

Demonstrating How Zero Emission Vehicles Can Be  
Utilised in Aotearoa New Zealand



**FUTURE POSITIVE**



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# Transport Powertrains

Petrol

Diesel

LPG

CNG

Hydrogen  
IC Engine

Hybrid

Plug-In

Electric

Fuel Cell



# Heavy Transport

More Than  
3,500 kg GVM

4% Volume

25% CO<sub>2</sub>

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# Heavy Transport

## 90,000 HVs <20 Yrs

*Heavy Duty – 31,7k, Mid Duty – 29,4k, Light Duty – 28,3k*

## 3,5 Billion £ Diesel

*Heavy Duty – 2,6m £, Mid Duty – 654k £, Light Duty – 257k £*

## 9,4 Million t CO<sub>2</sub>

*Heavy Duty – 6,9m t, Mid Duty – 1,7m t, Light Duty – 690k t*

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# Heavy Transport

## Tools of Trade

Productivity & Fit For  
Purpose Very  
Important

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# Battery Electric vs Fuel Cell Electric

## Hyundai is Taking a Dual Electrification Strategy



Xcient Fuel Cell

2022



Mighty Electric

2023



IONIQ 5 EV

2021



IONIQ 6 EV

2023



KONA EV

2023



NEXO FCEV

2019



IONIQ 5 N - EV

2024



IONIQ 7 EV

2024

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 HYUNDAI

# NZ & The World

With Zero Emission Heavy Transport

The Technologies :

Electric

Fuel Cell

Hydrogen IC  
Engine

# NZ & The World

## With Zero Emission Heavy Transport

### Electric

- High-Voltage batteries on-board (stored energy)
- No tail pipe emissions
- No greenhouse gases if recharged by renewable energy
- Typically most suitable lighter lower distance applications
- Increase in weight, reduce payload, need bigger charging infrastructure solutions

### Fuel Cell

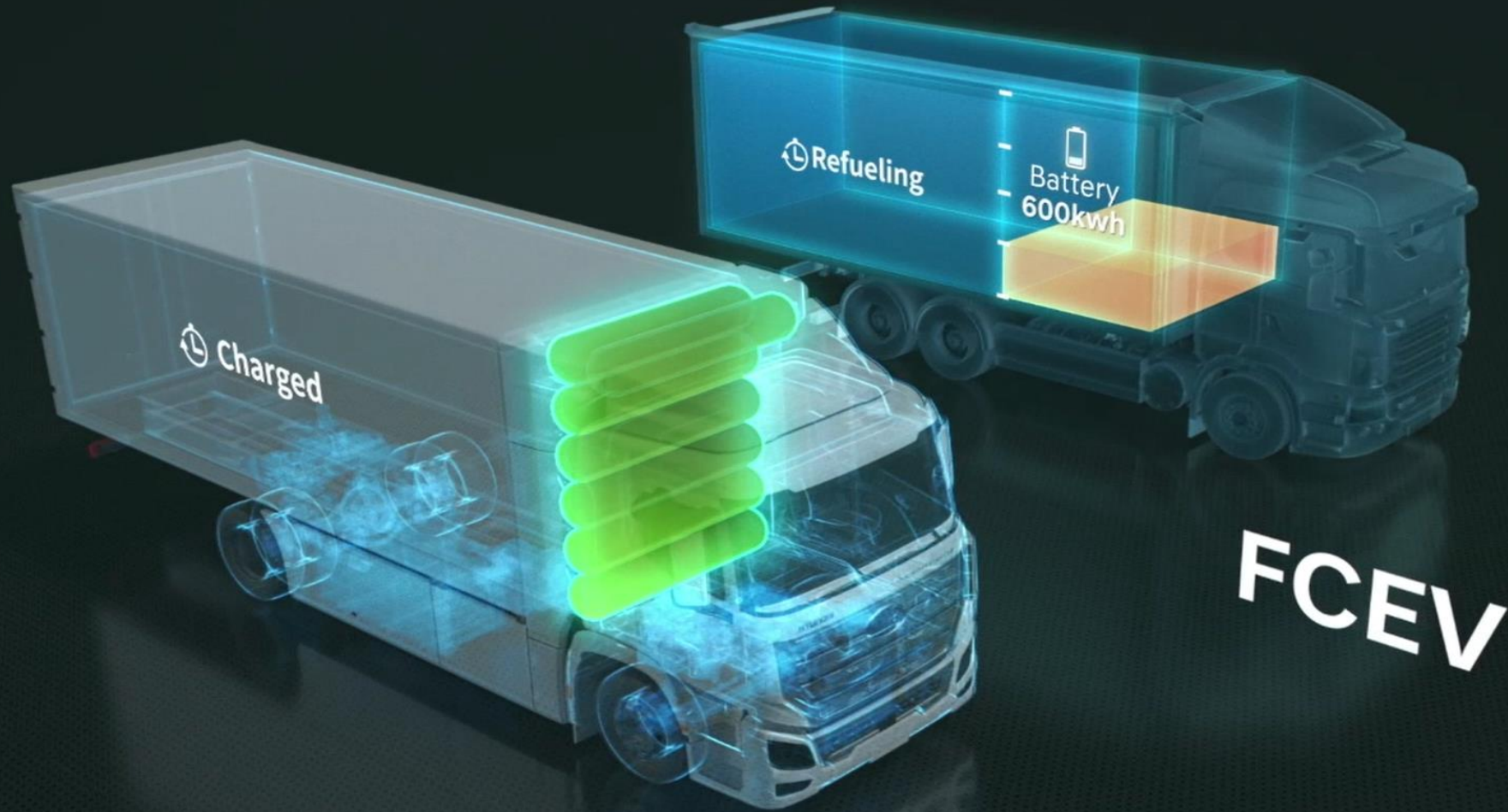
- Hydrogen on board (stored energy)
- No harmful tail pipe emissions,
- No greenhouse gas using Green Hydrogen
- Suitable in all applications but particularly longer distances and heavier payloads.
- Quick refuel time
- Payloads and range are similar to diesel variants
- Refueling Network

### Hydrogen IC Engine



- Much Lower emissions than diesel
- Often still has some emissions (NOx gases)
- High Operating Temp
- Lower H2 purity can be used
- A reasonable option for transition



# Battery Electric vs Fuel Cell Electric



# Battery Electric vs Fuel Cell Electric

Type	Range	Refuel / Recharge Time	Payload	Recharge / Refuel	
	Battery Electric	Local	Long	Low	High Capacity DC Charger
	Fuel Cell Electric	Long	Short	High	Refuel H2 Network

A scenic landscape photograph showing a winding asphalt road through a valley. The road curves from the bottom center towards the right. The surrounding terrain is covered in dry, brownish-yellow vegetation. In the background, there are large, rugged mountains under a blue sky with scattered white clouds. A small body of water is visible on the right side of the image.

**How is New Zealand taking part  
in hydrogen mobility?**



# NZ Post – Case Study

- Secured a Number FCEV Trucks
- Upgraded Our Refueller
- Partnership with BOC
- Local Engineering Developments
- Hyundai Korea – C/Vehicle Fuel Cell R&D Team Support
- First Customer with NZ Post – 1<sup>st</sup> Delivery Unit
- 6 Months of Testing



# NZ Post – Case Study

- Launch 12 Months Ago
- 6 Months Commercial Operations
- 12hr Shifts
- Range 450km (Fully Loaded)
- Over 30,000km Travelled
- Approx. 140kg (BOC) Hydrogen

↓ 12,500ℓ Diesel

↓ 33,500kg CO<sub>2</sub>

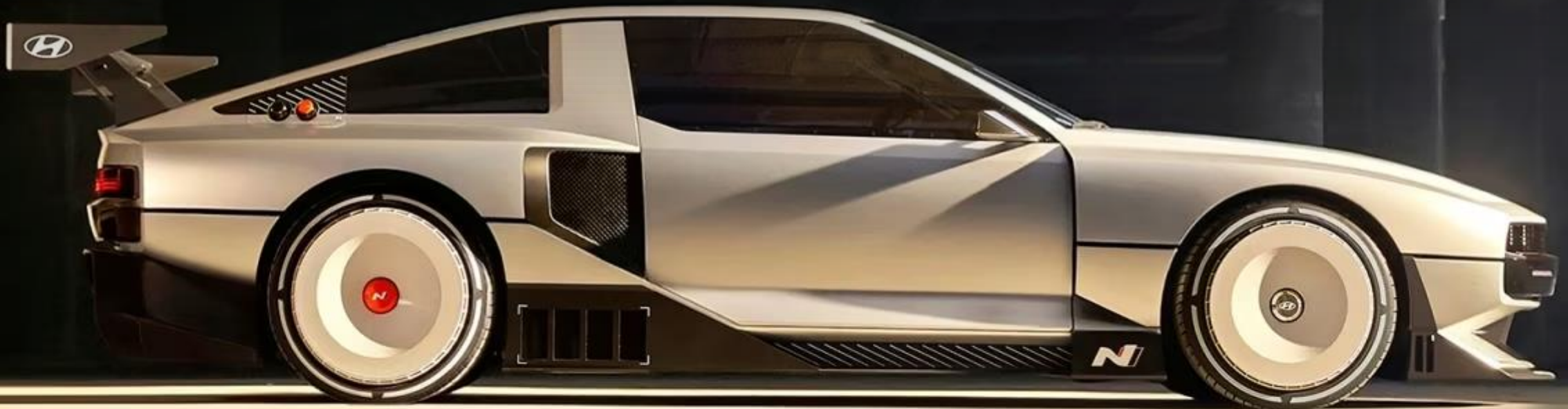




# FUTURE POSITIVE

N Vision 74 – Hyundai's Hydrogen-Powered Performance Vehicle

- Success for New Zealand will come from being an early leader . . . .
- Being committed to change, long term policy to provide certainty for investment . . . .
- Appropriate stimulus to drive the change, there is a cost to new technology. . . .
- Leaders , we need the leaders like NZ Post to show the way
- Apply the appropriate zero emission mobility solution for the required application



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# Future Positive

