

Commerce Commission New Zealand Open Letter – Ensuring our Energy and Airports Regulation is 'Fit For Purpose'

Hiringa Energy Ltd Submission

Confidentiality Notice

This document includes information that shall not be disclosed outside Commerce Commission and shall not be duplicated, used, or disclosed – in whole or part – for any other purpose other than to evaluate this document.

1.0 Introduction

Green hydrogen is emerging as a key part of New Zealand's (and the world's) future energy mix. The purpose of this submission is to ensure that green hydrogen is a part of our national energy transition conversation and to demonstrate that green hydrogen production and technology rollout is already underway. It is important that government agencies such as the Commerce Commission do what they can to ensure that green hydrogen is provided a level playing field against other new and incumbent fuels to allow it to play its role in decarbonizing the hard-to-treat sectors of our economy.

2.0 About Hiringa

Hiringa is connecting the green hydrogen value chain.



Make Clean Hydrogen

We develop commercial scale **green hydrogen** production projects using electrolysis from renewable electricity and biogas, forming joint ventures with commercial and industrial partners.



Develop Hydrogen Infrastructure

Together with partners, we develop and invest in hydrogen distribution and refuelling infrastructure across New Zealand to decarbonise heavy transport.



Facilitate Market Use of H₂

Partnering with New Zealand's largest road transport companies.

Working with global manufacturers to Introduce hydrogen technologies.

Establishing offtake for Industry & export

https://hydrogencouncil.com/wp-content/uploads/2021/02/Hydrogen-Insights-2021.pdf



2.0 Hydrogen General

Green hydrogen technology is ready for commercial deployment immediately and will enable the accelerated decarbonisation of multiple sectors, beginning with the emissions-intensive 'low hanging fruit' of the heavy transport sector.

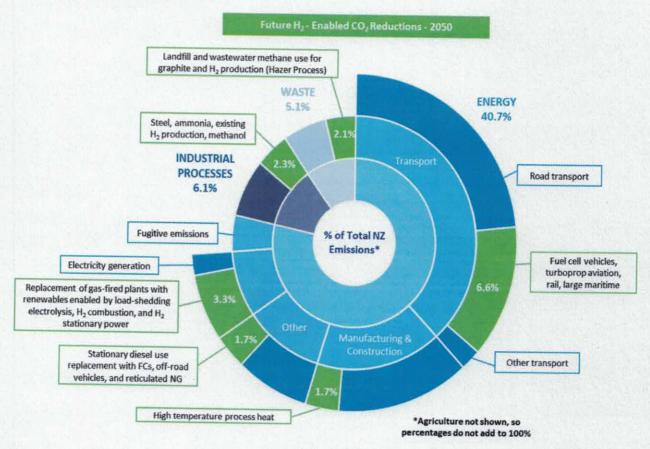
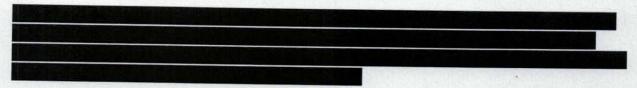


Figure 1. Hydrogen's Impact on Reducing Emissions (excl. Agriculture). Road transport market shares attributed to hydrogen are as follows: Vehicles >23t GVM (85%); 9-23t GVM (50%); 3-9t GVM (30%); Buses (75%); Cars (10%). 30% of aviation emissions, 30% of rail emissions, and 95% of domestic navigation (shipping) emissions are also included. In the Other category, 50% of emissions from off-road vehicles in agriculture and forestry are included.

New Zealand's energy future will be a combination of 'green electrons' and 'green molecules'. Green hydrogen (one type of green molecule) can penetrate hard to abate sectors more effectively than 'green electrons'. Green hydrogen is also the key building block of many other 'green molecules' such as ammonia, methanol and synthetic low carbon fuels. We need to apply the right technologies in the right sectors to transition quickly and affordably.

Green hydrogen improves the economics of renewable electricity generation projects through the conversion of off-peak electricity into a valuable commodity.





Green hydrogen reduces the need to overbuild renewable electricity to achieve a 100% renewable grid by providing the energy storage required to support the intermittency of renewables across days, weeks, months and years.

Infrastructure requirements associated with energy system transition need to be considered and communicated. Under an electrification-only scenario the cost may be borne by taxpayers in the form of lines charges, irrespective of their consumption or ability to pay. Hydrogen infrastructure, on the other hand, will be largely private sector funded and provides the ability for any price premium to be covered on a user pays basis.

There is significant investment in green hydrogen planned over the next 10 years which should be recognised and supported by government, as has been done by governments abroad. Over 30 countries have released hydrogen roadmaps, and governments worldwide have committed more than USD 70 billion in public funding.²



Figure 2. Hydrogen Decarbonises Hard to Treat Sectors and Supports the Electricity Grid

Green hydrogen is acknowledged as a cornerstone of our Just Transition within the energy sector through the creation of new domestic energy, fuel supply chains, and 'green jobs'. Transitioning the energy sector workforce is essential, especially with job losses already being seen in Taranaki as gas supply decreases.

² https://hydrogencouncil.com/wp-content/uploads/2021/02/Hydrogen-Insights-2021.pdf



There is existing international interest in New Zealand exporting green hydrogen. This door will close over time as trade relationships between green hydrogen producing and green hydrogen consuming countries are bedded in.

Hydrogen is rightly placed as one of the Government's pillars of its Energy Strategy and compliments other pillars such as Renewable Electricity Generation, Just Transition Work, Process Heat, and Backing Emerging Technologies.

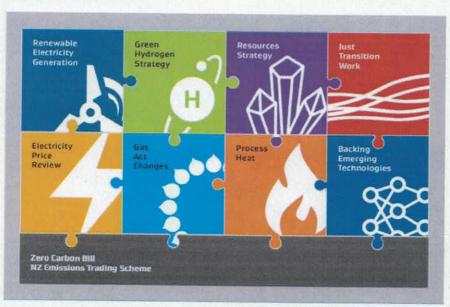


Figure 3. Government's Renewable Energy Strategy³

The cost of green hydrogen production is dropping rapidly, driven by the global acceleration of its commercialisation and ability to close-couple with the reducing costs of intermittent renewables such as wind and solar.

The European Union's Hydrogen Strategy for a Climate Neutral Europe 2020 outlines how the European Union sees hydrogen as "...an intrinsic part of an integrated energy system". "In the integrated energy system of the future hydrogen will play a role, alongside renewable electrification, to achieve a more efficient and circular use of resources. Large-scale deployment of clean hydrogen at a fast pace is key for the EU to achieve a higher climate ambition...in a cost-effective way".⁴

The possibility of stranded natural gas assets should not preclude scaling up of green gases such as biomethane and hydrogen which can unlock deeper decarbonisation than electricity alone. The infrastructure required for hydrogen is relatively flexible, with multiple supply sources and locations, modular relocatable equipment, and investments that are scalable with demand, unlike our existing oil, gas, and electricity infrastructure assets.

³ https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-strategies-for-new-zealand/

⁴ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0301&from=EN



REAL PROPERTY OF THE PROPERTY
THE TAX IS IN THE PARTY OF THE
CO. CO. S. D. C.
MENERAL REPORT OF THE PROPERTY
TERROLIS CONTROL CONTR
MENTAL AND THE PROPERTY OF THE
The contract of the second of
DECEMBER OF THE PROPERTY OF TH
MANUFACE PROGRAMMENT AND



4.0 Green hydrogen could be New Zealand's virtual-battery

Green hydrogen reduces the need to overbuild renewable electricity in order to achieve a 100% renewable grid by providing the energy storage required to support the intermittency of renewables across days, weeks, months and years. When generating electricity from stored hydrogen at times of peak demand, it reduces the requirement for additional wind, solar and hydro generation capacity to cover peak times.

Hydrogen can help optimise installed renewable energy capacity, reducing grid upgrades and avoiding peak charges.

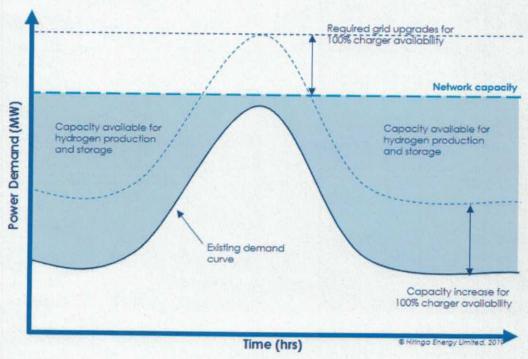
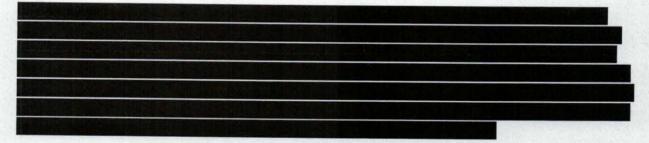


Figure 5. Hydrogen Supports Efficient Use of Our Grid



Using hydrogen to store renewable energy increases the resilience our energy system through diversifying across electrons and molecules. Storing excess renewable energy as hydrogen until it is required also increases our energy independence.

https://firstgas.co.nz/news/firstgas-ahuroa-upgrade-provides-flexible-gas-supply-to-support-renewable-energy/

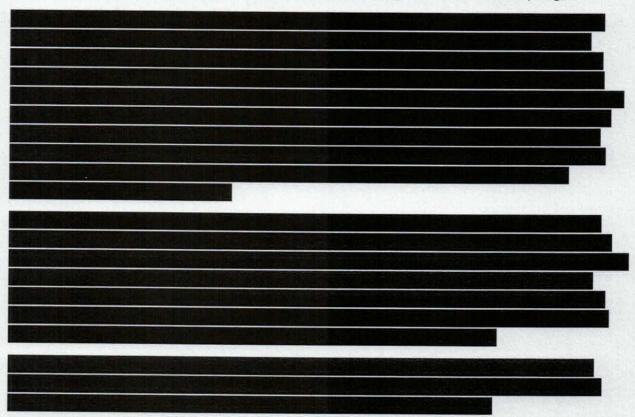


5.0 Green hydrogen helps achieve zero emission aviation

"As one of the hardest-to-abate sectors with high daily range requirements and weight constraints, aviation decarbonisation options remain limited. Biofuel is the most mature and proven technology available"⁶, however it emits carbon and other particulates and faces feedstock competition with other sectors.

"Liquid clean hydrogen (LH2) is the only alternative fuel that abates all CO2 emissions from flying. Furthermore, LH2 can reduce a significant share of non-CO2 emissions like NOx and SOx, leading to an overall reduction of 50-90% in climate impact, which exceeds the reduction potential of all other alternative fuels. However, contrary to other sustainable aviation fuels, LH2 requires an overhaul of existing fuel infrastructure".

"Hydrogen at scale can cost-effectively decarbonize flights up to the short and medium range categories, which account for 70% of global aviation CO2e emissions. Beyond the 10,000km range, the storage space requirements make hydrogen unfeasible in terms of cost". Therefore for long-range flights, which account for 30% of global aviation CO2e emissions, synfuel and advanced biofuels are the most cost competitive decarbonisation options, both requiring significant volumes of hydrogen.



In the UK and Norway, public-private aviation working groups have been established to develop a coordinated approach towards a more sustainable aviation industry. A similar body set up in New

⁶ https://hydrogencouncil.com/wp-content/uploads/2021/02/Hydrogen-Insights-2021.pdf

https://hydrogencouncil.com/wp-content/uploads/2021/02/Hydrogen-Insights-2021.pdf

⁸ https://hydrogencouncil.com/wp-content/uploads/2021/02/Hydrogen-Insights-2021.pdf



Zealand could identify and enable the policies and investment settings needed to support the development and commercial deployment of zero emission aviation.

ALTERNATION X INC. AND A STREET OF THE STREET	
AND THE PROPERTY OF THE PROPER	
TENNY ARREST CHARLES TO THE RESIDENCE OF THE STATE OF THE	
THE STREET STREET, STR	
THE RESIDENCE OF THE PARTY OF T	
AND A STREET OF THE PARTY OF TH	
THE REAL PROPERTY AND THE PARTY OF THE PARTY	
ART CONTRACTOR	
经验的对于 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	
TARREST CONTRACTOR OF THE PROPERTY OF THE PERSON OF THE PE	
CONTRACTOR AND ADDRESS OF THE PARTY OF THE P	
Property of the State of the St	
ANGARITA CONTRACTOR IN THE STATE OF THE STAT	
A TANK DECEMBER OF THE PROPERTY OF THE PARTY.	
125 Luni Marchael Carlo	

 $^{^9\,}https://www.minister.industry.gov.au/ministers/taylor/media-releases/fast-tracking-renewable-hydrogen-projects$



The	energy	to change	Togotha

TO BEAUTIFUL TO THE PROPERTY OF THE PARTY OF	
	-8
THE PARTY OF THE P	
ALEXACTED STATE OF THE STATE OF	
BANK AND AND THE CONTROL OF THE PROPERTY OF THE PARTY OF	
ALLER AND	
CARLES RESERVED TO THE PERSON OF THE PERSON	
AND THE RESIDENCE OF THE PROPERTY OF THE PROPE	
ANNOUNCE DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DE LA COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DEL COMPANIA DEL COMPANIA DE LA COMPANIA DE LA COMPANIA DEL COMPANIA DEL COMPANIA DEL COMPANIA DEL COMPANIA DEL COMP	
SAMESTIC TO THE PARTY OF THE PA	
THE REPORT OF THE PARTY OF THE	
CHARLEST AND AND AND A PARTY OF THE PARTY OF	
MANUAL PROPERTY OF THE PROPERT	
PARTIES AND THE PROPERTY OF THE PARTIES AND TH	10000
MARKET PROBLEMS AND	
The state of the s	
HALLES HER THE RESIDENCE OF THE PARTY OF THE	
THE STATE OF PASSED FOR COMPANIES AND A SECOND REPORT OF THE PASSED AND A SECOND RESERVOIS	
是一种,这种是一种,但是有是10.00mg,是10.00mg,这种是10.00mg,20.00mg,20.00mg,20.00mg,20.00mg,20.00mg	

¹⁰ https://www.fch.europa.eu/publications/study-strategies-joint-procurement-fuel-cell-buses
11 https://www.iea.org/reports/the-future-of-hydrogen
12 https://www.greenhydrogennz.com/
13 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0301&from=EN



The energy to change. Together.

PROPERTY AND DESCRIPTION OF THE PERSON OF TH			
A STATE OF THE PARTY OF THE PAR		THE RESERVE OF THE RESERVE OF THE PARTY OF T	
THE RESERVE OF THE PARTY OF THE			STATE AND ASSESSED BY THE PARTY OF
		DE MERCHANISTE DE L'ANDRE	William Resident
THE PARTY OF THE P		والتناظير التناقب المستحد	The part of the last of the last
		NAME OF TAXABLE PARTY.	AND PERSONS ASSESSMENT
THE RESERVE OF THE PERSON OF T	THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.		
PROPERTY AND ARRESTS OF THE PARTY.			
The state of the s	COLUMN THE RESERVE		
REAL OLD THE PARTY HAVE BEEN AS A PARTY OF THE PARTY.			
The state of the s			
The state of the s			
THE REAL PROPERTY OF THE PARTY	The second secon		
AND THE PROPERTY OF THE PROPERTY OF	The second secon		
	The state of the s		
THE STATE OF THE S	NAME OF TAXABLE PARTY OF TAXABLE PARTY.	THE CONTRACTOR OF THE PARTY.	
THE RESERVE OF THE PARTY OF THE			
THE RESIDENCE OF THE RE		William Company of the Company	
THE RESERVE OF THE PERSON OF T		THE RESERVE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN	THE RESERVE ASSESSMENT
THE PROPERTY OF THE PARTY OF TH	Control of the second second second		
American hit than is not a 10 miles in the			
A CONTRACTOR OF THE PROPERTY OF THE PARTY OF	TO THE PARTY OF THE PERSON		D. D
	AND MESSAGE STREET		
TO THE REPORT OF THE PARTY OF T	THE RESERVE OF THE PERSON NAMED IN		
	THE RESERVE TO SHARE THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED		
Charles of Market Street Street			Vicinia, and the same
Name Additional Particular Property and Property and Particular Pa			
BUILDING COUNTY CONTRACTOR OF SECUL			The second second second
4 Chillian College Col	THE RESERVE THE PARTY OF THE PA		Mark College C
MARKET AND AND AND AND ASSESSED.			THE RESERVE OF THE PERSONS ASSESSMENT
TRANSPORT OF THE PROPERTY OF T		With the second	
THE RESERVOIS CONTRACTOR OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TO			
1967 A 2 2 2 2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2	CONTRACTOR OF STREET		
The state of the s			
	THE REPORT OF THE PARTY OF THE	MARKET MARKET THE PARTY OF THE	
The second secon		STATE OF THE OWNERS OF THE OWNERS OF	CANCEL MADE IN CANCEL SERVICE
	IN CONTROL OF THE PARTY OF THE	WASHINGTON TO THE PARTY OF THE	THE PERSON NAMED IN
TO SET UP SET UP TO SEE THE SECOND SE			Maria Ma
Mark of Property of the Control of t			THE RESERVE OF THE PERSON NAMED IN
REPORT OF THE PARTY OF THE PART	DATE OF THE PARTY		
A PROPERTY OF THE PROPERTY OF			CONTRACTOR NAMED IN
The second secon			

END

¹⁴ https://www.mbie.govt.nz/dmsdocument/6798-a-vision-for-hydrogen-in-new-zealand-green-paper
15 https://www.lea.org/reports/the-future-of-hydrogen
16 https://www.mbie.govt.nz/dmsdocument/6798-a-vision-for-hydrogen-in-new-zealand-green-paper
17 https://www.nature.com/articles/s41467-019-09162-5