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INTRODUCTION

1.1 THE AUTHORITY AND VEHICLE EMISSIONS STANDARDS

The Climate Change Authority is an independent statutory agency, established to provide expert advice on Australian climate change policy.

The Authority's work is guided by a set of principles under the *Climate Change Authority Act 2011* (Cth). The principles require that measures responding to climate change should be economically efficient, environmentally effective, equitable and in the public interest. These principles have guided the Authority's analysis of vehicle emissions and underpin this report.

In its February 2014 report, *Reducing Australia's Greenhouse Gas Emissions—Targets and Progress Review*, the Authority examined opportunities to reduce Australia's emissions and help achieve its emissions reduction goals. Australia's emissions reductions contribute to the global goal of limiting warming to less than 2 degrees Celsius compared to pre-industrial levels. The Authority noted that the transport sector is a significant and growing source of emissions; it currently accounts for 16 per cent of Australia's emissions and light vehicles alone account for 10 per cent. The Authority identified a variety of low-cost opportunities to reduce emissions in the sector; in particular recommending:

The government investigate the near-term introduction of fleet-average CO₂ emissions standards for light vehicles in Australia as a way to secure significant, cost-effective emissions reductions and related co-benefits (CCA 2014a, p 166).

This report provides further analysis of light vehicle emissions standards, which demonstrates that standards are a cost-effective way to reduce Australia's greenhouse gas emissions and light vehicle fuel use. Standards should be designed to maximise benefits and minimise costs; if introduced soon, standards could improve the efficiency of almost half of the Australian fleet by 2025.

1.2 PREVIOUS WORK ON LIGHT VEHICLE EMISSIONS STANDARDS

While there have been significant improvements to the emissions intensity of Australian light vehicles, the fleet remains among the least efficient in the world. A significant body of evidence and international experience shows that Australia could benefit from mandatory light vehicle emissions standards.

Light vehicle fuel efficiency and greenhouse gas emissions have long been discussed in Australia. Voluntary fuel consumption targets for passenger vehicles were first raised in 1978. Targets have accompanied fuel efficiency improvements, with fuel consumption targets per 100 kilometres dropping from 9.5 litres by 1983 to 6.8 litres by 2010 (PC 2005, p. 245). In 2005, the industry adopted a voluntary target to reduce average emissions for all new light vehicles from 245 to 222 g CO₂/km by 2010 (FCAI 2008). This target was achieved two years early and not extended.

In July 2009, the comprehensive 10-year *National Strategy on Energy Efficiency* from the Council of Australian Governments (COAG) included measures to accelerate energy efficiency improvements and deliver cost-effective energy efficiency gains across all sectors of the

Australian economy. A key element of the strategy for the transport sector was to assess the costs and benefits of introducing CO₂ emission standards for light vehicles (COAG 2009, p. 20). In 2010, the Task Group on Energy Efficiency recommended that the government consider the introduction of a mandatory CO₂ standard for light vehicles (2010, p. 4).

In 2011, the Department of Infrastructure and Transport released a discussion paper seeking views on the most appropriate regulatory framework and target for an emissions standard (DIT 2011a). Stakeholders, including the Australian car manufacturing sector, expressed a range of views.¹

There is a significant and growing body of evidence from Australia and around the world that there are substantial low-cost emissions reduction opportunities from light vehicle efficiency technologies, and that light vehicle emissions standards have successfully encouraged greater penetration of those technologies in the market.

Most recently, ClimateWorks (2014) found that improving the fuel efficiency of Australia's light vehicle fleet could deliver substantial environmental and economic benefits. These included cumulative financial savings to vehicle owners of \$7.9 billion across the economy within 10 years.² The CSIRO (2012) found that the largest emissions reductions available in Australia's transport sector are from more efficient fuel use in light vehicles.

The International Energy Agency (IEA) strongly encourages governments to implement policies that include light vehicle emissions standards because they have proven to be effective in mobilising the large, low-cost opportunity available in light vehicle efficiency technologies (IEA 2012a).

1.3 AN EMISSIONS STANDARD FOR LIGHT VEHICLES IN AUSTRALIA

A fleet-average light vehicle emissions standard would set a national average target for new vehicles sold in Australia. Vehicle suppliers would have specific obligations, designed to ensure the national average target is met. Over time, a standard would contribute to emissions reductions as more vehicles in the fleet become more efficient. The standard would have costs, primarily a modest increase in the price of new light vehicles. These costs would be clearly outweighed by benefits, including reduced greenhouse gas emissions, lower fuel costs for motorists and improved energy security for Australia.

The Authority has assessed the range of options available to policy makers in designing a light vehicle emissions standard, and identified an effective and least-cost model (see Figure 1.1) that would deliver net benefits with a low regulatory burden.

¹ The paper and submissions are available at www.infrastructure.gov.au/roads/environment/CO2_emissions/index.aspx.

² ClimateWorks' estimate is based on a standard introduced by 2016, with a target of 130 g CO₂/km in 2020 and 95 g CO₂/km in 2024.

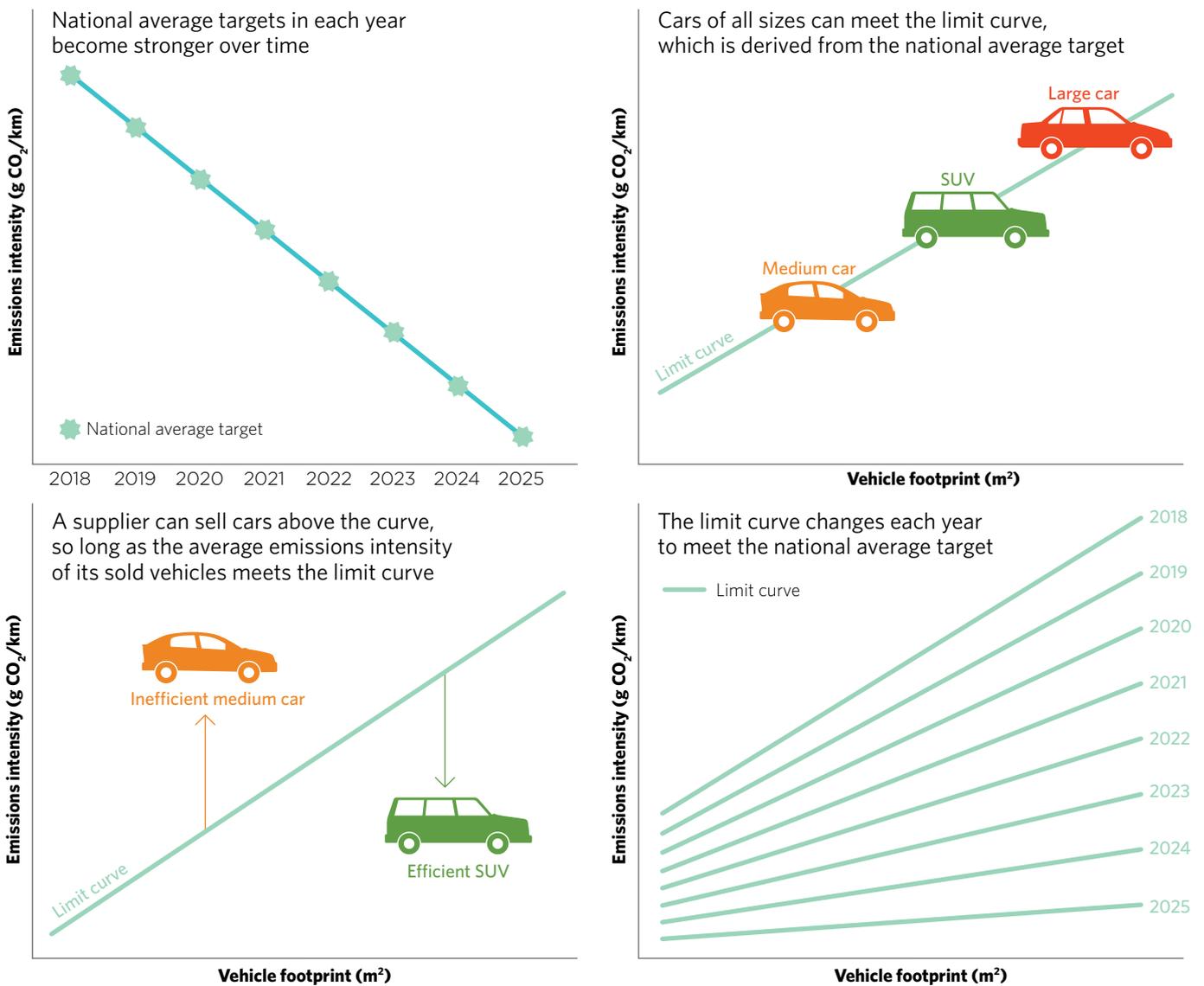
BOX 1: IMPORTANT TERMS IN THIS REPORT

Light vehicles—all road vehicles under 3.5 tonnes gross vehicle mass, including passenger vehicles, sports utility vehicles (SUVs) and light commercial vehicles, but excluding motorcycles.

Vehicle fuel efficiency—the amount of fuel consumed by a vehicle over a given driving distance; for example, litres per kilometre (L/km).

Emissions intensity—the amount of greenhouse gases emitted by a vehicle over a given driving distance; for example, grams of carbon dioxide per kilometre (g CO₂/km). There is a direct relationship between fuel efficiency and emissions intensity for any given fuel. Different fuels have different emissions intensities.

FIGURE 1.1: THE PROPOSED LIGHT VEHICLE EMISSIONS STANDARD



Source: Climate Change Authority

The government would set a national average target for emissions intensity of the new light vehicle fleet in Australia in each year. The target would be expressed in grams of carbon dioxide emitted per kilometre (g CO₂/km). The target would relate to the average emissions intensity of the Australian fleet—not individual vehicles.

The government would translate the national average target into an attribute-based limit curve based on the Australian fleet mix. It would use a mathematical relationship between the size (footprint) of vehicles and their emissions intensity to set a limit on the average emissions intensity of the fleet. Larger cars would be permitted somewhat more emissions than smaller cars under the standard, reflecting the reality that larger cars can be more emissions-intensive. The footprint approach recognises the different consumer utility of different vehicles.

Each supplier of new light vehicles to the Australian market would use the limit curve to determine the mix of vehicles it supplies to the market each year. A supplier could sell vehicles above the limit curve provided they are offset by sufficient sales of vehicles under the limit curve.

A supplier could improve the efficiency of all vehicles in its fleet or sell more highly efficient vehicles to offset its less efficient vehicles. This imposes a more equitable burden across suppliers that specialise in different market segments.

The standard would take effect in 2018, with annual limit curves defined to 2025. This gives the light vehicle sector time to prepare for the scheme and a clear pathway for improvement.

Each supplier would have an obligation to comply with the limit curve, with penalties for non-compliance. A supplier could bank or borrow credits for compliance from one year to use in another year.

1.4 STRUCTURE OF THIS REPORT

This report builds on previous Australian and international work, which has established a clear case for a light vehicle emissions standard in Australia and generated public discussion about the design of such a policy. This report:

- identifies opportunities to reduce transport emissions, particularly from light vehicles
- identifies policy options and makes a case for regulation
- describes the likely costs and benefits of a light vehicle emissions standard in Australia
- identifies the important policy design choices in making a standard
- makes findings about arrangements that would maximise the benefits of a standard while minimising the costs of regulation.

The report is structured as follows:

- Chapter 2 sets out trends in light vehicle emissions in Australia and identifies significant opportunities for reducing those emissions
- Chapter 3 examines the case for regulation and compares mandatory light vehicle emissions standards against other policy alternatives
- Chapter 4 identifies the appropriate national average target, taking account of public and private costs and benefits
- Chapter 5 outlines the preferred design of a standard to maximise the benefits and minimise the costs of the scheme
- Chapter 6 identifies a small number of issues requiring further research.