Hyundai Motor Company Response to

VEHICLE EMISSIONS
Discussion Paper

Prepared by Hyundai Motor Company Australia

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Table of Contents

1. Executive Summary

Hyundai Motor Company Australia (HMCA) has become established as one of the top four automobile manufacturers in the Australian market.

The company continues to grow market share and has had a presence in the Australian market for 30 years. There are over 100,000 new Hyundai vehicles sold in Australia each year and the Australian Hyundai car parc is in excess of 600,000 vehicles currently in operation.

HMCA has a central interest in the future development of the Australian market and consequently in the safety, technology and environmental standards that will guide the market in the future.

Hyundai Motor Company (HMC of Seoul, South Korea) has a comprehensive green motoring program and is a global leader in the development and deployment of Hydrogen Fuel Cell Electric Vehicles (FCEVs) and the development of the Hyundai IONIQ EV (Electric Vehicle) and PHEV (Plug-In Hybrid Electric Vehicle) platform.

HMCA has already provided initial thoughts on the Federal Government review of emission standards. This document is intended to respond directly to the questions raised in the Discussion Paper issued by the Department of Industry and Regional Development.

- **Implementation of Euro 6**

Various Hyundai vehicles already meet Euro 6 requirements in relevant markets and the company sees no major impediment to Euro 6 being introduced as the mandatory Australian standard.

HCMA supports the view of the Federal Chamber of Automotive Industries (FCAI) that Australian fuel quality standards should align with the highest international standards. A move to standard European Standard EN 228:2012 would require a minimum RON of 95 and a maximum sulphur content of 10 ppm.

- **Vehicle In-Service Testing and Emission Testing Standards**

HMCA does not oppose the introduction of an in-service emissions testing regime.

In Hyundai's home market of South Korea, vehicles undergo emissions testing every two years after an initial four year registration period.

If in-service testing is adopted it is imperative that agreed testing standards are consistently implemented throughout the market. It is therefore necessary for such standards to be agreed through the COAG process.

HMCA sees no rationale for the introduction of a specific Australian testing standard.

- **Implementation of a CO_2 standard for light vehicles**

HMCA is participating in the FCAI working group that is considering the appropriate configuration of Australian CO_2 standards that take into account the unique nature of the Australian market.

The FCAI working group will make recommendations to the government on the standards, the market categorisations, the means of measurement and the enforcements of such standards. The industry fervently hopes the government will be guided by the recommendations.

- **Fuel Quality Standards**

HMCA supports the view of the FCAI that Australian fuel quality standards should be aligned with the world's best.

There are environmental, efficiency and health benefits to be gained from petrol quality that conforms to the latest EU standards, namely a minimum 95 RON and a maximum sulphur content of 10 ppm.

- **Information and Education**

There is a distinct lack of consumer awareness, acceptance and understanding of clean energy technologies and its related benefits. While initial consumer concerns regarding 'green technology' may have been valid, consumer opinion has not moved with the tremendous technological advances made in the sustainable mobility sector.

Governments at all levels need to action policies that target barriers to entry, from vehicle procurement policies to consumer incentives to infrastructure development.

A comprehensive awareness campaign to drive consumer engagement is critical to the success of long-term green technology acceptance and use.

- **Fleet Purchasing Policy**

Global acceptance of sustainable mobility is most progressive in markets where governments have taken a leading role in driving the acceptance – and uptake – of such vehicles.

The intelligent use of vehicle procurement policies for government fleets can play a significant role in motivating large-scale demand that, in turn, provides the business case for investing in infrastructure.

- **Taxation and other Incentive Measures**

HMCA acknowledges the success of the government's initial fuel efficient Luxury Car Tax (LCT) threshold, and believes there is now an opportunity to further incentivise the market to embrace even lower average fuel consumption and emissions.

In addition to the introduction of a 'sliding scale' of LCT threshold, HMCA believes that Zero Emission Vehicles (ZEVs) should be exempt from LCT. This move would have little to no impact on revenue but would send a strong signal to market.

Providing standardised reductions in State vehicle registrations and stamp duty costs attached to ZEVs also requires a review within COAG.

- **Alternate Fuels and Electric Vehicle Incentives**

The Australian market is almost unique amongst developed global markets in not offering any meaningful incentives to drive consumer purchase of qualifying green vehicles, nor any incentive for the creation of supporting infrastructure for such vehicles.

HMCA would recommend utilising existing government mechanisms to fund green projects to help roll out supporting infrastructure. This can be achieved in partnership with commercial entities and as part of a government policy of acting as a catalyst for positive change. The Clean Energy Finance Corporation (CEFC) is one such mechanism.

HMCA also believes that a range of commercial and consumer incentives could be offered through tax concession measures that would provide incentive for the necessary supporting infrastructure for new green technology vehicles.

2. Implementation of Euro 6

Various Hyundai vehicles already meet Euro 6 requirements in relevant markets and the company sees no major impediment to Euro 6 being introduced as the mandatory Australian standard, as long as the minimum fuel quality standard is raised to benefit from the drivetrain technology that will be included in Euro 6 compliant vehicles.

In terms of an appropriate phase-in timetable, HMCA suggests the following schedule:

1 January 2020	• Euro 5 phase-out commences in-line with the closure of local manufacturing in Australia. • Pre-homologated Euro 5 vehicles accepted.
1 January 2022	• Euro 5 vehicles no longer homologated.
1 January 2024	• Full Euro 6 compliance for Australian automotive importers supported by alignment of Australian fuel quality standards with EU, Japan and Korea.

HMCA supports the position of the Federal Chamber of Automotive Industries (FCAI), as outlined in its Fuel Quality Standards submission to the Senate Inquiry into Motor Vehicle Standards (Cheaper Transport) Bill 2014 on 18 September 2015.

The FCAI has been consistent in its position that the introduction of Euro 6 must see a concomitant improvement in Australian market fuel quality.

HCMA supports the view of the FCAI that Australian fuel quality standards should align with the highest international standards. There is a clear emissions, and subsequent air quality, benefit to be gained from the alignment of the Australian petrol standard with European Standard EN 228:2012. This would require a minimum RON of 95 and a maximum sulphur content of 10 ppm.

Non-profit research organisation the International Council on Clean Transportation (ICCT) recognises the importance of fuel quality standards in its inaugural 'State of Clean Transport Policy'[1] report, released in 2014:

"Fuel quality, most notably the sulphur content of gasoline and diesel, is key to the implementation of advanced emission controls. For optimal function of emission controls … Euro 6/VI-equivalent vehicles require fuel as low as 10 ppm sulphur."[2]

[1] Miller, Joshua D., Facanha, Cristiano, The International Council on Clean Transportation (ICCT), the State of Clean Transport Policy: A 2014 synthesis of vehicle and fuel policy development, 2014.
[2] The International Council for Clean Transportation White Paper (Sept. 2015): Transition to a global Zero-Emission Vehicle fleet: A Collaborative Agenda for Governments. Table 5, p23

3. Vehicle In-Service Testing and Emission Testing Standards

HMCA does not oppose the introduction of an in-service emissions testing regimen.

Optimised engine performance results in efficient emissions and, therefore, cleaner and healthier environments.

Incorporating an emissions test with regular roadworthy testing would be the most appropriate course of action. In Hyundai's home market of South Korea, vehicles undergo emissions testing every two years after an initial four year registration period.

If in-service testing is adopted it is imperative that agreed testing standards are consistently implemented throughout the market. It is therefore necessary for such standards to be agreed through the COAG process.

In relation to the actual testing standards implemented, HMCA sees no rationale for the introduction of a specific Australian testing standard but rather takes the position that an alignment with UN or EU standards would be a logical outcome.

4. Implementation of a CO_2 Standard for Light Vehicles

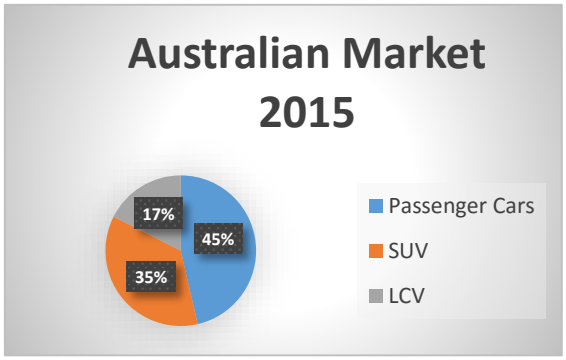
HMCA accepts that the government has a desire to establish Australian CO_2 emission standards for light vehicles. HMCA is participating in the FCAI working group that is considering the appropriate configuration of Australian CO_2 standards that take into account the unique nature of the Australian market.

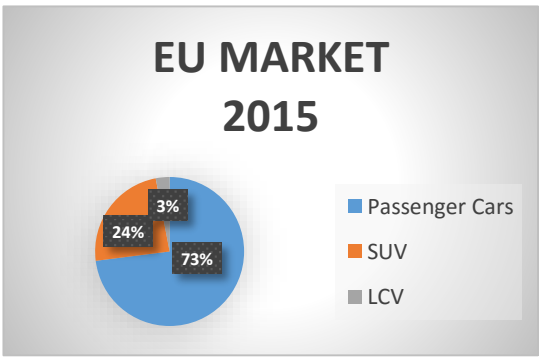
A particular feature of the Australian market is that new SUV deliveries account for a significantly higher share of the total market when compared to the EU:

	TOTAL EU SUV	TOTAL AU SUV
2014	19.8 %	31.7 %
2015	22.5 %	35.4 %

The FCAI working group will make recommendations to the government on the standards, the market categorisations, the means of measurement and the enforcement of such standards. The industry fervently hopes that the government will take account of such recommendations in arriving at a suitable standard.

The cleaner air objective of the establishment of an Australian CO_2 standard can be further assisted by the introduction of measures that will encourage the supply and purchase of more fuel efficient (lower CO_2-emitting) vehicles. Some such measures will be suggested later in this submission.





5. Fuel Quality Standards

As covered in the section relating to the introduction of Euro 6, HMCA supports the view of the FCAI that Australian fuel quality standards should align with the highest international standards. If the environmental benefits from Euro 6 are to be realised, Australian fuel quality standards will need to improve.

High quality fuels are backwards-compatible with older vehicles and a reduction from the current ppm limit of 50 to 150ppm would also align Australia with both Japan and South Korea, two source countries that, in combination, account for over 40% of the Australian new passenger car and light commercial market.

6. Information and Education

It could be suggested that a number of negative perception issues have, particularly in Australia, reduced the appeal of Zero Emissions Vehicle (ZEV) and Plug-in Hybrid Electric Vehicle (PHEV) offerings in the local market. This position has the potential to affect the positioning of all future green technologies – including Fuel Cell Electric Vehicles (FCEV).

There is a 'disconnect' between consumer knowledge and the capabilities of the latest green motoring technology. Most consumers don't understand the technology and therefore there is a reluctance to consider such vehicles, for both practicality and cost reasons. While these issues may have been valid considerations when the technology was relatively new, consumer awareness and understanding has not moved with the tremendous technological advances that have been made in the sector.

There is a valuable role for ensuring, in cooperation with industry, greater public education and information. Using existing government and industry communication channels and assets, much can be done to promote community understanding and acceptance of green technology motor vehicles. However, to build true consumer acceptance of these innovative and environmentally sound vehicles, actions need to match words. Governments at all levels need to action policies that target barriers to entry, from vehicle procurement policies to consumer incentives to infrastructure development.

"The consensus from the emerging studies clearly indicates the importance of consumer electric vehicle purchasing incentives and electric vehicle charging infrastructure, as well as education and awareness actions in driving electric vehicle purchasing and use..."[3]

[3] The International Council for Clean Transportation White Paper (Sept. 2015): Transition to a global Zero-Emission Vehicle fleet: A Collaborative Agenda for Governments. p.29

The table below shows the dominant electric vehicle adoption barriers, potential education and information options and current policy actions in other markets:[4]

Potential barrier	Potential actions to help overcome barrier	Examples of regions with action
Consumer knowledge and awareness including perceptions of cost and functionality	Provide information regarding state, local and utility incentives widely, at dealerships, on websites, through advertising in **broad awareness campaign**	California, UK
	Provide **cost evaluation tools and information** to prospective electric vehicle consumers on vehicle ownership fuel-saving benefits (websites, consumer labels)	Japan, South Korea
	Conduct **public events** (e.g. ride-and-drive with public officials) to increase awareness and encourage first electric vehicle experiences	Japan, South Korea, California
	Place electric vehicles in government, company, and car-sharing **fleets**	China, Quebec, California, South Korea, Japan

[4] The International Council for Clean Transportation White Paper (Sept. 2015): Transition to a global Zero-Emission Vehicle fleet: A Collaborative Agenda for Governments. Table 5, p25

7. Fleet Purchasing Policy

Governments around the world that are supportive of green technologies have effectively taken a leading role in driving the acceptance – and uptake – of such vehicles in their respective markets.

The importance of establishing a critical mass of ZEVs, PHEVs and other green technologies in a market cannot be underestimated. General consumer (as opposed to early adopters) comfort with new technology and acceptance as a viable option for their needs is heavily influenced by a belief that a new technology is tested in-market and supported.

Perception of critical mass is a key factor in that opinion forming process. The intelligent use of vehicle procurement policies for government fleets can play a very significant role in motivating large-scale demand that, in turn, provides the business case for investing in the supporting infrastructure.

"…increased placement of electric vehicles in government fleets increase awareness regarding the new technology."[5]

[5] The International Council for Clean Transportation White Paper (Sept. 2015): Transition to a global Zero-Emission Vehicle fleet: A Collaborative Agenda for Governments. p.24

8. Taxation and other Incentive Measures

The current Luxury Car Tax (LCT) rate sits at 33% for vehicles priced over $63,184 with a concessional threshold for fuel efficient cars (a combined-cycle fuel consumption rate of less than 7.0 litres per 100 kilometres) set at $75,357.

In 2013, a Department of Infrastructure and Regional Development report determined that the overall trend in decreased fuel consumption had accelerated since 2005, *"…with the average rated fuel consumption of new light vehicles…7.2 litres per 100 kilometres (L/100 km) for 2013."*[6]

HMCA acknowledges the success of the initial fuel efficient higher LCT threshold and believes that it would be beneficial to consider a 'sliding scale' to incentivise manufacturers and reward buyers of low emission vehicles.

The effect of the fuel efficient higher LCT threshold has been twofold. First to encourage manufacturers to introduce new models that take advantage of the concession and secondly to offer consumers premium vehicles at a lower price, often replacing older less fuel efficient vehicles, with a resulting reduction in emissions. The abovementioned improvement in average fleet consumption, largely due to improved technology, now offers the opportunity for further incentive for the market to embrace even lower average fuel consumption and emissions.

HMCA would propose the following model for a sliding scale of LCT threshold:

Luxury Car Tax Thresholds		
Financial Year	**Fuel Efficient Vehicles**	**Combined Fuel Consumption (L/100km)**
2017 – 2018	$75,375	7.0 l/100km
	$89,900	6.0 l/100km
	$99,900	5.0 l/100km

[6] Information sheet 66 - New passenger vehicle fuel consumption trends, 1979 to 2013. Department of Infrastructure and Regional Development: Bureau of Infrastructure, Transport and Regional Economic. p.1

In addition, HMCA believes that LCT should not be applied to ZEVs. The financial impact from the removal of LCT from such a small number of vehicles - particularly given the tight definition of 'Zero Emissions' - would be of little or no consequence to revenue, yet it has the potential to send a strong market signal.

HMCA would also like to see a discussion take place, within COAG, on the value of providing standardised reductions in State vehicle registration and State stamp duty costs attached to ZEVs and to offering practical incentives to ZEV drivers such as transit lane and parking privileges.

"Among the various forms of incentives, the use of vehicle purchasing tax exemptions and making the rebates applicable at the point of sale can be especially attractive."[7]

[7] The International Council for Clean Transportation White Paper (Sept. 2015): Transition to a global Zero-Emission Vehicle fleet: A Collaborative Agenda for Governments. p.31

9. Alternative Fuels and Electric Vehicle Incentives

According to the ICCT, there are a number of findings related to electric vehicle policy effectiveness:[8]

- Long-term policies (e.g. ZEV program, incentives) are essential in the transition to an electric drive fleet;
- Hydrogen refuelling infrastructure deployment must precede fuel cell electric vehicle market launch;
- Plug-in electric and fuel cell vehicles will both be important in the long-term;
- Transition to an electric fleet will take decades and benefits are likely to be at least 10 times greater than the costs (technology, incentives, and infrastructure).

The Australian market is almost unique in developed global markets in not offering any meaningful incentive for the take-up of zero emissions vehicles or any incentive for the creation of supporting infrastructure for such vehicles.

Although there is an increasing range of ZEV and PHEV (let alone Hybrid) vehicles on the Australian market, there is an active disincentive to consumers purchase due to the price premium required for new technology, low volume of vehicles and issues such as range anxiety and lack of supporting infrastructure.

In addition, all such vehicles suffer, in the Australian context, from the fact that the majority of the country's electrical power is brown-coal derived.

Of course there is the option for users to purchase "Green Energy". However, HMCA believes that Australia is not utilising a major renewable resource in solar energy that, in combination with FCEVs, could offer a totally renewable and clean motoring solution for at least some operations.

Whilst FCEVs may not be a solution for all motoring needs, they do offer a viable option for a range of vehicle uses, particularly in urban environments and for depot based fleets. FCEVs can be fueled by small scale, solar powered hydrogen refueling stations and can offer comparative range to Internal Combustion Engine (ICE) vehicles, thus addressing one of the major concerns for Australian motorists.

[8] The International Council for Clean Transportation White Paper (Sept. 2015): Transition to a global Zero-Emission Vehicle fleet: A Collaborative Agenda for Governments. p.22

HMCA believes that existing government mechanisms for funding of green projects should be utilised to help drive the roll out of supporting infrastructure, both in partnership with commercial entities and as part of a government policy of acting as a catalyst for positive change.

The Clean Energy Finance Corporation (CEFC) is one such mechanism and one with a brief that would appear to fit well with the role of assisting new green motoring technology roll-out.

According to the CEFC website the purpose of the organisation is as follows… *"We provide and develop financing solutions across the clean energy sector spanning renewable energy, low-emissions technologies and energy efficiency.*

We seek to catalyse and leverage funding for commercialisation and deployment of clean energy technologies necessary for Australia's transition to a carbon constrained economy.

Using a full range of financial instruments, the CEFC co-finances and invests, directly and indirectly, in clean energy projects and technologies."

On 23 March 2016, the Turnbull Government announced the creation of a $1 billion Clean Energy Innovation Fund. The fund, to be jointly managed by the Australian Renewable Energy Agency (ARENA) and CEFC will provide equity and debt funding for clean energy projects.

"The Government will retain and reinvigorate the Clean Energy Finance Corporation and the Australian Renewable Energy Agency as part of our strong commitment to supporting jobs and innovation through investment in clean and renewable energy in Australia.

The refocused agencies will work together to provide capital investment in Australian businesses and emerging clean energy technologies."

HMCA believes that through this program a valuable role could be played by ARENA and CEFC in assisting to roll-out (perhaps at first government owned) fleet- and depot-based FCEV and EV refueling /recharge facilities, and assist in working with established refueling infrastructure providers on adding green energy options to their current network.

The opportunity to help establish a viable network of solar powered FCEV refueling stations, through the support of such a program, is one that, if taken, could provide the impetus for FCEV vehicles to become a valuable part of a future clean motoring solution for the nation.

HMCA also believes that a range of commercial and consumer incentives could be offered through tax concession measures that would provide incentive for the necessary supporting infrastructure for new technology vehicles.

Such incentives could include:

- Accelerated (one time, 100%) tax depreciation for businesses running operational fleets to invest in in renewable energy refueling/recharging infrastructure at their base of operations/offices;
- Similar investment incentives for large fuel infrastructure operators to invest in new technology refueling/recharge infrastructure alongside their existing facilities;
- Allowing small scale recharge equipment as an accelerated depreciation under the current small business $20,000 investment allowance, even if not recharging primarily business-use vehicles (proof of ownership of EV would be required);
- Commercial and government joint ventures to establish public access refueling/recharge facilities;
- ZEV recharge/FCEV refueling facility requirements for new major public facilities and for significant residential multi dwelling developments.

HMCA believes there is a necessary role for government in influencing consumer behavior and the cost of doing so need not make a significant impact on government expenditure. The company also believes that any costs incurred will be offset, in the relatively short term (within one generation), by community benefits from improved urban air quality, including lower health spending and higher productivity.

The key question to be considered is what incentives or policy will make a material difference to consumer consideration and market penetration?

HMCA believes that the above proposals are worthy of detailed consideration and that the Australian Government should recognize that it must play some catalytic role in moving a meaningful proportion of Australia's future motoring onto a sustainable basis.

The chart below outlines some of the key incentives to purchase in other countries:

COMPARATIVE INCENTIVES FOR ZEV OR QUALIFYING ULEV VEHICLES				
Country or Region	ZEV National	ZEV State or Region	Qualifying ULEV National (mainly PHEV)	ULEV State or Region (subject to various qualification criteria)
Australia	Nil	Limited registration and stamp duty	Nil	Nil
Canada	Nil	$5,000-$8,500 rebates (volume capped)	Nil	Up to $2,500 rebate
China	Up to $11,000 purchase incentive	Exemption from annual taxes	Up to $11,000 purchase incentive	Exemption from annual taxes
Germany	Nil	State registration, parking, free charging and transit lane access		State registration, parking, free charging and transit lane access
Japan	$1,700-$3,500 tax exemption	N/A	$1,700-$3,500 tax exemption	N/A
South Korea	Up to $18,000 purchase incentive	N/A	Tax credit up to $2,500	N/A
UK	Up to UK £4,500	Congestion charge exempt	Up to UK £2,500 grant	Congestion charge exempt
USA	$2,500-$7,500 tax credit	$1,500-$6,000 state tax rebates+ registration, parking, free charging and transit lane access	Nil	$1,500-$3,000 state tax rebates+ free charging and transit lane access