

SUPPORTING A STATEWIDE ELECTRIC VEHICLE CHARGING NETWORK

Submission by Hyundai Motor Company Australia

November 2018

Hyundai Motor Company Australia welcomes the opportunity to make a submission to the Tasmanian Government's *Supporting a Statewide Electric Vehicle Charging Network* consultation paper.

Hyundai Motor Company was founded in 1967 and now 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.

Hyundai Australia is wholly owned subsidiary of the Korean parent company. For almost 30 years, Hyundai has been a part of the Australian automotive landscape and is the fastest growing automotive brand in Australia. We are widely acknowledged as a leader in design, safety and quality, and we pride ourselves on building cars that deliver affordable technology to all Australians.

Hyundai is recognised as at the forefront of eco mobility, already offering the broadest range of environmentally friendly powertrains in the market worldwide. We therefore appreciate the opportunity to share our knowledge and expertise to this consultation paper, as well as recommendations for how Tasmania can support the uptake of electric vehicles in the state and optimise the economic, environmental and social benefits of this new sector.

Hyundai's leadership in green vehicle technologies

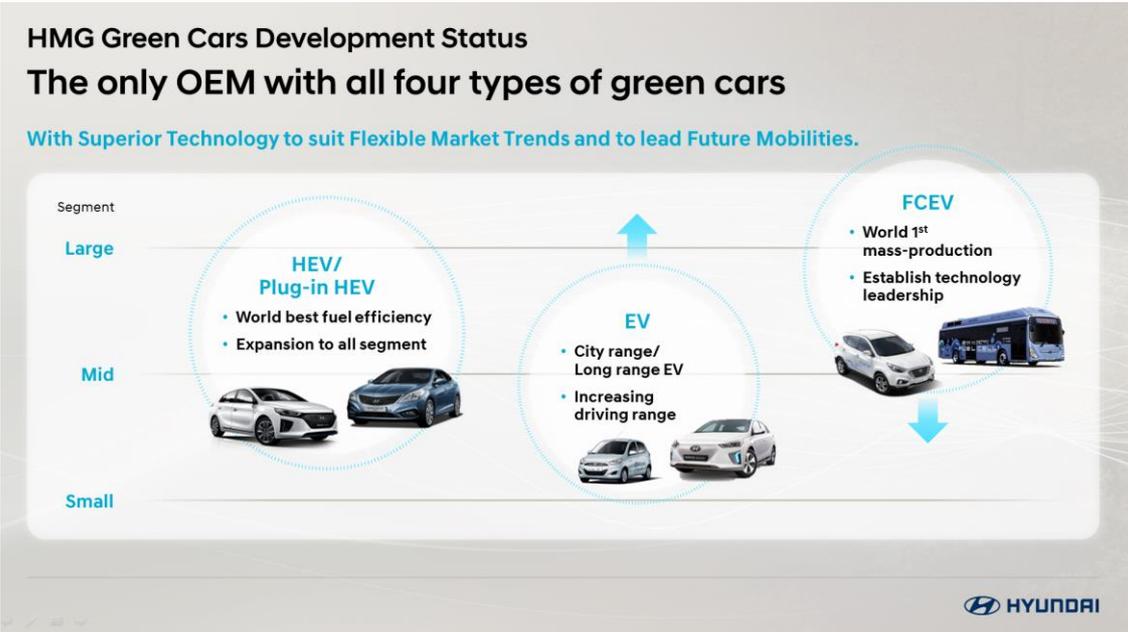
Hyundai is committed to sustainable mobility and recognises that eco-friendly vehicles are the future of automotive. Our ultimate ambition is to create a cleaner environment through the electrification of our product. We plan to expand our green car line-up to 31 models by 2020 and 38 by 2025, cementing our role as one of the largest manufacturers in this segment.

Our green car development strategy is based upon establishing a range of flexible platforms to enable us to swiftly react to market changes. Specifically, these platforms include hydrogen fuel cell electric, battery electric, hybrid electric and plug-in hybrid electric.

In Australia, this multi-pronged strategy to electrification will be clearly evident in the next 6 months alone, with the release of the NEXO hydrogen fuel cell electric SUV commencing production in November 2018, the IONIQ to be launched in Australia in November 2018 available as a battery electric, hybrid and plug-in hybrid, and the Kona battery electric SUV planned for launch in Australia from February 2019. Further details of these vehicles and our approach to each technology is outlined below.

Hyundai’s overarching position is that due to the relative strengths and weaknesses of each of these technologies, they will play complementary roles as the world transitions to a sustainable transport fleet. We envisage a world where green vehicle technologies 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 this strategy and the segments where we anticipate each technology is particularly suited and likely to proliferate.

Diagram 1: Hyundai’s green car development strategy



Zero emission mobility offers a wide range of community benefits including reduced emissions, the potential for lower operating costs, and noise and air quality improvements. The emergence of this new technology also provides opportunities for innovation, employment creation, manufacturing and investment attraction, all benefitting the economy at large.

These benefits can only be fully realised by industry and governments working together to optimise the opportunities presented by this new sector. This is being evidenced globally where countries around the world are setting vehicle electrification targets, including our home country Korea, where targets of 250,000 electric vehicles and 1,240,000 hybrid vehicles on the road by 2020 was announced by the Korean Government in 2016.

Battery electric vehicles

Hyundai is committed to demonstrating industry leadership in the battery electric vehicle (BEV) segment, targeting the introduction of eight models globally by 2020.

The soon to be released IONIQ is set to be one of the most affordable BEVs in the Australian marketplace. Delivering a range up to 270 kms [based on New European Driving Cycle (NEDC)] and a recharging time of 4 hours, 25 minutes with a standard AC charger or 23 minutes at a DC fast charger (to 80 per cent capacity), the IONIQ is expected to be one of the strongest performers in the global electric vehicle segment.

Following the IONIQ, the Kona EV will be the world's first small SUV in the BEV segment. Charging time is 6 hours 10 mins using a standard AC charger or 55 minutes with a DC fast charger (to 80 per cent capacity) and delivering a class-leading range of up to 470km [based on Worldwide Harmonised Light Vehicle Test Procedure (WLPT)].

With their affordability, convenience and performance, the IONIQ and Kona are expected to take BEVs in Australia from a niche vehicle segment to the mainstream.

Hydrogen fuel cell electric vehicles

For two decades Hyundai has been a leader in the development of hydrogen as an alternative fuel source. Hydrogen vehicles work by combining hydrogen with oxygen taken from the air within a fuel cell to produce electricity, heat and water. Without combustion, there are no harmful emissions with the only by-product being water. Electricity created through a chemical reaction within the fuel cell powers the vehicle.

Fuel cell electric vehicles (FCEVs) are therefore classified as an electric vehicle, however, unlike a BEV, which stores its electricity in a battery, an FCEV produces its own electricity on-board and on-demand in a fuel cell.

Hyundai was the first auto maker in the world to successfully begin commercial production of mass-produced FCEVs with the introduction of the ix35 in 2013, and in 2018 will launch its successor, the NEXO. The NEXO is the technological flagship of Hyundai's growing eco-vehicle portfolio and marks Hyundai's continued momentum toward having the industry's most diverse powertrain line-up.

Improving upon the ix35, the NEXO FCEV has an estimated driving range of 800km (NEDC), 206km more than its predecessor, and a refuelling time of 3-5 minutes.

Hyundai was Australia's first car company to permanently import an FCEV into the country for evaluation and demonstration purposes. It was also the first to have a permanent hydrogen refuelling station, built at our national headquarters in Sydney in 2014.

The initial Australian fleet customer of the NEXO will be the ACT Government who have committed to 20 vehicles (as well as a hydrogen refuelling station based in Canberra) as part of their Hornsdale Wind Farm project. It is expected delivery of these vehicles will commence in 2019.

Hybrid and plug-in hybrids

Hybrid electric vehicle (HEV) and plug-in hybrid electric (PHEV) vehicles continue to be an important part of Hyundai's eco car strategy, particularly as the availability of ZEV infrastructure is yet to reach critical mass in Australia.

Emissions from hybrids are significantly less than their internal combustion engine (ICE) equivalents through the partial use of an electric powered motor therefore resulting in less fuel consumed.

Hyundai globally is targeting the introduction of 10 HEV and 8 PHEV models globally by 2020, including the IONIQ HEV and PHEV with the PHEV delivering 63km from its electric battery alone.

All of the models referred to above will be sold with industry leading warranties demonstrating the durability and reliability of the new componentry, that is the battery, fuel cell and hydrogen storage tanks. In addition, given the average length of vehicle ownership being approximately five years, and even shorter in fleets, the length of warranty provides confidence to second hand buyers encouraging the mainstream uptake of this new technology.

Consultation paper response

Hyundai Australia's response to the questions outlined in the consultation paper is set out below. A summary of our position and recommendations to the Tasmanian Government are as follows:

- Tasmania's transition to an electric vehicle fleet presents significant economic, environmental and social opportunities that will be fully optimised with government coordination at the federal, state and local level in conjunction with close industry engagement. We therefore encourage the Tasmanian Government to liaise with the Australian Government on a national zero emission vehicle and infrastructure framework to support the growth of this emerging sector.

- The parallel introduction of government support measures for both vehicles and infrastructure are equally important. They should also be designed from a ZEV perspective to assist the entire suite of zero emission technologies based on electric drivetrains, that is fuel cell electric and battery electric vehicles. As such, we recommend the Tasmanian Government also introduce measures to enable the introduction of FCEVs to the state in parallel to the BEV program currently under development to ensure a technology neutral approach.
- A pre-condition of the volume introduction of ZEVs is the presence of a critical mass of charging and refuelling infrastructure. Public-private partnership to support infrastructure roll out are essential in the initial phase of deployment accompanied by regulatory reform to enable efficient implementation through internationally harmonised regulations, codes and standards.
- The Tasmanian Government can play a leading role in driving acceptance and take up of ZEVs through adopting a zero-emissions fleet policy. Commitments such as the ACT Government's announcement that all newly leased passenger vehicles will be ZEVs from 2020-21 (where fit for purpose) demonstrates public sector leadership and sends a strong signal to the private sector that the technology is tried, tested and suitable for wider fleet adoption. The Queensland Government's recent commitment to double ZEV numbers in their fleet each year to 2022 is also another positive example. We encourage the Tasmanian Government to consider similar initiatives.

Hyundai Australia is a member of the Electric Vehicle Council and supports their submission to this consultation paper. In addition, we are also a co-founder of Hydrogen Mobility Australia (HMA) and support their work in accelerating the introduction of FCEVs to Australia. We encourage the Tasmanian Government to engage with HMA on the opportunities for hydrogen refuelling infrastructure in the state.

In conclusion, Tasmania has an exciting opportunity to participate in and reap the benefits of the clean energy revolution taking place in the transport sector. Hyundai Australia is proud to be at the forefront of this transformation and we look forward to engaging with the Tasmanian Government as its approach to encourage electric vehicle uptake in the state develops.

1. Should the Tasmanian Government support the installation of both destination (slower charge) and Inter-regional DC fast chargers?

The installation of both destination and inter-regional DC fast chargers should be supported by the Tasmanian Government. It is important for BEV users to be provided with access to both

charger types to ensure varying driving and charging needs across consumer groups are met. It is also expected this approach will provide the greatest stimulus to BEV uptake given its dual focus on two charging types and therefore appeal to a wider range of drivers.

2. What factors should be considered in determining what type of charger should be installed where?

There are a range of factors that should be considered in determining the charger type that should be installed in a particular location. To ensure suitability of equipment, consistency across charging sites and a streamlined user experience, Hyundai along with Audi, Jaguar Land Rover and Mercedes-Benz announced a partnership with Chargefox in 2018. Through Chargefox, a coordinated approach to the roll out of charging infrastructure is taking place across Australia. Chargefox's expertise in BEV charging means that site decisions are informed and based on experience.

Hyundai also supports the use of Australian made charging equipment and encourages the Tasmanian Government to preference local companies in their selection of providers.

3. Which locations (for example high-population areas or less-populated regional areas) should the Tasmanian Government consider as the highest priority for installing electric vehicle charging stations?

Consistent with our approach to supporting the installation of both types of charging infrastructure to maximise consumer choice, Hyundai Australia similarly recommends the Tasmanian Government give equal focus to highly populated and less-populated areas across the state in its site identification activities. Prioritising both metropolitan and regional areas is important to enable the movement of BEVs across the state and give consumers confidence in their decision making when considering infrastructure availability prior to purchasing a BEV.

4. Which amenities are important to have nearby electric vehicle charging stations to facilitate a positive and convenient user-experience?

Amenities to be considered in the selection and development of electric charging sites that create a convenient user-experience include provision of covered areas for use in inclement weather, ample parking space for vehicle's waiting availability of charging stations, sufficient turning circle space for passenger vehicles of all sizes, sufficient night lighting for user safety and site cleanliness.

Additionally, features such as restrooms, playgrounds for children and the availability of food and drink will also contribute to a positive experience, particularly where users are awaiting the availability of charging infrastructure.

5. What type of operation and maintenance issues should be considered to ensure a positive and convenient user experience?

As outlined above, Hyundai Australia is working with Chargefox and is supporting the organisation's roll out of charging infrastructure across Australia. With Chargefox's expertise in site selection, equipment installation, operation and maintenance, we recommend the Tasmanian Government engage with them directly for operation and maintenance issues that require consideration.

6. What is the preferred payment mechanism(s) for electric vehicle charging station from a user perspective and an operator perspective?

Similar to the response above, as a charging network member of Chargefox we support the payment mechanism provided by the organisation through the Chargefox app. Consistency of payment systems across the state (as well as nationally) will ensure a convenient user-experience without the need to maintain accounts across multiple payment platforms.

7. Should charging stations offer an online booking system?

While the volume of BEVs registered in Tasmania is relatively low, we believe at this stage the implementation of a booking system is unnecessary. However, the need for a system should be reviewed on regular basis to ensure continued high levels of accessibility to charging infrastructure as BEV uptake increases. If in future it is determined a booking system is needed this service can be provided by Chargefox.

8. What are the expectations of users with regards to reliability and availability of installed charging stations and how could these expectations be met?

The main expectations of charging station users include the availability of charging infrastructure as required without equipment issues or significant wait times and that car parks provided for charging are not taken by non-BEV vehicles. For specific information on addressing these factors, including measures to ensure reliability and availability of equipment please refer to Chargefox.

9. How important is providing multiple chargers at each site to cover for availability and possible equipment failure?

The provision of multiple chargers at each site to cover for availability and possible equipment failure is critical for ensuring a positive user experience. Charging infrastructure at all locations should at a minimum include two Type 2 DC (primary) chargers and one Type 2 AC (back up) chargers.

10. What funding delivery model would work best to stimulate potential suppliers to install electric vehicle charging infrastructure in Tasmania and why?

The most effective funding model for charging infrastructure deployment is government-industry co-investment partnerships. This is the preferred approach of funding agencies such as ARENA who for example announced in October 2018 that it will provide \$6 million towards 21 new charging sites with at least 42 charging stations along major driving routes across Australia. These sites will all be operated by Chargefox.

Through its Advancing Renewables Program, ARENA funds up to 50 per cent of the total cost of eligible renewable projects. Hyundai Australia recommends the Tasmanian Government implement a similar model and ratio of funding support.

11. What level of funding (eg a percentage contribution to upfront costs) would be reasonable for potential partner organisations/businesses to make towards the installation of electric vehicle charging infrastructure and why?

See response to question 10.

12. Who should be responsible for ongoing costs and maintenance?

The site operator should be responsible for all ongoing costs and maintenance. This is consistent with practice in other states and territories, where organisations such as Chargefox are responsible for these aspects of site operation.

13. Should fees for charging at a station be based on commercial pricing or be subsidised to some extent?

We recommend that charging fees should initially be fully subsidised by the Tasmanian Government as an effective means to raise awareness of the technology and encourage BEV

uptake. However, a transition plan to move to commercial pricing as BEV sales increase should be clearly communicated with current and potential users to ensure transparency of pricing adjustments over time.

14. What should the Tasmanian Government consider in raising community awareness of the statewide electric vehicle charging network?

Initiatives to be considered in raising community awareness of a statewide charging network are as follows:

- Targeted education campaigns: Comprehensive education campaigns led by the Tasmanian Government in collaboration with industry are needed to increase consumer understanding and acceptance of BEV technology. Specifically, education programs should focus on the benefits of BEVs, market offerings, practicality as well as the range of consumer incentives on offer should these be implemented.
- Support and coordination of ZEV trials, demonstrations and drive days: Government support is important to assist with demonstrating the suitability of the technology, its potential applications and benefits through trials, demonstrations and drive days as a complement to education campaigns.

In addition, Hyundai Australia strongly recommends the Tasmanian Government introduce financial and non-financial measures for vehicles in parallel to its infrastructure commitment. This will ensure the state is implementing a holistic approach to ZEV introduction and achieve genuine change in the emissions levels of its transport fleet. Specific initiatives include:

- Financial support measures: To stimulate the uptake of electric vehicles, financial support measures are essential in the initial phase of technology introduction with a plan to remove at the point of price parity with ICE vehicles. State-based levers that should be considered by the Tasmanian Government include stamp duty and registration discounts/exemptions and support for home BEV charging equipment.
- Non-financial support measures: Financial support measures should be complemented by non-financial incentives such as preferential parking and lane access.

Finally, to support the development of an initial customer base and demonstrate leadership to the private sector of the advantages of clean mobility, ZEV targets should be introduced for Tasmanian fleets across both state and local government. Hyundai Australia encourages the Tasmanian Government to undertake a review its fleet policy to support ZEV adoption and

consider approaches taken by other states and territories, such as the ACT Government's *Transition to Zero Emissions Vehicles Action Plan 2018–21*.

Hyundai Motor Company Australia thanks the Tasmanian Government for the opportunity to provide input to the electric vehicle consultation paper. Should you have any questions regarding this submission please contact Scott Nargar, Manager of Future Mobility & Government.