Submission No 26

INQUIRY INTO DEVELOPMENT OF A HYDROGEN INDUSTRY IN NEW SOUTH WALES

Organisation: Hyundai Motor Company Australia (HMCA)

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Inquiry into the Development of a Hydrogen Industry in New South Wales

Submission by Hyundai Motor Company Australia

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Hyundai Motor Company Australia Pty Ltd
Cnr of 394 Lane Cove Road
and Hyundai Drive
Macquarie Park NSW 2113
T
F
ABN 58 008 995 588
www.hyundai.com.au

Introduction

Hyundai Motor Company Australia (HMCA) welcomes the opportunity to contribute to the NSW Legislative Council's Standing Committee on State Development's Inquiry into the Development of a Hydrogen Industry in New South Wales.

As NSW moves towards meeting its net zero commitment by 2050, a range of solutions will be required to meet this target, one of which is hydrogen. Hydrogen is increasingly being recognised as central to the energy transition and the key to unlock deep decarbonisation opportunities, including within the mobility sector.

As the leading state by vehicle registration, transport represents the second highest emitting sector in NSW and has experienced the greatest growth in emissions, increasing by 53% between 1990 and 2008. Hydrogen-powered clean transport presents a significant opportunity for NSW to reverse this trend while reaping the benefits of a new clean energy sector.

To optimise the benefits of the emerging hydrogen era, governments have an important role to play. From industry coordination, policy and regulation, funding and education, government is an integral stakeholder in encouraging the shift towards a cleaner transport fleet and broader energy sector.

HMCA commends the NSW Legislative Council's Standing Committee on State Development for their initiative to examine the role hydrogen can play in the transition towards a low carbon future for NSW, including within the transport sector.

We look forward to working with the Standing Committee as it examines the current state and opportunities for the development of a hydrogen industry in NSW.

About Hyundai Motor Company

Founded in 1967, Hyundai Motor Company produces close to four million cars and commercial vehicles a year, ranking as the world's fifth largest automotive corporation.

Supported by 68,000 global employees, we invest billions of dollars in research and development to achieve our aim of continuously producing eye-catching, advanced, practical cars that are more safe, efficient and environmentally friendly than ever before.

HMCA is a wholly owned subsidiary of the Korean parent company. For almost 30 years, we have been a part of the Australian automotive landscape offering affordable, efficient and stylish cars to all Australians.

Hyundai's leadership in eco vehicles

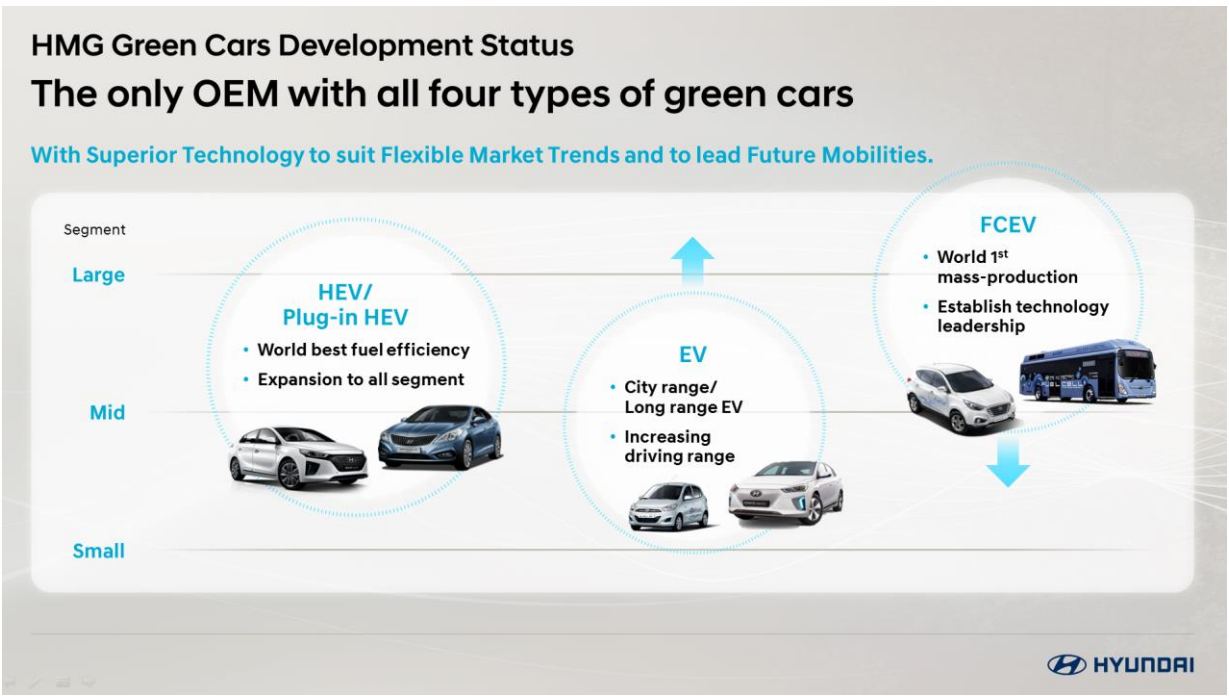
Hyundai is at the forefront of the global shift towards eco mobility, offering one of the widest ranges of environmentally friendly powertrains worldwide. We plan to expand our eco car line-up to 44 models by 2025, cementing our role as one of the largest manufacturers in this segment.

Our eco car development strategy is based upon establishing a range of flexible platforms to enable us to serve a number of customer needs. These platforms include hydrogen fuel cell electric vehicles (FCEV), battery electric vehicles (BEV), hybrid electric vehicles (HEV) and plug-in hybrid electric vehicles (PHEV). These technologies we collectively refer to as 'eco' vehicles.

Due to their relative strengths and weaknesses, each of these eco vehicles will play complementary roles in the development of a sustainable transport sector. Eco vehicle technologies will therefore co-exist with take-up driven by three factors: (1) consumer choice; (2) application area; and (3) government policy and regulation.

The diagram below illustrates Hyundai's view of eco mobility segments and where we anticipate each technology is particularly suited and likely to proliferate.

Diagram 1: Hyundai's green car development strategy



Hydrogen fuel cell electric vehicles

For two decades Hyundai has been a leader in the development of hydrogen fuel cells as an alternative zero emission vehicle technology.

We were the first automaker in the world to successfully begin commercial production of mass-produced FCEVs with the introduction of the ix35 in 2013. In 2018, we launched its successor, the NEXO.

The NEXO is the technological flagship of Hyundai's growing eco-vehicle portfolio and marks Hyundai's continued momentum toward offering the industry's most diverse eco powertrain line-up.

Improving upon the ix35, the NEXO FCEV has a driving range of 666km (WLTP), 206km more than its predecessor.

Hyundai is the only automotive company to have a certified, ADR compliant and ANCAP crash rated FCEV available in Australia making us the only brand that can retail this technology.

HMCA has secured two Australian fleet customers to date, with the ACT and Queensland Governments committing to 20 and five units of the NEXO respectively. The delivery of these vehicles will commence in quarter one, 2021 to coincide with the launch of Australia's first public refuelling station based in Canberra.

HMCA is also supporting a range of other hydrogen refuelling projects in progress across Australia and will supply NEXOs to these facilities once advanced to development stage.

To continue this positive momentum and ensure Australia reaps the benefits of hydrogen mobility across all transport segments, we are actively investigating opportunities to expand our fuel cell presence beyond passenger cars through strategic deployments of our fuel cell heavy-duty truck and bus range.

As a manufacturer of fuel cell systems, we also see an opportunity for the introduction of fuel cells for stationary power in areas such as remote applications and industrial energy, and will continue to explore this activity as the Australian hydrogen sector develops.

Hyundai's commitment to driving the Australian hydrogen economy

To help develop and grow this new industry sector in Australia, HMCA was the co-founder of the Australian Hydrogen Council and still has a representative on the Board of Directors.

We have also worked in collaboration with various industry sectors to establish the minimum requirements for the set-up of mechanical workshops to complete light FCEV servicing, FCEV technician training, road service support training (NRMA & National Motor Clubs) and with the co-operation of the South Australian Government who are currently the Chairs of the

Global Hydrogen Safety Council, HMCA has created a Fire & Rescue training package that covers the fundamentals of hydrogen safety that links to the Hyundai Nexo FCEV emergency response guide.

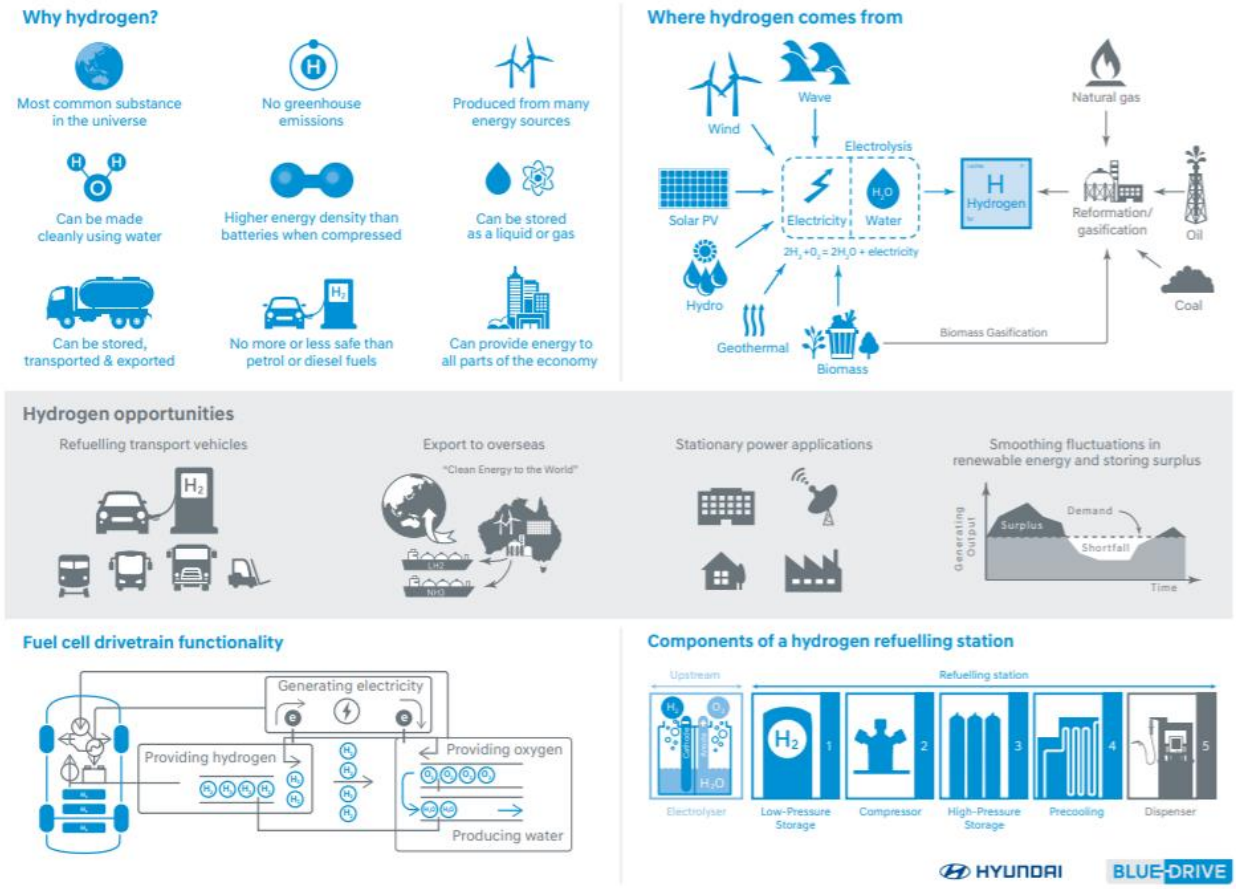
Over many years HMCA has used our site at Macquarie Park as an eco-car test bed and education centre hosting past Prime Ministers, State and Federal Ministers, MPs and hundreds of representatives from various departments within the NSW Government along with industry events and conferences.

In the spirit of industry co-operation and growth, HMCA has even hosted the launch of a competitor product (Hyster Yale Fuel Cell Forklift) on our site to help grow the hydrogen industry sector.

Furthermore, we estimate we have conducted hundreds of presentations on hydrogen to stakeholders around Australia with the objective to raise awareness, educate and to build recognition of hydrogen as an essential part of the country's clean energy future.

Diagram 2: Hyundai's NEXO FCEV, hydrogen development and hydrogen characteristics

Diagram 3: Hydrogen production & applications



Terms of reference response

As one of the leading brands in the eco vehicle segment, HMCA has been actively engaging with governments at all levels for many years to secure a framework that supports the uptake of these technologies in Australia, including FCEVs.

Both directly and through our membership of industry association the Australian Hydrogen Council, we have been advocating for the removal of barriers to FCEV adoption, such as improving the availability of hydrogen refuelling stations, measures to assist consumers and fleets with FCEV purchase, and mechanisms to promote the flow of zero emission vehicles to the country, such as a light vehicle emissions standard.

Unfortunately, Australia is presently a laggard in clean transport, and we continue to lack a national strategy for eco vehicles. We encourage the Standing Committee to use this opportunity to consider how NSW can be a leader in hydrogen mobility.

1. **The size of the economic and employment opportunity created by the development of a hydrogen industry in NSW, in particular those opportunities for regional NSW**

Australia's hydrogen sector has the potential to be a major new industry and could create around 7,600 new jobs and billions of dollars in economic growth by 2050. NSW is in a strong position to secure a significant share of this emerging sector.

HMCA has been pioneering the development of hydrogen mobility in NSW since 2014 when we established the first hydrogen refuelling station in Australia at our Sydney headquarters and commenced the introduction of FCEVs for demonstration purposes.

Since this time, we have continued to expand our hydrogen activities in the state, conducting global R&D on site at our Macquarie Park facility as well as vehicle durability testing programs in regional NSW. Global R&D for Nexo was completed in Australia around the Cooma and Snowy Mountains area to ensure it met its global launch timing. We estimate that our investment in driving the NSW hydrogen mobility sector to date is several million dollars and we will continue to invest as we expand our global range of FCEVs.

As a hydrogen sector participant, we have witnessed firsthand the potential for new opportunities through the creation of a hydrogen sector. We are committed for the long term to being leading this space and look forward to introducing an expanded FCEV product range in future, including heavy vehicles and buses, where an infrastructure network emerges.

2. **The State's existing hydrogen capabilities**

As part of our hydrogen development activities, HMCA is proud to have developed specialised hydrogen expertise in-house as well as engaging local technical support to assist the roll out of our hydrogen programs and investments in NSW.

While the state has a level of existing hydrogen capability that can be harnessed to build the early stages of a hydrogen sector, we believe that greater focus and investment is needed to scale-up our hydrogen skills and capabilities.

From an automotive perspective, this skills base will be critical in the production, handling and distribution of hydrogen which has unique characteristics versus other fuels, be they gases or liquids; in the development of a hydrogen infrastructure supply chain, such as the construction of hydrogen refuelling stations; and in the servicing and maintenance of the vehicles themselves.

The absence of these skills could create a hand break on the development of the NSW hydrogen mobility sector and we encourage the prioritisation of these areas when identifying the future skills needs of the state.

3. **The capacity of and barriers to NSW becoming a major production, storage and export hub for hydrogen.**

While NSW has an enormous opportunity to capitalise upon the emerging global marketplace for hydrogen, the state government must create a conducive policy and regulatory environment to encourage the private sector to invest in developing a local hydrogen sector.

In the absence of government mechanisms that attract and stimulate investment and in the face of growing competition for investment both in other Australia states as well as internationally, NSW risks being left behind and missing the opportunity presented by a global hydrogen market.

For example, currently NSW is one of the few states in Australia with no plans in progress to establish a public hydrogen refuelling station. While we recognise and support the state's ambitions to be a major producer and exporter of hydrogen, the market for hydrogen on a large scale has yet to emerge and therefore it is critical NSW is prepared for this opportunity by investing in smaller scale local projects today to drive community and industry awareness and growth in this sector.

Hydrogen refuelling facilities or hubs are an ideal pathway for developing infrastructure that has a market need today while building hydrogen know-how, raising awareness of hydrogen technologies, and fostering community engagement. Such investments are therefore an effective steppingstone in sector development but also in creating a social licence for hydrogen within the state.

4. **The economics of hydrogen's use in different sectors of the economy**

One of the most economic use cases for hydrogen today is as a transport fuel. Hydrogen retailed as a fuel provides a consistent and scalable offtake opportunity in an environment where limited use cases for hydrogen demand are currently available.

For this reason, in markets such as California, Germany and Korea, governments have prioritised hydrogen mobility as a mechanism to underpin the development of a wider hydrogen ecosystem and supported the roll out of refuelling infrastructure and the vehicles that utilise it.

NSW has a similar opportunity available to it, particularly with an expanding range of transport modes expected to enter the state over the coming years, including fuel cell light vehicles, trucks and buses, and a greater number of brands than ever before developing these vehicles.

5. **The infrastructure, technology, skills, workforce capabilities and other things needed to realise the economic opportunities of hydrogen as and when it becomes commercial in different sectors of the economy**

While NSW has ambitions to be an active participant in the global hydrogen sector, the supply chain to achieve such ambitions currently does not exist in the state. Given this, there is a pressing need for a strategic roadmap aligned with the global development of the hydrogen sector with the aim to position NSW for this opportunity.

While international trade in hydrogen has yet to commence, this roadmap must initially prioritise the development of a local hydrogen sector putting a plan in action for trialing and scaling hydrogen applications for deployment and use within NSW. The roadmap should identify strategic projects in the state.

This is consistent with the approaches of other Australian states, including Queensland, South Australia, Tasmania and Western Australia, each of which has seen their governments identify and support projects predominately focused on local production and use.

One of these project focus areas is hydrogen mobility. Both the governments of Queensland and Western Australia, for example, have supported hydrogen mobility projects as a stepping stone to reach their ambitions to be major hydrogen players.

These states acknowledge that hydrogen mobility projects build experience and capability while positioning them positively in the eye of potential future hydrogen trading partners who are manufacturing the vehicles that utilise these projects, namely South Korea, Japan and China.

This similarly represents a strategic opportunity for NSW. HMCA would be happy to share further information on opportunities within the state.

6. **The actions needed of the public and private sectors, to support the development of a hydrogen industry in NSW and to realise the associated economic opportunities, including actions to manage any safety risks in the hydrogen industry**

Based upon our experience in supporting the development of hydrogen ecosystems worldwide, the actions that HMCA believes should be prioritised by the NSW Government to enable the development of a hydrogen industry are outlined below.

- FCEV adoption by government fleets and mass transit
    - The NSW Government fleets presents an immediate opportunity to deploy, demonstrate and validate hydrogen mobility and drive acceptance of the technology by the wider community

    - Both the NSW departmental light vehicle fleet and public bus fleet should equally be pursued as strategic opportunities to integrate FCEVs
    - HMCA notes the NSW Government commitment to transition its 8,000 strong bus fleet to zero emission has only included a commitment to battery electric vehicles to date; if the state is serious about developing a hydrogen sector, this should also include a fuel cell bus demonstration
- Infrastructure development support
    - Consistent with other jurisdictions, dedicated financial support from the NSW Government is required to incentivise private investment in the sector while it is still at an emerging stage
    - Infrastructure support should be prioritised for those hydrogen applications that have been proven to be commercial, have a ready market available to them and present opportunities for scale
    - NSW should collaborate with infrastructure partners and automotive companies to create a 'cluster model' of recharging infrastructure within inner and outer Sydney with links to regional towns to create a state-wide network to foster the development of a hydrogen mobility sector in the state
- Vehicle incentives
    - While a cost differential exists between traditional vehicles and FCEVs, state governments should also introduce the mechanisms they have at their disposal to minimise the gap between these technologies
    - The ACT Government, as an example, has done an excellent job on this by introducing stamp duty and registration concessions as well as interest free loans for purchase of zero emission vehicles
    - NSW should consider such options as well as other measures to encourage fleets to adopt FCEVs into their light and heavy vehicle fleets
- Hydrogen education and awareness
    - In parallel to the above, it is essential that governments play a role in building social licence for hydrogen through education programs that address concerns regarding hydrogen safety, distribution and use.

7. The potential for jobs in New South Wales, both directly in the hydrogen industry and in other industries powered by hydrogen

Given our own experience in leading the development of a hydrogen mobility sector in NSW for over five years through activities including infrastructure investment, R&D, vehicle demonstrations, staff training and advocacy, we are confident in the potential for this sector to create significant job opportunities for NSW.

Contingent on continued private and public investment in the sector, HMCA believes that NSW could realise a significant new employment opportunity through hydrogen and its applications. This does require both sectors to invest in parallel, as well as governments creating an attractive regulatory and policy environment within the state.

HMCA appreciates the opportunity to contribute to this inquiry and looks forward to engaging with Standing Committee as required.

HMCA would also like to extend an invitation to all Members of the Standing Committee to visit our facility at Macquarie Park to explore Australia's first hydrogen refuelling station, FCEV technical training and drive a NEXO Hydrogen Fuel Cell vehicle.

Should you have any questions regarding this submission please contact Scott Nargar, Senior Manager of Future Mobility & Government Relations on T or E .