



## Towards Fuel Efficient, Lower Emission Light Vehicles

Issues Paper Response Summary

March 2016



The Issues Paper, released on 1 December 2015, considered a range of complementary measures that could be implemented in support of light vehicle CO<sub>2</sub> emission standards to help drive improvement in fuel economy across Australia's light vehicle fleet. The paper focused on overarching initiatives; those that can help drive consumer demand, along with those to help deployment of new technologies and fuels. It also presented an overview of potential challenges to addressing light vehicle fuel economy in Australia, and identified local and international trends relevant to the broader Australian policy debate.

ClimateWorks Australia, in collaboration with Future Climate Australia and the Global Fuel Economy Initiative, sought feedback from a range of industry, government and consumer stakeholders around areas included in the Issues Paper. Specifically, key issues and potential solutions to help drive improvement in the fuel economy of Australia's light vehicle fleet, in support of light vehicle CO<sub>2</sub> emission standards.

Input from this consultation process has been consolidated into this summary report, in order to identify priority issues and potential solutions for further investigation through engagement with policy makers and relevant stakeholders in 2016. The views and opinions outlined in this report do not expressly reflect those of ClimateWorks Australia, Future Climate Australia or the Global Fuel Economy Initiative, and ideas included have not been linked to parties that submitted responses to the Issues Paper in order to maintain confidentiality.

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# Towards Fuel Efficient, Lower Emission Light Vehicles

## Overarching Initiatives

### 1. Develop a vision for Australia's light vehicle fleet

There is continued support for the establishment of institutional and policy frameworks consisting of the creation of an agenda-setting organisation, either as a stand-alone or separate functional area of an existing department or agency, in relation to lower emission vehicles. It is envisioned this would ensure a coordinated approach in terms of policies and complementary measures.

An adequately resourced national organisation would be appropriate and valuable to:

- > Broadly promote low-emission automotive technologies;
- > Advise and guide Federal and State Government policy responses;
- > Evaluate the broad economic benefits of low emission vehicles; and
- > Support collaboration across automotive manufacturers and technology service providers.

While it was suggested that a number of existing organisations could undertake this role, there was also recognition it would need to be well placed, offer appropriate skills and have the ability to affect real change.

In terms of structuring a new organisation, several examples could be applied to Australia. An organisation similar to CALSTART or the UK Low Carbon Vehicle Partnership (LowCVP) would allow for a private, member-based structure that could be less dependent on government funding and shifts in policy direction. Alternatively - and given currently limited advocacy for low emission vehicles in Australia - the structure of the UK Office for Low Emissions Vehicles may be a more pragmatic starting point. State and Territory road agencies could also participate through an inter-jurisdictional transport body, such as Austroads, the association of Australasian road transport and traffic agencies, or the National Transport Commission.

## Consumer Demand

### 2. Increase understanding of Australian consumer purchasing attitudes and preferences in relation to fuel efficient and lower emission vehicles and fuels

Limited understanding of consumer attitudes and perceptions around lower emission vehicles has prevented proper consideration of significant barriers to consumer demand and uptake. Many studies of consumer preferences in other markets reveal key findings which helped shape relevant policy drivers<sup>1</sup>. In Australia there exists a range of public information regarding consumer preferences, including consumers' changing attitudes, preferences and behaviours<sup>2</sup>. However, it appears there is limited information which specifically investigates Australian consumer preferences and perceptions around fuel efficient and lower emission vehicles, or information that identifies relevant consumer demand drivers in this segment.

In addition to publicly available research, considerable information regarding consumer preferences conducted both internationally and by vehicle manufacturers is not readily available or released publicly.

Unreleased research conducted at the state government level considered community attitudes to light vehicle emissions, with a view to linking CO<sub>2</sub> emissions with light vehicle registration costs. The proposed approach is similar to the current ACT Government system of offering a reduction in stamp duty payable on lower emission vehicles for the registration of a new vehicle and in the transfer of registration.

The results from this research and survey revealed the following:

- > There was general support for raising vehicle owner awareness of their vehicle emissions, yet there was divided sentiment around including an emissions factor in registration charges.
- > There was broad awareness amongst the general community about CO<sub>2</sub> emissions, but not about other air pollutants emitted from vehicles.
- > Any incentive to reduce costs for lower emission vehicles would need to be offset against increased costs associated with the purchase of the vehicle.

1 Axsen J, Mountain D, & Jaccard M, 2009

2 Enhanced Media Metrics Australia, 2015

- > If provided with a reduction in registration costs, most private vehicle owners would choose a vehicle with a more efficient internal combustion engine than a hybrid vehicle.
- > There was a perception that electric and hybrid vehicles were the only ones that are considered 'low emission' and 'green'.
- > Fleet managers were more in favour of a proposed registration reduction for greener vehicles, which would 'very likely' change purchasing behaviour.

If further research is to be undertaken there should be a focus on the broader economic and environmental costs and benefits of seeking to increase the uptake of low and ultra-low emission vehicles in Australia. In addition, the feasibility and desirability of new ownership models for these types of vehicles should be considered, including through car share schemes and personal leasing systems in the case of situations where higher capital cost compared to conventional vehicles could favour a shift in ownership models.

### 3. Incentives to increase demand and strengthen current understanding of the value proposition for lower emission vehicles and fuels

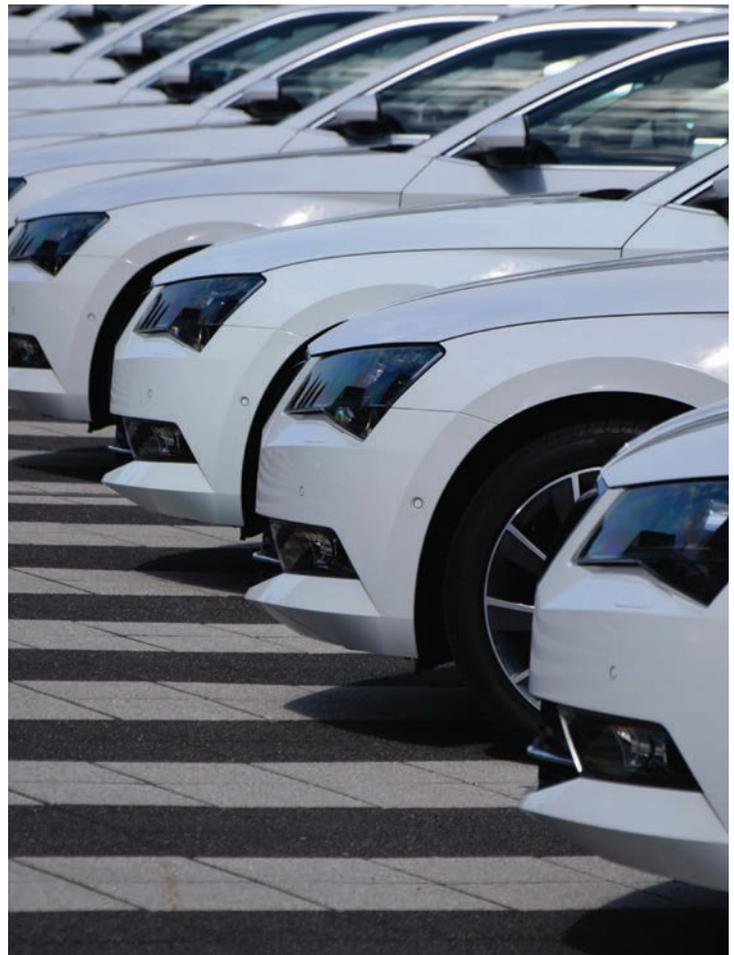
In Australia, consumer demand for environmental or lower emission vehicles has been lower than in other markets such as the United States or the UK<sup>3</sup>. Consumer interest could be motivated by setting incentives for the purchase of fuel efficient and lower emission vehicles, including both financial and non-financial mechanisms.

In the first instance, a clear definition and understanding of low emission vehicles is required. Where low emissions vehicles may include electric vehicles, plug-in hybrid electric vehicles, hydrogen fuel cell vehicles, compressed natural gas-internal combustion engines, and biofuel-internal combustion engines - which entail either a higher upfront purchase cost and/or higher ongoing costs for fuel or recharging - more substantial incentives will likely be required.

Research in international markets indicates that reductions in registration charges offered only minor impact in comparison to the overall purchase cost of a new vehicle. A better incentive to purchase a more fuel efficient vehicle would be a reduction in stamp duty on the original purchase, similar to the incentive currently offered in the ACT. Most vehicle owners would prefer a rebate on the cost of a less polluting vehicle. To best calculate the

Total Cost of Ownership (TCO) and improve consumer awareness, there needs to be input and coordination with vehicle manufacturers to develop changes to the current fuel and energy consumption labelling system. Higher purchase costs, absence of purchase incentives and lower resale values generally mean a higher TCO, even with the low operating costs of electric vehicles. It is important to recognise however, that there are difficulties in accurately predicting or comparing TCO between different vehicles, due to uncertain resale values and sales volumes driving behaviour and fluctuation in fuel prices.

As an alternative, consideration could be given to classes or groups of potential purchasers, instead of low vehicle utilisation situations such as private owners. Electric vehicles are arguably more suited to high use scenarios, where low running costs are able to pay back higher purchase costs more rapidly. A shorter term policy focus could concentrate on subsidising electric vehicle uptake in taxi, rental car, car share and urban delivery sectors. The rental car and car share schemes could also offer the greatest potential for general consumer exposure to low emissions technology.



<sup>3</sup> Dini, A. and al., 2013

#### 4. Awareness raising and encouraging greater familiarity with and exposure to lower emission vehicles and fuels

A lack of exposure to new technologies including fuel efficient and lower emission vehicles can lead to misinformation and lack of trust in the product. Initial research indicates that Australian consumer knowledge about lower emission vehicles is limited, primarily due to lack of exposure to the technology which in turn hinders purchase decisions<sup>4</sup>.

There are a number of ways to raise awareness and educate consumers about fuel efficient and lower emission vehicles and their benefits, and resolve misinformation. These range from fuel economy labelling, to information tools and campaigns and promoting lower emissions vehicles and the economic benefits they offer in the retail sector.

While green driving programs, car share schemes and utilisation of lower emission vehicles along tourist trails offer increased visibility and allow drivers to gain first-hand experience with these technologies, such approaches are relatively expensive when considering their potential impact.

Increased awareness and greater familiarity within government and corporate fleets could increase their uptake of lower emission vehicles. Coordinated buying could also provide sufficient market demand for the cost effective supply of new electric vehicles or plug-in hybrid electric vehicle models for fleet use. Fleet procurement coordination could align with the objectives of the proposed new agenda setting organisation.

An opportunity also exists around the positive flow on effects of low emissions fleet vehicles transitioning into the second-hand market, specifically the taxi industry.

4 Dini, A. and al., 2013



#### Advancement of New Technologies and Fuels

#### 5. Expansion of infrastructure and supply chains to support alternative fuel vehicles

Given that the deployment of zero emission vehicles requires both the right infrastructure and developed supply chains, a number of markets have faced repeated issues by not having supportive conditions in place.

Divided opinion continues regarding the role of charging infrastructure to drive the uptake of electric vehicles. Some argue that charging infrastructure will be essential to grow the number of electric vehicles being used, while others suggest it is less important, given the majority of charging occurs either in the home or at work.

In the shorter term, public recharging infrastructure will need to be a mix of fast charging and slower charging stations, available in car parks and shopping centres, to reflect varied and evolving vehicle usage and charging needs. Consideration for the number of public charging facilities will also be needed in order to reduce range anxiety, and provide enough sites for high visibility and serviceability consistent with current vehicle targets, without the risk of overinvesting.

In the longer term, consideration should be given to larger scale infrastructure projects such as electric highways between major centres as demonstrated with Tesla infrastructure being deployed between Sydney and Melbourne, and the WA Electric Highway from Perth to Margaret River. These projects will enable longer distance use of electric vehicles and further demonstrate EV capacity beyond urban driving.

There is recognition that in terms of some alternative technologies such as hydrogen fuel cells, there remains the need for development of additional capabilities and testing to ensure the technology is commercially viable. It remains unclear whether hydrogen fuel cells can become cost competitive with electric vehicles and plug-in hybrid electric vehicles, however there may be benefit in better trialling the technology and considering specialist applications.

**6. Ensure adequacy of fuel quality standards**

Motor vehicle fuel economy and CO<sub>2</sub> emissions are influenced by fuel quality, with ongoing debate around fuel quality standards in Australia.

Fuel quality standards may remain a barrier to the adoption of Euro VI compliant vehicles and therefore, exist as a barrier to further reducing other toxic emissions. Limited fuel quality standards may also mean Australia cannot access some vehicle technologies that offer potential for improved CO<sub>2</sub> emissions performance.

Consideration should be given to the benefits and overall costs of improving Australian fuel standards to match current EU, United States and Japanese standards along with the improvements in vehicle fleet performance this could offer the Australian market.

A second independent review of the Fuel Quality Standards Act 2000 is underway with a final report to be provided to the Federal Government by November 2015, enabling changes to legislation to be made by 30 June 2016.

**7. Advancement of emerging technologies and practices which can improve efficiency**

The broad-scale advancement of new and emerging technologies could bring significant efficiency changes, not only in terms of the technologies utilised for personal transportation, but also in moving economies away from petroleum and lessening the environmental footprint of transportation.

There is continued interest in the development of intelligent transportation systems (ITS) to provide advanced and innovative applications for different modes of transport and traffic management. If ITS becomes accessible to ten per cent of the Australian fleet, the benefits in terms of improved traffic management and safety would flow on to the entire fleet. In addition, greenlight technologies or traffic signal priority could improve traffic management- however this technology would best be suited to public transport and freight and its advancement will depend on optimal telecommunications and available data capacity.

Additional focus should also be given to alternative forms of transport and public transport including electric and hybrid buses and taxis. It is suggested that decreasing the emissions intensity of these public forms of transport, along with the promotion of this initiative would encourage individuals to review their personal emissions and impact.

**Additional feedback and key areas of focus**

There continues to be support for Australia to adopt vehicle and fleet fuel efficiency standards which are consistent with schemes in the EU, United States and Japan. The standards could be structured to tighten over time, in order to reflect anticipated improvements in vehicle performance which will be required to meet emissions reduction targets.

With standards in place, consideration could then be given to aligning state and territory duties and charges through a sliding scale for stamp duty and registration charges based on the emissions intensity of the vehicle, in order to support the objectives of emission standards.

To support uptake, incentivising or subsidising electric vehicles, plug-in hybrid vehicles and hydrogen fuel cell vehicles should also be considered for a period of time. Federal and state incentives, reduced stamp duties and registrations and the introduction of super credits for manufacturers could support the achievement of a target-for-market uptake. Flow on benefits of this could include increased model availability in the Australian market. This approach could also impact overall vehicle costs, allowing widespread adoption to become market driven.

Learning from overseas experience, emission standards should be based on ‘real world’ drive cycles. This would minimise the ability to game the system in order to achieve very low fuel use figures than cannot be replicated by vehicle owners.

It could also be beneficial to conduct additional research analysing actual costs that would be incurred as a result of encouraging low emission light vehicles, along with projected actual emissions reductions resulting from such changes.



## Next Steps

The submissions provided in response to the Towards Fuel Efficient, Lower Emission Light Vehicles have been summarised in the paper, and will be used to inform briefings and the submission to the Federal Working Group Discussion Paper.

The submission from ClimateWorks Australia, Future Climate Australia and the Global Fuel Economy Initiative in response to the Ministerial Forum on Vehicle Emissions Discussion Paper will be made public prior to the submission due date of 8 April.

## References

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