



# New Zealand's EnergyScape

Transitioning to a Hydrogen Economy  
EFNZ Workshop  
Wellington

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# Hydrogen Roadmap - Situation

2000

2005

2030

2050

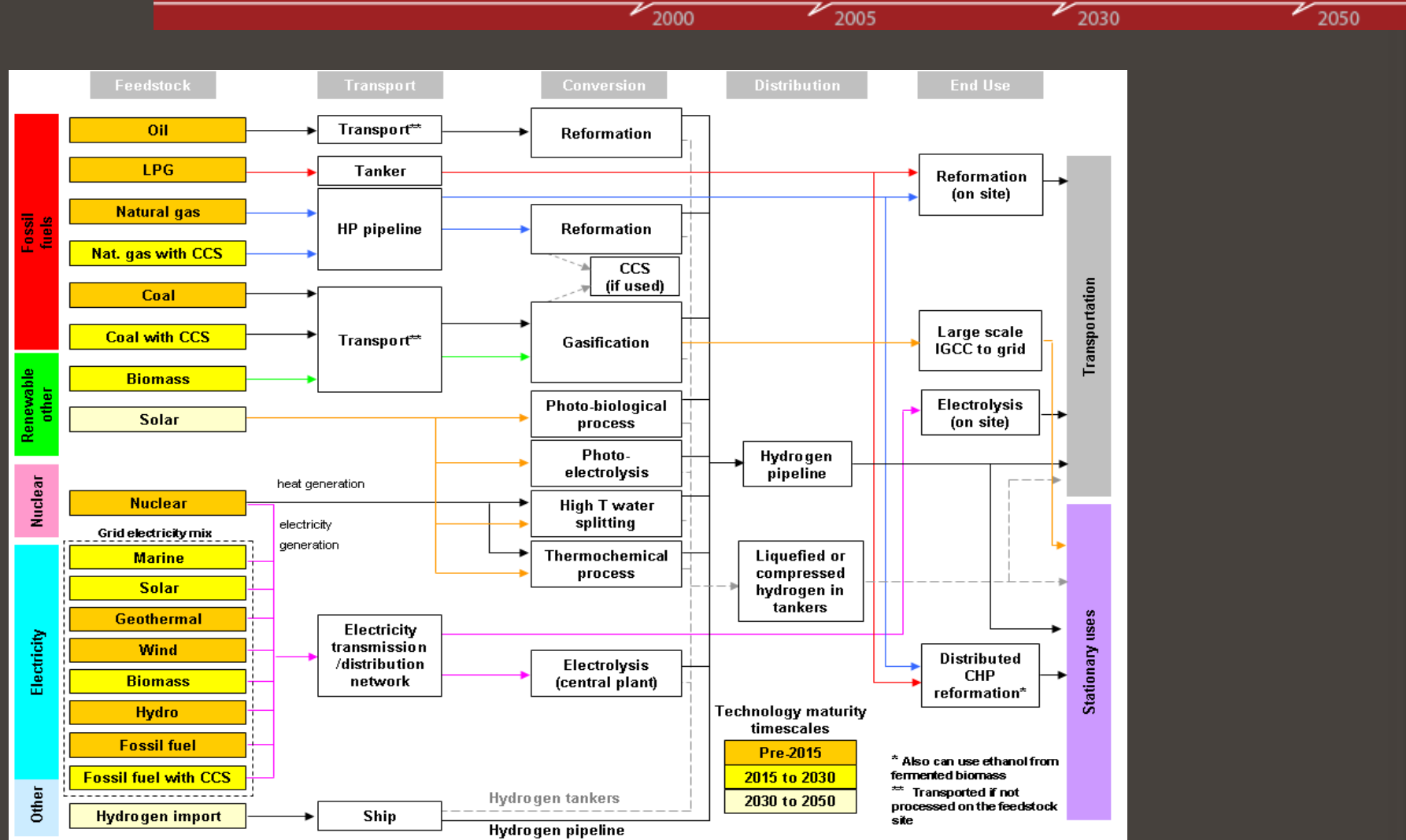
- Situation -Globally
  - 138 refuelling stations in 25 countries
  - 63 planned for 2007
  - 600 FCV
- Situation - New Zealand
  - 55,000 tpa
  - Consumed on site
  - 10 x for future transport



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# Hydrogen Roadmap – Potential Supply Chains



# Hydrogen Roadmap – E3 Chain Modelling Process

2000

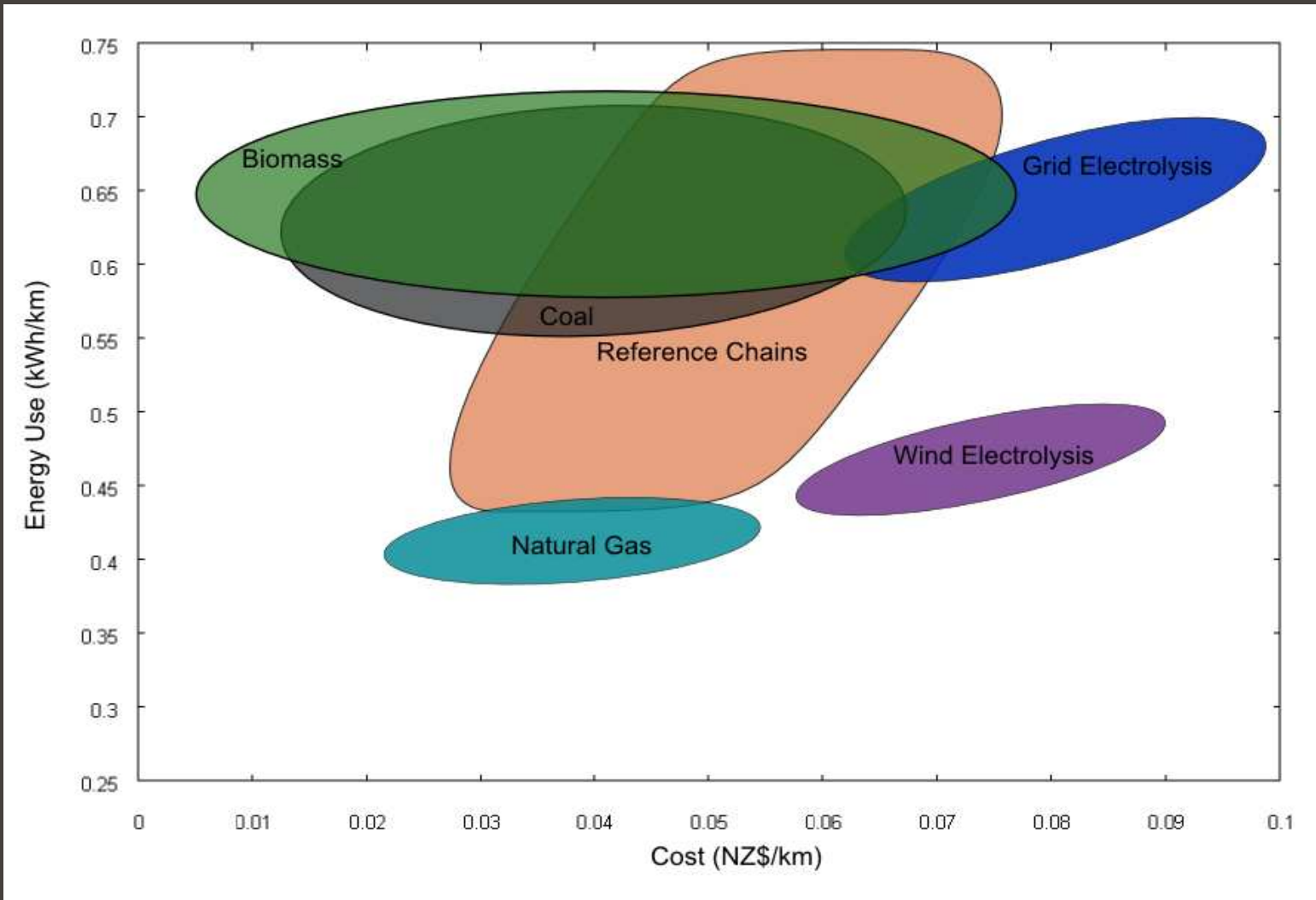
2005

2030

2050

- Identification of potential H<sub>2</sub> supply chains (set of 25)
- Process data from industry, open literature
- Up-to-date energy prices
- Calculate Energy use, Emissions and Economics (Cost)

# Hydrogen Roadmap – Transport Application Chains

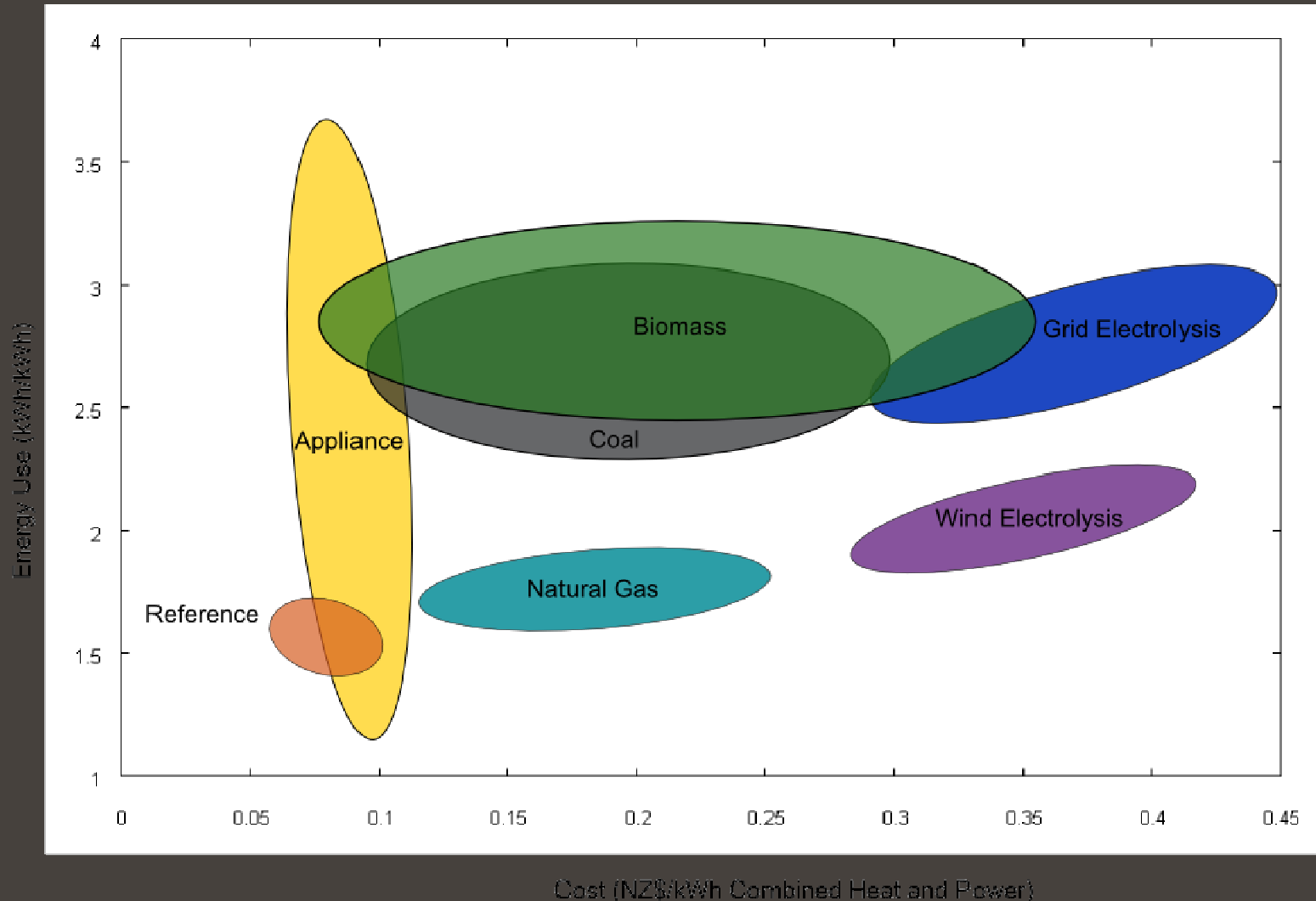


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# Hydrogen Roadmap – Stationary Application Chains

2000      2005      2030      2050



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# Hydrogen Roadmap – Preferred Chains



Feedstock	Hydrogen Production Method	CCS	Hydrogen Transport Method	End Use
Natural gas	Central Reformation	No	Tanker	Transport
Natural gas	Central Reformation	Yes	Pipeline	Transport
Coal	Central Gasification	Yes	Pipeline	Transport
Biomass	Central Gasification	No	Pipeline	Stationary
Biomass	Central Gasification	No	Tanker	Transport
Wind electricity	Central Electrolysis	N/A	Pipeline	Transport
Grid electricity	Central Electrolysis	N/A	Tanker	Transport
Wind electricity	Refuelling Site Electrolysis	N/A	Direct Use	Transport
Natural Gas	FC CHP with reformation	No	Direct Use	Stationary

# Hydrogen Roadmap – Next Steps

2000 2005 2030 2050

- Identification of future scenarios
  - 50% FCV, 25 fossil, 25 EV, 20% stationary
- Contribution of preferred chains
- Sensitivities
- Identification of knowledge gaps
- Integration into the broader EnergyScape suite
  - Life without hydrogen (EnergyScape reference case)
  - An unconstrained hydrogen economy
  - EnergyScape with Hydrogen (an EnergyScape sensitivity)