

# HIRINGA

*The energy to change. Together.*

## Establishing a Hydrogen Refuelling Network for New Zealand



Hydrogen is the energy to change our future -  
let's make it a zero emissions one.



Our world needs sustainable,  
low emission energy solutions.

Our mission at Hiringa Energy is to supply New Zealand with zero emission hydrogen. We are partnering with leading businesses and regions across the country to enable the adoption of hydrogen solutions for transport and industry.

Acquiring clean and renewable energy is arguably the greatest challenge of our time.

Hydrogen lets us harness the full potential of renewable energy with minimal environmental footprint.

We need to produce, transport and use sustainable energy at scale. We need mass-market, clean energy solutions for transport, industry, energy storage, heat and power.

New Zealand has an abundance of clean energy resources, far greater than our energy needs, that can be harnessed using hydrogen.

Hydrogen fuel cell vehicles are electric vehicles with a low environmental footprint. Fuel cells are 95% recyclable and battery life is extended.

Hydrogen fuel cell vehicles are EVs with range and quick refuelling similar to diesel and petrol. As the lightest element, hydrogen can provide range without sacrificing payload and time, providing a viable zero emission commercial transport solution.

Hydrogen can help redefine New Zealand's energy future and as a country of innovators, we have the opportunity to be a global leader in the decarbonisation of our planet.

Hiringa Energy is the first company in New Zealand dedicated to the supply of green hydrogen, and providing solutions for industry, the public sector, and transport operators.

# Creating a Refuelling Network for New Zealand

## NEW ZEALAND Initial Refuelling Network Plan



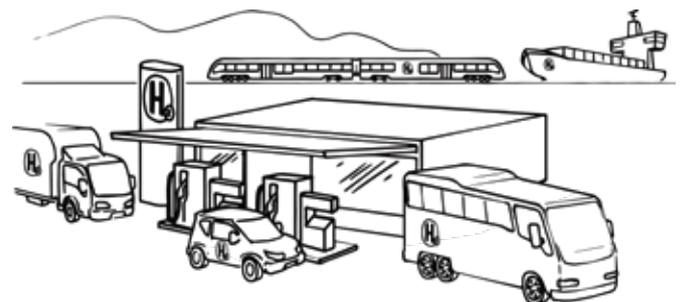
Site locations indicative only

Hiringa Energy is working with partners to establish a commercially viable hydrogen refuelling network across New Zealand.

The initial refuelling stations will be focused in cities and regions where the most potential exists for hydrogen fleets. Examples include industrial complexes, commercial and logistics hubs, dairy factories, ports and airports.

Where practical, these stations will be based at existing refuelling sites such as truck stops with access to arterial roads. They will be connected to a series of production facilities ensuring a dependable and reliable supply chain.

The network is created by linking the production and refuelling hubs, enabling vehicles to travel between cities and regions. As the demand grows, additional refuelling sites will be added.



The network will create the backbone for supply of green hydrogen for commercial, public transport and private vehicles.

# Why Hydrogen?

## Hydrogen is the everywhere energy Hydrogen is the most abundant element in the universe



### Plentiful

Hydrogen is the most abundant element in the universe and every region in the world can create it.



### Energy Rich

One kilogram of hydrogen holds three times the energy of one kilogram of crude oil.



### Life-Giving

The sun is powered by hydrogen and it's in our water.

## Hydrogen is kind to the planet

Hydrogen gives off no carbon and its only emission is water



### Zero Emissions

When using hydrogen for power or heat (either burned or in a fuel cell), it gives off water vapour with no carbon emissions.



### Clean

Hydrogen has no colour or odour and is non-toxic and environmentally benign.



### Diffuses Quickly

Being 14 times lighter than air, when outside its container, it dissipates quickly.

## Hydrogen has many uses

Hydrogen can be used to power vehicles, appliances and cities



### Energy Storage

Storing excess electricity from sustainable resources is one of today's biggest challenges; hydrogen lets us capture that energy and use it when we need.



### Makes Electricity

Fuel cells generate electricity by combining hydrogen with oxygen (from the air), thereby allowing hydrogen to power anything from electric vehicles, to laptops, and even a city.



### Tried & Tested

Hydrogen has been manufactured and used for over a hundred years. Countries and companies all over the world are increasingly adopting hydrogen as a fuel.

## Hydrogen saves time and money

Hydrogen will be more cost effective than petrol



### Economic

Given the sustainable abundance of hydrogen, in the long run it will be a cheaper source of fuel than finite fossil fuels.



### Time Saving

Hydrogen vehicles are refuelled in a similar time to petrol and diesel vehicles, and travel similar distance on a single fuel.



### Safe

Technological advances in the transportation, storage and use of hydrogen make it just as safe to use as any other combustible fuel.

# What Do We Do?

## Make Clean Hydrogen

Hiringa Energy is developing green hydrogen production projects using electrolysis and the utilisation of waste gases and biogases.

We are integrating electrolysis with wind and solar generation to unlock the development of renewables tailored to location. Hiringa are forming joint ventures with industrial partners who provide power and initial hydrogen offtake.

We are developing multiple supply sources to provide redundancy and security of supply.



## Develop Refuelling Infrastructure

One of the great hurdles to the adoption of any new fuel is a reliable supply network.

We are forming joint ventures to develop and invest in hydrogen distribution and refuelling infrastructure across New Zealand.

Our joint venture model enables partners, local government, community and Māori ownership of infrastructure in their region.



## Facilitate Market Use of Hydrogen

We are partnering with progressive transport operators including New Zealand's largest freight and logistics companies.

Hiringa Energy is working with global fuel cell and vehicle manufacturers to bring hydrogen fuel cell technologies to New Zealand.

We are developing a full suite of hydrogen fuel cell transport solutions for New Zealand which includes forklifts, buses, light and heavy vehicles, and ferries.



Hydrogen fuel is clean, sustainable, safe, and in the long run will be cheaper than fossil fuels. Let's start using it.

# Sectors We Serve



## Freight & Logistics

Sustainability is a key driver for New Zealand business, with freight and logistics operators facing increasing pressure to reduce their emissions. The decarbonisation of heavy transport is a key application for hydrogen fuel cell technology.

We are developing a hydrogen supply and refuelling network to enable public and private sector use of hydrogen for transport and logistics.



## Public Sector

The public sector has opportunity to transition multiple energy forms including transport, heat and power, and to utilise waste water and biogas to create new, sustainable hydrogen based ecosystems.

We are working with district, regional and central government to develop projects for fleet vehicles, waste trucks, street sweepers, road maintenance and stationary heat and power.



## Private Vehicles

Privately owned hydrogen vehicles have particular benefits for regions or where longer distance travel is required.

Creating a viable refuelling network for private vehicles is highly challenging in these early stages. By establishing initial stations at key transport hub locations we will be able to provide early refuelling for private vehicles and work with our partners to expand this network over time.



## Dairy, Agriculture & Forestry

The New Zealand economy is heavily dependant on primary industries including dairy, agriculture and forestry. These industries are significant consumers of diesel for transport and are looking for practical solutions to reduce their carbon emissions.

We are working with leading dairy, agriculture and forestry companies to develop and introduce hydrogen technology to the New Zealand market.



## Industrial Chemicals & Processes

We are partnering with industrial businesses to develop renewable generation that integrates with their plants for power and heat, and produces hydrogen for industrial feedstock and transport.

Green hydrogen provides a low emission alternative to carbon based hydrogen in production processes such as fertiliser manufacture, methanol production and refining.



## Tourism

Hydrogen is an opportunity to offer truly zero emission transport solutions for tourism operators, without compromising availability or reliability.

We are working with transport infrastructure owners and tourism operators to supply green hydrogen for their tourism operations.

# Fuel Cell Electric Vehicles



Fuel cells convert hydrogen into electricity needed to power the vehicle, producing no emissions other than water vapour.

Smaller batteries are used to provide a buffer of electrical storage to enable acceleration and regenerative braking.

FCEVs have all the benefits of battery powered electric drive trains in comparison to Internal Combustion Engines (ICEs). FCEVs provide:

- High efficiency
- Low noise
- Instant torque and acceleration
- Regenerative braking, increasing safety and further improving efficiency
- Low vehicle lifecycle maintenance costs

FCEVs are zero emission electric vehicles with added benefits:

- Quick refuelling
- Long range
- Increased payload
- Extended performance lifespan in comparison to lithium batteries
- 95% recyclable
- Scalable refuelling infrastructure
- Reduced physical footprint for refuelling



FCEVs are refuelled with compressed hydrogen at stations, similar to petrol and diesel vehicles.

Hundreds of refuelling stations are operating safely around the world.



Join us on our journey to  
a zero emissions future.

Our team at Hiringa are experienced energy professionals, with diverse business and energy backgrounds. We have a passion for unlocking the promise of green hydrogen and its associated clean energy technologies.

**We believe:**

- Zero emission solutions need to be commercially sustainable as well as environmentally sustainable.
- Environmental sustainability and economic growth are not mutually exclusive.
- Hydrogen is a key piece of the puzzle for addressing climate change.

**We want to:**

- Create opportunities and wealth for New Zealanders.
- Create long term competitive advantage for NZ businesses based on low emission energy use.
- Benefit our communities by creating more efficient, cleaner energy.

**We will:**

- Deliver solutions that are operationally efficient, practical, sustainable and convenient.
- Be a trusted partner.
- Provide local clean energy investment opportunities.

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