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WHITE PAPER

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Clean Fuel of the Future: Policy and Legislation Shaping Australia's Hydrogen Industry

In recent years, the Australian federal government has committed, at both the domestic and international levels, to ambitious renewable energy targets. Australia's hydrogen sector is positioning itself to play an increasingly key role in the global supply of hydrogen and in Australia's transition to a low-emissions economy. Clean hydrogen and hydrogen-based fuels are seen as credible alternatives that can facilitate decarbonisation, particularly in certain sectors including transport, shipping and manufacturing, such as the fertiliser sector.

Within the last 12 months, Australian governments at a federal, state and territory level have prioritised the implementation of regulatory initiatives and the funding of programs to accelerate hydrogen industry development across the country. The new regulatory initiatives have been announced in the context of a need to develop clean hydrogen production projects at large scale and to produce hydrogen at commercially suitable prices.

Industry participants will benefit from understanding the key aspects of the new regulatory reforms in the context of the Australian government's policy and funding initiatives, which are aimed at developing Australia's renewable hydrogen industry to be one of the largest in the world by 2030. These reforms provide developers, financiers and investors with opportunities to participate further in the growing Australian hydrogen industry.

INTRODUCTION

In the push to achieve net zero by 2050, the Australian government has prioritised increasing reliance on renewable energy sources. In 2022, the federal government codified its emissions reduction target under the Paris Agreement, and committed to targets of:

- 43% reduction in emissions over 2005 levels by 2030 and net zero by 2050; and
- 82% national renewable electricity generation by 2030.

At an international level, Australia joined 117 other countries in making a pledge to triple its renewable energy generation capacity by 2030 at the United Nations' 28th annual climate change summit, COP 28, in the United Arab Emirates.

The use of hydrogen is likely to prove key to achieving emissions reduction goals if it can be produced economically in large quantities.

Australia currently has up to $300 billion of announced potential domestic use and large export hydrogen projects; however, significant strategic investment, both financially and from a policy perspective, is required to develop Australia's renewable hydrogen industry in a timely and sustainable manner.

This *White Paper* outlines recent federal legislative developments and policy initiatives, along with legislative developments at the state and territory level, and offers valuable insights for industry players navigating opportunities in this evolving sector.

AUSTRALIAN FEDERAL HYDROGEN INDUSTRY POLICY INITIATIVES AND FUNDING

The federal government is taking significant strides to strengthen Australia's renewable hydrogen industry, aligning its efforts with ambitious emissions reduction targets. Key policy initiatives and funding programs at the federal level will play a major role in shaping the trajectory of Australia's hydrogen landscape. Some of the significant federal policy initiatives for 2023–24 in the renewable hydrogen space are discussed below.

National Hydrogen Strategy Review

The original National Hydrogen Strategy was introduced in 2019 to set a vision for a "clean, innovative, safe and competitive hydrogen industry". The strategy includes the creation of "hydrogen hubs" (clusters of large-scale demand) at ports, in cities, or in regional or remote areas to provide a "springboard to scale".

On 24 February 2023, the Energy and Climate Change Ministerial Council agreed to a review of the National Hydrogen Strategy to ensure it positions Australia on a path to be a global hydrogen leader by 2030 on both an export basis and for the decarbonisation of Australian industries.

The review process is designed to assess global developments in hydrogen policy and regulation since the strategy's inception. With more than 30 nations having now published their own strategies and notable progress having been achieved in overseas hydrogen projects, the federal government has sought stakeholder input on various aspects of its National Hydrogen Strategy. By way of a consultation paper released for feedback on 7 July 2023, the federal government sought feedback on:

- The potential replacement or augmentation of Australia's current Hydrogen Hub model;
- The use of mandates and targets for hydrogen end use; and
- How best to: (i) address technical risks and barriers in the supply chain and technology/infrastructure; (ii) facilitate community support; and (iii) overcome barriers to developing a large-scale export industry.

The consultation period for stakeholder feedback closed on 18 August 2023, with the 89 responses received to be used to help build on the existing strategy and ensure that it is fit for purpose in the rapidly evolving hydrogen industry. The next step to be taken, following completion of the review, will be for the federal government to propose amendments to the strategy as appropriate.

Hydrogen Headstart Program

The Hydrogen Headstart Program, initiated by the Australian Renewable Energy Agency ("ARENA") on behalf of the Australian government, aims to position Australia as a major exporter of clean hydrogen by 2030.

Building upon ARENA's prior commitment of more than $308 million to 46 renewable hydrogen projects since 2017, the Hydrogen Headstart Program aligns with the government's objective of fostering clean energy initiatives. The program is the largest-ever federally funded program for renewable hydrogen, with an allocation of $2 billion of revenue support for large-scale renewable hydrogen projects. It seeks to accelerate large-scale hydrogen production projects, providing financial support to address economic challenges and promote the competitiveness of green hydrogen production in Australia.

Expressions of interest for the program were received between 10 October and 10 November 2023. On 21 December 2023, ARENA announced that six applicants had been shortlisted and invited to submit a full application in the next stage of the Hydrogen Headstart Program:

Hydrogen Headstart Program Shortlisted Applicants

Applicant	Project	Electrolyser Size (MW)	State	End Use
bp Low Carbon Australia Pty Ltd	H2Kwinana	105	Western Australia	Ammonia, Sustainable Aviation Fuel, Minerals Processing
HIF Asia Pacific Pty Limited	HIF Tasmania eFuel Facility	144	Tasmania	e-Fuels
KEPCO Australia Pty Ltd (Korea Electric Power Corporation)	Port of Newcastle Green Hydrogen Project	750	New South Wales	Ammonia
Origin Energy Future Fuels Pty Ltd	Hunter Valley Hydrogen Hub	Phase 1: 50 Phase 2: 200	New South Wales	Ammonia, Mobility
Stanwell Corporation Limited	Central Queensland Hydrogen Project	720	Queensland	Ammonia
Murchison Hydrogen Renewables Pty Ltd as trustee for Murchison Hydrogen Renewables Project Trust	Murchison Hydrogen Renewables Project	1,625	Western Australia	Ammonia

These projects have a cumulative electrolyser capacity of more than 3.5 GW across various end uses, placing them amongst the largest renewable hydrogen projects in the world.

Hydrogen Energy Supply Chain Project

The Hydrogen Energy Supply Chain ("HESC") Pilot Project, jointly supported by the Australian and Victorian governments, positions hydrogen as a priority low-emissions technology. The project involves producing hydrogen gas from brown coal in Victoria's Latrobe Valley, followed by transportation, liquefaction and shipping to Japan. Its successful pilot phase in February 2022 demonstrated the technical feasibility of large-scale hydrogen production.

The project has now entered the commercial demonstration phase, with the Japanese government committing JPY220 billion (approximately A$2.35 billion) in funding from its Green Innovation Fund. The hydrogen will be extracted from Latrobe Valley coal with carbon capture, utilisation and storage to occur in the Bass Strait.

The HESC Project is poised to cut global CO2 emissions by 1.8 million tonnes annually at full scale, equivalent to the emissions from about 350,000 petrol engine cars. Putting aside environmental arguments around the use of coal, the HESC Project promises economic benefits for Australia, from a demonstrated supply chain that would also enable the establishment of local manufacturing utilising hydrogen inputs.

Extending the National Gas Regulatory Framework

On 28 October 2022, the Commonwealth and state/territory Energy Ministers agreed to amendments to the National Gas Law ("NGL") and National Energy Retail Law ("NERL") to bring hydrogen and other renewable gases under the national gas regulatory framework. This agreement came after two rounds of public consultation, and was developed in collaboration with the Australian Energy Market Commission, Australian Energy Market Operator, Australian Energy Regulator and the Western Australian Economic Regulation Authority.

These reforms were given effect on 27 November 2023 by the *Statutes Amendment (National Energy Laws) (Other Gases) Bill 2023* (SA). They are aimed at supporting investment in innovative projects that will reduce emissions in Australia's gas networks by addressing regulatory barriers and ambiguities in relation to the treatment of hydrogen and other gases in the national gas regulatory framework. In particular, references to "natural gas" in the NGL and NERL have been replaced with broader terminology encompassing natural gas, hydrogen, biomethane, synthetic methane and blends of these gases, as well as "natural gas equivalents" (i.e. gases that can be used in gas appliances, such as natural gas, biomethane, synthetic methane and low-level blends of hydrogen with these gases).

Guarantee of Origin Scheme

The Australian government is actively progressing the Guarantee of Origin ("GO") Scheme, a product-based emissions accounting framework designed to track and verify emissions associated with hydrogen and other products manufactured in Australia. The voluntary scheme's focus is threefold: defining an emissions accounting approach, certifying renewable electricity, and considering potential expansion to new products. With a dedicated budget of $38.2 million in the 2023–24 fiscal year, the GO Scheme serves as a mechanism to provide credibility to low-emission claims by producers. It seeks to streamline reporting processes based on internationally recognised emissions accounting methodologies, fostering opportunities for trade, decarbonisation and investment. The renewable electricity certification mechanism within the scheme, akin to the existing Large-scale Generation Certificate framework, not only ensures stability for renewable electricity investments but also supports Australia's long-term energy transformation goals beyond 2030.

The Clean Energy Regulator conducted trials throughout 2022 and 2023 to test and verify the design of the GO Scheme with producers of hydrogen and its derivatives. The trials brought together stakeholders operating some of Australia's most advanced hydrogen projects, testing design elements such as metering approaches, reporting frameworks and emission intensity calculation methods.

In September 2023, the Department of Climate Change, Energy, the Environment and Water ("Department") commenced a consultation process seeking feedback on the GO Scheme's design, its proposed emissions accounting approach and the proposed design of the Renewable Electricity Guarantee of Origin ("REGO") Scheme (an enduring mechanism to track renewable electricity generation in Australia).

Legislation will be developed on the basis of the trial workshops and submissions received as part of the consultation process to establish the regulatory framework and guidelines for the GO Scheme, which are expected to be in place in 2024. It is anticipated that the REGO Scheme will commence on 1 January 2025.

Following commencement of the GO Scheme, the Department proposes to provide an initial review of the scheme in 2027 and then an ongoing review every three years thereafter to assess effectiveness, integrity and efficiency of the scheme and identify areas for amendment.

STATE AND TERRITORY REGULATORY FRAMEWORK: THE CURRENT STATE OF PLAY

All Australian state and territory governments have now released strategies for the development of a hydrogen industry. While all strategies acknowledge the need for an appropriate regulatory framework, only New South Wales, Queensland, South Australia and West Australia have implemented specific legislative reforms to facilitate the development of a hydrogen industry. A summary of recent/proposed hydrogen-related legislative reforms for each jurisdiction is provided below.

Jurisdiction	Recent/Proposed Hydrogen Legislation
Australian Capital Territory	There have been no recent developments in hydrogen-related legislation in the ACT.
New South Wales	*Gas Supply (Safety and Network Management) Regulation 2022* (NSW)—Updated regulation commenced on 1 September 2022.
Northern Territory	The Northern Territory government has introduced a renewable hydrogen strategy, although specific hydrogen-related legislation is yet to be released.
Queensland	*Gas Supply and Other Legislation (Hydrogen Industry Development) Amendment Bill 2023* (Qld)—Bill passed on 10 October 2023. The Bill has not yet commenced, and will formally pass into law at a later, as yet unconfirmed, date.
South Australia	*Hydrogen and Renewable Energy Act Bill 2023* (SA)—Bill passed on 16 November 2023.
Tasmania	The Tasmanian government has implemented a renewable hydrogen action plan, although it is yet to release any specific hydrogen-related legislation.
Victoria	The Victorian government has published the *Victorian Renewable Hydrogen Industry Development Plan*, although it is yet to announce any proposed hydrogen-specific legislation.
Western Australia	*Petroleum Legislation Amendment Bill 2023* (WA)—Introduced to Parliament on 29 November 2023. Remains before Parliament.

New South Wales

On 1 September 2022, the NSW government implemented the *Gas Supply (Safety and Network Management) Regulation 2022* (NSW). This new regulation retains several of the existing rules that ensure the safety of the gas network, but now includes additional provisions to support the NSW Hydrogen Strategy. These provisions are specifically designed to ensure the safe injection of hydrogen and hydrogen-natural gas blends into the gas distribution network.

Key changes in the regulation involve: new reporting and approval requirements for injection points to maintain gas quality after renewable gas blends are injected; additional reporting requirements for incidents of venting, flaring and network pressure variations; clarifications around gas testing; and updated penalties.

Queensland

The Queensland government took an important first step in the regulatory reform required to enable the development of hydrogen projects in Queensland by passing the *Gas Supply and Other Legislation (Hydrogen Industry Development) Amendment Bill 2023* (Qld) on 10 October 2023. This legislative framework streamlines the secure transportation of renewable hydrogen and gases through pipelines by establishing a clear regulatory pathway for licensing and operating transmission pipelines. Increasing regulatory clarity in Queensland's hydrogen sector is anticipated to assist a range of renewable hydrogen projects, aimed at generating an estimated 10,000 jobs and $33 billion in economic activity by 2040.

With a focus on decarbonising pivotal industries such as haulage, shipping, aviation and manufacturing, these legislative changes provide announced hydrogen projects like the CQ-H2: Central Queensland Hydrogen Project in Gladstone with certainty on key infrastructure elements. These developments also reinforce Queensland's broader Energy and Jobs Plan and Resources Industry Development Plan.

South Australia

On 23 November 2023, the *Hydrogen and Renewable Energy Act 2023* (SA) was passed. This legislation, to commence on an as yet unconfirmed later date, represents a landmark step towards regulating and facilitating activities within the hydrogen and renewable energy sectors by introducing a comprehensive licensing framework to streamline large-scale projects in South Australia.

The Act's primary objective is to replace existing approval processes with a unified licensing system, simplifying regulatory procedures and addressing concerns related to land access, environmental impacts and native title rights. A distinctive aspect of the Act is the introduction of a competitive tender process for accessing government-owned land, known as "release areas". This approach fosters responsible development by allowing developers and investors to compete for licenses, ensuring the selection of projects aligns with the region's social, economic and environmental objectives.

This legislation prioritises consideration of First Nations people's rights and interests throughout regulatory processes, emphasising culturally sensitive and responsible development practices. It is anticipated that the new Act will help unlock South Australia's pipeline of renewable energy projects, with the South Australian government quoting a current anticipated capital development investment of approximately $21 billion.

Western Australia

The Western Australian government introduced the *Petroleum Legislation Amendment Bill 2023* (WA) to Parliament on 29 November 2023. The Bill aims to strengthen the state's petroleum legislation and support the industrial and resource sectors' transition to net zero. It seeks to amend the *Petroleum and Geothermal Energy Resources Act 1967* (WA), *Petroleum Pipelines Act 1969* (WA) and *Petroleum (Submerged Lands) Act 1982* (WA) (collectively, the "WA Petroleum Acts").

The Bill is an amalgamation of three separate petroleum amendment bills which have all undertaken individual consultation. One purpose of the Bill is to amend the WA Petroleum Acts to allow for the exploration of naturally occurring hydrogen. It also seeks to amend relevant provisions concerning the environment, royalty calculation, underground storage and additives which may be added to petroleum (such as hydrogen) within the WA Petroleum Acts.

Following consultation on the initial petroleum amendment bills, the Western Australian government released the stakeholder feedback and its response to those submissions. Key themes arising from stakeholder feedback included general support for the ability to permit additives (including hydrogen) to petroleum, general support for the ability to enable the exploration of naturally occurring hydrogen and a spectrum of views on the use of petroleum pipelines to convey hydrogen. The suite of reforms, introduced as one amendment package, remains before the Western Australian parliament.

LOOKING AHEAD

Australia is taking important strides to accelerate the development of its renewable hydrogen sector, strategically positioning itself to become a major player in the global renewable hydrogen market by 2030. The regulatory clarity and financial support provided by initiatives at both the federal and state/territory levels have the potential to create a favourable environment for investment and innovation within this space.

With Australia poised to become the second largest net-exporter of low-emissions hydrogen by 2030 and the largest by 2050, industry stakeholders will benefit from an understanding of key policy and funding initiatives which will provide opportunities for investors in both domestic and large-scale export projects. The recent and proposed hydrogen-related policy initiatives highlighted in this *White Paper* will not only support Australia's decarbonisation efforts, but will provide important support for the Australian economy well into 2050.

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