

# Decarbonisation Pathways for the Hunter Region

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Energy and Resources (NIER)

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# Acknowledgement of Country

The Department of Climate Change, Energy, the Environment and Water acknowledges that it stands on Aboriginal land.

We acknowledge the Traditional Custodians of the land and water, and we show our respect for Elders past, present and emerging.

We do this through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

Artist and designer Nikita Ridgeway from Aboriginal design agency – Boss Lady Creative Designs, created the People and Community symbol.



# Overarching policy to reach Net Zero

The NSW Government is committed to achieving net zero emissions by 2050.

NSW has a strong policy framework to achieve decarbonization of the state's electricity generation and of industry.

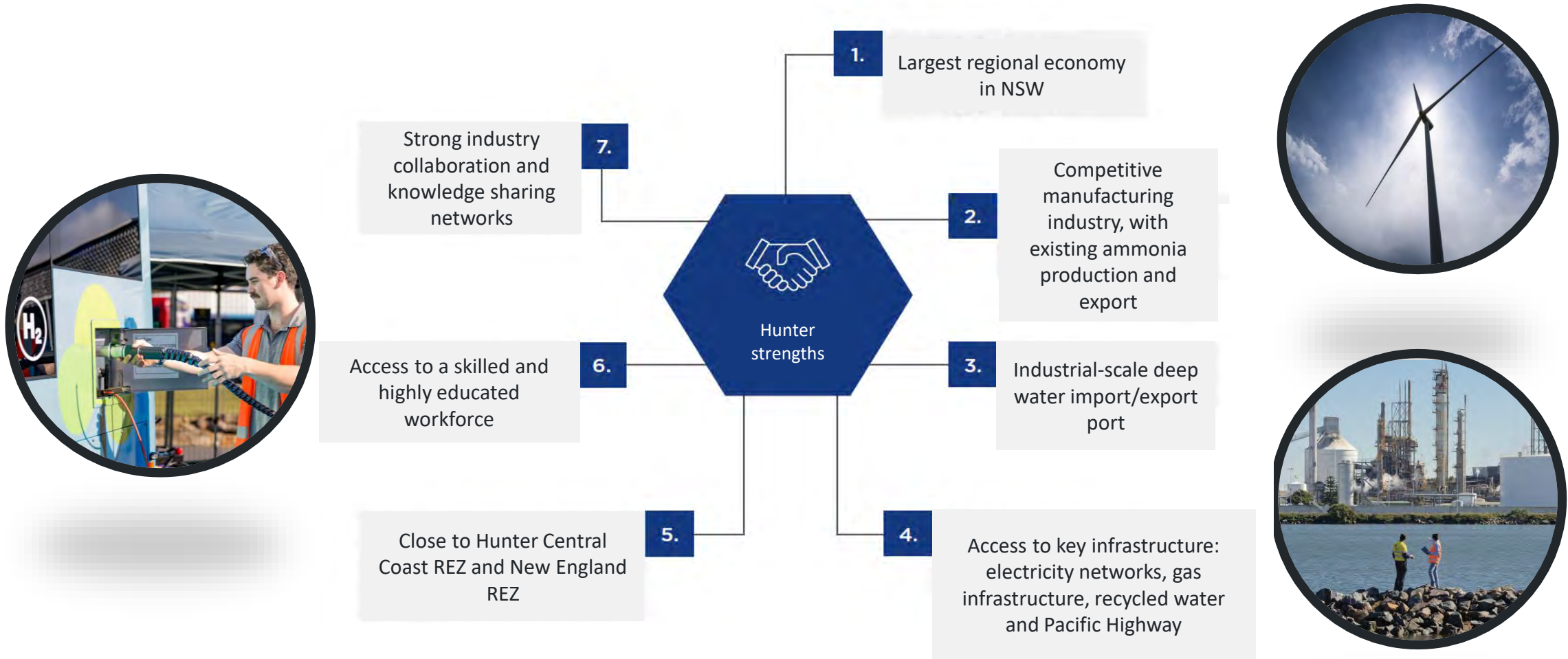


## The *Climate Change (Net Zero Future) Act 2023*

In 2023, the NSW Government legislated its commitment to:

- State emissions reduction targets of **50% by 2030** and **70% by 2035** (compared to 2005 levels)
- Establish an independent, expert **Net Zero Commission** to monitor, review and report on progress

# Strategic advantages of the Hunter region



# Mining Insights for the Hunter Region

## Regional Insights:

**9.3 MtCO<sub>2</sub>-e**

Emissions in 2022

**21 operational  
mines**

8 mines account for  
69% of Hunter mining  
emissions.

**62%**

Fugitive methane  
proportion of overall  
mining emissions.  
27%, on-site diesel  
consumption.

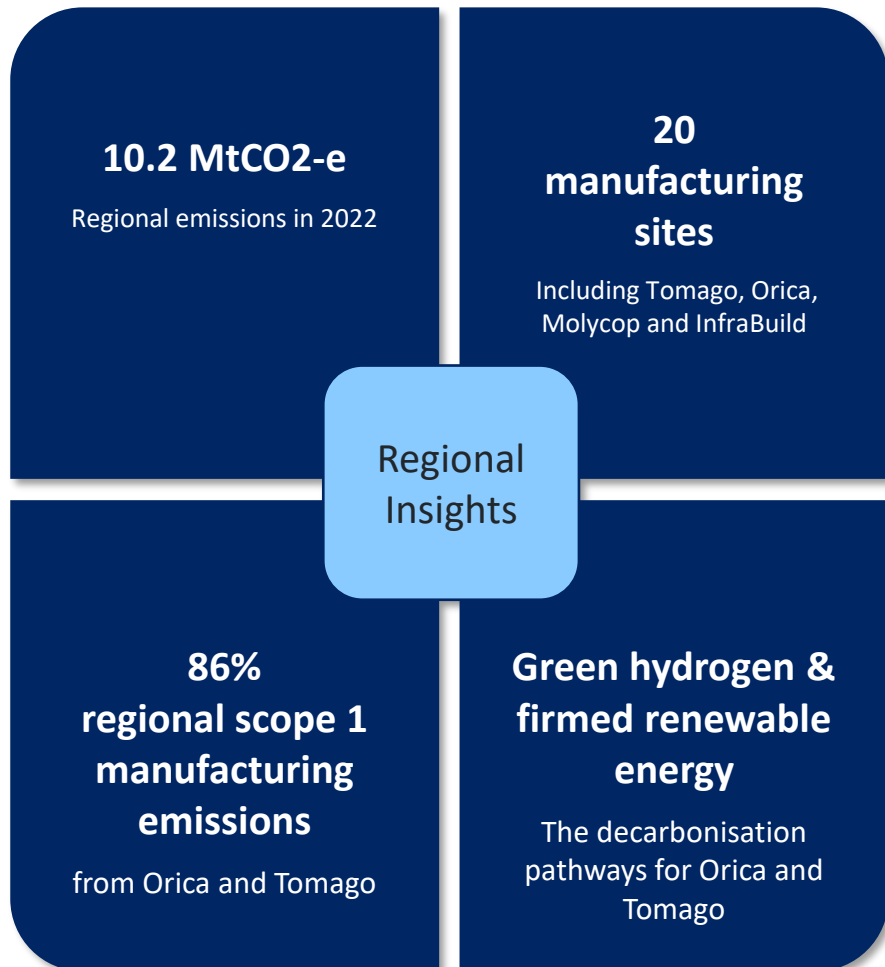
**Ventilation Air  
Methane**

Offers potential  
abatement for some  
underground mines.





# Manufacturing Insights for the Hunter Region



- Orica produces ammonia products using grey hydrogen sourced through steam methane reformation.
- Primary sources of emissions are CO<sub>2</sub> and the production of nitrogen oxides in the waste gas stream.
- Orica received funding from the NSW Government for industrial decarbonisation, with a \$13.6m grant to install tertiary catalyst abatement on its waste stream.

## Orica Case Study:



- Tomago produces aluminium from alumina through electrolysis, which uses a constant load of 950 MW of electricity, or 8.3 TWh of energy per year.
- Tomago also generates significant scope 1 emissions from degradation of the carbon anodes used in the electrolysis process.

## Tomago Case Study:



# NSW Net Zero plan: from innovation to operation

## Clean Tech Innovation Fund

Concept to market-ready clean technologies.

Funding round open early 2024.

## Industrial decarbonisation plans

Supporting the emergence of low carbon regions in the Hunter and Illawarra. Funding to be announced.

## Hydrogen regulatory guide

Simplifying regulatory obligations for hydrogen users and producers.

## Green hydrogen production concessions

Over \$2/kg H<sub>2</sub> cost reduction with 12-year network charge discounts.

Open for applications.

 **Concept**

 **Regulation**

 **Operation**

**Development**

## High Emitting Industries

\$305m grant funding to reduce emissions and strengthen resilience.

Funding round open.

## Hydrogen grant programs

\$109m to NSW hydrogen hubs  
\$20m to Hume Hydrogen Highway

**Construction**

## Net Zero Manufacturing funds

\$480m grant funding to boost renewable and low carbon product manufacturing industries.

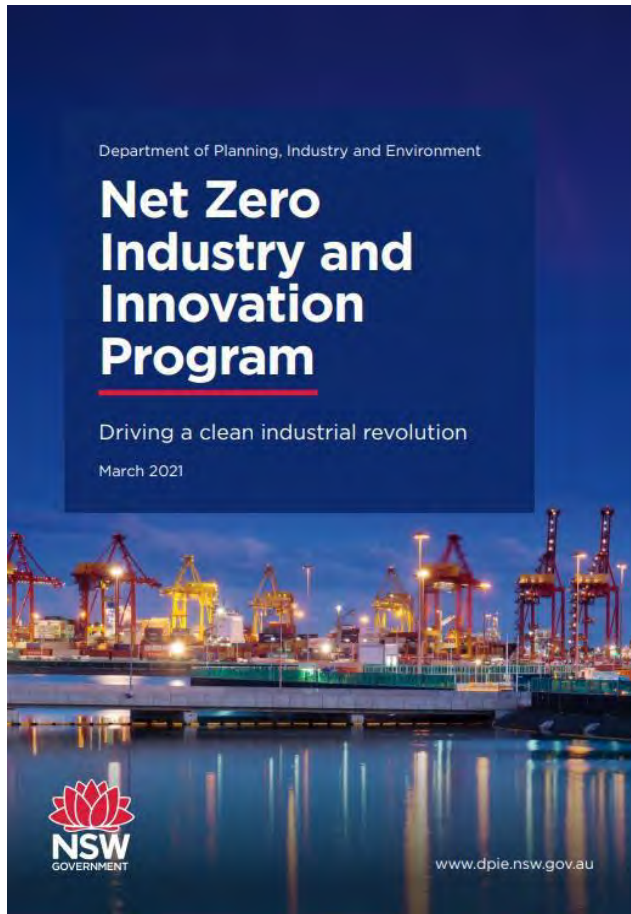
Funding rounds open early 2024.

## Renewable Fuels Scheme

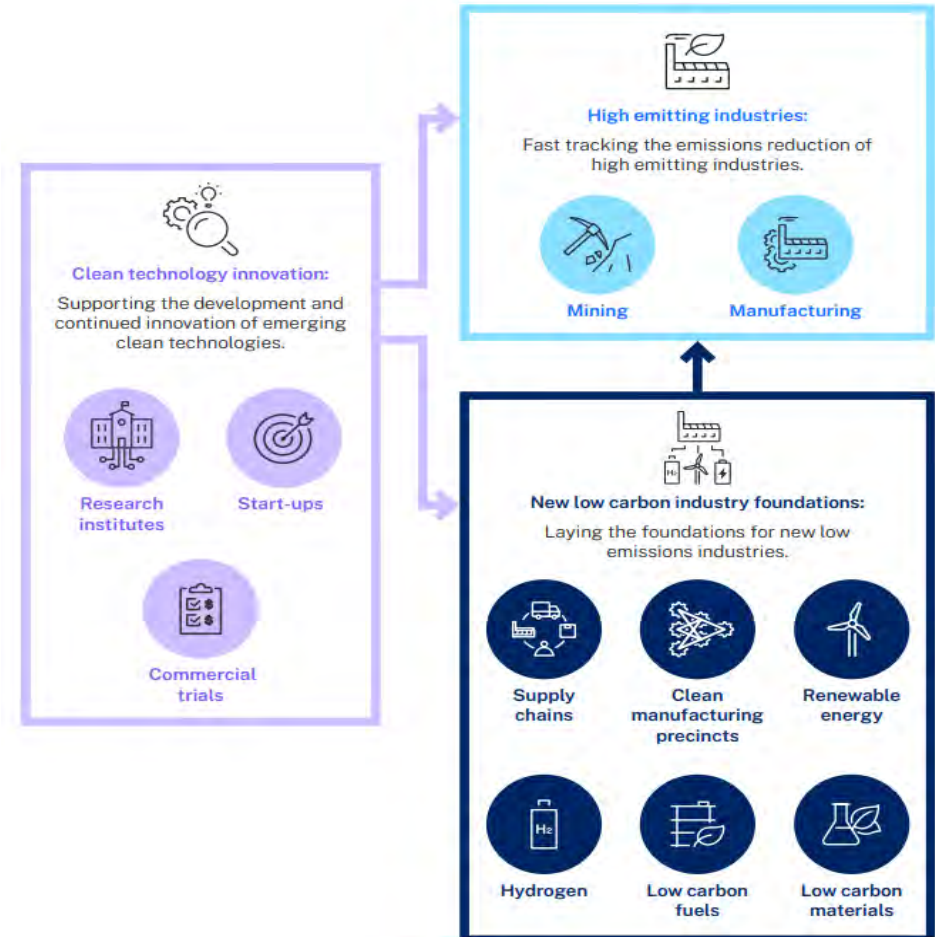
Added source of revenue (~\$1.50/kg H<sub>2</sub>) for hydrogen producers.

From 2025.

# Net Zero Industry and Innovation Program (NZIIP)



## NZIIP Workstreams:



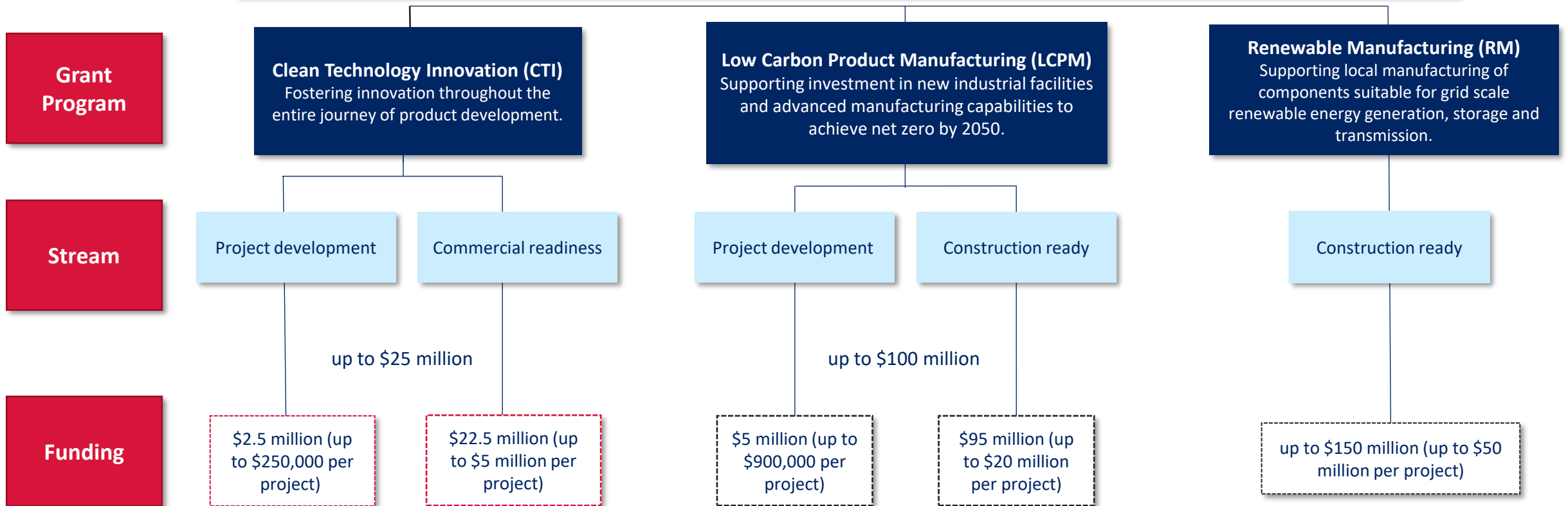


# NZM funding streams



The **Net Zero Manufacturing Initiative** grants will support the development of new clean technologies and strengthen local manufacturing of low carbon products and components for the renewable energy transition.

## Net Zero Manufacturing Initiative



# NSW Hydrogen Strategy – our plan to realise the hydrogen opportunity

## NSW Hydrogen Strategy

Our state's plan to become a hydrogen superpower.

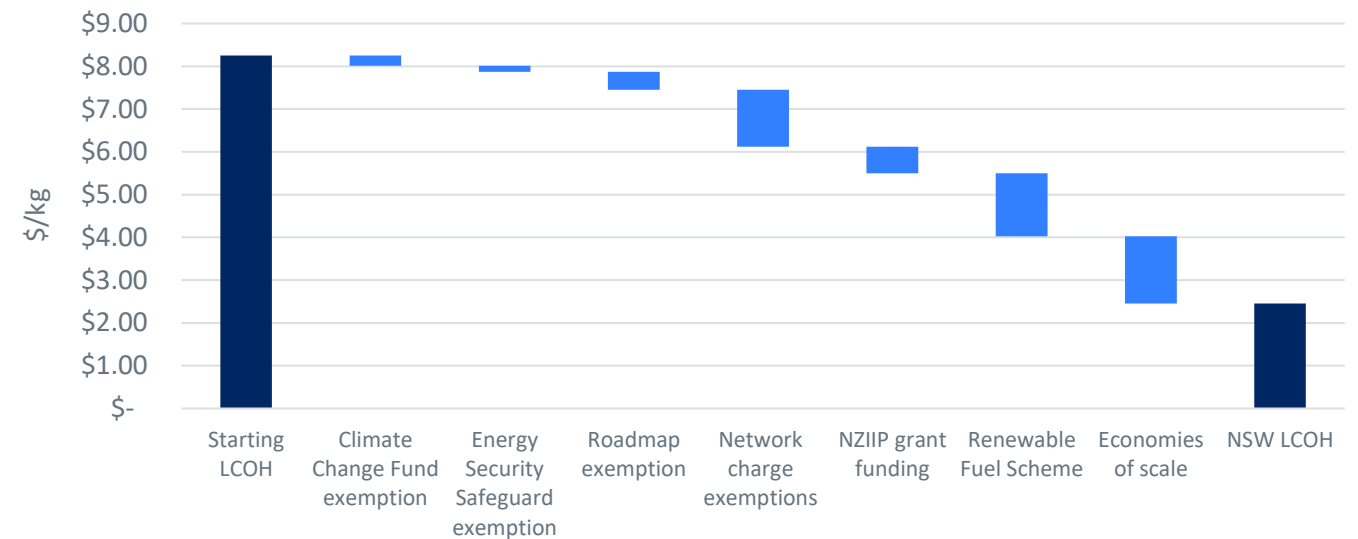
60 actions

\$3 billion total incentives

Over \$4 per kilo cost reduction

## Overcoming the key barrier to investment - COST

\$3 billion in incentives to reduce the cost of green hydrogen by around \$4 per kilo.



# Hunter Valley Hydrogen Hub – \$45 million in NSW funding and \$70 million in Cwth funding

## Joint project between Origin and Orica

Located at the Port of Newcastle.

- Origin Energy Future Fuels will work with Orica to develop the Hunter Valley Hydrogen Hub. This will deliver a safe, reliable and commercial-scale green hydrogen supply chain in the Newcastle industrial and port zone.
- The ~50MW electrolyser will produce hydrogen to supply green hydrogen via pipeline to Orica facility to produce green ammonia to decarbonise their operations. The project will also provide hydrogen to mobility customers.
- The Commonwealth is also providing \$70 million grant funding to this project.

### Initial Phase

**4720 t**

Renewable hydrogen produced per annum

### Project Aims

**1.65 GW**

Electrolyser capacity

**~50 MW**

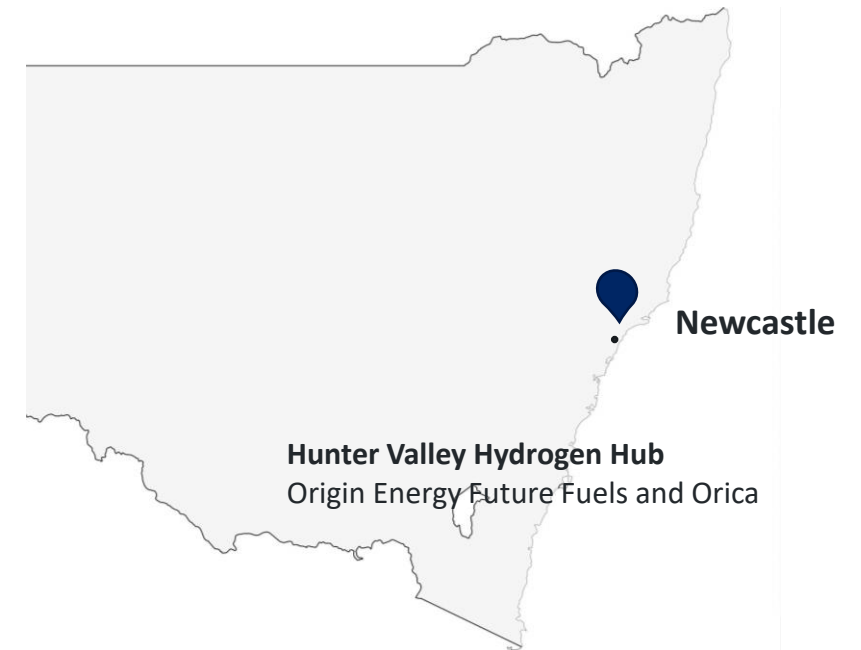
Electrolyser capacity

**195,000 t**

of GHG emissions abated by 2030.

**100-150**

NSW Jobs





# A green hydrogen industry in New South Wales has the potential to support 10,000 new jobs

- Hunter Valley Hydrogen Hub will deliver up to 150 direct and 65 indirect construction jobs in the Hunter.
- The Hub project will build workforce capabilities and support the creation of a new industry centred around green hydrogen availability.
- We are working to address skills, training and workforce planning gaps, and to prioritize hydrogen safety training.



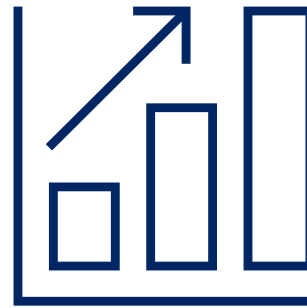
Image source: <https://www.originhydrogen.com.au/>

# Key takeaways for net zero in NSW



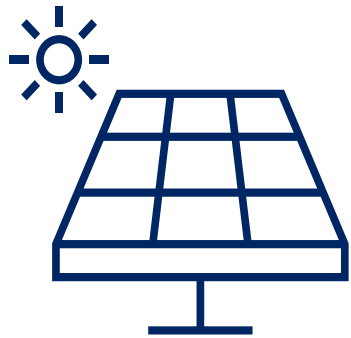
**LCOH\* below  
\$2.80/kg**

World-leading incentives,  
reducing green hydrogen cost  
by over \$4 per kilo



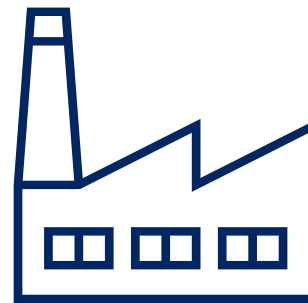
**Domestic hydrogen market  
of 1 Mt by 2050**

Hydrogen Hubs, Highways, green  
ammonia as a base for investment  
& export



**Abundant cheap, clean  
energy**

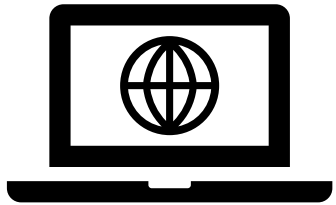
Five REZs & extensive  
transmission infrastructure



**Existing industry  
infrastructure**

Export terminals, heavy industry  
workforce & current H<sub>2</sub>  
production

# Key Contacts Page:



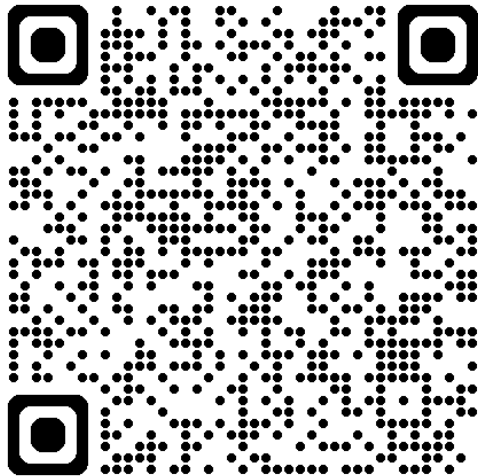
For more information on **hydrogen** in NSW, please visit:

For more information on **NZIIP**, please visit:

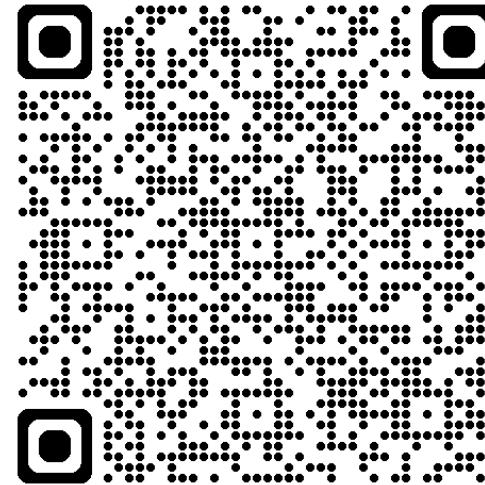


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Hydrogen in NSW



Net Zero Industry and Innovation