

26th July 2024

Ian Porter
First Assistant Secretary
Data, Release, Strategy and Net Zero
Department of Infrastructure, Transport, Regional Development, Communications and the Arts
Australian Government
GPO Box 594
CANBERRA ACT 2601

Dear Ian,

The Australian Hydrogen Council (AHC) welcomes the opportunity to engage with the development of Australia's low carbon liquid fuels opportunity under the Future Made in Australia package.

This submission is provided to two interlinked consultations:

- *A Future Made in Australia: Unlocking Australia's low carbon liquid fuel opportunity, and*
- *The Transport and Infrastructure Net Zero Consultation Roadmap.*

AHC is the peak body for the hydrogen industry and our membership includes companies from across the hydrogen value chain. Our members are at the forefront of Australia's hydrogen industry, developing the technology, skills and partnerships necessary to ensure that hydrogen and its derivatives play a meaningful role in decarbonising Australian industry.

The proposed *Future Made in Australia Act* (FMIA) is a vital Australian Government response to changes in global supply chains and energy security, as well as a necessary step to reinvigorate Australian capabilities and grow economic complexity. The energy transition is hugely challenging but it also presents an important opportunity for Australia to develop competitive advantage in renewable energy production, technology and use within the global marketplace, as well as ensuring ongoing prosperity in our region.

In the 2024–25 Budget, five industries were announced as aligned with the National Interest Framework under the FMIA:

- Renewable hydrogen
- Critical minerals processing
- Green metals
- Low carbon liquid fuels
- Clean energy manufacturing, including battery and solar panel supply chains.

These industries are clearly vital for Australia's decarbonisation and sovereign capabilities. Hydrogen also plays a role in most of them. Beyond renewable hydrogen itself (to decarbonise the hard to electrify parts of our economy, and as a potential export), producing green metals includes hydrogen to make iron from our iron ore and alumina from our bauxite. And low carbon liquid fuels, such as sustainable aviation fuel (SAF), need hydrogen as a feedstock to support scale when there is insufficient biofuel.

There will be other manufacturing opportunities as well, such as components and assembly for electrolysers.

We are pleased to note that the Australian Government is considering support models for particular end uses, such as for green metals and low carbon liquid fuels. We support these demand side initiatives and see them as being matched with the Hydrogen Production Tax Incentive to simultaneously support demand and supply for priority industries. It is vital that the different initiatives can work together for those projects that are eligible.

On low carbon liquid fuels (LCLFs), we support the development of an Australian LCLF production industry and are open to a range of policy approaches.

We note that this submission should also be read in the context of recent AHC input to transport and wider net zero ecosystem planning consultations. This includes responses to the:

- Victorian consultation on the zero emission bus transition (discussing regulatory harmony, total cost of ownership and the responsibility of electricity upgrades),¹
- MERNAP Issues Paper on regulation and standards (noting the complexity and interconnected nature of portfolios),²
- Aviation Green Paper (advocating for planning and leadership),³
- MERNAP Issues Paper on green shipping corridors and partnerships (regarding plurilateral corridors and the required modelling),⁴
- Electricity and Energy Sector Plan (considering the grid capabilities and role of molecules),⁵
- Climate Change Authority's Targets, Pathways and Progress (discussing sequencing, concurrent investments and ambition),⁶
- Australian Sustainable Finance Institute's Australian Finance Taxonomy (establishing the framework to support transitional and green capital),⁷ and
- Green Metals (encouraging long term decarbonisation in another FMIA focused demand case).⁸

¹ AHC (2023) *Consultation on the zero emission bus transition*, September, <https://h2council.com.au/wp-content/uploads/2023/09/230907-VIC-ZEB-transition.pdf>

² AHC (2023) *MERNAP Issues Paper: regulation and Standards*, September, <https://h2council.com.au/wp-content/uploads/2023/09/230928-MERNAP-sub-final.pdf>.

³ AHC (2023) *Aviation Green Paper*, November, <https://h2council.com.au/wp-content/uploads/2023/12/231130-Aviation-Green-Paper-submission.pdf>.

⁴ AHC (2024) *MERNAP Issues Paper: Green Shipping Corridors and Partnerships*, April, <https://h2council.com.au/wp-content/uploads/2024/04/240412-AHC-MERNAP-submission.pdf>.

⁵ AHC (2024) *Electricity and Energy Sector Plan – Discussion Paper*, April, <https://h2council.com.au/wp-content/uploads/2024/04/240426-AHC-submission-Electricity-and-Energy-Sector-Plan.pdf>.

⁶ AHC (2024) *Climate Change Authority 2024 issues paper: targets, pathways and progress*, May, <https://h2council.com.au/wp-content/uploads/2024/05/240521-AHC-submission-CCA-issues-paper.pdf>.

⁷ AHC (2024) *Australian Sustainable Finance Taxonomy V0.1 consultation*, July, <https://h2council.com.au/wp-content/uploads/2024/07/240707-AHC-submission-to-ASFI.pdf>.

⁸ AHC (2024) *Submission to A Future Made in Australia: Unlocking Australia's Green Iron, Steel, Alumina and Aluminium Opportunity*, July, <https://h2council.com.au/submissions/ahc-fed-fmia-green-metals-opportunity/>.

In August 2023 we submitted a comprehensive position paper to the Australian Government on its revised National Hydrogen Strategy.⁹ Among the 53 recommendations, we recommended that the Australian Government supports hydrogen in heavy road transport with a national ZLEV strategy, fleet trials, transition funds, and either a heavy vehicle fuel efficiency standard or sales target. The rationale for these perspectives is set out in that document, which we have provided as an appendix to this submission, as well as the relevant recommendations below.

Our current view is that these positions are still reasonable, and that a desirable policy instrument for road transport could be a supply chain emissions target that addresses scope 3 emissions for major retailers that use heavy road transport. We expect this would mean minor cost pass through when spread across all consumers (assuming retailers sought to pass costs on).

The best approach for aviation would be mandates for future long-term use of SAF, and incentives to help producers and users close the commercial gap.

We also support the Australian Government's commitment to funding to develop a certification scheme for LCLF through an expansion of the Guarantee of Origin scheme, and its plan to build on ARENA's SAF Funding Initiative.

We will not comment further on the particular mechanisms to be used but instead will comment on the framing of the two papers and necessary steps for heavy road transport in particular.

Longer term decarbonisation still needs action now

We note that the language across the two consultation documents supports renewable diesel and SAF, treating them as largely (or potentially) equivalent, and the short to medium timelines (2030-2040) combine to a general prioritisation of biofuels. This is said to be because drop-in fuels are preferable and because biofuels are available now.

Prioritising biofuels for near term use is a reasonable perspective. However, we caution the Australian Government to not put off harder work to develop at-scale solutions. Biofuels are the transitional step for most liquid fuel uses while electrification and hydrogen capabilities are scaled up, and they will continue to play a vital long-term role for smaller scale use. In our view biofuels must be enabled but cannot *deprioritise* Australian Government efforts to develop policy to electrify, use batteries, and have the infrastructure and supply for when the demand requires it. This obviously varies by transport mode – where hydrogen is used it could be for hydrogen as a fuel (such as for heavy road freight) or hydrogen as feedstock (for future maritime or aviation fuels). In any event, building out hydrogen capability and infrastructure will take time and needs to start now to be ready for when it is required.

Renewable diesel and SAF work on different timeframes

Renewable diesel and SAF (whether biofuel or hydrogen-based) have been merged in the discussions in the papers but it is important to note that these are not equivalent in terms of their long-term value to Australia's transport decarbonisation efforts. Renewable diesel is expected to have a shorter-term role in heavy road transport and will be used more in regional and rural areas, for vehicles that are not yet ready for retirement, and while the technology and refuelling/recharging networks are being rolled out. In contrast, SAF is a genuinely long-term play.

⁹ AHC (2023) *A fit-for-purpose refreshed National Hydrogen Strategy: next steps for building Australia's hydrogen industry*, August, <https://h2council.com.au/ahc-publications/>.

We suggest that the Australian Government should assess how quickly road vehicle fleets might need to turn over to reasonably meet emissions objectives and consider the demand side mechanisms to encourage this. Any LCLF incentive needs to encourage consumer technology shifts to the longer term low and zero emissions technologies. This seems most promising for battery and fuel cell electric road and rail transport. Government-funded renewable diesel incentives would then be suitable for a specific transition period while it may be needed.

Australia cannot afford to delay the build of hydrogen infrastructure

Australia currently has seven hydrogen refuelling stations opened and another 25 in development or construction.¹⁰ However, the significant Australian Government trial that the industry has been calling for to derisk investment, the Hydrogen Highways initiative, continues to be pushed back and delayed. (We note that the 2024-25 federal budget allocated \$75 million over four years to the Hydrogen Highways initiative;¹¹ however, the original application results were expected in early 2023, and the industry has no greater clarity on the proposed process.)

We have argued for some time that there needs to be pilots and trials of vehicles on Australian roads to be able to inform freight and logistics firms' assessments of total cost of ownership, or TCO. The Hydrogen Highways project was supposed to provide this information. The ongoing delay just furthers the problem that offtake cannot be agreed when no one can be sure of the total cost of a fleet replacement to hydrogen fuel cell heavy vehicles.

This example also demonstrates why activating hydrogen capability cannot be delayed to the moment that the LCLF industry needs it; there is urgency to test the technology in use in Australia so that there is total cost of ownership assurance, the OEMs have the time and confidence to manufacture or retrofit fuel cell heavy vehicles at scale, and Australia can progress beyond trials. This is a multi-year endeavour and the Australian Government has a necessary role here to prioritise establishing the hydrogen refuelling infrastructure, helping to accelerate the timeline and derisk fleet transition.

We note that the recently announced Hydrogen Production Tax Incentive is currently proposed to only apply to production facilities that have a minimum capacity on 10MW, which would not cover most hydrogen refuelling stations currently in development, therefore making them ineligible.¹² Furthermore, this credit is only expected to apply from 2027-28 which does not incentivise the scale up of hydrogen refuelling stations that will be required to derisk range anxiety and encourage vehicle supply in Australia.

Similarly for maritime, we will need to prepare for the planning and infrastructure requirements across Australian ports. Considering the lack of availability of space at existing Australian ports, and that Australia will generally be the taker of shipping company appetites for fuels, the Australian Government may need to nominate the best locations for specific segments of the maritime transition. This will also aid planning for the broader energy transition, as there is currently insufficient space for each port to cater for multiple bunkering fuels alongside large-scale imports of equipment such as wind turbines. Timely analysis and decision making must be undertaken to determine the target ports if we are to meet

¹⁰ HyResource (2024) *Projects spreadsheet*, CSIRO, accessed 1 July 2024, <https://research.csiro.au/hyresource/projects/projects-spreadsheet/>.

¹¹ Treasury (2024) *Budget 2024-25, Federal financial relations: budget paper no. 3*, Australian Government, 14 May, https://budget.gov.au/content/bp3/download/bp3_2024-25.pdf.

¹² Treasury (2024) *Hydrogen production tax incentive*, Australian Government, <https://treasury.gov.au/consultation/c2024-541265>.

the ambitious whole of economy decarbonisation targets under the Paris agreements, International Maritime Organisation, and national legislation. We also discussed the need for port infrastructure in our position paper, as appended, and we have since submitted to the MERNAP consultations.

Planning for fuel security

Biofuels are of course not all the same; this is a diverse family of feedstocks with their own different emissions characteristics. One thing all biofuels have in common, besides drop-in capabilities, is natural constraints on production. Waste streams are certainly constrained, and crop requirements for land and water can reach the point where biofuel production starts to compete with food.¹³ Additionally, there are implications for biodiversity and fertility of land where rising impacts of climate change are expected to already be impacting crop yield. These are finite and vital resources that need to be managed carefully and responsibly.

To add complexity, there will be competition for biofuels for the hard to abate transport modes, particularly in aviation and maritime, where the demand will outweigh the possible supply of biofuels. These modes of transport must strategically sequence their decarbonisation and the feedstocks each can potentially use. We need greater clarity on the natural constraints of biofuels and this is a matter not only of fuel security but also food security.

We are supportive of a LCLF industry in Australia and welcome demand side incentives and policy mandates. These then need to sit alongside investment and infrastructure in the long-term net zero fuel solutions, such as hydrogen.

If you wish to discuss any element of this in further detail, please contact me at fsimon@h2council.com.au.

Yours sincerely,

Fiona Simon
CEO
Australian Hydrogen Council

¹³ CSIRO (2023) *Sustainable Aviation Fuel Roadmap*, <https://www.csiro.au/en/research/technology-space/energy/sustainable-aviation-fuel>.

AHC's response to the 2023 National Hydrogen Strategy Refresh – Transport relevant recommendations¹⁴

Recommendation 6: Prioritise hard-to-abate and scalable domestic demand sources.

The Australian Government should prioritise growing demand for hydrogen in the applications that are more likely to require clean hydrogen to decarbonise, and more likely to achieve large scale. Ideally these should demonstrate an ability to open the market to other applications, through knowledge/technology sharing, geographic proximity, and/or cost reduction. Current evidence supports these industries as being:

- Chemicals, particularly ammonia and methanol
- Low emissions metals, particularly iron and alumina
- Heavy road transport
- High temperature process heating
- Marine and aviation, where hydrogen is a feedstock for future fuel
- Seasonal storage for the electricity market.

Recommendation 12: Develop joint support packages between Australia and its trading partners to support trade in hydrogen and hydrogen derivatives.

The Australian Government should develop bespoke joint support packages between Australia and its trading partners that underwrite trade and support necessary infrastructure.

These should also cover multilateral agreements to incentivise investment and collaboration, for example, between Australia as a producing country, Singapore as a key intermediary for shipping and the nations of North Asia as key customers for hydrogen, its derivatives and also products produced using hydrogen.

Recommendation 15: Create Hydrogen Economic Zones to support regional hydrogen initiatives and connect the relevant supply, demand, infrastructure and workforce.

The Net Zero Economy Agency should oversee the development of Hydrogen Economic Zones that link hydrogen production targets to locations via hydrogen economic zones that incorporate REZs and ports, as well as likely requirements for hydrogen storage, CCS, refuelling, pipelines, and workforce.

This work should adopt work already undertaken by the jurisdictions.

Recommendation 24: Develop a national assessment of port capability to meet the revised NHS objectives and targets.

DCCEEW should engage with port corporations and peak bodies to analyse and report back on port capability for future exports, in line with the objectives and targets set by the revised NHS and connected with Hydrogen Economic Zones.

This should lead to an understanding of how ports can collaborate without triggering unforeseen regulatory hurdles and future government support for common use infrastructure.

¹⁴ Please note that some of these recommendations have been partially addressed through subsequent policy.

Recommendation 25: Select and support ports with existing industry connections to be demonstration ports.

Australian governments should work with ports to identify appropriate demonstration sites for hydrogen development. To mirror international developments this could include ports that have existing industrial connections.

Recommendation 26: Commit to a funding envelope for ports.

The Australian Government should undertake to support port redevelopments to 2045. The national assessment will clarify what is required, but this is expected to be around A\$20-\$30 billion.

Recommendation 28: Commit to a funding envelope for common user storage.

The Australian Government should undertake to support common user storage developments to 2045. There is a particular need to fund demonstration and pilot projects for large-scale underground hydrogen storage.

Recommendation 29: Ensure a refreshed NHIA addresses refuelling infrastructure.

Building on Recommendation 5, the NHIA analysis should address refuelling needs for hydrogen in heavy transport. If the NHIA is not rerun, this requires separate analysis and reporting.

This should lead to an understanding of future government support for refuelling infrastructure, which then needs to be costed for different options.

Recommendation 30: Commit to a funding envelope for refuelling infrastructure.

The Australian Government should undertake to support refuelling station development until the uptake of FCEVs reaches a level sufficient to sustain the expansion and infill of a national hydrogen refuelling station network. The NHIA and cost analysis will clarify what is required. This funding may be provided as the infrastructure element of a combined refueller and vehicle trial, as discussed in Recommendation 48. Funding could be matched by states and territories for key projects and split so that one funding stream defrays capital costs and the other provides long term underwriting for contracts.

Recommendation 35: Drive coordination of competency standards and training packages for hydrogen.

The Australian Government should coordinate jurisdictional training package development, collaborate with education institutions, and connect with regulators. This work should build on outcomes from the Clean Energy Capacity Study, and the hydrogen workforce modelling of the SA and NSW governments.

Recommendation 43: Harmonise Australian heavy vehicle regulation with international standards.

The Net Zero Economy Agency should task and resource DCCEEW to work with the Department of Infrastructure, Transport, Regional Development, Communications and the Arts and jurisdictional bodies to support lessening the regulatory and administrative burden for ZLEVs, especially concerning width and axle mass, through the harmonisation of standards with international markets and a ZLEV axle mass concession.

Recommendation 48: Support hydrogen in heavy road transport with a national ZLEV strategy, fleet trials, transition funds, and either a heavy vehicle fuel efficiency standard or sales target.

In line with the revised NHS objectives and targets, DCCEEW should develop a national ZLEV strategy for heavy vehicles with both financial and non-financial incentives, including:

- Funding further heavy FCEV trials to aid total cost of ownership certainty. This should include separate trials for heavily-trafficked truck routes (at least two trials of heavy fleets at minimum of A\$200 million each), lighter logistics trucks (at least three trials at A\$25 million each), and for bus routes near hydrogen centres (at least two larger trials at A\$45 million each for 40 buses).
- Financial support for transitioning heavy vehicle fleet and associated infrastructure, which could align with support under Recommendations 49 and 50.
- Developing a heavy vehicle fuel efficiency standard or sales target for the Australian context.

Funding could be matched by states and territories for key projects and split so that one funding stream defrays capital costs and the other provides long term underwriting for contracts.

Recommendation 49: Attract private investment for hard-to-abate industrial processes.

Noting the need for funding to align with analyses addressed in Recommendations 3-5 and any targets set, the Australian Government should:

- Fund a hydrogen readiness programme of at least A\$1 billion for capital expenditure on industrial processes that cannot readily be electrified, including (and not exclusively) for the production of steel, ammonia, methanol, and alumina/aluminium.
- Continue to use ARENA (and CEFC where possible) to underwrite demand through a revenue support mechanism (such as contract for difference) intended to incentivise domestic production of critical chemicals and metals, including (and not exclusively) for the production of steel, ammonia, methanol, and alumina/aluminium. Funding should be aligned with funding from state/territory governments.

Funding should be prioritised for projects that protect or create local jobs and have a detailed plan for skilling and re-skilling. Applicants should be required to share non-commercially sensitive information to support industry knowledge development – this could be assisted by engaging with industry associations to support delivery.

To mitigate and reduce the costs associated with project development (such as transmission costs), the Australian and state governments could collaborate to further incentivise co-location of chemical production within Hydrogen Economic Zones, and within proximity to other industrial infrastructure such as ports.

Recommendation 51: Develop a national assessment of shipping routes and refuelling requirements.

The Australian Government should engage with shipping companies operating in Australia and peak bodies to analyse and report back on:

- Current shipping routes.
- Shipping companies' views on fuels in which they are investing, the relative energy densities of options, and requirements to refuel (that is, the maximum journey length without bunkering requirements).
- Bunkering in Australia, to understand if products (including fuels) are to be transported from southern Australia, what the impact is on key matters such as the total journey length and requirement to refuel.
- Opportunities for demonstration projects at suitable ports.

Recommendation 53: Work with the Department of Infrastructure, Transport, Regional Development, Communications and the Arts and its Jet Zero Council to consider the next steps for hydrogen for SAF production, using the CSIRO Futures report.

DCCEEW should work with the Department of Infrastructure, Transport Regional Development, Communications and the Arts, the Jet Zero Council and related stakeholders to assess future SAF needs for Australia and how they can be met, using the CSIRO Futures study. This should lead to planning and target setting for scaling up hydrogen production as required.