August 2021

Carbon Dioxide Emissions Intensity for New Australian Light Vehicles 2020

National Transport Commission

Leading change

Executive summary

Every year since 2009, the National Transport Commission (NTC) reports on the carbon dioxide intensity performance of new passenger and light commercial vehicles sold in Australia to help inform governments, fleet managers and consumers about the collective impacts of our buying choices on carbon dioxide emissions intensity.

The popularity and availability of electric and hybrid vehicles in Australia is slowly changing the emissions intensity of the nation's car fleet, with growing efforts across industry, governments and individuals to support more efficient vehicles.

Almost all governments purchased at least 10 per cent of their fleet as either electric or hybrid vehicles in 2020, while nine out of 10 new taxis were hybrid and the total number of hybrid sales almost doubled.

This year's report reflects a number of significant policy changes including the Federal Chamber of Automotive Industries' (FCAI) adoption of a new method for calculating carbon dioxide emissions intensity of the light vehicle fleet. The voluntary reporting scheme sets individual targets for vehicle makers extrapolated across the next 10 years.

This methodology has been designed to align with international approaches, and as such comparisons with earlier NTC reports is more difficult. This year's report 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) for the first time.

One of the key findings of the report is that if people who purchased new vehicles in 2020 had chosen the best-in-class for emissions performance, Australia's average carbon emissions intensity would have dropped by 93 per cent for new passenger cars and light SUVs, and by 50 per cent for new heavy SUVs and light commercial vehicles.

This is due to the increasing availability of battery electric, plug-in hybrid electric and hybrid electric vehicle variants in the Australian market. However, despite a 17 per cent increase of battery and plug-in hybrid electric vehicles sales in 2020, they still only represent 0.12 per cent of the nation's 18.1 million cars and light commercial vehicles, and as such have had little impact on materially decreasing overall emissions intensity. In comparison across the world 1 per cent of the global passenger fleet are electric vehicles (BNEF, 2021).

Key findings

- Electric vehicles are becoming more popular, with 6,900 battery or plug-in hybrid electric vehicles sold by FCAI members including Tesla in 2020 compared with 5,875 vehicles sold in 2019 – a 17 per cent increase.
- As a result of these sales the total number of electric vehicles within the estimated Australian vehicle fleet grew by 47 per cent within the year. Across the states and territories, the percentage increase in the estimated total electric vehicle fleet was greatest for the ACT (72 per cent) and lowest for South Australia (19 per cent).
- Sales of hybrid vehicles almost doubled in 2020 compared with 2019, with 58,595 hybrid vehicles sold in 2020.
- Data from the FCAI's voluntary emissions standard shows that the 2020 average emissions intensity for passenger cars and light SUVs was 149.5 g/km. By contrast, the average emissions intensity of heavy SUVs and light commercial vehicles was 216.7 g/km.
- If people who purchased new vehicles in 2020 had chosen the best-in-class for emissions performance, Australia's average carbon emissions intensity would have dropped by 93 per cent for passenger cars and light SUVs, and by 50 per cent for heavy SUVs and light commercial vehicles.
- 'Green' vehicles were 8.4 per cent of total vehicle sales in 2020, up from 5.7 per cent in 2019. A 'green' vehicle is defined as a vehicle with emissions intensity that does not exceed 120 g/km.
- Over 90 per cent of all new vehicle sales in 2020 were from 15 makes. Data from the FCAI's voluntary emissions standard shows that for passenger cars and light SUVs, Toyota had the lowest average emissions (100.2 g/km). For heavy SUVs and light commercial vehicles, Fiat Professional had the lowest average emissions (150.7 g/km).
- The average emissions intensity for passenger cars and light SUVs was lowest for government car fleets (134 g/km), followed by

private buyers (155 g/km) and business buyers (158 g/km). For heavy SUVs and light commercial vehicles, the emissions intensity was relatively similar for all buyer types, with private buyers having the lowest (216 g/km) and business buyers having the highest (220 g/km).

- Less than half of Australian new passenger car sales had an emissions intensity of 160 g/km or less, whereas over 90 per cent of new European passenger car registrations were below 160 g/km.
- There are many reasons why Australian light vehicle emissions intensity are higher than in Europe, including:
  - Australian consumer preferences for heavier vehicles with larger and more powerful engines
  - Consumer choice in Europe favouring small diesel-powered vehicles with manual transmission, where Australian consumers are trending towards SUVs (which represented more than half of total sales in 2020), pick-up trucks and automatic transmission
  - Australia has fewer government incentives for lower emissions vehicles
  - relatively lower fuel prices in Australia compared with Europe
  - Australia's relatively lower fuel quality compared with Europe.

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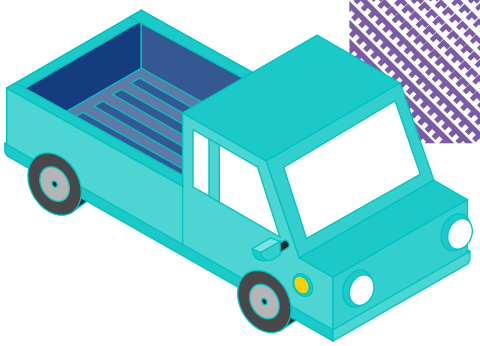

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Abbreviations

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
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 2020.

Vehicle emissions intensity is a measure of vehicle efficiency, not actual vehicle emissions, which depends 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 use the FCAI data to prepare this report and we would like to thank the FCAI for making this data available for use in this report.

This report is divided into three main sections:

2

Section 2

Describes the methodology used.

3

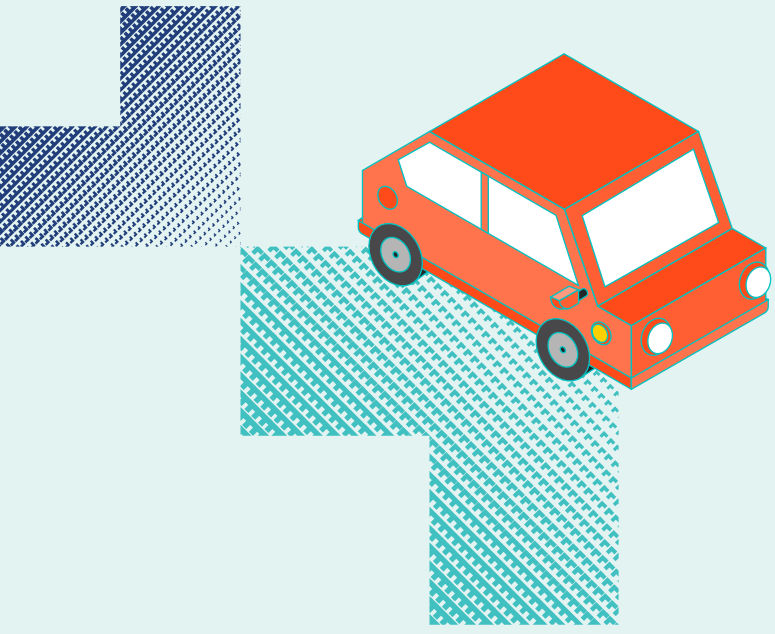
Section 3

Presents the results of the analysis.

4

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. It provided this data to the NTC. We entered the FCAI data into a database and analysed it.[1] These records consisted of:

- **vehicle attributes:** including 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
- **vehicle segment:** consistent with the classifications and definitions as described in **Table 1**
- **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, 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 this year's report the NTC has made changes to this methodology, based on updates to how CO_2 emission data is reported for each automotive brand sold in Australia by the FCAI, which provides the data to the NTC.

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 this year 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).

1 Prior to entering the data into the database, we removed a very small number of records from the data we received from the FCAI. The data contained 11 records, comprising 12 sales, of various models of Holdens that were released approximately 20 years ago and had 0 values for carbon dioxide emissions despite having a petrol-only engine.

To ensure consistency with this reporting, the NTC this year 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**, **4**, **5**, and **29** and **Table 9**, where the NTC has used the numerical results reported by the FCAI in its standard (FCAI, 2021b) to report them in a graphical format).

A further change to the methodology in this year's report is that battery electric vehicles with no secondary engine and emissions of 0 g/km are now included when calculating sales weighted averages in most tables and figures in this report.[3] Although vehicles operating on their electric engine may have no tailpipe emissions, the electricity 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 year-on-year changes in emissions comparisons that were included in previous years' reports.

Tesla sales data and other vehicle information is not included in the FCAI database, and as a result most tables and figures in this report do not include Tesla. However, certain tables and figures in the electric vehicles section do include estimated Tesla sales (these tables and figures specifically mention Tesla).

The 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.[4] **Table 1** presents the classifications and definitions.

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 small number of cases – 44 records in the dataset, comprising 74 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, 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).

4 From 2020, the FCAI's data started recording an SUV Light segment, which contains a number of vehicle models that were previously in the SUV Small segment.

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 ≤ 2.5t** 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 > 2.5–3.5t** 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

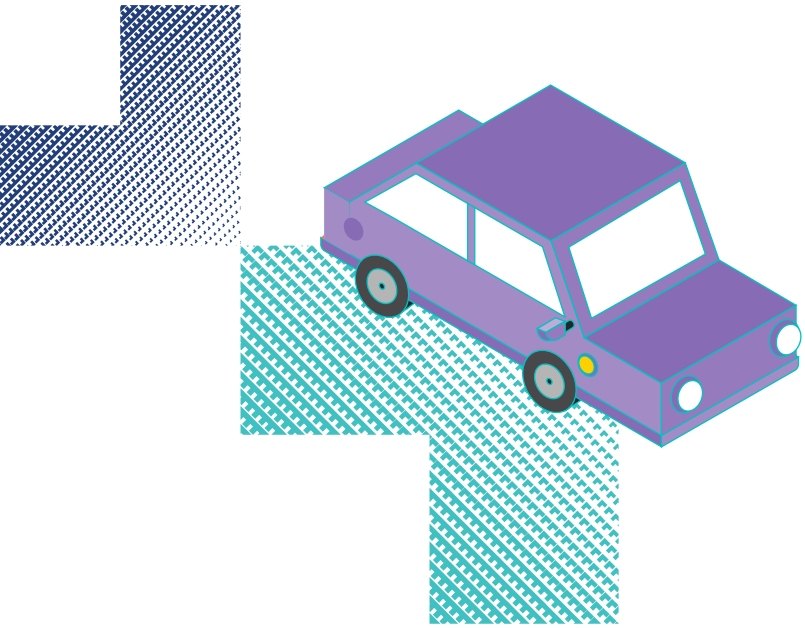
Carbon dioxide emissions intensity per kilometre is directly related to vehicle fuel consumption values. **Table 2** provides fuel consumption figures and the corresponding carbon dioxide emissions intensity for petrol and diesel.

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 carbon dioxide emissions from the top 10 selling vehicle models in Australia during 2020, 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 models[5] 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, 2020

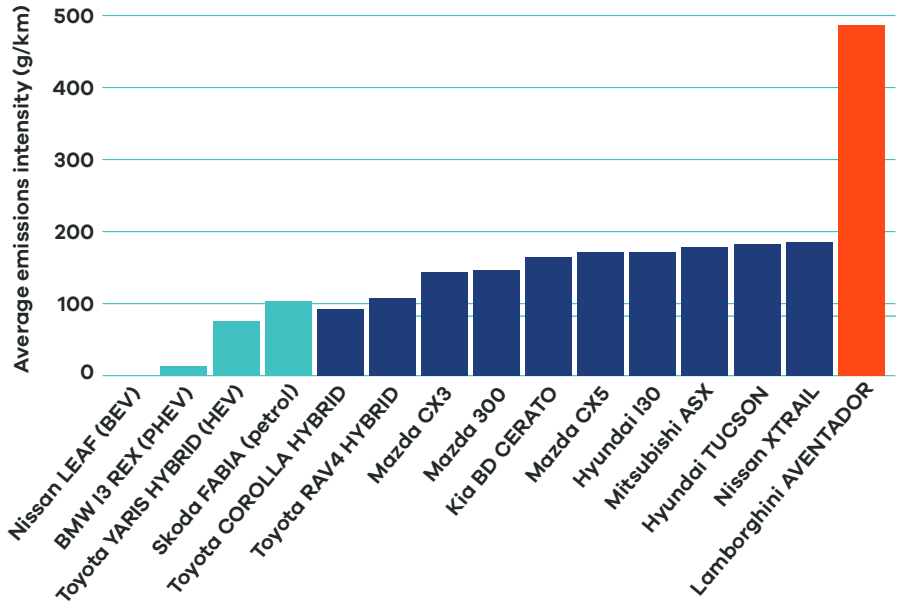
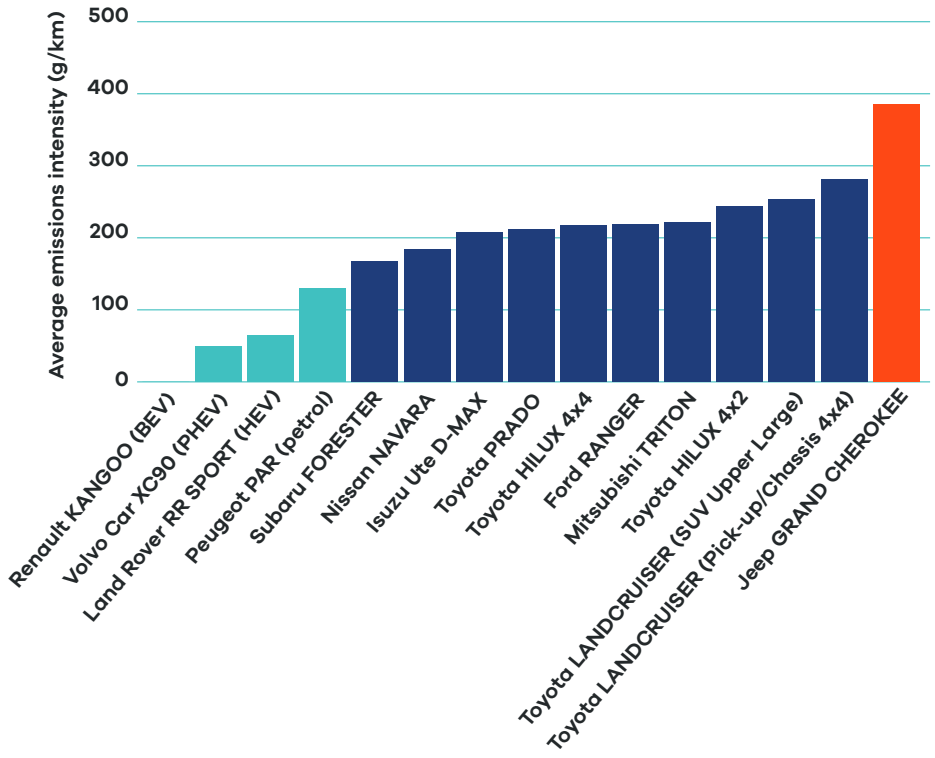


Figure 2: Average emissions intensity for top 10 selling vehicles in Australia in the MC+NA category plus other selected models, 2020



5 In this case, 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.

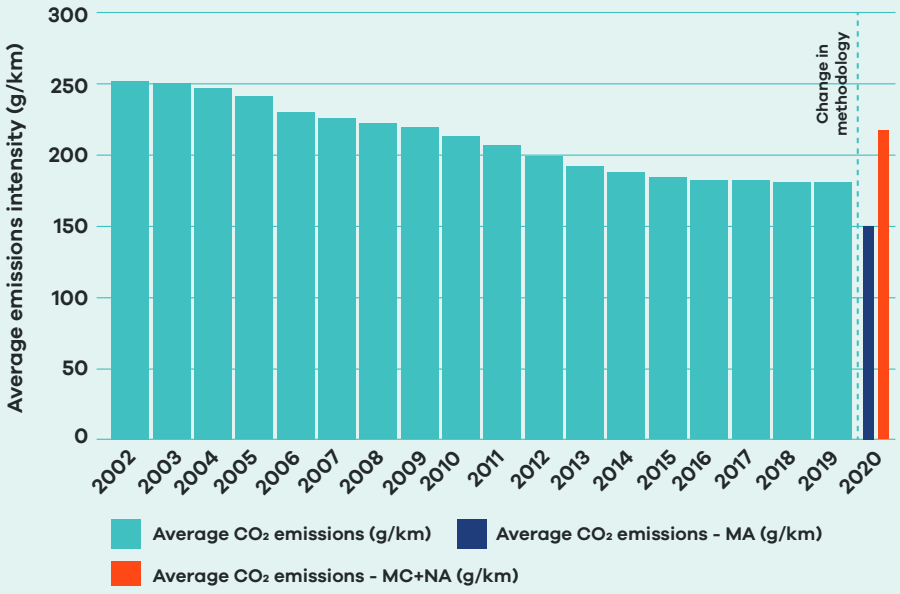
3. Australian emissions intensity

This section contains Australian data about the carbon dioxide emissions intensity for new passenger vehicles and light commercial vehicles in 2020.

As noted in Chapter 2, the methodology used to report emissions intensity has changed in several ways from previous 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), and the national average emissions intensity from previous NTC reports.[6] Given the change in methodology, it is not possible to directly compare the emissions intensity results for 2020 with 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. Additional data on the annual average emissions intensity is provided in **Table 9** in the appendix.

Figure 3: National average emissions intensity for new passenger and light commercial vehicles, 2002–2020



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

6 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, 4, 5,** and **29** and **Table 9**).

Vehicle manufacturers

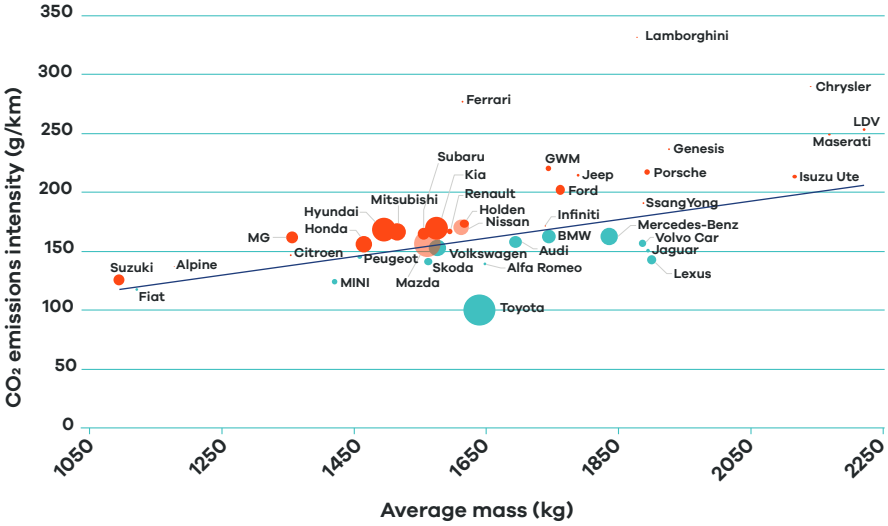
In 2020 there were 47 makes of new vehicles sold to Australian consumers in the MA category and 27 in the MC+NA category (with 23 of the 27 MC+NA category makes also appearing in the MA category). Around 91 per cent of all new vehicle sales were from the 15 highest-selling makes in the MA category, while the corresponding figure for the MC+NA category is 95 per cent. The average carbon dioxide emissions intensity of these market-leading makes largely determines the overall average emissions intensity for each category.

Figure 4 provides a graphical representation of the data released by the FCAI in its voluntary emissions standard (FCAI, 2021b). 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 their 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 102,822). Brands shown in aqua 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. Thirteen brands achieved results in 2020 below the limit curve.

Overall, Toyota had both the lowest emissions (100.2 g/km) in the MA category and was the furthest below its brand-specific target (beating it by 60.2 g/km). Lamborghini had both the highest emissions (331.3 g/km) and the largest distance above the target (152.2 g/km), but with just 111 sales during 2020. Full details on the sales and emissions intensity of each brand can be found in FCAI (2021b).

Figure 4: Average emissions intensity, average mass and limit curve for brands in the MA category, 2020



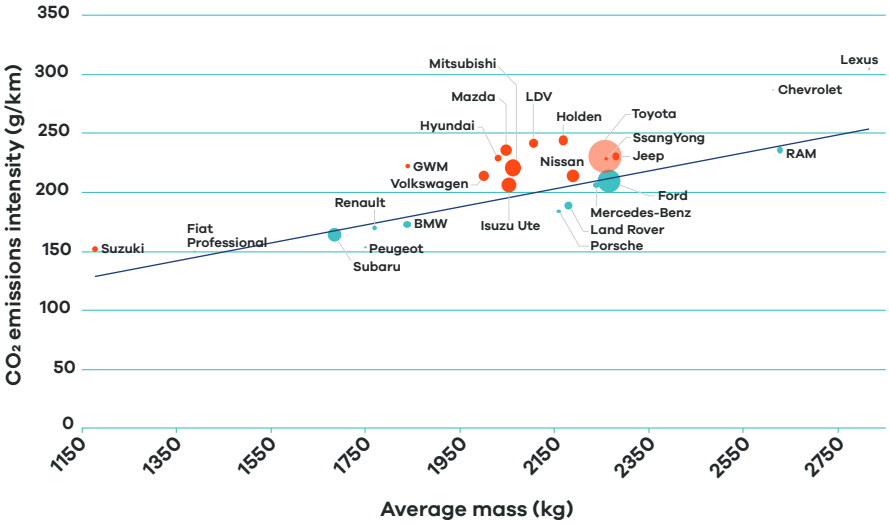
Note: The data in this graph for 2020 is sourced from the FCAI's voluntary emissions standard (FCAI, 2021b), and therefore includes the impacts of air-conditioning credits and off-cycle credits.

Over 91%

of all new vehicle sales in 2020 were from 15 makes.

Figure 5 shows the corresponding analysis for the MC+NA category. Toyota had the highest sales of all brands (99,625), reflected by the largest circle, and its emissions intensity was 19.2 g/km above its brand-specific target. Nine brands were below the limit curve. Fiat Professional had the lowest average emissions (150.7 g/km) – although this was above its emission target – and Peugeot was the brand that was furthest below its brand-specific target, beating its target by 19.6 g/km. Lexus had the highest average emissions intensity (304.5 g/km) and was also the furthest above its specific emissions target (exceeding it by 50.9 g/km).

Figure 5: Average emissions intensity, average mass and limit curve for brands in the MC+NA category, 2020



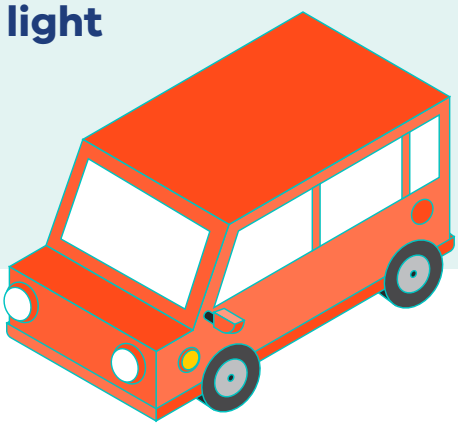
Note: The data in this graph for 2020 is sourced from the FCAI's voluntary emissions standard (FCAI, 2021b), and therefore includes the impacts of air-conditioning credits and off-cycle credits.

The 2020 average emissions intensity for passenger cars and light SUVs was

149.5 g/km.

By contrast, the average emissions intensity of heavy SUVs and light commercial vehicles was

216.7 g/km.



Segment type

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

Figure 6 shows the average carbon dioxide emissions intensity by segment during 2020.[7] The lowest emitting segment was 'Micro' (123 g/km); 'SUV Upper Large' (265 g/km) was the highest. Additional segment data, including the top 10 selling models for each segment, is provided in **Tables 10**, **11** and **12** in the appendix.

Figure 6: Average emissions intensity by segment, 2020

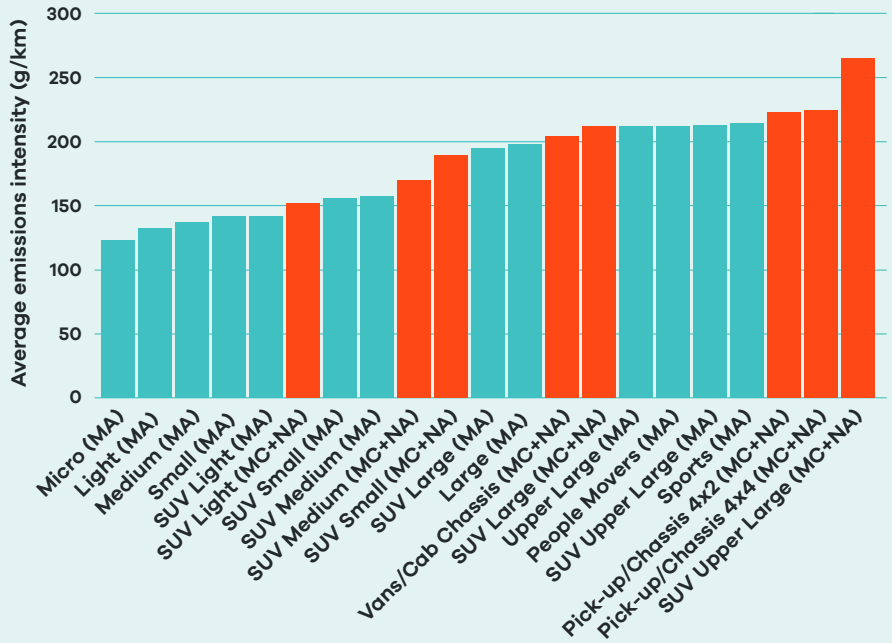
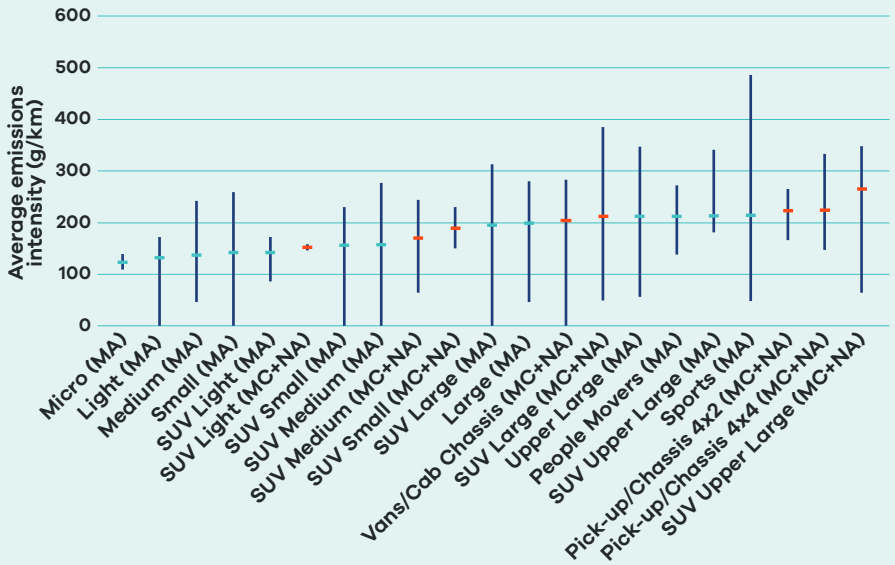


Figure 7 shows the average and the range in carbon dioxide emissions intensity for the segments during 2020. The average emissions are represented by the horizontal lines, and the ranges are represented by the vertical bars. As noted in chapter 2, battery electric vehicles with zero emissions have now been included in the analysis for this report, meaning that the range reaches down to zero for six of the segments.

Figure 7: Range and average emissions intensity by segment, 2020



7 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.

If Australian consumers had purchased vehicles with best-in-class carbon dioxide emissions in 2020, the national average carbon dioxide emissions would have been reduced by 93 per cent for the MA category and 50 per cent for the MC+NA category. These figures reflect the fact that five of the 13 segments in the MA category had battery electric vehicles available, and these were the five highest-selling segments (comprising around 84 per cent of total sales in the MA category). This shows the potential emissions reduction with currently available vehicles and technologies.

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, 2020

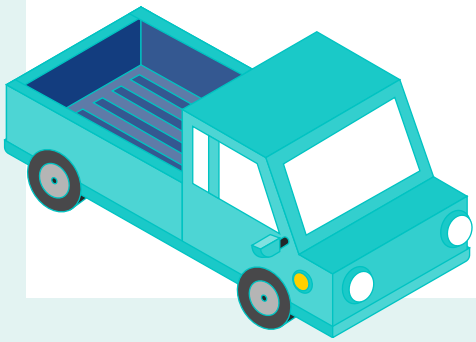
Segment	Make and model (fuel source/s)*	Best-in-class vehicle emissions intensity (g/km)
Micro (MA)	Mitsubishi MIRAGE (petrol)	109
Light (MA)	MINI COOPER (electric)^ Toyota YARIS HYBRID (petrol-electric)	0 76
Small (MA)	Nissan LEAF (electric)^ Hyundai IONIQ (petrol-electric)	0 79
Medium (MA)	Mercedes-Benz Cars C300E FL (electric-petrol)^ Toyota CAMRY HYBRID (petrol-electric)	46 96
Large (MA)	BMW 530E (electric-petrol) Mercedes-Benz Cars E220D (diesel)	46 108
Upper Large (MA)	Porsche 97A (electric-petrol)^ BMW 730D (diesel)	56 139
Sports (MA)	BMW I8 ROADSTER (electric-petrol) Audi A3 (petrol)	48 120
People Movers (MA)	Volkswagen CADDY (petrol)	138
SUV Light (MA)	Toyota YARIS CROSSHV (petrol-electric)	86
SUV Small (MA)	Hyundai KONA (electric) Toyota C-HR HYBRID (petrol-electric)	0 97
SUV Medium (MA)	Mercedes-Benz Cars EQC 400 4M (electric)^ Toyota RAV4 HYBRID (petrol-electric)	0 107
SUV Large (MA)	Jaguar I-PACE (electric)^ Lexus RX450H (petrol-electric)	0 131
SUV Upper Large (MA)	Audi Q8 (diesel)	181
SUV Light (MC+NA)	Suzuki JIMNY (petrol)	146

Additional data comparing the top 10 highest selling models[8] in each segment against best-in-class vehicles is provided in **Table 12** in the appendix. Additional average emissions intensity data for all models that sold more than 1,000 vehicles is provided in **Table 13** in the appendix.

Segment	Make and model (fuel source/s)*	Best-in-class vehicle emissions intensity (g/km)
SUV Small (MC+NA)	Jeep COMPASS (diesel)	150
SUV Medium (MC+NA)	BMW X3 XDRIVE30E (electric-petrol) Land Rover DISCOVERY SPORT (diesel)	64 148
SUV Large (MC+NA)	Volvo Car XC90 (electric-petrol) Land Rover RR SPORT (petrol-electric)	49 64
SUV Upper Large (MC+NA)	Land Rover RANGE ROVER (electric-petrol) Land Rover DISCOVERY (diesel)	64 197
Pick-up/ Chassis 4×2 (MC+NA)	Nissan NAVARA (diesel)	166
Pick-up/ Chassis 4×4 (MC+NA)	Nissan NAVARA (diesel)	147
Vans/ Cab Chassis (MC+NA)	Renault KANGOO (electric) Peugeot PAR (petrol)^	0 130

* 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.

If people who purchased new vehicles in 2020 had chosen the best-in-class for emissions performance, Australia's average carbon emissions intensity would have dropped by



93% for passenger cars and light SUVs, and by

50% for heavy SUVs and light commercial vehicles.

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

Buyer type

Figure 8 shows the average carbon dioxide emissions intensity by buyer type in 2020 for vehicles sold in the MA category. Vehicles bought by government buyers had the lowest average carbon dioxide emissions intensity (134 g/km), followed by private buyers (155 g/km) and business buyers (158 g/km). Additional data on buyer types is provided in **Tables 14** and **15** in the appendix.

Figure 8: Average emissions intensity by buyer type for the MA category, 2020

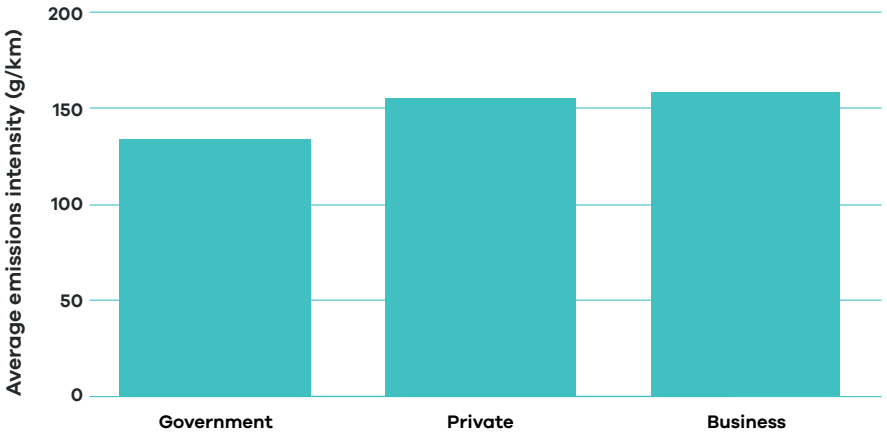


Figure 9 shows the average carbon dioxide emissions intensity by buyer type in 2020 for vehicles sold in the MC+NA category. Overall, the average emissions intensity was relatively similar across the three buyer types, although it was lowest for private buyers (216 g/km) and highest for business buyers (220 g/km).

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 9: Average emissions intensity by buyer type for the MC+NA category, 2020

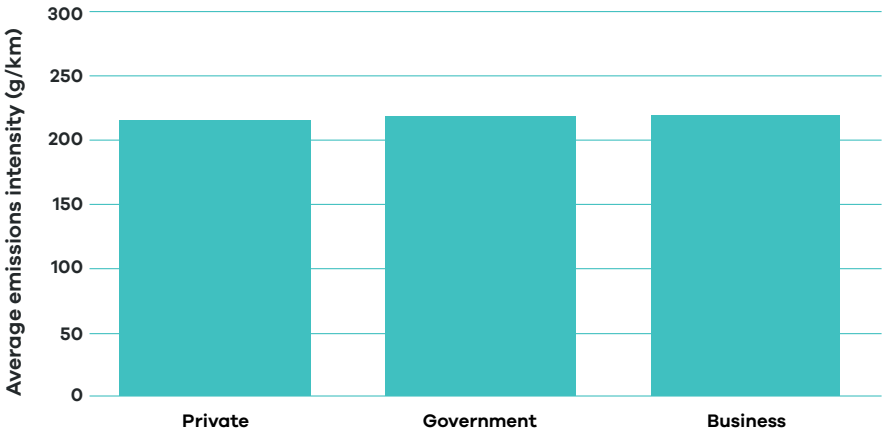


Figure 10 shows the average carbon dioxide emissions intensity for these buyers, for vehicles sold in the MA category, while **Figure 11** shows the corresponding information for the MC+NA category. Additional data on the detailed buyer types is provided in **Tables 16** and **17** in the appendix.

Figure 10: Average emissions intensity by detailed buyer type for the MA category, 2020

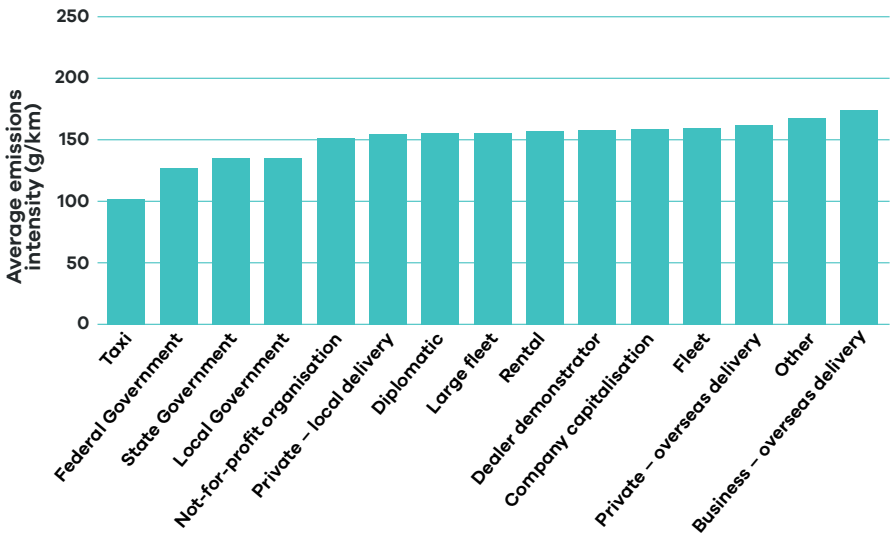
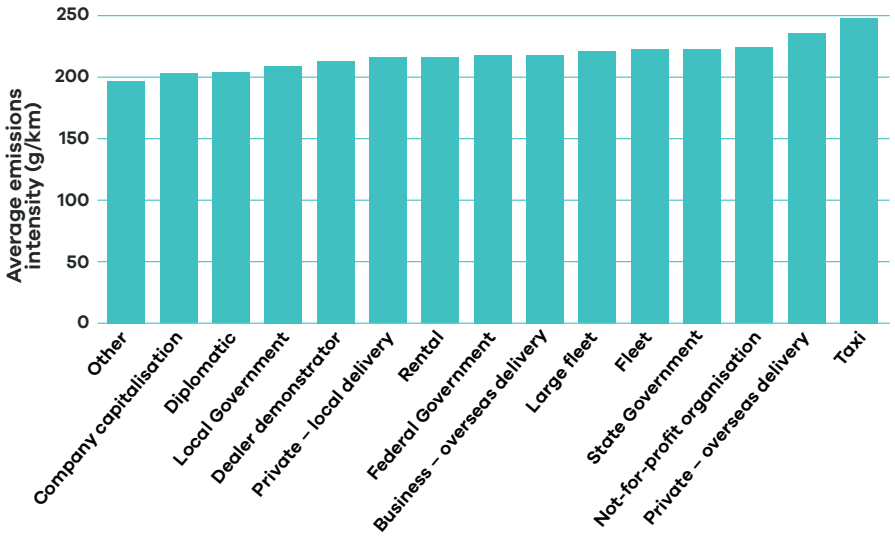


Figure 11: Average emissions intensity by detailed buyer type for the MC+NA category, 2020



The average emissions intensity for passenger cars and light SUVs was lowest for government car fleets, (134 g/km), followed by private buyers (155 g/km) and business buyers (158 g/km).

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 12** compares the emissions intensity for the MA category, and shows that the ACT had the lowest emissions intensity while the WA government had the highest.[9]

Figure 12: Average emissions intensity by government for the MA category, 2020

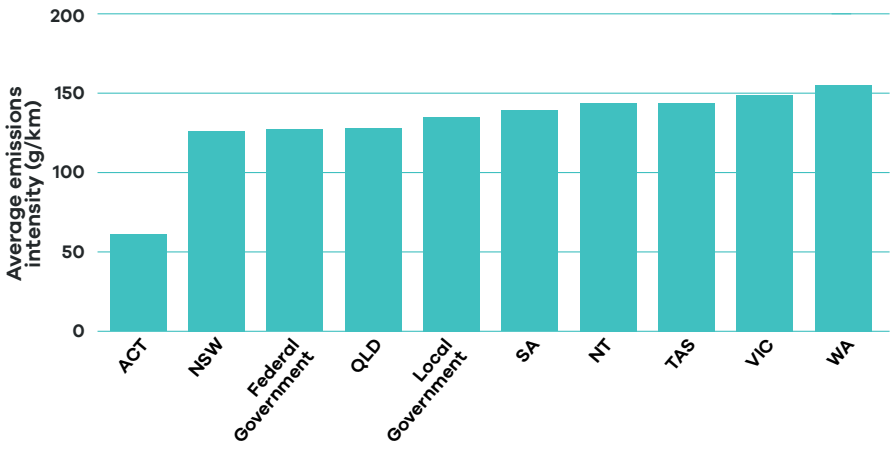
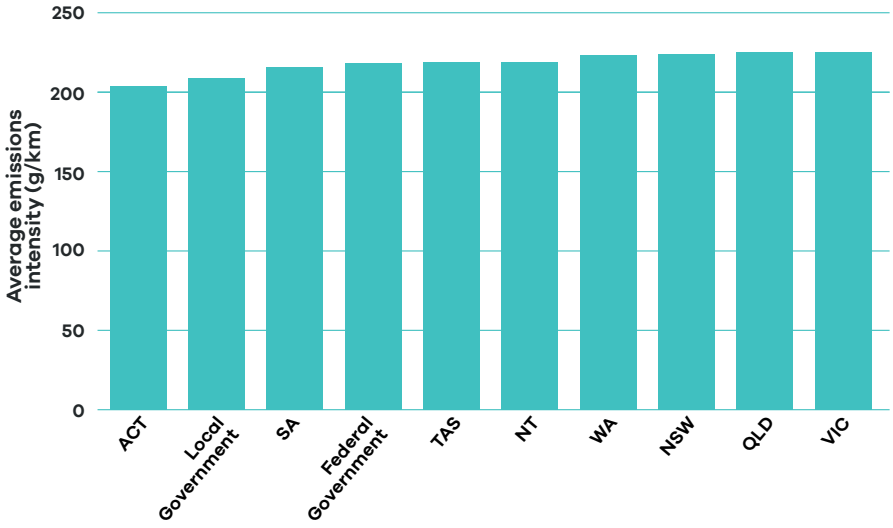


Figure 13 provides the same comparison for the MC+NA category. The ACT government again had the lowest emissions intensity, while Victoria had the highest. Overall, the differences in emissions intensity were much smaller for the MC+NA category than the MA category.

Figure 13: Average emissions intensity by government for the MC+NA category, 2020



9 The ACT government recorded less than half the emissions intensity for the MA category than the government fleet with the next lowest emissions intensity. This is largely attributable to the higher percentage of PHEVs and BEVs within its purchased vehicle fleet (see **Figure 21**), in combination with the resulting super-credit weighting applied to these purchases.

Powertrain and fuel type

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

Figure 14 shows the average carbon dioxide emissions intensity by powertrain and fuel type for 2020 for the MA category. More detailed information about electric and hybrid vehicles is reported separately in the following section. In a change from the corresponding graphs in previous reports, 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 166 g/km, while diesel vehicles' average emissions intensity was 178 g/km; this was significantly higher than the emissions intensity of HEVs (102 g/km).

Additional data on fuel types is provided in **Tables 18** and **19** in the appendix.

Figure 14: Average emissions intensity by powertrain and fuel type for the MA category, 2020

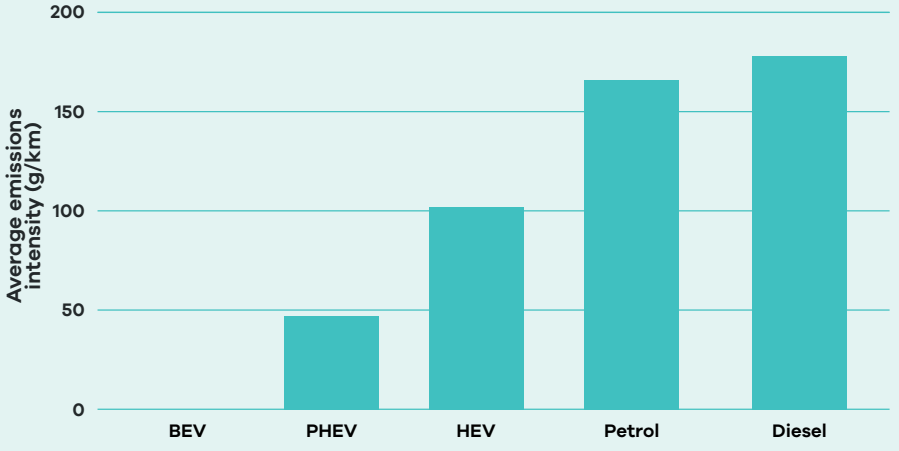
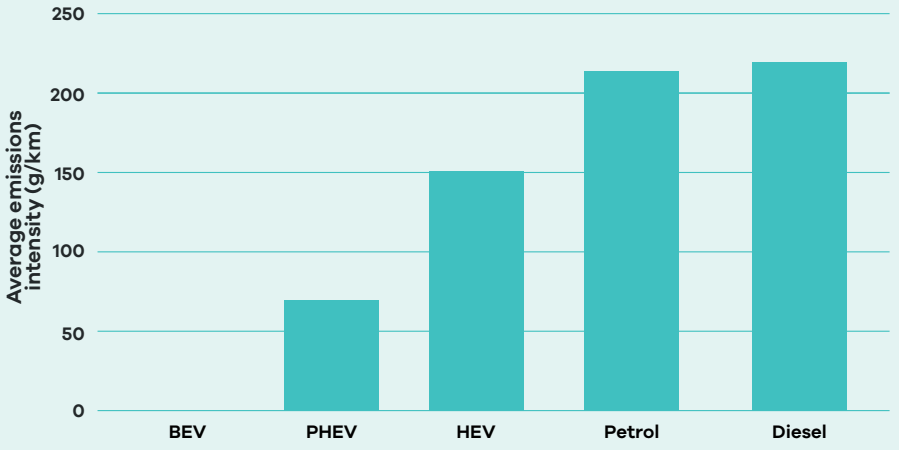


Figure 15 shows the average carbon dioxide emissions intensity by powertrain and fuel type for the MC+NA category. Petrol-only vehicles also had lower emissions intensity than diesel-only vehicles for the MC+NA category: 214 g/km compared with 220 g/km. This was again significantly higher than the emissions intensity of MC+NA category HEVs (151 g/km).

Figure 15: Average emissions intensity by powertrain and fuel type for the MC+NA category, 2020



Electric and hybrid vehicles

This year's report 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) for the first time.[10]

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.

Table 4: Emissions intensity and annual sales by electric vehicle type, 2019 and 2020

Electric vehicle type	Average emissions intensity (g/km)	Sales	
	2020	2019	2020
Plug-in Hybrid Electric Vehicles (PHEV)	51[a]	1,402	1,692
Battery Electric Vehicles (BEV)	0	1,523	1,778
Total	**N/A**	**2,925**	**3,470**

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

The FCAI data does not include Tesla vehicles. **Table 5** includes the FCAI data on electric vehicle sales and the NTC's estimates of the number of Tesla vehicles sold to determine total electric vehicle sales in Australia using state- and territory-based registration systems for the number of Tesla vehicles for 2019 and 2020. The total number of electric vehicles sold in 2020 was 6,900 compared to 5,875 vehicles sold in 2018. This is a 17 per cent increase.

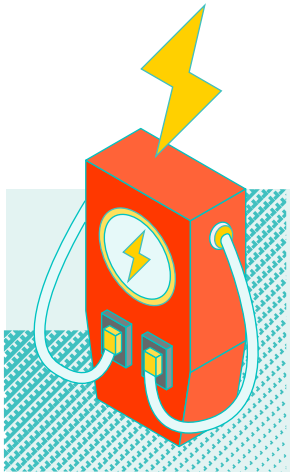
Table 5: Electric vehicle sales, 2019 and 2020

Make	2019	2020	% change between 2019 and 2020
Tesla	2,950[a]	3,430[b]	16%
All other makes[c]	2,925	3,470	19%
Total	**5,875**	**6,900**	**17%**

a. New registrations from state- and territory-based registration systems for December 2018 to December 2019.

b. New registrations from state- and territory-based registration systems for December 2019 to December 2020.

c. FCAI data.



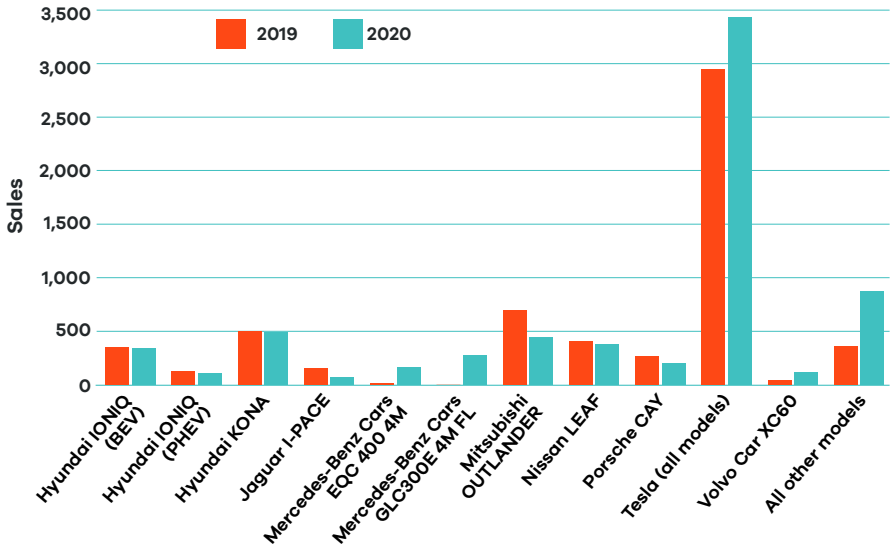
Electric vehicles make up an estimated 0.12% of the nation's 18.1 million cars and light commercial vehicles.

10 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.

The total number of registered Tesla electric vehicles in the Australian fleet in December 2020 was 9,588.

There were 37 models of electric vehicles sold in 2020 compared with 33 models in 2019 (excluding Tesla models). **Figure 16** shows the sales of the more popular electric vehicle models in 2019 and 2020. Additional data on sales by model, state and buyer type for 2019 and 2020 for the FCAI data are provided in **Tables 20**, **21** and **22** in the appendix.

Figure 16: Sales of selected electric vehicles, 2019 and 2020



Note: BEV is Battery Electric Vehicle and PHEV is Plug-in Hybrid Electric Vehicle

Table 6 summarises various types of electric vehicle data by state and territory. The first row of data summarises electric vehicle sales in 2020 from the FCAI data. The second row of data shows all electric vehicle sales between 2010 and 2020 in each state and territory, and again relies on the FCAI data. The final row of data shows the number of Tesla vehicles registered in each state and territory as at 21 December 2020.

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.[11]

The NTC estimates there were around 21,500 electric vehicles in the Australian vehicle fleet at the end of 2020. The total number of passenger vehicles and light commercial vehicles in Australia as at 31 January 2020 was 18.1 million (ABS, 2020), meaning that electric vehicles represent around 0.12 per cent of the nation's 18.1 million cars and light commercial vehicles (see details in **Table 23** in the appendix, which also includes the estimated share of electric vehicles in the total fleet in each state and territory). **Table 24** in the appendix contains more detailed information on BEV sales by state and model.

Table 6: Electric vehicle sales and Tesla registrations by state and territory

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Australia
Electric vehicle sales in 2020 (excluding Tesla)	247	1,097	6	610	207	83	917	303	3,470
Total electric vehicle sales from 2010 to 2020 (excluding Tesla)	568	3,369	26	1,859	1,812	221	3,242	942	12,039
Tesla registrations as at 21 December 2020	331	3,454	16	1,966	317	92	2,826	586	9,588

* Registrations from state- and territory-based registration systems as at 21 December 2020

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

Table 7 reports on the sales and emissions intensity for hybrid vehicles (HEVs), with sales of these vehicles almost doubling between 2019 and 2020.

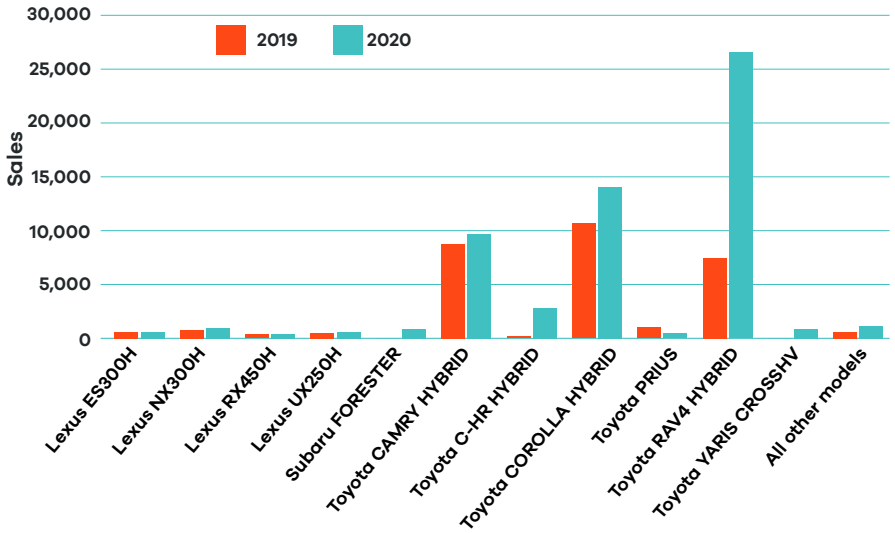
Table 7: Emissions intensity and annual sales for hybrid vehicles, 2019 and 2020

Hybrid vehicle type	Average emissions intensity (g/km)	Sales	
	2020	2019	2020
Hybrid Electric Vehicle (HEV)	103 [a]	30,641	58,595

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

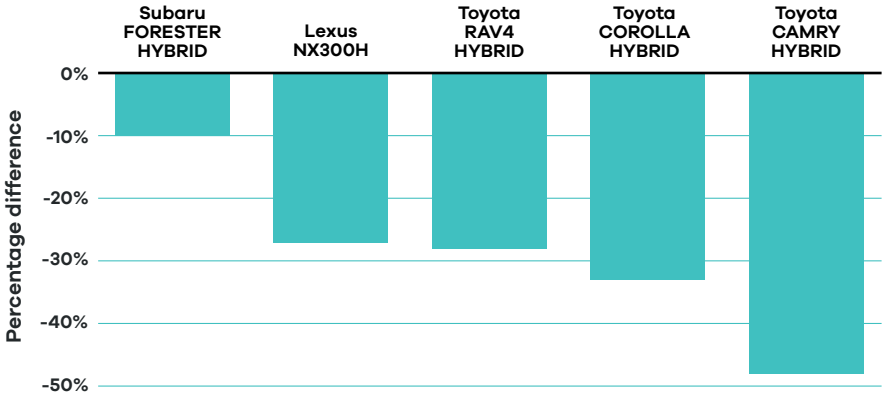
There were 26 models of hybrid vehicles sold in 2020 compared with 28 models in 2019. **Figure 17** shows the sales of the most popular hybrid vehicle models in 2019 and 2020. Toyota sold around 93 per cent of all hybrids in 2020. Additional data on hybrid vehicle sales by model for 2019 and 2020 are provided in **Table 25** in the appendix.

Figure 17: Sales of selected hybrid vehicles, 2019 and 2020



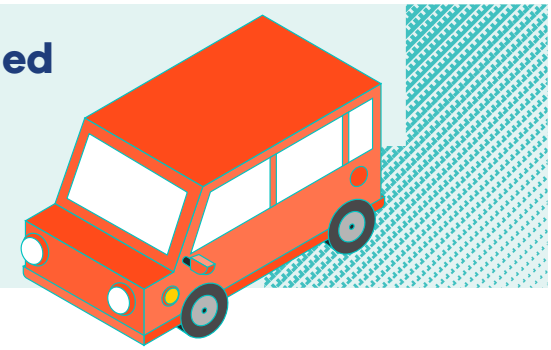
Hybrid vehicles do not require charging infrastructure and can still achieve significant reductions in emissions intensity. **Figure 18** shows the reductions in emissions intensity for five models relative to the equivalent petrol model, which range from 10 per cent to 48 per cent.

Figure 18: Difference in emissions intensity between hybrid and petrol variants of selected models



Sales of hybrid vehicles almost doubled in 2020 compared with 2019, with

58,595 **hybrid vehicles sold in 2020.**



Electric and hybrid vehicles have been purchased to varying degrees by different buyer types. **Figure 19** shows the percentage of total sales made up of BEVs, PHEVs and HEVs for various buyer types. Overall, governments had the highest or second highest shares of each of the three vehicle types in the graph, as a proportion of total sales. However, in terms of the absolute number of sales, private buyers were by far the biggest purchasers of electric and hybrid vehicles.

Figure 19: Percentage of total sales that were electric or hybrid vehicles by buyer type, 2020

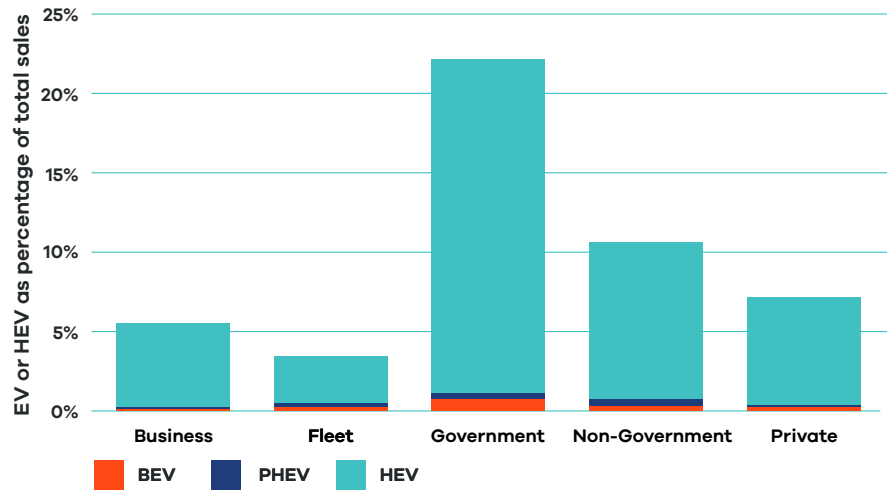


Figure 20 shows similar information by detailed buyer type. Over 90 per cent of taxi purchases in 2020 were hybrid vehicles, albeit this represented 700 vehicles.

Figure 20: Percentage of total sales that were electric or hybrid vehicles by detailed buyer type, 2020

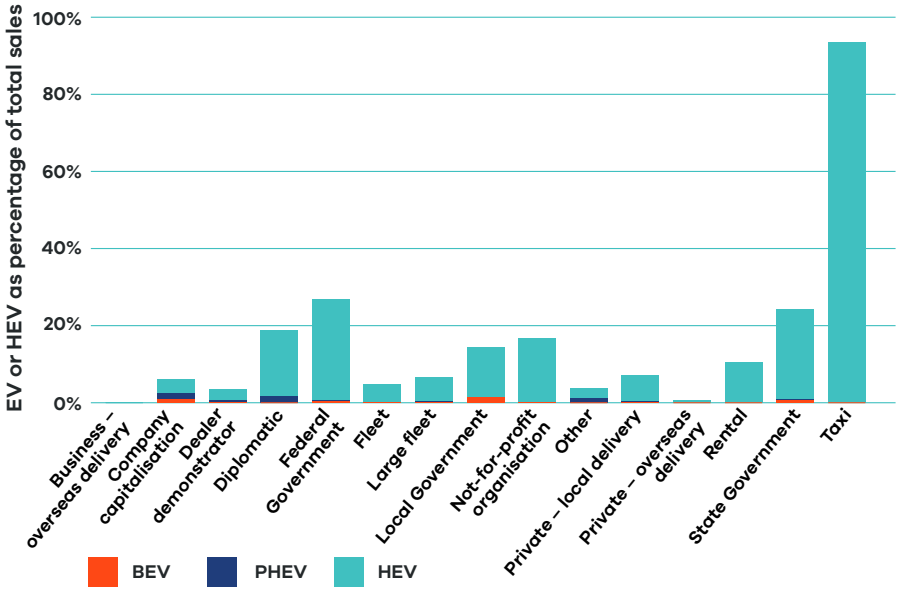
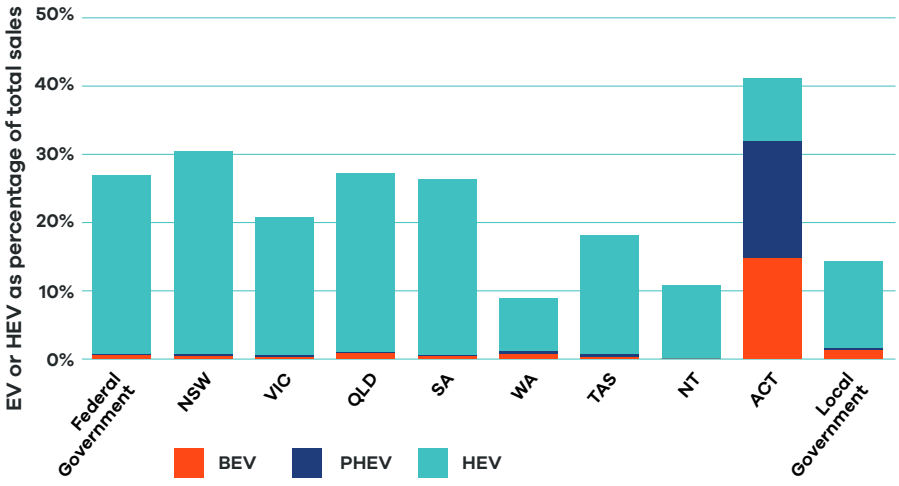


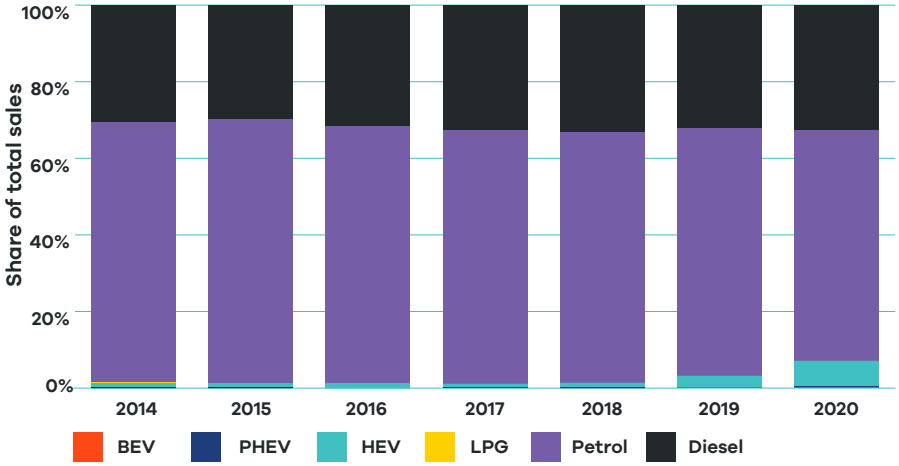
Figure 21 compares the percentages of electric and hybrid vehicles for each state and territory government, as well as the federal government and all local governments. The ACT government had by far the highest shares of BEVs and PHEVs as a proportion of total sales; however, the total number of vehicles it purchased in 2020 was relatively small at 216 vehicles. Almost all governments purchased at least 10 per cent of their fleet as either electric or hybrid vehicles in 2020, but most of these were hybrid vehicles.

Figure 21: Percentage of total sales that were electric or hybrid vehicles by government, 2020



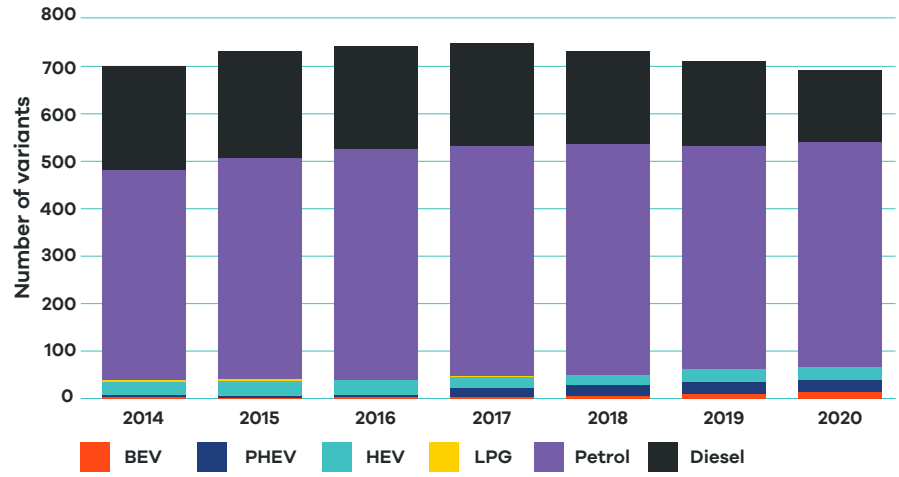
Although the overall sales of BEVs and PHEVs, and to a lesser extent HEVs, remain relatively low overall, they have increased significantly in recent years, as demonstrated in **Figure 22**, which shows the share of total sales by powertrain and fuel type from 2014 to 2020.[12]

Figure 22: Share of total sales by powertrain/fuel type, 2014-2020



This result in part reflects the increased availability of BEVs, PHEVs and HEVs model variants in the Australian market over time. **Figure 23** shows that the number of PHEV model variants sold in the Australian market increased significantly in 2017, and has increased further since then. BEV model variants sold have also increased from just 2 in 2015 to 13 in 2020. The overall number of model variants sold in Australia peaked in 2017, with the subsequent decline primarily due to diesel variants.

Figure 23: Number of model variants sold in Australia by powertrain/fuel type, 2014-2020



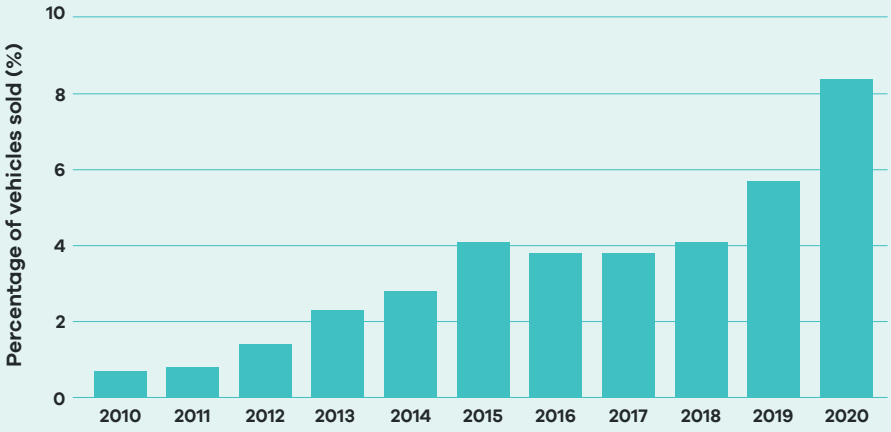
12 2014 was chosen as the starting point as it is the first year for which we have data available on the secondary fuel type, needed to distinguish between BEVs/PHEVs; and HEVs/internal combustion engine-only vehicles.

Green vehicles

Two alternative measures of 'green' vehicles are reported on. 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 2020 was 8.4 per cent of total sales (compared with 5.7 per cent in 2019). **Figure 24** shows 'green' vehicle sales as a proportion of total new light vehicle sales between 2010 and 2020.

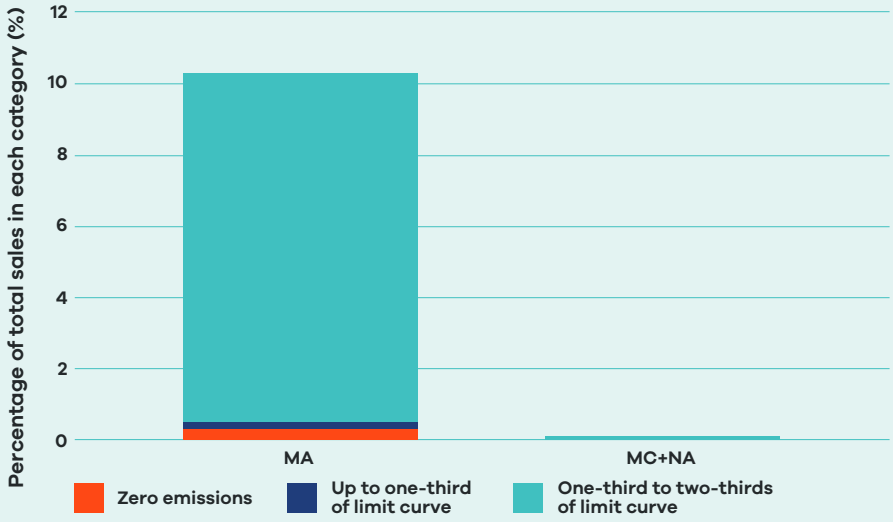
Table 26 in the appendix provides more detail on green vehicles sold in Australia in 2020, based on this measure of 'green' vehicles.

Figure 24: 'Green' vehicle sales as a percentage of total new light vehicles sold, 2010–2020



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 **Figure 25**. Around 10 per cent of all vehicles in the MA category received a super-credit weighting above 1, with the vast majority of these receiving the 1.5 super-credit weighting (with emissions between one-third and two-thirds of the limit curve). Super-credit weightings of 2 and 3 were attained by 0.2 per cent and 0.3 per cent of sales, respectively, in the MA category. For the MC+NA category, 99.9 per cent of vehicle sales did not have a super-credit weighting of above 1 (i.e., the emissions intensity was above two-thirds of the limit curve).

Figure 25: Alternative measure of 'green' vehicles using the FCAI super-credits for the MA and MC+NA categories, 2020



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 10 and 11), divided by total vehicle sales.[13] 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 26 displays the percentage 'contributions' for the MA category and shows that the five segments of SUVs contributed slightly less than two-thirds of the overall emissions intensity for the MA category. SUV Medium was the segment with the largest contribution (29 per cent), while SUV Small was the third largest with 19 per cent (just behind the Small segment, which also contributed 19 per cent).

Figure 27 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 (52 per cent), while SUV Large was the second highest with 18 per cent.

Figure 26: Percentage contribution to overall emissions intensity by segment for the MA category, 2020

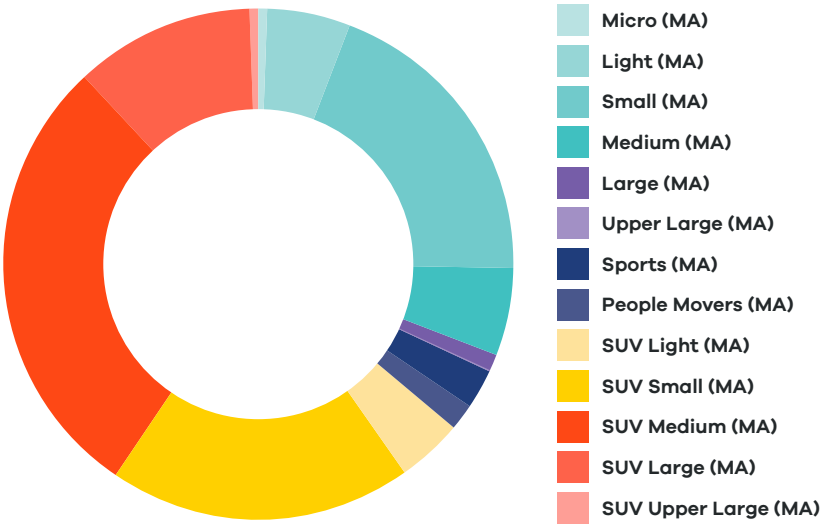
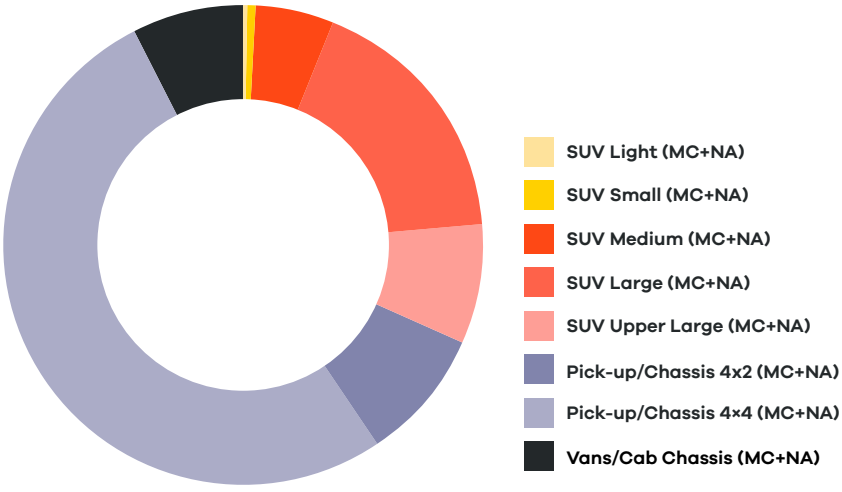


Figure 27: Percentage contribution to overall emissions intensity by segment for the MC+NA category, 2020

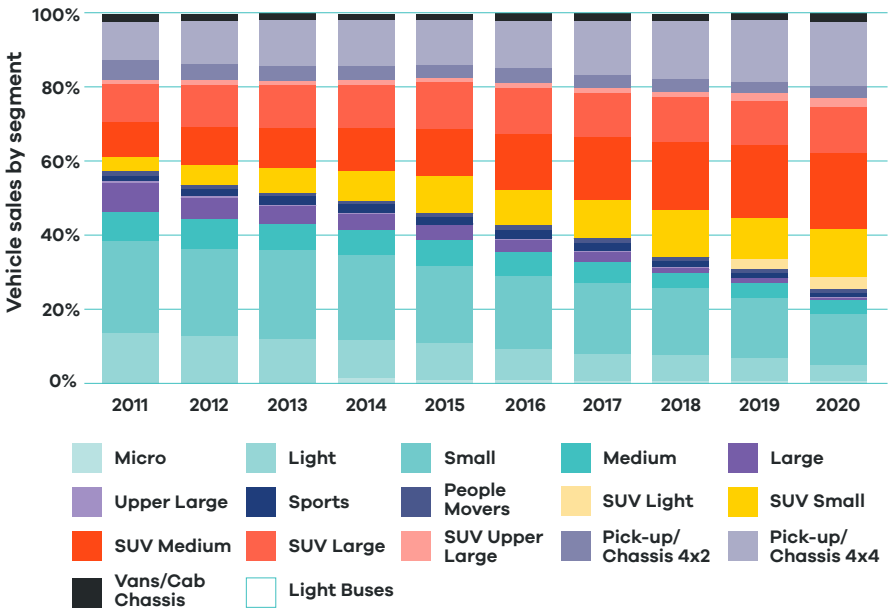


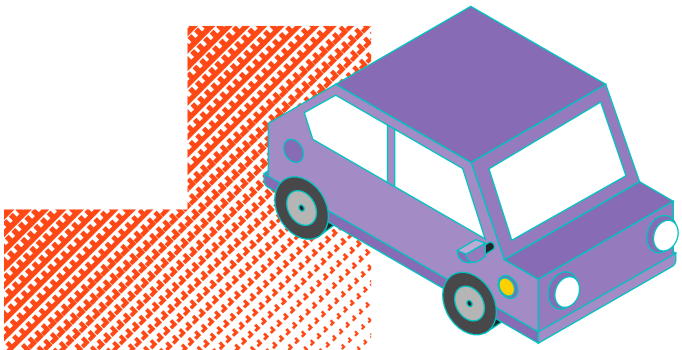
13 Both sales figures in these calculations include the use of super-credits.

There has been a significant transition in sales for different segments of Australia's vehicle fleet since 2011, as shown in **Figure 28**. 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 25 per cent of total sales in 2011, they had increased to over half (52 per cent) of total sales in 2020. 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 one quarter of all sales in 2011, but had decreased to 14 per cent by 2020; the Light segment's share of total sales decreased from 14 per cent in 2011 to 4 per cent in 2020.

Between 2011 and 2020, the average emissions intensity decreased in all segments except 'Sports', and in most segments there was a decrease by at least 10 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 2**), despite the relative emissions intensity improving in most segments.

Figure 28: Vehicle sales by segment, 2011-2020





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 were 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), 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 are currently still reported alongside.

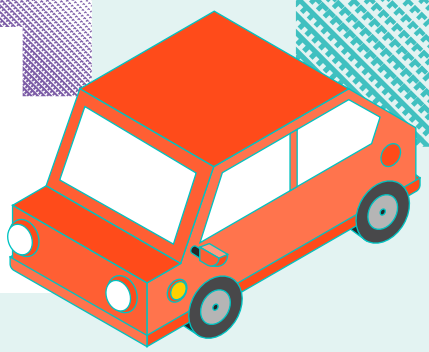
The published data from Europe separates passenger cars from light commercial vehicles.[14] The Australian information presented in section 3 is combined data covering passenger and light commercial vehicles. To enable comparisons between Australian and European data, we separated the Australian data 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).

Less than half

of Australian new passenger car sales had an emissions intensity of 160g/km or less, whereas

over 90%

of new European passenger car registrations were below 160 g/km.



14 In Europe, the passenger cars category includes SUVs.

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 8**. 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.[15]

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.[16]

The rest of this section compares Australian and other countries' carbon dioxide emissions intensity data for passenger and light commercial vehicles separately.

The international comparisons use European data from the European Environment Agency (EEA, 2021).

Table 8: 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 vehicles	Encourages consumers to purchase low carbon dioxide 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

15 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 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).

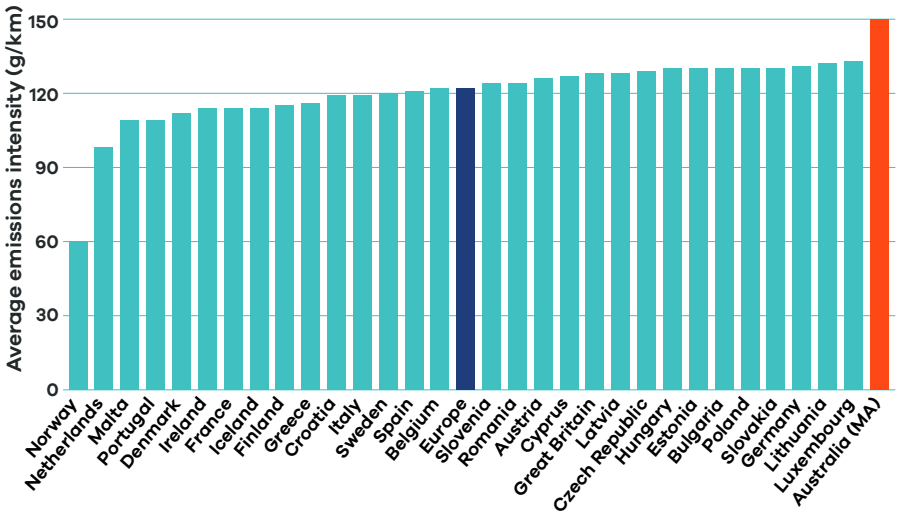
16 Data from the International Council on Clean Transportation Europe shows that around 41 per cent of new passenger car sales/registrations in the 28 European Union countries in 2019 had automatic transmissions (ICCT, 2020). By contrast, FCAI data shows that around 98 per cent of vehicle sales in the MA and MC categories in Australia in 2020 were either automatic or continuously variable transmission.

Passenger vehicles: average emissions intensity by country for 2019

The breakdown for average carbon dioxide emissions intensity for new passenger vehicles by country for 2019 is shown in **Figure 29**. We have used 2019 as the comparison year because this is the latest available year in the EEA's dataset; however, the data for Australia is for 2020. Another difference is that the Australian data reflects new vehicle sales, while the European data reflects new vehicle registrations.

In 2019, emissions intensity for passenger cars in European countries ranged from 60 g/km in Norway to 133 g/km in Luxembourg. The overall average emissions intensity for the 30 European countries was 122 g/km. Australia's emissions intensity was significantly higher at 150 g/km (based on the results for the MA category from the FCAI's standard).

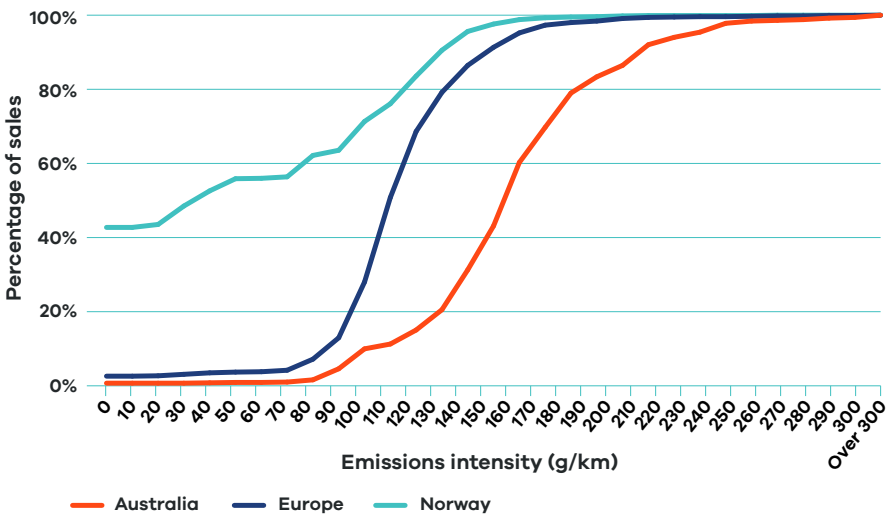
Figure 29: Average emissions intensity of passenger vehicles, 2020 (Australia) and 2019 (Europe)



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

Figure 30 compares the distribution of the emissions intensity among new passenger car sales in Australia[17] and Europe, in intervals of 10 g/km.[18] Norway is also shown as a comparator. The graph shows that around 4 per cent of Australia's passenger car sales in 2020 had an emissions intensity of 100 g/km or less, whereas 12.6 per cent of European and 63.4 per cent of Norwegian vehicles were at or below this emissions intensity figure. The vast majority of European new passenger cars (91 per cent) had an emissions intensity of 160 g/km or less, whereas in Australia just 43 per cent were below this mark.

Figure 30: Cumulative percentage of passenger vehicle sales relative to emissions intensity, 2020 (Australia) and 2019 (Europe)



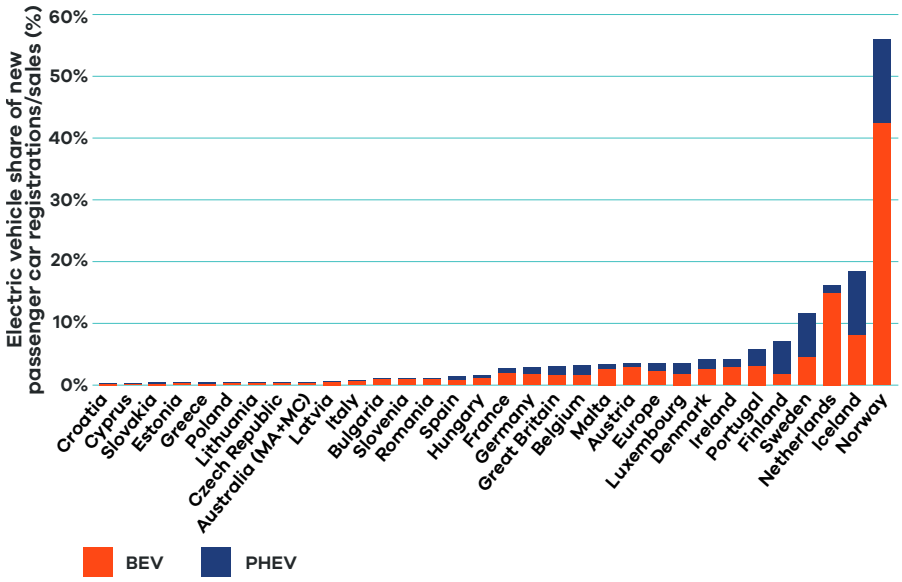
17 For the MA and MC categories combined.

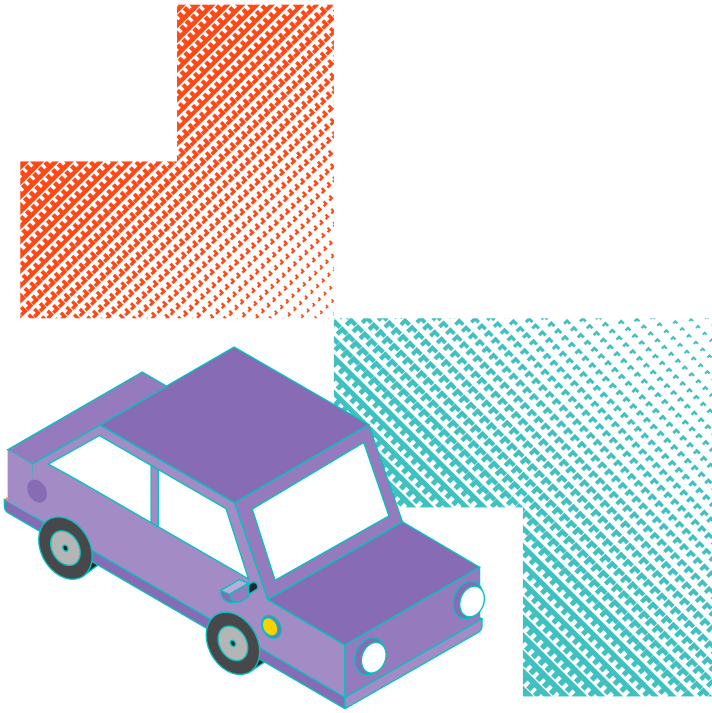
18 Vehicles sold with an emissions intensity above 300 g/km have been grouped into a single 'Over 300' category. This is due to the relatively small number of vehicles in this emissions range and the long 'tail' of the distribution, reaching 486 g/km for Australia, 575 g/km for Europe and 395 g/km for Norway.

The share of electric vehicles sold, relative to total sales, varies considerably across countries in Europe. **Figure 31** plots the share of electric vehicles – separately for BEVs and PHEVs – in each European country, as well as the average across the 30 European countries and in Australia[19]. In Norway, more than half of new passenger vehicles are electric vehicles, with BEVs representing 42 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).

Croatia had the lowest share of new electric passenger vehicles at 0.4 per cent, with Australia's figure slightly higher at 0.5 per cent. Overall, the share of electric vehicles in new passenger car registrations remains below 10 per cent in most European countries.

Figure 31: Electric vehicle share of new passenger car registrations/sales (%), 2020 (Australia) and 2019 (Europe)



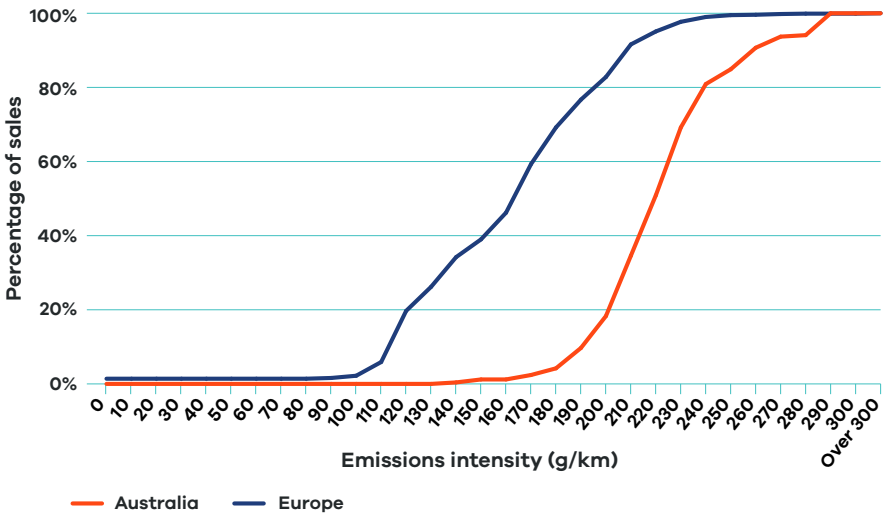


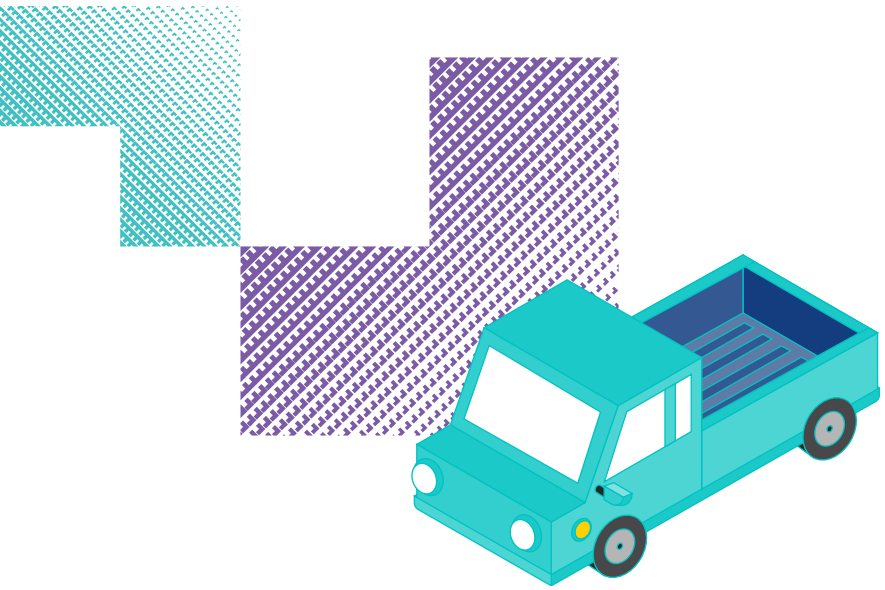
19 Using the MA and MC categories.

Light commercial vehicles: average emissions intensity by country for 2019

Figure 32 compares the distribution of the emissions intensity among new light commercial vehicle sales in Australia[20] and Europe, in intervals of 10 g/km.[21] The graph shows that around 18 per cent of Australia's light commercial vehicle sales in 2020 had an emissions intensity of 200 g/km or less, whereas around 83 per cent of new European light commercial vehicles were at or below this emissions intensity.

Figure 32: Cumulative percentage of light commercial vehicle sales relative to emissions intensity, 2020 (Australia) and 2019 (Europe)





20 For the NA category.

21 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 500 g/km for Europe.

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Appendix

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

Table 9: National average emissions intensity for new passenger and light commercial vehicles, 2002–2020

Year	Average CO_2 emissions (g/km)	Annual change (%)	Average CO_2 emissions - MA (g/km)	Annual change	Average CO_2 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	N/A	150	N/A	217	N/A

N/A – not applicable

Note: 2020 figures are sourced from the FCAI's voluntary emissions standard (FCAI, 2021b)

Table 10: Average emissions intensity and annual sales by segment for the MA category, 2020

Segment	Average emissions intensity (g/km)	Sales
	2020	2020
SUV Medium	157	159,368
Small	142	121,151
SUV Small	156	114,658
SUV Large	195	54,229
Light	132	38,545
Medium	137	32,852
SUV Light	142	26,425
Sports	214	10,674
People Movers	212	7,733
Large	198	5,353
Micro	123	5,008
SUV Upper Large	213	2,149
Upper Large	212	858
Total	**N/A**	**579,003**

Table 11: Average emissions intensity and annual sales by segment for the MC+NA category, 2020

Segment	Average emissions intensity (g/km)	Sales
	2020	2020
Pick-up/Chassis 4×4	224	152,145
SUV Large	212	54,611
Pick-up/Chassis 4×2	223	26,614
Vans/Cab Chassis	204	23,646
SUV Medium	170	20,592
SUV Upper Large	265	19,523
SUV Light	152	2,368
SUV Small	189	1,161
Total	**N/A**	**300,660**

Table 12: Top selling models within segments and comparison with best-in-class model, 2020

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	3,891	125	15	109
	2	Mitsubishi	MIRAGE	594	110	1	Mitsubishi MIRAGE (petrol)
	3	Fiat	500	291	112	3	
	4	Fiat	ABARTH	232	139	28	
Light (MA)	1	MG	MG3	7,158	159	N/A	0
	2	Kia	YB RIO	4,952	140	N/A	MINI COOPER (electric)
	3	Suzuki	SWIFT	4,332	114	N/A	
	4	Toyota	YARIS	4,235	140	N/A	
	5	Mazda	200	3,790	123	N/A	
	6	Volkswagen	POLO	3,602	118	N/A	
	7	Suzuki	BALENO	3,326	124	N/A	
	8	Honda	JAZZ	2,692	135	N/A	
	9	MINI	COOPER	1,633	109	N/A	
	10	Skoda	FABIA	807	108	N/A	
Small (MA)	1	Hyundai	I30	20,734	172	N/A	0
	2	Kia	BD CERATO	17,559	165	N/A	Nissan LEAF (electric)
	3	Mazda	300	14,663	147	N/A	
	4	Toyota	COROLLA HYBRID	13,943	93	N/A	
	5	Toyota	COROLLA	11,939	139	N/A	
	6	Volkswagen	GOLF	10,012	140	N/A	
	7	Honda	CIVIC 5D	4,856	146	N/A	
	8	Subaru	IMPREZA	3,395	158	N/A	
	9	Honda	CIVIC 4D	2,131	146	N/A	
	10	Ford	FOCUS	1,878	155	N/A	

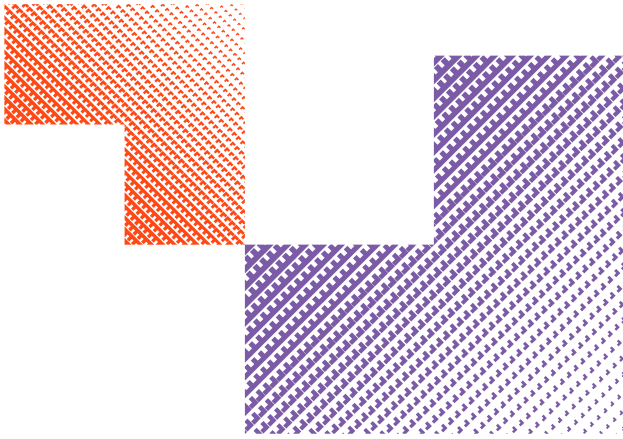
* Best-in-class is the lowest emissions model variant and includes battery electric vehicles with emissions of 0 g/km. For segments where the best-in-class vehicle is a battery electric vehicle, it is not possible to do a percentage difference for the top-selling models.

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	Toyota	CAMRY HYBRID	9,615	98	113	46
	2	Toyota	CAMRY	3,504	187	306	Mercedes-Benz Cars C300E FL (electric-petrol)
	3	Skoda	OCTAVIA	2,115	132	188	
	4	Mercedes-Benz Cars	C200 FL	2,086	158	244	
	5	BMW	330I	1,744	152	231	
	6	Mazda	600	1,727	177	284	
	7	Subaru	LIBERTY	931	175	279	
	8	BMW	320I	817	144	213	
	9	Mercedes-Benz Cars	CLA200	772	130	183	
	10	Mercedes-Benz Cars	C300 FL	665	159	246	
Large (MA)	1	Kia	CK STINGER	1,778	238	417	46
	2	Holden	COMMODORE	1,009	192	318	BMW 530E (electric-petrol)
	3	Mercedes-Benz Cars	E200	381	161	250	
	4	Skoda	SUPERB	273	159	246	
	5	BMW	530D	207	134	192	
	6	Audi	A6	140	164	256	
	7	BMW	530I	138	150	225	
	8	Maserati	GHIBLI	114	210	356	
	9	BMW	520I	112	150	227	
	10	BMW	M5	98	242	426	

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	Chrysler	300 LX	220	293	423	56
	2	Mercedes-Benz Cars	S350 D FL	104	141	152	Porsche 97A (electric-petrol)
	3	BMW	620D GT	91	142	154	
	4	BMW	840I GC	65	180	221	
	5	BMW	740I	44	177	216	
	6	Mercedes-Benz Cars	M-AMG GT 63S 4M	41	258	361	
	7	Mercedes-Benz Cars	S450L FL	40	192	243	
	8	BMW	M850I GC	36	245	338	
	9	BMW	730D	30	139	148	
	10	Porsche	97A	23	141	152	
Sports (MA)	1	Ford	MUSTANG	2,922	283	489	48
	2	Hyundai	VELOSTER	639	162	237	BMW I8 ROADSTER (electric-petrol)
	3	Mercedes-Benz Cars	C200 CPE FL	529	157	228	
	4	Mazda	MX5	457	162	237	
	5	Porsche	911	431	226	372	
	6	Subaru	BRZ	408	186	287	
	7	Toyota	86	387	176	267	
	8	BMW	M2	282	207	331	
	9	Porsche	982	246	196	308	
	10	Mercedes-Benz Cars	M-AMG C63S CPFL	230	234	388	

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	YP CARNIVAL	3,647	226	64	138
	2	Honda	ODYSSEY	1,091	182	32	Volkswagen CADDY (petrol)
	3	LDV	G10	725	258	87	
	4	Hyundai	IMAX	638	231	67	
	5	Mercedes-Benz Vans	V-CLASS	411	160	16	
	6	Volkswagen	MULTIVAN	281	196	42	
	7	Toyota	GRANVIA	276	211	53	
	8	Volkswagen	CADDY	257	138	0	
	9	Mercedes-Benz Vans	VALENTE	222	169	22	
	10	Toyota	TARAGO	124	210	52	
SUV Light (MA)	1	Mazda	CX3	13,953	144	67	86
	2	Hyundai	VENUE	3,678	165	91	Toyota YARIS CROSSHV (petrol-electric)
	3	Volkswagen	T-CROSS	2,646	123	43	
	4	Holden	TRAX	2,314	163	90	
	5	Nissan	JUKE	1,059	138	60	
	6	Toyota	YARIS CROSSHV	857	87	1	
	7	Suzuki	IGNIS	651	114	32	
	8	Ford	PUMA	597	121	41	
	9	Toyota	YARIS CROSS	454	124	44	
	10	Citroen	C3 AIRCROSS	67	126	47	

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	Mitsubishi	ASX	14,056	178	N/A	0
	2	Hyundai	KONA	12,514	149	N/A	Hyundai KONA (electric)
	3	Kia	SP2 SELTOS	9,966	163	N/A	
	4	Mazda	C30	8,998	153	N/A	
	5	Honda	HR-V	8,181	156	N/A	
	6	Subaru	XV	7,963	159	N/A	
	7	Nissan	QASHQAI	7,098	159	N/A	
	8	Toyota	C-HR	5,690	145	N/A	
	9	MG	MG ZS	5,494	161	N/A	
	10	Mitsubishi	ECLIPSE CROSS	4,517	166	N/A	
SUV Medium (MA)	1	Toyota	RAV4 HYBRID	26,400	108	N/A	0
	2	Mazda	CX5	21,979	171	N/A	Mercedes-Benz Cars EQC 400 4M (electric)
	3	Hyundai	TUCSON	15,789	182	N/A	
	4	Nissan	XTRAIL	14,483	186	N/A	
	5	Toyota	RAV4	12,137	150	N/A	
	6	Mitsubishi	OUTLANDER	12,004	157	N/A	
	7	Kia	QL SPORTAGE	9,579	181	N/A	
	8	Honda	CR-V	9,523	166	N/A	
	9	Volkswagen	TIGUAN	5,611	178	N/A	
	10	Volvo Car	XC60	2,858	154	N/A	



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	Toyota	KLUGER	8,403	216	N/A	0
	2	Hyundai	SANTA FE	4,615	207	N/A	Jaguar I-PACE (electric)
	3	Subaru	OUTBACK	4,239	175	N/A	
	4	Mazda	CX9	4,047	197	N/A	
	5	Mazda	CX8	3,738	176	N/A	
	6	Volkswagen	TIGUAN ALLSPACE	3,537	186	N/A	
	7	Kia	MQ4 SORENTO	2,684	159	N/A	
	8	Kia	UM SORENTO	1,863	206	N/A	
	9	Isuzu Ute	MU-X	1,737	213	N/A	
	10	BMW	X5 XDRIVE30D	1,725	189	N/A	
SUV Upper Large (MA)	1	Mercedes-Benz Cars	GLS400D 4M	656	202	12	181
	2	BMW	X7 XDRIVE30D	653	191	6	Audi Q8 (diesel)
	3	BMW	X7 M50I	207	265	46	
	4	Audi	Q8	193	201	11	
	5	Mercedes-Benz Cars	GLS450 4M	146	210	16	
	6	Audi	SQ8	79	205	13	
	7	Audi	RSQ8	71	276	52	
	8	Bentley	BENTAYGA	52	260	43	
	9	Lamborghini	URUS	48	279	54	
	10	Rolls-Royce	CULLINAN	18	341	88	
SUV Light (MC+NA)	1	Suzuki	JIMNY	2,368	152	4	146 Suzuki JIMNY (petrol)

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	Volvo Car	XC40	765	182	21	150
	2	Jeep	COMPASS	395	202	35	Jeep COMPASS (diesel)
	3	Jeep	RENEGADE	1	175	17	
SUV Medium (MC+NA)	1	Subaru	FORESTER	12,337	167	161	64
	2	BMW	X3 XDRIVE30I	2,311	169	164	BMW X3 XDRIVE30E (electric-petrol)
	3	Land Rover	RR EVOQUE	1,369	173	171	
	4	Land Rover	DISCOVERY SPORT	1,206	174	172	
	5	BMW	X3 SDRIVE20I	907	163	155	
	6	BMW	X4 XDRIVE30I	521	169	164	
	7	BMW	X3 XDRIVE20D	373	149	133	
	8	BMW	X3 M40I	346	199	211	
	9	BMW	X4 XDRIVE20I	310	168	163	
	10	BMW	X3 XDRIVE30D	242	159	148	
SUV Large (MC+NA)	1	Toyota	PRADO	18,034	212	333	49
	2	Mitsubishi	PAJERO SPORT	6,017	212	333	Volvo Car XC90 (electric-petrol)
	3	Ford	EVEREST	5,574	195	297	
	4	Isuzu Ute	MU-X	5,319	209	327	
	5	Toyota	FORTUNER	2,883	217	344	
	6	Jeep	GRAND CHEROKEE	2,880	232	374	
	7	Mazda	CX9	2,700	210	329	
	8	Mitsubishi	PAJERO	2,399	240	390	
	9	Land Rover	RR SPORT	1,644	209	326	
	10	Holden	TRAILBLAZER	1,426	250	409	

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	15,078	253	295	64
	2	Nissan	PATROL	2,870	343	436	Land Rover RANGE ROVER (electric-petrol)
	3	Land Rover	DISCOVERY	795	202	215	
	4	Mercedes-Benz Cars	M-AMG G63 FL	270	299	367	
	5	Lexus	LX570	228	334	422	
	6	Land Rover	RANGE ROVER	167	236	269	
	7	Lexus	LX450D	115	250	291	
Pick-up/ Chassis 4×2 (MC+NA)	1	Toyota	HILUX 4X2	10,410	243	47	166
	2	Isuzu Ute	D-MAX	4,347	201	21	Nissan NAVARA (diesel)
	3	Ford	RANGER	3,084	200	20	
	4	Mitsubishi	TRITON	2,443	228	37	
	5	Nissan	NAVARA	1,726	175	6	
	6	Mazda	B32	1,663	244	47	
	7	GWM	STEED	1,265	221	33	
	8	Holden	COLORADO	845	240	44	
	9	Mazda	B22	470	217	31	
	10	Mazda	B30	262	202	22	
Pick-up/ Chassis 4×4 (MC+NA)	1	Ford	RANGER	37,888	218	48	147
	2	Toyota	HILUX 4X4	34,765	217	48	Nissan NAVARA (diesel)
	3	Mitsubishi	TRITON	14,942	222	51	
	4	Isuzu Ute	D-MAX	10,736	207	41	
	5	Toyota	LANDCRUISER	10,064	281	91	
	6	Nissan	NAVARA	9,933	184	25	
	7	Holden	COLORADO	6,714	244	66	
	8	Volkswagen	AMAROK	6,271	235	60	
	9	LDV	T60	5,581	245	66	
	10	Mazda	B32	5,213	263	79	

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) *
Vans/Cab Chassis (MC+NA)	1	Toyota	HIACE	8,391	220	N/A	0
	2	Hyundai	ILOAD	3,919	229	N/A	Renault KANGOO (electric)
	3	Ford	TRANSIT CUSTOM	2,379	184	N/A	
	4	Volkswagen	CADDY VAN	1,749	140	N/A	
	5	Renault	TRAFIC	1,701	182	N/A	
	6	LDV	G10	1,627	230	N/A	
	7	Mercedes-Benz Vans	VITO	1,194	169	N/A	
	8	Mitsubishi	EXPRESS	612	188	N/A	
	9	Volkswagen	TRANSPORTER	582	205	N/A	
	10	LDV	V80	513	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 13: Average emissions intensity for models with a sales volume greater than 1,000 vehicles, 2020

Rank	Make	Model	Average emissions intensity (g/km)	Sales
1	Ford	RANGER	216	40,972
2	Toyota	HILUX 4X4	217	34,765
3	Toyota	RAV4 HYBRID	108	26,400
4	Toyota	LANDCRUISER	264	25,142
5	Mazda	CX5	171	21,979
6	Hyundai	I30	172	20,734
7	Toyota	PRADO	212	18,034
8	Kia	BD CERATO	165	17,559
9	Mitsubishi	TRITON	223	17,385
10	Hyundai	TUCSON	182	15,789
11	Isuzu Ute	D-MAX	205	15,083
12	Mazda	300	147	14,663
13	Nissan	XTRAIL	186	14,483
14	Mitsubishi	ASX	178	14,056
15	Mazda	CX3	144	13,953
16	Toyota	COROLLA HYBRID	93	13,943
17	Hyundai	KONA	149	12,514
18	Subaru	FORESTER	167	12,337
19	Toyota	RAV4	150	12,137
20	Mitsubishi	OUTLANDER	157	12,004
21	Toyota	COROLLA	139	11,939
22	Nissan	NAVARA	182	11,659
23	Toyota	HILUX 4X2	243	10,410
24	Volkswagen	GOLF	141	10,355
25	Kia	SP2 SELTOS	163	9,966
26	Toyota	CAMRY HYBRID	98	9,615
27	Kia	QL SPORTAGE	181	9,579
28	Honda	CR-V	166	9,523
29	Mazda	C30	153	8,998
30	Toyota	KLUGER	216	8,403
31	Toyota	HIACE	220	8,391

Rank	Make	Model	Average emissions intensity (g/km)	Sales
32	Honda	HR-V	156	8,181
33	Subaru	XV	159	7,963
34	Holden	COLORADO	243	7,559
35	MG	MG3	159	7,158
36	Nissan	QASHQAI	159	7,098
37	Isuzu Ute	MU-X	210	7,056
38	Mazda	B32	258	6,876
39	Mazda	CX9	202	6,747
40	Volkswagen	AMAROK	235	6,343
41	Mitsubishi	PAJERO SPORT	212	6,017
42	Ford	EVEREST	194	5,996
43	Toyota	C-HR	145	5,690
44	Volkswagen	TIGUAN	178	5,611
45	LDV	T60	245	5,581
46	MG	MG ZS	161	5,494
47	Kia	YB RIO	140	4,952
48	Honda	CIVIC 5D	146	4,856
49	Subaru	OUTBACK	174	4,840
50	Hyundai	SANTA FE	207	4,615
51	Mitsubishi	ECLIPSE CROSS	166	4,517
52	Suzuki	VITARA	139	4,386
53	Suzuki	SWIFT	114	4,332
54	Toyota	YARIS	140	4,235
55	Hyundai	ILOAD	229	3,919
56	Kia	JA PICANTO	125	3,891
57	Mazda	200	123	3,790
58	Mazda	CX8	176	3,738
59	Hyundai	VENUE	165	3,678
60	Kia	YP CARNIVAL	226	3,647
61	Volkswagen	POLO	118	3,602
62	Volkswagen	TIGUAN ALLSPACE	186	3,537
63	Toyota	CAMRY	187	3,504

Rank	Make	Model	Average emissions intensity (g/km)	Sales
64	Subaru	IMPREZA	158	3,395
65	Suzuki	BALENO	124	3,326
66	Volvo Car	XC40	169	3,229
67	MINI	COOPER	125	3,143
68	Ford	MUSTANG	283	2,922
69	Jeep	GRAND CHEROKEE	232	2,888
70	Toyota	FORTUNER	217	2,883
71	Nissan	PATROL	343	2,870
72	Volvo Car	XC60	154	2,858
73	Toyota	C-HR HYBRID	97	2,810
74	Honda	JAZZ	135	2,692
75	Kia	MQ4 SORENTO	159	2,684
76	Volkswagen	T-CROSS	123	2,646
77	MG	MG HS	170	2,600
78	Lexus	NX300	179	2,575
79	Renault	KOLEOS	189	2,408
80	Mitsubishi	PAJERO	240	2,399
81	Mercedes-Benz Vans	X-CLASS	216	2,397
82	Audi	Q3	169	2,389
83	Ford	TRANSIT CUSTOM	184	2,379
84	Suzuki	JIMNY	152	2,368
85	LDV	G10	238	2,352
86	Holden	TRAX	163	2,314
87	BMW	X3 XDRIVE30I	169	2,311
88	Audi	Q5	157	2,303
89	Mazda	B30	206	2,242
90	Porsche	95B	217	2,158
91	Honda	CIVIC 4D	146	2,131
92	Skoda	OCTAVIA	132	2,115
93	Mercedes-Benz Cars	C200 FL	158	2,086
94	Mercedes-Benz Cars	GLC300 4M FL	181	2,016
95	GWM	HAVAL H2	208	1,993

Rank	Make	Model	Average emissions intensity (g/km)	Sales
96	Ford	ESCAPE	186	1,971
97	Ford	FOCUS	155	1,878
98	Kia	UM SORENTO	206	1,863
99	GWM	STEED	221	1,829
100	Kia	CK STINGER	238	1,778
101	Volkswagen	CADDY VAN	140	1,749
102	BMW	330I	152	1,744
103	Mazda	600	177	1,727
104	BMW	X5 XDRIVE30D	189	1,725
105	Holden	EQUINOX	172	1,719
106	Audi	A3	121	1,716
107	Renault	TRAFIC	182	1,701
108	RAM	EXPRESS 1500	230	1,653
109	Skoda	KODIAQ	174	1,653
110	Land Rover	RR SPORT	209	1,644
111	BMW	118I	135	1,564
112	Mercedes-Benz Cars	GLE300D 4M	182	1,555
113	Hyundai	ELANTRA	166	1,520
114	Mercedes-Benz Cars	GLC200 FL	176	1,519
115	Audi	Q7	174	1,475
116	BMW	X1 SDRIVE20I	149	1,428
117	Holden	TRAILBLAZER	250	1,426
118	Holden	ACADIA	213	1,407
119	Subaru	WRX	223	1,400
120	Porsche	CAY	197	1,385
121	Land Rover	RR EVOQUE	173	1,369
122	Audi	Q3 SPORTBACK	169	1,366
123	Mercedes-Benz Cars	GLA180 FL	133	1,346
124	Ford	ENDURA	176	1,311
125	Audi	Q2	130	1,284
126	Volkswagen	T-ROC	161	1,261
127	Holden	ASTRA	138	1,254
128	Skoda	KAROQ	142	1,254

Rank	Make	Model	Average emissions intensity (g/km)	Sales
129	Land Rover	DISCOVERY SPORT	174	1,206
130	Mercedes-Benz Cars	A180 SEDAN	130	1,205
131	Volkswagen	TOUAREG	193	1,202
132	Mercedes-Benz Vans	VITO	169	1,194
133	Jeep	WRANGLER	223	1,181
134	RAM	LARAMIE 1500	247	1,154
135	Mercedes-Benz Cars	A200 SEDAN	130	1,133
136	Nissan	PATHFINDER	234	1,122
137	Honda	ODYSSEY	182	1,091
138	Nissan	JUKE	138	1,059
139	Holden	COMMODORE	192	1,009
Total*				**798,091**

* 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 14: Average emissions intensity and annual sales by buyer type for the MA category, 2020

Buyer type	Average emissions intensity (g/km)	Sales
	2020	2020
Private	155	342,422
Business	158	220,226
Government	134	16,355
Total	**N/A**	**579,003**

Table 15: Average emissions intensity and annual sales by buyer type for the MC+NA category, 2020

Buyer type	Average emissions intensity (g/km)	Sales
	2020	2020
Business	220	183,598
Private	216	103,004
Government	219	14,058
Total	**N/A**	**300,660**

Table 16: Average emissions intensity and annual sales by detailed buyer type for the MA category, 2020

Buyer type	Average emissions intensity (g/km)	Sales
	2020	2020
Private – local delivery	155	342,310
Dealer demonstrator	158	80,463
Fleet	160	59,014
Rental	157	27,212
Large fleet	156	25,920
Company capitalisation	159	14,305
Not-for-profit organisation	152	12,401
State Government	135	12,034
Local Government	135	3,085
Federal Government	127	1,236
Taxi	102	746
Private – overseas delivery	162	112
Other	168	68
Diplomatic	156	49
Business – overseas delivery	174	48
Total	**N/A**	**579,003**

Table 17: Average emissions intensity and annual sales by detailed buyer type for the MC+NA category, 2020

Buyer type	Average emissions intensity (g/km)	Sales
	2020	2020
Fleet	223	104,257
Private – local delivery	216	102,965
Large fleet	221	34,891
Dealer demonstrator	213	30,152
State Government	223	8,722
Rental	216	7,114
Company capitalisation	203	4,873
Local Government	209	4,089
Not-for-profit organisation	224	2,238
Federal Government	218	1,247
Business – overseas delivery	218	47
Private – overseas delivery	236	39
Other	197	14
Diplomatic	204	9
Taxi	248	3
Total	**N/A**	**300,660**

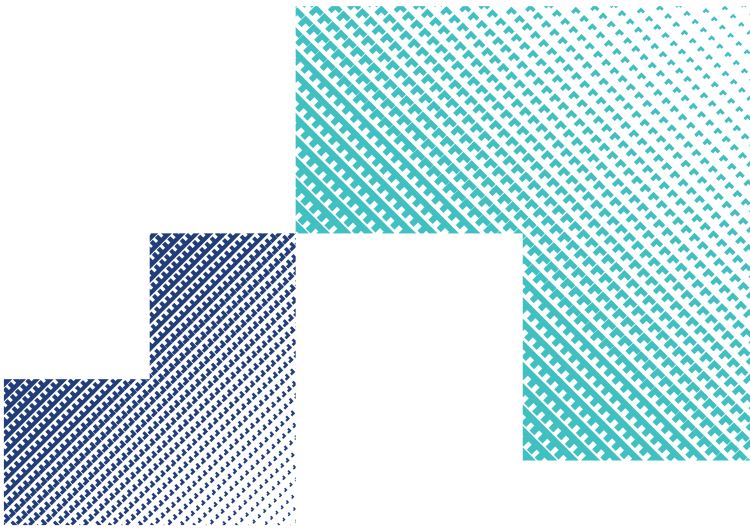


Table 18: Average emissions intensity and annual sales by powertrain and fuel type for the MA category, 2020

Powertrain and fuel type	Average emissions intensity (g/km)	Sales
	2020	2020
Petrol	166	480,925
HEV	102	57,724
Diesel	178	37,185
BEV	0	1,764
PHEV	47	1,405
Total	**N/A**	**579,003**

Table 19: Average emissions intensity and annual sales by powertrain and fuel type for the MC+NA category, 2020

Powertrain and fuel type	Average emissions intensity (g/km)	Sales
	2020	2020
Diesel	220	250,635
Petrol	214	48,853
HEV	151	871
PHEV	70	287
BEV	0	14
Total	**N/A**	**300,660**

Table 20: Electric vehicle sales by model for FCAI data, 2019 and 2020

Make and Model	2019	2020
Audi E7	0	31
Audi EB	0	33
Audi Q7	1	0
BMW 330E	1	91
BMW 530E	19	14
BMW 740E	2	0
BMW 745E	0	5
BMW I3	15	1
BMW I3 REX	14	1
BMW I3S	51	52
BMW I3S REX	16	0
BMW I8	6	1
BMW I8 ROADSTER	11	13
BMW X3 XDRIVE30E	0	1
BMW X5 XDRIVE40E	12	0
BMW X5 XDRIVE45E	0	46
Hyundai IONIQ	475	454
Hyundai KONA	499	488
Jaguar I-PACE	155	70
Land Rover RANGE ROVER	9	4
Land Rover RR SPORT	26	13
Mercedes-Benz Cars A250E	0	18
Mercedes-Benz Cars A250E SEDAN	0	5
Mercedes-Benz Cars C300E FL	4	71
Mercedes-Benz Cars C350 E	3	0
Mercedes-Benz Cars E300E	2	20
Mercedes-Benz Cars E300E FL	0	9
Mercedes-Benz Cars E350E	2	0
Mercedes-Benz Cars EQC 400 4M	11	163
Mercedes-Benz Cars EQC 400 4M EAL	0	31
Mercedes-Benz Cars GLC300E 4M FL	0	274
Mercedes-Benz Cars GLE500E	2	0

Make and Model	2019	2020
MINI COOPER	32	150
Mitsubishi OUTLANDER	700	440
Nissan LEAF	408	380
Porsche 97A	5	6
Porsche CAY	269	205
Renault KANGOO	27	14
Renault ZOE	5	77
Volvo Car S60	16	14
Volvo Car V60	6	24
Volvo Car XC40	0	67
Volvo Car XC60	87	120
Volvo Car XC90	34	64
Total	**2,925**	**3,470**

Table 21: Electric vehicle sales by state for FCAI data, 2019 and 2020

State	2019	2020
Australian Capital Territory	134	247
New South Wales	832	1,097
Northern Territory	5	6
Queensland	450	610
South Australia	412	207
Tasmania	65	83
Victoria	815	917
Western Australia	212	303
Total	**2,925**	**3,470**

Table 22: Electric vehicle sales by buyer type for FCAI data, 2019 and 2020

Buyer type	2019	2020
Company capitalisation	518	450
Dealer demonstrator	456	537
Diplomatic	1	1
Federal Government	16	16
Fleet	146	314
Large fleet	215	173
Local Government	136	106
Not-for-profit organisation	19	25
Other	0	1
Private – local delivery	1,293	1,643
Private – overseas delivery	0	1
Rental	2	1
State Government	123	202
Total	**2,925**	**3,470**

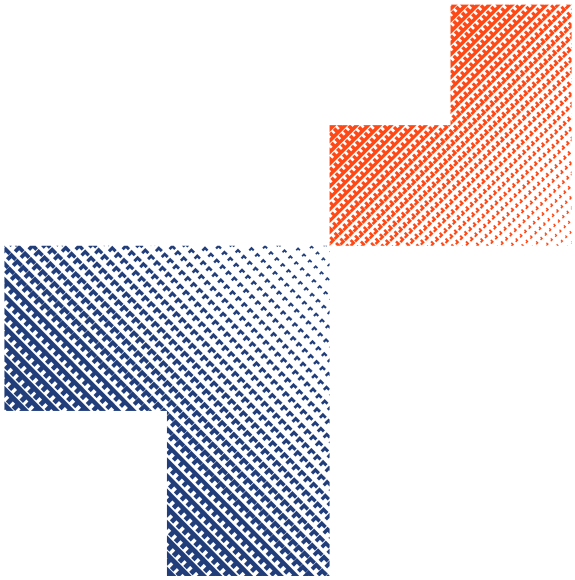


Table 23: Estimated electric vehicle fleet (including Tesla) by state and territory

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Australia
Total electric vehicle sales from 2010 to 2020 (excluding Tesla)	568	3,369	26	1,859	1,812	221	3,242	942	12,039
Tesla registrations as at 21 December 2020	331	3,454	16	1,966	317	92	2,826	586	9,588
Total estimated electric vehicles as at 2020 (including Tesla)	899	6,823	42	3,825	2,129	313	6,068	1,528	21,627
Total passenger and light commercial vehicle fleet in 2020	293,201	5,289,569	144,073	3,807,094	1,337,153	460,228	4,717,159	2,037,788	18,086,265
Estimate of electric vehicles as percentage of total fleet in 2020	0.31%	0.13%	0.03%	0.10%	0.16%	0.07%	0.13%	0.07%	0.12%
Total estimated electric vehicles as at 2019 (including Tesla)	523	4,627	30	2,416	1,787	195	4,193	956	14,727
Change in estimated total electric vehicle fleet between 2019 and 2020	72%	47%	40%	58%	19%	61%	45%	60%	47%

Sources: VFACTS data on EVs from 2010 to 2020; ABS (2020); Registrations from state- and territory-based registration systems as at 21 December 2020 for Tesla data.

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 EVs 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 24: Battery electric vehicle sales by model and jurisdiction, 2020

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Total
Audi E7	1	22	0	2	1	1	2	2	**31**
Audi EB	1	15	0	4	1	0	9	3	**33**
BMW I3	0	1	0	0	0	0	0	0	**1**
BMW I3S	1	24	1	4	4	0	12	6	**52**
Hyundai IONIQ	26	100	0	60	30	14	76	38	**344**
Hyundai KONA	48	160	0	75	37	22	93	53	**488**
Jaguar I-PACE	2	25	0	16	3	0	18	6	**70**
Mercedes-Benz Cars EQC 400 4M	0	44	0	33	6	0	74	6	**163**
Mercedes-Benz Cars EQC 400 4M EAL	1	12	0	9	1	0	3	5	**31**
MINI COOPER	6	29	0	17	5	1	20	16	**94**
Nissan LEAF	41	69	4	83	16	16	112	39	**380**
Renault KANGOO	0	7	0	4	0	0	3	0	**14**
Renault ZOE	0	2	0	9	0	0	66	0	**77**
Total	**127**	**510**	**5**	**316**	**104**	**54**	**488**	**174**	**1,778**

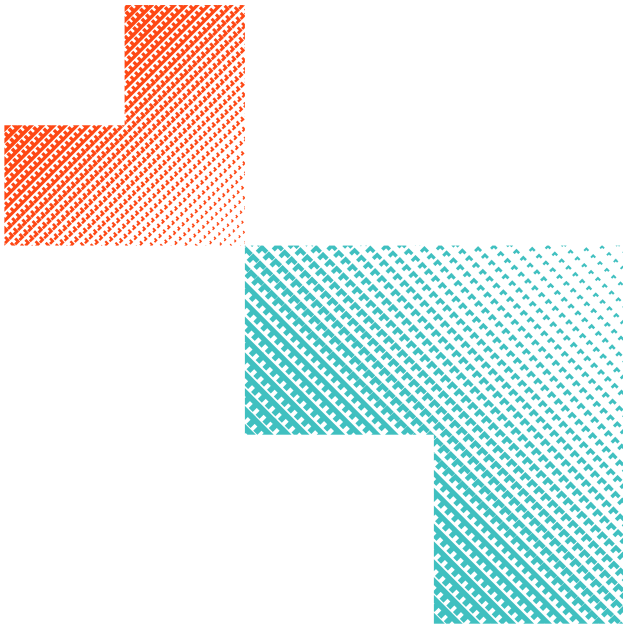


Table 25: Hybrid vehicle sales by model, 2019 and 2020

Make and Model	2019	2020
BMW 330E	7	0
Honda ACCORD	18	70
Honda NSX	3	0
Hyundai IONIQ	71	72
Infiniti Q50	1	0
Land Rover RR SPORT	5	3
Lexus CT200H	183	112
Lexus ES300H	559	586
Lexus GS450H	3	4
Lexus IS300H	102	83
Lexus LC500H	3	3
Lexus LS500H	10	5
Lexus NX300H	773	943
Lexus RX450H	364	391
Lexus RX450HL	141	193
Lexus UX250H	481	608
McLaren SPEEDTAIL	0	1
Mercedes-Benz Cars E350E	9	0
Mercedes-Benz Cars S560E L FL	1	0
Nissan PATHFINDER	49	22
Porsche 97A	1	0
Porsche CAY	1	0
Subaru FORESTER	0	868
Subaru XV	0	296
Toyota CAMRY HYBRID	8,696	9,615
Toyota C-HR HYBRID	155	2,810
Toyota COROLLA HYBRID	10,607	13,943
Toyota PRIUS	180	95
Toyota PRIUS C	415	83
Toyota PRIUS V	392	272
Toyota RAV4 HYBRID	7,411	26,400
Toyota YARIS CROSSHV	0	857
Toyota YARIS HYBRID	0	260
Total	**30,641**	**58,595**

Table 26: 'Green' vehicle average emissions intensity and sales by segment, 2020

Segment	Make	Model	Average emissions intensity (g/km)	Sales
Micro	Mitsubishi	MIRAGE	110	594
	Fiat	500	112	291
	Kia	JA PICANTO	116	1,948
Light	MINI	COOPER	0	94
	Renault	ZOE	0	77
	Toyota	YARIS HYBRID	76	260
	Toyota	PRIUS C	90	83
	Skoda	FABIA	108	807
	Suzuki	SWIFT	111	3,869
	Volkswagen	POLO	114	2,954
	Toyota	YARIS	114	800
	Mazda	200	114	95
	Audi	A1	115	1
	Citroen	C3	115	48
	Suzuki	BALENO	118	202
Small	BMW	I3	0	1
	BMW	I3S	0	52
	Nissan	LEAF	0	380
	Hyundai	IONIQ	11	526
	BMW	I3 REX	13	1
	Mercedes-Benz Cars	A250E SEDAN	34	5
	Mercedes-Benz Cars	A250E	34	18
	Toyota	PRIUS	80	95
	Toyota	COROLLA HYBRID	93	13,943
	Lexus	CT200H	95	112
	Toyota	PRIUS V	101	272
	BMW	118I	112	1
	Peugeot	308	114	162
	Alfa Romeo	GIULIETTA	114	40
	Audi	A3	116	1,223
	Skoda	RAPID	118	102

Segment	Make	Model	Average emissions intensity (g/km)	Sales
Medium	Volvo Car	S60	46	14
	Mercedes-Benz Cars	C300E FL	46	71
	Volvo Car	V60	49	24
	BMW	330E	50	91
	Toyota	CAMRY HYBRID	98	9,615
	Honda	ACCORD	98	70
	Alfa Romeo	GIULIA	109	10
	Lexus	ES300H	109	586
	Lexus	IS300H	114	83
	BMW	320D	119	72
	Audi	A4	119	39
Large	BMW	530E	48	14
	Mercedes-Benz Cars	E300E	50	20
	Mercedes-Benz Cars	E300E FL	50	9
	Mercedes-Benz Cars	E220D	108	5
Upper Large	BMW	745E	56	5
	Porsche	97A	59	6
Sports	BMW	I8 ROADSTER	48	13
	BMW	I8	49	1
	Audi	A3	120	104
SUV Light	Toyota	YARIS CROSSHV	87	857
	Citroen	C4 CACTUS	108	2
	Suzuki	IGNIS	114	651
	Renault	CAPTUR	120	33
SUV Small	Hyundai	KONA	0	488
	Volvo Car	XC40	50	67
	MINI	COOPER	51	56
	Toyota	C-HR HYBRID	97	2,810
	Lexus	UX250H	103	608
	Peugeot	2008	110	69
	Skoda	KAMIQ	113	373
	BMW	X1 SDRIVE18D	114	16

Segment	Make	Model	Average emissions intensity (g/km)	Sales
SUV Medium	Mercedes-Benz Cars	EQC 400 4M	0	163
	Mercedes-Benz Cars	EQC 400 4M EAL	0	31
	Mitsubishi	OUTLANDER	43	440
	Volvo Car	XC60	50	120
	Mercedes-Benz Cars	GLC300E 4M FL	59	274
	BMW	X3 XDRIVE30E	64	1
	Toyota	RAV4 HYBRID	108	26,400
SUV Large	Audi	E7	0	31
	Audi	EB	0	33
	Jaguar	I-PACE	0	70
	Volvo Car	XC90	49	64
	BMW	X5 XDRIVE45E	56	46
	Land Rover	RR SPORT	64	16
	Porsche	CAY	79	205
SUV Upper Large	Land Rover	RANGE ROVER	64	4
Vans/Cab Chassis	Renault	KANGOO	0	14
Total*				**73,850**

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

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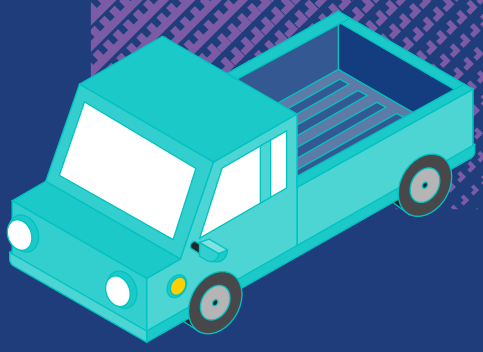

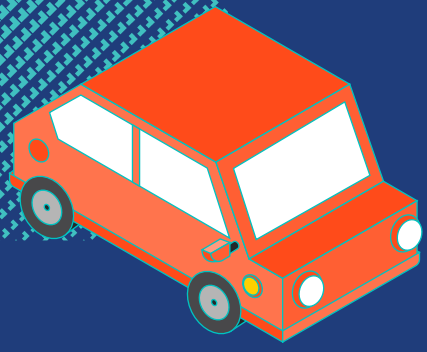

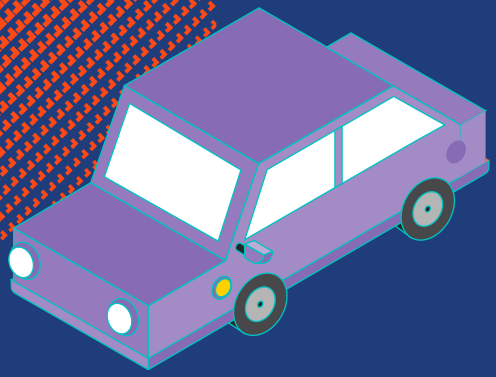

National Transport Commission

Leading change