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## Australian Hydrogen Projects Paper

November 2020

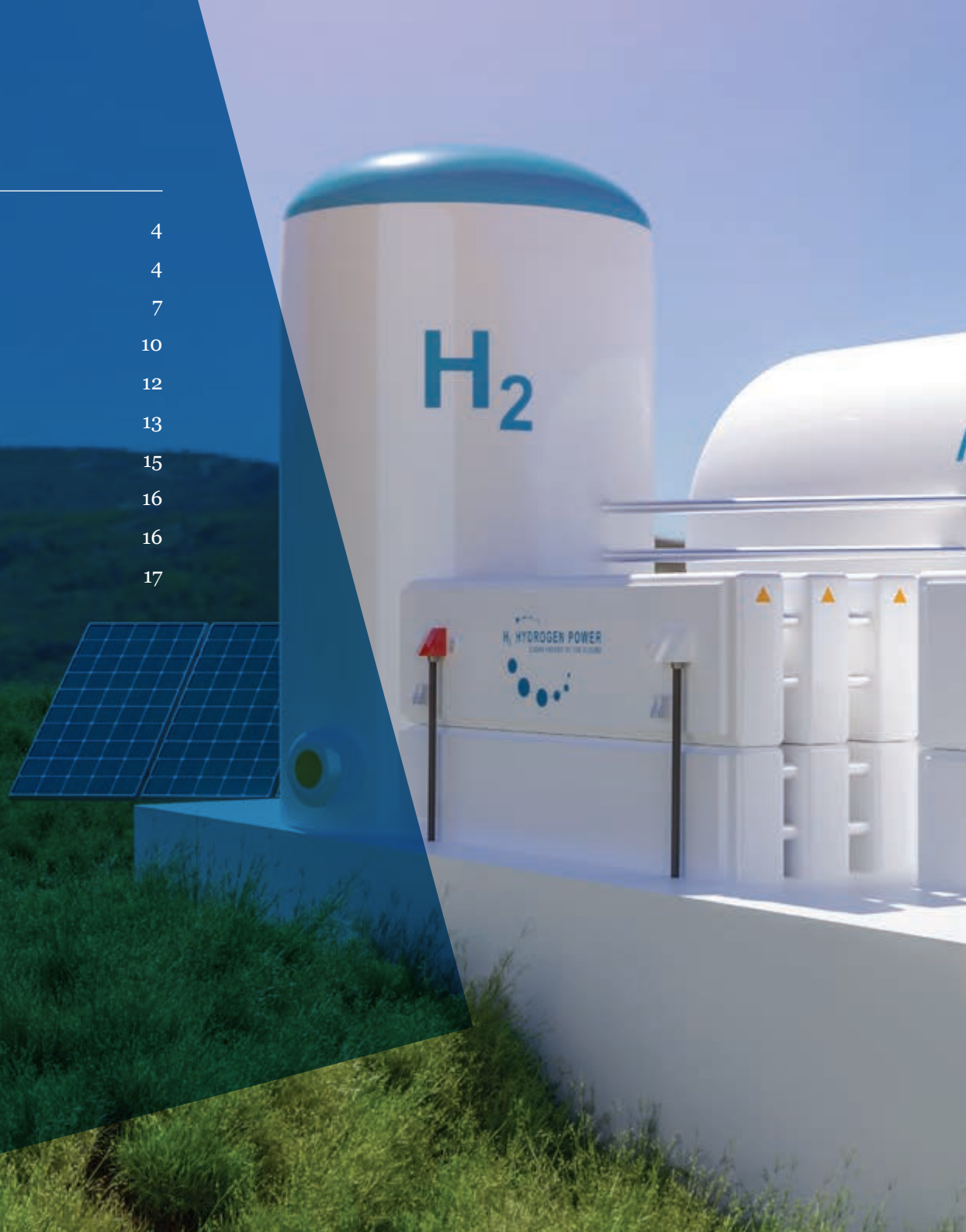
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*This publication is of a general nature only and should not be relied upon as a substitute for specific advice.*





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### Want to know more?

If you would like more information or assistance, drop us an email or give us a call.



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# 1. Current Australian hydrogen projects

We set out in the table below the current Australian hydrogen pilot projects, refuelling projects, feasibility studies and research projects based on information made available to the public as at 29 October 2020.

Legend:

■ Pilot production/pipeline projects

■ Feasibility studies

■ Pilot refuelling projects

■ Research projects

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
1.1 Western Australia							
	<a href="#">Arrowsmith Hydrogen Project</a>	Infinite Blue Energy	Commenced in mid-2020 Expected to be completed in 2022	This project involves building Australia's largest hydrogen production facility in Dongara. The facility is expected to produce 25 tonnes of green hydrogen a day using water, wind and solar energy.	Green	A\$300m investment funding	A\$300m
	<a href="#">ATCO Hydrogen Microgrid, Clean Energy Innovation Hub</a>	ATCO Australia Pty Ltd	Completed in 2017	Approximately 1000 solar panels have been installed at the Jandakot Operations Centre, capable of generating 300kW of power. The design stores 500kWh of energy in batteries, with excess renewable energy utilised to power an electrolyser for the production of hydrogen which can be stored or injected into the micro-grid for testing, as a direct fuel or blended with natural gas.	Green	A\$1.79m by ARENA	A\$3.53m
	<a href="#">ATCO and Fortescue Power On with Hydrogen</a>	ATCO Australia Pty Ltd ("ATCO"), Fortescue Metals Group ("Fortescue")	Unknown	ATCO is working with Fortescue to deploy hydrogen vehicle fuelling infrastructure in Western Australia. Under the agreement, ATCO and Fortescue will construct and operate the refuelling facility at ATCO's existing facility in Jandakot.	N/A	Unknown	Unknown
	<a href="#">Clean Energy Innovation Park</a>	ATCO Australia Pty Ltd	Unknown	ATCO is conducting a feasibility study for the development of a 10MW electrolysis hydrogen production plant at Henderson Waste Recovery Park to help form investment decisions. The strategic area of focus is transporting and blending in the gas network.	Blue	A\$375,225 by WA Renewable Hydrogen Fund	A\$500,000
	<a href="#">Green Hydrogen for City of Cockburn</a>	City of Cockburn	Unknown	Feasibility study for solar hydrogen production for waste collection and light vehicle fleets. Study also examines cogeneration opportunities for electricity and heat production.	Green	A\$149,412 by WA Renewable Hydrogen Fund	A\$325,704

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
	<a href="#">Hazer Commercial Demonstration Plant (“HCDP”)</a>	Hazer Group	Commenced in March 2020	The Hazer Group will build a 100 tonne per annum facility which converts biogas from sewerage treatment into hydrogen and graphite. The hydrogen produced will be fuel cell grade, capable of being used as a low emissions transport fuel. In May 2020, the Hazer Group executed a binding Gas Supply Agreement (“GSA”) and Collaboration Deed with Western Australian Water Corporation (“WAWC”) for the supply of biogas and co-location of the HCDP. Under the GSA, the WAWC will supply biogas produced at its Woodman Point Wastewater Treatment Plant as feedstock for the proposed HCDP. Delivery of biogas under the GSA is scheduled to begin in 2021 and continue for three years.	Green	A\$9.4m by ARENA	A\$22.6m
	<a href="#">Hybrid PV-Battery-Hydrogen System for Microgrids</a>	Murdoch University	Unknown	Feasibility study for 100% renewable energy standalone power system for an indigenous community in the Pilbara. Study includes development of a new modelling tool to optimise design.	Green	A\$75,000 by WA Renewable Hydrogen Fund	Unknown
	Hydrogen Peaking Plant for Collie, WA	ATCO, Nedstack, Hydrogenics, Siemens, Nel, Hydrogen Society of Australia	Unknown	Proposed to use Green Hydrogen as a power source. The project will be implemented in three stages. Stage one will be the pilot project based around a 100kW electrolyser. Stage two is implementing the 5kW modular system. Stage 3 is to implement a 120MW+ system.	Green	Unknown	Unknown
	<a href="#">Hyer Penetration – EDL Hydrogen Enabled Hybrid Renewables</a>	Energy Developments Limited	Unknown	Feasibility study for integration of renewable hydrogen production with isolated power stations.	Unknown	A\$242,500 by WA Renewable Hydrogen Fund	Unknown
	<a href="#">Murchison Renewable Hydrogen Project</a>	Siemens, Hydrogen Renewables Australia Pty Ltd	Unknown	5GW wind and solar project to produce green hydrogen for export to Asia. The project is located near Murchison House Station, north off the coast of Kalbarri.	Green	Unknown	Unknown
	<a href="#">Ord Hydrogen</a>	Pacific Hydro Australia Developments Pty Ltd	Unknown	Feasibility study for hydrogen production facility near Kununurra utilising existing hydro generation.	Unknown	A\$370,000 by WA Renewable Hydrogen Fund	Unknown

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
	Green Shepherd	Pearl Clean Energy Pty Ltd	Pre-Feasibility	A phased hydrogen production facility located in the south-west of Western Australia, with an initial 10MW electrolysis plant producing 1,400 tonnes of hydrogen, for use in heavy transportation.	Green	Unknown	Unknown
	<a href="#">Preparing the Dampier to Bunbury Natural Gas Pipeline for Hydrogen</a>	DBNGP (WA) Nominees Pty Ltd	Unknown	Feasibility study examining the compatibility of the transmission pipeline with blended hydrogen, includes preparing a roadmap for development of regulations for hydrogen blended gas in Western Australia.	Blue	A\$216,000 by WA Renewable Hydrogen Fund A\$234,000 by Australian Gas Infrastructure Group	A\$450,000
	<a href="#">Project GERI Feasibility Study</a>	BP Australia Pty Ltd, GHD Group Limited	Commenced in April 2020 Completed in February 2021	The Geraldton Export-Scale Renewable Investment Feasibility Study will explore the potential for developing a green hydrogen and ammonia production supply chain.	Green	A\$1.17m by ARENA	A\$4.42m
	<a href="#">Renewable Hydrogen Transport Hub in the City of Mandurah</a>	Hazer Group Limited	Unknown	Feasibility study for a hydrogen refuelling infrastructure hub and associated transport applications.	Unknown	A\$250,000 by WA Renewable Hydrogen Fund	Unknown
	<a href="#">UWA Methanol from Syngas Research and Development</a>	The University of Western Australia, Anergy Pty Ltd	Commenced in August 2018	The research project seeks to develop an innovative and miniaturised process technology for synthesising renewable methanol from biomass pyrolysis syngas and demonstrate the technology in a laboratory-scale pilot plant for engineering evaluation and process economic studies.	Blue	A\$1.07m	A\$2.9m
	<a href="#">Yara Pilbara Renewable Ammonia Feasibility Study</a>	Yara Pilbara Fertilisers Pty Ltd, Engie Services Australia Pty Limited	Commenced in February 2020	This feasibility study is examining the potential to make renewable hydrogen technology work in industrial-scale facilities. Yara wants to build a pilot project at its facility in WA's Pilbara region to produce ammonia using renewable energy rather than fossil fuels.  The goal is to convert the Pilbara ammonia plant from one that relies completely on natural gas for its hydrogen to one where a significant share of its hydrogen comes from renewable power.	Blue	A\$995,000 by ARENA	A\$3.76m

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
	<a href="#">The Asian Renewable Energy Hub</a>	InterContinental Energy, CWP Renewables, Vestas, Macquarie Bank	Construction expected to start in 2023	The Asian Renewable Energy Hub encompasses 6,500 square kilometres of land in the East Pilbara region. The project will generate up to 15,000+ MW of renewable energy in Western Australia. The bulk of the energy will be used for large scale production of green hydrogen products for domestic and export markets.	Green	N/A	A\$51b
<b>1.2 Queensland</b>							
	<a href="#">APA Renewable Methane Demonstration Plan</a>	APT Facility Management Pty Ltd, Southern Green Gas Pty Limited	Commenced in March 2020	This power to gas demonstration plant to be built at Wallumbilla Gas Hub near Roma will create methane using solar-generated electricity, water and CO2 from the atmosphere.  The power to gas demonstration plant will produce approximately 620kg of hydrogen per year, converting it into 74 gigajoules of methane that can then be injected into APA's natural gas pipelines across the East Coast Gas Grid.	Blue	A\$1.1m by ARENA	A\$2.26m
	<a href="#">Bulwer Island Refuelling Station</a>	BOC	Commenced in May 2019	BOC will install a 220 kW electrolyzer supplied by ITM Power and 100 kW solar array to produce renewable hydrogen through electrolysis at its Bulwer Island site. The electrolyser will have capacity to produce up to 2,400 kilograms of renewable hydrogen per month to power hydrogen fuel cell electric vehicles (HFCEV) and supply BOC's industrial customers.	Green	A\$950,000 by ARENA	A\$4.18m
	<a href="#">Feasibility of Renewable Green Energy</a>	Dyno Nobel Moranbah Pty Ltd, Incitec Pivot Limited	Completed	The Feasibility of Renewable Green Hydrogen project will conduct and assess the feasibility of producing renewable hydrogen and ammonia at Dyno Nobel's existing facility in Moranbah, Queensland.	Green	A\$980,000 by ARENA	A\$2.67m
	<a href="#">Feasibility Study for a Green Hydrogen and Ammonia Project</a>	Queensland Nitrates Pty Ltd, Neoen Australia Pty Ltd, Advisian Pty Ltd (part of the Worley Group)	Completed	The Feasibility Study for a Green Hydrogen and Ammonia Project is a study of using green hydrogen to produce ammonia at QNP's existing manufacturing plant at Moura site. The proposed facility includes a 30 MW electrolyser and a small-scale ammonia plant consuming 208 GWh of electricity.	Green	A\$1.91m by ARENA	A\$3.89m
	<a href="#">Hydrogen Park Gladstone</a>	AGN	Commence in November 2020	Development of a renewable hydrogen plant, able to deliver up to 10% blended hydrogen across Gladstone's 770 residential, small commercial and industrial customer base.	Unknown	A\$1.78m by Queensland Hydrogen Industry Strategy Fund	A\$4.2m

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
	H2-Hub™ Gladstone	Hydrogen Utility	Unknown	Proposal of an industrial complex for the large-scale production of green hydrogen and ammonia. H2U has a contract on a 171 hectare site at Yarwun in the Gladstone State Development Area, which is in close proximity to the export precinct at Fisherman's Landing.	Unknown	Unknown	A\$1.61b billion
	<a href="#">National Hydrogen Materials Reference Facility</a>	Griffith University	Unknown	Reference facility focused on characterising the performance of hydrogen storage materials. Capabilities include: measurement of hydrogen absorption, adsorption and desorption, lifetime testing, hydrogen storage testing systems.	Unknown	Unknown	Unknown
	<a href="#">Northern Oil Advanced Biofuels Laboratory</a>	Southern Oil Refining Pty Ltd	Completed	The Northern Oil Advanced Biofuels Laboratory project involves the development and construction of Australia's first biocrude and biofuel laboratory at the site of the Northern Oil Advanced Biofuels Pilot Plant in Yarwun, central Queensland.  Hydrogen will be produced from waste through the chemical looping process to support refining. Surplus hydrogen will be used to power a 200-400kw fuel cell.	Blue	A\$3.19m by ARENA	A\$6.94m
	<a href="#">Pacific Solar Hydrogen</a>	Austrom Hydrogem	Unknown	Development of a solar farm and battery facility near Callide, Central Queensland, with a capacity of up to 3,600MW. The solar farm will supply renewable energy for a hydrogen production facility at Gladstone for export of hydrogen.	Unknown	Unknown	Unknown
	<a href="#">Queensland Centre for Advanced Technology</a>	CSIRO	Unknown	Internationally-unique facility for studying the gasification behaviour of a range of feedstocks over a range of industrially relevant conditions.	Unknown	Unknown	Unknown
	<a href="#">Redlands Research Centre</a>	Queensland University of Technology	Unknown	Renewable hydrogen pilot plan to build knowledge and explore export opportunities.	Unknown	Unknown	A\$7.5m
	<a href="#">Renewable Ammonia Plant</a>	(Dyno Nobel Moranbah) Incitec Pivot Limited	Commenced September 2019	Assessing the feasibility of creating the world's largest ammonia plant using a 160MW electrolyser powered by a 210MW solar farm.	Green	A\$980,000 by ARENA	A\$2.7m
	<a href="#">Renewable Hydrogen Microgrid</a>	Daintree Renewable Energy Pty Ltd	Unknown	Assessing the feasibility of a microgrid will store energy generated by new and existing solar panels by converting it to hydrogen for use in a fuel cell RAPS.	Unknown	A\$950,150 by Commonwealth Government's Regional and Remote Communities Reliability Fund	Unknown



#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
	<a href="#">Renewable Hydrogen Production and Refuelling Project, Pinkenba</a>	BOC Limited, ITM Power Pty Ltd, Queensland University of Technology, Hyundai Motor Company Australia Pty Limited	Completed	The Renewable Hydrogen Production and Refuelling Project aims to demonstrate renewable hydrogen production at a commercially viable scale, and help progress the commercialisation of hydrogen for vehicle transport in Australia.	Blue	A\$950,000	A\$4.18m
	<a href="#">Sir Samuel Griffith Centre Renewable Hydrogen Microgrid</a>	Griffith University	Unknown	University building operating independently of the electricity grid by integrating PV, electrolysis and fuel cells.	Green	Unknown	Unknown
	<a href="#">Springfield City Group</a>	Springfield City Group, ENGIE	Unknown	Greater Springfield, located in Southeast Queensland, Australia and named the World's Best Master-Planned Community by the International Real Estate Federation, that's precisely the goal. In partnership with Springfield City Group, ENGIE is investing in a revolutionary zero-carbon plan that will make Springfield a beacon of sustainability and innovation.	Unknown	Unknown	Unknown
	<a href="#">Stanwell Hydrogen Electrolysis Deployment Feasibility Study</a>	Stanwell Corporation Limited, Deloitte Financial Advisory Pty Limited, Advisian Pty Ltd	Commenced in March 2020	Assessing the feasibility of a large (10MW or bigger) hydrogen electrolysis demonstration plant at Stanwell Power Station, near Rockhampton in Queensland.	Green	A\$1.25m by ARENA	A\$4.99m
	<a href="#">Sun Metals Corporation</a>	Sun Metals Corporation Pty Ltd	Unknown	Establishment of a renewable hydrogen plant with the focus on diesel displacement for heavy vehicles and integration into the operations of the refinery.	Unknown	A\$5m by Queensland Government's Hydrogen Industry Development Strategy Fund	Unknown
	<a href="#">Bundaberg Hydrogen Hub ("BHH")</a>	Elvin Group Renewables, Denzo Pty Ltd, H2X	Unknown	The BHH will provide clean green hydrogen for a wide range of industrial and vehicle uses. It will start with the development of a state of the art 80MW Hydrogen Electrolyser. The BHH is targeting production of zero-emission clean hydrogen producing up to 6,000 tonnes each year.	Green	N/A	A\$300m

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
1.3 New South Wales							
	<a href="#">ARC Training Centre for The Global Hydrogen Economy</a>	University of New South Wales	Unknown	Centre to train and develop hydrogen engineering professionals to meet the demand for hydrogen production, storage and distribution skills.	Unknown	A\$4.9m by Australian Research Council	Unknown
	<a href="#">Biological Hydrogen Production</a>	Macquarie University, Bioplatforms Australia Ltd, BOC Australia	Started in August 2018	The Biological Hydrogen Production project will produce a bacteria that can efficiently and rapidly convert sugars from various renewable sources into hydrogen gas.	Unknown	A\$1.17m by ARENA	A\$2.83m
	<a href="#">Fire and Explosion Testing Services ("FETS")</a>	University of Newcastle	Unknown	With its A\$15 million facility, FETS operates an integrated platform that combines a wide range of expertise at the University with one of the most comprehensive and state-of-the-art fire and explosion testing facilities in the country. Testing of hydrogen is to be included. Comprises of a 30m and 100m detonation tube for explosion measurements and analysis.	Unknown	Unknown	A\$15m
	<a href="#">H2Store Technology</a>	University of New South Wales	Second half of 2020	H2Store technology is a compact and transportable hydrogen storage solution. It's an effective way to store and generate renewable energy, mitigate the fluctuation of renewable generation and increase confidence in the security of supply. This is done in collaboration with the Manilla Solar project.	Green	A\$3.5m by NSW Government	Unknown
	<a href="#">Highly Efficient and Low Cost Photovoltaic-Electrolysis System</a>	University of New South Wales, Beijing Zhongchao Haiqi Technology Co Ltd, RayGen Resources Pty Ltd, Shenzhen Kohodo Sunshine Renewable Energy Co. Ltd	Started in August 2018	The Highly Efficient & Low Cost Photovoltaic-Electrolysis System project is a promising approach to produce renewable hydrogen (H2) for export from sunlight and water. The main obstacle to utilising PVE to produce H2 is the high cost and modest efficiency. The project aims to lower the cost of renewable hydrogen produced via PVE by improving the energy efficiency of transition metal-based alkaline water electrolyzers and the overall solar to hydrogen (STH) conversion efficiency of PVE systems. This approach is anticipated to lead to the development of an integrated PVE system demonstrating an overall solar-to hydrogen (STH) conversion efficiency > 30%.	Green	A\$1.31m by ARENA	A\$5.04m

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
	<a href="#">Jemena Power to Gas Demonstration</a>	Jemena	Started in September 2018	The Jemena Power to Gas Demonstration project involves designing and constructing a Power-to-Gas facility which will source renewable electricity and convert it into hydrogen via electrolysis.	Blue	A\$7.5m by ARENA	A\$15m
	<a href="#">Methane Fuel Carrier Research and Development</a>	CSIRO	Started in August 2018	The Methane Fuel Carrier Research and Development project will investigate the production of synthetic methane as a readily exportable, renewable fuel, derived from atmospheric carbon dioxide and hydrogen produced from renewable sources.	Blue	A\$1.08m	A\$2.17m
	<a href="#">Project NEO</a>	Infinite Blue Energy	Unknown	1000MW of combined wind, solar and hydrogen fuel cell generation capacity deployed in New South Wales, delivering continuous power to the State.	Green	Unknown	A\$2.7b
	<a href="#">Solar Thermochemical Hydrogen Research and Development</a>	CSIRO, Niigata University, Japan Institute of Applied Energy (IAE)	Started in August 2018	The Solar Thermochemical Hydrogen Research and Development project will demonstrate Australia's first solar thermal beam down system, concentrating solar energy from a heliostat field in order to heat a fluidised bed on the ground to 1300 °C. Water added to this bed will be split into hydrogen and oxygen using a two-step chemical process. Additional research will examine the conversion of the produced hydrogen into methanol that can be used as a hydrogen carrier to export markets.	Green	A\$2m by ARENA	A\$4.04m
	<a href="#">Waste Biomass to Renewable Hydrogen</a>	University of New South Wales, Beijing Origin Water Technology Co. Ltd, Apricus Energy	Started in August 2018	Extracting hydrogen from biomass represents a valuable approach by which a waste organic stream can be converted into hydrogen (or hydrogen-carriers) for downstream use or as an exportable commodity. The Waste Biomass to Renewable Hydrogen project aims to develop a biomass reforming system capable of extracting hydrogen and/or hydrogen-carriers – such as bio-alcohols and bio-acids – from biomass.	Blue	A\$1.04m by ARENA	A\$2.54m
	Warrambool Research Centre	Deakin University, Kenworth	Unknown	The centre will test how hydrogen fuel-cells can work together with electric vehicle technologies. It will mean an electric truck can create power while driving, avoiding the need for frequent stops and battery charging infrastructure.	N/A	A\$2m by Commonwealth Government	A\$20m

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
1.4 South Australia							
	<a href="#">Australian Hydrogen Centre</a>	Australian Gas Networks Limited, Department for Energy and Mining, Department of Environment, Land, Water and Planning, AusNet Services, Engie Energy Services, Neoen Australia	Started in December 2019	The Australian Hydrogen Centre will assess the feasibility of blending renewable hydrogen into gas distribution networks in Victoria and South Australia.	Blue	A\$1.28m by ARENA	A\$4.15m
	<a href="#">Crystal Brook Energy Park</a>	Neoen Australia	Unknown (construction starting second half of 2020)	Neoen is looking to construct a A\$600 million renewable hydrogen production facility, to support its solar and wind generation facilities at the Crystal Brook Site. The proposed 50MW Hydrogen superhub would be the largest co-located wind, solar, battery and hydrogen production facility in the world, producing about 7000 tonnes of hydrogen a year.	Green	A\$1m by South Australian Government	A\$500m
	<a href="#">Connecting the Power and Gas Grids</a>	AquaHydrex Pty Ltd	Completed	The “Connecting the Power and Gas Grids project” aimed to design and build an electrolyser pilot plant and test it in partnership with Australian Gas Networks (AGN) as a demonstration of “power to gas” injection of hydrogen into the natural gas grid.	Blue	A\$5m by ARENA	A\$12.21m
	<a href="#">Hydrogen Park of South Australia</a>	Australian Gas Networks (AGN), part of the Australian Gas Infrastructure Group (AGIG), Siemens	Unknown	Electrolysis will be used to generate hydrogen using renewable electricity and injected into the natural gas network.	Green	A\$4.9m by South Australian Government	A\$11.4m

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
	<a href="#">Mawson Lakes Renewable Energy System</a>	University of South Australia	Completed in 2019	The University of South Australia has built a A\$7.7 million facility incorporating solar power, flow batteries, a hydrogen fuel cell stack and thermal energy storage at its Mawson Lakes campus.	Green	A\$3.6m by South Australian Government	A\$7.7m
	<a href="#">Port Lincoln Hydrogen and Ammonia Supply Chain Demonstrator</a>	H2U, Hydrogen Utility, ThyssenKrupp	Unknown	A 30MW water electrolysis plant, as well as a facility for sustainable ammonia production.	Green	A\$4.7m by South Australian Government	A\$117.5m
<b>1.5 Victoria</b>							
	<a href="#">Enabling the Efficient, Affordable and Robust Use of Renewable Hydrogen</a>	University of Melbourne, University of New South Wales, MAN Diesel & Turbo SE, Energy Power Systems Australia Pty Ltd, Continental Automotive Systems Inc, Energy Australia Pty Ltd	Commenced in August 2018	A number of experimental facilities and modelling tools will be used to develop and implement high efficiency, hydrogen fuelled engines. Fundamental experiments will be conducted to assess hydrogen combustion at engine-relevant conditions.	N/A	A\$2.59m	A\$8.61m
	<a href="#">Heywood Hydrogen and Solar Farm Project</a>	Glenelg Shire Council, Deakin University, CSIRO, Countrywide Renewable Energy, ITM Power, Port of Portland and Ausnet Services	Unknown	Electricity generated at the 80MW solar farm would be used to produce hydrogen gas which would be exported out of the Port of Portland.	Green	Unknown	A\$160m

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
	<a href="#">Hydrogen Energy Supply Chain Project</a>	Kawasaki Heavy Industries, J-POWER, Iwatani Corporation, Marubeni Corporation, Shell and AGL	Commenced in 2019	During the pilot phase, brown coal will be gasified in Latrobe Valley to produce hydrogen-rich syngas which will subsequently be purified, then transported to the Port of Hastings to be liquefied and loaded onto a specialised tanker for transport to Japan.	Brown	A\$100m by Victorian Government and Commonwealth Government	A\$496m
	<a href="#">Hydrogen to Ammonia Research and Development</a>	CSIRO, Orica Australia Pty Ltd, Grains Research and Development Corporation	Commenced in August 2018	The Hydrogen to Ammonia Research and Development project is to develop an ammonia production process which is less energy intensive than the conventional Haber-Bosch process and does not contribute to any greenhouse gas emissions.	Blue	A\$1.17m by ARENA	A\$2.83m
	<a href="#">Liquid Fuel Carrier Research and Development</a>	CSIRO, Johnson Matthey, BG Negev Technologies and Applications Ltd	Started in August 2018	The Liquid Fuel Carrier Research and Development project proposes a game changing technology for conversion of solar energy to liquid fuels. Both solar heat and solar PV electricity will be used to drive a solid oxide electrolyser device for production of hydrogen and syngas which then can be converted onsite into transportable liquid fuels enabling large-scale energy export and storage.	Green	A\$1.01m	A\$2.51m
	<a href="#">Toyota Ecopark Hydrogen Demonstration Project</a>	Toyota Motor Corporation Australia Limited	Started March 2019	This project involves constructing refuelling infrastructure to be used as a demonstration site for relevant industry partners.	Green	A\$3.07m by ARENA	A\$7.37m

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
<b>1.6 Australian Capital Territory</b>							
	<a href="#">Efficient Solar Hydrogen Generation</a>	The Australian National University, Shenzhen Kohodo Hydrogen Energy, University of New South Wales	Started in August 2018	The Efficient Solar Hydrogen Generation project investigates the fabrication and integration of low-cost semiconductors and earth abundant catalysts to address one of the most significant challenges for hydrogen production: the development of efficient, stable and cheap solar water splitting systems.	Green	A\$1.72m by ARENA	A\$4.4m
	<a href="#">Government Fleet and Refuelling Station</a>	ActewAGL, Neoen, Megawatt Capital, Siemens, Hyundai	Opening in late 2020	Public hydrogen refuelling station will open in Canberra to service 20 new FCEV's under order by the ACT government.	Unknown	Unknown	A\$1m
	<a href="#">Hydrogen Test Facility</a>	Evoenergy, Canberra Institute of Technology ("CIT")	Opened in December 2018	CIT will use the facility together with Evoenergy to train plumbing students in these new technologies, to equip future tradespeople with skills not only for now, but for the future. Through this partnership, Evoenergy will gain a clear understanding of the impact of introducing hydrogen to existing infrastructure, and how it can viably be used as a new energy source.	N/A	Unknown	Unknown

#	Project name	Proposing company	Status	Description	Hydrogen type	Funding received	Total cost
1.7 Tasmania							
	<a href="#">Bell Bay Hydrogen Hub</a>	Unknown	Unknown	The Bell Bay Advanced Manufacturing Zone is Tasmania's premier industrial zone and has the established infrastructure, capacity and ease of access to transport options to support the production of hydrogen and its derivatives.	Unknown	Unknown	Unknown
	<a href="#">Burnie Hydrogen Hub</a>	Unknown	Unknown	Development of a hydrogen hub in Burnie.	Unknown	Unknown	Unknown
1.8 Australia / International							
	<a href="#">Global H2OzBus Project</a>	Transit Systems, Ballard Power Systems, BOC Limited, Palisade Investment Partners and ITM Power	Unknown	In May 2020, the H2OzBus Project was established, with a consortium of partners signing a memorandum of understanding (MoU) as a further step in evaluating and demonstrating the concept of hydrogen fuel cell electric buses for use in public bus transport in Australia.	Unknown	Unknown	Unknown
	<a href="#">Woodside international agreements (locations: Australia, Japan, and Korea)</a>	Woodside	Unknown	Woodside is focused on establishing collaborative partnerships, particularly with Japan and Korea for the past two years, to progress hydrogen export.	Green	Unknown	Unknown
				(a) An MoU has been signed with Korea Gas Corporation (KOGAS) to conduct a feasibility study to explore a green hydrogen export project.			
				(b) Investment in HyNet (a 13 -party consortium led by KOGAS and Hyundai Motor Co.) which aims to deliver 100 hydrogen refuelling stations over the next four years in Korea. (c) Consortium with Japanese companies to undertake a joint study examining the large-scale export of hydrogen as ammonia for use decarbonising coal-fired power generation in Japan.			



## 2. Australian hydrogen funding initiatives

State	Funding initiatives	Is this funding currently available to projects?
WA	<p>The Western Australian Government has recently accelerated its Renewable Hydrogen Strategy by a decade (from 2040 to 2030) and will invest A\$22 million towards the development of the hydrogen industry in Western Australia. The accelerated targets are accompanied with nine feasibility studies and projects.</p> <p>As part of the strategy, the following investments have been made:</p> <ul style="list-style-type: none"> <li>• A\$5.7 million to an Australia-first renewable energy microgrid in Denham;</li> <li>• A\$2 million for the FMG H2's renewable hydrogen mobility project in Pilbara;</li> <li>• A\$1 million for ATCO's hydrogen refueller project in Jandakot;</li> <li>• A\$5 million for the State Government's existing A\$10 million Renewable Hydrogen Fund for grants to support the hydrogen industry development in Western Australia;</li> <li>• A\$3 million for a regulatory reform package to undertake and support a local hydrogen industry;</li> <li>• A\$2.7 million to expand the Renewable Hydrogen Unit in the Department of Jobs, tourism, Science and Innovation;</li> <li>• A\$1 million to identify locations suitable for hydrogen storage;</li> <li>• A\$1 million to develop a detailed supply chain model that promotes hydrogen and identifies bottlenecks and limitations affecting the hydrogen export industry; and</li> <li>• A\$600,000 to study blending hydrogen in the Western Australian gas network.</li> </ul> <p>Applications are closed for funding capital works projects by the Renewable Hydrogen Fund.</p>	No
Qld	<p><b>Hydrogen Industry Development Fund</b></p> <p>The Queensland Government has allocated A\$15 million over four years for a Hydrogen Industry Development Fund ("HIDF"). The purpose is to actively support existing and new businesses looking to develop hydrogen projects.</p> <p>The HIDF provides financial assistance towards the Eligible Project Costs for an eligible project, under two funding streams:</p> <ul style="list-style-type: none"> <li>• Funding Stream One – Plant and Equipment: Financial assistance of between A\$500,000 and A\$5 million – to a maximum of 50 percent of Eligible Project Costs (investment in hydrogen related plant, equipment or technology) for projects that will contribute to the HIDF objectives.</li> <li>• Funding Stream Two – Feasibility Studies: Financial assistance of up to A\$500,000 – to a maximum of 25 percent of Eligible Project Costs (whichever is lesser), for a feasibility study related to a proposed project that will contribute to the HIDF objectives.</li> </ul> <p>Expressions of interest or round one closed on 21 August 2019. Applications for funding will only be accepted when a funding round is open with future rounds of the HIDF dependent on the funding available. For more information, please view the <a href="#">Hydrogen Industry Development</a> and the <a href="#">applicant guidelines</a>.</p>	No

State	Funding initiatives	Is this funding currently available to projects?
NSW	<p><b>Regional Community Energy Fund</b> The New South Wales Government has offered A\$15 million in grants for regional community energy. The projects funded, among other things, includes New South Wales' first hydrogen energy storage system alongside a solar-battery system to store renewable energy, at Manilla.</p> <p>Applications for the first round of funding have now closed and it has not yet been confirmed if a second round will take place. This <a href="#">page</a> will be updated if information becomes available.</p> <p><b>Emerging Energy Program</b> The New South Wales Government has offered A\$75 million in its Emerging Energy Program to support the development of innovative, large-scale electricity and storage projects in New South Wales. The program will help reduce barriers to investing in emerging technologies, supporting affordable, reliable and clean energy across the state.</p> <p>There are two funding streams offering grants to speed up project development:</p> <ul style="list-style-type: none"> <li>• Pre-investment studies: Funding for activities that will lead to development of a dispatchable electricity project.</li> <li>• Capital projects: Funding to assist with the construction of a dispatchable electricity project.</li> </ul> <p>They have awarded grants in stream one. Projects in stream two have been shortlisted and applications are currently being assessed. At this stage there are no further funding rounds scheduled for both streams. They will update this <a href="#">page</a> should this change.</p>	No
SA	<p>In 2017, the South Australian Government has named four utility-scale energy projects which it will support with grants toward the total cost of development. Investment guidelines issued via the fund called for projects in three key areas of renewable and clean energy technologies: projects to firm renewable generation, storing energy in bulk and bioenergy. The fund is 50% comprised of grant funding, with the remaining A\$75 million available as loans.</p> <p>The South Australian Government has invested more than A\$17 million in grants and A\$25 million in loans in four green hydrogen projects. The South Australia Government has committed over A\$1 million as part of its Hydrogen Action Plan towards identifying locations for renewable hydrogen production and export infrastructure. The study will consider supply chains based around liquid hydrogen, ammonia and methylcyclohexane. Key findings will be summarised as a modelling tool and detailed prospectus, which will be made available to international customers, infrastructure developers and investors.</p> <p>The South Australian Government has also launched a A\$50 million fund supporting construction of new energy storage projects. Proposals involving pumped hydro energy storage, hydrogen and natural gas storage, bioenergy, solar thermal and batteries are examples that could be submitted into one of the following investment streams:</p> <ul style="list-style-type: none"> <li>• Stream 1 – targeting behind-the-meter projects in commercial or industrial facilities, or in the distribution network.</li> <li>• Stream 2 – targeting centralised, bulk energy storage projects.</li> </ul> <p>Applications closed on 7 February 2019 and successful projects were announced in mid-2019.</p>	No

State	Funding initiatives	Is this funding currently available to projects?
Vic	<p><b>Victoria Hydrogen Investment Program</b> The Victorian Government has introduced the Victoria Hydrogen Investment Program, which has invested A\$2 million to boost the development of clean hydrogen technologies in Victoria.</p> <p>The A\$2 million was used to fund Deakin's Warrnambool Hydrogen Project. The funding will support the first stage of a hydrogen hub to enable the creation of a research, manufacturing and supply chain project in Warrnambool.</p> <p><b>New Energy Jobs Fund</b> Groups ready to develop community-scale renewable energy projects can apply for funding through New Energy Jobs Fund ("NEJF") Round 5 before 18 June 2020. By using the visions of the <a href="#">Regional Renewable Energy Roadmaps</a>, together with the experiences of the pilot Community Power Hubs, there is A\$1 million worth of grants to support community-owned renewable energy projects, directly benefiting the local groups and associations delivering them. Round-5 will focus on projects that:</p> <ul style="list-style-type: none"> <li>• deliver benefits to the participating community.</li> <li>• utilise technology that is a commercially-ready renewable energy project or new energy generation, storage and technology.</li> <li>• implement community energy retailing in Victoria.</li> </ul> <p>Information on the NEJF can be found <a href="#">here</a>.</p>	No
ACT	<p><b>Renewable Energy Innovation Fund</b> The ACT Government's A\$12 million industry-funded Renewable Energy Innovation Fund ("REIF") is driving the long-term development and sustainability of the renewable energy industry in the ACT. REIF Direct Grants aim to provide flexible, early-stage funding to businesses to support a broad diversity of new and emerging technologies, ventures and activities including hydrogen innovation.</p> <p>This round of Direct Grants has up to A\$1.13 million in funding available. In considering proposals, especially with regards to larger funding amounts, the BAB will be looking for how REIF money will leverage private and/or other public funding sources, and the level of direct return to the ACT economy.</p> <p>The REIF Direct Grants Round 2 has now closed. Submissions closed on 29 February 2020.</p>	No
Tas	<p>The Tasmanian Government is offering a A\$50 million support package for the purpose of using abundant existing and expendable renewable energy resources to commence production of renewable hydrogen by 2022-2024. Total funding is available as:</p> <ul style="list-style-type: none"> <li>• up to A\$20 million through a Tasmanian Renewable Hydrogen Fund.</li> <li>• up to A\$20 million in concessional loans.</li> <li>• up to A\$10 million in support services which include competitive electricity supply arrangements and payroll tax relief.</li> </ul> <p>Businesses may now apply for a share of the comprehensive A\$50 million package of support measures, and applications ended on 18 August 2020. For more details, please see this <a href="#">link</a>.</p>	Yes

State	Funding initiatives	Is this funding currently available to projects?
Cth	<p><b>Advancing Hydrogen Fund</b>  The Australian Government through the Clean Energy Finance Corporation (“CEFC”) Investment Mandate Direction 2020 has established a A\$300 million fund to support the growth of a clean, innovative, safe and competitive Australian hydrogen industry. This is known as the Advancing Hydrogen Fund.</p> <p>The Advancing Hydrogen Fund will draw on existing CEFC finance. In line with the CEFC Act, projects seeking CEFC finance through the Advancing Hydrogen Fund are required to be commercial, draw on renewable energy, energy efficiency and/or low emissions technologies and contribute to emissions reduction.</p> <p>Eligible projects can include those which advance hydrogen production; develop export and domestic hydrogen supply chains, including hydrogen export industry infrastructure, establish hydrogen hubs and assist in building domestic demand for hydrogen. It is unclear when applications for this funding will open. More information on CEFC can be found <a href="#">here</a>.</p> <p><b>Regional and Remote Communities Reliability Fund</b>  The Regional and Remote Communities Reliability Fund (“Regional Fund”) will provide up to A\$50.4 million over 5 years from 2019-20 to 2023-24. The Regional Fund supports feasibility studies looking at microgrid technologies to replace, upgrade or supplement existing electricity supply arrangements in off-grid and fringe-of grid communities located in regional and remote areas.</p> <p>Recipients of Round One were announced on 5 June 2020.</p> <p><b>Climate Solutions Fund</b>  The Australian Government has established the Climate Solutions Fund, providing A\$2 billion to continue purchasing low cost-abatement and build on the success of the Emissions Reduction Fund. It aims to deliver a step change to the offsets market in Australia by boosting the supply of Australian carbon credit units (carbon credits).</p> <p>The Climate Solutions Fund offers landholders, communities and businesses the opportunity to run new projects that reduce or remove greenhouse gas emissions from the atmosphere.</p> <p>In running a Climate Solutions Fund project, one can earn carbon credits and sell them to the Australian Government, or to businesses and other private purchasers. Each carbon credit represents one tonne of carbon dioxide equivalent greenhouse gas emissions stored or avoided.</p> <p>Applications appear to still be open, though no official deadline is reflected on the government website. More information on the application process can be found <a href="#">here</a>.</p>	No

State	Funding initiatives	Is this funding currently available to projects?
ARENA	<p><b>Renewable Hydrogen Deployment Fund</b></p> <p>In 2019, ARENA announced the Renewable Hydrogen Deployment Funding Round of up to A\$70 million to help fast track the development of renewable hydrogen in Australia.</p> <p>As of 20 July 2020, ARENA has shortlisted and invited certain applicants to submit a full application for the next stage of the Agency's A\$70 million hydrogen funding round. The total grant requested across all seven is over A\$200 million, with a total project value of almost A\$500 million. ARENA aims to support two or more of the shortlisted large scale renewable hydrogen projects. These projects will be expected to be among some of the largest electrolysers in the world. Each project will need to be powered by renewable electricity, either directly or through a contracting approach.</p> <p>All applicants may also be considered for financing from the CEFC under the CEFC's A\$300 million Advancing Hydrogen Fund.</p> <p>Applicants invited by ARENA must submit the full applications by Wednesday 20 January 2021, 5pm AEDT. More information can be found <a href="#">here</a>.</p>	<p>Only for selected shortlisted applicants to submit full applications</p>







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