

Submission on the *Gas Transitions Plan Issues Paper*

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Responses to questions

Chapter 2: Transitioning our gas sector

1 How can New Zealand transition to a smaller gas market over time?

Gas should not be discounted as a valid fuel and must continue to have a future in New Zealand. The solution is not to transition to a smaller gas market, but to transition to a gas market that isn't dependent on fossil fuel.

According to a [2021 NZ Gas Infrastructure Future Working Group report](#), gas pipelines supply more than 292,000 customer connections. And 297,000 businesses and residential customers use bottled LPG for space heating, especially in agriculture and horticulture. Gas plays a crucial role in meeting energy needs and providing affordable heating options. It increases energy security and fuel diversity by reducing demands on electricity and doubles as a reliable source of energy during natural disasters and extreme weather events, such as Cyclone Gabrielle.

Instead of reducing reliance on gas, we need a carefully managed transition to ensure continuity of a safe, reliable, and affordable energy supply. Gas and LPG consumers can transition their consumption to renewable gas or alternative renewable energy sources.

One such option is biogas, which is already used in many industries. Biogas is naturally produced from the decomposition of organic waste during anaerobic digestion. When biogas is processed to regulatory pipeline standards, it is considered renewable natural gas. The use of biogas at scale is a viable solution and the most immediately feasible option. Green hydrogen is another valid option but will take additional time and infrastructure investment to roll out at replacement levels. More is discussed about hydrogen under the Chapter 3 answers included in our submission.

The risk of banning new connections is that the industry will lose the scale required to incentivise and manage the switch to renewable gas. The people, skills, knowledge and investment currently in conventional gas are needed to transition into renewable energy.

Master Plumbers represents a large proportion of New Zealand's 6,244 licensed gasfitters ([PGDB Annual Report 2023](#)) and it is imperative they maintain a key role in the industry, not only to provide essential maintenance to existing gas infrastructure but to service future renewable gas alternatives. In order to do this, the establishment of a robust renewable gas training system is paramount.

Our organisation has aligned with GasNZ and Master Plumbers Australia to develop quality standards and training for gasfitters in preparation for the future rollout of renewable gas. We believe licence endorsements could be utilised to recognise licence holders who have met the relevant training standards and are deemed commercially competent to work in a renewable gas specialty.

We also recommend the establishment of a specialised training facility and the development of a formal qualification for work with renewable gas. In the Tertiary Education Commission (TEC) Advice [publication released in April 2023](#) by Waihanga Ara Rau, the organisation recommends reviewing the creation of a centre of excellence for the PGD industry. The centre would provide training for work with biogas, renewable LPG and hydrogen. Over in Australia, the Queensland Government has funded a [\\$23 million Renewable Energy Training Facility](#) to

ensure existing gasfitters and apprentice gasfitters are educated on new renewable options. We should follow their example here in New Zealand. We need to ensure the workforce is ready before attempting a large-scale transition to a renewable gas market.

2 What is needed to ensure fossil gas availability over the transition period?

The Government needs to provide gas producers and suppliers with an aspirational date from when they can supply low carbon gas to the entire network. Biogas replacement can start initially as blended gas – a mixture of conventional gas and renewable biogas – followed by increasing biogas proportions over time.

Fossil gas should continue to be provided at current levels until the switch is complete. Consumers should not be discouraged from new gas connections as it is important the market maintains scale while undergoing the transition to renewable gas.

3 What factors do you see driving decisions to invest or wind down fossil gas production?

Scale and reliance on gas must be a factor in decisions that could undermine the gas industry. If gas declines, it will leave a gap that electricity could take decades to fill and runs the risk of overwhelming the electricity industry in meeting demand for generation, transmission and distribution.

Fossil fuel gas production has a significant place in filling demand for energy and cannot easily be replaced. Currently, New Zealand isn't able to rely on complete electrification for its energy needs and gas is needed to supplement demand. As we transition to low carbon gas, that should be allowed to continue. Gas should be given the time and support to transition itself to a low-emissions industry which increasingly uses more biogas, biomethane and hydrogen and less fossil fuels.

4 Does the Government have a role in enabling continued investment in the gas sector to meet energy security needs? If yes, what do you see this role being?

The Government has an important role in continued investment in the gas sector to meet energy security needs. Some industries with high energy requirements, such as manufacturing, will struggle to electrify. Hydrogen provides a better alternative and a more sustainable source than electricity. However, while the existing gas pipeline is 80% hydrogen ready, infrastructure updates and replacements will be needed so that the pipeline can carry hydrogen in future.

The Government can proactively support the development and expansion of the renewable gas industry, setting the tone for greater commercial investment.

5 Does the Government have a role in supporting vulnerable residential consumers as network fossil gas use declines? If yes, what do you see this role being?

Yes.

There is a significant number of New Zealanders for whom electricity is not an adequate substitute to gas, and an even greater number of gas users that might be open to switching to electricity but don't have the resources to do so. In remote and lower socio-economic areas, many gas users don't have access to electricity connections. Removing gas as an energy option

or having gas servicing costs significantly increase in these areas would be a considerable burden to an already vulnerable population.

The cost of a replacement appliance installation – swapping from a gas hot water cylinder to an electric one – can be significant in older homes and smaller homes where there is no room for a standing tank. To combat the country’s long-standing housing shortage, there has been a rise in high-density construction in the form of apartments and townhouses. With less space, there is often little to no room for hot water storage and many recently constructed dwellings specifically rely on gas appliances as they cannot accommodate traditional standing cylinders.

Government has an important role in supporting vulnerable energy consumers through income supplements, tax relief, and targeted energy payments. Commercial customers will also be affected by replacement appliance requirements and potential service cost increases and should have access to subsidies or formal assistance.

Fossil gas and electricity

6 What role do you see for gas in the electricity generation market going forward?

7 What would need to be in place to allow gas to play this role in the electricity market?

8 Do you think gas can play a role in providing security of supply and/or price stability in the electricity market? Why / Why not?

9 Do you see alternative technology options offering credible options to replace gas in electricity generation over time? Why / Why not?

10 If you believe additional investment in fossil gas infrastructure is needed, how do you think this should be funded?

Chapter 3: Key issues and opportunities

Renewable gases and emissions reduction technologies

11 On a scale of one to five, how important do you think biogas is for reducing emissions from fossil gas? Why did you give it this rating?

Scale: 5/5

Biogas can use existing gas infrastructure and employ a staggered rollout by initially using blended gas – a mixture of conventional gas and renewable biogas. The existing natural gas pipeline is capable of taking biogas up to a 100% mix without any infrastructure funding required.

Producing biogas at scale would also require diverting food waste from landfills which has larger environmental benefits for the country.

12 Do you see biogas being used as a substitute for fossil gas? If so, how?

Yes.

In the [Gas Transition Plan - Biogas Research Report](#) produced by Woodbeca, it shows the great potential for biogas to be used as a substitute for fossil gas. It estimated the total biogas potential across New Zealand of various material streams:

Waste/Residue Feedstocks	
Total Biogas Potential (from organic waste/agricultural residues)	24 PJ/year
Total Syngas Potential (from woody biomass)	63 PJ/year
Total Biodiesel Potential (oils/fats)	4.5 PJ/year

In the medium term, Woodbeca found that the total accessible and economic size of New Zealand biogas potential up to 2035 is around 7 petajoules (PJ), which is equivalent to nearly all commercial or all residential natural gas use in New Zealand. Development of these sources of biogas will have large net reductions on NZ’s carbon emissions, as these waste streams will divert material from landfill and other high-emitting end locations.

Firstgas Group company, First Renewables Limited, and Ecogas have [developed a large-scale renewable gas to pipeline project](#) with a state-of-the-art facility to be built at Ecogas’ Organics Processing Facility in Reporoa. The facility will start transforming kerbside food waste into biomethane, a valuable source of renewable gas, from the second quarter of 2024. The development of multiple renewable gas to pipeline facilities in New Zealand could produce enough gas to supply all residential users and three quarters of commercial gas users with low carbon gas, equivalent to taking 415,000 petrol cars off our roads.

13 On a scale of one to five, how important do you think hydrogen is for reducing emissions from fossil gas use? Why do you think this?

Scale: 5/5

The extent of hydrogen’s role will become clearer over time. For now, it should continue to be considered a possibility across the energy spectrum for gas use, electricity, blended with natural gas and, potentially, in replacing LPG in gas bottles.

The best opportunity for hydrogen use in the early stages of transition would be in long-haul transport vehicles, like the fleet of hydrogen trucks currently in [development by Toyota and the Dutch VDL Groep](#). Shipping and air travel will also be able to utilise hydrogen fuelled vehicles. The New Zealand Hydrogen Aviation Consortium, which includes Airbus and Air New Zealand, have released a report – [Launching Green Hydrogen Powered Aviation in Aotearoa New Zealand](#) – that details the shift to hydrogen power would remove up to 900,000 tonnes of carbon emissions every year by 2050.

Large commercial gas use would be the next target for a switch to hydrogen as high-energy processing requirements are unlikely to be supported by electricity alone – and at a reasonable cost. This is why it is important that infrastructure work for a future hydrogen rollout is considered early in the transition process; to ensure hydrogen has a chance when it’s ready and viable to be used for the commercial and residential fuel market.

In the meantime, there is a considerable opportunity for New Zealand, which has significant generational capabilities, to export green hydrogen to the international market – particularly decarbonising parts of Asia where resources are limited, and we could make a greater global impact. In July 2021, New Zealand [signed an agreement with Singapore](#) regarding cooperation on low-carbon hydrogen research and supply chain development. Singapore is working to partner with regional importing nations, such as Japan and South Korea, and exporting nations such as Australia, New Zealand and Malaysia to accelerate the adoption of a regional hydrogen economy.

We need to look further than our country in isolation, New Zealand has the potential to make a worldwide climate change impact by supporting highly populated parts of the world to convert to carbon neutral gas. A thriving export market would also create volume and, once volume increases, then cost will decrease – making hydrogen a more viable domestic option for residential and commercial energy demand.

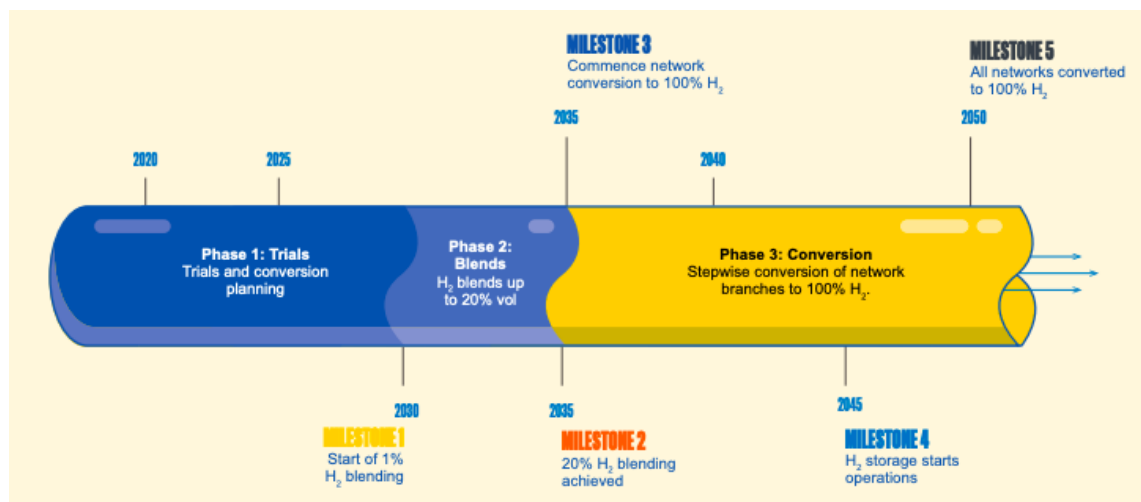
14 Do you see hydrogen being used as a substitute for fossil gas? If so, how and when?

Yes.

Demand for green hydrogen is expected to grow significantly in coming decades as the technology continues to develop and the market for hydrogen scales up. According to a [2022 report by UK-based Juniper Research](#), it is predicted that consumer vehicles will account for over 60 percent of hydrogen vehicles in service globally in 2027. Gas distributors have a role in catalysing the hydrogen economy by supporting demand as the hydrogen sector develops in New Zealand, contributing to emission reductions.

Master Plumbers emphasises the importance of developing adequate training for working with hydrogen, specifically for professional gasfitters, in order to ensure standards are in place ahead of the curve.

The [FirstGas Hydrogen Feasibility study summary](#) outlines the following timeline for a potential hydrogen rollout:



15 What else can be done to accelerate the replacement of fossil gas with low-emissions alternative gases?

Master Plumbers supports any policy mechanism that signals a commitment to the development of renewable gases and helps to underwrite investment in renewable gas

projects today. We believe the following two policies will have the greatest immediate impact in accelerating the uptake of renewable gas.

Renewable gas mandate: This is a regulated obligation on the industry that a proportion of gas used for homes and businesses must be from renewable (non-fossil fuel) sources. Coupled with the renewable gas certification scheme explained below, a renewable gas mandate will scale up much-needed investment in renewable gas, both in natural gas and LPG. A clear market for renewable gas and a way to recognise it in the gas system will incentivise suppliers to invest in more biogas projects.

Renewable gas certificates: A mandate should be backed by tradeable renewable gas certificates where renewable gas can be recognised and rewarded, which will incentivise renewable gas production. Currently, around 3% of NZ's electricity is traded with renewable electricity certificates. Internationally this is common for both electricity and gas as end users want to be able to reduce their emissions and make environmental claims. We strongly support the need for renewable gas certificates as an essential part of recognising the full value of renewable gases.

16 On a scale of one to five how important is a renewable gas trading to supporting the uptake of renewable gases? Why have you given it this rating?

Scale: 5/5

A certification scheme would improve the viability of biogas and facilitate investment in the sector. Its main benefit is allowing consumers a choice in what they purchase, and to have an assurance that they are purchasing renewable gas, thereby encouraging demand and investment in biogas.

17 What role do you see for the government in supporting such a scheme?

Gas certification schemes will most likely be developed by industry. The Government's role is to support the gas industry in a staged, measured transition from fossil fuels to increasing amounts of renewable gas. A Government mandate that renewable gases must provide some of the heat for homes and businesses would incentivise biogas production and injection.

Carbon Capture, Utilisation and Storage

18 On a scale of one to five how important do you think CCUS is for reducing emissions from fossil gas use? Why did you give it this rating?

19 What are the most significant barriers to the use of CCUS in New Zealand?

20 Do you see any risks in the use of CCUS?

21 In what ways do you think CCUS can be used to reduce emissions from the use of fossil gas?

Options to increase capacity and flexibility of gas supply

22 What role do you see for gas storage as we transition to a low-emissions economy?

23 On a scale of one to five, how important do you think increasing gas storage capacity is for supporting the transition? Why did you give it this rating?

24 What should the role for government be in the gas storage market?

25 Our position is that LNG importation is not a viable option for New Zealand. Do you agree or disagree with this position? If so, why?

26 What risks do you anticipate if New Zealand gas markets were tethered to the international price of gas?

General comments

Training for existing gasfitters: Considerable thought needs to go into how New Zealand will bring the existing gasfitting workforce up to speed when it comes to renewable gas technologies. The development of a comprehensive training platform and formal qualification system is imperative to ensure trade professionals are able to operate safely and competently with the array of renewable gas options available now and in the future.

Renewable gas centre of excellence: Master Plumbers is an ardent supporter of Waihangā Ara Rau's recommendation to establish a centre of excellence for renewable gas training in New Zealand. Gasfitters need to be ahead of the curve when it comes to advances in biogas, renewable LPG and hydrogen. Failing to prioritise appropriate training for the tradespeople tasked with servicing the industry will lead to a stalled or protracted transition.

There needs to be a long-term commitment from Government when it comes to the funding of both incentives as significant investment will be required.

Our position in summary:

- Master Plumbers believes that renewable gases - biogas and hydrogen - are key parts of an energy future.
- To promote and continue the development of specialised renewable gas appliances, manufacturers and suppliers need commitment from the Government that sufficient investment will be made in renewable gas technology and infrastructure.
- Appropriate credentials must be developed for trade professionals working with renewable gas to ensure safety and consistency across the industry.
- We recommend the creation of a centre of excellence for renewable gas training.