National Transport Commission

Carbon Dioxide Emissions Intensity for New Australian Light Vehicles 2022

Information paper

December 2023

Executive summary

Each year since 2009, the National Transport Commission has reported on the carbon dioxide intensity performance of new passenger and light commercial vehicles sold in Australia to track the nation's 'average' emissions.

In recent years this has become more challenging, as the industry adopted a voluntary standard with multiple categories and multipliers of 'super credits'.

As Australia prepares to join other developed nations in having a fuel efficiency standard that requires vehicle manufacturers to improve the average fuel efficiency of new cars over time, the NTC is shifting reporting beyond new car sales to the entire passenger fleet.

Accordingly, this will be the last report of this kind.

The NTC is working with jurisdictions, transport agencies, and industry to publish the first comprehensive 'whole of fleet' view of Australia's emissions intensity performance in early 2024.

This will be an independent report on average vehicle emissions for all light vehicles that consolidates registration data, sales data, and other data sources to track total fleet changes. It will be a big step up to inform the broader transport policy of all Australian governments to achieve net zero by 2050 and provide transparent advice to consumers.

The positive trend of electrification continues

The sales of battery electric vehicles (BEVs) helped cut overall carbon dioxide emissions intensity in the medium vehicle class by 57 per cent, pointing to the role BEVs can play in reducing emissions from Australia's light vehicles.

The significant decrease in emissions from the medium vehicle class comes on the back of high sales of Tesla and Polestar vehicles.

A growing preference for BEVs reflects diminishing range anxiety as the average driving range for BEVs increased by 28 per cent in 2022 – increasing from an average of 370km to 473km.

'Green vehicles' with an emissions intensity of 120 g/km or less now account for 12 per cent of all light vehicles sold.

It's a positive trend reflected in other report findings that show sales of BEVs and hybrid vehicles at 10 per cent.

Across Australia, government subsidies, grants, tax exemptions, and funding for charging infrastructure are making BEVs more appealing to more Australians.

The Australian Government's Electric Vehicle Discount eliminates the Fringe Benefits Tax paid by fleets on BEVs below the Luxury Car Threshold of $89,332 and provides access to novated lease options for employees.

Fleet buyers are now making an impact with a 22 per cent reduction in emissions from passenger cars and light SUVs drawing on the incentives introduced by the Australian Government.

Governments are also shifting their preference to lower emissions vehicles with 5.6 per cent of all cars in the Queensland Government's fleet now BEVs, up from just 0.7 per cent in the previous year. More than a third of vehicles bought by the South Australian Government were hybrid.

On total emissions from passenger vehicles and light SUVs in government fleets, the Queensland Government saw a 20 per cent drop in emissions intensity between 2021 and 2022, the highest of any state or territory. It's now second only to the ACT Government in lowest emissions intensity for new vehicles. The Northern Territory Government also saw a reduction of 16 per cent.

The marketplace for BEVs also expanded with three all-BEV brands now in the Australian market.

However, with a limited range of BEV options for larger utes and SUVs, and a clear link between emissions and vehicle size, emissions intensity for larger vehicle classes is not showing the same positive trend toward reduced emissions evident in other classes.

The National Electric Vehicle Strategy and future fuel emission standards could be expected to improve overall emissions reduction in future years by increasing the number of BEVs on Australian roads. Ahead of these policy initiatives, BEV sales in 2022 made up 5.1 per cent, below the global average of 14 per cent. In New Zealand, BEVs account for 13 per cent of sales. The total stock of BEVs on the road in Australia made up 0.59 per cent, below the world average of 2.1 per cent.

*Tesla sales data has been included for the first time this year.

Contents

List of figures

List of tables

Abbreviations

BEV	battery electric vehicle
EEA	European Environment Agency
FCAI	Federal Chamber of Automotive Industries
g/km	grams per kilometre
GVM	gross vehicle mass
HEV	hybrid electric vehicle
ICCT	International Council on Clean Transportation
IEA	International Energy Agency
MA	passenger cars and light SUVs
MC+NA	heavy SUVs and light commercial vehicles
NTC	National Transport Commission
PHEV	plug-in hybrid electric vehicle
SUV	sports utility vehicle

1. Introduction

Each year since 2009, the National Transport Commission (NTC) has published a carbon dioxide emissions intensity report on new Australian light vehicles. This is the latest in this series and provides data for 2022.

Vehicle emissions intensity is a measure of vehicle efficiency, not actual vehicle emissions, which depend on many real-world factors such as distance travelled, the nature of the driving, and road and traffic conditions.

The Federal Chamber of Automotive Industries (FCAI) collates carbon dioxide emissions intensity data from vehicle manufacturers.

We analyse this data in preparing each year's report (see Methodology).

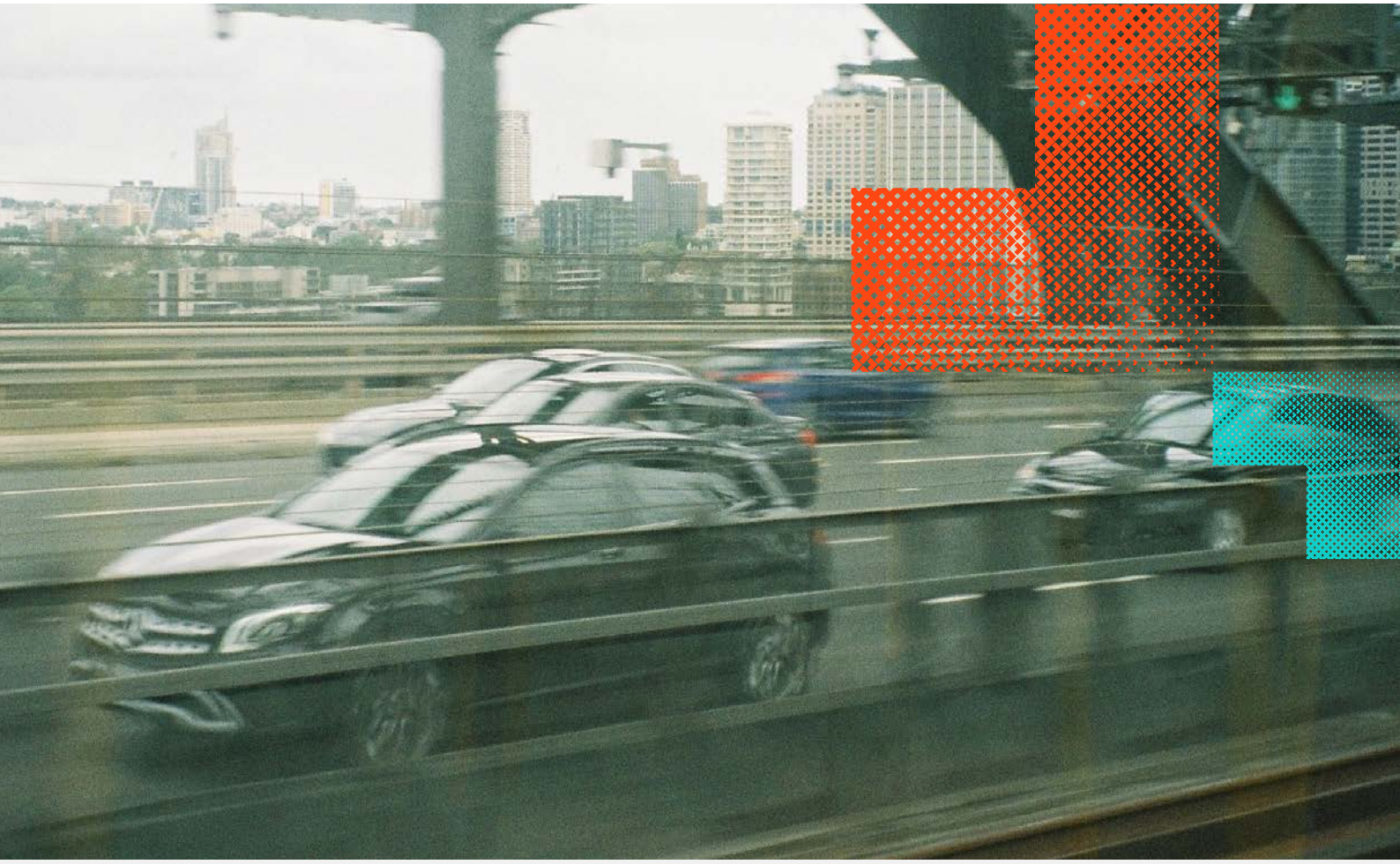
Through analysis of carbon dioxide emissions intensity and sales data aggregated by vehicle class, type of use by purchaser and by state or territory, the report helps inform governments, fleet managers and consumers of the broad impacts of buying choices on carbon dioxide emissions intensity.

This report is divided into three main sections:

Section 2 describes the methodology used.

Section 3 presents the results of the analysis.

Section 4 compares Australian data with international data.



2. Methodology

This section describes the methodology used to calculate the carbon dioxide emissions intensity data for Australia.

The FCAI and its members collate data on the sales of new vehicles each year. It provided data on 2022 sales to the NTC. We entered the FCAI data into a database and analysed it. These records consisted of:

These records consisted of:

1 Vehicle attributes:

make, model, vehicle generation, body style, engine capacity, number of cylinders, engine power, transmission type, gears, number of seats, gross vehicle mass (GVM), kerb mass, driven wheels, country of origin, fuel type, secondary fuel type, carbon dioxide emissions intensity, vehicle category and fuel economy.

2 Vehicle segment:

consistent with the classifications and definitions as described in Table 1.

3 Sales data:

sales by state and region and by type of buyer (that is, government, business or private).

Carbon dioxide emissions intensity for vehicles is calculated using the method described in *Vehicle Standard* (*Australian Design Rule 81/02 – fuel consumption labelling for light vehicles)* and expressed in grams of carbon dioxide per kilometre (g/km). The data in this report reflects tailpipe emissions. It does not reflect all aspects of lifecycle emissions for a vehicle, which also include those involved in manufacturing the vehicle, transporting it to the point of sale, and disposing of it.

In previous years of this report, until the report on 2019 vehicle sales, the NTC calculated a simple sales-weighted average for vehicle emissions for different vehicle attributes, categories and buyer types. A weighted average calculation is similar to an arithmetic average (the most common type of average), but instead of each data point contributing equally to the final average, some data points contribute more than others. In this case, the average was weighted to vehicle sales.

However, for the past three years of reporting the NTC has made changes to this methodology based on updates to how CO_2 emission data is reported in Australia by the FCAI, which provides the data to the NTC.[1]

In early 2021, the FCAI released the inaugural results of its voluntary industry-led emissions standard (FCAI, 2021b). The results of the FCAI's standard are reported in two categories: an MA category (comprising passenger cars and light SUVs) and an MC+NA category (comprising heavy SUVs and light commercial vehicles). The NTC's report provides results aligned with these categories.

The FCAI's voluntary standard is based on a number of internationally mandated practices, including from Europe and the USA. These practices include the use of super-credits, air-conditioning credits and off-cycle credits (FCAI, 2021c).

To ensure consistency with this reporting, the NTC has adopted the use of super-credits when calculating weighted average emission values. This means that while the majority of vehicle sales still have a weighting of 1 when calculating a weighted average, some low emissions vehicles will have weightings of 1.5, 2 or 3, depending on their emissions values (see details in FCAI, 2021c).[2]

The data needed to calculate air-conditioning credits and off-cycle credits was not available to the NTC and therefore has not been included in the results reported in this document (with the exception of **Figures 3**, **5**, **6**, **7**, and **8** and **Table 8**, where the NTC has used the numerical results reported by the FCAI in its voluntary standard (FCAI, 2022a; FCAI, 2023) to report them in a graphical format).

A further change to the methodology in the past three years of reporting is that battery electric vehicles (and hydrogen vehicles) with no secondary engine and emissions of 0 g/km are included when calculating weighted average emissions intensity values in most tables and figures in this report.[3] Although vehicles operating on their electric engine may have no tailpipe emissions, the electricity used to charge the battery may produce carbon dioxide emissions depending on its source.

Given the changes to the methodology outlined in the previous paragraphs, it is not possible to report on some of the longer-term year-on-year changes in emissions intensity that were included in previous years' reports. However, with three years of data under the new methodology available, it is again possible to do some year-on-year comparisons on a consistent basis over this time period, and various graphs and tables throughout the report and appendix provide these comparisons.

Tesla sales data became available for the first time through the FCAI's VFACTS data in 2022. As a result, in some cases there are quite significant changes in emissions intensity or sales results in 2022 compared with earlier years. Most tables and graphs in this report do not include estimated Tesla sales for any years prior to 2022 (with the exception of **Table 4** and **Figures 28** and **37**).

Light vehicles are classified into three main classes by the FCAI: passenger motor vehicles, sports utility vehicles (SUVs) and light trucks. These classes are then broken down into segments. For example, the segments of SUVs are light, small, medium, large and upper large. **Table 1** presents the classifications and definitions.

1 As noted in the Executive Summary, for future reports the NTC is working with jurisdictions, transport agencies and industry to publish the first comprehensive 'whole of fleet' view of Australia's emissions intensity performance. We will consider the most appropriate methodology for analysing and reporting results, informed by both methodologies used in previous NTC reports and in the planned fuel efficiency standard for light vehicle emissions.

2 The super-credit weights were not available in the dataset provided by the FCAI to the NTC. The NTC has therefore calculated the super-credits in line with the methodology detailed in FCAI (2021c). In a relatively small number of cases – 3,843 records in the dataset, comprising 8,062 sales – there was no data provided in the dataset on the unladen (kerb) mass. The NTC entered the tare mass as the unladen mass for these records.

3 In previous years, up to and including the report on 2019 sales, these vehicles had been excluded from the analysis on the basis that, when the NTC first began this series of reports over a decade ago, a zero value for emissions was more likely to reflect an error in the data than a true zero value (for a battery electric vehicle). This approach is unlikely to have materially affected the reported emissions results given that in each year between 2010 and 2019 battery electric vehicles comprised well below 1 per cent of total sales (a minimum of 0.004 per cent and a maximum 0.149 per cent).

Table 1: FCAI motor vehicle classifications and definitions

Passenger motor vehicles	Sports utility vehicles	Light trucks
Passenger vehicles are classified dependent on size, specification and average retail pricing. Selected vehicle types will be assessed on footprint* defined as length (mm) x width (mm), rounded, as follows:	Vehicles classified as SUVs meet the FCAI criteria for classifying SUVs based on a 2/4 door wagon body style and elevated ride height. Vehicles typically will feature some form of 4WD or all-wheel drive; however, where a 2WD variant of a model is available it will be included in the appropriate segment to that model. Selected vehicle types will be assessed on footprint* defined as length (mm) × width (mm), rounded, as follows:	Vehicles designed principally for commercial use but may include designs intended for non-commercial applications.
Micro Hatch, sedan or wagon with a footprint < 6.3 m^2	**Light** ≤ 7.6 m^2	**Light Bus < 20 seats** 8+ seats, but less than 20 seats
Light Hatch, sedan or wagon with a footprint range 6.301–7.5 m^2	**Small** 7.601–8.1 m^2	**Light Bus ≥ 20 seats** 20+ seats
Small Hatch, sedan or wagon with a footprint range 7.501–8.3 m^2	**Medium** 8.101–8.8 m^2	**Van/Cab Chassis ≤ 2.5 t** Blind/window vans and cab chassis ≤ 2.5 t GVM
Medium Hatch, sedan or wagon with a footprint range 8.301–9.0 m^2	**Large** 8.801–9.8 m^2	**Van/Cab Chassis > 2.5–3.5 t** Blind/window vans and cab chassis 2.5–3.5 t GVM
Large Hatch, sedan or wagon with a footprint range 9.001–9.5 m^2	**Upper Large** ≥ 9.801 m^2	**Pick-up/Chassis 4×2** Two driven wheels, normal control (bonnet), utility, cab chassis, one and a half cab and crew cab
Upper Large Hatch, sedan or wagon with a footprint range > 9.501 m^2		**Pick-up/Chassis 4×4** Four driven wheels, normal control (bonnet), utility, cab chassis, one and a half cab and crew cab
People Movers Wagon for passenger usage, seating capacity > 5 people		
Sports Car, coupe, convertible or roadster		

Note: These parameters are indicative only; exceptions do occur based on market focus and other subjective criteria. They are largely based on the specifications listed and are reflective of the volume-selling variant where crossover occurs.

Note the NTC has converted the footprint units to m^2. The units on the FCAI website are $mm^2/1000$.

Source: FCAI 2021a.

Carbon dioxide emissions intensity per kilometre is directly related to vehicle fuel consumption values. **Table 2** provides fuel consumption figures and the corresponding carbon dioxide emissions intensity for petrol and diesel.

Another way to relate carbon dioxide emissions intensity to fuel is per litre of fuel consumed. For example, 1 litre of petrol will produce about 2.3 kg of carbon dioxide and 1 litre of diesel will produce about 2.7 kg of carbon dioxide.

Table 2: Fuel consumption and corresponding average emissions intensity

Fuel consumption (litres per 100 kilometres)	**Average emissions intensity (g/km)**	
	Petrol	Diesel
3	68	80
4	91	107
5	114	134
6	137	160
7	160	187
8	182	214
9	205	240
10	228	267
11	251	294
12	274	321
13	297	347
14	319	374
15	342	401
16	365	427
17	388	454
18	411	481
19	433	508
20	456	534

Source: Department of Climate Change 2009.

To help get a frame of reference for carbon dioxide emissions intensity from vehicles, **Figure 1** and **Figure 2** show the emissions intensity from the top 10 selling vehicle models in Australia during 2022, for the Passenger Cars and Light SUVs (MA) and the Heavy SUVs and Light Commercial Vehicle (MC+NA) categories, respectively. **Figures 1** and **2** also contain four low emitting vehicle model[4]s[3] and the highest emitting model in each category.

Figure 1: Average emissions intensity for top 10 selling vehicles in Australia in the MA category plus other selected models, 2022

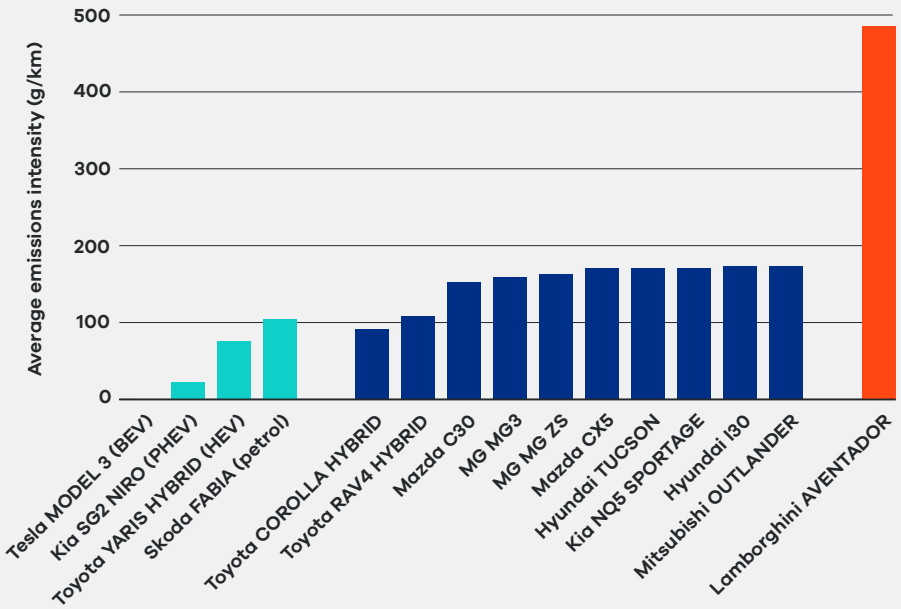
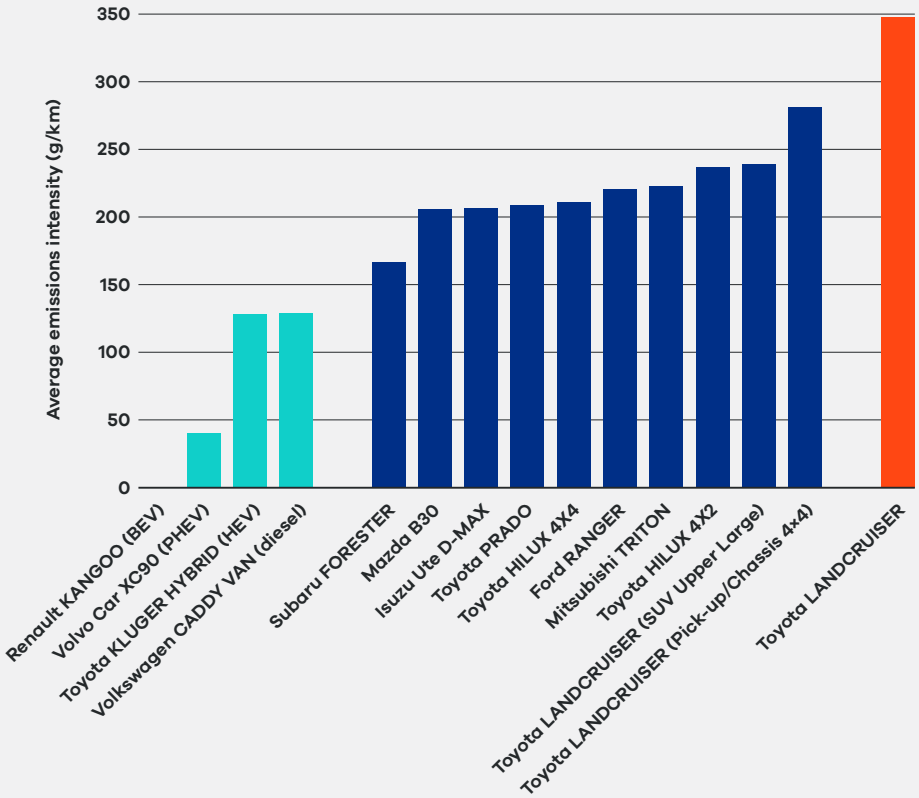


Figure 2: Average emissions intensity for top 10 selling vehicles in Australia in the MC+NA category plus other selected models, 2022



4 The models selected are a battery electric vehicle (BEV), and the lowest emitting plug-in hybrid electric vehicle (PHEV), hybrid electric vehicle (HEV) and petrol- or diesel-only vehicle.

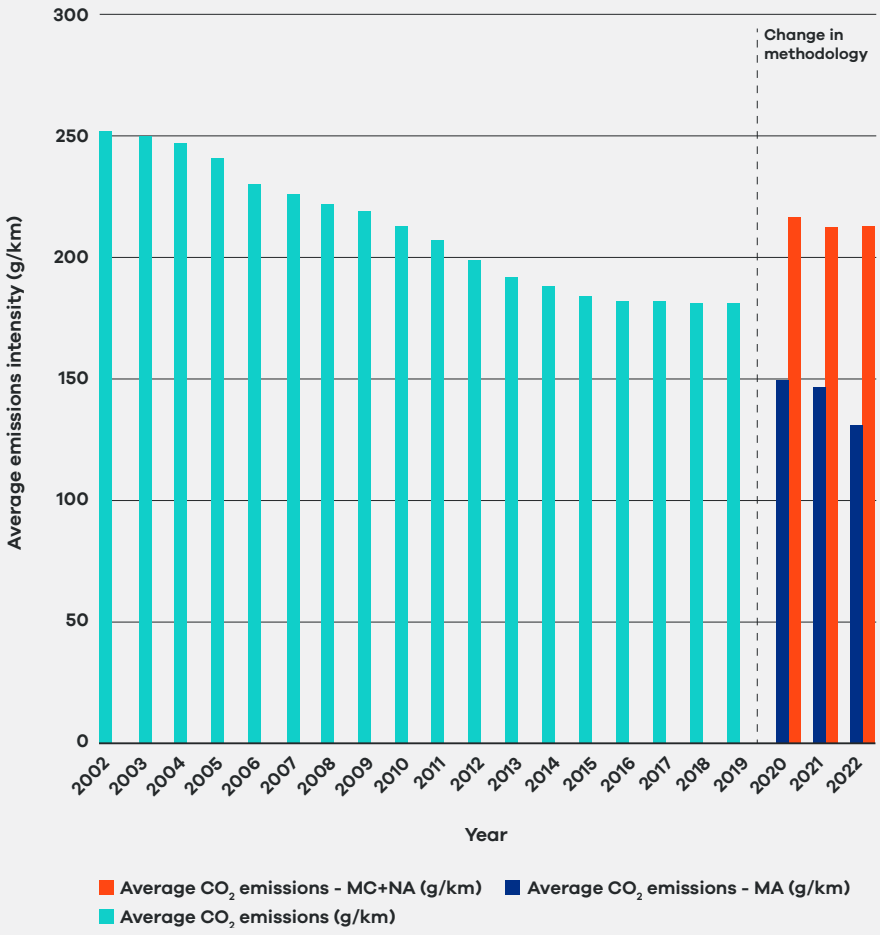
3. Australian emissions intensity

This section contains Australian data about the carbon dioxide emissions intensity for new passenger vehicles and light commercial vehicles in 2022.

As noted in Chapter 2, the methodology used to report emissions intensity has recently changed in several ways from historical NTC reports. The largest changes are to report separate emissions intensity figures for the MA and MC+NA categories – rather than a single national average – and the use of super-credits when calculating sales-weighted average emissions. **Figure 3** shows the emissions intensity values for the MA and MC+NA categories, as reported by the FCAI in the results for its standard (FCAI, 2021b; FCAI, 2022a; FCAI, 2023), and the national average emissions intensity from previous NTC reports.[5] Given the change in methodology, it is not possible to directly compare the emissions intensity results for the past three years with those in previous years.

Under the previous methodology used by the NTC, there had been an overall reduction of 28 per cent in carbon dioxide emissions intensity between 2002 and 2019, although the annual reductions were relatively small between 2016 and 2019. The data from the FCAI's voluntary standard shows that there was a fall in emissions intensity by around 10.5 per cent for the MA category between 2021 and 2022 (partly resulting from the inclusion of Tesla data for the first time in 2022) while the MC+NA category emissions intensity increased very slightly by 0.1 per cent. Additional data on the annual average emissions intensity is provided in **Table 8** in the appendix.

Figure 3: National average emissions intensity for new passenger and light commercial vehicles, 2002–2022



Note: The data in this graph for 2020 to 2022 is sourced from the FCAI's voluntary emissions standard (FCAI, 2021b; FCAI, 2022a; FCAI, 2023), and therefore includes the impacts of air-conditioning credits and off-cycle credits.

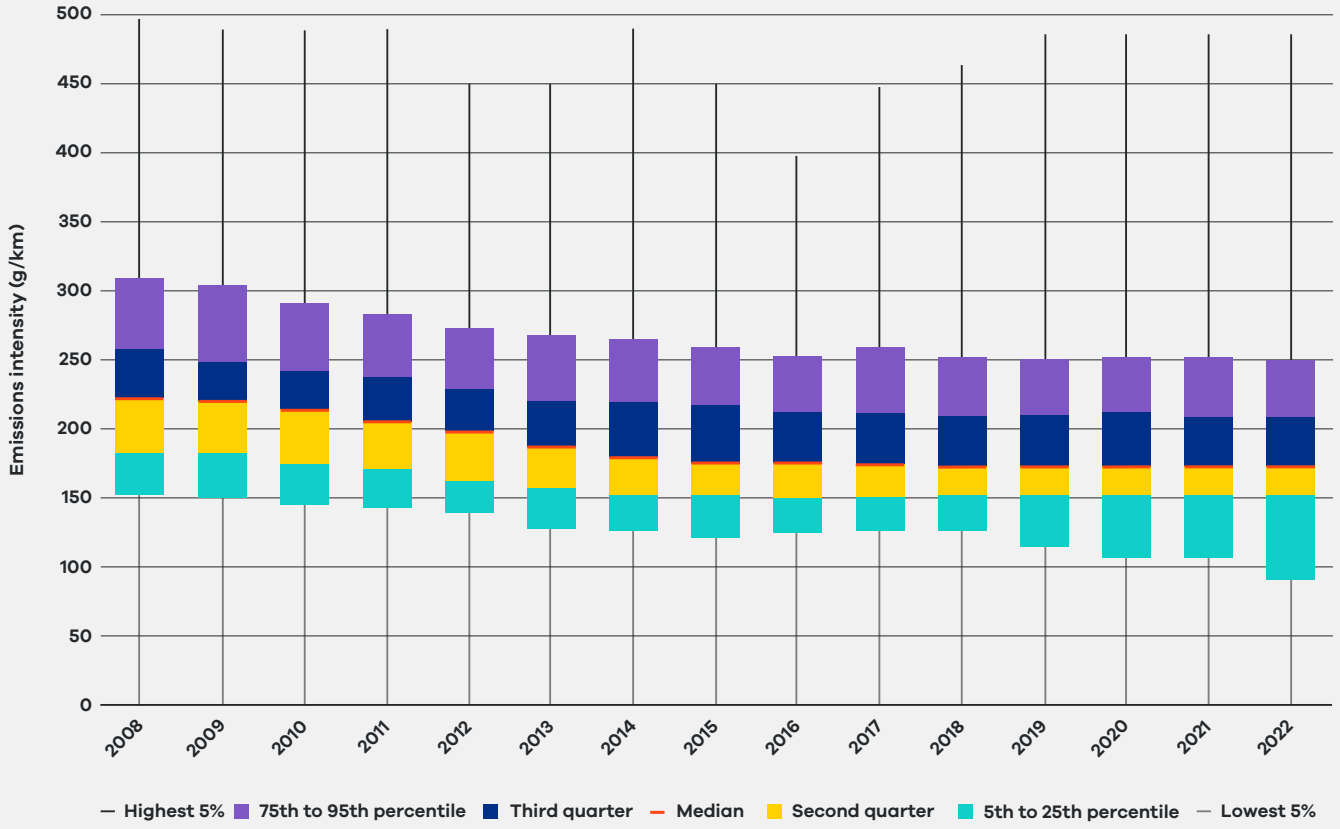
5 These numbers include the air-conditioning credits and off-cycle credits used by the FCAI but are not used elsewhere in the report (with the exception of **Figures 3**, **5**, **6**, **7**, and **8** and **Table 8**).

It is also possible to graph the distribution of emissions intensity for all vehicles sold in each year, when vehicle sales are ranked from lowest emitting to highest emitting, without calculating any sales-weighted average. **Figure 4** includes the following:

- The red bars reflect the median emissions intensity of all vehicles sold in a particular year, with 50 per cent of vehicles sold having a lower emissions intensity value and 50 per cent a higher one.
- The thin vertical lines at the bottom and top show, respectively, the ranges for the lowest and highest emitting 5 per cent of vehicles sold in each year. These reflect a relatively wide range of emissions values comprising relatively few sales and, particularly for the line showing the range of higher emitting vehicles, will not include many of the top-selling vehicle models in a year.
- The wider shaded area in different colours reflects the range of emissions intensity values for majority of vehicles sold in a year. The range from the bottom of the green shaded area to the top of the purple shaded area reflects the 'middle 90 per cent' of vehicles sold in a year in terms of emissions intensity values, while the range from the bottom of the yellow shaded area to the top of the blue shaded area reflects the 'middle 50 per cent' of vehicles sold.

Analysing the entire time period in the graph, there is a clear downward trend in the shaded areas of the graph over time, particularly in the earlier years. In 2008, 90 per cent of vehicles sold had an emissions intensity value between 152 and 309 g/km, whereas by 2022 the corresponding range was 91 to 250 g/km. The increasing sales of electric and hybrid vehicles in the Australian market is evident by the continued decrease of the lower bound of the green shaded area, which in 2022 was below 100 g/km for the first time (which is a lower emissions intensity than almost all petrol- or diesel-only vehicles sold). However, the bounds of the blue and purple shaded areas have had relatively little change since 2016, and this likely reflects the increasing prevalence of SUVs and utes in new vehicle sales (as discussed in more detail later in the report). The median value has remained unchanged at 173 g/km since 2018.

Figure 4: Distribution of emissions intensity of vehicles sold, 2008–2022



Vehicle manufacturers

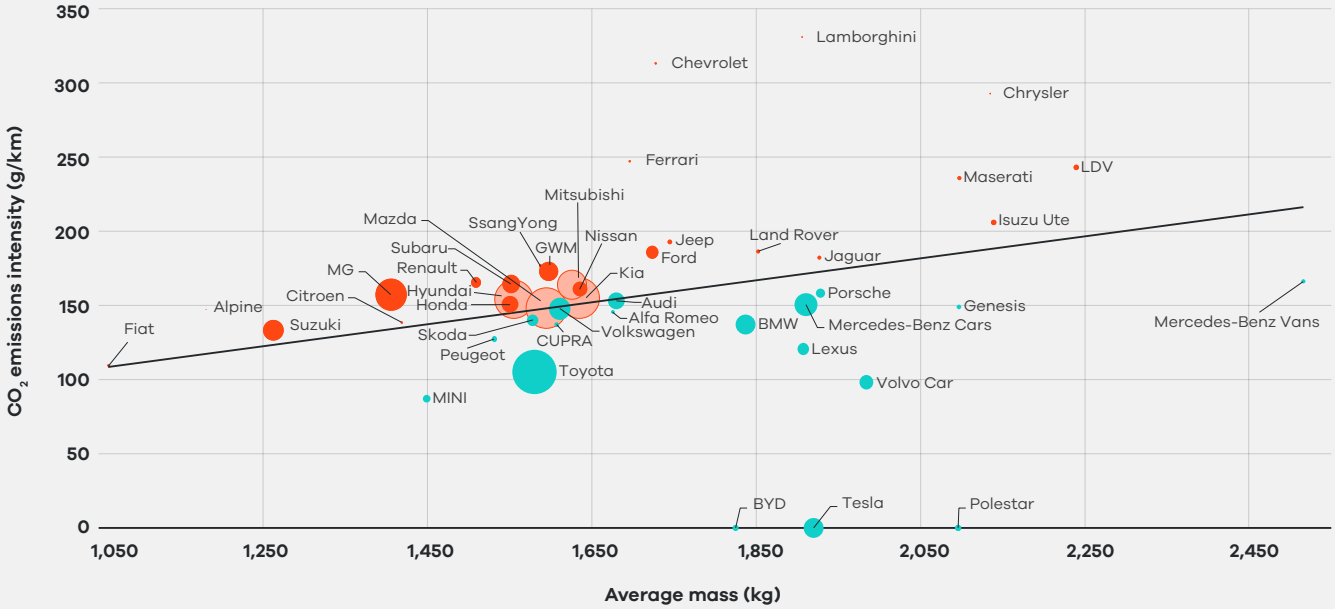
In 2022 there were 50 makes of new vehicles sold to Australian consumers in the MA category and 29 in the MC+NA category (with 28 of the 29 MC+NA category makes also appearing in the MA category). Around 89 per cent of all new vehicle sales were from the 15 highest selling makes in the MA category, while the corresponding figure for the MC+NA category is 96 per cent. The average carbon dioxide emissions intensity of these market-leading makes largely determines the overall average emissions intensity for each category.

Figure 5 provides a graphical representation of the data released by the FCAI in its voluntary emissions standard (FCAI, 2023). The limit curve line illustrated in the figure represents this mathematical relationship between the sales-weighted mass of a brand's vehicles sold within Australia and its applicable emission targets. Simply put, the lower a brand's average sales-weighted mass is, the lower its emissions target and vice versa.

Each brand is represented by a circle, with the size of each circle representing the relative number of sales (Toyota had the highest sales with 94,673). Brands shown in green achieved results below the limit curve, meaning they beat their brand-specific target, while other brands that were above the limit curve are represented in red. Eighteen brands achieved results in 2022 below the limit curve, which was higher than the 13 that did so in 2021 (in part due to the inclusion of three all-electric vehicle brands in the data for the first time in 2022).

For the MA category, BYD, Tesla and Polestar had the joint lowest emissions intensity (at 0 g/km), with Polestar the furthest below its limit curve (given it had the highest average vehicle mass among these three brands). Ignoring electric vehicle-only brands, MINI had the lowest emissions intensity (87.2 g/km) while Volvo Car was furthest below its brand-specific target (beating it by 78.6 g/km). Lamborghini had both the highest emissions intensity (330.8 g/km) and the largest distance above its target (159.8 g/km), but with just 176 sales during 2022. Full details on the sales and emissions intensity of each brand can be found in the FCAI's voluntary standard (FCAI, 2023).

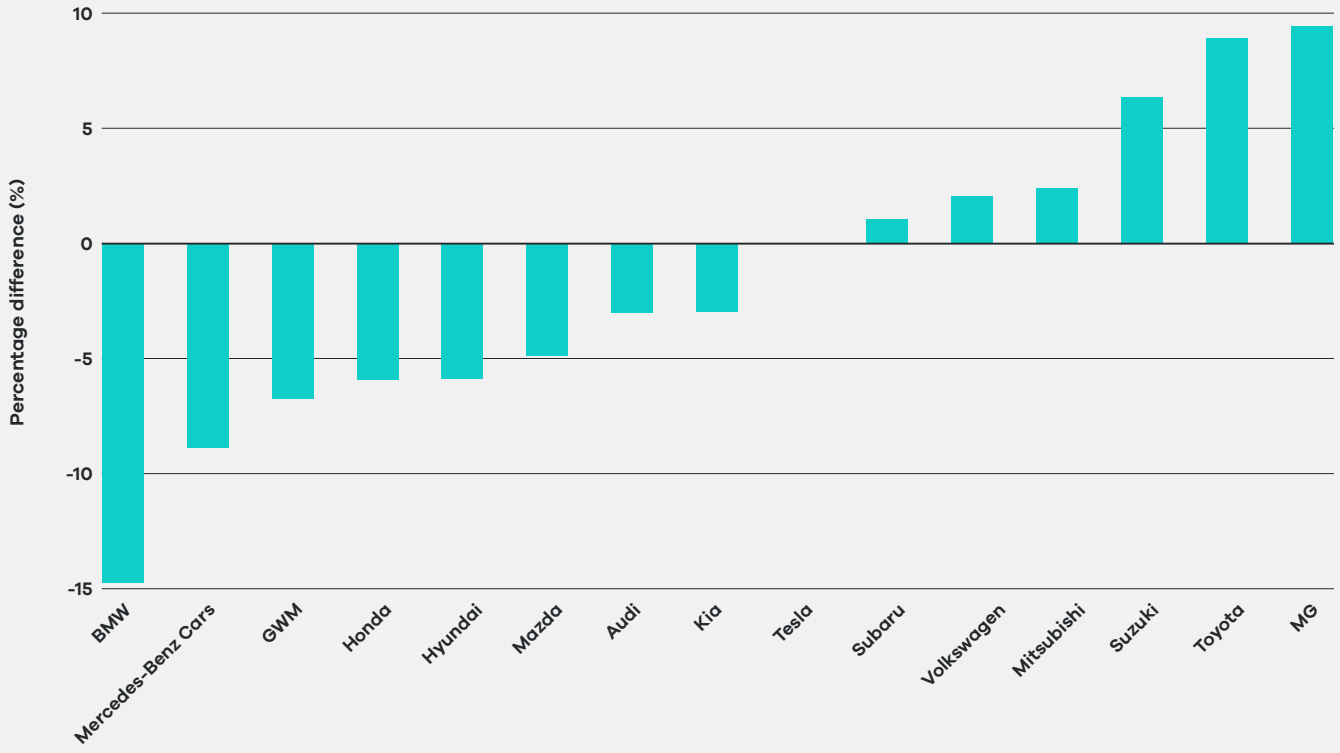
Figure 5: Average emissions intensity, average mass and limit curve for brands in the MA category, 2022



Note: The data in this graph is sourced from the FCAI's voluntary emissions standard (FCAI, 2023), and therefore includes the impacts of air-conditioning credits and off-cycle credits.

With multiple years of data now reported by the FCAI through its voluntary standard, it is possible to compare the percentage change in emissions intensity for different brands between 2021 and 2022. **Figure 6** shows this information for the top 15 selling brands in the MA category in 2022, with BMW's emissions intensity decreasing by almost 15 per cent, while MG's increased by around 9.5 per cent and Toyota's also increased by almost 9 per cent.

Figure 6: Percentage change in average emissions intensity between 2021 and 2022 for the top 15 makes by volume in the MA category (%)



Note: The data for this graph is sourced from the FCAI's voluntary emissions standard (FCAI, 2022a; FCAI, 2023), and therefore includes the impacts of air-conditioning credits and off-cycle credits.

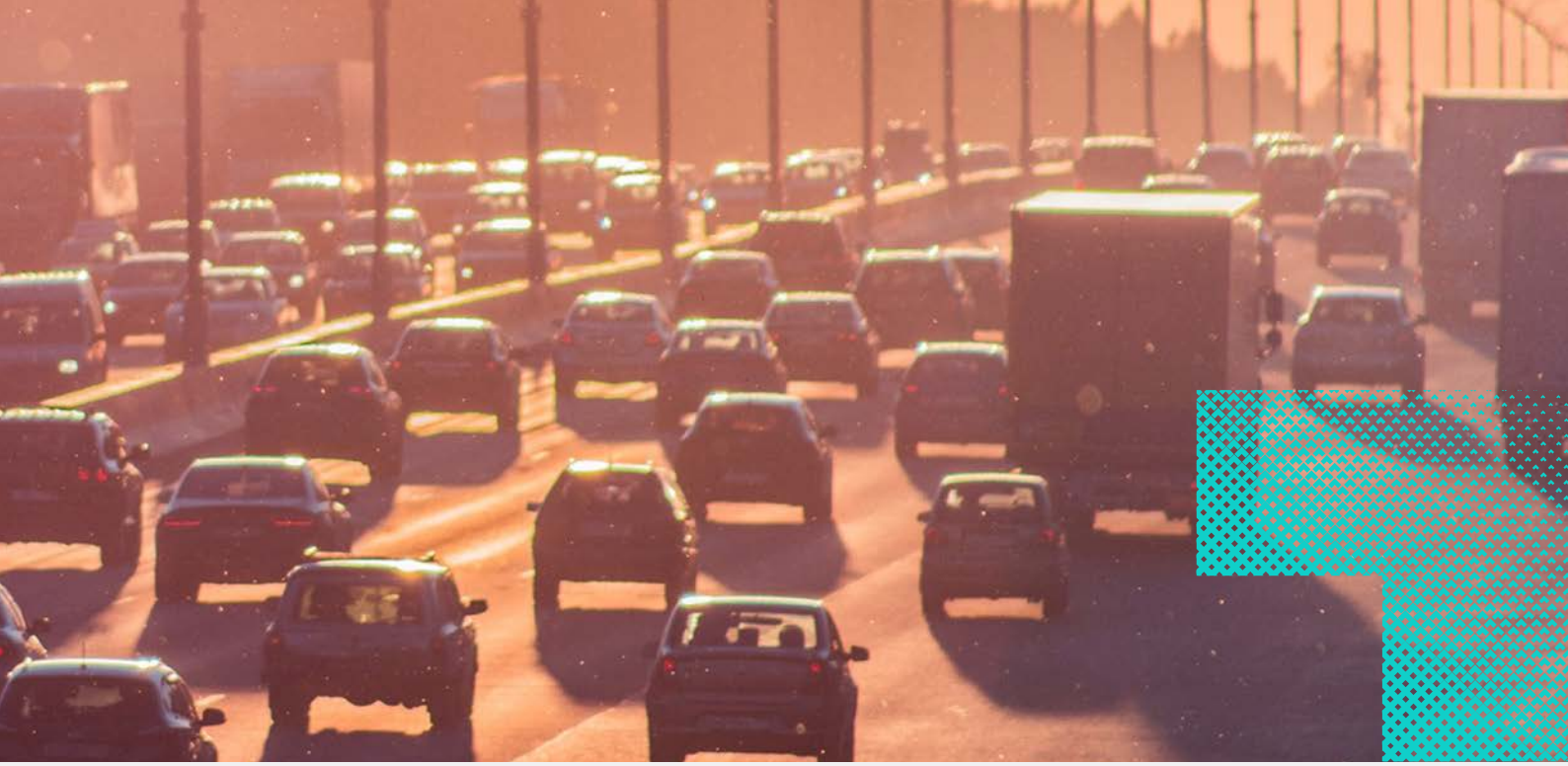
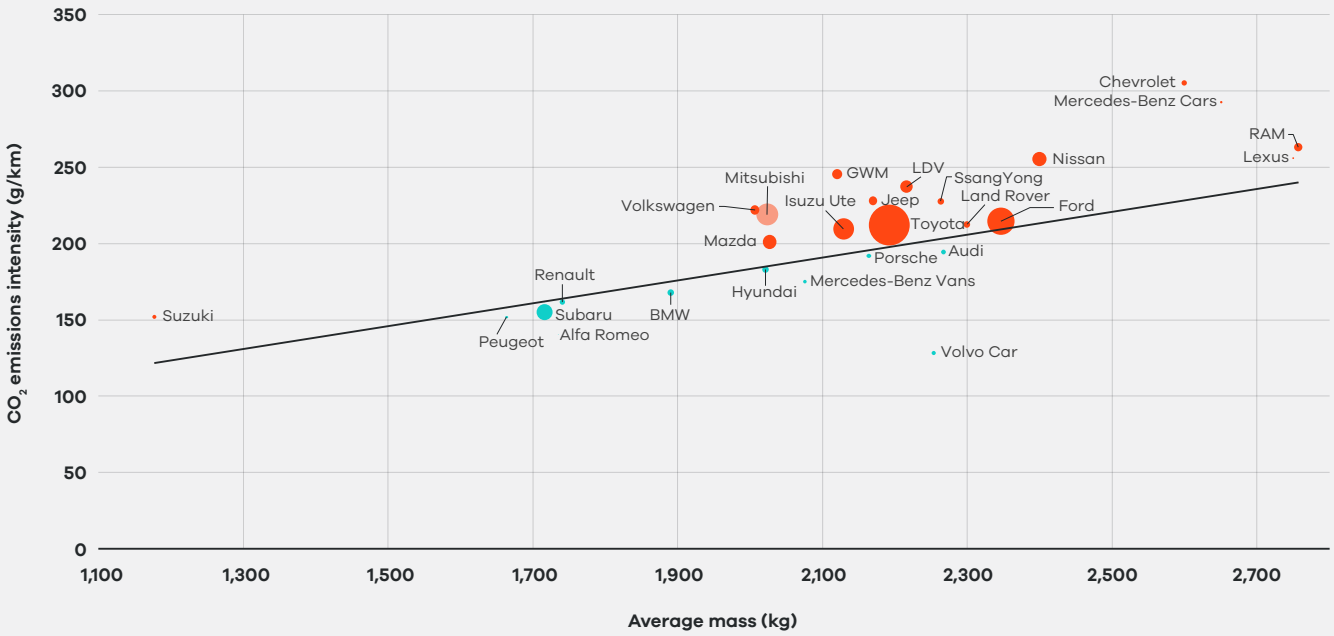


Figure 7 shows the corresponding analysis for the MC+NA category. Toyota had the highest sales of all brands (132,015), reflected by the largest circle, and its emissions intensity was 14.5 g/km above its brand-specific target. Within the MC+NA category Toyota had more sales than the next three largest brands combined. Around 58 per cent of Toyota's total sales were vehicles in the MC+NA category in 2022, an increase from the corresponding shares of 49 per cent in 2020 and 55 per cent in 2021.

Ten brands were below the MC+NA limit curve, with Subaru being the highest-selling of these brands with 20,375 sales (the fifth highest sales in the MC+NA category). Volvo Car had the lowest average emissions intensity (128.4 g/km) and was also the furthest below its brand-specific target, beating its target by 73.9 g/km. Chevrolet had the highest average emissions intensity (305.3 g/km) and was also the brand furthest above its specific emissions target (exceeding it by 77.0 g/km).

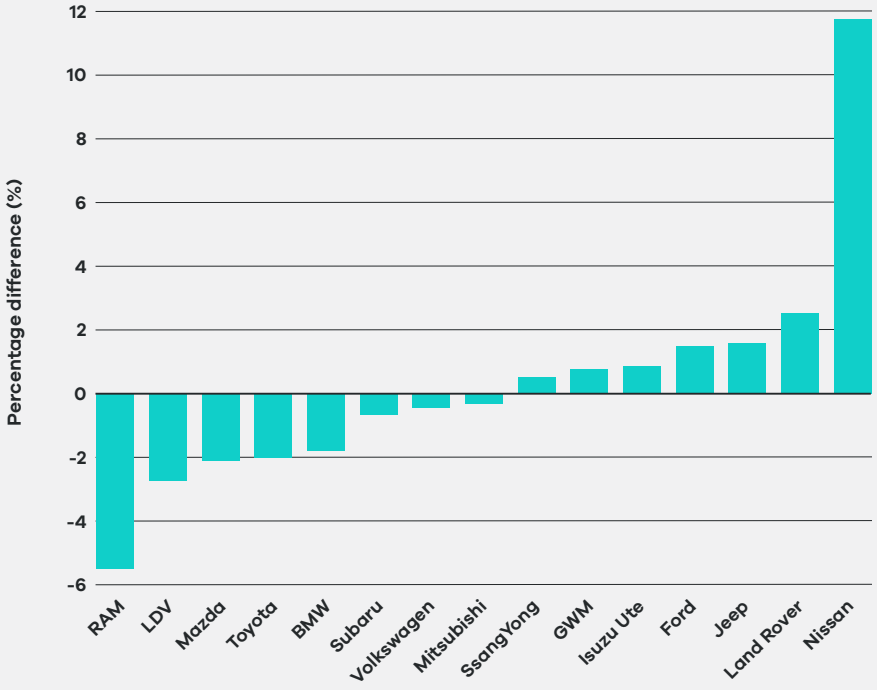
Figure 7: Average emissions intensity, average mass and limit curve for brands in the MC+NA category, 2022



Note: The data in this graph is sourced from the FCAI's voluntary emissions standard (FCAI, 2023), and therefore includes the impacts of air-conditioning credits and off-cycle credits.

As above, it is possible to assess the percentage change in emissions intensity between 2021 and 2022 for each brand in the MC+NA category. This information is shown for the top 15 selling brands in 2022 in **Figure 8**. RAM saw the largest reduction in emissions intensity in 2022 (5.5 per cent), after having been the brand with the largest increase the previous year (with an 18 per cent increase in 2021). Nissan had the largest increase in emissions intensity, rising by around 11.7 per cent.

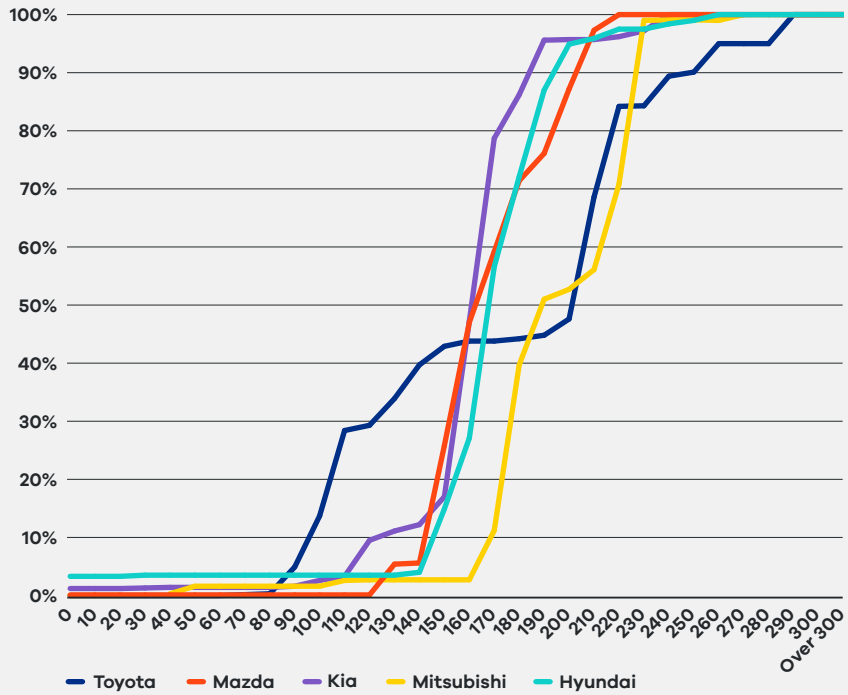
Figure 8: Percentage change in average emissions intensity between 2021 and 2022 for the top 15 makes by volume in the MC+NA category (%)



Note: The data for this graph is sourced from the FCAI's voluntary emissions standard (FCAI, 2022a; FCAI, 2023), and therefore includes the impacts of air-conditioning credits and off-cycle credits.

Figure 9 shows the distribution of emissions intensity for the top 5 selling manufacturers in 2022 when assessing all sales (that is, in both the MA and MC+NA categories). The height of each line in the graph can be interpreted as the *share of total sales with an emissions intensity less than or equal to* a given value on the horizontal axis. Approximately 29 per cent of Toyota's vehicles sold in 2022 had an emissions intensity of 120 g/km or less, which was by far the highest share among these five manufacturers. However, around 16 per cent of Toyota's sales had an emissions intensity above 220 g/km. Some of the other major manufacturers had most of their sales in relatively narrower ranges: both Mazda and Hyundai sold over 90 per cent of their vehicles with emissions intensities in the range of 140 to 210 g/km. Mitsubishi had a relatively high emissions intensity compared with its top-selling competitors, with 97 per cent of its sales having an emissions intensity above 160 g/km, and almost half (47 per cent) above 200 g/km.

Figure 9: Cumulative percentage of passenger vehicle sales relative to emissions intensity for top 5 selling manufacturers, 2022

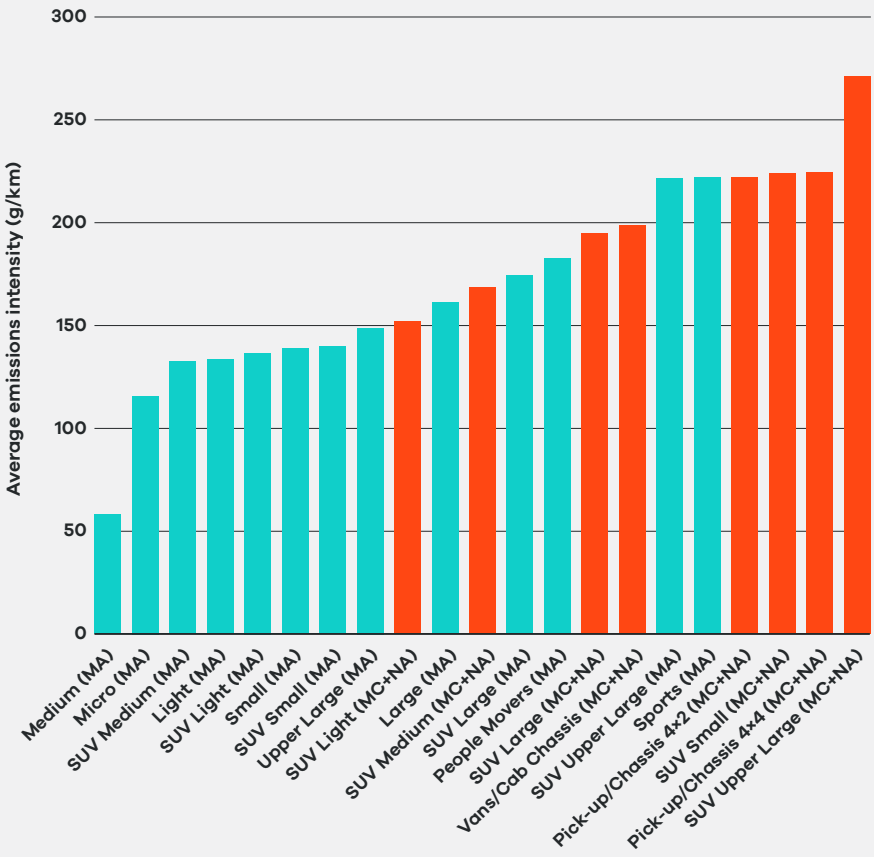


Segment type

A segment analysis was conducted using the categories shown in **Table 1** and split into the MA and MC+NA categories.

Figure 10 shows the average carbon dioxide emissions intensity by segment during 2022.[6] The lowest emitting segment by a significant margin was 'Medium' (58.0 g/km). This is the first year in the history of this report that the 'Micro' or 'Light' segments[7] have not had the lowest average emissions intensity from all the segments. A key driver of this result is the relatively high sales within the 'Medium' segment of the Tesla MODEL 3 and Polestar 2, particularly in combination with the super-credit weighting of 3 applied to sales of these vehicles (although the 'Medium' segment would still have had by far the lowest average emissions intensity even with simple sales weighting). 'SUV Upper Large' in the MC+NA category (271.1 g/km) was the highest emitting segment on average. Additional segment data, including the top 10 selling models for each segment, is provided in **Tables 9**, **10** and **11** in the appendix.

Figure 10: Average emissions intensity by segment, 2022



6 SUVs, and the five associated SUV segments from Light through to Upper Large, may appear as either MA or MC (and therefore within the MC+NA category). This will depend on whether the SUV is considered an 'off-road passenger vehicle' (the MC category), as defined under the Australian Design Rules (Australian Government, 2021), and whether or not the vehicle manufacturer has chosen to apply for MC categorisation for the relevant model variant.

7 Data classifying vehicles in the 'Micro' segment commenced in 2014; prior to this, these types of vehicles were classified as part of the 'Light' segment.

Figure 11 shows the percentage change in average emissions intensity by segment between 2021 and 2022. There was significant variation between segments. Emissions intensity for the 'Medium' segment fell by 57 per cent, with large declines also for 'Upper Large' (30 per cent) and 'SUV Medium (MA)' (15 per cent). Each of these segments had battery electric vehicle models among the top sellers. By contrast, two segments had year-on-year emissions intensity increases in excess of 10 per cent: 'SUV Small (MC+NA)' (16 per cent) and 'Large' (11 per cent).

Figure 11: Percentage change in average emissions intensity by segment between 2021 and 2022

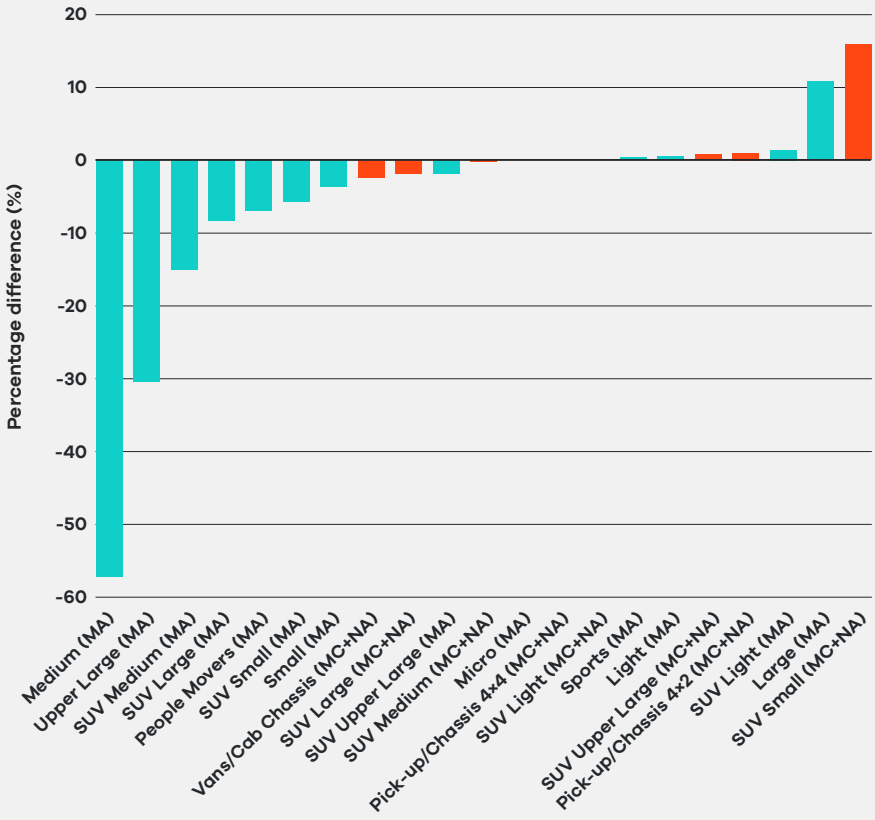
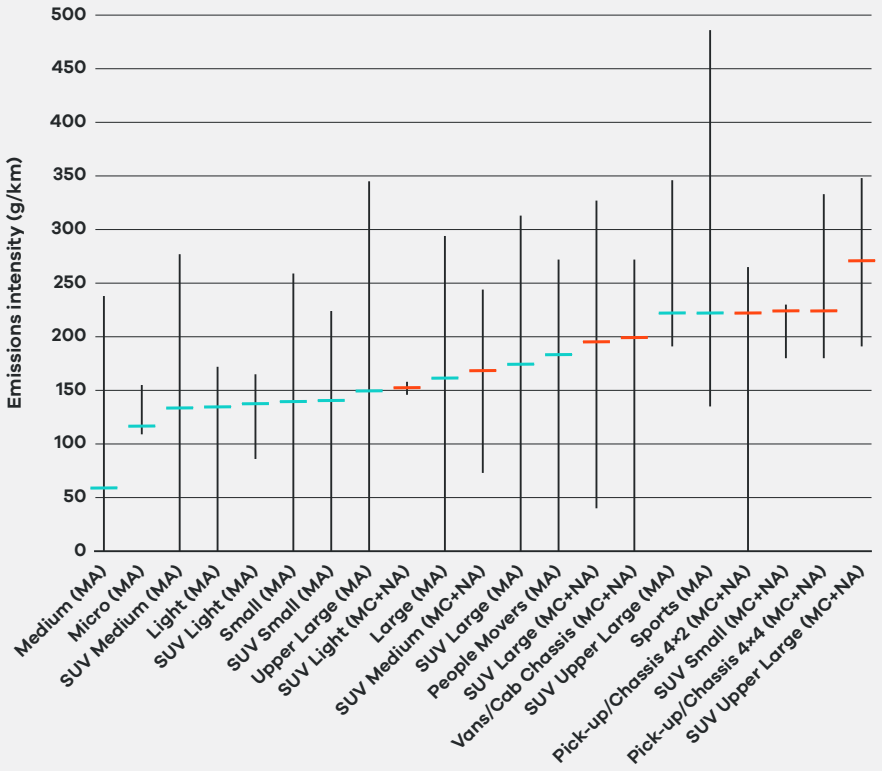


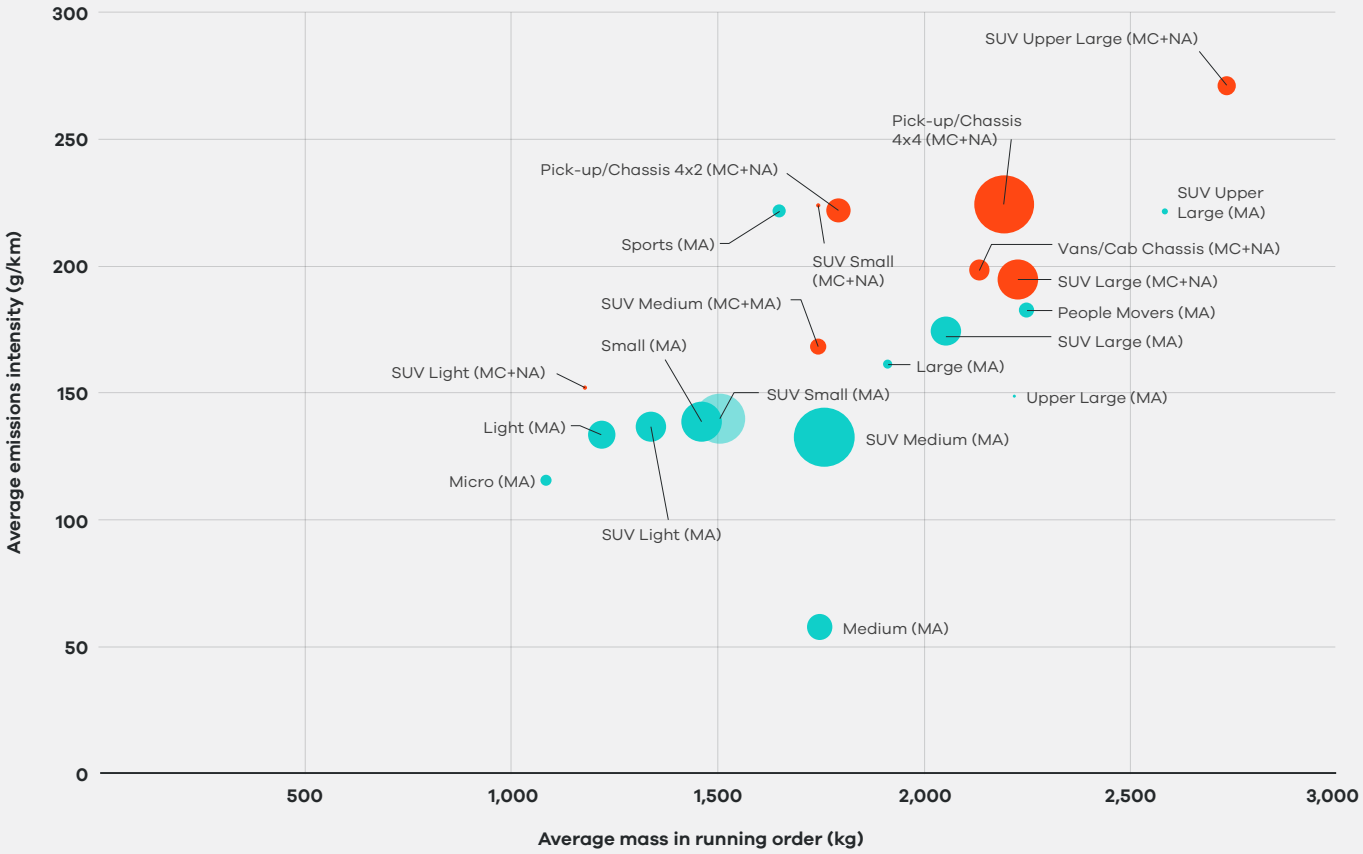
Figure 12 shows the average and the range in carbon dioxide emissions intensity for the segments during 2022. The average emissions are represented by the horizontal bars, and the ranges are represented by the vertical lines. As noted in chapter 2, battery electric vehicles with zero emissions are included, meaning that the range reaches down to zero for 11 of the segments (compared with 7 segments in 2021).

Figure 12: Range and average emissions intensity by segment, 2022



The average mass of vehicles varies considerably across segments, and in general there is a strong positive correlation between average mass and average emissions intensity in Australia. **Figure 13** plots these two variables against each other, with the size of each circle in the chart reflecting the relative number of sales in each segment. Vehicles in the heaviest segment, 'SUV Upper Large' (in the MC+NA category), are on average more than two and a half times as heavy as vehicles in the lightest (the 'Micro' segment). The difference in average emissions intensity is similar, with the larger and heavier segment's emissions intensity around 2.3 times higher. This strong positive relationship between mass and emissions intensity holds true because of the relatively low share of electric vehicles in the Australian market currently (since electric vehicles – in addition to having lower emissions – tend to be heavier than internal combustion engine cars due to the weight of the batteries (CNN Business, 2021)).[8]

Figure 13: Average emissions intensity and average mass in running order by segment, 2022



If Australian consumers had purchased vehicles with best-in-class carbon dioxide emissions in 2022, the national average carbon dioxide emissions would have been reduced by 93 per cent for the MA category and 47 per cent for the MC+NA category.[9] These figures reflect the fact that nine of the 13 segments in the MA category had battery electric vehicles available, most of which were among the highest selling segments (in total, these nine segments comprised around 89 per cent of total sales in the MA category). This shows the potential emissions reduction with currently available vehicles and technologies.

8 By contrast, a graph plotting the same two variables and comparing across countries for passenger cars in Europe shows two distinct relationships – see the dashboard of EEA (2023b). Near the top-left corner, there is a positive relationship between vehicle mass and emissions data, as seen in Australia, comprising data for European countries that still have relatively few electric vehicle sales. A second mostly negative correlation between mass and emissions intensity is then visible for countries with higher electric vehicle sales shares, with Norway, Sweden and Iceland being the three lowest-emitting countries but also having the highest average mass of vehicles.

9 The headline figure of a 47 per cent reduction for the MC+NA category is unchanged from 2021. However, this overall result disguises two offsetting trends for the best-in-class in the two 'Pick-up/Chassis' segments. A zero-emissions vehicle (the LDV T60) was the best in class for the 4×2 segment – a significant improvement in best-in-class for 2022. However, this was offset by a large rise in the emissions intensity of the best-in-class for the 4×4 segment, as none of the previously lowest emitting model (the Nissan NAVARA, which had a variant emitting 147 g/km) were sold in 2022, with the best-in-class rising to 180 g/km.

Table 3 shows the best-in-class vehicles for carbon dioxide emissions intensity available for each segment. Where the best-in-class vehicle model's primary engine is listed as electric for a segment, we have also shown the best-in-class with the primary engine listed as petrol or diesel.

Table 3: Best-in-class vehicles for carbon dioxide emissions intensity for each segment, 2022

Segment	Make and model (fuel source/s)*	Best-in-class vehicle emissions intensity (g/km)
Micro (MA)	Mitsubishi MIRAGE (petrol)	109
Light (MA)	MINI COOPER (electric) Toyota YARIS HYBRID (petrol-electric)	0 76
Small (MA)	Hyundai IONIQ (electric)^ Hyundai IONIQ (petrol-electric)	0 79
Medium (MA)	Tesla MODEL 3 (electric)^ Toyota CAMRY HYBRID (petrol-electric)	0 96
Large (MA)	Porsche TAY (electric)^ Citroen C5 X (petrol)	0 137
Upper Large (MA)	Mercedes-Benz Cars EQS 53 4M (electric)^ BMW 730D (diesel)	0 139
Sports (MA)	BMW 220I COUPE (petrol)	135
People Movers (MA)	Mercedes-Benz Vans EQV (electric)^ Volkswagen CADDY (diesel)	0 129
SUV Light (MA)	Toyota YARIS CROSSHV (petrol-electric)	86
SUV Small (MA)	MG MG ZS EV (electric)^ Kia DE NIRO (petrol-electric)	0 88
SUV Medium (MA)	Tesla MODEL Y (electric)^ Toyota RAV4 HYBRID (petrol-electric)	0 107
SUV Large (MA)	Kia CV EV6 (electric)^ Kia MQ4 SORENTO (petrol-electric)	0 121
SUV Upper Large (MA)	BMW X7 XDRIVE30D (diesel)	191
SUV Light (MC+NA)	Suzuki JIMNY (petrol)	146
SUV Small (MC+NA)	Jeep COMPASS (diesel)	181
SUV Medium (MC+NA)	BMW X3 XDRIVE30E (electric-petrol) Land Rover DISCOVERY SPORT (diesel)	73 151
SUV Large (MC+NA)	Volvo Car XC90 (electric-petrol) Toyota KLUGER HYBRID (petrol-electric)	40 128
SUV Upper Large (MC+NA)	Land Rover RANGE ROVER (diesel)	190
Pick-up/Chassis 4×2 (MC+NA)	LDV T60 (electric) Ford RANGER (diesel)	0 169
Pick-up/Chassis 4×4 (MC+NA)	Isuzu Ute D-MAX (diesel)^	180
Vans/Cab Chassis (MC+NA)	Renault KANGOO (electric)^ Volkswagen CADDY VAN (diesel)	0 129

* If two fuel sources are shown, the first is the primary engine.

^ At least two vehicle models in this segment have the equal-lowest emissions. The make and model reported in this table is the one with the highest sales.

Additional data comparing the top 10 highest selling models[10] in each segment against best-in-class vehicles is provided in **Table 11** in the appendix. Additional average emissions intensity data for all models that sold more than 1,000 vehicles is provided in **Table 12** in the appendix.

10 Top 10 models, or as many vehicle models as were sold in that segment.

Buyer type

Figure 14 shows the average carbon dioxide emissions intensity by buyer type in 2022 for vehicles sold in the MA category. Vehicles bought by government buyers had the lowest average carbon dioxide emissions intensity (124 g/km), followed by private buyers (133 g/km) and business buyers (137 g/km). All three buyer types had lower emissions intensities in 2022 than the previous year, with private buyers having the largest reduction (more than 13 per cent) and government the smallest, as shown in **Figure 15**. Additional data on buyer types is provided in **Tables 13** and **14** in the appendix.

Figure 14: Average emissions intensity by buyer type for the MA category, 2022

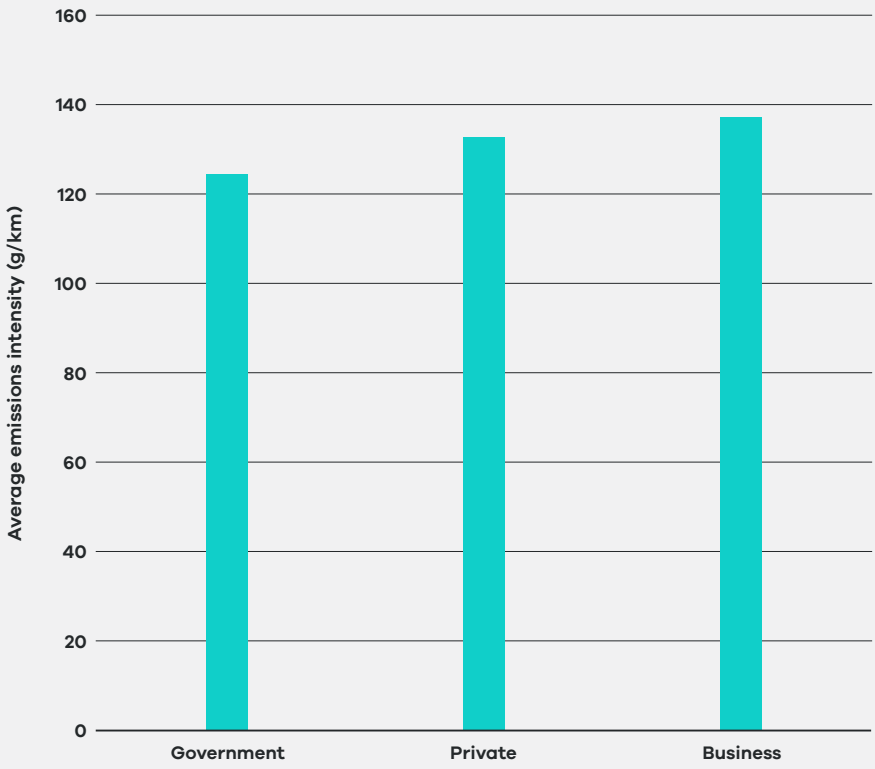


Figure 15: Percentage change in average emissions intensity by buyer type for the MA category between 2021 and 2022 (%)

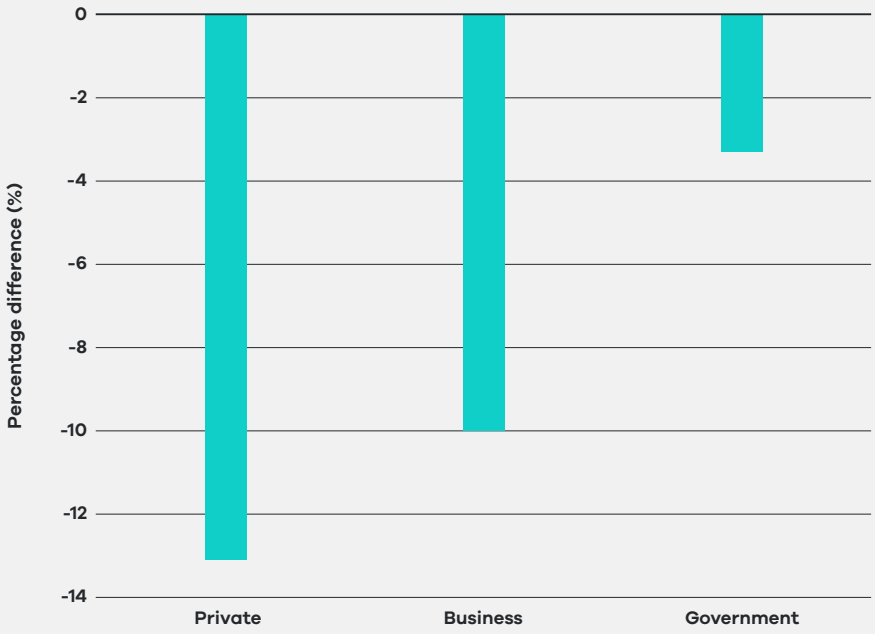


Figure 16 shows the average carbon dioxide emissions intensity by buyer type in 2022 for vehicles sold in the MC+NA category. Overall, the average emissions intensity was relatively similar across the three buyer types, although it was lowest for government buyers (208 g/km) and highest for business buyers (216 g/km). **Figure 17** shows that two of the three buyer types in the MC+NA category saw reductions in emissions intensity in 2022 relative to the previous year, with government buyers having the largest reduction, while there was a small increase in the emissions intensity for private buyers.

Figure 16: Average emissions intensity by buyer type for the MC+NA category, 2022

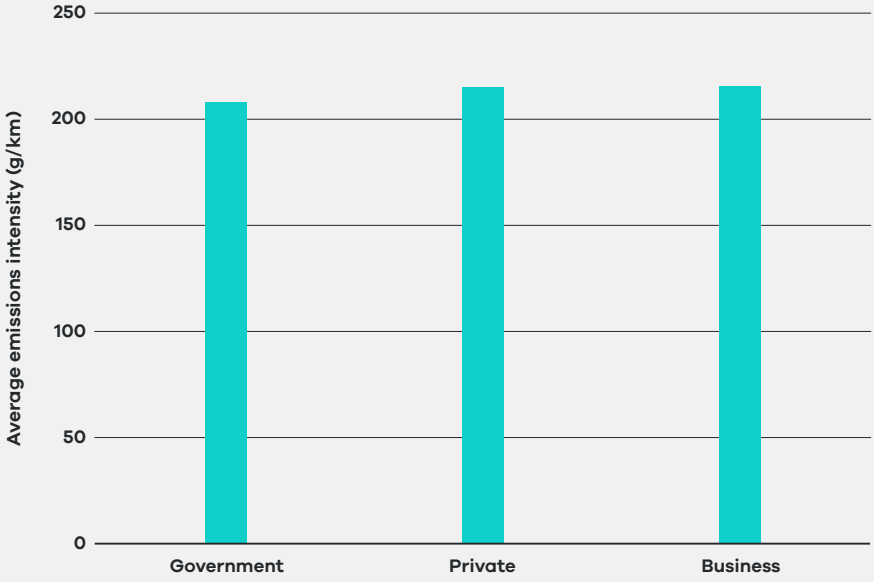
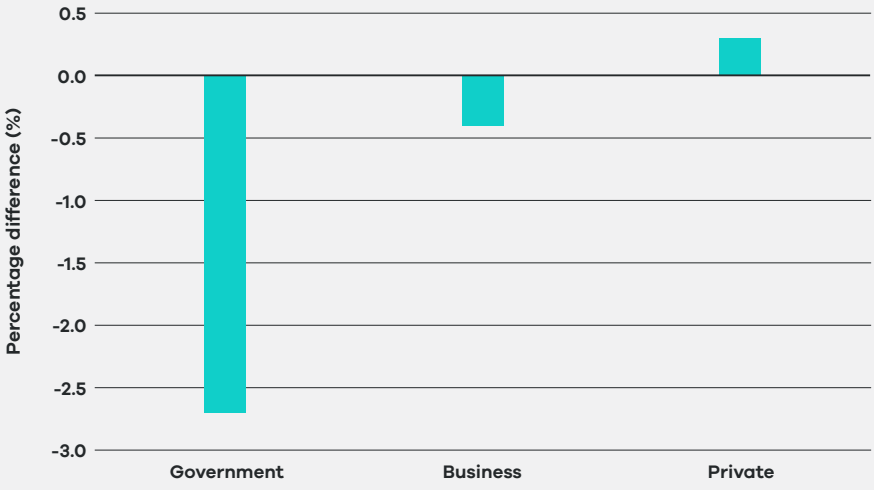


Figure 17: Percentage change in average emissions intensity by buyer type for the MC+NA category between 2021 and 2022 (%)



The three buyer types can be broken down further:

- private: local delivery and overseas delivery
- government: federal, state and local
- business: company capitalisation, dealer demonstrator, diplomatic, fleet, large fleet, not-for-profit organisation, overseas delivery, rental, taxi and other.

Figure 18 shows the average carbon dioxide emissions intensity for these buyers, for vehicles sold in the MA category, while **Figure 19** displays the annual percentage change in emissions intensity for each of these buyer types. Taxi buyers had the lowest average emissions intensity levels in 2022, as in many previous years, while the two overseas delivery buyer types had the highest (but both of these had very few sales). State and local governments were also among the lowest emitting buyer types. 'Fleet' buyers had the largest reduction in emissions intensity, by around 22 per cent, while three other buyer types had annual reductions exceeding 10 per cent. 'Fleet' and 'private – local delivery' buyers were the only buyers of the two models of Tesla, while 'Company capitalisation' buyers were relatively significant purchasers of the BYD ATTO 3 (the best-selling non-Tesla electric vehicle), which may explain these results. The emissions intensity increased relative to the previous year for three buyer types, the highest of which was the Federal government at around 6 per cent.

Figure 18: Average emissions intensity by detailed buyer type for the MA category, 2022

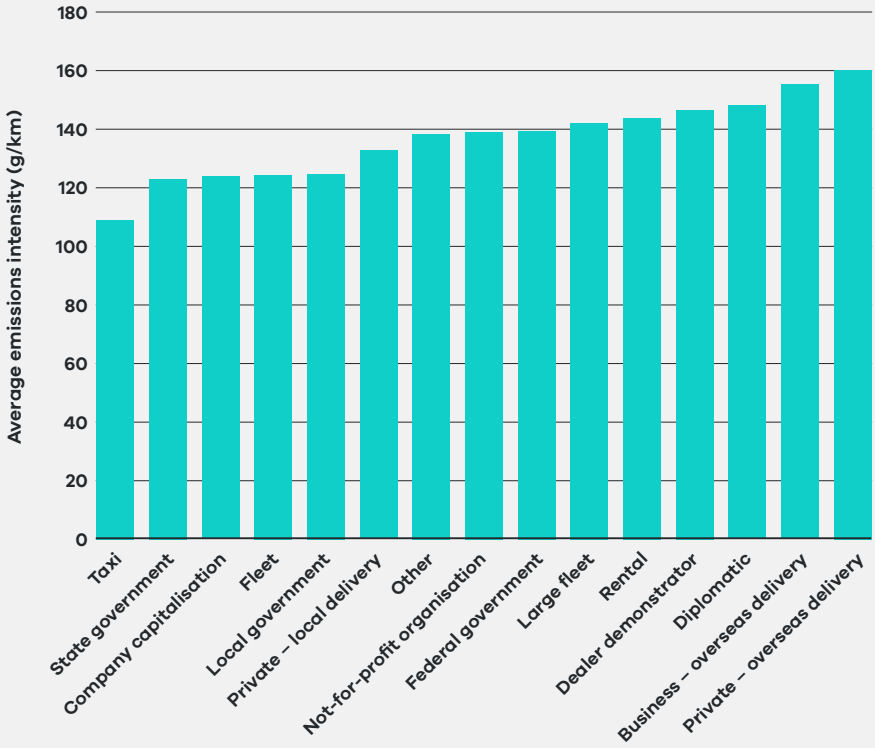
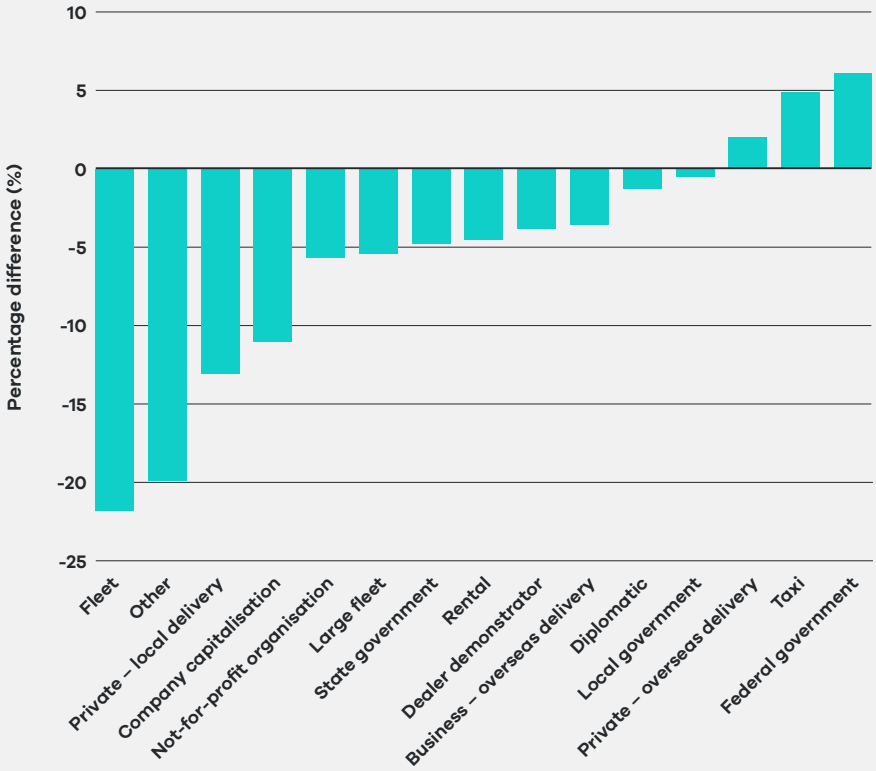


Figure 19: Percentage change in average emissions intensity by detailed buyer type for the MA category between 2021 and 2022 (%)



Figures 20 and **21** show the corresponding information for the MC+NA category. There was a large decrease in average emissions intensity for diplomatic and taxi buyers – which were also the two lowest emitting buyer types in 2022 – but there were very few vehicles sold to either of these buyer types in the MC+NA category in either year. Additional data on the detailed buyer types is provided in **Tables 15** and **16** in the appendix.

Figure 20: Average emissions intensity by detailed buyer type for the MC+NA category, 2022

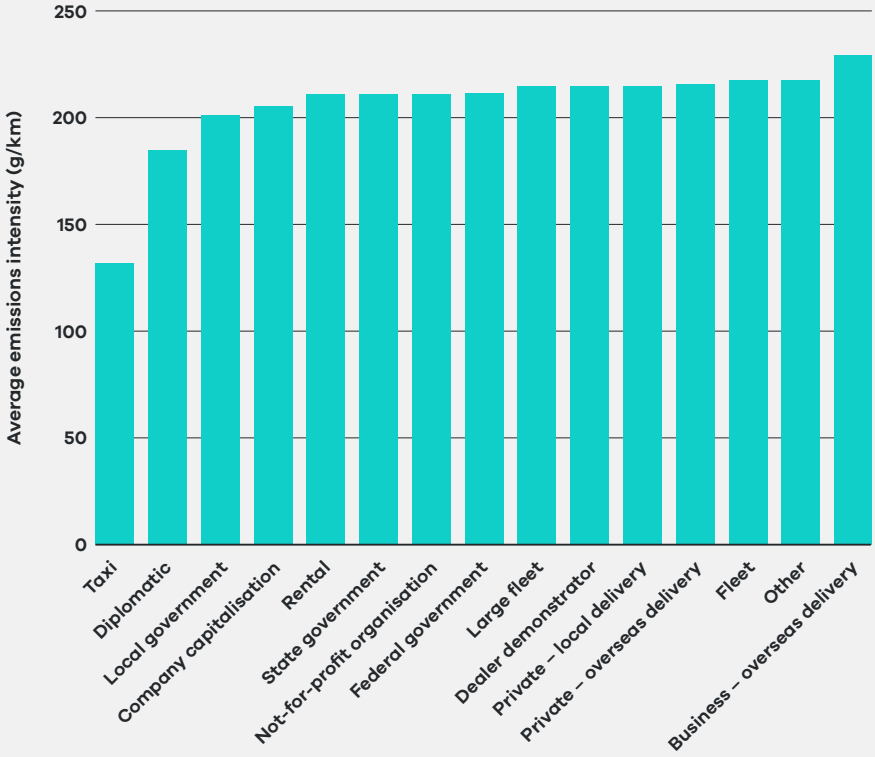
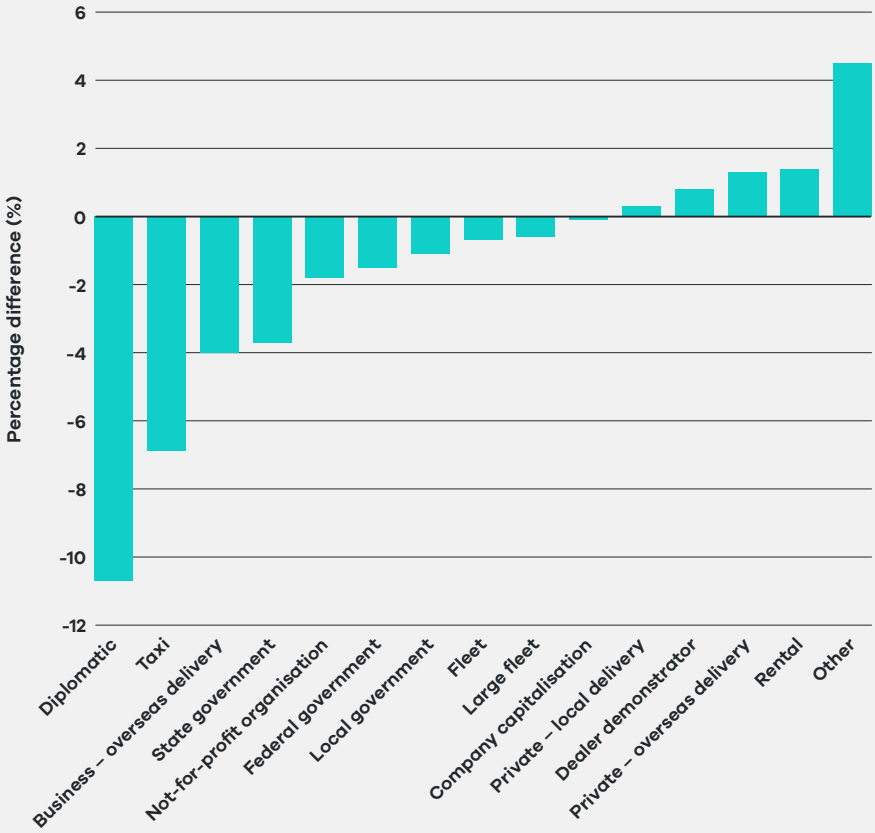


Figure 21: Percentage change in average emissions intensity by detailed buyer type for the MC+NA category between 2021 and 2022 (%)



A further comparison of the emissions intensity for governments' vehicle purchases is possible by breaking down the 'State government' into each of the state and territory governments, while reporting the 'Federal government' and 'Local government' alongside. **Figure 22** compares the emissions intensity for the MA category and shows that the ACT had the lowest emissions intensity while the Federal government had the highest (with Western Australia the highest of the state/territory governments).[11] The biggest reductions in emissions intensity in 2022 occurred for Queensland (20 per cent) and the Northern Territory (16 per cent), while the ACT had the largest increase (16 per cent).

Figure 22: Average emissions intensity by government for the MA category, 2022

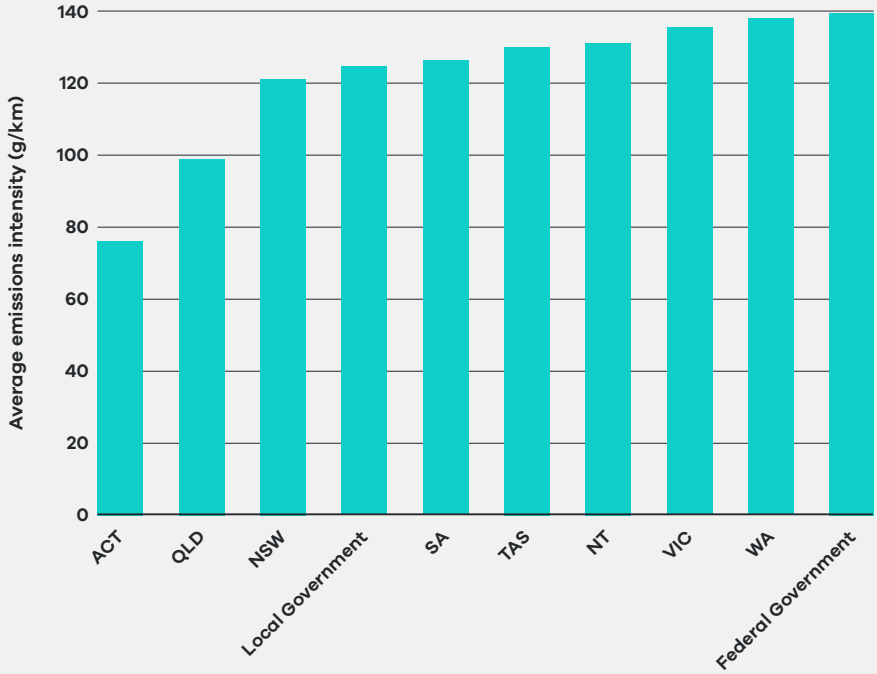
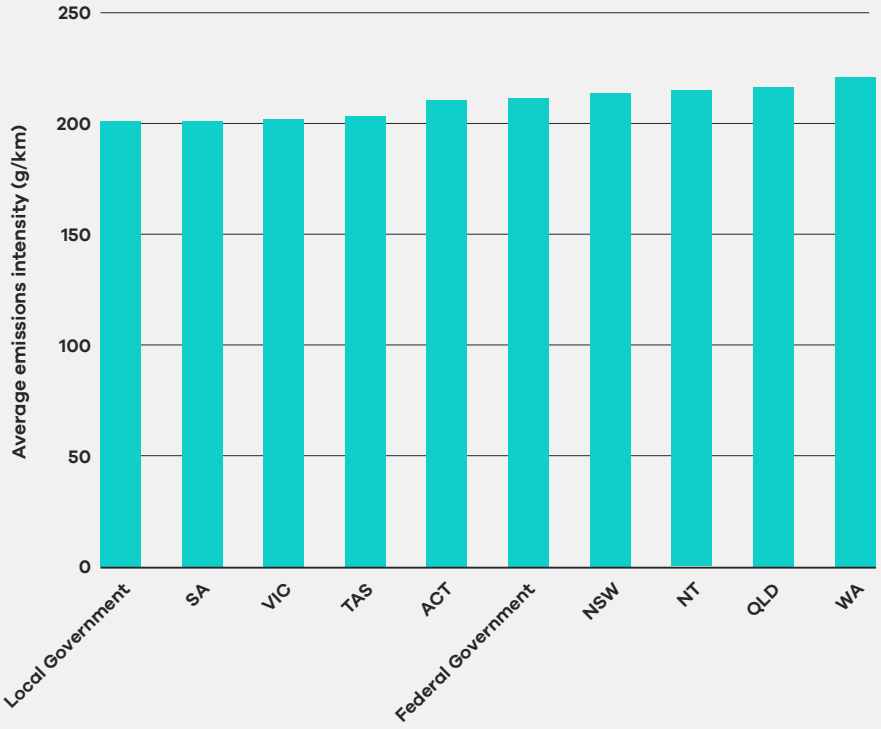


Figure 23 provides the same comparison for the MC+NA category. Local governments had the joint lowest emissions intensity with South Australia (which had the biggest reduction in emissions intensity between 2021 and 2022). WA had the highest emissions intensity among governments in the MC+NA category. Overall, the differences in emissions intensity were much smaller across governments for the MC+NA category than the MA category.

Figure 23: Average emissions intensity by government for the MC+NA category, 2022



11 The ACT and Queensland governments had significantly lower emissions intensities than other governments. This is largely attributable to the higher percentage of PHEVs and BEVs within their purchased vehicle fleets (see **Figure 32**), in combination with the resulting super-credit weighting applied to these purchases.

Powertrain and fuel type

This section contains data on average carbon dioxide emissions intensity by powertrain and fuel type.

Figure 24 shows the average carbon dioxide emissions intensity by powertrain and fuel type for 2022 for the MA category. More detailed information about electric and hybrid vehicles is reported in the following section. We have reported the emissions intensity of hybrid vehicles separately from petrol- and diesel-only vehicles. Petrol-only vehicles in the MA category had an average emissions intensity of 165 g/km, while diesel vehicles' average emissions intensity was 171 g/km; this was significantly higher than the emissions intensity of HEVs (102 g/km). As was the case in 2021, there were two models of hydrogen vehicles sold in 2022 (the Hyundai NEXO and Toyota MIRAI), with a total of 15 vehicles sold (compared with 38 in 2021).

Additional data on fuel types is provided in **Tables 17** and **18** in the appendix.

Figure 24: Average emissions intensity by powertrain and fuel type for the MA category, 2022

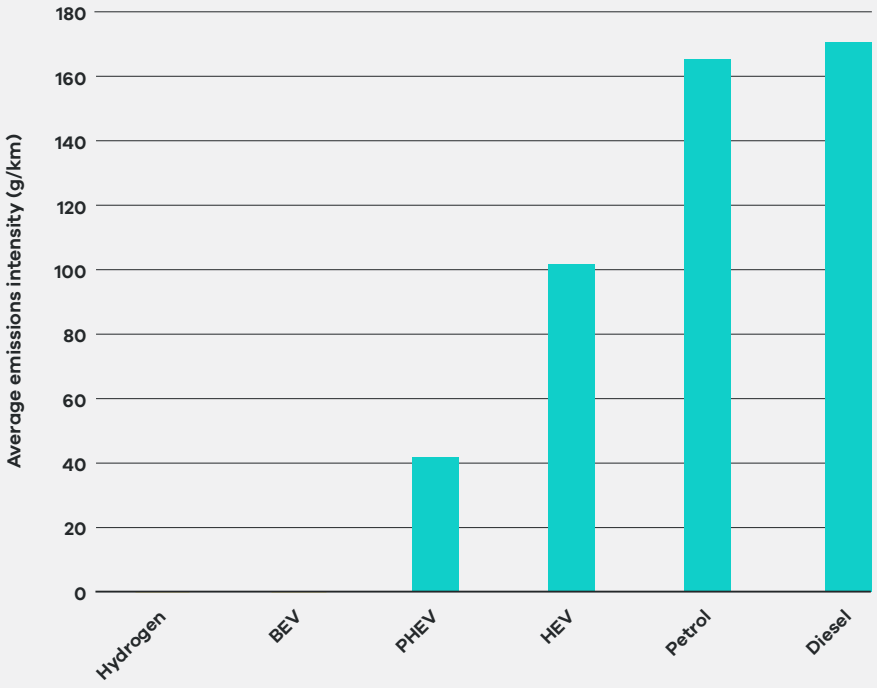
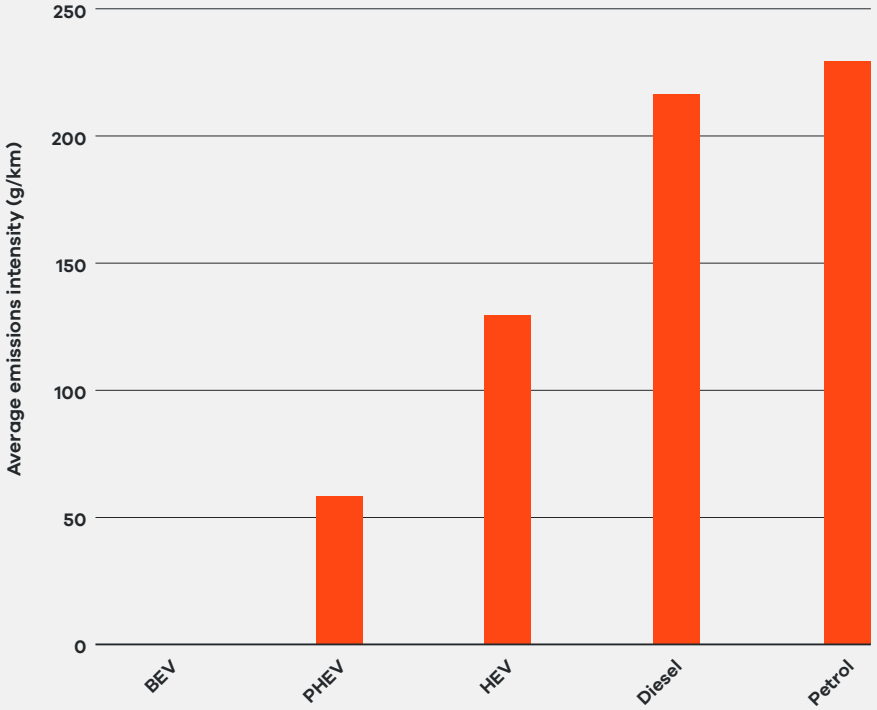


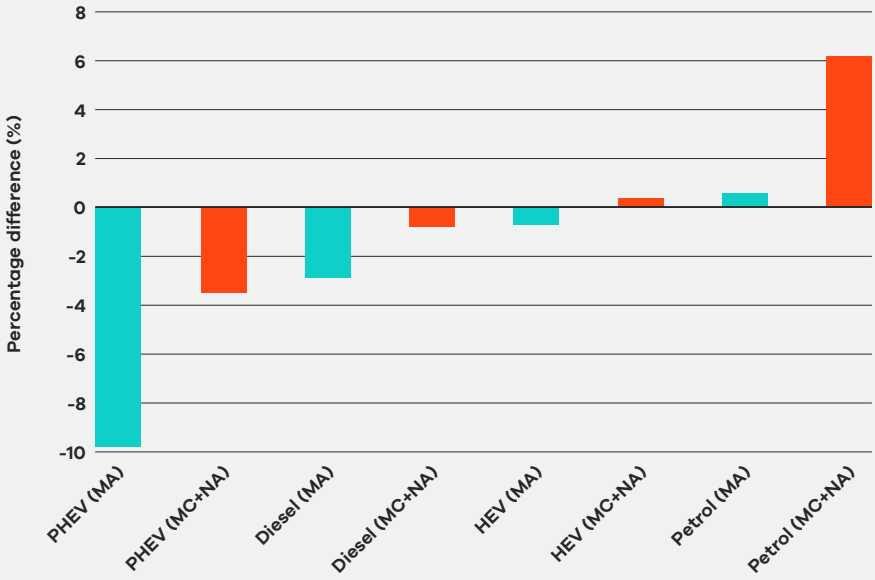
Figure 25 shows the average carbon dioxide emissions intensity by powertrain and fuel type for the MC+NA category. Diesel-only vehicles had a lower average emissions intensity than petrol-only vehicles for the MC+NA category: 216 g/km compared with 230 g/km. This was significantly higher than the emissions intensity of MC+NA category HEVs (130 g/km).

Figure 25: Average emissions intensity by powertrain and fuel type for the MC+NA category, 2022



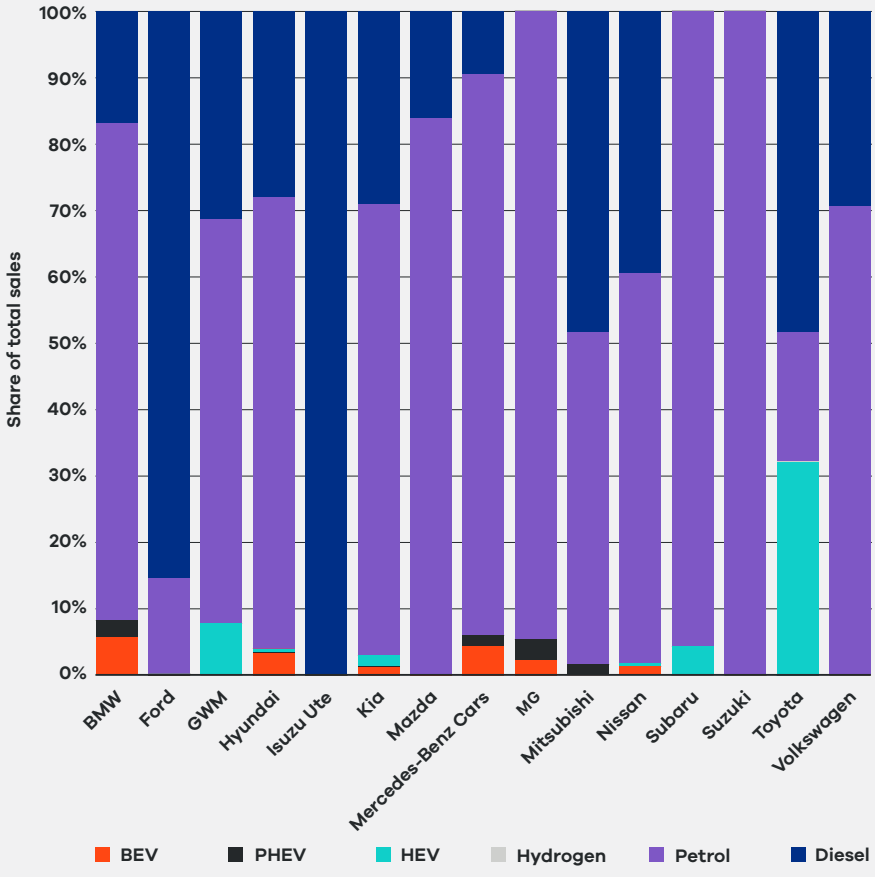
There were reductions in the emissions intensity for several powertrains/fuel types in 2022 compared with the previous year, as shown in **Figure 26**.[12] The largest reductions were for PHEVs in both the MA and MC+NA categories, albeit these two groups both had relatively low sales figures. The emissions intensity of petrol vehicles increased for both the MA and MC+NA category, with the latter increasing by more than 6 per cent.

Figure 26: Percentage change in average emissions intensity by powertrain and fuel type between 2021 and 2022 (%)



Among the top 15 selling manufacturers, there is some variation in the adoption of different technologies. **Figure 27** shows the differing mixes of petrol and diesel vehicles sold among the top 15 selling manufacturers. Most of Isuzu Ute and Ford's sales were diesel vehicles, as were almost half of Mitsubishi and Toyota's. Relative to their total sales, BMW, MG and Mercedes-Benz Cars had the highest proportion of electric vehicle sales, while Toyota had the highest proportion of hybrid vehicle sales. Tesla was ranked number 16 by total sales.

Figure 27: Share of total sales by powertrain and fuel type for top 15 selling manufacturers, 2022



12 BEVs and hydrogen vehicles are not shown in the graph since they are zero emission vehicles.

Electric and hybrid vehicles

This section provides more detailed information on electric vehicles – both battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) – as well as separate graphs and data on hybrid electric vehicles (HEVs).[13]

Data on electric vehicle sales and emissions can be broken down into the categories shown in **Table 4**. Plug-in hybrid electric vehicles are vehicles whose primary fuel type is electric, but which have a secondary engine/fuel type (that is, petrol or diesel) and have a non-zero emissions figure in the FCAI data. Battery electric vehicles have no secondary engine/fuel type, and therefore no (tailpipe) emissions listed in the FCAI data. Sales of PHEVs increased by 76 per cent in 2022 compared with the previous year, while BEV sales almost doubled.

Table 4: Emissions intensity and annual sales by electric vehicle type, 2021 and 2022

Electric vehicle type	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
Plug-in Hybrid Electric Vehicles (PHEV)	48[a]	43[a]	-8.9	3,372	5,930
Battery Electric Vehicles (BEV)	0	0	N/A	17,207[b]	33,393
Total	N/A	N/A	N/A	20,579	39,323

a. This figure is the combined figure for MA and MC+NA.

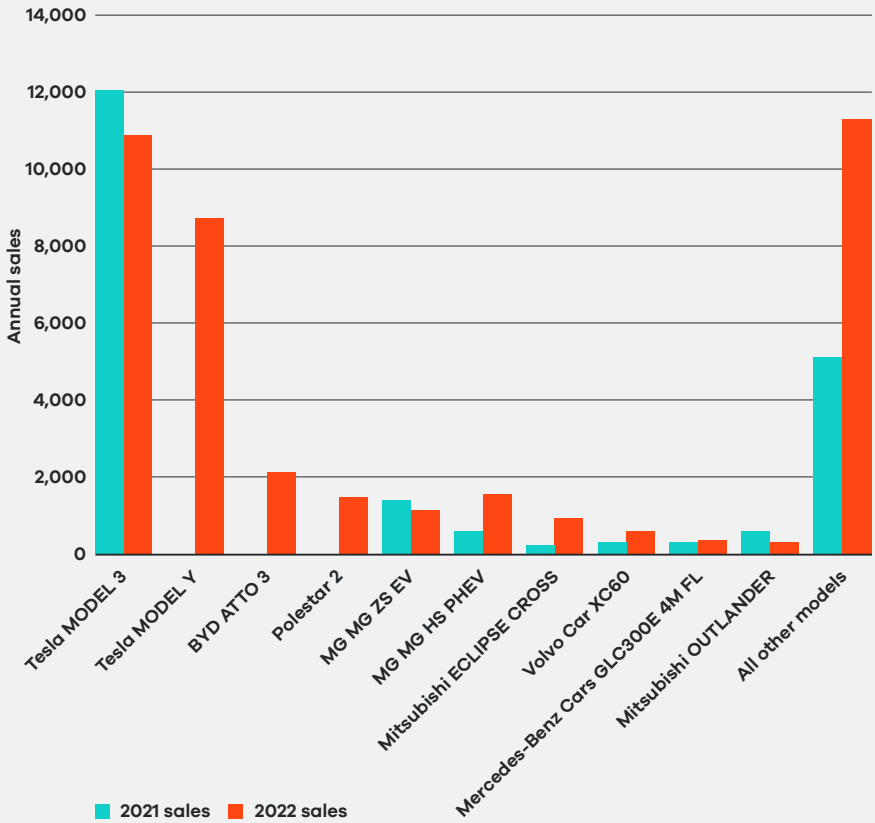
b. BEV sales data for 2021 in this table includes an estimate of Tesla sales (which were not part of the FCAI's data for this year).

Data from the Bureau of Infrastructure and Transport Research Economics shows that the total number of registered Tesla electric vehicles in the Australian fleet in January 2023 was 45,502 (BITRE, 2023a).

13 HEVs are powered by an internal combustion engine in combination with one or more electric motors that use energy stored in batteries, with the batteries not being recharged from an external electricity source. They are listed in the FCAI data as having a petrol or diesel primary fuel source, and an electric secondary fuel source.

There were 79 models of electric vehicles sold in 2022 compared with 49 models in 2021 (the 2021 figure excludes Tesla models). **Figure 28** shows the sales of the more popular electric vehicle models in 2021 and 2022. The first five models in the graph were the top selling BEVs in 2022, the next five were the top selling PHEVs, followed by the combined total of all other electric vehicles. For the purposes of this graph, estimated Tesla 'sales' for 2021 – calculated as the difference between the number registered at the start of 2022 and the start of 2021 – are all assumed to be the Tesla MODEL 3.[14] Additional data on sales by model, state and buyer type for 2021 and 2022 for the FCAI data are provided in **Tables 19**, **20** and **21** in the appendix.

Figure 28: Sales of selected electric vehicles, 2021 and 2022



14 Data from BITRE (2023b) support this as an accurate assumption, with 99.9 per cent of the increase in Teslas during 2021 being the MODEL 3.

Table 5 summarises various types of electric vehicle data by state and territory. The first row of data summarises electric vehicle sales in 2022 from the FCAI data (including Tesla). The second row of data shows all electric vehicle sales between 2010 and 2022 in each state and territory (excluding Tesla). The final row of data shows the number of Tesla vehicles registered in each state and territory as at 31 January 2023. Although the second and third rows of data to some extent show the total (cumulative) vehicle fleet for non-Tesla and Tesla electric vehicles, respectively, they are not directly comparable.[15]

The NTC estimates that there were around 85,000 electric vehicles in the Australian vehicle fleet at the end of 2022. The total number of passenger vehicles and light commercial vehicles in Australia as at 31 January 2023 was 19.3 million (BITRE, 2023a), meaning that electric vehicles represent around 0.44 per cent of the nation's 19.3 million cars and light commercial vehicles (see details in **Table 22** in the appendix, which also includes the estimated share of electric vehicles in the total fleet in each state and territory). **Table 23** in the appendix contains more detailed information on BEV sales by state and model in the latest year. A July 2023 article by the ABC discussed prices and trends in used electric vehicles, noting that among certain buyer types such as fleets and governments, vehicles are expected to enter the second-hand market at the conclusion of lease periods of three to five years (ABC, 2023). **Table 24** in the appendix contains data on annual electric vehicle sales, comprising both BEVs and PHEVs, by buyer type from 2010 to 2022.

Table 5: Electric vehicle sales and Tesla registrations by state and territory

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Australia
Electric vehicle sales in 2022 (including Tesla)	1,503	12,762	93	7,945	1,771	683	11,074	3,492	39,323
Total electric vehicle sales from 2010 to 2022 (excluding Tesla)	1,695	12,456	122	7,522	3,519	981	10,908	3,086	40,289
Tesla registrations as at 31 January 2023*	1,719	14,836	62	9,961	1,591	417	12,382	4,534	45,502

* Registrations from state- and territory-based registration systems as at 31 January 2023.

Table 6 reports on the sales and emissions intensity for hybrid vehicles (HEVs). Sales of these vehicles were around 16 per cent higher in 2022 than the previous year, while their average emissions intensity increased by around 1 per cent.

Table 6: Emissions intensity and annual sales for hybrid vehicles, 2021 and 2022

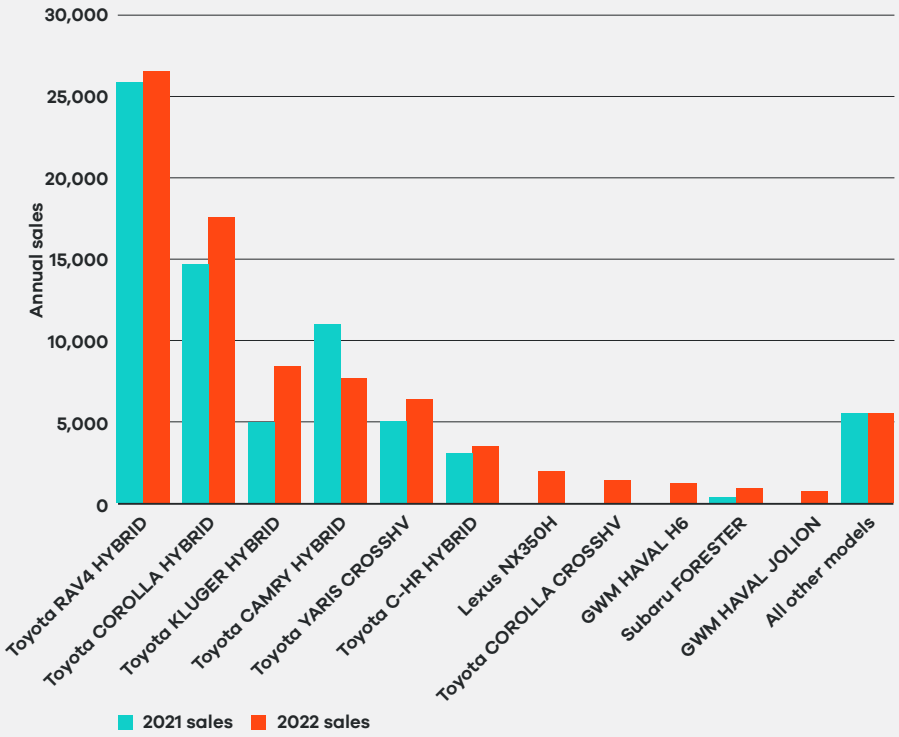
Hybrid vehicle type	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
Hybrid Electric Vehicle (HEV)	105[a]	105[a]	0.9	70,506	81,825

[a] This figure is the combined figure for MA and MC+NA.

15 For example, it is possible that an electric vehicle could be sold in one state or territory and subsequently transferred to a different one. Additionally, a vehicle may be sold but subsequently written off as a result of a crash.

There were 35 models of hybrid vehicles sold in 2022 compared with 27 models in 2021. **Figure 29** shows the sales of the most popular hybrid vehicle models in 2021 and 2022. Toyota sold around 89 per cent of all hybrids in 2022. Sales of most of the top-selling hybrid models increased in 2022 relative to the previous year, although the Toyota CAMRY HYBRID was an exception. Additional data on hybrid vehicle sales by model for 2021 and 2022 are provided in **Table 25** in the appendix.

Figure 29: Sales of selected hybrid vehicles, 2021 and 2022



Electric and hybrid vehicles have been purchased to varying degrees by different buyer types. **Figure 30** shows the percentage of total sales made up of BEVs, PHEVs, HEVs and hydrogen vehicles for various buyer types. Overall, private buyers were by far the biggest purchasers of electric vehicles in both absolute numbers and as a percentage of total sales. Private buyers were also the largest purchaser of HEVs in absolute numbers, although government and non-government buyers had a higher share of sales that were HEVs.

Figure 30: Percentage of total sales that were electric, hybrid or hydrogen vehicles by buyer type, 2022

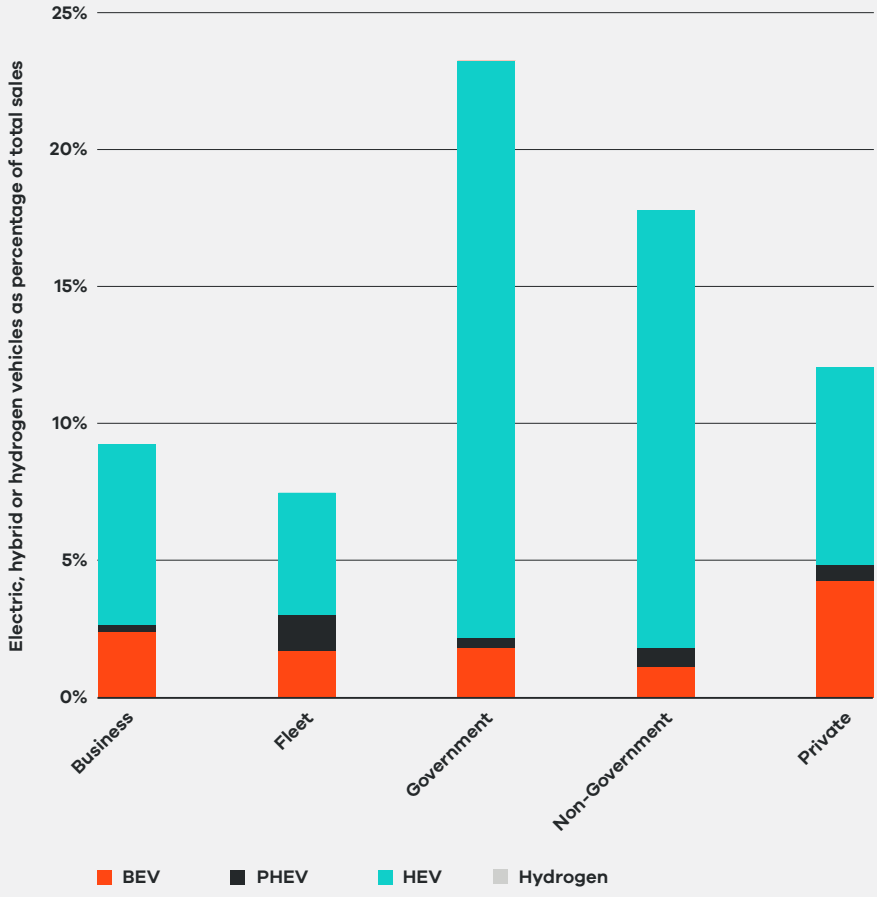


Figure 31 shows similar information by detailed buyer type. Company capitalisation, private – local delivery, and fleet were the buyer types with the highest proportions of electric vehicle sales. As in previous years, around 90 per cent of taxi purchases in 2022 were hybrid vehicles, albeit this represented around 520 vehicles.

Figure 31: Percentage of total sales that were electric, hybrid or hydrogen vehicles by detailed buyer type, 2022

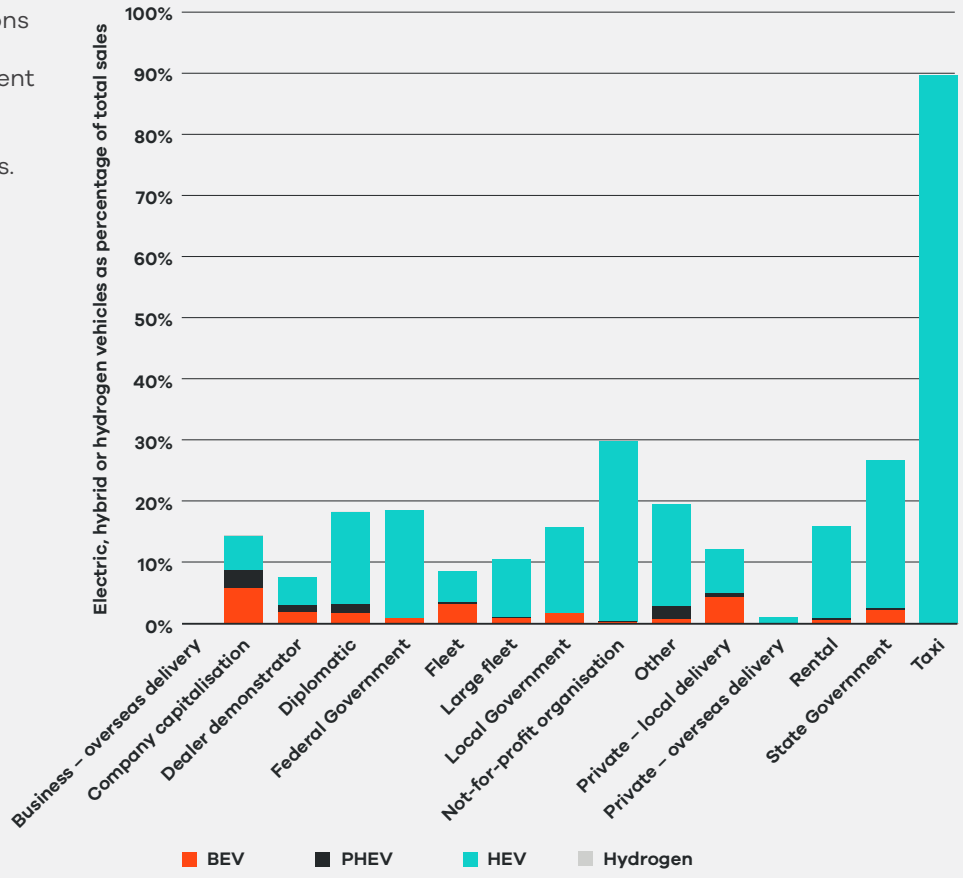
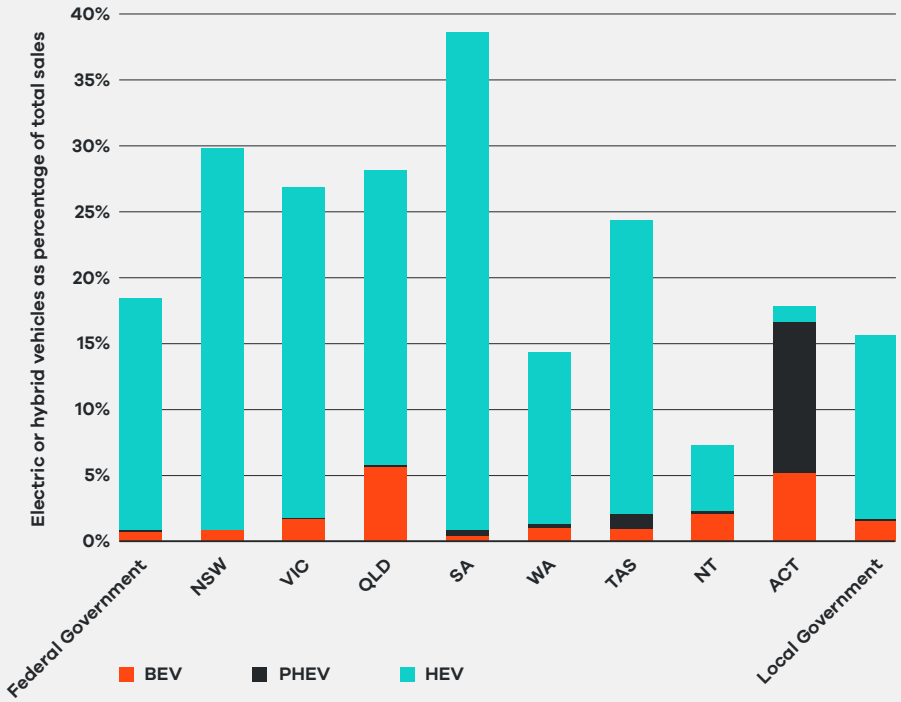


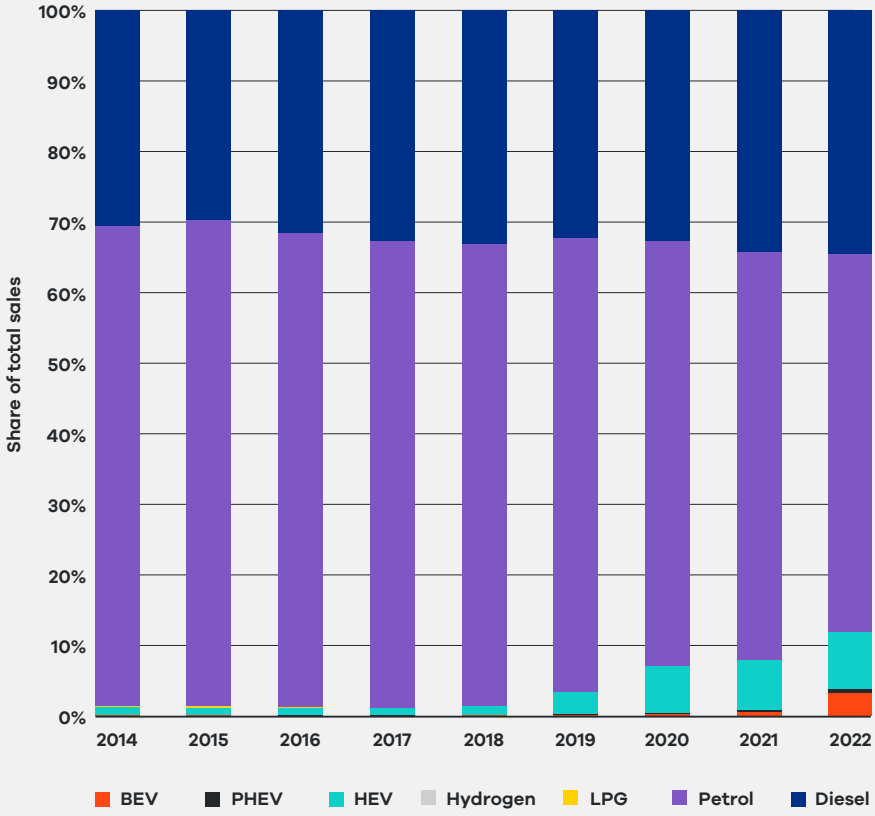
Figure 32 compares the percentages of electric and hybrid vehicles for each state and territory government, as well as the federal government and all local governments. The ACT government had by far the highest share of electric vehicles as a proportion of total sales, with around 16.6 per cent of its vehicle purchases being electric; however, the total number of vehicles it purchased in 2022 was relatively small at 325 vehicles. The Queensland government had the highest share of BEV sales at 5.6 per cent, a big increase compared with its BEV share the previous year of 0.7 per cent. All governments except the Northern Territory purchased at least 14 per cent of their fleet as either electric or hybrid vehicles in 2022, but for most governments most of these were hybrid vehicles (with South Australia leading the way with HEVs, having more than one-third of its total vehicle purchases as hybrid vehicles). **Table 26** in the appendix provides further detail on the powertrain/fuel type of vehicle purchases by governments.

Figure 32: Percentage of total sales that were electric or hybrid vehicles by government, 2022



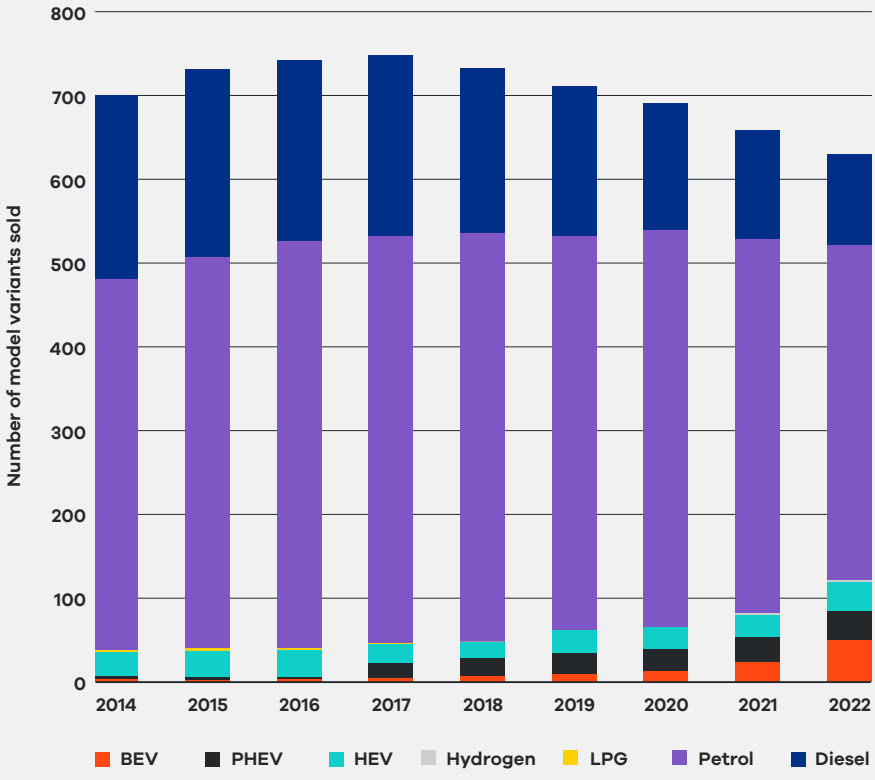
Although sales of BEVs and PHEVs, and to a lesser extent HEVs, remain relatively low overall, they have increased significantly in recent years, as demonstrated in **Figure 33**, which shows the share of total sales by powertrain and fuel type from 2014 to 2022.[16] In 2022, the share of petrol- or diesel-only vehicles was below 90 per cent for the first time.

Figure 33: Share of total sales by powertrain/fuel type, 2014–2022



This result in part reflects the increased availability of BEV, PHEV and HEV model variants in the Australian market over time. **Figure 34** shows that the number of PHEV model variants sold in the Australian market increased significantly in 2017, when it reached 18, and has increased further since then to 34 variants in 2022. BEV model variants sold have also increased from just 2 in 2015 to 23 in 2021 and 50 in 2022. The overall number of model variants sold in Australia peaked in 2017, with the subsequent decline primarily due to diesel variants, although petrol variants have also decreased significantly in the two most recent years.

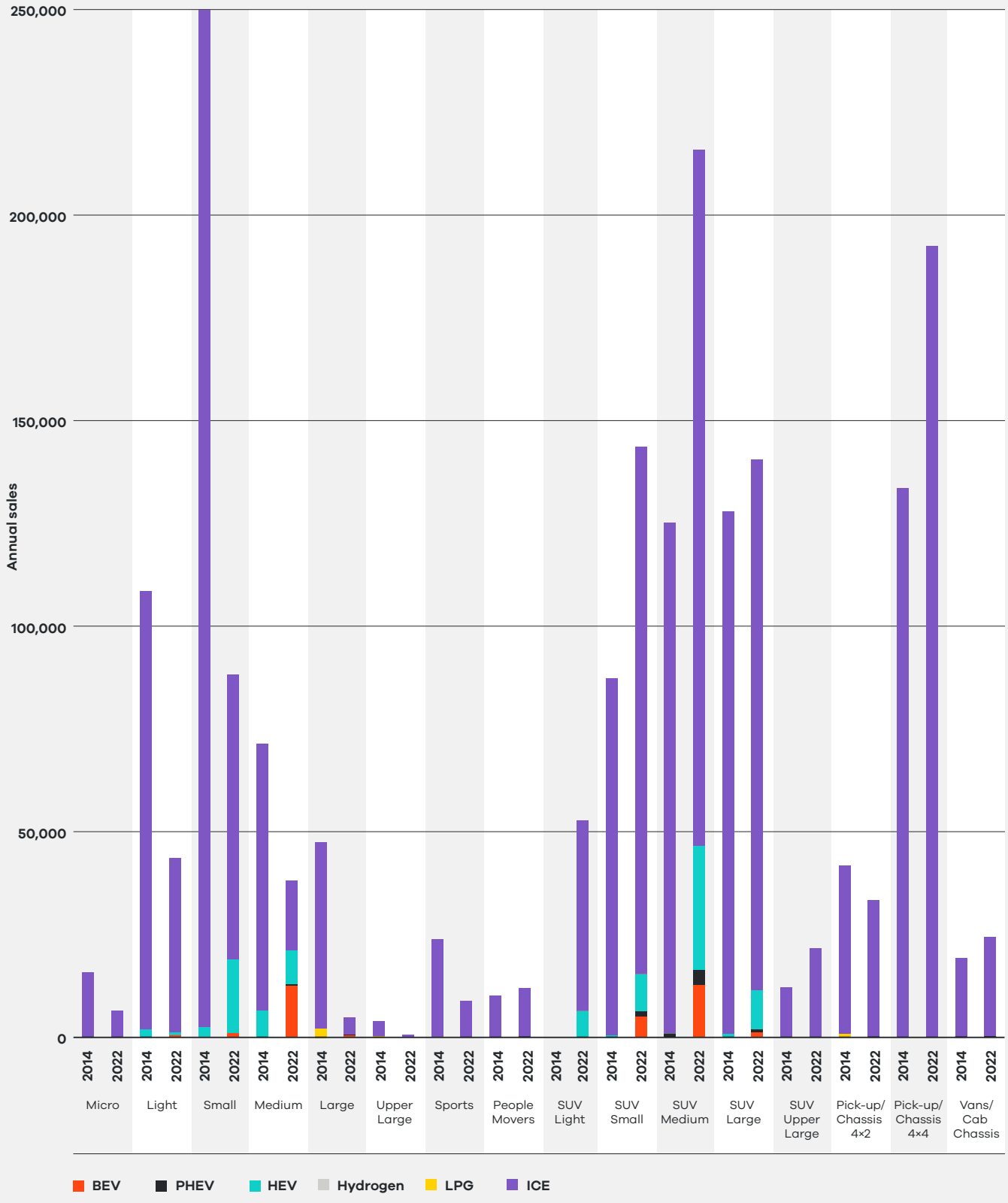
Figure 34: Number of model variants sold in Australia by powertrain/fuel type, 2014–2022



16 2014 was chosen as the starting point as it is the first year for which we have data available on the secondary fuel type, needed to distinguish between BEVs and PHEVs, and between HEVs and internal combustion engine-only vehicles.

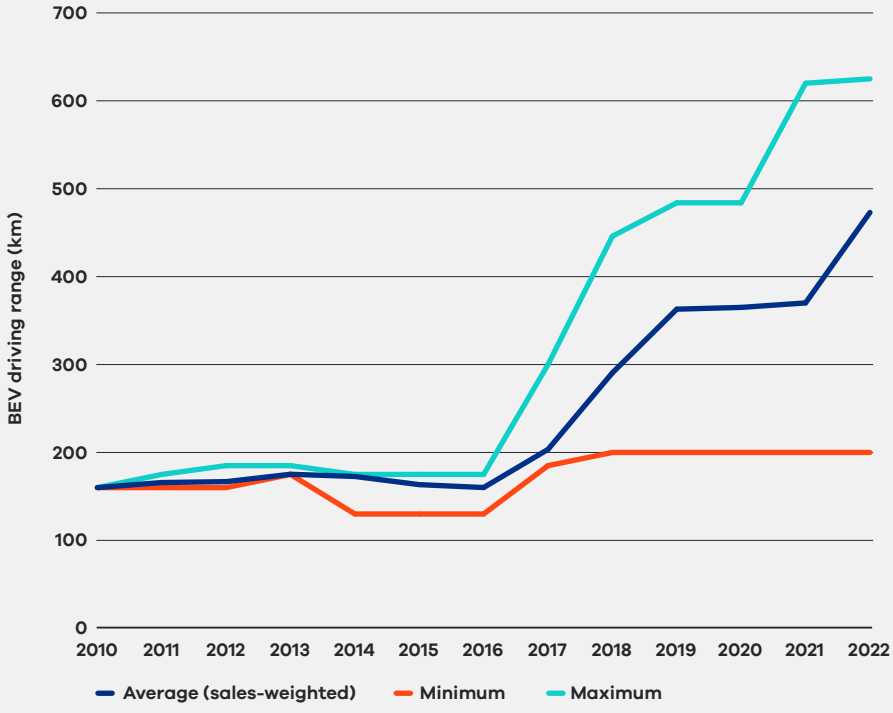
While the overall sales and availability of electric and hybrid models have increased significantly, albeit from a low base, this has been concentrated in certain vehicle segments. **Figure 35** shows that these types of vehicles were primarily sold in the 'Medium', 'Small', 'SUV Medium' and 'SUV Small' segments in 2022, while many segments had either no or very few sales of electric or hybrid vehicles. As a share of total sales, the 'Large' and 'Upper Large' segments also had relatively high shares of electric vehicles, but with relatively low sales overall compared with other segments.

Figure 35: Comparison of vehicle sales by powertrain/fuel type in different segments, 2014 and 2022



Improved battery technology and the increased number of BEV models available in Australia has improved the driving range of these vehicles in recent years. **Figure 36** shows the minimum, maximum and sales-weighted average driving range of BEVs sold in Australia (with data prior to 2022 not including Tesla as no sales data by Tesla model or variant was available). Since 2016 there has been a significant increase in the average driving range of BEVs sold in Australia, with the average rising sharply again by 28 per cent in 2022 (increasing from 370 km in 2021 to 473 km in 2022). This increase may be slightly overstated because data on Teslas sold was not available for most of the time period shown (which may otherwise have raised the average driving range for earlier years). Nonetheless the average range would still have increased significantly in 2022 on a like-with-like basis, with the average driving range excluding Tesla being 439 km. The maximum range across all models sold has also increased quickly, from below 200 km in 2016 to above 600 km in 2021 and 2022.

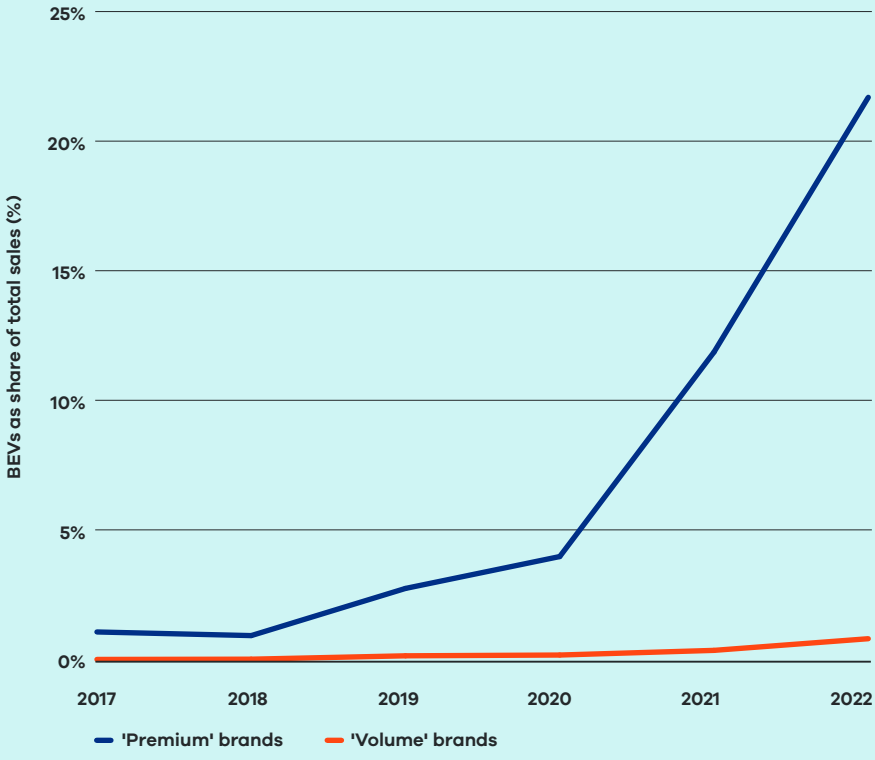
Figure 36: Driving range for BEV models sold in Australia, 2010–2022



Source: NTC analysis based on FCAI sales data and driving ranges collected from a variety of sources including manufacturers' websites, Electric Vehicle Council *State of Electric Vehicles* reports and other websites for historical models.

The share of BEV sales as a proportion of total sales varies between manufacturers. 'Premium' brands have tended to lead in electric vehicle sales, in part due to the relatively higher cost of manufacturing electric vehicles and their batteries and the typically higher prices that these brands can charge (ABC, 2021). In research by S&P Global published by the FCAI, 'premium' brands are forecast to have 77 per cent of their sales as BEVs by 2033 compared with 21 per cent for volume brands (FCAI, 2022b). Using the same categorisation of 'premium' and 'volume' brands, based on a list provided by the FCAI to the NTC, **Figure 37** shows that this trend has already begun, with 'premium' brands having 21.7 per cent of their total sales as BEVs in 2022 compared with 0.8 per cent for 'volume' brands (which sold around 88 per cent of all vehicles in 2022). For the purposes of this analysis, all vehicles sold by 'volume' brands were classified as 'volume' sales (even though some vehicle models or model variants sold by these brands may be considered 'premium' vehicles); and similarly, all sales by 'premium' brands are classified as 'premium'.

Figure 37: Share of BEV sales for 'premium' and 'volume' brands, 2017–2022



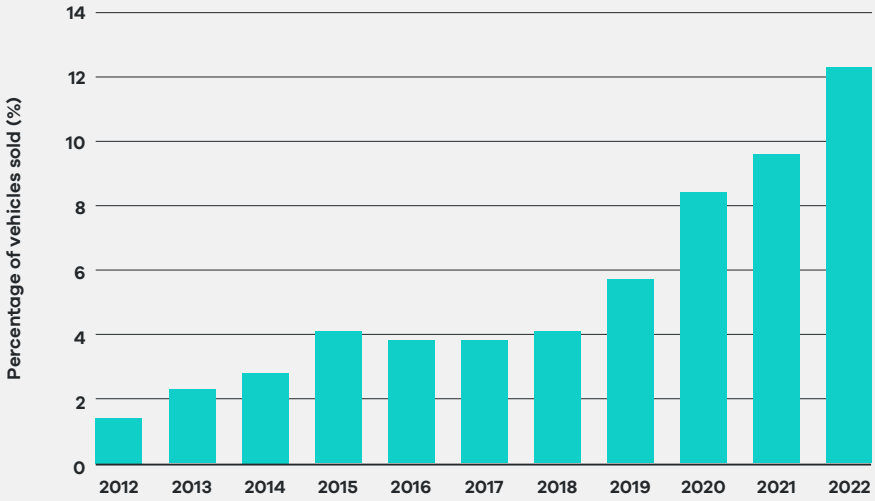
Source: NTC analysis based on classification of 'premium' and 'volume' brands provided by the FCAI, VFACTS sales data, and Tesla data from state- and territory-based registration systems (with Tesla 'sales', calculated based on the annual difference in the number of registered vehicles for all years prior to 2022, included among the 'premium' brands).

Green vehicles

Two alternative measures of 'green' vehicles are reported on in this section. The first continues the approach of previous reports, where a 'green' vehicle has been defined as a vehicle whose carbon dioxide emissions intensity does not exceed 120 g/km. In Australia, the proportion of green cars sold in 2022 was 12.3 per cent of total sales (compared with 9.6 per cent in 2021). **Figure 38** shows 'green' vehicle sales as a proportion of total new light vehicle sales between 2012 and 2022.

Table 27 in the appendix provides more detail on green vehicles sold in Australia in 2022, based on this measure of 'green' vehicles.

Figure 38: 'Green' vehicle sales as a percentage of total new light vehicles sold, 2012–2022



An alternative measure of 'green' vehicles is to compare each vehicle model's emissions intensity to its limit curve and record the share of vehicles receiving the different super-credit weightings under the FCAI's voluntary emissions standard methodology, as shown in **Figures 39** and **40**, for MA and MC+NA, respectively.

Around 10 per cent of all vehicles in the MA category received a super-credit weighting above 1 in 2022, which is up by around 2 percentage points compared with the previous year and approximately the same as the percentage in 2020. However, in 2022 more than half of these were battery electric vehicles and received a super-credit weighting of 3 sales, whereas in earlier years a large majority of these received a 1.5 super-credit weighting (where emissions are between one-third and two-thirds of the limit curve). Super-credit weightings of 1.5, 2 and 3 were attained by 3.9, 0.8 per cent and 5.1 per cent of sales, respectively, in the MA category. For the MC+NA category, 97.6 per cent of vehicle sales did not have a super-credit weighting of above 1 in 2022 (that is, the emissions intensity was above two-thirds of the limit curve), whereas in 2020 this figure was 99.9 per cent. In each of the past two years, the vast majority of 'green' vehicles in the MC+NA category under this measure have been of the Toyota KLUGER HYBRID.

Figure 39: Alternative measure of 'green' vehicles using the FCAI super-credits for the MA category (%), 2020–2022

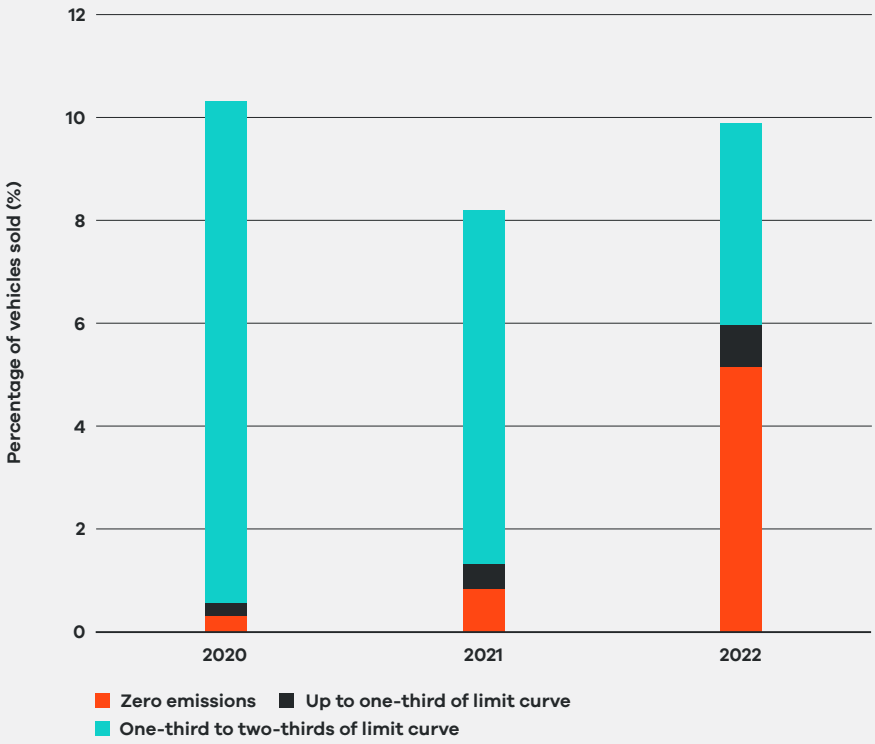
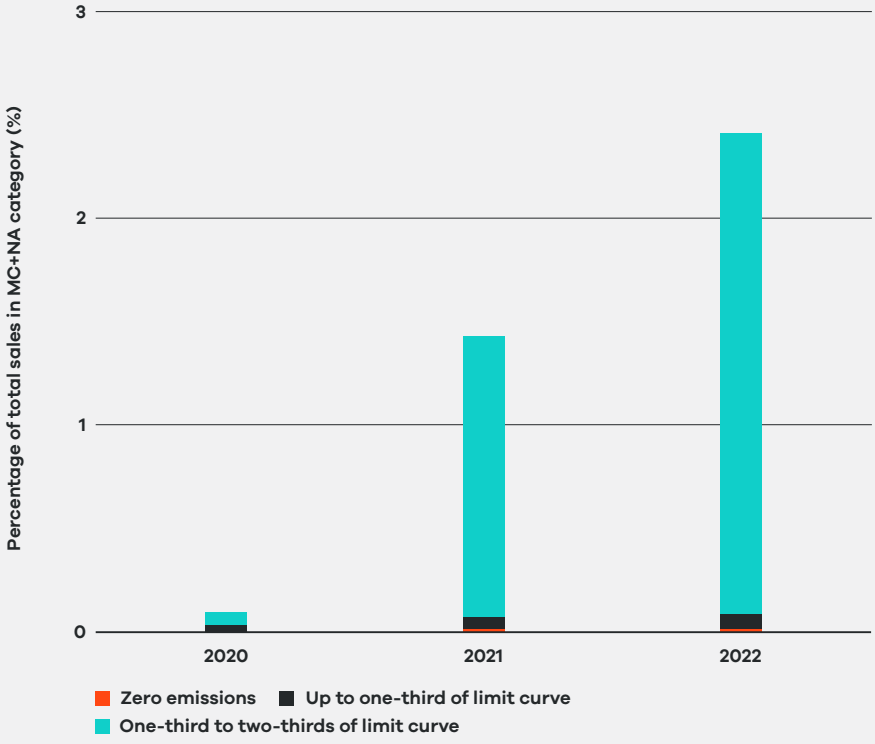
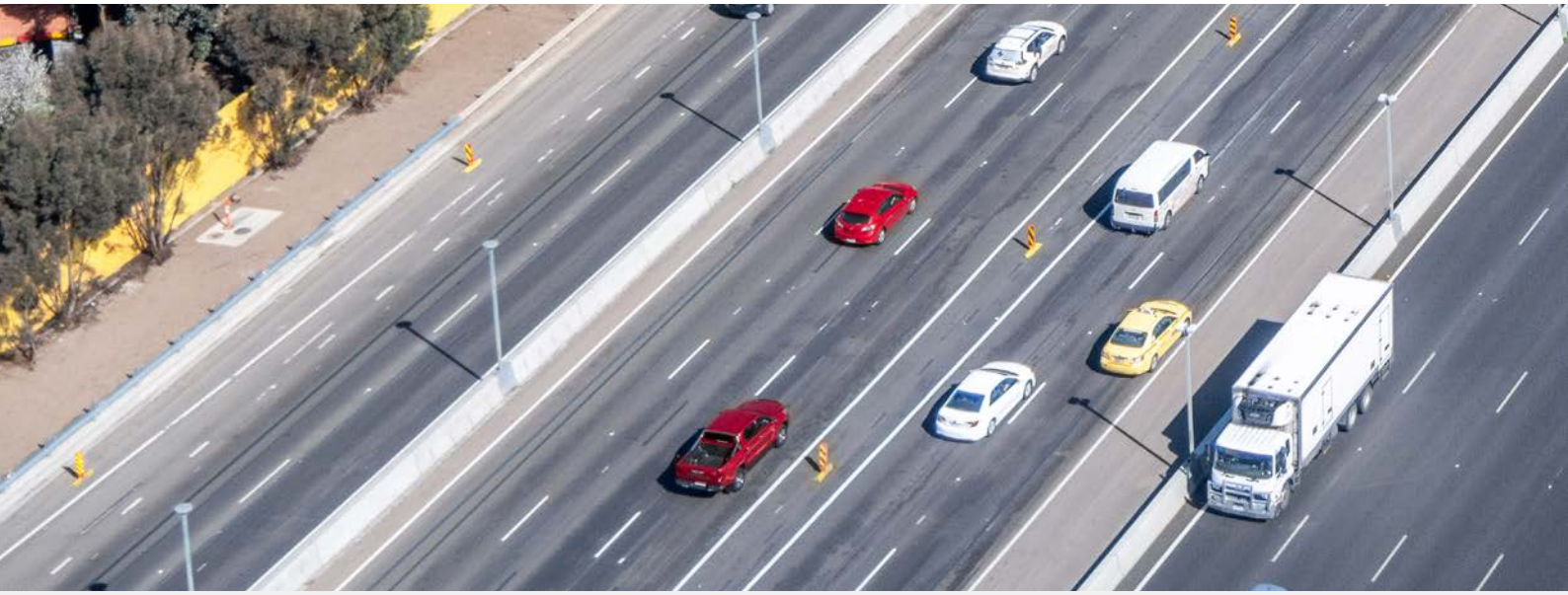


Figure 40: Alternative measure of 'green' vehicles using the FCAI super-credits for the MC+NA category (%), 2020–2022



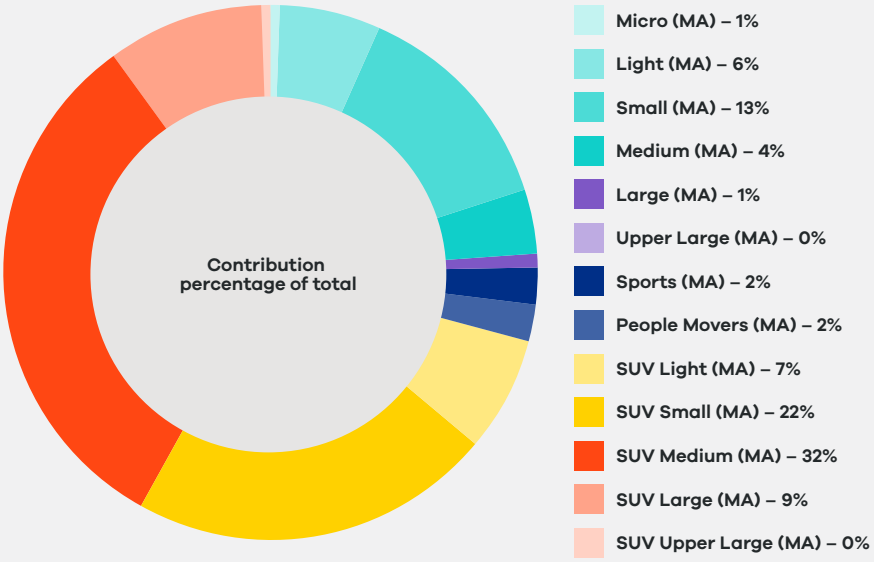


Contribution of each segment to the average emissions intensity in each category

This section shows the percentage contribution of each segment to the average vehicle emissions intensity figure in both the MA and MC+NA categories. The 'contribution' for a segment is calculated as: the number of vehicle sales in the segment, multiplied by the weighted average emissions intensity figure for that segment (as reported in **Tables 9** and **10** in the appendix), divided by total vehicle sales.[17] The sum of the 'contributions' from each segment is the overall average emissions intensity in each category. A segment will make a larger contribution to the overall average emissions intensity the higher the number of vehicle sales in that segment and/or the higher the average emissions intensity of vehicles in that segment.

Figure 41 displays the percentage 'contributions' for the MA category and shows that the five segments of SUVs contributed around 70 per cent of the overall emissions intensity for the MA category. 'SUV Medium' was the segment with the largest contribution (32 per cent), with 'SUV Small' second largest with 22 per cent, ahead of the 'Small' segment which contributed 13 per cent.

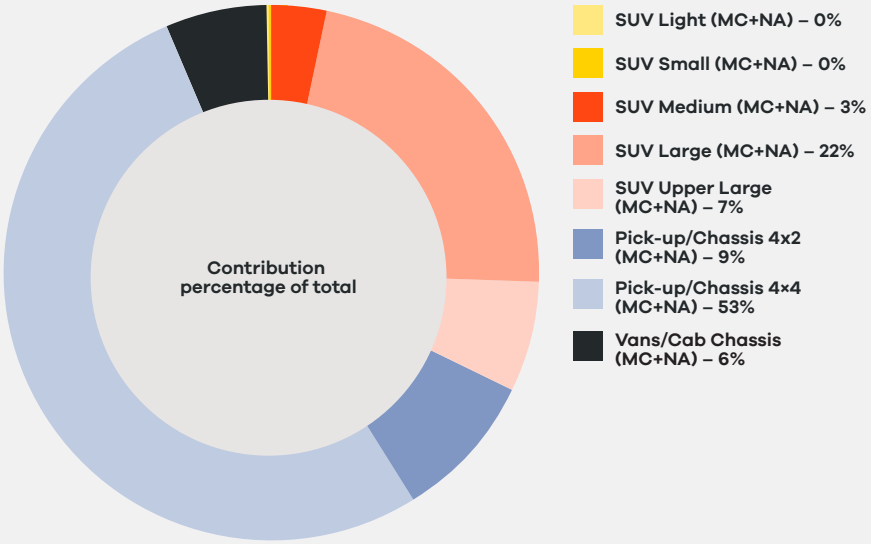
Figure 41: Percentage contribution to overall emissions intensity by segment for the MA category, 2022



17 Both sales figures in these calculations include the use of super-credits.

Figure 42 displays the percentage 'contributions' for the MC+NA category. More than half of the contribution for this category came from the 'Pick-up/Chassis 4×4' segment (53 per cent), while 'SUV Large' was the second highest with 22 per cent.

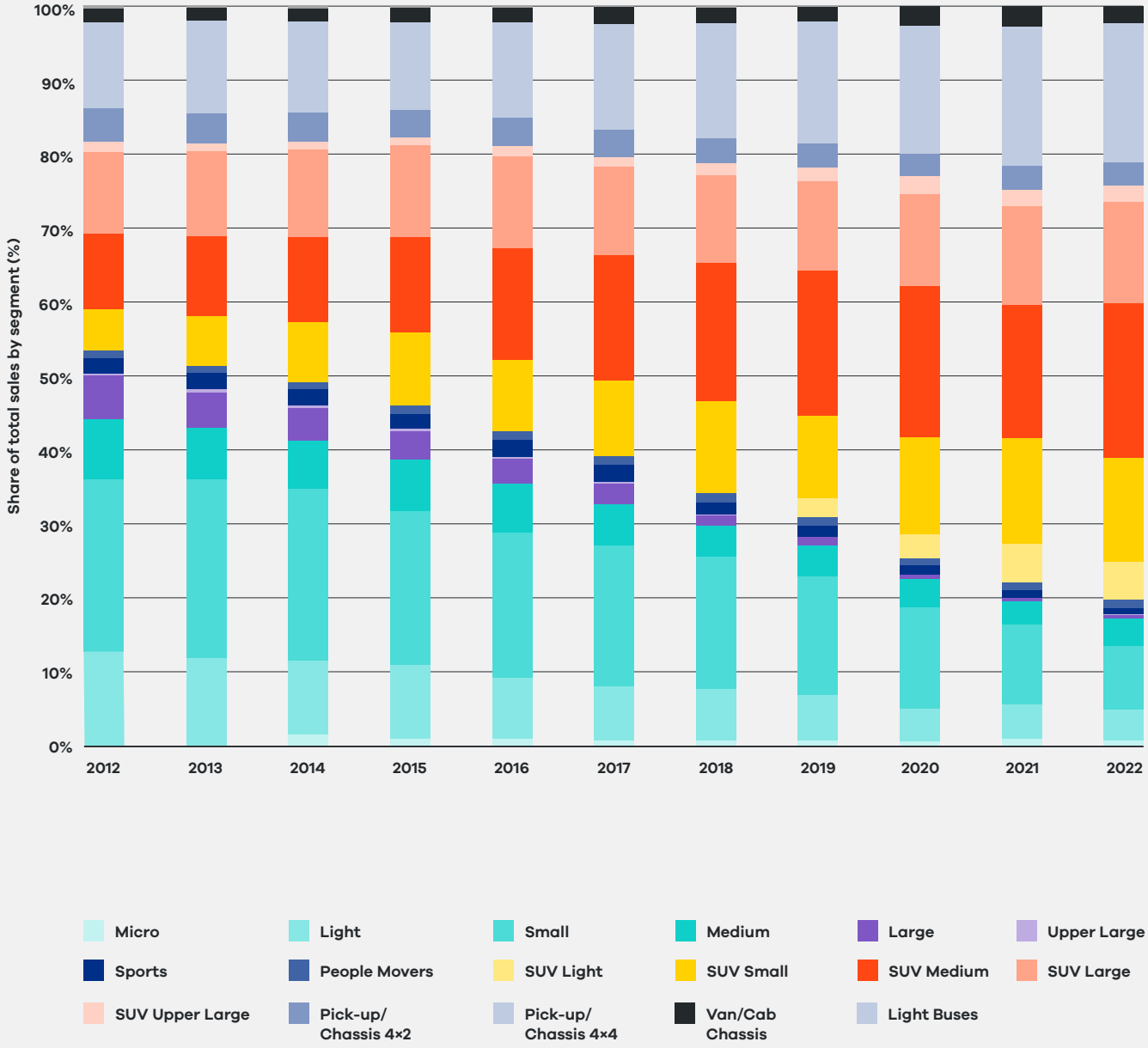
Figure 42: Percentage contribution to overall emissions intensity by segment for the MC+NA category, 2022



There has been a significant transition in sales for different segments of Australia's vehicle fleet since 2012, as shown in **Figure 43**. There has been a large shift of sales away from segments in the 'Passenger motor vehicles' section of **Table 1**, and a shift towards SUVs and light trucks. While sales of the five segments of SUVs represented 28 per cent of total sales in 2012, they had increased to over half (56 per cent) of total sales in 2022. Among the 'Passenger motor vehicles' segments, the share of total sales in the 'Light' and 'Small' segments decreased fairly consistently over the same time period. Sales in the 'Small' segment represented 23 per cent of all sales in 2012 but had decreased to 9 per cent by 2022; the 'Light' segment's share of total sales decreased from 13 per cent in 2012 to 4 per cent in 2022.

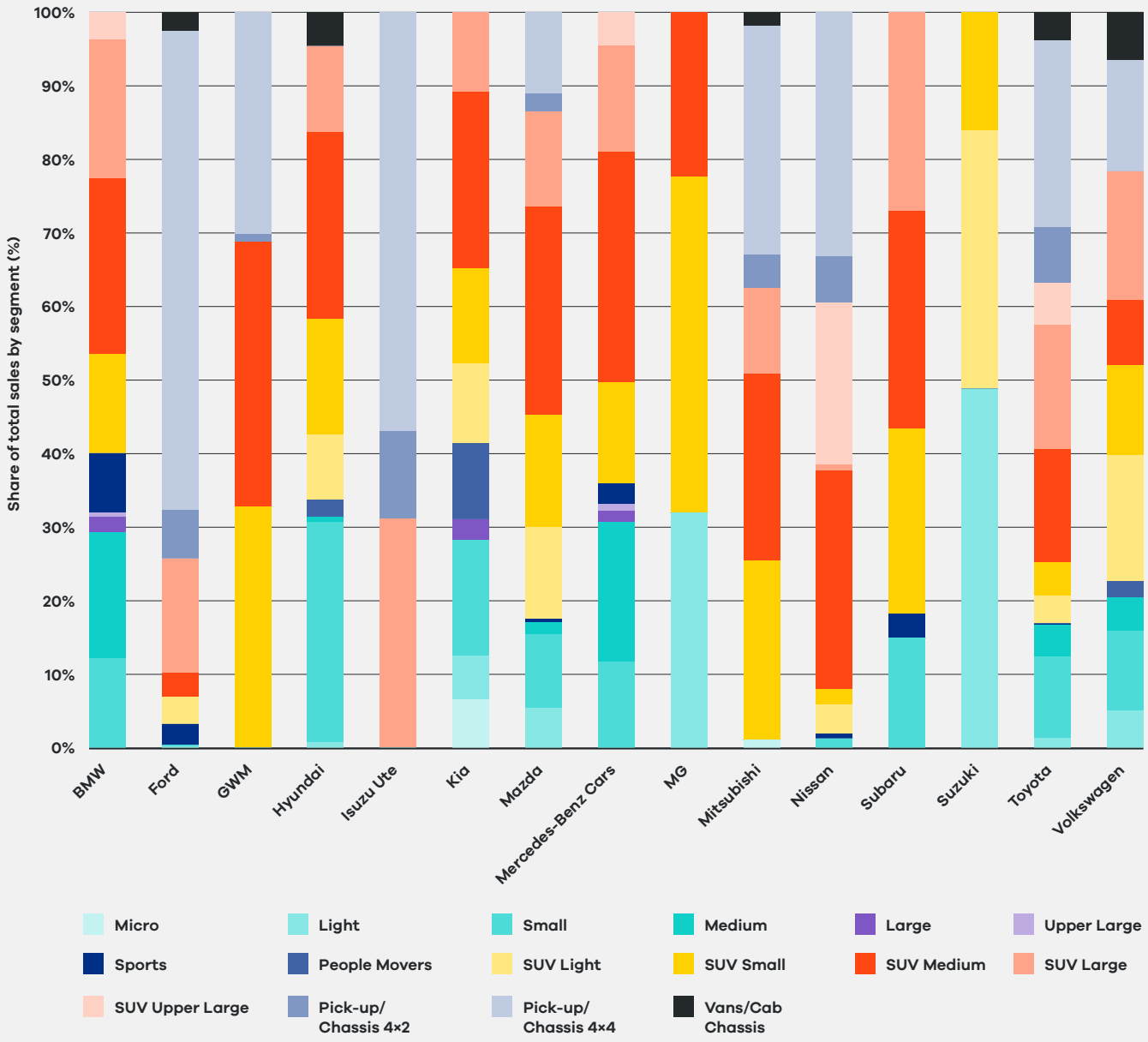
Between 2012 and 2022, the average emissions intensity decreased in all segments except 'Sports', and in most segments there was a decrease by at least 6 per cent. However, the shift in the mix of the fleet may help explain why the national average emissions intensity figure has declined relatively slowly in recent years (as shown in **Figure 3**), despite the relative emissions intensity improving in most segments.

Figure 43: Vehicle sales by segment, 2012–2022



All of the top 15 selling manufacturers in 2022 sold more than half of their vehicles in the SUV or Pick-up/Chassis segments, as shown in **Figure 44**. Five of these manufacturers sold over 95 per cent of their vehicles in these segments: Ford, GWM, Isuzu Ute, Mitsubishi and Nissan. Suzuki had the lowest SUV and ute share with 51 per cent, with all of its other sales in the 'Light' segment (where Suzuki sold almost one-quarter of all the segment's vehicles).

Figure 44: Share of total sales by segment for top 15 selling manufacturers, 2022



4. Emissions in Australia and other countries

This section compares data from Australia and other countries.

Different methods have been used worldwide to calculate vehicle emissions which makes direct comparisons difficult. The three main methods are from Europe, Japan and the United States. Each method can give a different emissions result when applied to the same vehicle.

An international test method, called the Worldwide Harmonised Light Vehicle Test Procedure (WLTP), has been developed to replace these three different regional test methods and to better reflect on-road emissions performance. The WLTP began to be used in Europe from 2019.

Australia currently uses the previous European method, the New European Driving Cycle (NEDC), and will continue to do so until the United Nations Working Party on Pollution and Energy agrees to adopt the WLTP method. Beginning in 2019, European vehicle emissions reporting must be done using the WLTP method, but NEDC results were still reported alongside WLTP results during the initial years after implementation. However, the European Environment Agency notes that 'from 2021 onwards, the WLTP will replace fully the NEDC for the purpose of the CO2 emission standards' (EEA, 2023b), and the published European dataset for 2022 has many records with missing NEDC values. For these reasons, the European data reported in this chapter is based on WLTP emissions results.

The WLTP methodology has been noted to be 'closer to reality and more demanding than the NEDC' (Mercedes-Benz, 2022), with WLTP estimated to increase type-approval emissions results by approximately 25 per cent compared with NEDC (Pavlovic, et al., 2018).

The discussion in the previous two paragraphs means that some caution should be exercised when comparing the results for Australia and Europe in this chapter, as the results are based on two different testing regimes. Another reason for caution is that the 2022 European data used in the graphs is provisional rather than final data.[18]

The published data from Europe separates passenger cars from light commercial vehicles.[19] To enable comparisons between Australian and European data, we separated the Australian data into passenger vehicle and light commercial vehicle groups as defined in section 1. The Australian groupings are consistent with the European Commission Regulation (No 443/2009, Annex II).

Emissions from new vehicles in European countries tend to be lower than Australia. There are a number of reasons for this, including fewer measures in Australia to reduce carbon dioxide emissions and emissions intensity. The European measures are shown in **Table 7**. A summary of the European measures was published by the European Conference of Ministers of Transport (2007). Governments in a number of European countries have provided incentives or levied taxes to try to reduce carbon dioxide emissions from road transport; see ETCAPCCM (2018) for a summary.[20]

Consumer preferences also contribute to the difference in emissions performance between Australia and Europe. For example, European consumers purchase more small vehicles compared with Australian consumers and prefer manual transmission to automatic transmissions.[21]

18 In reporting for previous years, the NTC has generally used the latest available final dataset published by the EEA (which was typically available by the end of June). However, at the time of publication of this report the EEA has not yet published the final European data for 2021.

19 In Europe, the passenger cars category includes SUVs.

20 The impact of incentives and taxes on encouraging electric vehicle uptake is probably most evident by examining PHEV sales within the Netherlands between 2010 and 2017. From 2010 to 2013 they exempted PHEVs from taxation, before increasing the tax to the still reduced rate of 7 per cent. This encouraged PHEV sales to increase to 9.2 per cent of all new vehicle sales by 2015. However, by 2017 they had removed this incentive, taxing PHEVs at the same rate (22 per cent) as other conventional vehicles. As a consequence, by 2017 PHEVs had reduced to just 0.3 per cent of all new sales within the Netherlands (EEA, 2019).

21 Data from the International Council on Clean Transportation Europe shows that 50 per cent of new passenger car sales/registrations in the 27 European Union countries in 2020 had automatic transmissions (ICCT, 2021). By contrast, FCAI data shows that around 98 per cent of vehicle sales in the MA and MC categories in Australia in 2022 were either automatic or continuously variable transmission.

The National Transport Commission continues to collaborate with governments & industry.

Table 7: European measures that have reduced carbon dioxide emissions from motor vehicles

European measure	Intent of measure
High fuel prices through higher fuel taxes	Encourages consumers to purchase fuel-efficient vehicles to lower running costs
Low diesel taxes compared with petrol taxes	Encourages consumers to purchase diesel vehicles to reduce running costs
Regulating carbon dioxide emissions from motor vehicles (passenger vehicle standards were phased in from 2012, with full implementation from 2015)	Provides manufacturers with targets for emissions reductions
Vehicle excise duties	Encourages consumers to purchase low carbon dioxide-emitting vehicles
Direct cash incentives for consumers to purchase low carbon dioxide-emitting vehicles	Encourages consumers to purchase low carbon dioxide-emitting vehicles as it lowers the purchase price of the vehicle
Consumer information on vehicles	Provides information to consumers about relative carbon dioxide efficiency and the annual running costs of new vehicles
Consumer information in printed advertisements	Provides information to consumers about relative carbon dioxide efficiency and the annual running costs of new vehicles

The next two parts of this section compare Australian and other countries' carbon dioxide emissions intensity data for passenger and light commercial vehicles separately. These international comparisons use European data from the European Environment Agency (EEA, 2023a). The final two parts of this section provide: an alternative international comparison using data from the International Energy Agency (IEA); and a comparison of electric vehicles sales and electric vehicle stock shares in different countries, also based on IEA data.

Passenger vehicles: average emissions intensity by country for 2022

The breakdown for average carbon dioxide emissions intensity for new passenger vehicles by country for 2022 is shown in **Figure 45**. As noted above, key caveats in interpreting this and the following graphs are that the European emissions data is based on the WLTP methodology, and the European data for 2022 is provisional data. Another difference is that the Australian data reflects new vehicle sales, while the European data reflects new vehicle registrations.

In 2022, emissions intensity for passenger cars in European countries ranged from 18 g/km in Norway to 142 g/km in Estonia. The overall average emissions intensity for the 29 European countries was 108 g/km. Australia's emissions intensity was significantly higher at 144 g/km (based on the combined results for the MA and MC categories, and applying super-credit weightings to sales).

Figure 45: Average emissions intensity of passenger vehicles in Australia and Europe, 2022

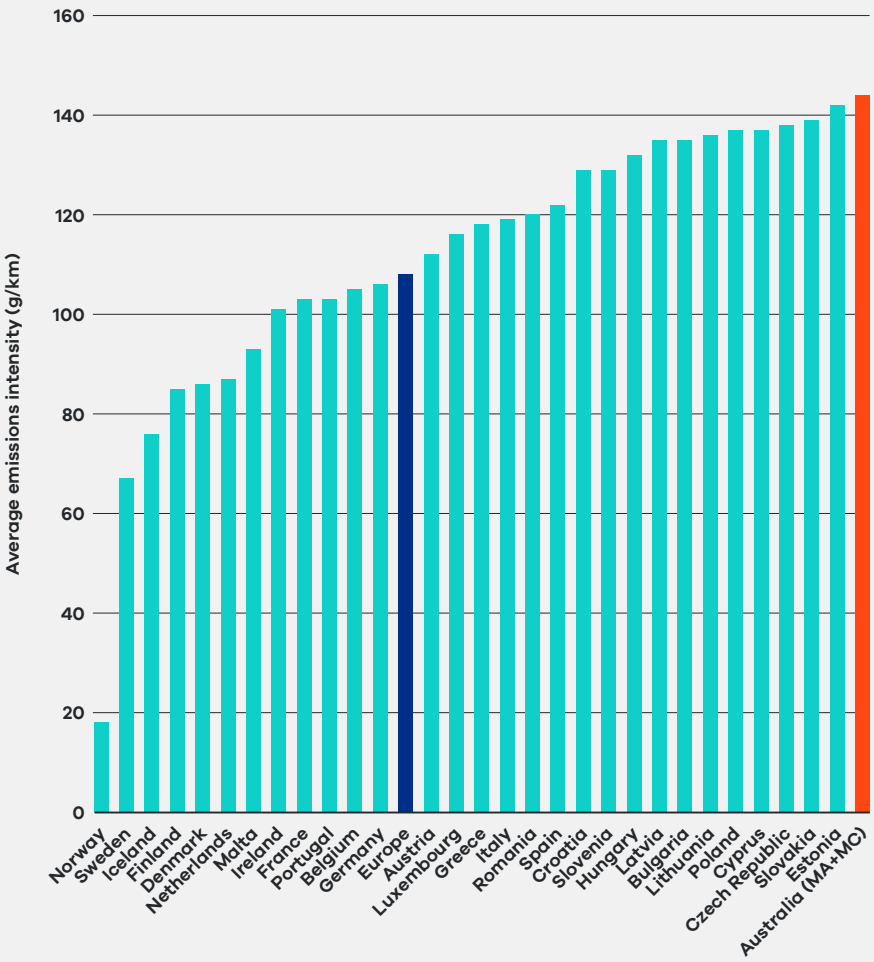
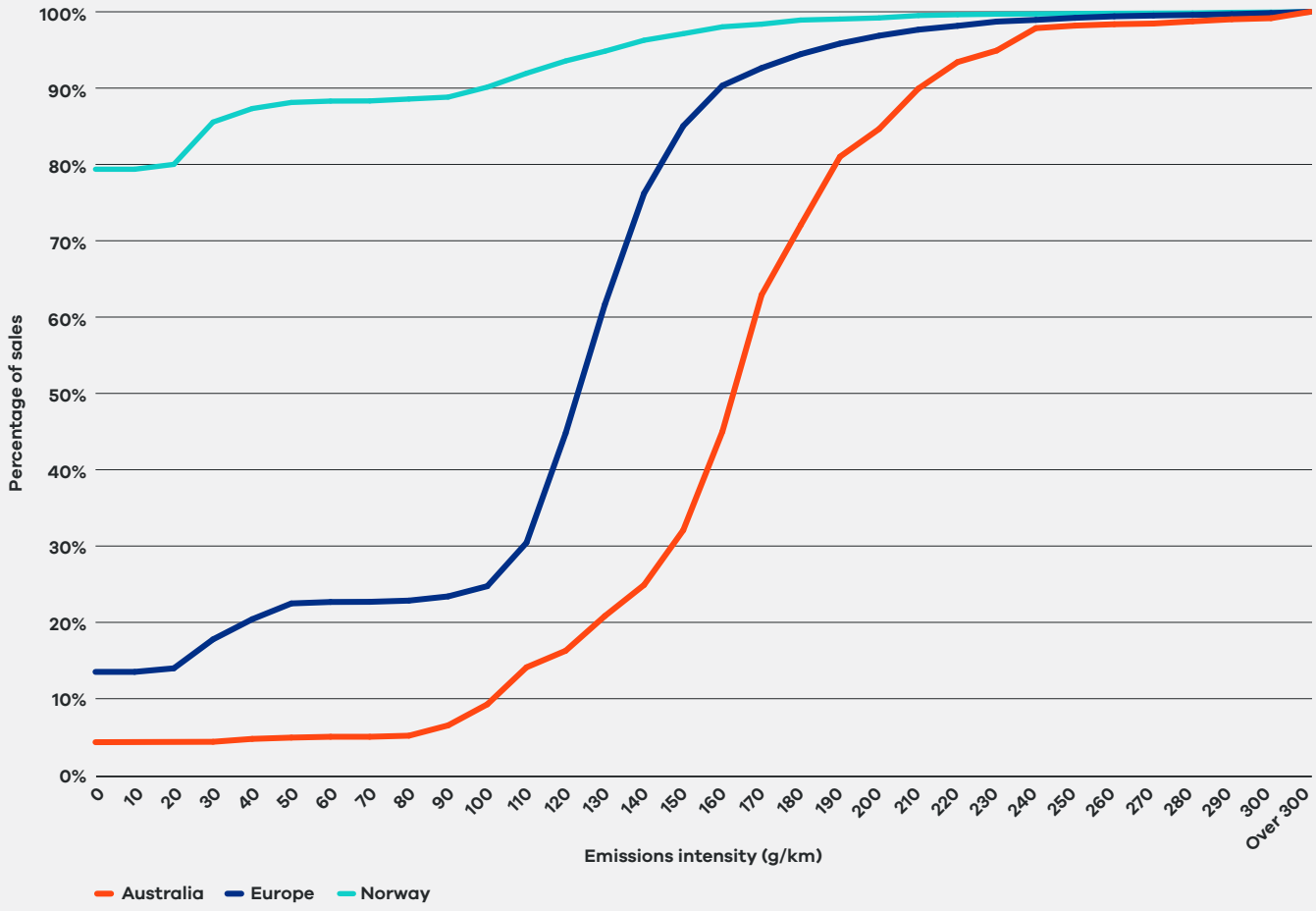


Figure 46 compares the distribution of the emissions intensity among new passenger car sales in Australia[22] and Europe, in intervals of 10 g/km.[23]Norway is also shown as a comparator. Each line in the graph shows the percentage of vehicles sold with an emissions intensity *less than or equal to* a given emissions intensity value on the horizonal axis. The graph shows that around 9 per cent of Australia's passenger car sales in 2022 had an emissions intensity of 100 g/km or less, whereas 25 per cent of European and 90 per cent of Norwegian passenger vehicles were at or below this emissions intensity figure. The vast majority of European new passenger cars (90 per cent) had an emissions intensity of 160 g/km or less, whereas in Australia just 45 per cent were below this mark – these numbers are almost unchanged from the previous year.

Figure 46: Cumulative percentage of passenger vehicle sales relative to emissions intensity in Australia and Europe, 2022



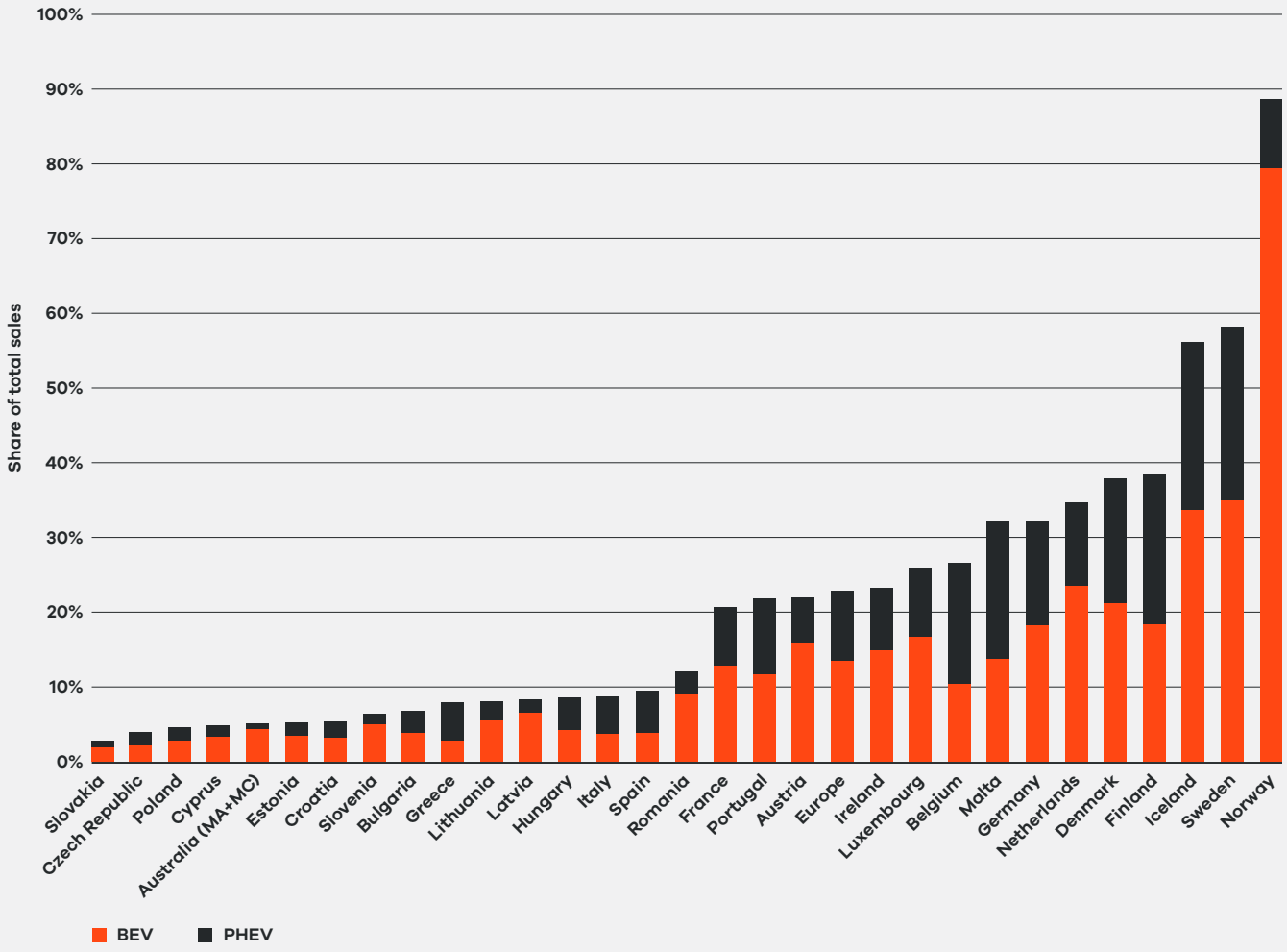
22 For the MA and MC categories combined.

23 Vehicles sold with an emissions intensity above 300 g/km have been grouped into a single 'Over 300' category. This is due to the relatively small number of vehicles in this emissions range and the long 'tail' of the distribution, reaching 486 g/km for Australia, 730 g/km for Europe and 456 g/km for Norway.

The share of electric vehicles sold, relative to total sales, varies considerably across countries in Europe. **Figure 47** plots the share of electric vehicles – separately for BEVs and PHEVs – in each European country, as well as the average across the 29 European countries and in Australia[24]. In Norway, around 89 per cent of new passenger vehicles are electric vehicles, with BEVs representing almost 80 per cent of total new registrations. The uptake of electric vehicles within Norway has been encouraged by exempting electric vehicles from registration and circulation taxes that apply to other conventional vehicles (EEA, 2019).

Slovakia had the lowest share of new electric passenger vehicles at 2.7 per cent, with Australia's figure slightly higher at 5.1 per cent (which was also higher than the Czech Republic, Poland and Cyprus). Overall, the share of electric vehicles in new passenger car registrations was below 10 per cent in around half of the European countries shown in the graph, with the other half almost all having shares above 20 per cent.

Figure 47: Electric vehicle share of new passenger car registrations/sales (%) in Australia and Europe, 2022

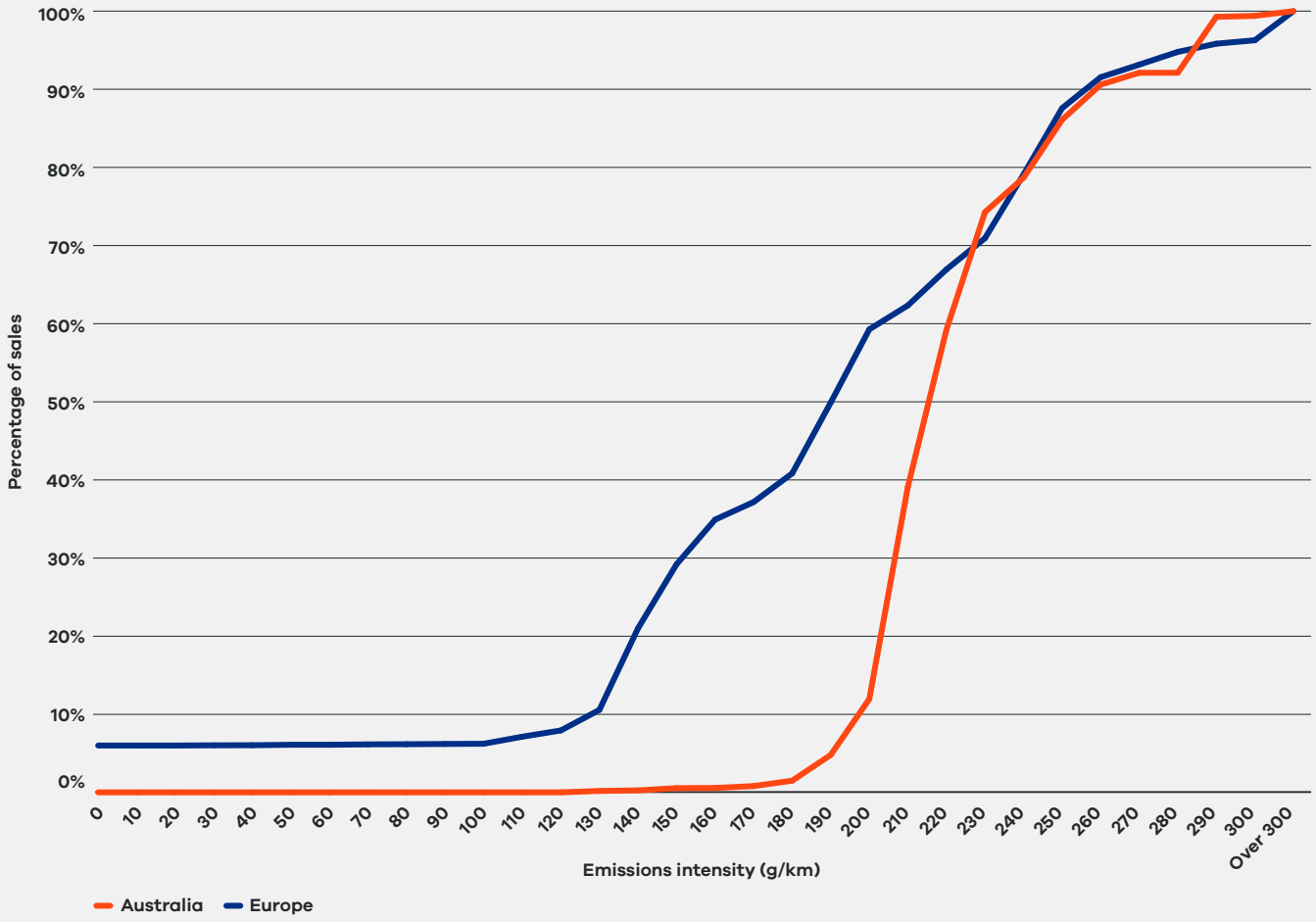


24 Using the MA and MC categories.

Light commercial vehicles: emissions intensity for 2022

Figure 48 compares the distribution of the emissions intensity among new light commercial vehicle sales in Australia[25] and Europe, in intervals of 10 g/km.[26] The graph shows that around 12 per cent of Australia's light commercial vehicle sales in 2022 had an emissions intensity of 200 g/km or less, whereas around 59 per cent of new European light commercial vehicles were at or below this emissions intensity.

Figure 48: Cumulative percentage of light commercial vehicles sales relative to emissions intensity in Australia and Europe, 2022



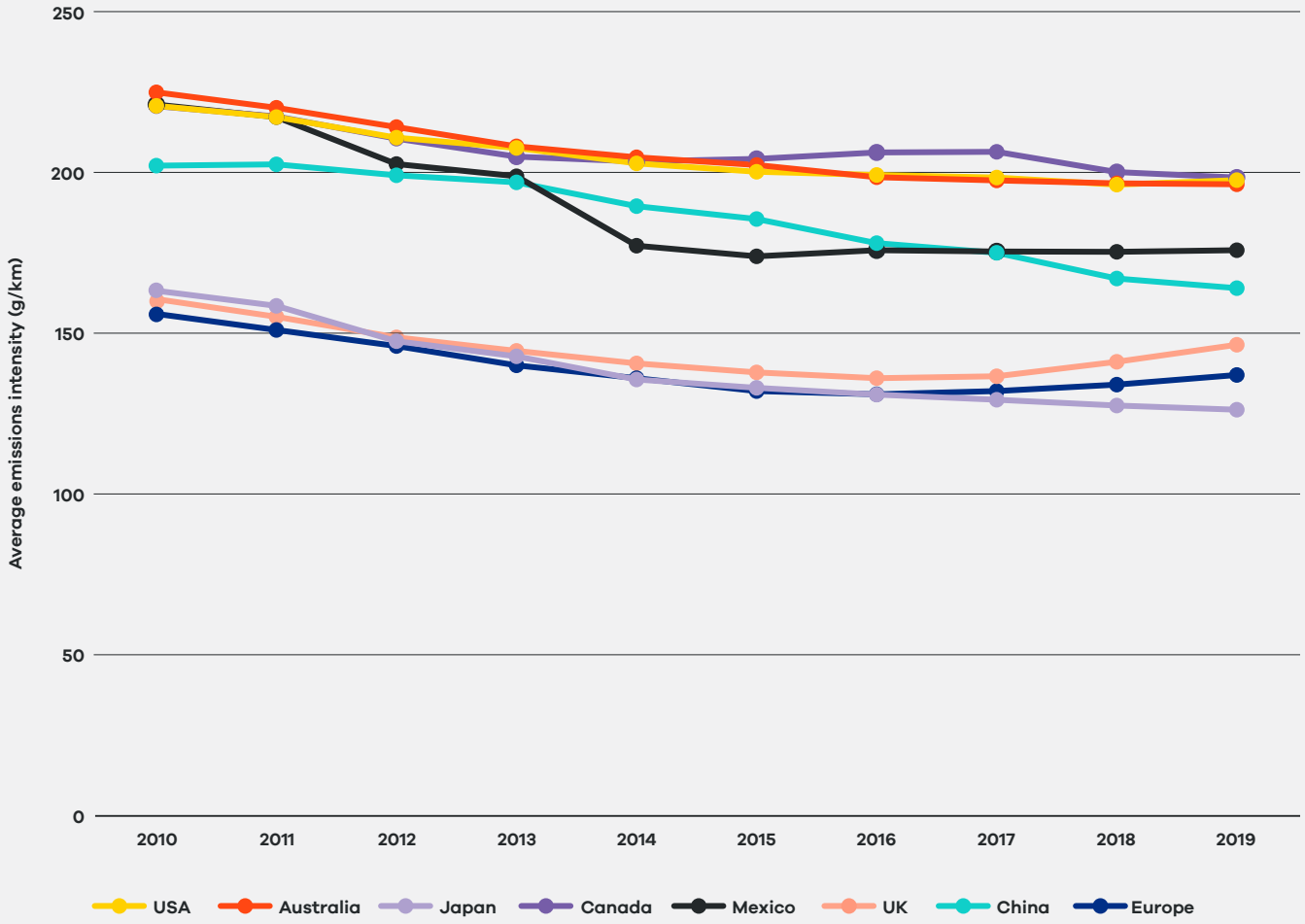
25 For the NA category.

26 Vehicles sold with an emissions intensity above 300 g/km have been grouped into a single 'Over 300' category. This is due to the relatively small number of vehicles in this emissions range and the long 'tail' of the distribution, reaching 333 g/km for Australia and 999 g/km for Europe.

International comparison of average emissions intensity using IEA data

The NTC has compared the average emissions intensity for new vehicle sales in various countries from 2010 to 2019 (the latest available year of data), using data published as part of the IEA's *Global Fuel Economy Initiative 2021* (IEA, 2021a; IEA, 2021b). Due to the various testing regimes in place in different regions of the world, the IEA converted each country's emissions intensity results in its database to WLTP (IEA, 2021a). **Figure 49** compares the average emissions intensities for selected countries. Note that the data in the graph is identical to what was published in our most recent report (on 2021 vehicle sales), since the IEA's report is only published biennially, but has been included again in this report to provide a more global comparison for Australia. It shows that all countries' new vehicle sales had a lower average emissions intensity in 2019 than 2010. However, most countries saw the emissions intensity reductions achieved during the early years stabilise towards the end of this time period, and emissions intensity actually increased in European Union (EU) countries.[27] The emissions intensity for Australia was broadly comparable with Canada and the USA, and among the highest of all countries in the IEA's dataset. Japan and European Union countries tended to have the lowest emissions intensities, with Japan's emissions intensity around 36 per cent below Australia's in 2019.

Figure 49: International comparison of emissions intensity of light-duty vehicle sales using IEA data, 2010-2019



Source: NTC analysis based on IEA data (IEA, 2021a; IEA, 2021b).

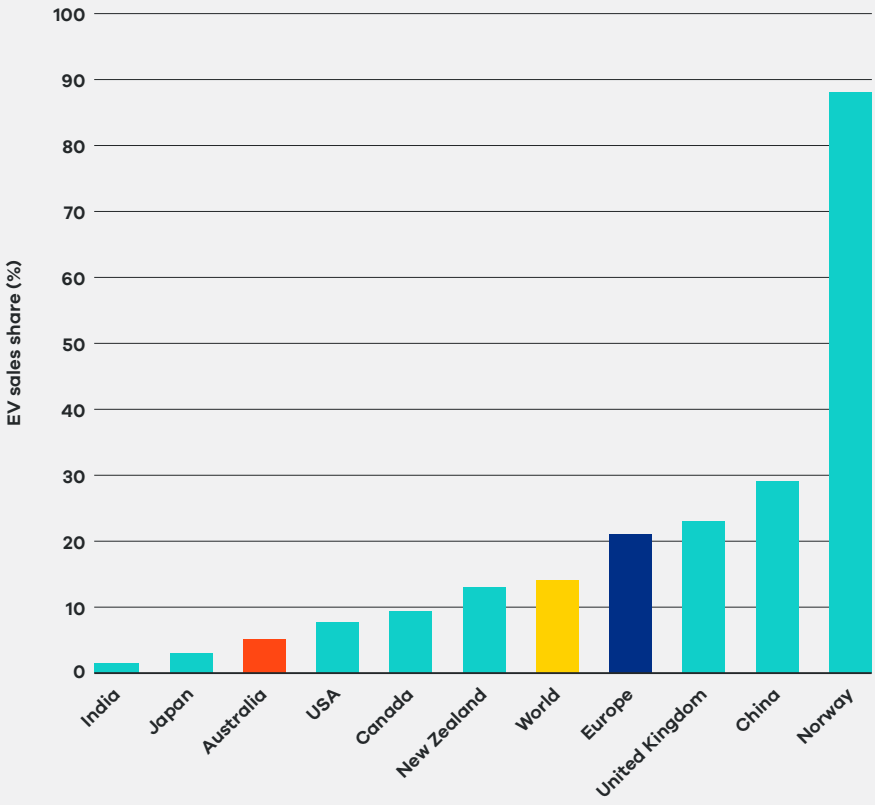
27 The IEA attributes this result to: 'A peculiarity of the EU CO_2 emissions standards is that the targets are set at five-year intervals. Manufacturers have taken advantage of this leeway, which resulted in three consecutive years of increased average emissions intensity in vehicle sales (2017-2019).' (IEA, 2021a, p. 30).

International comparison of EV sales and stock shares using IEA data

The NTC has compared electric vehicle passenger car data for Australia and several other countries using data from the IEA's Global EV Outlook 2023 (IEA, 2023). We have chosen countries as comparator countries for the graphs based on some of the following factors: the market size; being a developed economy; being a large country geographically, being a right-hand drive market; and/or being a leader in the EV transition. The IEA's data enables comparisons of both annual EV sales, and the stock of EVs (that is, the total number of them on the road).

Figure 50 compares electric vehicle sales as a share of total sales in 2022 for selected countries. Australia's EV sales share of 5.1 per cent is higher those in India (1.5 per cent) and Japan (3 per cent). However, it is significantly below the world average of 14 per cent, as well as countries such as the USA (7.7 per cent), Canada (9.4 per cent) and New Zealand (13 per cent). China's share of 29 per cent is more than twice the world average, although still below leading European countries such as Norway (and several other European countries that are shown separately in **Figure 47**).

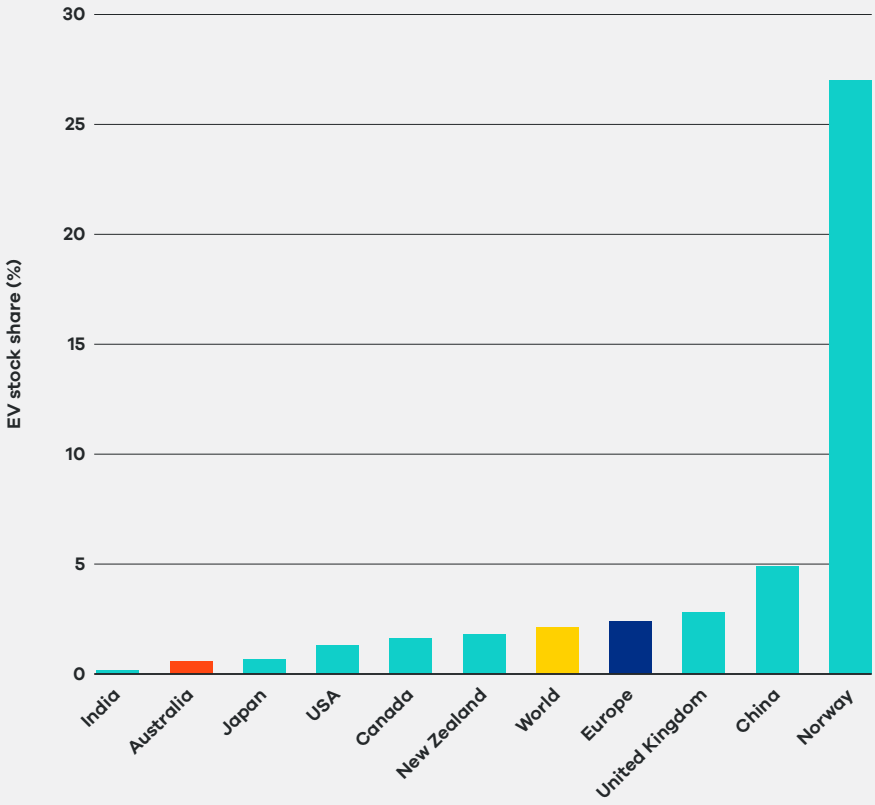
Figure 50: International comparison of share of electric passenger car sales in selected countries (%), 2022



Source: NTC analysis based on IEA data (IEA, 2023).

Figure 51 compares the stock of electric vehicles as a share of the total vehicle stock (or entire passenger car parc) in 2022 in selected countries. Australia's EV stock share is 0.59 per cent, which is lower than all of the other comparator countries shown with the exception of India (0.16 per cent). The world average is 2.1 per cent and Europe's average is 2.4 per cent, with the USA (1.3 per cent) and New Zealand (1.8 per cent) being comparator countries with higher EV stock shares than Australia. In China around one in 20 cars (4.9 per cent) on the road are electric, while in Norway this figure is around one in 4 cars (27 per cent).

Figure 51: International comparison of share of electric passenger car stock in selected countries (%), 2022



Source: NTC analysis based on IEA data (IEA, 2023).

References

Australian Broadcasting Corporation (ABC) 2021, Which car brands are going all electric and when?, viewed on 15 August 2022, <**https://www.abc.net.au/news/2021-11-10/which-cars-going-all-electric-and-when/100529330**>.

Australian Broadcasting Corporation (ABC) 2023, Looking to buy a used EV? Here's why they're so expensive — and when they'll be more affordable, viewed on 1 August 2023, <**https://www.abc.net.au/news/science/2023-07-27/heres-when-used-second-hand-electric-vehicles-evs-get-affordable/102610276**>.

Australian Government 2021, Vehicle Standard (Australian Design Rule – Definitions and Vehicle Categories) 2005, viewed on 17 June 2021, <**https://www.legislation.gov.au/Details/F2021C00095**>.

Bureau of Infrastructure and Transport Research Economics (BITRE), 2023a, *Road Vehicles, Australia, January 2023*, Canberra: BITRE.

Bureau of Infrastructure and Transport Research Economics (BITRE), 2023b, Road Vehicles, Australia, January 2022, viewed on 24 July 2023, <**https://data.gov.au/data/dataset/road-vehicles-australia-january-2022**>.

CNN Business 2021. Why electric cars are so much heavier than regular cars, viewed on 21 July 2023, <**https://edition.cnn.com/2021/06/07/business/electric-vehicles-weight/index.html**>.

Department of Climate Change, 2009. *National Greenhouse Accounts (NGA) Factors*, Canberra: Department of Climate Change.

European Topic Centre on Air Pollution and Climate Change Mitigation (ETCAPCCM), 2018, *Vehicle Emissions and Impacts of Taxes and Incentives in the Evolution of Past Emissions*, Bilthoven: ETCAPCCM.

European Environment Agency (EEA) 2019, Fiscal instruments favouring electric over conventional cars are greener, viewed on 16 June 2021, <**https://www.eea.europa.eu/publications/fiscal-instruments-favouring-electric-over**>.

European Environment Agency (EEA) 2023a. Monitoring of CO_2 emissions from passenger cars – Regulation (EU) 2019/631, viewed on 21 July 2023, <**https://www.eea.europa.eu/data-and-maps/data/co2-cars-emission-20**>.

European Environment Agency (EEA) 2023b. CO2 emissions from new passenger cars registered in EU27, Iceland (from 2018) and Norway (from 2019) – Regulation (EU) 2019/631 – Dashboard, viewed on 21 July 2023, <**http://co2cars.apps.eea.europa.eu/**>.

European Conference of Ministers of Transport, 2007. *Cutting transport CO_2 emissions. What progress?*, Paris: European Conference of Ministers of Transport.

Federal Chamber of Automotive Industries (FCAI) 2021a, FCAI segmentation criteria, viewed on 31 May 2021, <**www.fcai.com.au/sales/segmentation-criteria**>.

Federal Chamber of Automotive Industries (FCAI) 2021b, FCAI Releases Brand CO2 Emissions Data, viewed on 31 May 2021, <**https://www.fcai.com.au/news/index/view/news/712**>.

Federal Chamber of Automotive Industries (FCAI) 2021c, CO2 Standard: Rules for Calculating Brand Targets and Assessing Brand Compliance, viewed on 31 May 2021, <**https://www.fcai.com.au/news/publication/view/publication/178**>.

Federal Chamber of Automotive Industries (FCAI) 2022a, FCAI releases brand CO2 emissions data, viewed on 20 May 2022, <**https://www.fcai.com.au/news/index/view/news/761**>.

Federal Chamber of Automotive Industries (FCAI) 2022b, FCAI Releases Three-Point Plan to Drive Lower Carbon Emissions/S&P Global Research Summary, viewed on 15 August 2022, <**https://www.fcai.com.au/news/index/view/news/773**>.

Federal Chamber of Automotive Industries (FCAI) 2023, FCAI Releases 2022 Brand CO2 Emissions Data, viewed on 17 July 2023, <**https://www.fcai.com.au/news/index/view/news/795**>.

International Council on Clean Transportation Europe (ICCT) 2021, *European Vehicle Market Statistics Pocketbook 2021/22*, Berlin: ICCT.

International Energy Agency (IEA) 2021a, *Vehicle Fuel Economy in Major Markets 2005-2019*, Paris: IEA.

International Energy Agency (IEA) 2021b, Global Fuel Economy Initiative 2021: Explore data, viewed on 15 August 2022, <**https://www.iea.org/reports/global-fuel-economy-initiative-2021**>.

International Energy Agency (IEA) 2023, Global EV Data Explorer, viewed on 25 July 2023, <**https://www.iea.org/data-and-statistics/data-tools/global-ev-data-explorer**>.

Mercedes-Benz 2022, WLTP, viewed on 21 July 2022, <**https://www.mercedes-benz.com.au/vans/en/mercedes-benz-vans/wltp-rde/wltp**>.

Pavlovic, J. et al., 2018. How much difference in type-approval CO2 emissions from passenger cars in Europe can be expected from changing to the new test procedure (NEDC vs. WLTP)?. *Transportation Research Part A: Policy and Practice*, Volume 111, pp. 136-147.

Appendix

This appendix provides tables containing the data used in this report.

Table 8: National average emissions intensity for new passenger and light commercial vehicles, 2002–2022

Year	Average CO2 emissions (g/km)	Annual change	Average CO2 emissions - MA (g/km)	Annual change	Average CO2 emissions - MC+NA (g/km)	Annual change
2002	252.4	n/a		n/a		n/a
2003	249.5	-1.1%		n/a		n/a
2004	246.5	-1.2%		n/a		n/a
2005	240.5	-2.4%		n/a		n/a
2006	230.3	-4.2%		n/a		n/a
2007	226.4	-1.7%		n/a		n/a
2008	222.4	-1.8%		n/a		n/a
2009	218.6	-1.7%		n/a		n/a
2010	212.6	-2.7%		n/a		n/a
2011	206.6	-2.8%		n/a		n/a
2012	199.0	-3.7%		n/a		n/a
2013	192.2	-3.4%		n/a		n/a
2014	187.8	-2.3%		n/a		n/a
2015	184.2	-1.9%		n/a		n/a
2016	182.1	-1.1%		n/a		n/a
2017	181.7	-0.3%		n/a		n/a
2018	180.9	-0.4%		n/a		n/a
2019	180.5	-0.2%		n/a		n/a
2020		n/a	149.5	n/a	216.7	n/a
2021		n/a	146.5	-2.0%	212.5	-1.9%
2022		n/a	131.1	-10.5%	212.8	0.1%

N/A – not applicable.

Note: 2020, 2021 and 2022 figures are sourced from the FCAI's voluntary emissions standard (FCAI, 2021b; FCAI, 2022a; FCAI, 2023), and therefore include the impacts of air-conditioning credits and off-cycle credits.

Table 9: Average emissions intensity and annual sales by segment for the MA category, 2021 and 2022

Segment	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
SUV Medium	156	133	-15.0	162,777	200,779
SUV Small	148	140	-5.7	141,410	142,426
Small	144	139	-3.6	109,064	88,244
SUV Light	135	137	1.4	48,894	51,467
SUV Large	190	174	-8.3	52,441	50,553
Light	133	134	0.5	45,732	43,520
Medium	136	58	-57.2	30,601	38,085
People Movers	196	183	-6.9	11,202	12,029
Sports	221	222	0.4	9,939	8,749
Micro	116	116	-0.1	9,528	6,423
Large	146	161	10.8	4,689	4,872
SUV Upper Large	226	222	-1.9	2,459	1,764
Upper Large	214	149	-30.4	798	607
Total	**N/A**	**N/A**	**N/A**	**629,534**	**649,518**

Table 10: Average emissions intensity and annual sales by segment for the MC+NA category, 2021 and 2022

Segment	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
Pick-up/Chassis 4×4	224	224	0.0	189,400	192,433
SUV Large	198	195	-1.9	81,307	89,920
Pick-up/Chassis 4×2	220	222	1.0	32,731	33,405
Vans/Cab Chassis	203	199	-2.4	27,665	24,418
SUV Upper Large	269	271	0.8	19,308	19,849
SUV Medium	169	168	-0.2	17,388	15,104
SUV Light	152	152	0.1	2,856	1,262
SUV Small	193	224	15.9	2,860	1,118
Total	**N/A**	**N/A**	**N/A**	**373,515**	**377,509**

Table 11: Top selling models within segments and comparison with best-in-class model, 2022

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)*	Best-in-class emissions intensity (g/km) *
Micro (MA)	1	Kia	JA PICANTO	5,196	116	7	109
	2	Mitsubishi	MIRAGE	862	109	0	Mitsubishi MIRAGE (petrol)
	3	Fiat	500	231	111	2	
	4	Fiat	ABARTH	134	137	26	
Light (MA)	1	MG	MG3	15,672	159	N/A	0
	2	Suzuki	BALENO	6,125	126	N/A	MINI COOPER (electric)
	3	Mazda	200	5,146	123	N/A	
	4	Kia	YB RIO	4,576	141	N/A	
	5	Suzuki	SWIFT	4,405	124	N/A	
	6	Toyota	YARIS	1,999	114	N/A	
	7	MINI	COOPER	1,651	62	N/A	
	8	Volkswagen	POLO	1,532	119	N/A	
	9	Toyota	YARIS HYBRID	676	76	N/A	
	10	Hyundai	I20	597	157	N/A	
Small (MA)	1	Hyundai	I30	21,166	173	N/A	0
	2	Toyota	COROLLA HYBRID	17,585	92	N/A	Hyundai IONIQ (electric)
	3	Kia	BD CERATO	12,354	166	N/A	
	4	Mazda	300	9,639	148	N/A	
	5	Toyota	COROLLA	7,699	138	N/A	
	6	Volkswagen	GOLF	3,222	143	N/A	
	7	Subaru	IMPREZA	3,013	158	N/A	
	8	Subaru	WRX	2,392	203	N/A	
	9	Audi	A3	1,319	132	N/A	
	10	BMW	118I	865	135	N/A	

Table 11 continued...

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)*	Best-in-class emissions intensity (g/km) *
Medium (MA)	1	Tesla	MODEL 3	10,877	0	N/A	0
	2	Toyota	CAMRY HYBRID	7,654	102	N/A	Tesla MODEL 3 (electric)
	3	Toyota	CAMRY	1,874	155	N/A	
	4	Mazda	600	1,511	170	N/A	
	5	Mercedes-Benz Cars	C200	1,506	157	N/A	
	6	Polestar	2	1,480	0	N/A	
	7	Mercedes-Benz Cars	C300	1,328	164	N/A	
	8	BMW	330I	1,236	159	N/A	
	9	Skoda	OCTAVIA	963	147	N/A	
	10	Volkswagen	PASSAT	759	162	N/A	
Large (MA)	1	Kia	CK STINGER	2,242	238	N/A	0
	2	Skoda	SUPERB	655	175	N/A	Porsche TAY (electric)
	3	Porsche	TAY	428	0	N/A	
	4	BMW	530D	191	145	N/A	
	5	Audi	A6	154	165	N/A	
	6	Mercedes-Benz Cars	E200 FL	152	180	N/A	
	7	Audi	RS6	122	268	N/A	
	8	Maserati	GHIBLI	117	208	N/A	
	9	BMW	M550I	113	246	N/A	
	10	Mercedes-Benz Cars	E350 FL	94	175	N/A	

Table 11 continued...

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)*	Best-in-class emissions intensity (g/km) *
Upper Large (MA)	1	Mercedes-Benz Cars	S450 4M	95	193	N/A	0
	2	Chrysler	300 LX	78	301	N/A	Mercedes-Benz Cars EQS 53 4M (electric)
	3	Mercedes-Benz Cars	EQS 53 4M	69	0	N/A	
	4	Porsche	97A	60	183	N/A	
	5	BMW	740I	51	178	N/A	
	6	BMW	840I GC	42	180	N/A	
	7	Mercedes-Benz Cars	S450 4M L	31	196	N/A	
	8	Mercedes-Benz Cars	S580 4M L	28	246	N/A	
	9	Bentley	FLYING SPUR	20	274	N/A	
	10	Rolls-Royce	GHOST	14	344	N/A	
Sports (MA)	1	Ford	MUSTANG	1,886	280	108	135
	2	Subaru	BRZ	1,165	209	55	BMW 220I COUPE (petrol)
	3	Porsche	911	547	252	87	
	4	Mazda	MX5	495	162	20	
	5	BMW	M240I X COUPE	301	185	37	
	6	BMW	220I COUPE	287	145	7	
	7	Porsche	982	253	223	65	
	8	Chevrolet	CORVETTE STNGRY	225	313	132	
	9	Toyota	GR86	211	208	54	
	10	BMW	420I COUPE	205	146	8	

Table 11 continued...

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)*	Best-in-class emissions intensity (g/km) *
People Movers (MA)	1	Kia	KA4 CARNIVAL	8,054	172	N/A	0
	2	Hyundai	STARIA	1,721	225	N/A	Mercedes-Benz Vans EQV (electric)
	3	Mercedes-Benz Vans	V-CLASS	568	173	N/A	
	4	Volkswagen	MULTIVAN	468	185	N/A	
	5	Honda	ODYSSEY	414	183	N/A	
	6	LDV	G10	221	270	N/A	
	7	Toyota	GRANVIA	156	211	N/A	
	8	Mercedes-Benz Vans	VALENTE	109	173	N/A	
	9	Volkswagen	CALIFORNIA	86	202	N/A	
	10	Mercedes-Benz Vans	VITO	75	181	N/A	
SUV Light (MA)	1	Mazda	CX3	11,907	144	67	86
	2	Kia	YB STONIC	8,557	151	76	Toyota YARIS CROSSHV (petrol-electric)
	3	Hyundai	VENUE	6,440	165	92	
	4	Toyota	YARIS CROSSHV	6,394	87	1	
	5	Volkswagen	T-CROSS	5,145	123	43	
	6	Suzuki	JIMNY	4,435	158	84	
	7	Ford	PUMA	2,408	121	41	
	8	Toyota	YARIS CROSS	2,038	124	44	
	9	Suzuki	IGNIS	1,878	114	32	
	10	Renault	CAPTUR	1,207	149	73	

Table 11 continued...

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)*	Best-in-class emissions intensity (g/km) *
SUV Small (MA)	1	MG	MG ZS	21,339	163	N/A	0
	2	Mazda	C30	13,891	153	N/A	MG MG ZS EV (electric)
	3	Mitsubishi	ASX	12,751	178	N/A	
	4	Hyundai	KONA	11,538	117	N/A	
	5	Subaru	XV	9,090	158	N/A	
	6	Kia	SP2 SELTOS	8,504	162	N/A	
	7	GWM	HAVAL JOLION	8,219	179	N/A	
	8	Mitsubishi	ECLIPSE CROSS	5,972	133	N/A	
	9	Volvo Car	XC40	5,119	98	N/A	
	10	Honda	HR-V	4,717	140	N/A	
SUV Medium (MA)	1	Mazda	CX5	27,062	171	N/A	0
	2	Toyota	RAV4 HYBRID	26,547	108	N/A	Tesla MODEL Y (electric)
	3	Mitsubishi	OUTLANDER	19,545	173	N/A	
	4	Kia	NQ5 SPORTAGE	18,731	171	N/A	
	5	Hyundai	TUCSON	17,870	171	N/A	
	6	MG	MG HS	9,394	177	N/A	
	7	Tesla	MODEL Y	8,717	0	N/A	
	8	Toyota	RAV4	8,298	142	N/A	
	9	Honda	CR-V	8,122	166	N/A	
	10	Nissan	XTRAIL	7,769	185	N/A	

Table 11 continued...

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)*	Best-in-class emissions intensity (g/km) *
SUV Large (MA)	1	Kia	MQ4 SORENTO	7,889	163	N/A	0
	2	Mazda	CX8	5,932	177	N/A	Kia CV EV6 (electric)
	3	Hyundai	SANTA FE	4,595	167	N/A	
	4	Hyundai	PALISADE	4,000	203	N/A	
	5	Mazda	CX9	3,899	197	N/A	
	6	Volkswagen	TIGUAN ALLSPACE	3,877	193	N/A	
	7	Toyota	KLUGER	2,487	202	N/A	
	8	BMW	X5 XDRIVE30D	2,236	189	N/A	
	9	Skoda	KODIAQ	1,555	181	N/A	
	10	Isuzu Ute	MU-X	1,549	206	N/A	
SUV Upper Large (MA)	1	BMW	X7 XDRIVE30D	608	191	0	191
	2	Mercedes-Benz Cars	GLS400D 4M	356	202	6	BMW X7 XDRIVE30D (diesel)
	3	Mercedes-Benz Cars	GLS450 4M	294	210	10	
	4	BMW	X7 M50I	148	265	39	
	5	Mercedes-Benz Cars	M-AMG GLS63	110	296	55	
	6	Lamborghini	URUS	90	301	58	
	7	BMW	X7 XDRIVE40D	68	210	10	
	8	Mercedes-Benz Cars	GLS600 4M	37	285	49	
	9	Rolls-Royce	CULLINAN	37	345	81	
	10	BMW	X7 M60I	16	277	45	
SUV Light (MC+NA)	1	Suzuki	JIMNY	1,262	152	4	146 Suzuki JIMNY (petrol)

Table 11 continued...

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)*	Best-in-class emissions intensity (g/km) *
SUV Small (MC+NA)	1	Jeep	COMPASS	1,118	224	24	181 Jeep COMPASS (diesel)
SUV Medium (MC+NA)	1	Subaru	FORESTER	10,637	167	128	73
	2	BMW	X3 XDRIVE30I	2,374	180	146	BMW X3 XDRIVE30E (electric-petrol)
	3	BMW	X3 SDRIVE20I	700	166	127	
	4	Land Rover	DISCOVERY SPORT	549	189	158	
	5	BMW	X3 M40I	395	204	179	
	6	BMW	X3 XDRIVE30E	230	73	0	
	7	BMW	X3 XDRIVE30D	93	169	132	
	8	BMW	X3 XDRIVE20D	83	154	111	
	9	Jeep	CHEROKEE	15	236	223	
	10	BMW	X3 M	10	244	234	
SUV Large (MC+NA)	1	Toyota	PRADO	21,102	209	423	40
	2	Subaru	OUTBACK	9,738	168	320	Volvo Car XC90 (electric-petrol)
	3	Isuzu Ute	MU-X	9,439	220	450	
	4	Ford	EVEREST	9,262	197	393	
	5	Mitsubishi	PAJERO SPORT	8,838	212	430	
	6	Toyota	KLUGER HYBRID	8,413	128	220	
	7	Toyota	FORTUNER	4,614	201	403	
	8	Mazda	CX9	2,561	211	427	
	9	LDV	D90	2,275	240	500	
	10	Jeep	GRAND CHEROKEE	1,780	227	468	

Table 11 continued...

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)*	Best-in-class emissions intensity (g/km) *
SUV Upper Large (MC+NA)	1	Toyota	LANDCRUISER	12,930	239	26	190
	2	Nissan	PATROL	5,788	343	81	Land Rover RANGE ROVER (diesel)
	3	Mercedes-Benz Cars	M-AMG G63 FL	385	299	57	
	4	Lexus	LX600	185	275	45	
	5	Land Rover	RANGE ROVER	133	253	33	
	6	Land Rover	DISCOVERY	127	203	7	
	7	Lexus	LX500D	102	235	24	
	8	Bentley	BENTAYGA	101	267	40	
	9	Mercedes-Benz Cars	G400D	41	252	33	
	10	Aston Martin	DBX	33	282	48	
Pick-up/ Chassis 4×2 (MC+NA)	1	Toyota	HILUX 4X2	17,062	237	N/A	0
	2	Ford	RANGER	4,351	201	N/A	LDV T60 (electric)
	3	Isuzu Ute	D-MAX	4,209	200	N/A	
	4	Mitsubishi	TRITON	3,483	227	N/A	
	5	Nissan	NAVARA	1,639	198	N/A	
	6	Mazda	B30	1,575	204	N/A	
	7	Mazda	B19	828	181	N/A	
	8	GWM	UTE	251	246	N/A	
	9	GWM	STEED	4	212	N/A	
	10	LDV	T60	2	0	N/A	

Table 11 continued...

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)*	Best-in-class emissions intensity (g/km) *
Pick-up/ Chassis 4×4 (MC+NA)	1	Toyota	HILUX 4X4	47,329	211	17	180
	2	Ford	RANGER	43,126	221	23	Isuzu Ute D-MAX (diesel)
	3	Mitsubishi	TRITON	23,952	223	24	
	4	Isuzu Ute	D-MAX	20,120	207	15	
	5	Mazda	B30	10,263	206	14	
	6	Toyota	LANDCRUISER	10,155	281	56	
	7	Nissan	NAVARA	8,673	208	15	
	8	GWM	UTE	7,562	246	36	
	9	LDV	T60 MAX	5,912	244	35	
	10	Volkswagen	AMAROK	4,519	246	36	
Vans/ Cab Chassis (MC+NA)	1	Toyota	HIACE	8,748	214	N/A	0
	2	Hyundai	STARIA LOAD	3,291	183	N/A	Renault KANGOO (electric)
	3	LDV	G10+	3,093	221	N/A	
	4	Ford	TRANSIT CUSTOM	1,709	186	N/A	
	5	Renault	TRAFIC	1,449	184	N/A	
	6	Mitsubishi	EXPRESS	1,444	189	N/A	
	7	Volkswagen	TRANSPORTER	1,365	204	N/A	
	8	Mercedes-Benz Vans	VITO	936	178	N/A	
	9	Volkswagen	CADDY VAN	567	131	N/A	
	10	LDV	V80	562	249	N/A	

* Best-in-class is the lowest emissions model variant and includes battery electric vehicles with emissions of 0 g/km. For segments where the best-in-class vehicle is a battery electric vehicle, it is not possible to do a percentage difference for the top-selling models.

Table 12: Average emissions intensity for models with a sales volume greater than 1,000 vehicles, 2022

Rank	Make	Model	Average emissions intensity (g/km)	Sales
1	Ford	RANGER	219	47,477
2	Toyota	HILUX 4X4	211	47,329
3	Mitsubishi	TRITON	224	27,435
4	Mazda	CX5	171	27,062
5	Toyota	RAV4 HYBRID	108	26,547
6	Isuzu Ute	D-MAX	206	24,329
7	Toyota	LANDCRUISER	258	23,085
8	MG	MG ZS	163	21,339
9	Hyundai	I30	173	21,166
10	Toyota	PRADO	209	21,102
11	Mitsubishi	OUTLANDER	173	19,545
12	Kia	NQ5 SPORTAGE	171	18,731
13	Hyundai	TUCSON	171	17,870
14	Toyota	COROLLA HYBRID	92	17,585
15	Toyota	HILUX 4X2	237	17,062
16	MG	MG3	159	15,672
17	Mazda	C30	153	13,891
18	Mitsubishi	ASX	178	12,751
19	Kia	BD CERATO	166	12,354
20	Mazda	CX3	144	11,907
21	Mazda	B30	206	11,838
22	Hyundai	KONA	117	11,538
23	Isuzu Ute	MU-X	218	10,988
24	Tesla	MODEL 3	0	10,877
25	Subaru	FORESTER	167	10,637
26	Ford	EVEREST	196	10,314
27	Nissan	NAVARA	206	10,312
28	Subaru	OUTBACK	168	9,738
29	Mazda	300	148	9,639
30	MG	MG HS	177	9,394

Table 12 continued...

Rank	Make	Model	Average emissions intensity (g/km)	Sales
31	Subaru	XV	158	9,090
32	Mitsubishi	PAJERO SPORT	212	8,838
33	Toyota	HIACE	214	8,748
34	Tesla	MODEL Y	0	8,717
35	Kia	YB STONIC	151	8,557
36	Kia	SP2 SELTOS	162	8,504
37	Toyota	KLUGER HYBRID	128	8,413
38	Toyota	RAV4	142	8,298
39	GWM	HAVAL JOLION	179	8,219
40	Honda	CR-V	166	8,122
41	Kia	KA4 CARNIVAL	172	8,054
42	Kia	MQ4 SORENTO	163	7,889
43	GWM	UTE	246	7,813
44	Nissan	XTRAIL	185	7,769
45	Toyota	COROLLA	138	7,699
46	Toyota	CAMRY HYBRID	102	7,654
47	GWM	HAVAL H6	161	7,010
48	Mazda	CX9	203	6,460
49	Hyundai	VENUE	165	6,440
50	Toyota	YARIS CROSSHV	87	6,394
51	Suzuki	BALENO	126	6,125
52	Mitsubishi	ECLIPSE CROSS	133	5,972
53	Mazda	CX8	177	5,932
54	LDV	T60 MAX	244	5,912
55	Nissan	PATROL	343	5,788
56	Suzuki	JIMNY	157	5,697
57	Kia	JA PICANTO	116	5,196
58	Mazda	200	123	5,146
59	Volkswagen	T-CROSS	123	5,145
60	Volvo Car	XC40	98	5,119
61	Honda	HR-V	140	4,717

Table 12 continued...

Rank	Make	Model	Average emissions intensity (g/km)	Sales
62	Toyota	FORTUNER	201	4,614
63	Hyundai	SANTA FE	167	4,595
64	Kia	YB RIO	141	4,576
65	Volkswagen	AMAROK	246	4,519
66	Toyota	C-HR	148	4,460
67	Suzuki	SWIFT	124	4,405
68	Toyota	KLUGER	204	4,149
69	Hyundai	PALISADE	203	4,000
70	Volkswagen	TIGUAN ALLSPACE	193	3,877
71	Volkswagen	T-ROC	159	3,628
72	Toyota	C-HR HYBRID	97	3,517
73	Volvo Car	XC60	136	3,465
74	Hyundai	STARIA LOAD	183	3,291
75	Volkswagen	GOLF	143	3,222
76	LDV	D90	239	3,183
77	Suzuki	VITARA	139	3,114
78	LDV	G10+	221	3,093
79	Subaru	IMPREZA	158	3,013
80	MINI	COOPER	88	3,002
81	Porsche	95B	226	2,735
82	Volkswagen	TIGUAN	191	2,658
83	Renault	KOLEOS	189	2,552
84	Ford	PUMA	121	2,408
85	Subaru	WRX	203	2,392
86	BMW	X3 XDRIVE30I	180	2,374
87	Audi	Q3	172	2,321
88	Kia	CK STINGER	238	2,242
89	BMW	X5 XDRIVE30D	189	2,236
90	Ford	ESCAPE	179	2,179
91	BYD	ATTO 3	0	2,113
92	Audi	Q3 SPORTBACK	174	2,045

Table 12 continued...

Rank	Make	Model	Average emissions intensity (g/km)	Sales
93	Toyota	YARIS CROSS	124	2,038
94	Toyota	YARIS	114	1,999
95	GWM	HAVAL H6GT	190	1,988
96	Toyota	COROLLA CROSSHV	98	1,984
97	RAM	1500 LIMITED	283	1,973
98	Mercedes-Benz Cars	GLC300 4M FL	183	1,911
99	Audi	Q5	161	1,909
100	Ford	MUSTANG	280	1,886
101	Suzuki	IGNIS	114	1,878
102	Toyota	CAMRY	155	1,874
103	Jeep	COMPASS	210	1,869
104	Chevrolet	SILVERADO	305	1,823
105	Jeep	GRAND CHEROKEE	227	1,780
106	Hyundai	STARIA	225	1,721
107	Ford	TRANSIT CUSTOM	186	1,709
108	Skoda	KAMIQ	124	1,633
109	Porsche	CAY	215	1,582
110	Skoda	KODIAQ	181	1,555
111	MG	MG HS PHEV	39	1,549
112	RAM	LARAMIE 1500	283	1,534
113	Volkswagen	POLO	119	1,532
114	Mazda	600	170	1,511
115	Mercedes-Benz Cars	C200	157	1,506
116	Polestar	2	0	1,480
117	BMW	X1 SDRIVE20I	149	1,474
118	SsangYong	REXTON	223	1,470
119	RAM	EXPRESS 1500	283	1,469
120	Renault	TRAFIC	184	1,449
121	Mitsubishi	EXPRESS	189	1,444
122	Renault	ARKANA	137	1,398
123	Jeep	GLADIATOR	288	1,392

Table 12 continued...

Rank	Make	Model	Average emissions intensity (g/km)	Sales
124	Lexus	NX350H	114	1,389
125	Volkswagen	TRANSPORTER	204	1,365
126	Mercedes-Benz Cars	GLE300D 4M	182	1,342
127	Mercedes-Benz Cars	GLA200	140	1,330
128	Mercedes-Benz Cars	C300	164	1,328
129	Land Rover	DEFENDER 110	222	1,324
130	Audi	A3	132	1,319
131	Jeep	WRANGLER	232	1,316
132	Mercedes-Benz Cars	GLC200 FL	180	1,302
133	Volvo Car	XC90	136	1,258
134	BMW	330I	159	1,236
135	Volkswagen	TOUAREG	179	1,222
136	Renault	CAPTUR	149	1,207
137	Mercedes-Benz Cars	GLB200	148	1,176
138	SsangYong	MUSSO XLV	235	1,169
139	Subaru	BRZ	209	1,165
140	Mercedes-Benz Cars	GLA250 4M	175	1,161
141	MG	MG ZS EV	0	1,119
142	Mazda	B19	181	1,098
143	Audi	Q7	192	1,078
144	Nissan	JUKE	136	1,058
145	Lexus	NX250	158	1,011
146	Mercedes-Benz Vans	VITO	178	1,011
Total*			**N/A**	**949,233**

* The totals shown in this row differ to the national totals shown in other tables as they only include vehicle models with sales of at least 1,000.

Table 13: Average emissions intensity and annual sales by buyer type for the MA category, 2021 and 2022

Buyer type	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
Private	153	133	-13.1	391,111	420,258
Business	152	137	-10.0	225,503	216,582
Government	129	124	-3.3	12,920	12,678
Total	**N/A**	**N/A**	**N/A**	**629,534**	**649,518**

Table 14: Average emissions intensity and annual sales by buyer type for the MC+NA category, 2021 and 2022

Buyer type	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
Business	217	216	-0.4	210,467	205,074
Private	214	215	0.3	147,876	158,293
Government	214	208	-2.7	15,172	14,142
Total	**N/A**	**N/A**	**N/A**	**373,515**	**377,509**

Table 15: Average emissions intensity and annual sales by detailed buyer type for the MA category, 2021 and 2022

Buyer type	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
Private – local delivery	153	133	-13.1	390,960	420,177
Fleet	159	124	-21.8	59,470	60,939
Dealer demonstrator	152	147	-3.8	68,641	57,886
Rental	151	144	-4.5	45,311	46,656
Large fleet	150	142	-5.4	28,272	29,075
Not-for-profit organisation	147	139	-5.7	12,319	11,434
Company capitalisation	139	124	-11.0	10,389	9,882
State government	129	123	-4.8	9,947	9,637
Local government	125	125	-0.5	2,233	2,140
Federal government	131	139	6.1	740	901
Taxi	104	109	4.9	905	508
Other	173	138	-19.9	46	144
Private – overseas delivery	157	160	2.0	151	81
Diplomatic	150	148	-1.3	58	50
Business – overseas delivery	161	155	-3.6	92	8
Total	**N/A**	**N/A**	**N/A**	**629,534**	**649,518**

Table 16: Average emissions intensity and annual sales by detailed buyer type for the MC+NA category, 2021 and 2022

Buyer type	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
Private – local delivery	214	215	0.3	147,808	158,269
Fleet	219	217	-0.7	126,657	116,620
Large fleet	216	215	-0.6	40,116	45,135
Dealer demonstrator	213	215	0.8	22,835	22,142
Rental	208	211	1.4	14,254	15,961
State government	219	211	-3.7	8,587	8,583
Local government	203	201	-1.1	4,803	4,488
Company capitalisation	206	205	-0.1	3,939	2,589
Not-for-profit organisation	215	211	-1.8	2,543	2,474
Federal government	215	211	-1.5	1,782	1,071
Taxi	142	132	-6.9	15	77
Other	208	218	4.5	6	36
Business – overseas delivery	239	229	-4.0	82	24
Private – overseas delivery	213	216	1.3	68	24
Diplomatic	207	185	-10.7	20	16
Total	**N/A**	**N/A**	**N/A**	**373,515**	**377,509**

Table 17: Average emissions intensity and annual sales by powertrain and fuel type for the MA category, 2021 and 2022

Powertrain & fuel type	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
Petrol	164	165	0.6	514,418	481,530
HEV	102	102	-0.7	65,165	72,527
Diesel	176	171	-2.9	41,766	56,830
BEV	0	0	N/A	5,104	33,340
PHEV	46	42	-9.8	3,043	5,276
Hydrogen	0	0	N/A	38	15
Total	**N/A**	**N/A**	**N/A**	**629,534**	**649,518**

Table 18: Average emissions intensity and annual sales by powertrain and fuel type for the MC+NA category, 2021 and 2022

Powertrain & fuel type	Average emissions intensity (g/km) in 2021	Average emissions intensity (g/km) in 2022	Change from 2021 to 2022 (%)	Sales in 2021	Sales in 2022
Diesel	218	216	-0.8	301,767	298,328
Petrol	216	230	6.2	66,033	69,176
HEV	129	130	0.4	5,341	9,298
PHEV	60	58	-3.5	329	654
BEV	0	0	N/A	45	53
Total	**N/A**	**N/A**	**N/A**	**373,515**	**377,509**

Table 19: Electric vehicle sales by model for FCAI data, 2021 and 2022

Make and Model	2021 BEV sales	2021 PHEV sales	2021 total EV sales	2022 BEV sales	2022 PHEV sales	2022 total EV sales
Audi E7	34	0	**34**	21	0	**21**
Audi EA	0	0	**0**	13	0	**13**
Audi EB	74	0	**74**	44	0	**44**
Audi ETRON S	0	0	**0**	27	0	**27**
Audi ETRON S SB	0	0	**0**	37	0	**37**
BMW 330E	0	150	**150**	0	166	**166**
BMW 530E	0	22	**22**	0	4	**4**
BMW 745E	0	6	**6**	0	1	**1**
BMW I3S	67	0	**67**	3	0	**3**
BMW I4 EDRIVE40 GC	0	0	**0**	113	0	**113**
BMW I4 M50 GC	0	0	**0**	94	0	**94**
BMW I7 XDRIVE60	0	0	**0**	13	0	**13**
BMW IX M60	0	0	**0**	38	0	**38**
BMW IX XDRIVE40	23	0	**23**	382	0	**382**
BMW IX XDRIVE50	12	0	**12**	57	0	**57**
BMW IX3	50	0	**50**	0	0	**0**
BMW IX3 MSPORT	12	0	**12**	593	0	**593**
BMW X3 XDRIVE30E	0	37	**37**	0	230	**230**
BMW X5 XDRIVE45E	0	118	**118**	0	176	**176**
BYD ATTO 3	0	0	**0**	2,113	0	**2,113**
CUPRA BORN	0	0	**0**	1	0	**1**
CUPRA FORMENTOR	0	0	**0**	0	55	**55**
CUPRA LEON	0	0	**0**	0	25	**25**
Ferrari 296 GTB	0	0	**0**	0	6	**6**
Ferrari 296 GTS	0	0	**0**	0	1	**1**
Ferrari SF90 SPIDER	0	1	**1**	0	11	**11**
Ferrari SF90 STRADALE	0	24	**24**	0	16	**16**
Ford ESCAPE	0	0	**0**	0	139	**139**
Genesis G80	0	0	**0**	16	0	**16**
Genesis GV60	0	0	**0**	114	0	**114**

Table 19 continued...

Make and Model	2021 BEV sales	2021 PHEV sales	2021 total EV sales	2022 BEV sales	2022 PHEV sales	2022 total EV sales
Genesis GV70	0	0	**0**	44	0	**44**
Hyundai IONIQ	339	68	**407**	580	98	**678**
Hyundai IONIQ 5	172	0	**172**	756	0	**756**
Hyundai KONA	505	0	**505**	1,096	0	**1,096**
Jaguar I-PACE	44	0	**44**	23	0	**23**
Kia CV EV6	0	0	**0**	564	0	**564**
Kia DE NIRO	217	60	**277**	152	49	**201**
Kia MQ4 SORENTO	0	15	**15**	0	62	**62**
Kia SG2 NIRO	0	0	**0**	233	15	**248**
Land Rover RANGE ROVER	0	1	**1**	0	0	**0**
Land Rover RR EVOQUE	0	0	**0**	0	13	**13**
Land Rover RR SPORT	0	11	**11**	0	5	**5**
LDV MIFA9	0	0	**0**	2	0	**2**
LDV T60	0	0	**0**	2	0	**2**
Lexus NX450H	0	0	**0**	0	230	**230**
Lexus UX300E	43	0	**43**	82	0	**82**
Mazda M30	63	0	**63**	55	0	**55**
Mercedes-Benz Cars A250E	0	49	**49**	0	29	**29**
Mercedes-Benz Cars A250E SEDAN	0	17	**17**	0	7	**7**
Mercedes-Benz Cars C300E FL	0	13	**13**	0	0	**0**
Mercedes-Benz Cars E300E	0	2	**2**	0	0	**0**
Mercedes-Benz Cars E300E FL	0	18	**18**	0	22	**22**
Mercedes-Benz Cars EQA 250	367	0	**367**	547	0	**547**
Mercedes-Benz Cars EQA 350 4MATIC	0	0	**0**	75	0	**75**
Mercedes-Benz Cars EQB 250	0	0	**0**	138	0	**138**
Mercedes-Benz Cars EQB 350	0	0	**0**	37	0	**37**
Mercedes-Benz Cars EQC 400 4M	174	0	**174**	144	0	**144**
Mercedes-Benz Cars EQC 400 4M EAL	124	0	**124**	73	0	**73**
Mercedes-Benz Cars EQC 400 4M SPRT	0	0	**0**	95	0	**95**
Mercedes-Benz Cars EQS 53 4M	0	0	**0**	69	0	**69**

Table 19 continued...

Make and Model	2021 BEV sales	2021 PHEV sales	2021 total EV sales	2022 BEV sales	2022 PHEV sales	2022 total EV sales
Mercedes-Benz Cars GLC300E 4M FL	0	307	**307**	0	361	**361**
Mercedes-Benz Cars GLC300E 4MFL CP	0	1	**1**	0	0	**0**
Mercedes-Benz Vans EQV	0	0	**0**	10	0	**10**
Mercedes-Benz Vans EVITO	0	0	**0**	2	0	**2**
Mercedes-Benz Vans EVITO TOURER	0	0	**0**	1	0	**1**
MG MG HS PHEV	0	580	**580**	0	1,549	**1,549**
MG MG ZS EV	1,388	0	**1,388**	1,119	0	**1,119**
MINI COOPER	291	141	**432**	455	189	**644**
Mitsubishi ECLIPSE CROSS	0	229	**229**	0	926	**926**
Mitsubishi OUTLANDER	0	592	**592**	0	303	**303**
Nissan LEAF	367	0	**367**	335	0	**335**
Peugeot 3008	0	11	**11**	0	59	**59**
Peugeot 508	0	5	**5**	0	19	**19**
Polestar 2	0	0	**0**	1,480	0	**1,480**
Porsche 97A	0	6	**6**	0	7	**7**
Porsche CAY	0	122	**122**	0	152	**152**
Porsche TAY	531	0	**531**	428	0	**428**
Renault KANGOO	45	0	**45**	49	0	**49**
Tesla MODEL 3	N/A	0	**N/A**	10,877	0	**10,877**
Tesla MODEL Y	N/A	0	**N/A**	8,717	0	**8,717**
Volvo Car C40	0	0	**0**	491	0	**491**
Volvo Car XC40	207	288	**495**	983	147	**1,130**
Volvo Car XC60	0	308	**308**	0	591	**591**
Volvo Car XC90	0	170	**170**	0	267	**267**
Total	**5,149**	**3,372**	**8,521**	**33,393**	**5,930**	**39,323**

Table 20: Electric vehicle sales by state for FCAI data, 2021 and 2022

State	2021 BEV sales	2021 PHEV sales	2021 total EV sales	2022 BEV sales	2022 PHEV sales	2022 total EV sales
Australian Capital Territory	213	136	**349**	1,281	222	**1,503**
New South Wales	1,499	1,098	**2,597**	10,758	2,004	**12,762**
Northern Territory	14	10	**24**	70	23	**93**
Queensland	963	642	**1,605**	6,704	1,241	**7,945**
South Australia	314	256	**570**	1,429	342	**1,771**
Tasmania	187	52	**239**	572	111	**683**
Victoria	1,572	911	**2,483**	9,498	1,576	**11,074**
Western Australia	387	267	**654**	3,081	411	**3,492**
Total	**5,149**	**3,372**	**8,521**	**33,393**	**5,930**	**39,323**

Table 21: Electric vehicle sales by buyer type for FCAI data, 2021 and 2022

Buyer type	2021 BEV sales	2021 PHEV sales	2021 total EV sales	2022 BEV sales	2022 PHEV sales	2022 total EV sales
Company capitalisation	392	266	**658**	717	354	**1,071**
Dealer demonstrator	808	805	**1,613**	1,349	1,041	**2,390**
Diplomatic	0	3	**3**	1	1	**2**
Federal government	6	2	**8**	14	2	**16**
Fleet	328	354	**682**	5,467	482	**5,949**
Large fleet	148	142	**290**	548	221	**769**
Local government	121	13	**134**	102	10	**112**
Not-for-profit organisation	18	7	**25**	22	8	**30**
Other	1	0	**1**	1	4	**5**
Private – local delivery	3,088	1,645	**4,733**	24,530	3,477	**28,007**
Rental	92	33	**125**	269	254	**523**
State government	147	102	**249**	373	76	**449**
Total	**5,149**	**3,372**	**8,521**	**33,393**	**5,930**	**39,323**

Table 22: Estimated electric vehicle fleet by state and territory

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Australia
Total electric vehicle sales from 2010 to 2022 (excluding Tesla)	1,695	12,456	122	7,522	3,519	981	10,908	3,086	40,289
Tesla registrations as at 31 January 2023	1,719	14,836	62	9,961	1,591	417	12,382	4,534	45,502
Total estimated electric vehicles as at 2022 (including Tesla)	3,414	27,292	184	17,483	5,110	1,398	23,290	7,620	85,791
Total passenger and light commercial vehicle fleet in 2022	311,830	5,607,164	149,013	4,153,211	1,432,592	484,673	4,953,759	2,187,162	19,279,404
Estimate of electric vehicles as percentage of total fleet in 2022	1.09%	0.49%	0.12%	0.42%	0.36%	0.29%	0.47%	0.35%	0.44%
Total estimated electric vehicles as at 2021 (including Tesla)	1,736	13,202	87	8,456	3,150	689	11,660	3,714	42,694
Change in estimated total electric vehicle fleet between 2021 and 2022	97%	107%	111%	107%	62%	103%	100%	105%	101%

Sources: VFACTS data on electric vehicles from 2010 to 2022 and BITRE (2023a; 2023b).

Note: Numbers in the table should be treated as indicative estimates, as they are based on a combination of cumulative VFACTS sales data and registration data (for Teslas). As a result, there is potential for electric vehicles to in some cases be under-counted and in others over-counted, as well as variation between jurisdictions. For example, electric vehicles sold early in the period of analysis (for example, 2010 or 2011) may no longer be in the fleet due to an accident or the vehicle or battery reaching the end of its life. By contrast, any 'grey imports' of electric vehicles from overseas markets would not be captured in the above data sources. Finally, transfers of vehicles between jurisdictions mean that there is potential for some discrepancies in the comparisons between states and territories, as a vehicle may have been sold in one jurisdiction but be currently registered in a different one.

Table 23: Battery electric vehicle sales by model and jurisdiction, 2022

Make and model	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Total
Audi E7	0	11	0	2	2	2	2	2	**21**
Audi EA	0	5	0	0	2	0	5	1	**13**
Audi EB	0	21	0	7	1	4	6	5	**44**
Audi ETRON S	1	14	0	2	1	0	5	4	**27**
Audi ETRON S SB	2	13	0	5	1	1	10	5	**37**
BMW I3S	0	2	0	0	0	0	1	0	**3**
BMW I4 EDRIVE40 GC	4	39	0	17	4	3	39	7	**113**
BMW I4 M50 GC	6	23	0	20	2	2	23	18	**94**
BMW I7 XDRIVE60	0	4	0	3	1	0	5	0	**13**
BMW IX M60	0	13	0	7	4	0	12	2	**38**
BMW IX XDRIVE40	12	126	1	66	22	2	131	22	**382**
BMW IX XDRIVE50	4	12	0	18	2	1	14	6	**57**
BMW IX3 MSPORT	18	172	0	104	27	8	230	34	**593**
BYD ATTO 3	70	677	6	506	134	67	438	215	**2,113**
CUPRA BORN	0	1	0	0	0	0	0	0	**1**
Genesis G80	0	12	0	1	1	0	2	0	**16**
Genesis GV60	2	60	0	27	4	1	15	5	**114**
Genesis GV70	0	20	0	11	0	1	11	1	**44**
Hyundai IONIQ	32	103	5	230	36	19	99	56	**580**
Hyundai IONIQ 5	50	225	0	141	52	24	191	73	**756**
Hyundai KONA	50	244	14	225	72	37	369	85	**1,096**
Jaguar I-PACE	0	9	0	2	4	2	5	1	**23**
Kia CV EV6	11	179	3	103	39	6	165	58	**564**
Kia DE NIRO	4	70	1	17	8	3	36	13	**152**
Kia SG2 NIRO	7	76	4	38	15	9	66	18	**233**
LDV MIFA9	0	2	0	0	0	0	0	0	**2**
LDV T60	0	2	0	0	0	0	0	0	**2**

Table 23 continued...

Make and model	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Total
Lexus UX300E	4	33	0	22	2	1	16	4	**82**
Mazda M30	1	18	1	5	3	5	16	6	**55**
Mercedes-Benz Cars EQA 250	11	141	0	113	36	9	158	79	**547**
Mercedes-Benz Cars EQA 350 4MATIC	2	22	0	14	6	0	31	0	**75**
Mercedes-Benz Cars EQB 250	5	37	0	32	8	0	49	7	**138**
Mercedes-Benz Cars EQB 350	0	10	0	11	0	1	12	3	**37**
Mercedes-Benz Cars EQC 400 4M	3	41	0	22	8	3	60	7	**144**
Mercedes-Benz Cars EQC 400 4M EAL	1	26	0	10	5	2	22	7	**73**
Mercedes-Benz Cars EQC 400 4M SPRT	1	33	0	20	5	1	28	7	**95**
Mercedes-Benz Cars EQS 53 4M	1	16	0	13	5	2	28	4	**69**
Mercedes-Benz Vans EQV	1	2	0	2	1	0	3	1	**10**
Mercedes-Benz Vans EVITO	0	0	0	0	0	0	2	0	**2**
Mercedes-Benz Vans EVITO TOURER	0	0	0	0	0	0	1	0	**1**
MG MG ZS EV	46	359	7	266	57	50	254	80	**1,119**
MINI COOPER	14	158	1	84	37	9	119	33	**455**
Nissan LEAF	37	78	6	50	29	23	88	24	**335**
Polestar 2	76	719	0	215	52	34	311	73	**1,480**
Porsche TAY	10	139	0	72	22	10	142	33	**428**
Renault KANGOO	0	20	0	12	3	0	10	4	**49**
Tesla MODEL 3	426	3,371	14	2,206	377	111	3,262	1,110	**10,877**
Tesla MODEL Y	299	2,901	7	1,681	257	51	2,629	892	**8,717**
Volvo Car C40	18	195	0	115	11	10	126	16	**491**
Volvo Car XC40	52	304	0	187	71	58	251	60	**983**
Total	**1,281**	**10,758**	**70**	**6,704**	**1,429**	**572**	**9,498**	**3,081**	**33,393**

Table 24: Electric vehicle sales by buyer type and year, 2010–2022

Buyer type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Business – overseas delivery	0	0	0	0	0	20	0	0	0	0	0	0	0	**20**
Company capitalisation	110	16	119	42	363	599	74	299	304	518	450	658	1,071	**4,623**
Dealer demonstrator	0	0	57	48	379	143	51	279	381	456	537	1,613	2,390	**6,334**
Diplomatic	0	0	0	0	0	0	0	0	1	1	1	3	2	**8**
Federal government	0	16	1	0	0	0	11	1	1	16	16	8	16	**86**
Fleet	0	4	8	32	10	10	0	53	111	146	314	682	5,949	**7,319**
Large fleet	0	2	4	25	39	13	7	56	36	215	173	290	769	**1,629**
Local government	0	0	10	37	7	9	1	5	16	136	106	134	112	**573**
Not-for-profit organisation	0	0	0	1	0	0	0	2	3	19	25	25	30	**105**
Other	0	0	0	0	0	0	0	0	0	0	1	1	5	**7**
Private – local delivery	0	11	47	95	298	298	72	377	442	1,293	1,643	4,733	28,007	**37,316**
Private – overseas delivery	0	0	0	0	23	4	0	0	0	0	1	0	0	**28**
Rental	0	0	0	0	0	0	0	21	23	2	1	125	523	**695**
State government	2	0	7	12	16	12	3	31	34	123	202	249	449	**1,140**
Taxi	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**112**	**49**	**253**	**292**	**1,135**	**1,108**	**219**	**1,124**	**1,352**	**2,925**	**3,470**	**8,521**	**39,323**	**59,883**

Table 25: Hybrid vehicle sales by model, 2021 and 2022

Make and model	2021 sales	2022 sales
GWM HAVAL H6	0	1,194
GWM HAVAL JOLION	0	755
GWM TANK 300	0	3
Honda ACCORD	54	50
Honda CIVIC 5D	0	71
Honda HR-V	0	416
Hyundai IONIQ	77	60
Hyundai SANTA FE	0	315
Kia DE NIRO	465	656
Kia MQ4 SORENTO	0	123
Kia SG2 NIRO	0	497
Lexus CT200H	77	0
Lexus ES300H	700	543
Lexus IS300H	211	3
Lexus LC500H	1	1
Lexus LS500H	8	9
Lexus NX300H	992	9
Lexus NX350H	0	1,389
Lexus RX450H	420	341
Lexus RX450HL	220	154
Lexus UX250H	975	519
Maserati GHIBLI	40	32
Maserati LEVANTE	13	181
Nissan PATHFINDER	4	0
Nissan XTRAIL	0	122
Subaru FORESTER	356	882
Subaru XV	402	685
Toyota CAMRY HYBRID	10,979	7,654
Toyota C-HR HYBRID	3,075	3,517
Toyota COROLLA CROSSHV	0	1,984

Table 25 continued...

Make and model	2021 sales	2022 sales
Toyota COROLLA HYBRID	14,657	17,585
Toyota KLUGER HYBRID	4,985	8,413
Toyota PRIUS	77	44
Toyota PRIUS C	1	0
Toyota PRIUS V	210	1
Toyota RAV4 HYBRID	25,850	26,547
Toyota YARIS CROSSHV	5,052	6,394
Toyota YARIS HYBRID	605	676
Total	**70,506**	**81,825**

Table 26: Sales of vehicles by powertrain/fuel type and government, 2021 and 2022

Government	2021 BEV sales	2022 BEV sales	2021 PHEV sales	2022 PHEV sales	2021 HEV sales	2022 HEV sales	2021 ICE vehicle sales	2022 ICE vehicle sales	2021 Total sales	2022 Total sales
Federal Government	6	14	2	2	325	347	2,189	1,609	**2,522**	**1,972**
NSW	29	38	7	1	1,209	1,289	3,153	3,126	**4,398**	**4,454**
VIC	23	84	29	5	1,099	1,242	3,682	3,628	**4,833**	**4,959**
QLD	29	186	33	7	972	738	3,114	2,376	**4,148**	**3,307**
SA	14	7	7	7	666	611	945	995	**1,632**	**1,620**
WA	12	20	6	7	175	264	1,632	1,735	**1,825**	**2,026**
TAS	15	9	7	11	166	213	756	723	**944**	**956**
NT	2	12	1	1	37	29	548	531	**588**	**573**
ACT	23	17	12	37	1	4	130	267	**166**	**325**
Local Government	121	102	13	10	802	924	6,100	5,592	**7,036**	**6,628**
Total	**274**	**489**	**117**	**88**	**5,452**	**5,661**	**22,249**	**20,582**	**28,092**	**26,820**

Table 27: 'Green' vehicle average emissions intensity and sales by segment, 2022

Segment	Make	Model	Average emissions intensity (g/km)	Sales
Micro	Mitsubishi	MIRAGE	109	862
Micro	Fiat	500	111	231
Micro	Kia	JA PICANTO	116	5,196
Light	MINI	COOPER	0	455
Light	Toyota	YARIS HYBRID	76	676
Light	Skoda	FABIA	112	276
Light	Suzuki	SWIFT	114	2,843
Light	Toyota	YARIS	114	1,998
Light	Volkswagen	POLO	114	1,248
Light	Citroen	C3	118	74
Light	Suzuki	BALENO	118	133
Small	BMW	I3S	0	3
Small	CUPRA	BORN	0	1
Small	Nissan	LEAF	0	335
Small	Hyundai	IONIQ	5	738
Small	Mercedes-Benz Cars	A250E	34	29
Small	Mercedes-Benz Cars	A250E SEDAN	34	7
Small	CUPRA	LEON	40	25
Small	Toyota	PRIUS	80	44
Small	Toyota	COROLLA HYBRID	92	17,585
Small	Honda	CIVIC 5D	96	71
Small	Toyota	PRIUS V	101	1
Small	Audi	A3	111	571
Small	Skoda	SCALA	115	405
Small	Peugeot	308	120	81
Medium	Polestar	2	0	1,480
Medium	Tesla	MODEL 3	0	10,877

Table 27 continued...

Segment	Make	Model	Average emissions intensity (g/km)	Sales
Medium	BMW	I4 M50 GC	0	94
Medium	BMW	I4 EDRIVE40 GC	0	113
Medium	Peugeot	508	40	19
Medium	BMW	330E	49	166
Medium	Honda	ACCORD	98	50
Medium	Toyota	CAMRY HYBRID	102	7,654
Medium	Lexus	ES300H	109	543
Medium	Lexus	IS300H	116	3
Large	Genesis	G80	0	16
Large	Porsche	TAY	0	428
Large	Toyota	MIRAI	0	14
Large	Audi	EA	0	13
Large	BMW	530E	53	4
Large	Mercedes-Benz Cars	E300E FL	55	22
Upper Large	BMW	I7 XDRIVE60	0	13
Upper Large	Mercedes-Benz Cars	EQS 53 4M	0	69
Upper Large	BMW	745E	56	1
Upper Large	Porsche	97A	57	7
People Movers	Mercedes-Benz Vans	EVITO TOURER	0	1
People Movers	LDV	MIFA9	0	2
People Movers	Mercedes-Benz Vans	EQV	0	10
SUV Light	Toyota	YARIS CROSSHV	87	6,394
SUV Light	Suzuki	IGNIS	114	1,878
SUV Small	Lexus	UX300E	0	82
SUV Small	Volvo Car	C40	0	491
SUV Small	MG	MG ZS EV	0	1,119
SUV Small	Mercedes-Benz Cars	EQA 350 4MATIC	0	75
SUV Small	Mazda	M30	0	55
SUV Small	Hyundai	KONA	0	1,096

Table 27 continued...

Segment	Make	Model	Average emissions intensity (g/km)	Sales
SUV Small	Mercedes-Benz Cars	EQA 250	0	547
SUV Small	Genesis	GV60	0	114
SUV Small	Volvo Car	XC40	5	1,130
SUV Small	Mitsubishi	ECLIPSE CROSS	43	926
SUV Small	Kia	SG2 NIRO	46	745
SUV Small	MINI	COOPER	54	189
SUV Small	Kia	DE NIRO	57	857
SUV Small	Toyota	C-HR HYBRID	97	3,517
SUV Small	Honda	HR-V	98	416
SUV Small	Toyota	COROLLA CROSSHV	98	1,984
SUV Small	Lexus	UX250H	103	519
SUV Small	Skoda	KAMIQ	113	326
SUV Small	GWM	HAVAL JOLION	115	755
SUV Small	Audi	Q2	119	346
SUV Medium	Mercedes-Benz Cars	EQB 350	0	37
SUV Medium	Hyundai	NEXO	0	1
SUV Medium	Hyundai	IONIQ 5	0	756
SUV Medium	Mercedes-Benz Cars	EQC 400 4M	0	144
SUV Medium	Mercedes-Benz Cars	EQC 400 4M SPRT	0	95
SUV Medium	Mercedes-Benz Cars	EQC 400 4M EAL	0	73
SUV Medium	Mercedes-Benz Cars	EQB 250	0	138
SUV Medium	BYD	ATTO 3	0	2,113
SUV Medium	Genesis	GV70	0	44
SUV Medium	BMW	IX3 MSPORT	0	593
SUV Medium	Tesla	MODEL Y	0	8,717
SUV Medium	Lexus	NX450H	29	230
SUV Medium	Ford	ESCAPE	33	139
SUV Medium	Mitsubishi	OUTLANDER	37	303
SUV Medium	Peugeot	3008	37	59

Table 27 continued...

Segment	Make	Model	Average emissions intensity (g/km)	Sales
SUV Medium	Volvo Car	XC60	37	591
SUV Medium	MG	MG HS PHEV	39	1,549
SUV Medium	CUPRA	FORMENTOR	43	55
SUV Medium	Mercedes-Benz Cars	GLC300E 4M FL	54	361
SUV Medium	BMW	X3 XDRIVE30E	73	230
SUV Medium	Toyota	RAV4 HYBRID	108	26,547
SUV Medium	Lexus	NX350H	114	1,389
SUV Medium	GWM	HAVAL H6	120	1,194
SUV Large	Jaguar	I-PACE	0	23
SUV Large	Audi	E7	0	21
SUV Large	Audi	EB	0	44
SUV Large	Audi	ETRON S	0	27
SUV Large	Audi	ETRON S SB	0	37
SUV Large	BMW	IX M60	0	38
SUV Large	BMW	IX XDRIVE40	0	382
SUV Large	BMW	IX XDRIVE50	0	57
SUV Large	Kia	CV EV6	0	564
SUV Large	Kia	MQ4 SORENTO	36	62
SUV Large	Volvo Car	XC90	42	267
SUV Large	BMW	X5 XDRIVE45E	56	176
SUV Large	Land Rover	RR SPORT	64	5
SUV Large	Porsche	CAY	73	152
Pick-up/Chassis 4×2	LDV	T60	0	2
Vans/Cab Chassis	Renault	KANGOO	0	49
Vans/Cab Chassis	Mercedes-Benz Vans	EVITO	0	2
Total*				**126,314**

* The total shown in this row differs to the national total shown in other tables as it only includes 'green' vehicles.

National Transport Commission
Level 3/600 Bourke Street
Melbourne VIC 3000
Tel: (03) 9236 5000
enquiries@ntc.gov.au
www.ntc.gov.au

National Transport Commission
Leading change