

Submission to Vehicle Emissions Working Group

The Department of Infrastructure and
Regional Development

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Vehicle Emissions Working Group
The Department of Infrastructure and Regional Development
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Dear Sir or Madam,

This submission responds to select questions raised by the Department of Infrastructure and Regional Development, and is supported by the authors published peer reviewed journal articles.

Develop Fuel Efficiency (CO₂) Standards

7. **What are the costs and benefits of adopting a fleet average standard for fuel efficiency (CO₂)?**
- **A. Mortimore, 2011**, “Mandating Emission Targets can significantly reduce road transport emissions” *Critical Issues in Environmental Taxation: Environmental Taxation in China and Asia Pacific, Vol 9*. P 133-149

Without economic instruments to influence car-purchasing trends to lower emission vehicles, consumers would most likely not choose fuel-efficient vehicles because they are prone to loss aversion and have a low willingness to pay for fuel economy improvements, which may lead to market failure.¹

The key findings indicate that some form of state intervention is necessary to address this market failure² caused by consumers “behavioural anomaly” that is described as irrational.³ This behavioural anomaly known as “loss aversion” can influence consumers’ choice of new vehicle, as they substantially undervalue future vehicle fuel savings and become reluctant to pay up front for uncertain reduction in fuel expenditure.⁴ Behavioral anomalies can create uncertainty for

¹ Kurt Van Dender, 2009 ‘Energy policy in transport and transport policy’ (*Energy policy*) 37 (2009) 3854-3862:3857.

² A.C.Pigou 1932, ‘The Economics of Welfare’, 4th ed., London: Macmillan

³ A. Mortimore, 2011, “Mandating Emission Targets can significantly reduce road transport emissions” *Critical Issues in Environmental Taxation: Environmental Taxation in China and Asia Pacific, Vol 9*. Pp 135

⁴ Greene David L, Evans David H, Hiestand John, “Survey evidence on the willingness of of U.S. consumers to pay for automotive fuel economy” *Energy Policy* Volume 61, 1538-1550

manufacturers in deciding whether to increase the supply of low emission vehicles and reluctance in investing in energy efficiency when consumers are risk averse.⁵

To control for consumer risk aversion, the regulator (the government) can control the externality by introducing a regulatory emission performance standard that is imposed on the sale of all new light vehicles that are both manufactured and imported in the country. The regulatory emission standards are “command and control” policies that discourage higher-carbon fuel inefficient vehicles from entering the market by imposing a financial penalty on manufacturers and importers who disregard the standard⁶.

The key findings observe that even though the regulatory emission standards are directed towards the car manufacturers⁷ or importers of new vehicles, the standards are a complimentary measure to the economic instruments that are required to drive consumer demand towards fuel-efficient cars and support “manufacturers to compete on the grounds of environmental performance”⁸ and no longer be concerned on whether consumers will want to buy fuel efficient vehicles and on how competitors will respond to the same problem”.⁹ Moreover, the key findings highlighted that regulatory emission standards will provide the fleet-average standard in CO₂ emissions (per grams of CO₂ per kilometre) as the benchmark for economic instruments to drive consumer’s car purchasing trends towards fuel-efficient lower carbon vehicles.

The “costs” of not adopting a fleet average standard for fuel efficiency are as follows:

- Australia has become the “dumping ground” of global car manufacturers that are required to meet stringent regulatory CO₂ emission standards in

⁵ A.Mortimore, 2011: 135

⁶ Ibid

⁷ Achnicht Martin: 694

⁸ Commission of the European Communities, ‘Results of the review of the Community Strategy to reduce CO₂ emissions from passenger cars and light-commercial vehicles’, Communication from the Commission to the Council and the European Parliament’ ‘COM(2007) 1-10: 7

⁹ Kurt Van Dender, 2009, ‘Energy policy in transport and transport policy’ (*Energy Policy*) 37 (2009) 3854-3862: 3857

the country of manufacture or in the country where cars are imported, as shown in Table 1. With no restrictions on the number of high CO2 emitting vehicles sold in Australia, importers of new vehicles are not required to meet any regulatory CO2 emission standards. Nor is the ‘polluter pays principle’ imposed on consumers choosing to buy high CO2 emitting vehicles.

Table 1.* Car manufacturers average CO2 emissions intensity of new vehicles sold in the European Union compared to Australia, 2013.

Make	Average vehicle CO2 emissions intensity (g/km)		
	European Union	Australia	Percentage difference (%)
Toyota	116	188	62
General Motors	136	205	51
Ford	122	189	55
Volkswagon	127	152	20
Nissan	131	194	48
Renault	110	185	68
Peugeot	115	167	45
All makes	127	182	43

- Source: National Transport Commission, 2015, “Carbon Dioxide Emissions Intensity for New Australian Light Vehicles 2014” The above table is an extract from Table 18.

8. If standards were adopted, what would be an appropriate fleet average target for 2020 and why? What would be an appropriate target for 2025 and why?

The International Council on Clean Transportation reported that about three-quarters of global light-duty vehicle sales occur in markets regulated by efficiency standards.¹⁰

Table 2 compares all new passenger vehicle fuel economy standards that have been adopted or proposed worldwide. Countries adopt varying approaches in determining their regulations, using different drive cycles and vehicle certification test procedures. The following standards have taken into account the differences

¹⁰ International Council on Clean Transportation, 2015, “Policies to reduce fuel consumption air pollution, and carbon emissions from vehicles in G20 Nations.” Pp 1-28: 12.

and have normalized the new-vehicle performance to one or another test cycle – in this case the New European Driving Cycle (NEDC).¹¹

Table 2. Comparison of light-duty vehicle efficiency standards (passenger cars only, light duty trucks excluded).

Jurisdiction	Basis for standard	Target		Target		Targeted fleet
		CO2 g/km 2015	L/100km	CO2 g/km 2020 or post	L/100km	
EU	CO2 emissions (GHG)	130g (achieved in 2013)	5.6L	95 (2021)	4.1L	Passenger and SUV's
*US	Fuel economy /GHG	175g (2016)	7.5L	97 (2025)	4.5L	Passenger and Light trucks
South Korea (Republic)	Fuel economy/ GHG	140g	5.8L	97 (2020)		Passenger and SUV's
China	Fuel economy	161	6.9L	117 (2020)	5.0L	Passenger and SUV's
India (proposed)	GHG	130 (2016)	6.3L	113 (2021)	4.8L	Passenger and SUV's
*Canada	GHG	157 (2016)	6.3L	97 (2025)		Passenger and Light trucks
*Mexico	Fuel economy/ GHG	145 (2016)	6.5L			Passenger and Light trucks

Regulatory emission standards prepared by Global Fuel Economy Initiative sighted in <http://www.fiafoundation.org/our-work/global-fuel-economy-initiative>

US Standards: EPA and NHTSA standards between 2017-2025,

<http://www.epa.gov/otaq/climate/documents/420f12051.pdf>

International Council on Clean Transportation, 2015, "Policies to reduce fuel consumption air pollution, and carbon emissions from vehicles in G20 Nations." P 1-28: 13

Australia will no longer have a car manufacturing industry after 2017, and will be able to adopt internationally compatible CO2 emission standards as shown in Table 2. For example, the US (as shown in Table 2) will double new passenger vehicle economy by 2025, from 175g of CO2/km in 2015 to 97g of CO/km by 2025. The US will achieve the Global Fuel Economy Initiative's target of

¹¹Ibid: 13

doubling new passenger vehicle fuel economy by 2030.¹² Similarly Australia could adopt such transformational fuel economy standards to lower CO2 emissions by improving energy efficiency in new vehicles. There will be no justification why such an action cannot be taken when countries in the G20 made a commitment in 2014 to improve fuel efficiency.

9. How would standards affect the range of vehicles offered in Australia?

Apart from standards, are there any complementary or alternative measures that could be adopted to encourage the purchase and supply of more fuel efficient vehicles?

- **Anna Mortimore 2014**, 'Reforming vehicle taxes on new car purchases can reduce road transport emissions - ex post evidence', in *Australian Tax Forum*, vol.29, Tax Institute, Australia.

The key findings from the above research article highlights the growing body of literature and empirical support for the reform of vehicle taxes differentiated on the basis of CO2 emissions that provides a strong price signal to influence the type of vehicle being purchased and to discourage the acquisition of higher-carbon vehicles. The literature is divided as to whether vehicle taxes are more effective in influencing demand for lower CO2 emitting vehicles at the time of acquisition, commonly known as 'vehicle purchase tax' in the EU, and 'stamp duty' in Australia, or during the time of ownership, (paid annually) known as 'ownership tax' in the EU and 'registration tax' in Australia

The article found that it was important to target the economic instrument that has impact. According to consumer surveys, 'purchase price' is the most important factor when choosing a new vehicle.¹³ Literature supports reforming 'vehicle purchase price' as the instrument to encourage the uptake of alternative fuelled vehicles, because ownership taxes/registration taxes

¹² Ibid, 12

¹³ Australian Government, Australian Bureau of Statistics, 2013, '4102.0 – Australian Social Trends, July 2013' July 2013 Sighted
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features40July+2013> 12
November 2014.

can have a limited effect on the purchase decision as they are annual or monthly charges, and consumers place more attention to the up-front purchase price at the time of acquisition rather than on annual or monthly charges.¹⁴ Although a comparative study of Member States, found reforming both vehicle taxes had the biggest reductions in the average CO2 emissions from new passenger vehicles.

For any further enquiries on the information provided, please do not hesitate to contact the author.

Kind regards

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¹⁴ Gass V, Schmidt J., and Schmid E., (2014) "Analysis of alternative policy instruments to promote electric vehicles in Austria" *Renewable Energy* Volume 61, Jan 2014, pages 96-101