

PROVINCE
RESOURCES LIMITED

ASX:PRL

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Technical Information

This presentation includes disclosure of scientific and technical information. The information in this document is based on, and fairly represents information and supporting documentation reviewed by Mr David Frances, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr Frances is a Director of the Company. Mr Frances has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Mr Frances has approved this document as a whole in the form and context in which it appears.

Forward-looking statements

Certain information contained in this presentation may contain “forward-looking statements”. Forward-looking statements may include, but is not limited to, information with respect to the future financial and operating performance of Province, its subsidiaries and affiliates, the estimation of Mineral Reserves and Mineral Resources, realization of Mineral Reserve and Mineral Resource estimates, costs and timing of development of Province’s projects, costs and timing of future exploration, timing and receipt of approvals, consents and permits under applicable legislation, results of future exploration and drilling and adequacy of financial resources. Forward-looking statements are often characterized by words such as “plan”, “expect”, “budget”, “target”, “project”, “intend”, “believe”, “anticipate”, “estimate” and other similar words or statements that certain events or conditions “may” or “will” occur.

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The Gascoyne Project

Western Australia

Salt and Potash

The Gascoyne Region is located in NW Western Australia with Carnarvon as its administrative centre. The project area covers 1,408 km² and is south of Carnarvon

Carnarvon's population of 5,300 adjoins the property with first class infrastructure in place including the Dampier Bunbury Natural Gas Pipeline (DBNGP) and the North West Coastal Highway

Carnarvon's central location within the broader salt producing region of the North West demonstrates the inherent potential of the project area

Initial exploration and evaluation will investigate the salt and potash, mineral sands and renewable hydrogen potential over the extensive tenement area

The region also boasts the world class Coburn mineral sands deposit with an Ore Reserve of 523Mt @ 1.1% Total Heavy Mineral (THM) and initial mine life of 22.5 years¹

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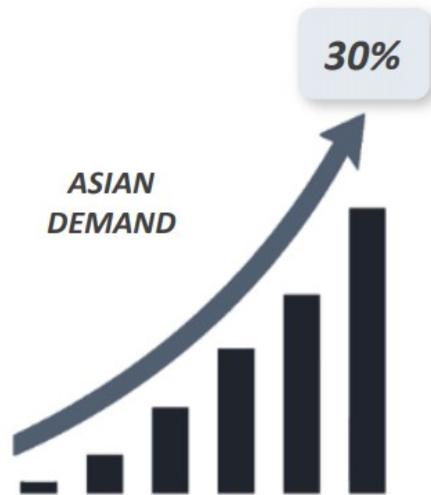
¹ "Building a significant Mineral Sands Business, Company Overview, Strandline Resources, November 2020"



Why Salt and SOP?

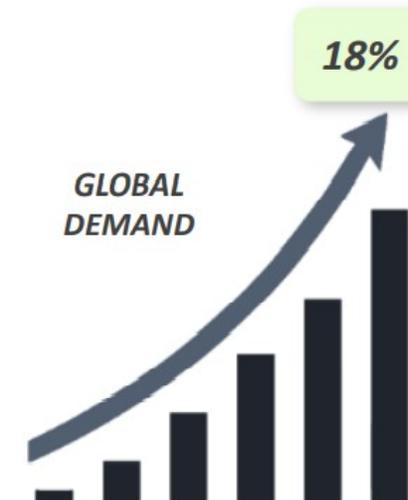
SALT

- >10,000 products derived from salt (PVC, alumina, glass, paper, water purification)
- Asian market size of ~160Mtpa salt (annual value of US\$6.5B)
- >50Mtpa additional demand over next decade¹ – (growing population, requiring more industrial and consumer products)



SOP² (Sulphate of Potash)

- Premium fertiliser used on high value crops
- Global market size of ~7Mtpa (annual value of ~US\$3.5B)
- ~1Mtpa additional demand over next decade³ – (growing population, changing dietary habits and declining arable land)



Western Australia's salt and potash advantage



- Gascoyne and Pilbara has ideal climate to produce high purity salt
- High temperature, high wind, low rainfall and low humidity



- Proven salt production region since the 1960's
- Five large WA Solar Salt Operations (12–13Mtpa), controlled by Rio Tinto and Mitsui
- No new large Australian salt project in 20 years



- No current SOP production in Australia, other development projects all based on inland lake brines with >800km road transport to third party ports



- Carnarvon Basin Project will use an inexhaustible seawater resource to be concentrated through solar and wind evaporation to sustainably produce salt and potash ready to meet growing global demand

Attractive Financials - Mardie

BCI Minerals Mardie Salt and SOP Project¹

- DFS released July 2020 confirmed Mardie can become a globally significant Tier 1 salt and sulphate of potash (SOP) project located equidistant between Onslow and Karratha on the Pilbara coast
- Attractive financial returns for more than 60 years, potentially making it one of the longest life projects developed in Australia for decades
- An inexhaustible seawater resource will be concentrated through solar and wind evaporation to sustainably produce 4.4 million tonnes per annum (Mtpa) of high purity sodium chloride (NaCl) salt and 120 thousand tonnes per annum (ktpa) of sulphate of potash (SOP or K₂SO₄) fertiliser for supply to the growing chemical and agricultural industries in Asia
- NPV of \$1,197M (pre-tax real), annual steady state EBITDA of \$197M, total revenue of \$22 billion and total net cash flow of \$10 billion over 60 years, with total capital cost of \$779M
- Expected attractive long-term salt and SOP prices based on strong demand growth in the Asian region
- Thirteen non-binding salt offtake memoranda of understanding (MOUs) and two SOP non-binding offtake MOUs secured with credible Asian buyers, accounting for 100% of Mardie's three-year salt production and 75% of five-year SOP production
- Benefits to Western Australia and Australia² include; Corporate taxes: >\$6Bn, State royalties: >\$600M, Native title payments >\$150M

¹ Developing the Multi-Generational Mardie Salt & Potash Project, Corporate Presentation, BCI Minerals Limited, November 2020

² NPV of value add to Northern Australian GRP over 60 years, as per KPMG Public Benefit Report (October 2020)

Gascoyne Project HM

The region boasts the world class Coburn mineral sands deposit with an Ore Reserve of 523Mt @ 1.11% Total Heavy Mineral (THM) and initial mine life of 22.5 years¹

Regional aircore drilling nearby has confirmed the presence of commercially important heavy minerals in the northern Gascoyne coastal region²

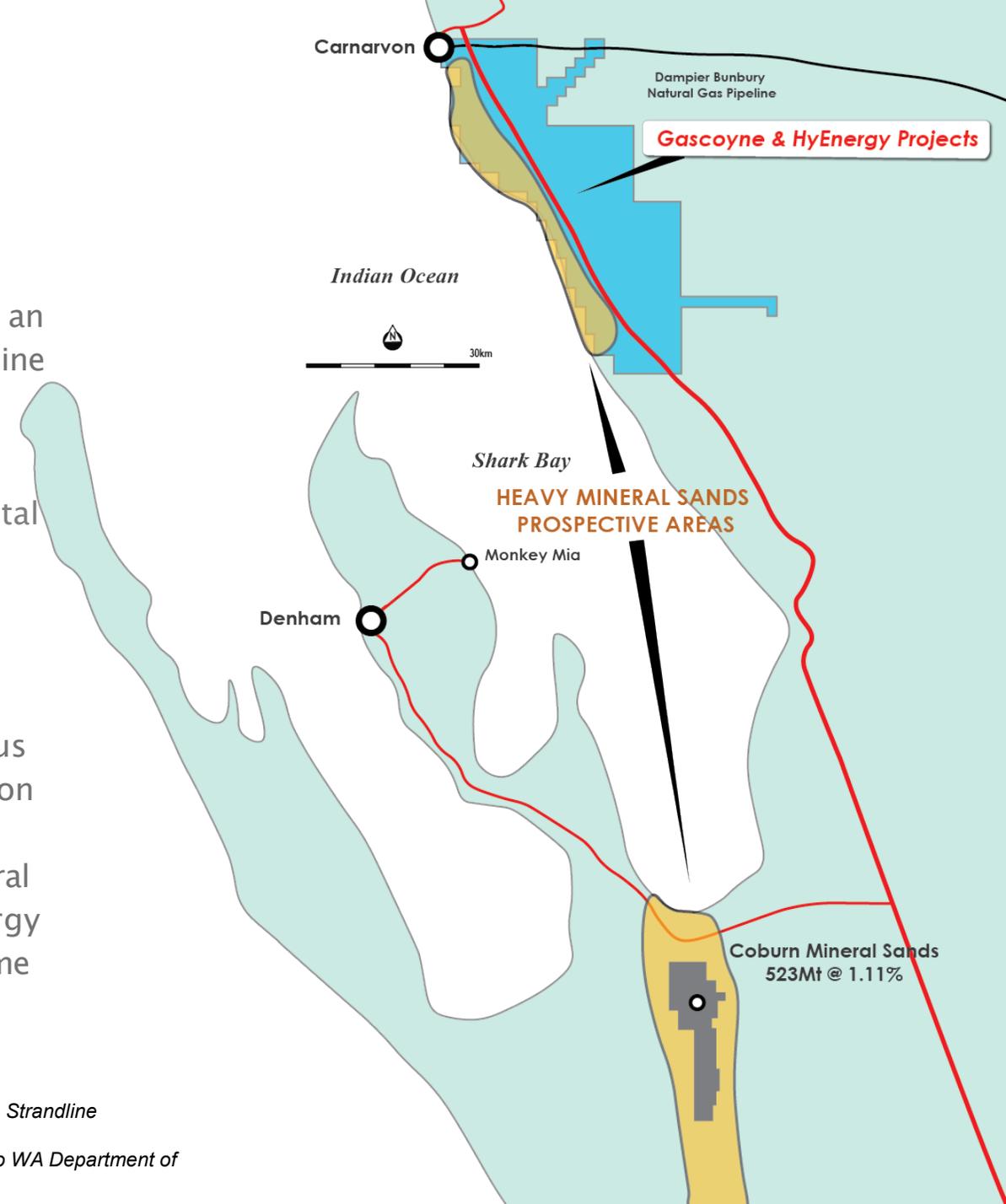
Limited historic work completed in the project area

Heavy minerals, such as zircon, titanium dioxide minerals, garnet, sillimanite, kyanite, and staurolite, are eroded from their parent igneous or metamorphic rocks and are transported by water and/or wind action over long periods of geological time, often ending up in the same locations as placer deposits. Most of the commercially attractive mineral sand deposits occur along old coastlines, particularly where high energy wave action and strong winds have prevailed over long periods of time

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¹ "Building a significant Mineral Sands Business, Company Overview, Strandline Resources, November 2020"

² WAMEX A29292, Gascoyne Mineral Sands Project, Annual report to WA Department of Mines, September 1989



Global Mineral Sands Market

Heavy Minerals (Zircon and Titanium)

- Zircon and high grade titanium feedstocks; producing products used in everyday life such as ceramic tiles, refractory, paint, titanium metal and welding rod applications
- Zircon is resistant to water, chemicals, heat and abrasion, ~1.1million tonnes per annum global market
- TiO₂ pigment imparts whiteness, is UV resistant and inert, ~7.0 million tpa global market
- Increasing demand driven by urbanisation, rising living standards, global growth and extensive array of applications
- 'Critical Minerals', vital to the economic well-being of the world's major and emerging economies
- Supply restricted by mine closures, declining grades and depleting stockpiles. China chloride pigment consumption increasing, driven by higher environmental standards and technology advancement
- Strong long-term market fundamentals –demand growth outpacing supply, new projects required to meet future demand
- Forecast structural supply gap, with demand for zircon increasing year on-year at 2.5–3.0% pa and existing production decreasing at average of 5% pa¹

¹ TZ Minerals International, Global Zircon Supply/Demand Balance to 2035 (February 2020)

Attractive Financials - Coburn

Strandline Resources Coburn Mineral Sands Project¹

- DFS released June 2020 confirmed the strong outlook for the Coburn mineral sands project. High margins and strong, long-term cash flows are the result of low operating costs and an exceptional, high-value zircon and titanium product suite
- Large Ore Reserve of 523Mt @ 1.11% Total Heavy Mineral (THM) underpins an initial mine life of 22.5 years at the planned mining rate of 23.4Mtpa of ore. First ore delivered to process facilities ~78 weeks after project development commences
- Pre-tax (real) NPV of A\$705 million and IRR% of 37%, with total capital expenditure estimated to be A\$260 million
- Experts forecast attractive long-term Zircon and Titanium prices based on strong demand growth in the Asian region
- Binding offtake agreements have been secured with major global consumers for 66% of revenue for the first 5–7 years, with further offtakes pending
- The project is a long life, multi decade operation and will generate a host of socio-economic benefits including capital inflows to regional Australia, significant job creation, indigenous engagement, training and job diversity as well local business opportunities and community partnership programs

¹ "Building a significant Mineral Sands Business, Company Overview, Strandline Resources, November 2020"

Renewable "Green" Hydrogen Project

HyEnergy – ZERO CARBON HYDROGEN™

*International Energy Agency and the World Energy Council both
identifying Australia as a potential hydrogen production powerhouse*

Navigating society towards a decarbonised future supported by Renewable Hydrogen

A New Global Industry in
Western Australia

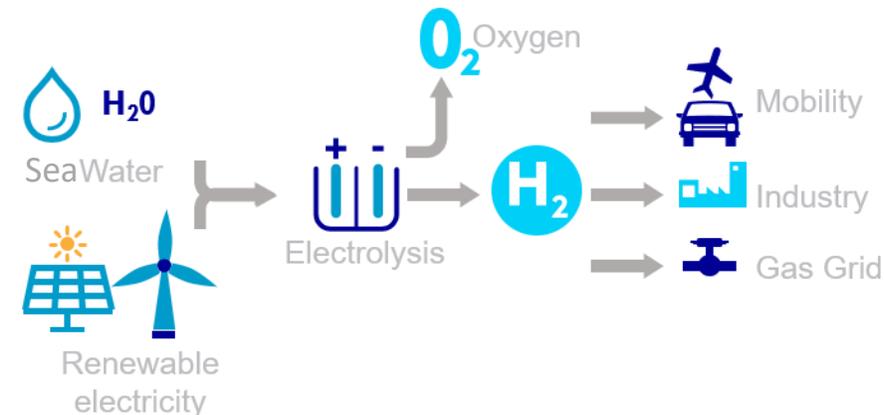
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Aiming to be Australia's first truly zero carbon green hydrogen project – How do you make green hydrogen?

H₂

Renewable (green) hydrogen is defined as hydrogen produced using energy from renewable energy sources. Producing a clean zero carbon Gas or Liquid Hydrogen Fuel.



The Opportunity

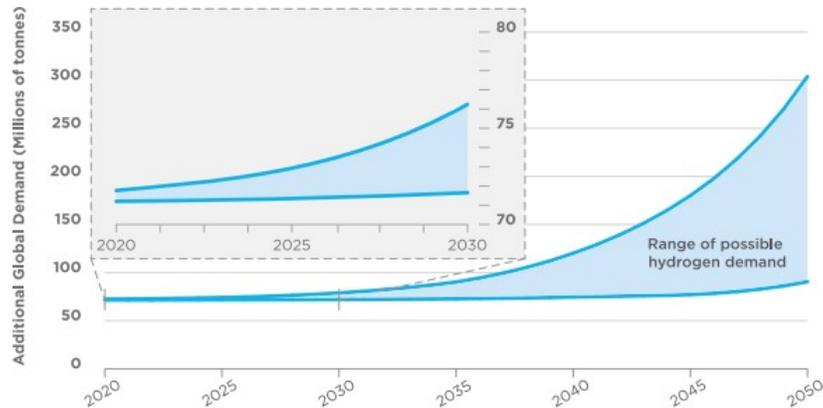


Figure 1. Range of possible hydrogen demand over the next three decades.
Source, The International Energy Agency and International Renewable Energy Agency

01

Growing Demand

Australia's potential zero carbon green hydrogen exports could reach \$2.2 billion by 2030 and \$5.7 billion by 2040¹

02

Global Decarbonisation

Western Australia to support international decarbonisation efforts, while also supporting Australia's commitments to the Paris Agreement.

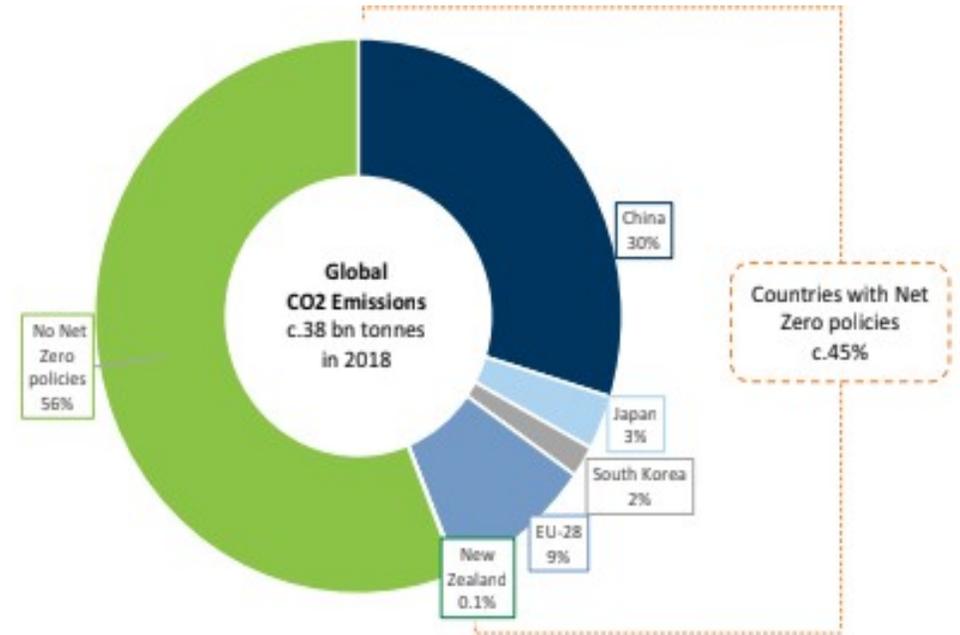
03

Supportive Government

The COAG Energy Council has approved the development of a National Hydrogen Strategy.

Net Zero Policy is Going Global

- On the back of climate commitments in Europe and Asia, nearly half of the globe has already embraced net zero policies; further, early statements from the pending new US Administration appear encouraging.
- The globalization of net zero policies could imply a c.200% capex acceleration for global utilities (c.€40 trn of investment in renewables and power grids to 2050; €1.3 trn pa).
- Green Energy Ministerial – 10–10–10 by 2030
- For climate experts, green hydrogen is indispensable to climate neutrality. It features in all eight of the European Commission's net zero emissions scenarios for 2050 ¹



Source: Emissions Database for Global Atmospheric Research, Goldman Sachs Global Investment Research.



Vision Mission and Goals

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01

Vision:

to be the first significant West Australian producer and exporter of 100% renewable green hydrogen and ammonia.

02

Mission:

contributing to global decarbonisation and decarbonising the State's economy.

03

Goal:

Western Australia's market share in global hydrogen exports to be comparable to its share in LNG today.

Western Australia's hydrogen advantage



- Renewable energy resources, Western Australia's solar is amongst the highest irradiance in the world and, due to being on the western edge of the continent, it has excellent wind resources.



- Land, With an area of 2.5 million km² (one-third of the Australian continent), low intensity land use combined with low population density, Western Australia is well placed to develop large-scale renewable energy generation.



- Existing infrastructure, Dampier Bunbury Natural Gas Pipeline world-class industrial and export infrastructure that can accommodate the development of the hydrogen industry.



- Strong existing industry presence, because of Western Australia's established LNG industry and its ability to develop collaborative and globally competitive supply chains.



- Access to markets, Western Australia geographical proximity to Asia and its long-term presence in these markets.

Local, State and Federal Government accelerating greening economy

- Western Australian Renewable Hydrogen Strategy \$10m
- Australian Renewable Energy Agency (ARENA) \$70m
- Australian Government Advancing Hydrogen Fund \$300m
- Council of Australian Governments Energy Council, Australia's National Hydrogen Strategy

"Hydrogen provides a means to harness our world-class solar and wind resources for energy export, and help our international partners meet emissions reduction goals".

**Hon Alannah MacTiernan MLC
Minister Assisting the Minister for State Development, Jobs & Trade**

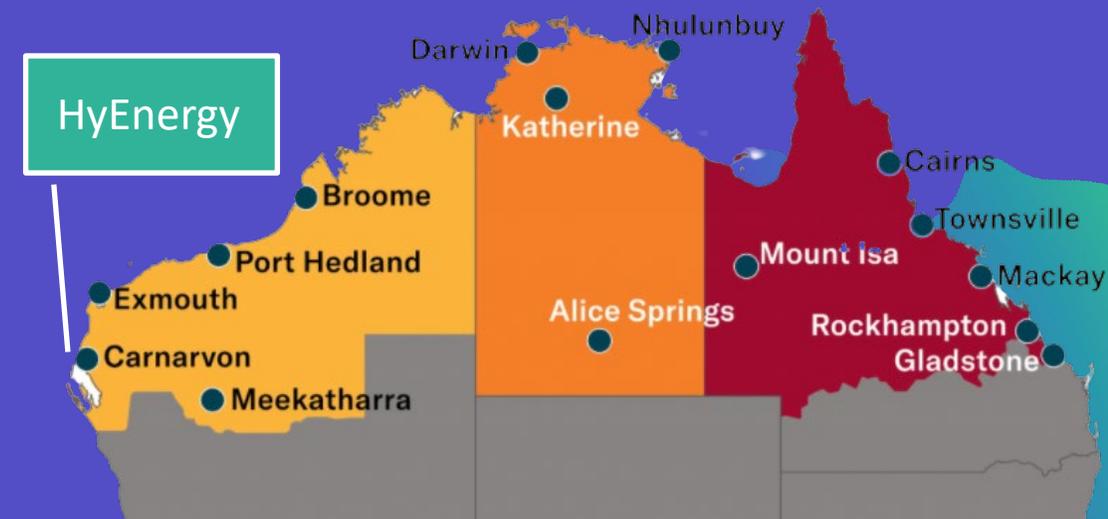
"Now, as the world moves to a lower carbon future, we have the ability to once again be a key player in value chains of new energy technologies, through our exports, expertise, technology and renewables potential. The Government is actively pursuing this vision, which will diversify our economy and create new, long term job opportunities for Western Australians."

**The Honourable Mark McGowan MLC
Premier of Western Australia and
Minister for State Development**

\$5B Northern Australia Infrastructure Fund

- NAIF is a \$5 billion development financier that provides loans to infrastructure projects in the Northern Territory, Queensland and Western Australia, in the last financial year, NAIF has made 11 Investment Decisions worth more than \$1.4 billion.
- NAIF's mission is to be an innovative financing partner in the growth of northern Australia. A key focus of any financing is to drive public benefit, economic and population growth and Indigenous involvement in northern Australia.
- NAIF can lend up to 100% of the debt and has a higher tolerance for the unique risks of investing in northern Australia including but not limited to, distance, remoteness and climate.
- NAIF has announced investment decisions for projects across a range of sectors and regions. They are;
- Mardie Salt & Potash Project (\$450m), Strandline Resources' Coburn Project (\$150m), Chichester Solar Gas Hybrid Project (\$90m), Onslow Marine Support Base (\$16.8m), Kalium Lakes' Beyondie SOP Project (\$74m (plus an additional \$10m facility), AAMC (\$12.5m), and Sheffield Resources' Thunderbird Mineral Sands Project (\$95m).

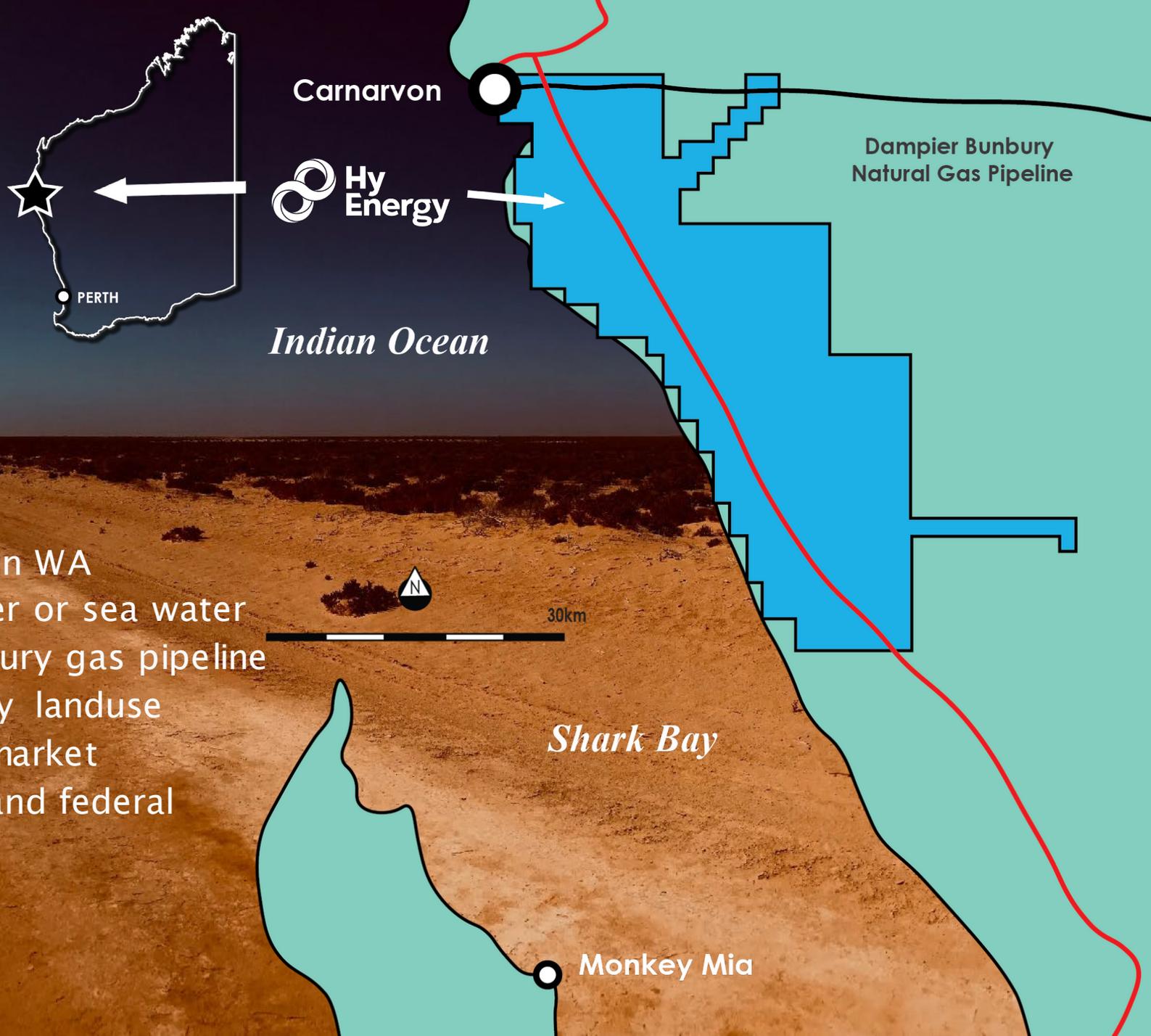
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Why Carnarvon?

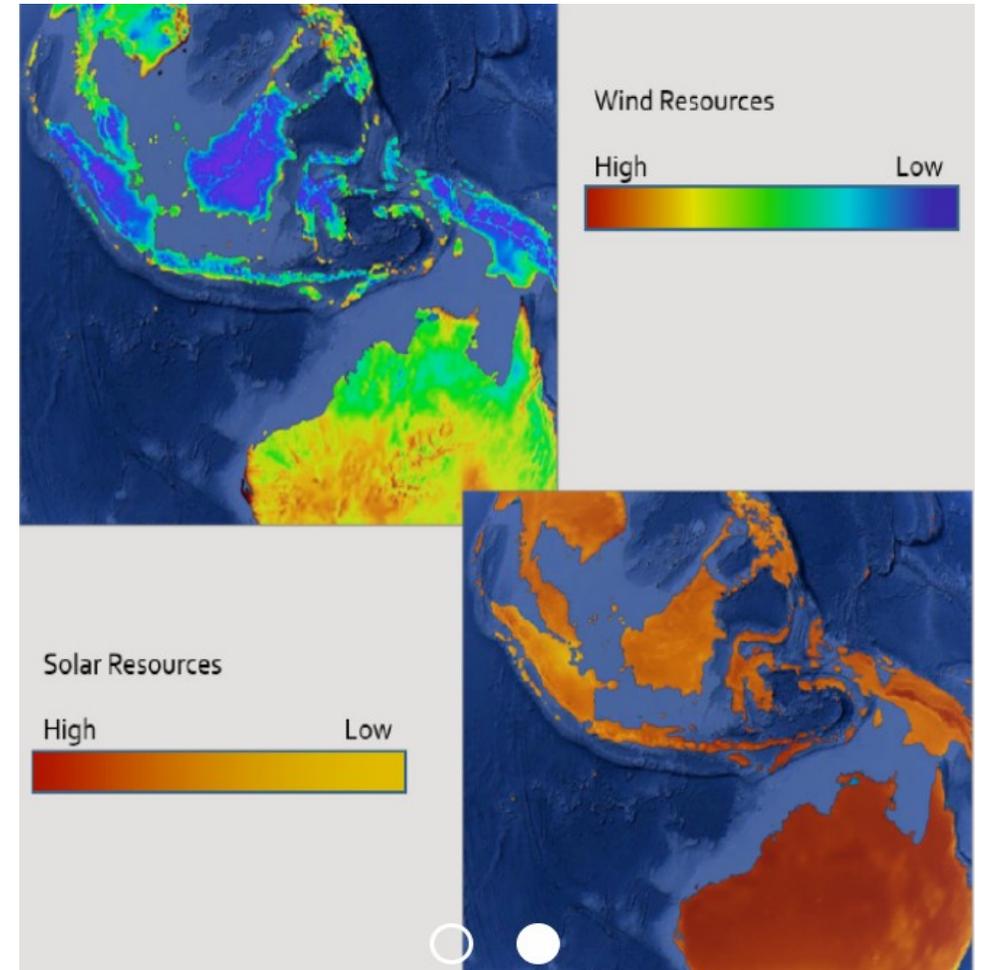
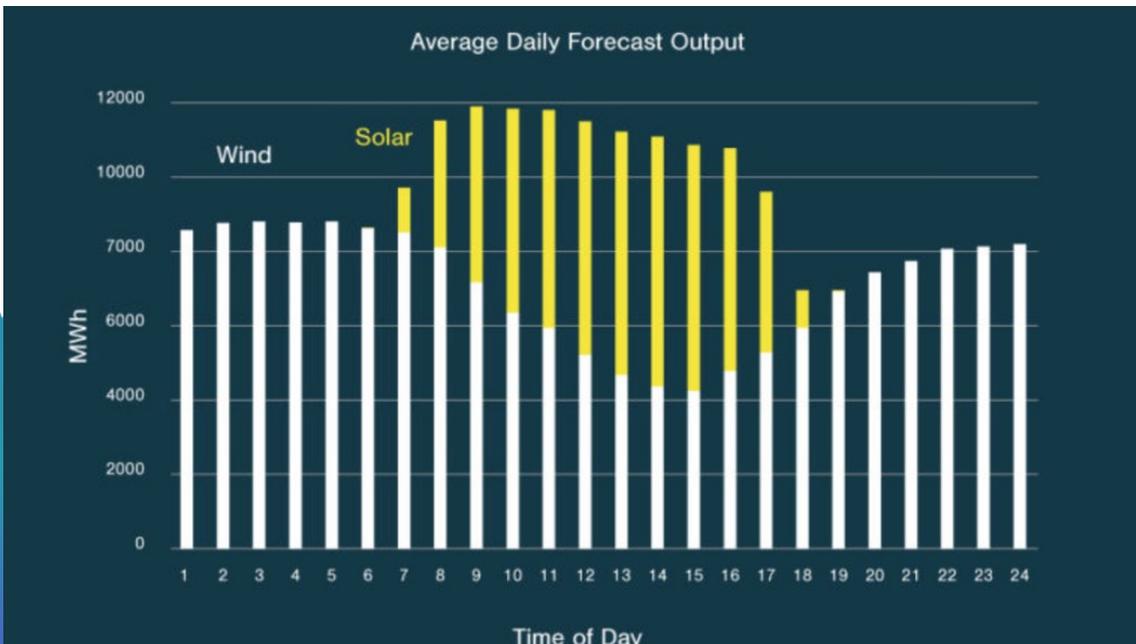
- Sun – very high irradiance
- Wind – fourth windiest location in WA
- Water – Birdrong artesian aquifer or sea water
- Infrastructure – Dampier to Bunbury gas pipeline
- Landuse – very flat, low intensity landuse
- Market – good access to Asian market
- Regulatory – strong local, state and federal support for green H2

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World Class Wind and Solar

- HyEnergy Carnarvon Basin project site in the Gascoyne region in Western Australia has world class solar and wind resources.
- Significantly, those resources are perfectly complementary, with high incidence of sun during the daytime and high wind speeds in the morning, evening and night. This enables competitively priced predictable and firm renewable electricity output, 365 days a year.



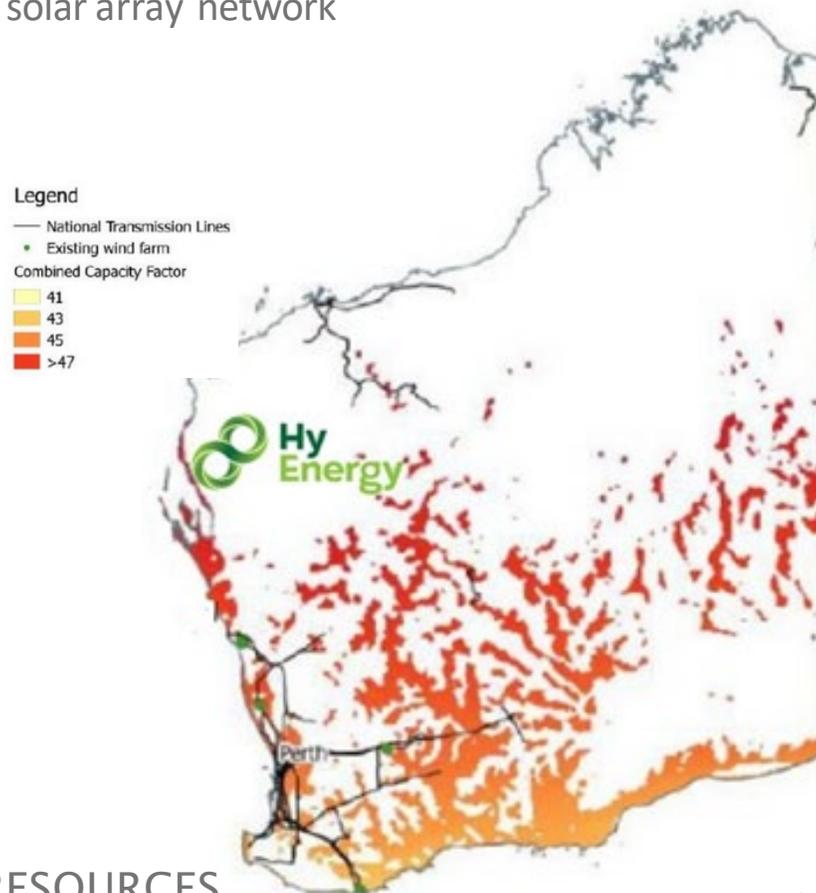
Wind Resource

- Carnarvon Annual Mean Windspeed of 25.5 km/h makes it top 4th windiest location in Western Australia.¹
- Existing windfarms at Denham and Coral Bay operating proof of concept in the Gascoyne region.
- With the Gascoyne's climate and wind pattern, renewable energy is an attractive and viable option.²
- The Carnarvon region does not have the same record of prevalent cyclones as the Pilbara, where other large-scale wind farms are planned, this supports the Carnarvon region as a preferred lower risk wind farm location



Solar

- Carnarvon has a very rich solar resource averaging 211 sunny days per year, with an average solar exposure of 22 MJ/m² /day (or 6.24 kWh/m² /day) ¹
- Low competing land use and high solar resource makes project area ideal for a large-scale solar array network



Heat map highlighting the best combined wind and solar resource locations (poor wind (<35% CF) and poor solar resource (<16% CF) locations removed)
Source AECOM

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¹ Carnarvon a case study of increasing levels of PV penetration in an isolated electricity supply system (Apr 2012)



Next 12 - 18 Months

- Execute a heritage agreement with the Yinggarda Aboriginal Corporation (YAC) to govern the conduct of site resource monitoring investigations
- Undertake numerous key stakeholder discussions, including, Carnarvon Shire and Community, WA government, Federal government and Indigenous representatives (YAC)
- Assembled a highly capable project team including local & international experts
- Commence feasibility studies for both renewable power generation and green hydrogen production
- Execute a binding MoU with an IPP (Independent Power Provider) to develop the renewable power required for the H2 plant
- Initiate discussions with potential offtakers and AGAIG – Australian Gas and Infrastructure Group (owners of the DBNGP)

Stages

The HyEnergy RH2 Zero Carbon Renewable Green Hydrogen Project is proposed to be developed in stages:

- Stage 1 Foundations and Demonstration, advance priority pilot trial of green hydrogen and green ammonia production in Carnarvon region and investigate potential gas blending into the Dampier Bunbury Natural Gas Pipeline (DBNGP).
- Stage 2 Gas blending, scale up project to supply into the nearby Dampier Bunbury Natural Gas Pipeline. With the aim of helping meet the State Governments objective of up to 10% green hydrogen in the DBNGP by 2030.
- Stage 3 Export, full scale production to supply Asian markets. Develop a Liquefied Hydrogen and or Ammonia Loading Facility in the Carnarvon area. Subject to customer needs hydrogen offtake could be either in the form of ammonia or liquefied hydrogen.

A key element of Australia's approach will be to create hydrogen hubs – clusters of large-scale demand. These may be at ports, in cities, or in regional or remote areas, and will provide the industry with its springboard to scale. Hubs will make the development of infrastructure more cost-effective, promote efficiencies from economies of scale, foster innovation, and promote synergies from sector coupling. These will be complemented and enhanced by other early steps to use hydrogen in transport, industry and gas distribution networks, and integrate hydrogen technologies into our electricity systems in a way that enhances reliability ¹

Project Scope

- The HyEnergy Renewable Hydrogen Project is proposed to generate 1GW (1,000MW) of renewable energy in Western Australia using wind and solar and to produce approx. 60,000t of green hydrogen or up to approx. 300,000t of green ammonia
- The bulk of the energy will be used for large scale production of green hydrogen products for domestic and export markets, with potentially a smaller proportion of generation capacity (or scaled up) to be dedicated to large energy users in the Pilbara region, which could include downstream mineral processing.

Our Aim is to create a hydrogen hub at Carnarvon

We believe that the project will contribute significantly to the national, state and local objectives for new investment, new jobs, renewable energy sources and new export markets. We look forward to working with government, stakeholders and local communities to realise this exciting new project



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Contact Us



Appendix

"The potential to export clean hydrogen is substantial, with the International Energy Agency and the World Energy Council both identifying Australia as a potential hydrogen production powerhouse. We can become a leader in the new industry I call 'shipping sunshine', with our hydrogen exports being additional to our other energy exports."

Dr Alan Finkel AO

Australia's Chief Scientist

Chair, COAG Energy Council Hydrogen Working Group

22 November 2019

Accelerating Renewable Green Hydrogen

 **ARENA**

Renewable Energy Funding Projects Knowledge & Innovation

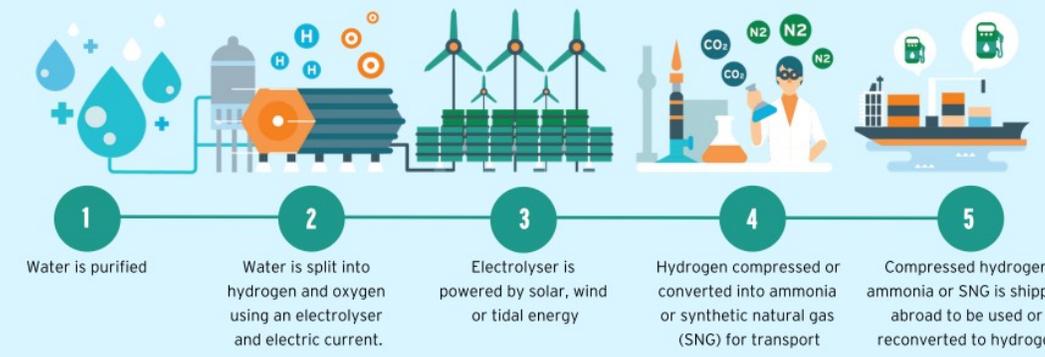
What do we look for in hydrogen energy projects?

- feasibility studies for projects involving 100+ MW electrolyzers
- commercial-scale deployments involving 10-40+ MW electrolyzers focused on industries and applications with large potential demand for hydrogen (e.g. ammonia production, power to gas, etc.) to drive the commercialisation of key component technologies
- demonstration-scale projects involving 1-10 MW electrolyzers demonstrating new applications such as transport or remote area power systems with onsite hydrogen production and fuel cells/turbines replacing diesel generation, to drive the commercialisation for key component technologies
- projects or activities that support the implementation of the National Hydrogen Strategy
- projects that demonstrate or address issues with the use of hydrogen in industrial processes currently using fossil fuels (e.g. hydrogen as a fuel in boilers, kilns or other process heating applications, hydrogen as a reducing agent in steel manufacture).

HYDROGEN

OUR NEXT GREAT EXPORT?

As a nation, we've long shipped coal to the world. But could renewable energy be our next great export industry? ARENA has set exporting renewable energy as one of its priorities. Here's how it might work.



- 1 Water is purified
- 2 Water is split into hydrogen and oxygen using an electrolyser and electric current.
- 3 Electrolyser is powered by solar, wind or tidal energy
- 4 Hydrogen compressed or converted into ammonia or synthetic natural gas (SNG) for transport
- 5 Compressed hydrogen, ammonia or SNG is shipped abroad to be used or reconverted to hydrogen

 [Link: Learn about hydrogen energy.](#)

 **ARENA**

WA Projects attracting funding

Renewable Hydrogen Fund

The WA Government's initial \$10 million Renewable Hydrogen Fund will drive a new job-creating industry harnessing the state's renewable resources.

1. Ord Hydrogen Feasibility Study

Feasibility study for hydrogen production facility near Kununurra utilising existing hydro generation.

Applicant: Pacific Hydro Australia Developments
Grant amount: \$370,000

2. Hyer Penetration

Feasibility study for the integration of renewable hydrogen production with isolated power stations.

Applicant: Energy Developments Limited
Grant amount: \$370,000

3. Hybrid PV-Battery-Hydrogen System for Microgrids

Feasibility study for 100% renewable energy standalone power system for an indigenous community in the Pilbara.

Applicant: Murdoch University
Grant amount: \$75,000

4. Christmas Creek Renewable Hydrogen Mobility Project

This project will develop and deploy onsite renewable hydrogen generation (via electrolysis) and refuelling infrastructure to support a fleet of fuel cell coaches at Fortescue's Christmas Creek mine.

Applicant: Fortescue Future Industries
Grant amount: \$2 million

5. Denham Hydrogen Microgrid Demonstration Project

This pilot project will test and demonstrate the suitability of hydrogen generation in Horizon Power's systems, before executing a full renewable system.

Applicant: Horizon Power
Grant amount: \$1 million

6. Preparing the Dampier to Bunbury Natural Gas Pipeline for Hydrogen

Feasibility study examining the compatibility of the transmission pipeline with blended hydrogen.

Applicant: DBNGP (WA) Nominees
Grant amount: \$216,000

7. Clean Energy Innovation Park

Feasibility study for a 10 MW electrolysis hydrogen production plant.

Applicant: ATCO Gas Australia
Grant amount: \$375,000

8. Green Hydrogen for the City of Cockburn

Feasibility study for solar hydrogen production for waste collection and light vehicle fleets.

Applicant: City of Cockburn
Grant amount: \$149,000

9. Hydrogen Refueller Station

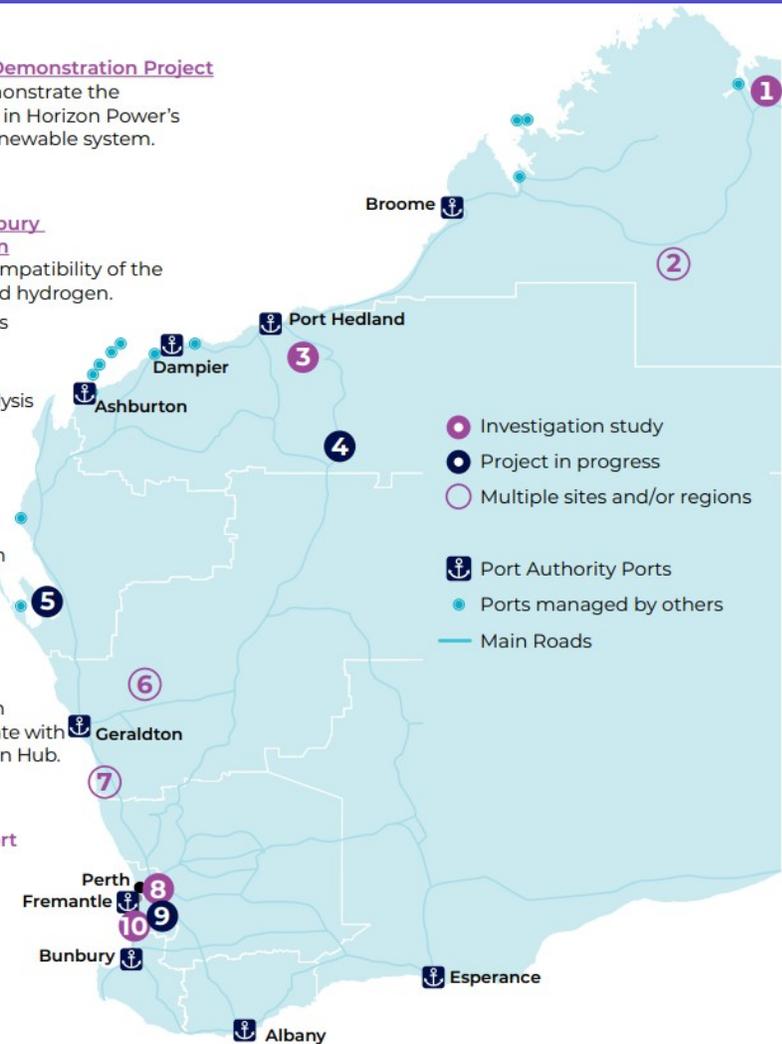
This project will deliver a hydrogen refuelling station in Perth to integrate with the existing Clean Energy Innovation Hub.

Applicant: ATCO Gas Australia
Grant amount: \$1 million

10. Renewable Hydrogen Transport Hub in the City of Mandurah

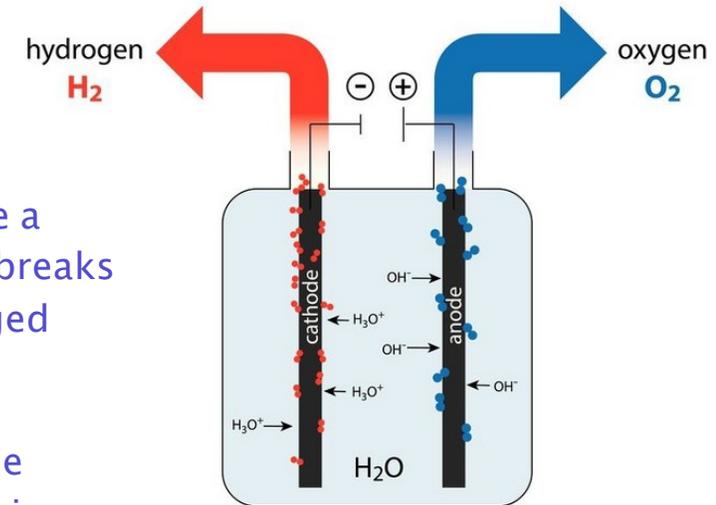
Feasibility study for a hydrogen refuelling infrastructure hub and associated transport application.

Applicant: Hazer Group Limited
Grant amount: \$250,000



Water Electrolysis - how it works

- In a water electrolysis plant, electricity is passed through water, thereby initiating the splitting of the water molecules into their two components, hydrogen and oxygen.
- Oxygen accumulates at the plus pole, rises and escapes into the atmosphere. Hydrogen accumulates at the minus pole, from where it can be captured and stored.
- A hydrogen fuel cell is the main source of energy in a hydrogen fuel engine and works like a battery. There is a membrane situated in the middle of the cathode and anode. Hydrogen breaks down when it hits this membrane through a chemical reaction that makes negatively charged electrons and positively charged hydrogen ions
- An electric current is formed when the positively charged hydrogen ions travel through the membrane while the electrons go around. The hydrogen ions combine with oxygen, which is naturally available, to form water. The water is expelled from the fuel cell along with heat which are the only by products of the process. This is why the hydrogen fuel engine is believed to be eco-friendly.



How much Hydrogen is that?



1 kg of hydrogen is enough to travel up to **100 km** in a **Hyundai Nexo**



Travelling in a **Hyundai Santa Fe** uses **7.5 L** of diesel or **9.3 L** of petrol



Driving a **Hyundai Nexo** compared to a diesel **Hyundai Santa Fe** avoids **0.2 kg CO₂-e / km** driven or **20 kg CO₂-e per kilogram** of hydrogen used



1 kg of hydrogen in a fuel cell could power a **1,400 watt** electric split-cycle air conditioner for **14.5 hours**

Replacing Australian grid electricity with electricity from **hydrogen** avoids **0.75 kg CO₂-e / kWh**, or **15 kg CO₂-e per kilogram** of hydrogen used



1 tonne of **hydrogen** is equivalent to around **3.4 times** the average annual consumption of an Australian house with **gas heating**



Replacing **natural gas** with **hydrogen** avoids **0.052 tonnes CO₂-e / GJ** of **natural gas** or **6.2 tonnes CO₂-e per tonne** of **hydrogen**

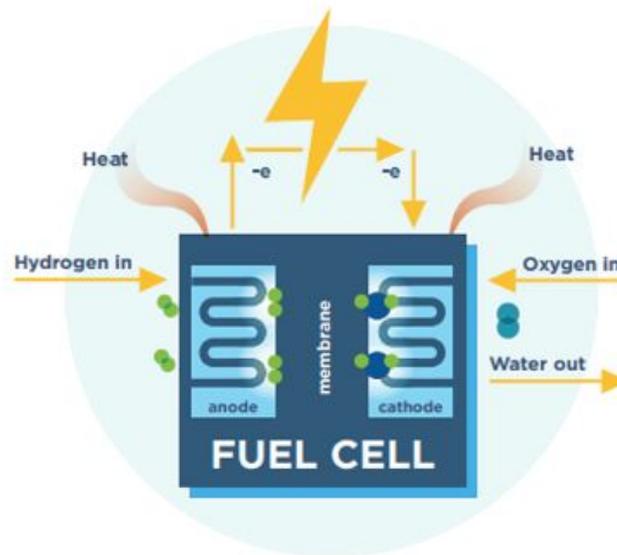


Hydrogen fuel cell - how it works

HOW FUEL CELLS WORK

A fuel cell is an electrochemical energy conversion device - it utilizes hydrogen and oxygen to generate electricity, heat, and water.

- 1** The hydrogen atoms enter at the anode.
- 2** The atoms are stripped of their electrons in the anode.
- 3** The positively charged protons pass through the membrane to the cathode and the negatively charged electrons are forced through a circuit, generating electricity.
- 4** After passing through the circuit, the electrons combine with the protons and oxygen from the air to generate the fuel cell's byproducts: water and heat.



(Source: Fuel Cell & Hydrogen Energy Association)