infrastructure will take time. Incentivising this sooner will have multiple benefits for the 2026-30 period and beyond for New Zealand's waste strategy, the bioeconomy, as well as regional development opportunities. We recommend that the Commission broaden recommendation 19 so that there are specific regulatory and policy tools in place to encourage optimal energy options. This is also linked to our comments and suggested recommendation in the energy and industry section above (renewable gas potential).

[27] Powerco Submission - EV Charging Strategy, Final draft 8 May 2023

Attachment 1 – Information about Powerco and our network

Providing an essential service

We bring electricity and gas to 1.1 million customers across the North Island. We're one part of the energy supply chain. We own and maintain the local lines, cables and pipes that deliver energy to the people and businesses who use it. Our networks extend across the North Island, serving urban and rural homes, businesses, and major industrial and commercial sites. We are also a lifeline utility. This means that we have a duty to maintain operations 24/7, including in the case of a major event like an earthquake or a flood.

The cost of operating our business is not dependent on the amount of gas or electricity we distribute in our networks. These costs reflect the need to maintain the safe operation of the network and are mostly driven by compliance with safety regulations. This includes replacing assets when they reach their end of life. Additional costs to grow the size or the capacity of the network are often met by customers requiring the upgrade or new connection.

Under Part 4 of the Commerce Act, Powerco's revenue and expenditure are set by the Commerce Commission as part of monopoly regulation. We are also subject to significant information disclosure requirements, publicly publishing our investment plans, technical and financial performance, and prices. The regulatory regime allows us to recover the value of our asset base using a regulated cost of capital (WACC) set by the Commission, and a forecast of our expenditure. Every five years, the Commission reviews its forecasts and resets our allowable revenue. This process is designed to ensure the costs paid by customers for us to manage and operate our network is efficient given we are a monopoly and an essential service.

Our electricity customers

Powerco is New Zealand's largest electricity utility by the area we serve. Our electricity networks are in Western Bay of Plenty, Thames, Coromandel, Eastern and Southern Waikato, Taranaki, Whanganui, Rangitikei, Manawatu and Wairarapa. We have 28,441 km of electricity lines and cables connecting 344,000 homes and businesses. Our place in the electricity sector is illustrated below.

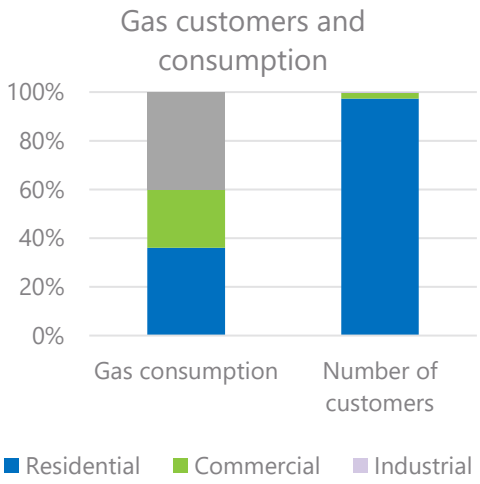
Our network contains a range of urban and rural areas, although is predominantly rural. Geographic, demographic, and load characteristics vary significantly across our supply area. Our development as a utility

included several mergers and acquisitions that have led to a wide range of legacy asset types and architecture across the network.

Powerco is one of 29 electricity distribution companies. Our customers represent around 13% of electricity consumption (similar in magnitude to the Tiwai aluminium smelter) and around 14% of system demand. Powerco's network is almost three times the size of Transpower's in terms of circuit length. The peak demand on our combined networks (2022) was 986 MW, with an energy throughput of 5,266 GWh.

Our gas customers

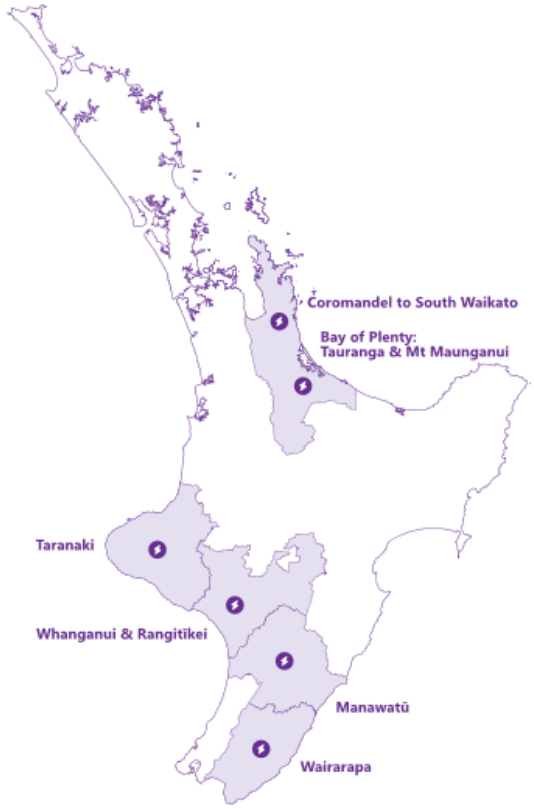
Powerco is New Zealand's largest gas distribution utility. Our gas pipeline networks are in Taranaki, Hutt Valley, Porirua, Wellington, Horowhenua, Manawatu and Hawke's Bay. We have 6,100 km of gas pipes connecting 112,000 homes and businesses to gas.



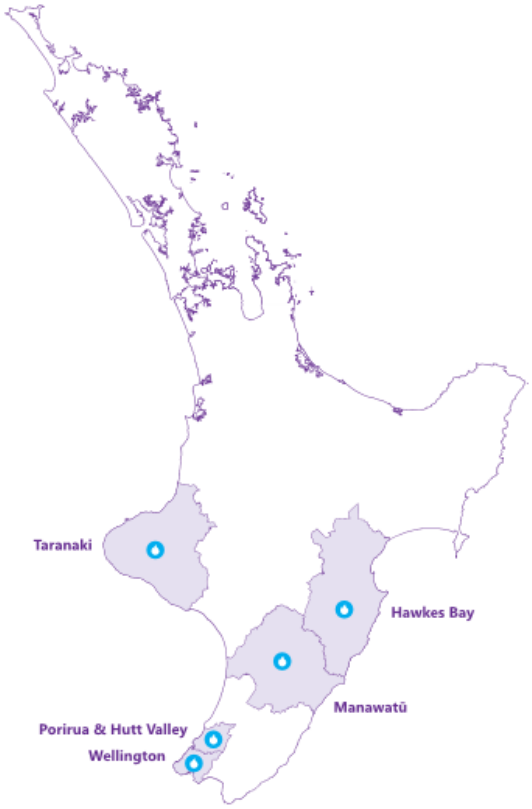
Our customers consume around 8.6 PJ of gas per year. Our industrial customers are less than 1% of our customer base and consumer approx. 40% of gas on our network. Our residential customers are 97% of our customer base and consume approx. 35% of gas on our network. The remaining 25% of gas is consumed by our commercial customers. Around 30% of our larger customers are in the food processing sector, around 20% in the manufacturing sector and around 10% in the healthcare sector.

Our network footprint

Electricity footprint



Gas footprint



Attachment 2 – Advisian top 10 potential sources of biogas for Powerco

Top 10 potential sources of biogas within Powerco's operating area

Supply Type	Facility name	Powerco Area	Treatment Type	Methane Gas Proxy Amount (TJ/PA)
Landfill	Bonny Glen Landfill	Manawatu/Horowhenua	Current gas sent to flare	623
Landfill	Omarunui Landfill	Hawkes Bay	Current gas sent to flare	220
Landfill	TDC Central Landfill	Taranaki	No current CH4 Capture Project on hold as of 2021 (waste diverted to Bonny Glen)	80
Agriculture	Alliance Levin	Manawatu/Horowhenua	No current CH4 Capture	12
Agriculture	AFFCO Wairoa	Hawkes Bay	No current CH4 Capture	8
Agriculture	Progressive meats	Hawkes Bay	No current CH4 Capture	8
Agriculture	AFFCO Land Meats	Manawatu/Horowhenua	No current CH4 Capture	8
Agriculture	ANZCO Fods Manawatu	Manawatu/Horowhenua	No current CH4 Capture	8
Agriculture	Taylor Preston	Wellington	No current CH4 Capture	7
Agriculture	Silver Fern Farms Pacific	Hawkes Bay	No current CH4 Capture	6
Agriculture	ANZCO Foods Rangitikei	Manawatu/Horowhenua	No current CH4 Capture	4