Submission No 45

INQUIRY INTO DEVELOPMENT OF A HYDROGEN INDUSTRY IN NEW SOUTH WALES

Organisation: The Australian Workers' Union

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Secretariat
Inquiry into the development of a hydrogen industry in New South Wales
Standing Committee on State Development
NSW Legislative Council
Parliament House
6 Macquarie Street
SYDNEY NSW 2000

Via email: *State.Development@parliament.nsw.gov.au*

To whom it may concern

Re: The hydrogen opportunity for New South Wales

The Australian Workers' Union welcomes the opportunity to make a submission to the Standing Committee on the important issues raised in the Terms of Reference for this inquiry. As Australia moves towards meeting its commitments under the Paris Agreement and the world transitions towards net-zero emissions, hydrogen will be a crucial tool to allow industry to continue and prosper. This inquiry is a positive step by the Committee to get New South Wales on the front foot of the global hydrogen industry.

The AWU notes that much of the technical detail relating to hydrogen will already be available to the Committee. Thus, this report will be restricted to issues impacting on employment opportunities.

The AWU has a substantial role to play in the emerging hydrogen industry, across both the 'green' and 'blue' hydrogen sectors. The AWU covers workers at all stages of the hydrogen generation cycle:

- the extraction of natural gas and gas energy facilities (an essential input for blue hydrogen, produced through the process of steam methane reforming)
- civil construction (including solar, wind and hydro power facilities as well as any future hydryogen pipelines)
- chemical manufacturing, preparation and storage (relevant to hydrogen gas, ammonia solution and hydrogen liquefaction)
- water
- gas storage (which is a key issue for the success and growth of the global hydrogen sector).

Accordingly the AWU is the union for hydrogen workers.

AWU members also work in Australia's steelworks, aluminium smelters and other manufacturing facilities – these would stand to benefit from industrial-scale availability of low- and zero-carbon energy. Hydrogen will be essential for the transition to 'green' steelmaking. And with Australia having the largest iron ore deposits in the world and abundant energy inputs, green steel has been identified as a significant strategic opportunity for the country to value-add in the metals supply chain as well as an opportunity for a new era of low emissions manufacturing. Indeed, Australia is the natural home of global steel making.[1]

The AWU believes that there is a significant economic and employment opportunity in the hydrogen industry. Although Australia's current hydrogen capacity, is primarily used in the oil and chemical sectors, global demand for clean-burning fuels is encouraging strong demand forecasts over the next decade and beyond. In Australia, the

[1] Scarlett Evans, "Could Green Steel Become One of Australia's Most Strategic Minerals?," Mining Technology, January 18, 2021, https://www.mining-technology.com/features/could-green-steel-become-one-of-australias-most-strategic-minerals/.

COAG Energy Council's *National Hydrogen Strategy* sets out a plan of creating, testing and proving Australia's clean hydrogen supply chains over the next 5 years, building up to robust large-scale domestic and export markets from 2025 onwards.[2] This fed into the *Technology Investment Roadmap*, which sets a target of a sub-$2/kg price on clean hydrogen.[3]

Several large hydrogen projects are already being developed in Australia, with more proposed in the near future:

- A consortium of Japanese and Australian companies (including Kawasaki, Shell and AGL) have worked together in the LaTrobe Valley to produce hydrogen via brown coal gasification, with the intention to implement carbon capture and storage (CCS) in the near term.[4]
- Coregas has announced plans to acquire hydrogen-powered prime movers and build a hydrogen refueling facility in Port Kembla (with support from the NSW Government).
- Fortescue Metals Group is intending to become carbon-neutral by 2030, entailing significant development of its green hydrogen capacity.[5]
- The South Australian Government installed Australia's largest hydrogen electrolyser, feeding into the natural gas network, in late 2019; it is also investing in the largest 'green ammonia' plant in the world.[6]
- Canadian energy company ATCO has established a Clean Energy Innovation Hub in Jandakot, Western Australia with Commonwealth support, and is already distributing hydrogen blended with natural gas through its existing gas network.[7]
- The CSIRO first demonstrated its 'ammonia-to-hydrogen' fuelling system in 2018, which has been described as a potential 'game-changer' in hydrogen storage.[8]

The global export market for hydrogen is also expected to be a lucrative opportunity for New South Wales: Goldman Sachs forecasts that, by 2050, the European hydrogen market will grow to €2.2 trillion while Bank of America forecasts the global market at USD$11 trillion.[9] Green steel has also been described as an industry with billions of dollars of global demand in the near future.

The New South Wales Government has the opportunity to become a first-mover in this space, particularly if tied in to existing LNG export facilities (based in Queensland), by establishing a hydrogen pilot project. This opportunity would allow New South Wales to secure the jobs of its industrial workforce (much of which is based in the regions) as well as creating potentially thousands of new jobs. A local hydrogen industry will also depend on transport infrastructure being established (potentially including rail between sites).

As the home to Australia's steelmaking industry, NSW could consider following the example of Sweden and conducting a 'green steel' pilot program.

However noting the above activity in Australia and around the world, there is also the risk of NSW falling behind other jurisdictions and missing the hydrogen boom altogether.

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[2] Council of Australian Governments and Energy Council, *Australia's National Hydrogen Strategy*, 2019.

[3] Australian Government, "TECHNOLOGY INVESTMENT ROADMAP; First Low Emissions Technology Statement," September 2020.

[4] "Australia 'Hydrogen Road' to Japan Set to Cut Emissions," Australian Financial Review, December 1, 2020, https://www.afr.com/companies/energy/australia-hydrogen-road-to-japan-set-to-cut-emissions-20201201-p56jik.

[5] Tim Fernandez, "Port Kembla to Be Home of Australia's First Hydrogen Trucks, Refuelling Station," March 19, 2021, https://www.abc.net.au/news/2021-03-19/port-kembla-first-hydrogen-truck-gets-green-light/13263384.

[6] Imogen Hartmann, "South Australia Launches World-Leading $240 Million Hydrogen Project," *Energy Magazine* (blog), November 8, 2020, https://www.energymagazine.com.au/south-australia-launches-world-leading-240-million-hydrogen-project/.

[7] ATCO, "The Clean Energy Innovation Hub," 2020, https://www.atco.com/en-au/projects/hydrogen.html.

[8] Stephen H. Crolius, "CSIRO Demonstrates Ammonia-to-Hydrogen Fueling System," *Ammonia Energy Association* (blog), August 16, 2018, https://www.ammoniaenergy.org/articles/csiro-demonstrates-ammonia-to-hydrogen-fueling-system/.

[9] Michael Liebrich, "Liebreich: Separating Hype from Hydrogen – Part Two: The Demand Side," *BloombergNEF* (blog), October 16, 2020, https://about.bnef.com/blog/liebreich-separating-hype-from-hydrogen-part-two-the-demand-side/.

Supporting our existing industries remains critical

However, the excitement relating to hydrogen should not be used to dismiss the significant risks to existing heavy industry in NSW and the value of employment in the gas and manufacturing sectors. Global demand for hydrogen to provide energy and feedstock to the industrial and transport sectors is not expected to mature until 2040, according to the Hydrogen Council.[10] Thus, hydrogen cannot solve our state's existing problems in the near term.

It is critical that governments act today to lower the cost pressures on manufacturing businesses, particularly those flowing from out-of-control gas exports and sky-rocketing power prices. The AWU has made previous submissions on these challenges and can expand upon them on request.

The AWU does not see gas and hydrogen as 'either/or' propositions: rather, a successful export hydrogen industry will depend on the generation of 'blue hydrogen' – which combines the energy-efficiency of natural gas and low emissions from the creation and use of hydrogen. The viability of blue hydrogen will be greatly improved by and depend on the ability of the New South Wales Government, working closely with the Commonwealth, to improve and scale CCS technology and ultimately, a mechanism for the environmental benefits and costs of the multi-faceted energy sector to be factored into commercial decision-making. Victoria's project in partnership with Australian and Japanese businesses may be instructive in this regard.

The energy sector's transition to 'net zero emissions' (including under scenarios examined by the International Panel on Climate Change, or IPCC) is likely to involve renewable energy, gas, CCS, and emissions offsets. Accordingly, the future of Australian hydrogen is likely to involve both blue and green hydrogen, and can contribute to growth in the existing Australian gas industry and workforce while contributing to a manufacturing renaissance.

The AWU would welcome the opportunity to contribute further to the inquiry, including by appearing at upcoming hearings later this year.

Kind regards

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Assistant National Secretary
Australian Workers' Union

[10] Hydrogen Council, "Hydrogen Scaling up: A Sustainable Pathway for the Global Energy Transition," 2017, https://hydrogencouncil.com/wp-content/uploads/2017/11/Hydrogen-scaling-up-Hydrogen-Council.pdf.