

# Carbon Dioxide Emissions Intensity for New Australian Light Vehicles 2017

Information paper  
June 2018

# Executive Summary

This information paper provides detailed data on the carbon dioxide emissions intensity performance of new passenger and light commercial vehicles sold in Australia during 2017. The data is broken down by vehicle make, model, segment, fuel and buyer type.

This report focuses on vehicle emissions performance, measured in terms of grams of carbon dioxide per kilometre (g/km). This is a measure of vehicle efficiency or intensity rather than a measure of actual vehicle emissions, which depends on many factors such as distance travelled, the nature of the driving, and road and traffic conditions.

**Fleet-wide vehicle emissions depend on many factors including consumer preference (for example, vehicle type, engine size and power, fuel type and transmission type). Consumer preferences can also be influenced by government policies and regulations, industry marketing and promotions and fuel prices.**

## Key findings

- In 2017 the national average carbon dioxide emissions intensity from new passenger and light commercial vehicles was 181.7 g/km. This is a 0.3 per cent reduction from 2016. This is the lowest annual reduction since records started in 2002.
- Consumer preferences are an important factor affecting the national average of carbon dioxide emissions intensity for new vehicles. If all Australians who purchased new vehicles in 2017 had purchased vehicles with best-in-class emissions, the national average carbon dioxide emissions intensity would have been reduced to 76 g/km, a 58 per cent reduction.
- About 92 per cent of all new vehicle sales in 2017 were from 15 makes. Of these 15 makes, Audi had the lowest corporate average emissions intensity (145 g/km), and Holden had the highest (219 g/km).
- Private buyers purchased vehicles with the lowest average emissions intensity (176 g/km), followed by business buyers (186 g/km) and government buyers (199 g/km).
- There were 97 'green' car models available in Australia in 2017 (compared with 51 in 2016), which represented 3.8 per cent of total sales (compared with 2.5 per cent in 2016). A 'green' car is defined as a vehicle with emissions intensity that does not exceed 120 g/km.
- There were 2,424 electric vehicles sold in 2017 (compared to 1,369 in 2016) which is a 77 per cent increase from 2016.
- The average emission intensity for new passenger vehicles in European countries was 118.5 g/km in 2017. In the same year, Australia's average emissions intensity for passenger vehicles was 171.5 g/km, 45 per cent higher.
- **There are many reasons why Australian light vehicle emissions intensity are higher than in Europe. Some of the reasons include:**
  - Australian consumer preferences for heavier vehicles with larger and more powerful engines
  - Australia has a lower proportion of diesel-powered engines
  - Australia has fewer government incentives for lower emissions vehicles
  - relatively lower fuel prices in Australia compared with Europe.

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# Abbreviations

<b>FAI</b>	Federal Chamber of Automotive Industries
<b>g/km</b>	grams per kilometre
<b>GVM</b>	gross vehicle mass
<b>LPG</b>	liquefied petroleum gas
<b>NTC</b>	National Transport Commission
<b>SUV</b>	sports utility vehicle

# 1

## Introduction

Each year since 2009, the National Transport Commission (NTC) has published an information paper about carbon dioxide emissions intensity for new Australian light vehicles. This information paper is the latest in this series and provides data for 2017.

The paper focuses on vehicle emissions intensity and is a measure of vehicle efficiency. It is not a measurement of 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 information paper and we would like to thank the FCAI for making this data available for use in this report. We also used European Environment Agency data for the European comparisons.

This year we have included sales of Tesla vehicles from state and territory registration systems. This Tesla data is only included in the electric vehicle data on page 24.

This information paper is divided into three main sections:

- Section 2 describes the methodology used.
- Section 3 presents the results of the analysis.
- Section 4 compares Australian data with European data.



# 2

## Methodology

The FCAI is the peak industry organisation representing the manufacturers and importers of passenger vehicles, light commercial vehicles and motorcycles in Australia. We entered the FCAI data into a database and analysed it. These records consisted of:

- **vehicle attributes:** make, model, vehicle generation, body style, engine capacity, number of cylinders, engine power, transmission type, gears, number of seats, gross vehicle mass (GVM), driven wheels, country of origin, fuel type, carbon dioxide emissions intensity and fuel economy
- **vehicle category:** 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 NTC calculated the 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.

Electric vehicles with emissions of 0 g/km have been excluded when calculating sales weighted averages. Although electric vehicles have no tailpipe emissions, the electricity may produce emissions depending on its source.

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 small, medium, large and upper large. Table 1 presents the classifications and definitions.

This information paper uses the following definitions:

- **passenger vehicles:** passenger motor vehicles and SUVs
- **light commercial vehicles:** light trucks.

**Table 1: Motor vehicle classifications and definitions**

Passenger motor vehicles	Sports utility vehicles (SUVs)	Light trucks
<p>Passenger vehicles are classified dependent on size, specification and average retail pricing.</p> <p>Selected vehicle types will be assessed on footprint* defined as length (mm) x width (mm), rounded, as follows:</p>	<p>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.</p> <p>Selected vehicle types will be assessed on footprint* defined as length (mm) x width (mm), rounded, as follows:</p>	<p>Vehicles designed principally for commercial use but may include designs intended for non-commercial applications.</p>
<p><b>Micro</b></p> <p>Hatch, sedan or wagon with a footprint <math>\leq 6.3\text{m}^2</math></p>	<p><b>Small</b></p> <p><math>\leq 8.1\text{m}^2</math></p>	<p><b>Light Bus &lt; 20 seats</b></p> <p>8+ seats, but less than 20 seats</p>
<p><b>Light</b></p> <p>Hatch, sedan or wagon with a footprint range <math>6.301\text{--}7.5\text{m}^2</math></p>	<p><b>Medium</b></p> <p><math>8.101\text{--}8.8\text{m}^2</math></p>	<p><b>Light Bus &gt; 20 seats</b></p> <p>20+ seats</p>
<p><b>Small</b></p> <p>Hatch, sedan or wagon with a footprint range <math>7.501\text{--}8.3\text{m}^2</math></p>	<p><b>Large</b></p> <p><math>8.801\text{--}9.8\text{m}^2</math></p>	<p><b>Van/Cab Chassis <math>\leq 2.5\text{t}</math></b></p> <p>Blind/window vans and cab chassis <math>\leq 2.5\text{ t GVM}</math></p>
<p><b>Medium</b></p> <p>Hatch, sedan or wagon with a footprint range <math>8.301\text{--}9.0\text{m}^2</math></p>	<p><b>Upper large</b></p> <p><math>\geq 9.801\text{m}^2</math></p>	<p><b>Van/Cab Chassis &gt; 2.5–3.5t</b></p> <p>Blind/window vans and cab chassis <math>2.5\text{--}3.5\text{ t GVM}</math></p>
<p><b>Large</b></p> <p>Hatch, sedan or wagon with a footprint range <math>9.001\text{--}9.5\text{m}^2</math></p>		<p><b>Pick-up/Chassis 4x2</b></p> <p>Two driven wheels, normal control (bonnet), utility, cab chassis, one and a half cab and crew cab</p>
<p><b>Upper Large</b></p> <p>Hatch, sedan or wagon with a footprint range <math>\geq 9.501\text{m}^2</math></p>		<p><b>Pick-up/Chassis 4x4</b></p> <p>Four driven wheels, normal control (bonnet), utility, cab chassis, one and a half cab and crew cab</p>
<p><b>People Movers</b></p> <p>Wagon for passenger usage, seating capacity &gt; 5 people</p>		
<p><b>Sports</b></p> <p>Car, coupe, convertible or roadster</p>		

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  $\text{m}^2$ . The units on the FCAI website are  $\text{mm}^2/1000$ .

Source: FCAI 2018

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.

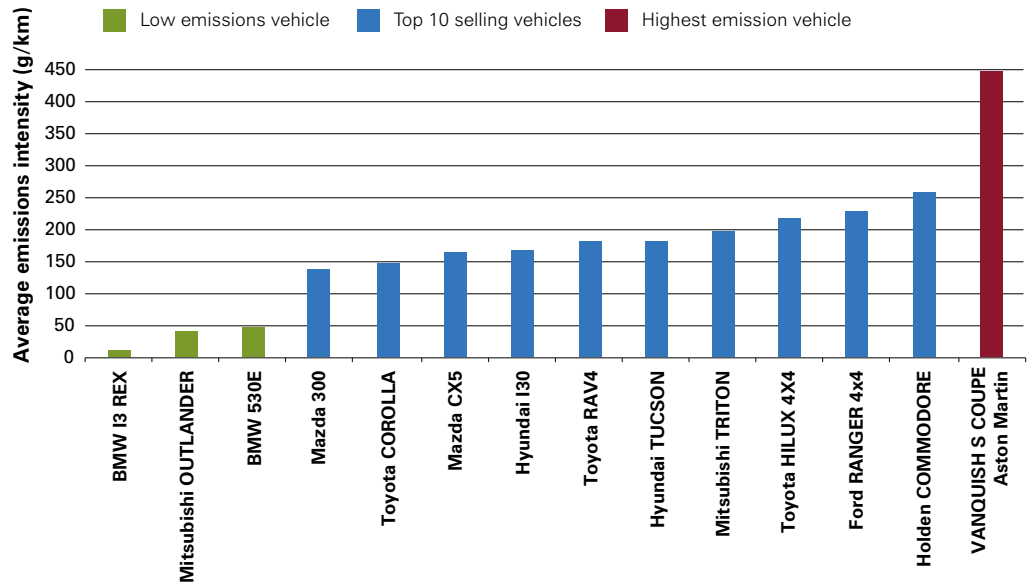
**Table 2: Fuel consumption and corresponding average emissions intensity**

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 shows carbon dioxide emissions from the top 10 selling vehicles in Australia during 2017. Figure 1 also contains the three lowest emitting vehicle models (excluding zero emission vehicles) and the highest emitting model.

**Figure 1: Average emissions intensity for top 10 selling vehicles in Australia plus other selected models, 2017**



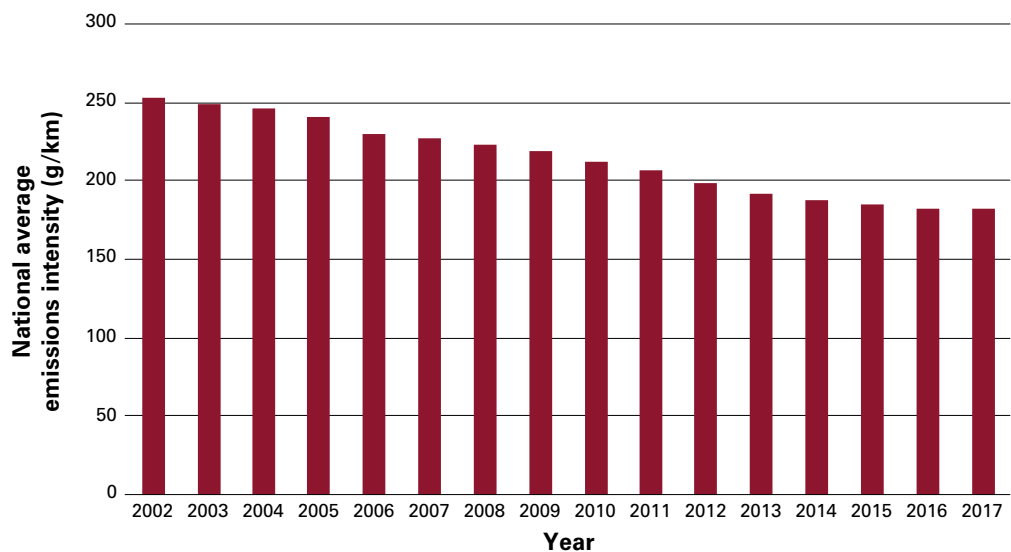
# 3

## Australian emissions intensity

Across all new passenger and light commercial vehicles sold in 2017, the national average carbon dioxide emissions intensity was 181.7 g/km (Figure 2). This is a 0.3 per cent reduction from the previous year. This is the lowest annual reduction since records started in 2002.

Since 2002 there has been an overall reduction of 28 per cent in carbon dioxide emissions intensity. Additional data on the annual average emissions intensity is provided in Table 7 in the appendix.

**Figure 2: National average emissions intensity for new passenger and light commercial vehicles, 2002–2017**



### Vehicle manufacturers

In 2017 there were 51 makes of new vehicles available to Australian consumers. Ninety two per cent of all new vehicle sales were from 15 makes. The average corporate carbon dioxide emissions intensity of these market-leading makes largely determines the national average emissions intensity. Table 8 in the appendix contains more detail on average emissions intensity for all makes sold in Australia.

Figure 3 shows the corporate average carbon dioxide emissions intensity for the top 15 makes in 2017 (data for all vehicle makes is provided in Table 8 in the appendix). Audi had the lowest corporate average carbon dioxide emissions intensity (145 g/km), and Holden had the highest (219 g/km).

**Figure 3: Corporate average emissions intensity for the top 15 makes by volume, 2017**

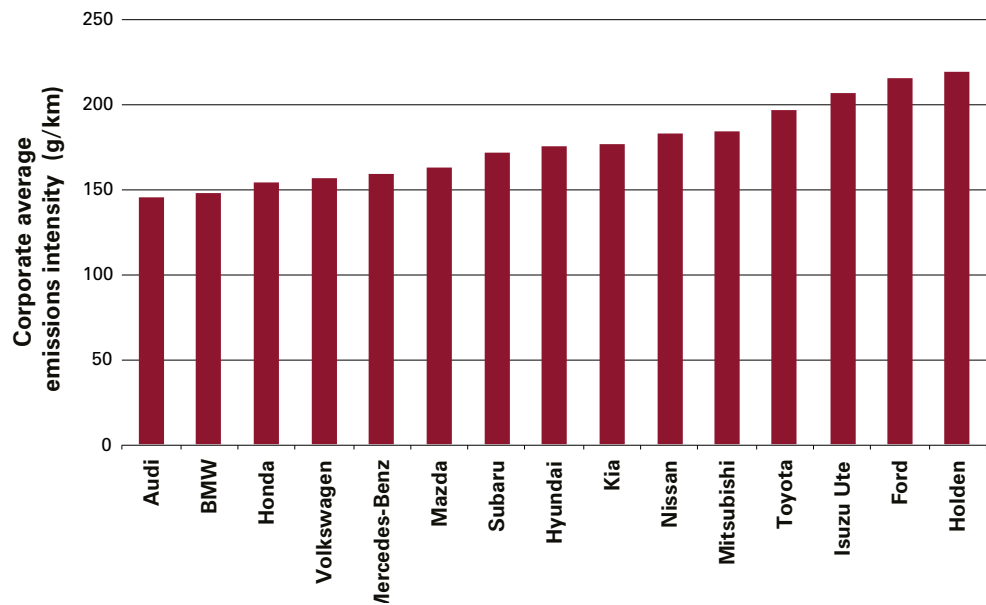
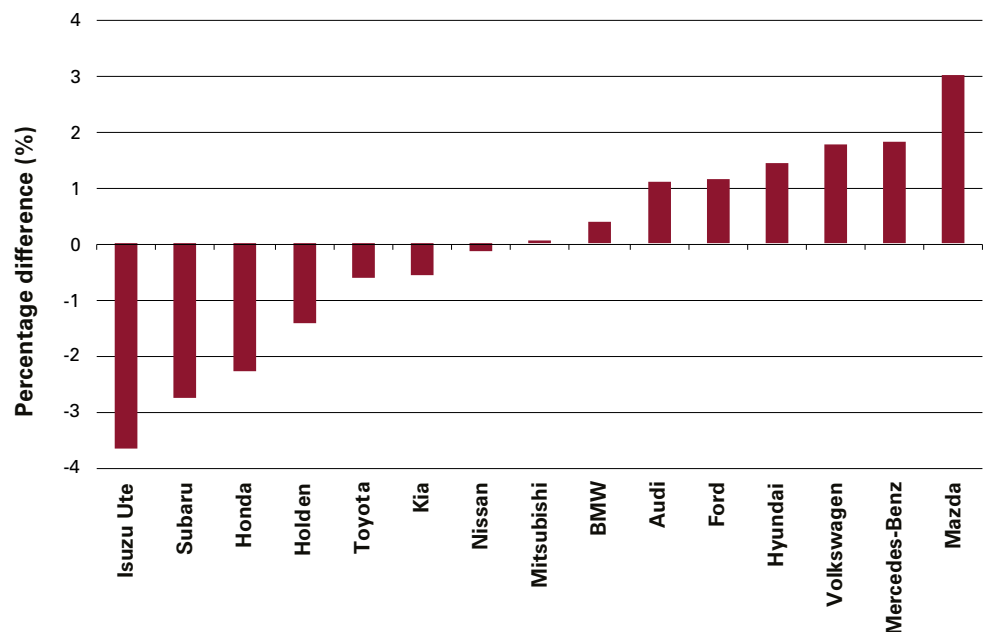


Figure 4 shows the change in corporate average carbon dioxide emissions intensity between 2016 and 2017 for the highest selling 15 makes. Isuzu Ute had a 3.7 per cent reduction in average corporate emissions intensity. Mazda’s average carbon dioxide emissions intensity increased by 3 per cent.

**Figure 4: Change in corporate average emissions intensity between 2016 and 2017 for the top 15 makes by volume**



## Australian-made vehicles

This section contains data for vehicles made in Australia and sold in 2017.

In 2017 the average carbon dioxide emissions value for all Australian-made light vehicles was 219 g/km. This is a 2.9 per cent increase when compared with 2016.

Figure 5 shows the average carbon dioxide emissions intensity for the Australian-made light vehicles by make in 2017. Toyota had the lowest emissions intensity (175 g/km), followed by Ford (229 g/km) and Holden (259 g/km). Table 9 in the appendix contains this data.

**Figure 5: Average emissions intensity for new Australian-made vehicles, 2017**

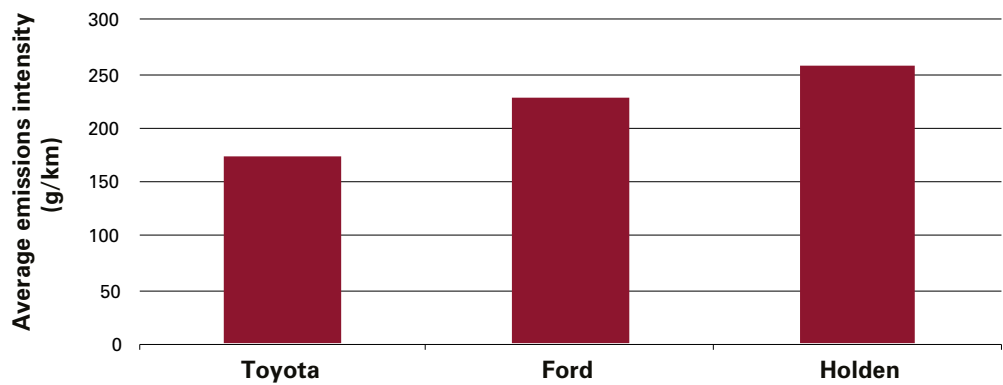
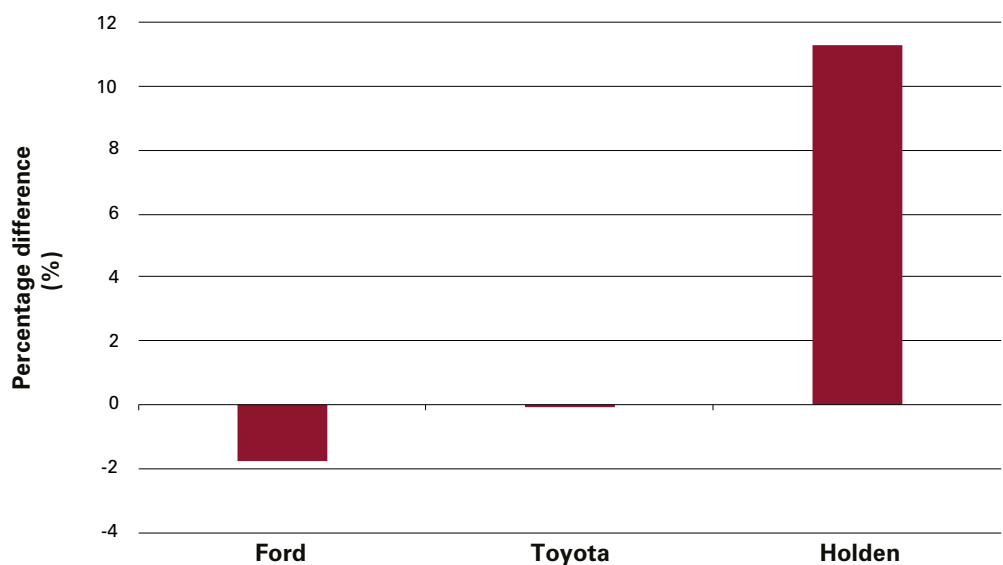


Figure 6 shows the changes in average emissions intensity for new Australian made vehicles.

**Figure 6: Change in average emissions intensity for new Australian-made vehicles, 2016 and 2017**



This is the last time we will include this section in this annual report as Holden and Toyota ceased Australian vehicle production in October 2017. Table 9 in the appendix contains more data on Australian-made vehicle models.

## Segment type

A segment analysis was conducted using the categories shown in Table 1.

Figure 7 shows the average carbon dioxide emissions intensity by segment during 2017. The lowest emitting segment was 'micro' (126 g/km); 'SUV upper large' (261 g/km) was the highest. Additional segment data, including the top 10 selling models for each segment, is provided in Tables 11 and 12 in the appendix.

SUVs as a segment grouping had a reduction of 2 per cent in average emissions intensity during 2017 (182 g/km) when compared with 2016 (185 g/km).

**Figure 7: Average emissions intensity by segment, 2017**

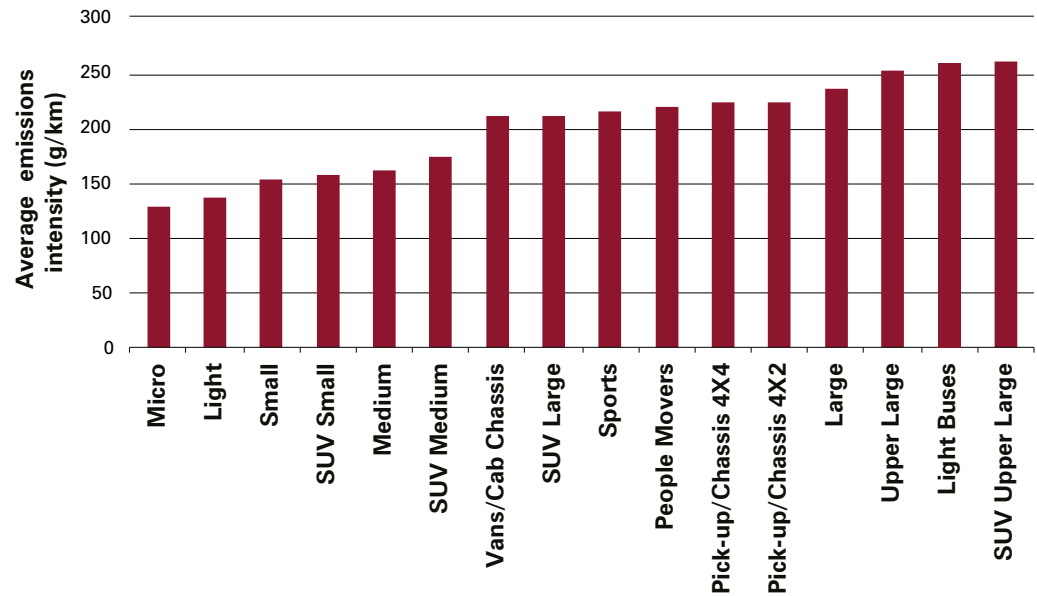




Figure 8 shows the change in average carbon dioxide emissions intensity by segment between 2016 and 2017. In 2017 the 'vans/cab chassis' segment had the largest reduction of 2.8 per cent, while the 'sports' segment had the largest increase of average emissions intensity at 7.7 per cent.

**Figure 8: Change in average emissions intensity by segment between 2016 and 2017**

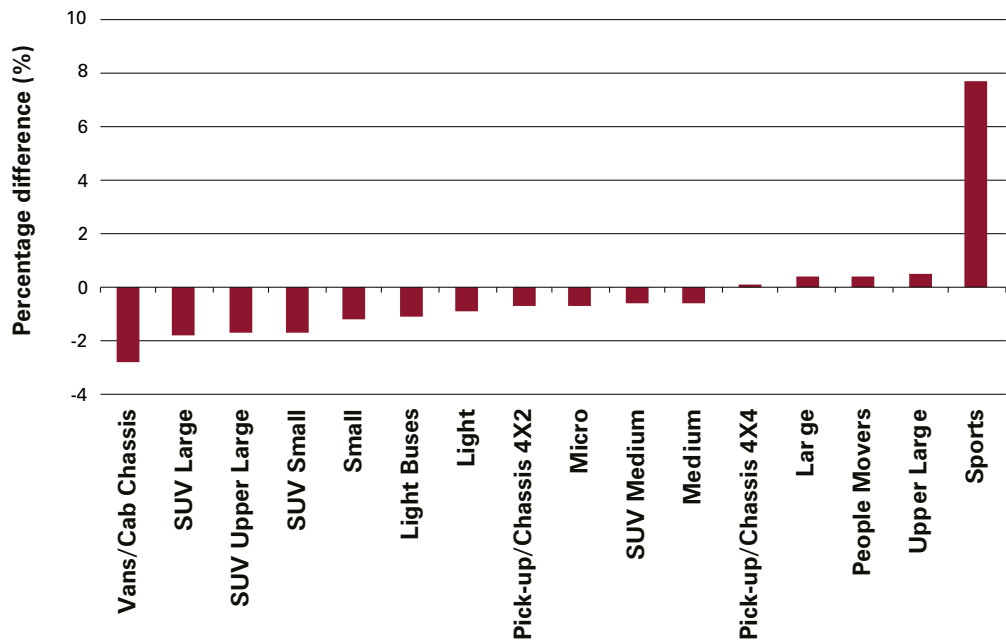
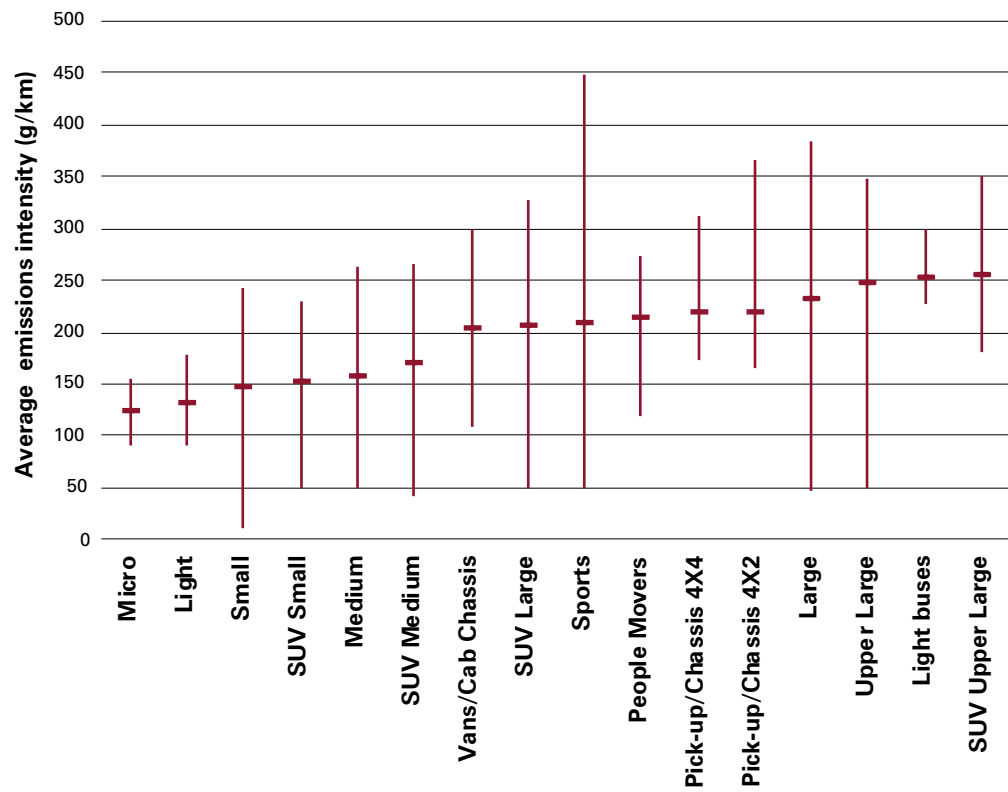


Figure 9 shows the average and the range in carbon dioxide emissions intensity for the segments during 2017. The average emissions are represented by the horizontal lines, and the ranges are represented by the vertical lines.

**Figure 9: Range and average emissions intensity by segment, 2017**



If Australian consumers had purchased vehicles with best-in-class carbon dioxide emissions in 2017, the national average carbon dioxide emissions would have been reduced to 76 g/km, a 58 per cent reduction. This shows the potential emissions reduction with currently available vehicles and technologies. It is important to note that fully electric vehicles with zero tailpipe emissions were excluded from this analysis to prevent the results being distorted.

Table 3 shows the best-in-class vehicles for carbon dioxide emissions intensity available for each segment.

**Table 3: Best-in-class vehicles for carbon dioxide emissions intensity for each segment, 2017**

Segment	Make and model (fuel source/s)*	Best-in-class vehicle emissions intensity (g/km)
Micro	Fiat 500 (petrol)	90
Light	Toyota Prius C (petrol-electric)	90
Small	BMW i3 REX (electric-petrol)	12
	Toyota Prius C (petrol-electric)	80
Medium	BMW 330E (electric-petrol)	49
	Mercedes-Benz C300 BTH (diesel-electric)	105
Large	BMW 530E (electric-petrol)	46
	Mercedes-Benz E220D (diesel)	108
Upper large	BMW 530E (electric-petrol)	50
	Mercedes-Benz S300 BT (diesel-electric)	118
Sports	BMW i8 (electric-petrol)	49
	BMW 220D coupe (diesel)	107
People mover	Citroen C4 Grand Picasso (diesel)	120
SUV small	Mini Cooper (electric-petrol)	49
	Citroen C4 Cactus (diesel)	92
SUV medium	Mitsubishi Outlander (electric-petrol)	41
	Peugeot 3008 (diesel)	124
SUV large	Volvo XC90 (electric-petrol)	49
SUV upper large	Land Rover Range Rover (diesel)	182
Pick-up/chassis 4×2	Nissan Navara (diesel)	166
Pick-up/chassis 4×4	Nissan Navara (diesel)	172
Vans/cab chassis	Citroen Berlingo (diesel)	108
Light buses	Toyota Hiace (diesel)	228

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

Additional data comparing the top 10 highest selling models 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.

## Buyer type

Figure 10 shows the average carbon dioxide emissions intensity by buyer type. Vehicles bought by private buyers had the lowest average carbon dioxide emissions intensity (176 g/km), followed by business buyers (186 g/km) and government buyers (199 g/km). Additional data on buyer types is provided in Table 14 in the appendix.

**Figure 10: Average emissions intensity by buyer type, 2017**

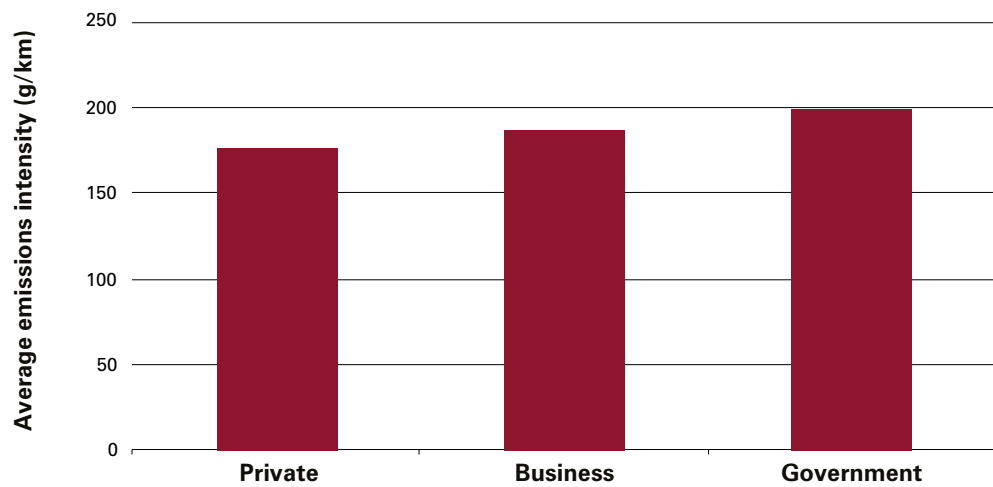
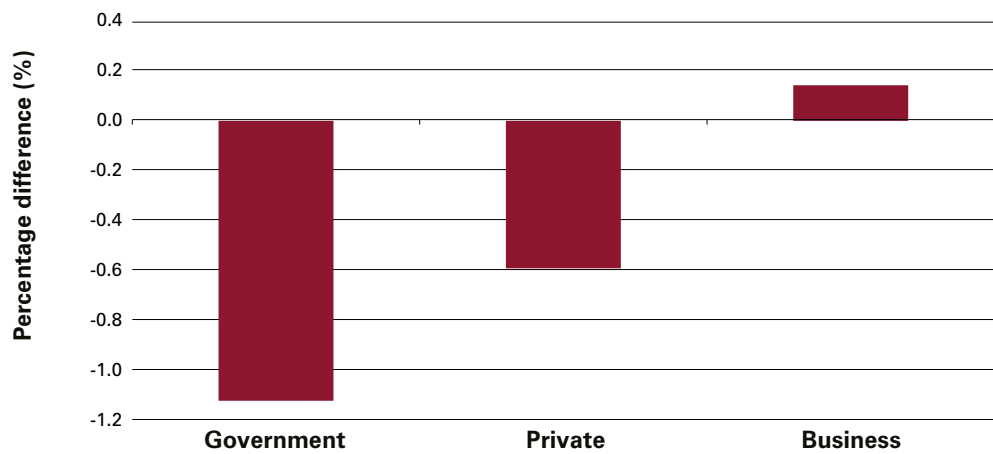


Figure 11 shows the reduction in average emissions intensity between 2016 and 2017. Business and government buyers purchased vehicles representing a 1.1 per cent improvement in average emissions intensity.

**Figure 11: Change in average emissions intensity by buyer type between 2016 and 2017**

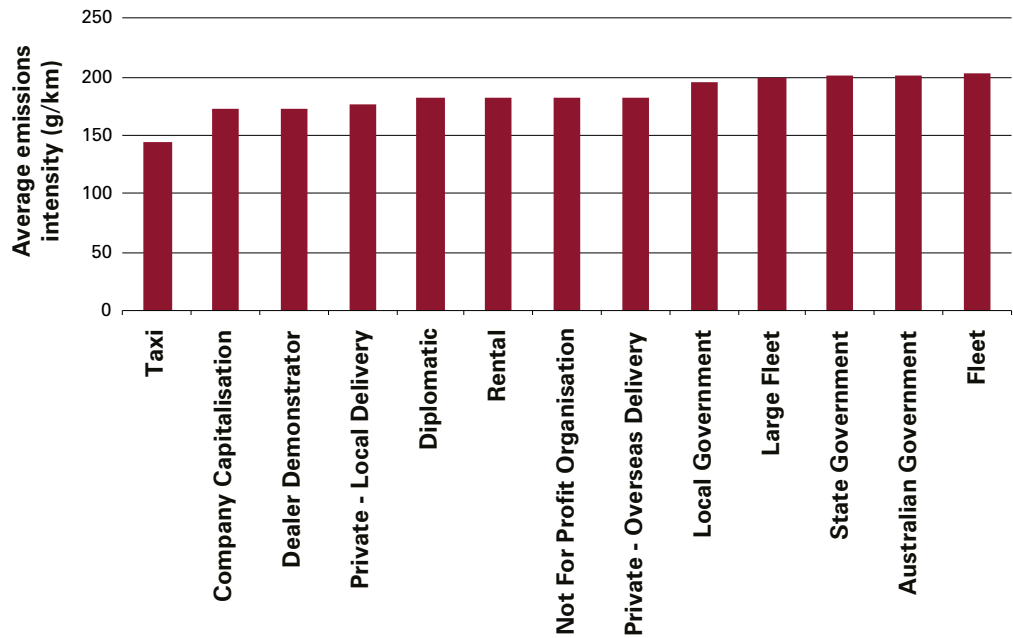


The three buyer types can be broken down further:

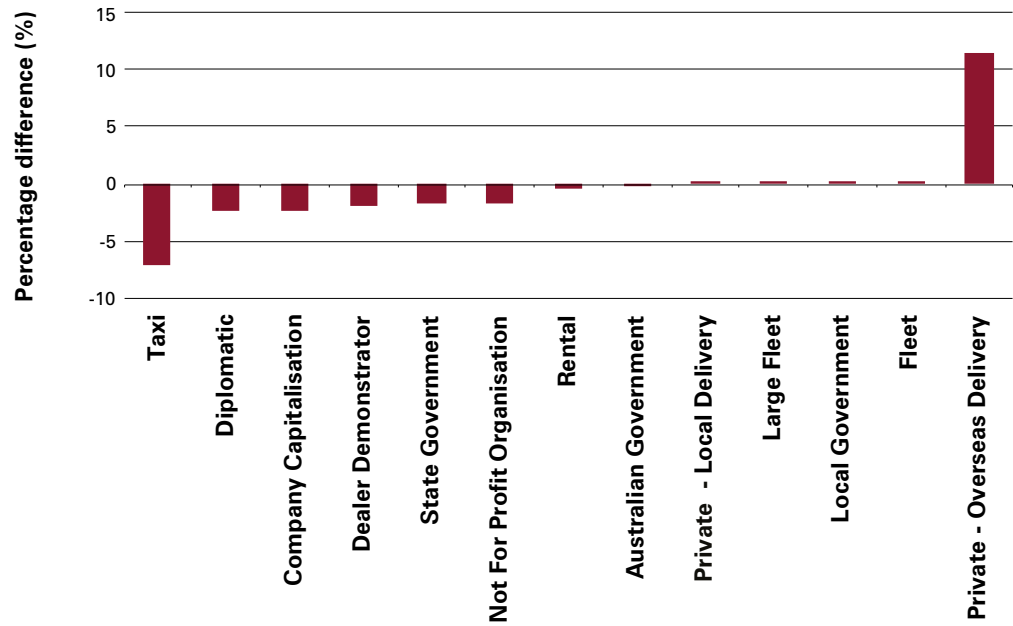
- private: local delivery and overseas delivery
- government: Australian, state and local
- business: company capitalisation, dealer demonstrator, diplomatic, fleet, large fleet, not-for-profit organisation, rental and taxi.

Figure 12 shows the average carbon dioxide emissions intensity for these buyers. The change in average emissions intensity from 2016 to 2017 is shown in Figure 13. Additional data on the detailed buyer types is provided in Table 15 in the appendix.

**Figure 12: Average emissions intensity by detailed buyer type, 2017**



**Figure 13:** Change in average emissions intensity between 2016 and 2017 by detailed buyer type



In past reports, we have provided a further breakdown of the government buyer type by state. Last year, we were contacted by a state government representative that said their figures on sales numbers and average emissions intensity did not match the numbers published in the NTC report. We have provided this information to the FCAI to examine. Once the matter is resolved, we will start to publish this further breakdown on government buyer type by state.

## Fuel type

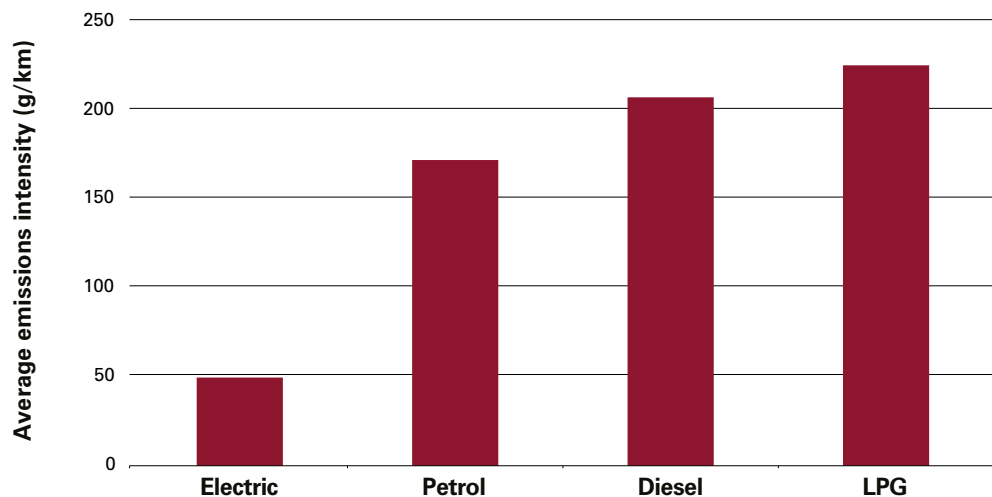
This section contains average carbon dioxide emissions intensity by fuel type.

After the 2016 report was published in May 2017, an error was found that classified some electric vehicles as petrol vehicles. As such, we reported the sales of electric vehicles in 2016 was 151 (it was actually 769 electric vehicles sales in 2016). We have corrected this error in this report.

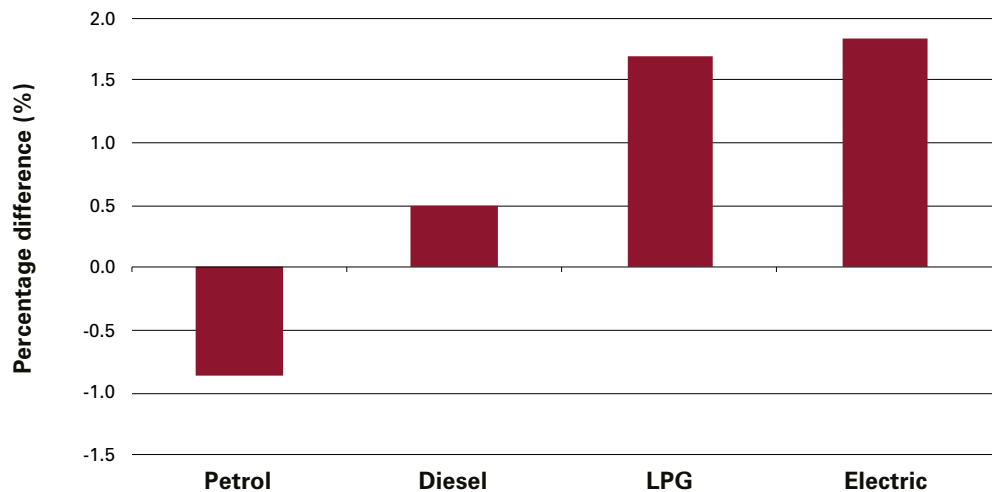
Figure 14 shows the average carbon dioxide emissions intensity by fuel type for 2017. Electric vehicles had the lowest average emissions intensity (49 g/km), followed by petrol vehicles (170 g/km), diesel vehicles (206 g/km) and liquefied petroleum gas (LPG) vehicles (225 g/km).

Figure 15 shows that petrol vehicles had the largest reduction between 2016 and 2017 (0.9 per cent). Diesel, LPG vehicles and electric vehicles had increased emissions intensity by 0.5, 1.7 and 1.8 per cent respectively between 2016 and 2017. Additional data on fuel types is provided in Table 16 in the appendix.

**Figure 14: Average emissions intensity by fuel type, 2017**



**Figure 15: Change in average emissions intensity for new passenger and light commercial vehicles between 2016 and 2017 by fuel type**



There were 2,424 electric vehicles sold in 2017 (compared to 1,369 vehicles sold in 2016) which is a 77 per cent increase from 2016. We have included estimates of the number of Tesla vehicles for the first time in these NTC reports. The FCAI data does not contain Tesla vehicles. We have used state and territory based registration systems for the number of Tesla vehicles for 2017.

**Table 4. Electric vehicle sales, 2016 and 2017**

Make	Year	
	2016	2017
Tesla	600 <sup>a</sup>	1,300 <sup>b</sup>
All other makes <sup>c</sup>	769	1,124
<b>Total</b>	<b>1,369</b>	<b>2,424</b>

a. ClimateWorks Australia (2017)

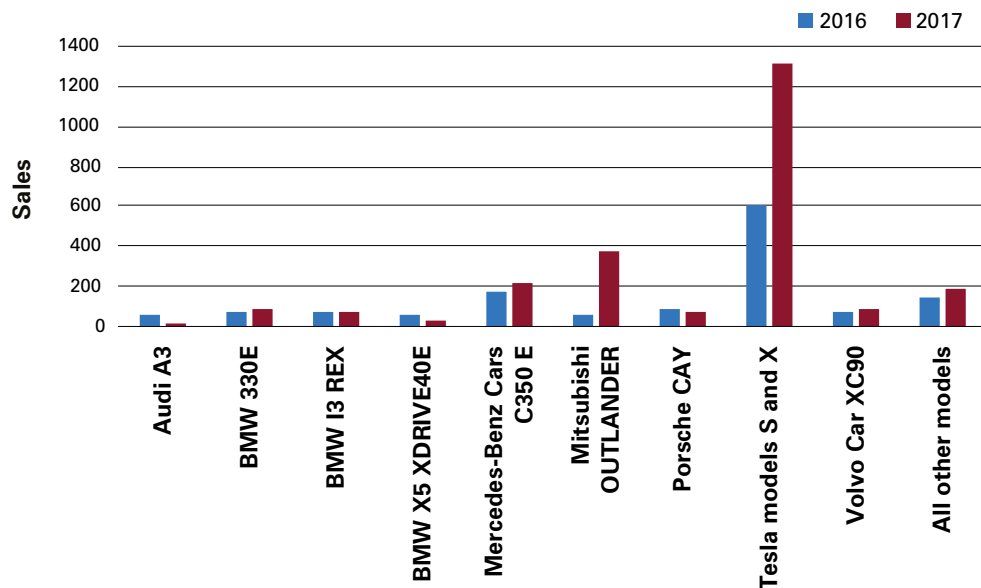
b. New registrations from state and territory based registration systems for May 2017 to May 2018

c. FCAI data

The total number of registered Tesla electric vehicles in the Australian fleet in May 2018 was 2,783.

There were 24 models of electric vehicles available in 2017 compared to 16 models in 2016. Figure 16 shows the sales of the more popular electric vehicle models. Additional data on sales by model, state and buyer type for 2016 and 2017 for the FCAI data are provided in Tables 17, 18 and 19 in the appendix.

**Figure 16: Sales of selected electric vehicles, 2016 and 2017**





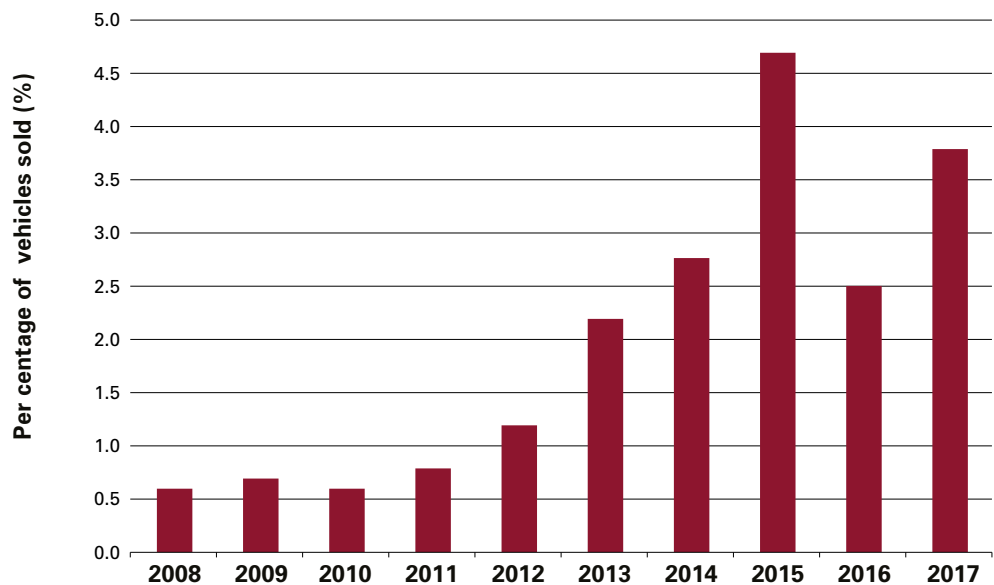
## Green vehicles

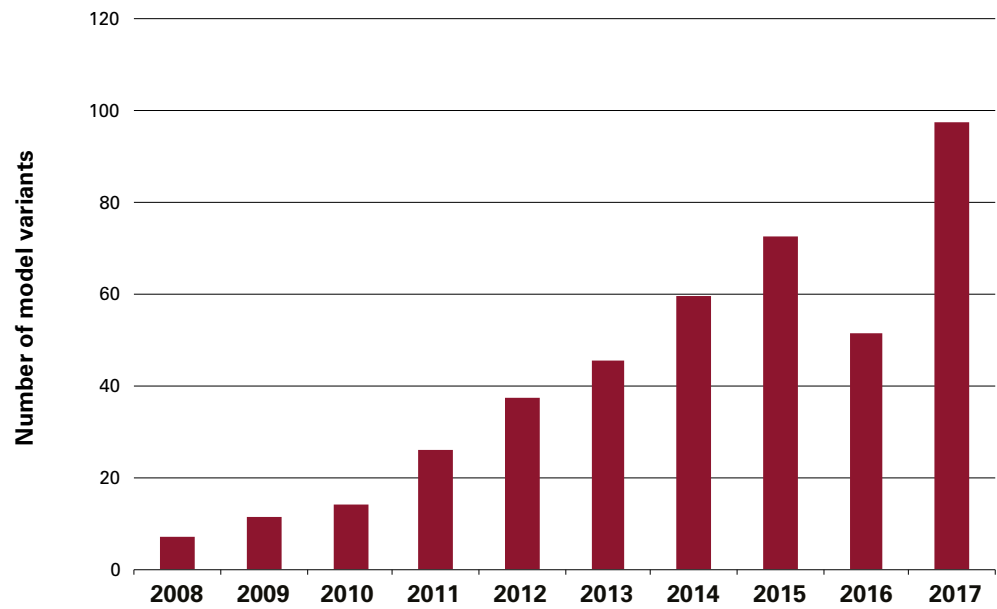
As in previous reports, a 'green' vehicle has been defined as a vehicle whose carbon dioxide emissions intensity does not exceed 120 g/km. In Australia, the proportion of green cars sold in 2017 was 3.8 per cent of total sales (compared with 2.5 per cent in 2016). Figure 17 shows the growth of 'green' vehicle sales as a proportion of total new light vehicle sales between 2008 and 2017.

There were 97 green car model variants available in Australia in 2017 (compared with 55 in 2016). This includes electric vehicles with zero emissions. Figure 18 shows the number of green vehicle models available for sale between 2008 and 2017.

Table 20 in the appendix provides more detail on green vehicles sold in Australia in 2017.

**Figure 17:** 'Green' vehicles sales as a percentage of total new light vehicles sold, 2008–2017



**Figure 18:** 'Green' vehicle model variant availability, 2008–2017

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# 4

## Comparison of Australian and European data

This section compares Australian and European data. There are different methods used worldwide to calculate vehicle emissions. The three main methods are from Europe, Japan and the United States. Each method can give a different emissions result when applied to the same vehicle.

Australia uses the European method. This makes the Australian data directly comparable with European data. However, the published data from Europe separates passenger vehicles from light commercial vehicles. 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).

We sourced the European data from the European Environment Agency (2017, 2018). The European Environment Agency has published provisional data for passenger cars for 2017 and only for the European Union. As the latest detailed European Environment Agency data is for the year 2016, this is the year we used to do the comparisons.

As the data illustrates, emissions from new vehicles in the European countries analysed are 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 5. A summary of the European measures was published by the European Conference of Ministers of Transport (2007).

**Table 5: European measures designed to reduce 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 European consumers purchase more small vehicles compared with Australian consumers European consumers prefer manual transmission vehicles, whereas Australian consumers prefer automatic transmissions
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

Table 6 gives separated emissions data for passenger and light commercial vehicles. The average carbon dioxide emissions intensity for passenger vehicles and light commercial vehicles sold in Australia during 2017 was 171.5 g/km and 221.2 g/km respectively.

**Table 6: Average emissions intensity for new passenger and light commercial vehicles, 2016 and 2017 for Australia**

Groupings	Average emissions intensity (g/km)		Annual change (%)
	2016	2017	
Passenger vehicles	172.8	171.5	-0.7
Light commercial vehicles	222.2	221.2	-0.4

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

In past reports we have included comparisons for manufacturers between Australia and Europe. We have not included these comparisons in this year's report as we have found it difficult to undertake these comparisons because the European data is now much more disaggregated. However, we have included the Australian data in tables 21 and 22 in the appendix for those that wish to undertake these manufacturer comparisons.

## **Passenger vehicles: average emissions intensity for the European Union and Australia for 2017**

The average carbon dioxide emissions intensity of a new car sold in the European Union rose in 2017. The average carbon dioxide emissions intensity was 118.5 g/km in 2017, 0.3 per cent higher than in 2016. This was the first time the emissions intensity has risen since monitoring started in 2010 under the current European Union laws. According to the European Federation for Transport and Environment (2018), the main reasons for this rise are increasing sales of SUVs and more powerful vehicles.

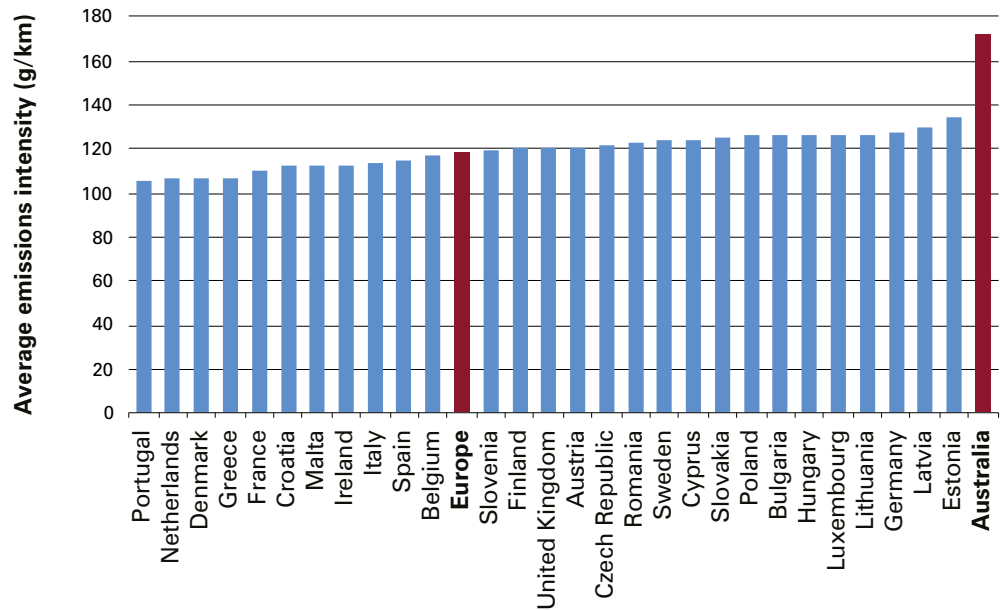
In 2017, Australia's average emissions intensity for passenger vehicles was 171.5 g/km, 45 per cent higher than the European Union.

## Passenger vehicles: average emissions intensity by country for 2016

The breakdown for average carbon dioxide emissions intensity for new passenger vehicles by country for 2016 is shown in Figure 19. The average emissions intensity for new passenger vehicles in Europe was 118.1 g/km compared with Australia’s average of 172.8 g/km – which is 46 per cent higher than the European average. In 2016, European emissions intensity ranged from 105 g/km in Portugal to 134 g/km in Estonia (63 per cent and 28 per cent lower than Australia respectively).

European average emissions intensity was reduced by 1.2 per cent for 2016 compared with 2015. In the same time, Australia’s average emissions intensity fell by 1 per cent. The European countries that showed the highest annual reductions were Latvia (6 per cent) and Bulgaria (3.5 per cent). Additional data is provided in Table 23 in the appendix.

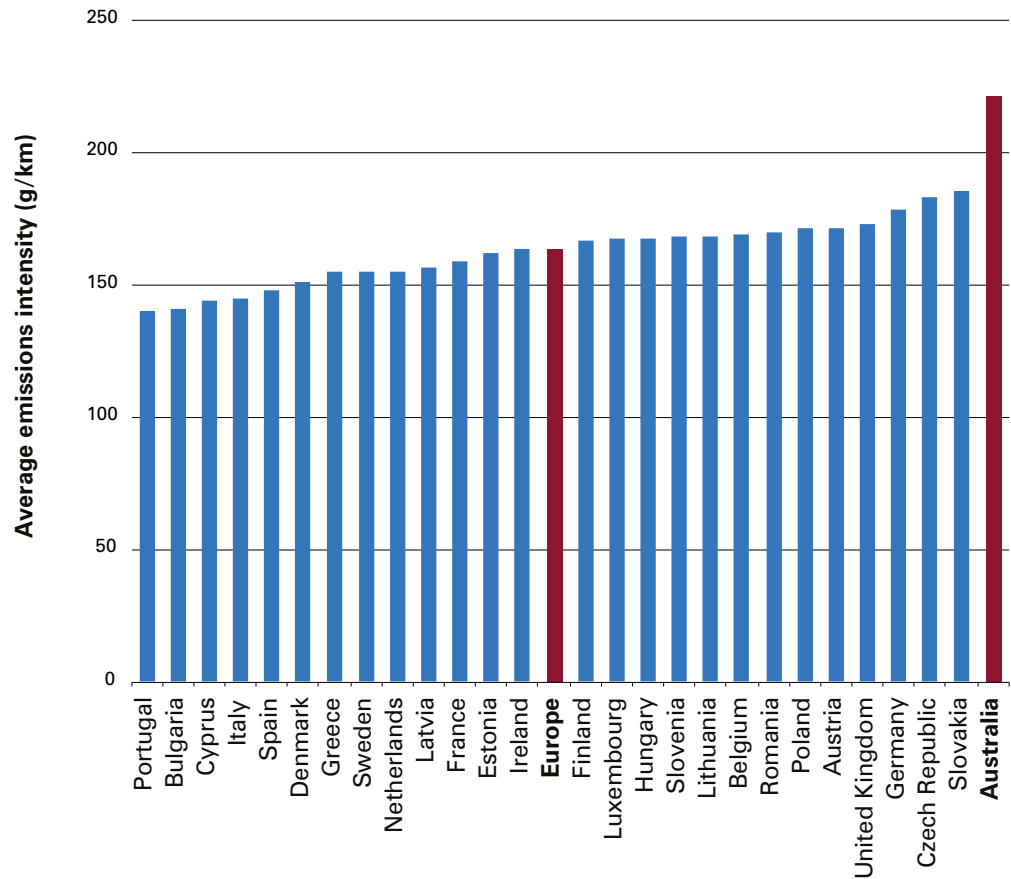
**Figure 19: Average emissions intensity for new passenger vehicles by country, 2016**



## Light commercial vehicles: average emissions intensity by country for 2016

Figure 20 shows the average carbon dioxide emissions intensity for light commercial vehicles in Europe was 164 g/km in 2016. The average Australian emissions intensity was 222 g/km – which is 36 per cent higher than Europe. Additional data is provided in Table 24 in the appendix.

**Figure 20:** Average emissions intensity for light commercial vehicles by country, 2016





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# Appendix

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

**Table 7: National average emissions intensity for new passenger and light commercial vehicles, 2002–2017**

Year	Average emissions intensity (g/km)	Annual change (%)
2002	252.4	n/a
2003	249.5	-1.1
2004	246.5	-1.2
2005	240.5	-2.4
2006	230.3	-4.2
2007	226.4	-1.7
2008	222.4	-1.8
2009	218.6	-1.7
2010	212.6	-2.7
2011	206.6	-2.8
2012	199.0	-3.7
2013	192.2	-3.4
2014	187.8	-2.3
2015	184.2	-1.9
2016	182.1	-1.1
2017	181.7	-0.3

n/a – Not applicable

**Table 8: Corporate average emissions intensity and annual sales by make, 2016 and 2017**

Make	Average emissions intensity (g/km)		Change from 2016 to 2017 (%)	Sales	
	2016	2017		2016	2017
Toyota	198	196	-0.6	209,395	216,256
Mazda	158	163	3.0	118,217	116,349
Hyundai	174	176	1.4	101,555	97,013
Holden	222	219	-1.4	94,308	90,306
Mitsubishi	184	184	0.0	73,368	80,654
Ford	213	215	1.1	80,371	77,212
Volkswagen	154	157	1.8	56,030	57,536
Nissan	184	184	-0.1*	66,784	56,594
Kia	178	177	-0.6	42,668	54,737
Subaru	177	173	-2.8	47,018	52,511
Honda	158	155	-2.3	40,838	46,783
Mercedes-Benz	156	159	1.8	37,787	39,146

Make	Average emissions intensity (g/km)		Change from 2016 to 2017 (%)	Sales	
	2016	2017		2016	2017
Isuzu Ute	215	207	-3.7	23,377	25,804
BMW	148	148	0.4*	28,006	23,576
Audi	144	145	1.1	24,258	22,011
Suzuki	149	133	-10.9	19,495	19,256
Land Rover	181	167	-7.8	13,597	13,112
Renault	152	159	4.3	9,321	8,902
Lexus	174	177	1.6	9,027	8,800
Jeep	218	221	1.6	12,620	8,270
Skoda	132	137	3.8	4,760	5,350
Volvo Car	157	155	-1.0	5,878	4,681
Porsche	194	187	-3.7	4,434	4,484
MINI	132	130	-1.4	3,765	3,712
Peugeot	138	132	-4.1	3,129	3,392
LDV	259	248	-4.5	1,542	2,580
Jaguar	155	161	3.7	3,008	2,483
Fiat	154	135	-11.8	2,414	2,008
Alfa Romeo	143	153	6.7	711	1,057
Infiniti	206	208	0.9	807	776
Maserati	233	211	-9.3	483	740
Citroen	125	126	1.3	965	735
Haval	236	226	-4.5	286	710
MG	-	175	n/a	0	600
Great Wall	223	228	2.0	110	404
Foton Light	218	218	0.2*	839	371
Chrysler	271	281	3.8	462	258
Bentley	282	272	-3.8	190	219
Ferrari	270	272	0.5	188	210
Aston Martin	314	287	-8.5	115	144
Lamborghini	309	310	0.2	127	122
McLaren	266	257	-3.3	93	116
Fiat Professional	172	145	-15.6	293	107
Ssangyong	208	208	0.2*	371	96
Lotus	211	198	-5.9	31	62
Rolls-Royce	330	329	-0.3	37	45
Proton	191	204	7.0	182	39
Genesis	-	249	n/a	0	26
Morgan	198	206	4.2	5	8
Chery	187	204	9.2	19	7
Dodge	242	242	0.0	366	4
Caterham	181	-	n/a	3	0
<b>Total</b>	<b>182</b>	<b>182</b>	<b>-0.3*</b>	<b>1,143,653</b>	<b>1,150,374</b>

\* Due to rounding, average emissions intensity appear the same for 2016 and 2017.

However, the percentage change considers the unrounded figure.

n/a – Not applicable

**Table 9: Average emissions intensity and annual sales by Australian-made makes, 2016 and 2017**

Make	Average emissions intensity (g/km)		Change from 2016 to 2017 (%)	Sales	
	2016	2017		2016	2017
Holden	233	259	11.1	43,246	28,681
Toyota	175	175	-0.2*	30,318	26,124
Ford	234	229	-2.0	13,532	2,046
<b>Australian-made</b>	<b>213</b>	<b>219</b>	<b>2.9</b>	<b>87,096</b>	<b>56,851</b>

\* Due to rounding, average emissions intensity appear the same for 2016 and 2017. However, the percentage change considers the unrounded figure.

**Table 10: Average emissions intensity and annual sales by Australian-made vehicle models, 2016 and 2017**

Make	Average emissions intensity (g/km)		Change from 2016 to 2017 (%)	Sales	
	2016	2017		2016	2017
Holden Commodore	252	258	2.3	25,860	23,598
Toyota Camry	183	183	0.0	20,594	18,543
Holden Cruze	174	178	2.3	11,630	291
Ford Territory	227	228	0.4	6,928	1,764
Ford Falcon	237	238	0.2	4,434	210
Toyota Hybrid Camry	121	121	0.0	5,891	4,880
Holden Utility	258	266	3.0	4,802	4,241
Toyota Aurion	215	215	0.0	3,833	2,701
Ford Falcon Utility	248	242	-2.5	2,170	72
Holden Caprice	300	300	0.1*	954	551
<b>Total</b>	<b>213</b>	<b>219</b>	<b>2.9</b>	<b>87,096</b>	<b>56,851</b>

\* Due to rounding, average emissions intensity appear the same for 2016 and 2017. However, the percentage change considers the unrounded figure.

**Table 11: Average emissions intensity and annual sales by segment, 2016 and 2017**

Segment	Average emissions intensity (g/km)		Change from 2016 to 2017 (%)	Sales	
	2016	2017		2016	2017
Small	153	151	-1.1	224,386	220,104
SUV Medium	174	173	-0.6	172,194	195,655
Pick Up/Chassis 4X4	222	222	0.0	146,528	165,276
SUV Large	212	208	-1.8	142,495	136,684
SUV Small	158	155	-1.6	110,414	117,573
Light	136	134	-0.9	95,021	84,247
Medium	161	160	-0.6	74,573	63,423
Pick Up/Chassis 4X2	224	223	-0.7	43,948	41,818
Large	235	236	0.4	39,392	32,818
Sports	197	212	7.7	27,464	27,311
Vans/Control Cab	213	207	-2.8	23,812	25,419
SUV Upper Large	261	257	-1.7	15,914	15,722
People Movers	216	217	0.5	12,864	13,551
Micro	127	126	-0.6	10,207	7,142
Light Buses	259	256	-1.0	2,155	2,262
Upper Large	250	251	0.5	2,286	1,369
<b>Total</b>	<b>182</b>	<b>182</b>	<b>-0.3*</b>	<b>1,143,653</b>	<b>1,150,374</b>

\* Due to rounding, average emissions intensity appear the same for 2016 and 2017. However, the percentage change considers the unrounded figure.

Table 12: Top selling models within segments, 2017

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	1	Kia	JA PICANTO	2,457	133	48	Fiat 500 (petrol)
	2	Mitsubishi	MIRAGE	1,563	109	22	
	3	Holden	SPARK	1,227	136	51	
	4	Kia	PICANTO TA	866	130	44	
	5	Fiat	500	704	116	29	
	6	Fiat	ABARTH	168	140	56	
	7	Suzuki	CELERIO	155	112	24	
	8	Nissan	MICRA	2	154	71	
Light	1	Hyundai	ACCENT	17,578	150	66	Toyota Prius C (petrol-electric)
	2	Mazda	200	12,101	120	33	
	3	Toyota	YARIS	11,226	146	62	
	4	Honda	JAZZ	7,301	136	52	
	5	Kia	YB RIO	6,532	144	60	
	6	Volkswagen	POLO	6,515	114	27	
	7	Suzuki	SWIFT	6,511	122	36	
	8	Holden	BARINA	3,697	155	73	
	9	Suzuki	BALENO	2,592	125	39	
	10	MINI	COOPER	2,588	125	39	
Small	1	Toyota	COROLLA	37,353	149	1,141	BMW i3 REX (electric-petrol)
	2	Mazda	300	32,690	138	1,052	
	3	Hyundai	I30	28,780	168	1,298	
	4	Kia	CERATO YD	18,731	169	1,306	
	5	Volkswagen	GOLF	18,454	133	1,008	
	6	Holden	ASTRA	13,535	140	1,063	
	7	Subaru	IMPREZA	11,903	157	1,207	
	8	Mitsubishi	LANCER	7,560	175	1,355	
	9	Honda	CIVIC 5D	7,198	146	1,117	
	10	Honda	CIVIC 4D	7,090	144	1,101	

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	1	Toyota	CAMRY	18,740	183	273	49  BMW 330E (electric-petrol)
	2	Toyota	CAMRY HYBRID	4,880	121	147	
	3	Mazda	600	3,647	152	210	
	4	Mercedes-Benz Cars	C200	3,185	144	193	
	5	Ford	MONDEO	2,959	149	203	
	6	Volkswagen	PASSAT	2,463	144	194	
	7	Mercedes-Benz Cars	C250	2,444	143	193	
	8	Audi	A4	2,031	131	168	
	9	Subaru	LIBERTY	2,023	180	267	
	10	Skoda	OCTAVIA	1,882	131	168	
Large	1	Holden	COMMODORE	23,676	301	554	46  BMW 530E (electric-petrol)
	2	Toyota	AURION	2,701	266	478	
	3	Skoda	SUPERB	984	266	478	
	4	Mercedes-Benz Cars	E200	591	276	500	
	5	Kia	CK STINGER	504	296	543	
	6	BMW	520D	419	358	678	
	7	BMW	530I	291	340	639	
	8	Audi	A6	268	388	743	
	9	Mercedes-Benz	E220D	267	275	498	
	10	Jaguar	XF	249	296	543	
Upper Large	1	Holden	CAPRICE	551	300	500	50  BMW 530E (electric-petrol)
	2	Chrysler	300 LX	257	281	462	
	3	Porsche	97A	111	174	247	
	4	BMW	740I	55	164	228	
	5	Mercedes-Benz Cars	S350 D	49	152	204	
	6	Maserati	QUATTROPORTE	34	219	338	
	7	Audi	A8	31	167	233	
	8	BMW	730D	28	129	158	
	9	Jaguar	XJ	26	201	303	
	10	BMW	630I GT	24	159	218	

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	1	Kia	CARNIVAL YP	5,878	237	97	120
	2	Honda	ODYSSEY	2,184	182	51	
	3	Volkswagen	MULTIVAN	1,076	197	64	
	4	Hyundai	IMAX	987	243	102	
	5	Toyota	TARAGO	958	215	79	
	6	LDV	G10	737	272	127	
	7	Mercedes-Benz Vans	V-CLASS	582	166	38	
	8	Mercedes-Benz Vans	VALENTE	341	166	38	
	9	Volkswagen	CADDY	287	141	18	
	10	Citroen	C4 GRD PICASSO	138	133	11	
Sports	1	Ford	MUSTANG	9,165	283	477	49
	2	Hyundai	VELOSTER	1,935	160	227	
	3	Toyota	86	1,619	178	264	
	4	Mazda	MX5	1,459	165	236	
	5	Subaru	BRZ	786	182	272	
	6	Mercedes-Benz Cars	C63 AMG S CPE	722	202	312	
	7	BMW	M2	583	187	282	
	8	Mercedes-Benz Cars	C200 CPE	519	146	198	
	9	Mercedes-Benz Cars	C43 AMG CPE	497	188	284	
	10	Audi	A5	440	144	195	
SUV Small	1	Mitsubishi	ASX	19,403	176	258	49
	2	Mazda	CX3	17,490	148	201	
	3	Nissan	QASHQAI	13,495	159	224	
	4	Honda	HR-V	11,843	158	222	
	5	Subaru	XV	10,161	160	226	
	6	Holden	TRAX	7,497	165	238	
	7	Toyota	C-HR	6,330	145	196	
	8	Suzuki	VITARA	5,805	139	183	
	9	Audi	Q3	2,775	141	188	
	10	Hyundai	KONA	2,695	165	236	



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 Medium	1	Mazda	CX5	25,831	165	303	41 Mitsubishi Outlander (electric-petrol)
	2	Hyundai	TUCSON	23,828	182	344	
	3	Toyota	RAV4	21,077	179	337	
	4	Nissan	XTRAIL	18,955	185	352	
	5	Mitsubishi	OUTLANDER	16,632	159	287	
	6	Kia	QL SPORTAGE	13,448	182	344	
	7	Subaru	FORESTER	12,474	185	351	
	8	Volkswagen	TIGUAN	9,620	163	298	
	9	Honda	CR-V	9,502	172	321	
	10	Ford	ESCAPE	4,987	171	317	
SUV Large	1	Toyota	LANDCRUISER	12,814	253	416	49 Volvo XC 90 (electric-petrol)
	2	Nissan	PATROL	916	331	576	
	3	Mercedes-Benz Cars	GLS350D 4M	779	199	306	
	4	Land Rover	RANGE ROVER	436	232	373	
	5	Lexus	LX570	323	334	582	
	6	Mercedes-Benz Cars	G63 AMG	104	322	557	
	7	Mercedes-Benz Cars	GLS63 AMG 4M	88	288	488	
	8	Bentley	BENTAYGA	84	249	408	
	9	Infiniti	QX80	83	350	614	
	10	Mercedes-Benz Cars	GLS500 4M	59	264	439	
SUV Upper Large	1	Toyota	LANDCRUISER	12,814	253	39	182 Land Rover Range Rover (diesel)
	2	Nissan	PATROL	916	331	82	
	3	Mercedes-Benz Cars	GLS350D 4M	779	199	9	
	4	Land Rover	RANGE ROVER	436	232	27	
	5	Lexus	LX570	323	334	84	
	6	Mercedes-Benz Cars	G63 AMG	104	322	77	
	7	Mercedes-Benz Cars	GLS63 AMG 4M	88	288	58	
	8	Bentley	BENTAYGA	84	249	37	
	9	Infiniti	QX80	83	350	92	
	10	Mercedes-Benz Cars	GLS500 4M	59	264	45	

Segment	Selling rank within segment	Make	Model	Sales	Average emissions intensity (g/km)	Difference in average emissions intensity compared with best-in-class model (%)	Best-in-class emissions intensity (g/km) *
Pick-up/Chassis 4x2	1	Toyota	HILUX 4X2	11,796	237	43	166 Nissan Navara (diesel)
	2	Ford	RANGER	5,796	202	22	
	3	Isuzu Ute	D-MAX	4,922	199	20	
	4	Holden	HOLDEN UTILITY	4,241	266	60	
	5	Mazda	B32	3,432	242	46	
	6	Nissan	NAVARA	3,288	175	6	
	7	Mitsubishi	TRITON	3,092	211	27	
	8	Holden	COLORADO	2,472	240	45	
	9	Mazda	B22	1,787	215	29	
	10	Volkswagen	AMAROK	560	214	29	
Pick-up/chassis 4x4	1	Ford	RANGER	36,932	228	33	172 Nissan Navara (diesel)
	2	Toyota	HILUX 4X4	35,297	218	27	
	3	Mitsubishi	TRITON	20,513	197	15	
	4	Holden	COLORADO	19,107	243	41	
	5	Nissan	NAVARA	12,940	183	6	
	6	Isuzu Ute	D-MAX	12,795	207	20	
	7	Toyota	LANDCRUISER	8,915	281	63	
	8	Mazda	B32	8,900	261	52	
	9	Volkswagen	AMAROK	8,722	212	23	
	10	LDV	T60	334	249	45	
Vans/Cab Chassis	1	Toyota	HIACE	7,470	238	120	108 Citroen Berlingo (diesel)
	2	Hyundai	ILOAD	5,645	235	118	
	3	Volkswagen	CADDY VAN	2,256	141	30	
	4	Volkswagen	TRANSPORTER	2,183	202	87	
	5	Renault	TRAFIC	2,037	164	52	
	6	Ford	TRANSIT CUSTOM	1,593	178	64	
	7	Mercedes-Benz Vans	VITO	1,240	165	53	
	8	LDV	G10	1,108	235	117	
	9	Renault	KANGOO	883	151	40	
	10	LDV	V80	361	238	120	
Light Buses	1	Toyota	HIACE	2,246	256	12	228 Toyota Hiace (diesel)
	2	LDV	V80	16	233	2	

\* Best-in-class is the lowest emissions model variant and excludes fully electric vehicles with emissions of 0 g/km.

**Table 13: Average emissions intensity for models with a sales volume greater than 1,000 vehicles, 2017**

Rank	Make	Model	Average emissions intensity (g/km)	Sales
1	Toyota	COROLLA	149	37,353
2	Ford	RANGER 4X4	228	36,932
3	Toyota	HILUX 4X4	218	35,297
4	Mazda	300	138	32,690
5	Hyundai	I30	168	28,780
6	Mazda	CX5	165	25,831
7	Hyundai	TUCSON	182	23,828
8	Holden	COMMODORE	258	23,676
9	Toyota	RAV4	179	21,077
10	Mitsubishi	TRITON	197	20,513
11	Mitsubishi	ASX	176	19,403
12	Holden	COLORADO	243	19,107
13	Nissan	XTRAIL	185	18,955
14	Toyota	CAMRY	183	18,740
15	Kia	CERATO YD	169	18,731
16	Volkswagen	GOLF	133	18,454
17	Hyundai	ACCENT	150	17,578
18	Mazda	CX3	148	17,490
19	Mitsubishi	OUTLANDER	159	16,632
20	Toyota	PRADO	211	15,982
21	Holden	ASTRA	140	13,535
22	Nissan	QASHQAI	159	13,495
23	Kia	QL SPORTAGE	182	13,448
24	Nissan	NAVARA	183	12,940
25	Toyota	LANDCRUISER	253	12,814
26	Isuzu Ute	D-MAX	207	12,795
27	Toyota	KLUGER	220	12,509
28	Subaru	FORESTER	185	12,474
29	Mazda	200	120	12,101
30	Subaru	IMPREZA	157	11,903
31	Honda	HR-V	158	11,843
32	Toyota	HILUX 4X2	237	11,796
33	Subaru	OUTBACK	173	11,340
34	Toyota	YARIS	146	11,226
35	Subaru	XV	160	10,161
36	Volkswagen	TIGUAN	163	9,620
37	Holden	CAPTIVA	228	9,588
38	Honda	CR-V	172	9,502
39	Ford	MUSTANG	283	9,165
40	Mazda	CX9	201	9,012

Rank	Make	Model	Average emissions intensity (g/km)	Sales
41	Toyota	LANDCRUISER	281	8,915
42	Mazda	B32	261	8,900
43	Volkswagen	AMAROK	212	8,722
44	Isuzu Ute	MU-X	212	8,087
45	Hyundai	SANTA FE	208	7,974
46	Mitsubishi	PAJERO SPORT	212	7,618
47	Mitsubishi	LANCER	175	7,560
48	Holden	TRAX	165	7,497
49	Toyota	HIACE	238	7,470
50	Honda	JAZZ	136	7,301
51	Honda	CIVIC 5D	146	7,198
52	Honda	CIVIC 4D	144	7,090
53	Kia	YB RIO	144	6,532
54	Volkswagen	POLO	114	6,515
55	Suzuki	SWIFT	122	6,511
56	Toyota	C-HR	145	6,330
57	Ford	FOCUS	154	5,953
58	Kia	CARNIVAL YP	237	5,878
59	Suzuki	VITARA	139	5,805
60	Ford	RANGER 4X2	202	5,796
61	Hyundai	ILOAD	235	5,645
62	Hyundai	ELANTRA	167	5,613
63	Jeep	GRAND CHEROKEE	226	5,356
64	Ford	ESCAPE	171	4,987
65	Isuzu Ute	D-MAX	199	4,922
66	Toyota	CAMRY HYBRID	121	4,880
67	Kia	SORENTO UM	188	4,725
68	Ford	EVEREST	223	4,607
69	Land Rover	DISCOVERY SPORT	154	4,547
70	Nissan	PATHFINDER	235	4,502
71	Holden	HOLDEN UTILITY	266	4,241
72	Mitsubishi	PAJERO	240	4,140
73	Holden	BARINA	155	3,697
74	Mazda	600	152	3,647
75	Mazda	B32	242	3,432
76	Holden	TRAILBLAZER	252	3,304
77	Nissan	NAVARA	175	3,288
78	Mercedes-Benz Cars	C200	144	3,185
79	Renault	KOLEOS	186	3,120
80	Mitsubishi	TRITON	211	3,092
81	Audi	A3	119	3,054
82	Land Rover	RR SPORT	192	2,983

Rank	Make	Model	Average emissions intensity (g/km)	Sales
83	Ford	MONDEO	149	2,959
84	Land Rover	RR EVOQUE	138	2,909
85	Toyota	FORTUNER	227	2,851
86	Audi	Q3	141	2,775
87	Toyota	AURION	215	2,701
88	Hyundai	KONA	165	2,695
89	Audi	Q5	153	2,694
90	Subaru	WRX	217	2,614
91	Suzuki	BALENO	125	2,592
92	MINI	COOPER	125	2,588
93	Porsche	95B	188	2,478
94	Holden	COLORADO	240	2,472
95	Volkswagen	PASSAT	144	2,463
96	Kia	JA PICANTO	133	2,457
97	Mercedes-Benz Cars	C250	143	2,444
98	Suzuki	IGNIS	113	2,406
99	Audi	Q7	161	2,269
100	Volkswagen	CADDY VAN	141	2,256
101	Toyota	HIACE	256	2,246
102	BMW	X5 XDRIVE30D	162	2,187
103	Honda	ODYSSEY	182	2,184
104	Volkswagen	TRANSPORTER	202	2,183
105	Lexus	NX200T	181	2,140
106	Renault	TRAFIC	164	2,037
107	Audi	A4	131	2,031
108	Subaru	LIBERTY	180	2,023
109	Audi	Q2	141	1,999
110	Hyundai	VELOSTER	160	1,935
111	Volvo Car	XC60	170	1,891
112	Skoda	OCTAVIA	131	1,882
113	BMW	X3 XDRIVE20D	139	1,881
114	Mazda	B22	215	1,787
115	Ford	TERRITORY	228	1,764
116	BMW	X1 XDRIVE25i	152	1,696
117	Toyota	86	178	1,619
118	Volkswagen	TOUAREG	196	1,612
119	Land Rover	DISCOVERY	189	1,611
120	Ford	TRANSIT CUSTOM	178	1,593
121	Mitsubishi	MIRAGE	109	1,563
122	Ford	FIESTA	133	1,550
123	Mercedes-Benz Cars	GLC250	168	1,513
124	Mercedes-Benz Cars	A180	135	1,493

Rank	Make	Model	Average emissions intensity (g/km)	Sales
125	Mazda	MX5	165	1,459
126	Mercedes-Benz Cars	A250 SPORT 4M	156	1,440
127	Mercedes-Benz Cars	GLC250D	149	1,434
128	Audi	S3	152	1,391
129	Ford	ECOSPORT	152	1,364
130	Audi	A1	111	1,327
131	BMW	X1 SDRIVE18D	114	1,302
132	Nissan	JUKE	148	1,299
133	Jaguar	FP	158	1,275
134	Renault	MEGANE	128	1,259
135	Mercedes-Benz Vans	VITO	165	1,240
136	Holden	SPARK	136	1,227
137	Renault	CLIO	128	1,223
138	Subaru	LEVORG	192	1,210
139	Porsche	CAY	186	1,111
140	LDV	G10	235	1,108
141	BMW	330I	136	1,094
142	Volvo Car	XC90	158	1,086
143	BMW	X3 XDRIVE20I	175	1,077
144	Volkswagen	MULTIVAN	197	1,076
145	Jeep	CHEROKEE	213	1,069
146	Volkswagen	JETTA	147	1,056
147	Peugeot	308	119	1,031

**Table 14: Average emissions intensity and annual sales by buyer type, 2016 and 2017**

Buyer type	Average emissions intensity (g/km)		Change from 2016 to 2017 (%)	Sales	
	2016	2017		2016	2017
Private	176	176	0.0	571,332	557,018
Business	187	186	-0.6	531,664	554,733
Government	201	199	-1.1	40,657	38,623
<b>Total</b>	<b>182</b>	<b>182</b>	<b>-0.3*</b>	<b>1,143,653</b>	<b>1,150,374</b>

\* Due to rounding, average emissions intensity appear the same for 2016 and 2017. However, the percentage change considers the unrounded figure.

**Table 15: Average emissions intensity and annual sales by detailed buyer type, 2016 and 2017**

Buyer type	Average emissions intensity (g/km)		Change from 2016 to 2017 (%)	Sales	
	2016	2017		2016	2017
Private – Local Delivery	176	176	0.0	571,107	556,893
Fleet	201	201	0.3*	159,812	171,170
Dealer Demonstrator	176	172	-1.9	189,537	180,826
Large Fleet	198	198	0.1*	65,798	69,634
Rental	181	180	-0.5	60,318	71,264
Company Capitalisation	176	172	-2.4	38,742	42,198
State Government	204	200	-1.8	26,584	24,940
Not For Profit Organisation	184	181	-1.7	16,168	18,253
Local Government	195	195	0.1*	10,364	9,307
Australian Government	200	200	-0.2*	3,709	4,376
Taxi	155	144	-7.1	1,067	793
Private - Overseas Delivery	162	181	11.4	225	125
Diplomatic	185	180	-2.5	110	89
<b>Total</b>	<b>182</b>	<b>182</b>	<b>-0.3*</b>	<b>1,143,541</b>	<b>1,149,868</b>

\* Due to rounding, average emissions intensity appear the same for 2016 and 2017. However, the percentage change considers the unrounded figure.

**Table 16: Average emissions intensity and annual sales by fuel type, 2016 and 2017**

Fuel type	Average emissions intensity (g/km)		Change from 2016 to 2017 (%)	Sales	
	2016	2017		2016	2017
Petrol	172	170	-0.9	781,114	773,677
Diesel	205	206	0.5	361,776	375,587
LPG	221	225	1.7	612	34
Electric <sup>a</sup>	48 <sup>b</sup>	49 <sup>b</sup>	1.8	769	1,076
<b>Total</b>	<b>182</b>	<b>182</b>	<b>-0.3<sup>c</sup></b>	<b>1,144,271</b>	<b>1,150,374</b>

a. For FCAI data

b. Excludes vehicles with emissions intensity of 0g/km

c. Due to rounding, average emissions intensity appear the same for 2016 and 2017.

However, the percentage change considers the unrounded figure.

**Table 17: Electric vehicle sales by model for FCAI data, 2016 and 2017**

Make and Model	2016	2017
Audi A3	60	15
BMW 330E	74	89
BMW 530E	0	21
BMW740E	0	2
BMW I3	22	43
BMW I3 REX	70	75
BMW I8	32	24
BMW X5 XDRIVE40E	60	29
Mercedes-Benz Cars C350 E	162	207
Mercedes-Benz Cars C350T E	6	5
Mercedes-Benz Cars E350E	0	12
Mercedes-Benz Cars GLE500E	40	45
Mercedes-Benz Cars S500L E	0	1
MINI COOPER	0	2
Mitsubishi OUTLANDER	49	369
Nissan LEAF	42	0
Porsche 97A	0	14
Porsche CAY	76	71
Renault FLUENCE	0	2
Renault KANGOO	4	1
Renault ZOE	0	2
Volvo Car XC60	0	7
Volvo Car XC90	72	88
<b>Total</b>	<b>769</b>	<b>1124</b>



**Table 18: Electric vehicle sales by state for FCAI data, 2016 and 2017**

State	2016	2017
Australian Capital Territory	33	40
New South Wales	273	395
Northern Territory	4	1
Queensland	107	147
South Australia	61	152
Tasmania	9	5
Victoria	248	307
Western Australia	34	77
<b>Total</b>	<b>769</b>	<b>1,124</b>

**Table 19: Electric vehicle sales by buyer type for FCAI data, 2016 and 2017**

Buyer Type	2016	2017
Company Capitalisation	167	299
Dealer Demonstrator	280	279
Federal Government	11	1
Fleet	41	53
Large Fleet	7	56
Local Government	1	5
Not For Profit Organisation	0	2
Private - Local Delivery	259	377
Private - Overseas Delivery	0	0
Rental		21
State Government	3	31
<b>Total</b>	<b>769</b>	<b>1,124</b>

Table 20: 'Green' vehicle average emissions intensity and sales by segment, 2017

Segment	Make	Model	Average emissions intensity (g/km)	Sales
<b>Micro</b>	Mitsubishi	MIRAGE	109	1,563
	Suzuki	CELERIO	112	155
	Fiat	500	113	626
	Kia	JA PICANTO	117	175
<b>Light</b>	Renault	ZOE	0	2
	Toyota	PRIUS C	90	737
	Peugeot	208	104	324
	Citroen	C3	110	40
	Skoda	FABIA	110	983
	Audi	A1	111	1,293
	Suzuki	SWIFT	111	4,432
	Volkswagen	POLO	112	5,890
	Ford	FIESTA	113	362
	MINI	COOPER	113	1,256
	Mazda	200	114	6,765
	Mitsubishi	MIRAGE	116	1
	Renault	CLIO	117	446
	Suzuki	BALENO	118	236
<b>Small</b>	BMW	I3	0	43
	Renault	FLUENCE	0	2
	BMW	I3 REX	12	75
	Toyota	PRIUS	80	274
	Hyundai	IONIQ	92	5
	Lexus	CT200H	95	821
	Toyota	COROLLA	96	2,158
	BMW	118D	99	156
	Toyota	PRIUS V	101	384
	Renault	MEGANE	105	3
	Mercedes-Benz Cars	A200D	105	193
	BMW	218D AT	111	123
	BMW	118I	112	374
	Volvo Car	V40	112	236
	Citroen	DS4	113	5
	Mercedes-Benz Cars	B200 CDI	114	68
	Audi	A3	114	2,390
	Peugeot	308	114	864
	Skoda	RAPID	117	437
	Alfa Romeo	GIULIETTA	119	165
Hyundai	I30	119	130	
Volvo Car	V40 CC	119	94	

Segment	Make	Model	Average emissions intensity (g/km)	Sales
<b>Medium</b>	BMW	330E	49	89
	Mercedes-Benz Cars	C350 E	56	207
	Mercedes-Benz Cars	C350T E	59	5
	Mercedes-Benz Cars	C300 BTH	105	5
	Honda	ACCORD	107	1
	Alfa Romeo	GIULIA	109	20
	Mercedes-Benz Cars	CLA200 CDI	110	1
	Jaguar	XE	111	221
	Mercedes-Benz Cars	CLA220D	111	155
	Lexus	IS300H	113	305
	BMW	420D GRAN COUPE	114	22
	Mercedes-Benz Cars	CLA200 CDI SB	114	1
	Mercedes-Benz Cars	CLA220D SB	115	32
	Mercedes-Benz Cars	C250 BT	116	123
	BMW	320D	116	204
	Volvo Car	S60	117	9
	BMW	320D G TURISMO	118	36
	Audi	A4	119	571
	Mercedes-Benz Cars	C200 BT	119	76
	Volvo Car	V60	120	30
Skoda	OCTAVIA	120	289	
<b>Large</b>	BMW	530E	46	21
	Mercedes-Benz Cars	E350E	55	12
	Mercedes-Benz Cars	E220D	108	267
	Audi	A6	110	64
	BMW	520D	114	192
	Peugeot	508	114	8
	Jaguar	XF	114	85
	BMW	520D TOUR	119	9
<b>Upper Large</b>	BMW	740E	50	2
	Porsche	97A	57	14
	Mercedes-Benz Cars	S300 BT HYBRID	118	2
<b>Sports</b>	BMW	I8	49	24
	BMW	220D COUPE	107	4
	BMW	420D COUPE	114	26
	Mercedes-Benz Cars	C250D CPE	115	106
	MINI	COOPER	119	3
	Audi	A3	120	302

Segment	Make	Model	Average emissions intensity (g/km)	Sales
<b>People Movers</b>	Citroen	C4 GRD PICASSO	120	76
<b>SUV Small</b>	MINI	COOPER	49	2
	Citroen	C4 CACTUS	105	190
	Peugeot	2008	110	519
	Suzuki	IGNIS	113	2406
	BMW	X1 SDRIVE18D	114	1302
	Skoda	YETI	117	209
	Renault	CAPTUR	118	9
	Mercedes-Benz Cars	GLA220 D	118	180
	Mercedes-Benz Cars	GLA220 D FL	118	265
	Infiniti	Q30	120	7
<b>SUV Medium</b>	Mitsubishi	OUTLANDER	41	369
	Volvo Car	XC60	49	7
<b>SUV Large</b>	Volvo Car	XC90	49	88
	BMW	X5 XDRIVE40E	77	29
	Mercedes-Benz Cars	GLE500E	78	45
	Porsche	CAY	79	71
<b>Vans/Cab Chassis</b>	Renault	KANGOO	0	1
	Citroen	BERLINGO	108	65

**Table 21: Corporate average emissions intensity for new passenger vehicles for Australia, 2016**

Make	Average vehicle CO <sub>2</sub> emissions (g/km)	Sales
Audi	144	24,258
BMW	148	28,006
Citroen	117	650
Fiat	154	2,414
Ford	201	40,062
Holden	215	71,120
Honda	158	40,838
Hyundai	169	96,088
Jaguar	155	3,008
Kia	178	42,668
Land Rover	181	13,579
Infiniti	206	807
Lexus	174	9,027
Mazda	147	103,713
Mercedes-Benz	156	36,634
MINI	132	3,765
Mitsubishi	178	51,471
Nissan	184	49,759
Peugeot	138	3,129
Renault	146	6,477
Skoda	132	4,760
Subaru	177	47,018
Suzuki	148	19,023
Toyota	183	150,671
Volkswagen	141	44,103
Volvo Car	157	5,878

**Table 22: Average emissions intensity for new light commercial vehicles for Australia by make, 2016**

Make	Average emissions intensity (g/km)	Sales
Citroën	140	315
Fiat Professional	172	293
Ford	225	40,309
Foton Light	218	839
Great Wall	223	101
Holden	244	23,188
Hyundai	248	5,467
Isuzu Ute	214	16,359
Land Rover	295	18
LDV	252	963
Mazda	241	14,504
Mercedes-Benz	165	1,153
Mitsubishi	200	21,897
Nissan	184	17,025
Renault	166	2,844
Ssangyong	204	45
Suzuki	190	472
Toyota	235	58,724
Volkswagen	202	11,927

**Table 23: Average emissions intensity and annual registrations for new passenger vehicles by country, 2015 and 2016**

Country	Average emissions intensity (g/km)		Change from 2015 to 2016 (%)	Annual registrations (thousands)	
	2015	2016		2015	2016
Portugal	106	105	-0.9	179	207
Netherlands	101	106	4.6	438	378
Denmark	106	106	-0.2*	204	221
Greece	106	106	-0.1*	76	79
France	111	110	-1.1	2,011	2,167
Croatia	113	112	-1.2	36	45
Malta	113	112	-1.3	7	7
Ireland	114	112	-1.8	123	146
Italy	115	113	-1.6	1,573	1,823
Spain	115	114	-0.8	1076	1185
Belgium	118	116	-1.7	503	541
<b>Europe</b>	<b>120</b>	<b>118</b>	<b>-1.2</b>	<b>13,772</b>	<b>14,712</b>
Slovenia	119	119	-0.2*	53	53
Finland	123	120	-2.4	106	115
United Kingdom	121	120	-1.0	2,623	2,687
Austria	124	120	-2.7	308	329
Czech Republic	126	121	-4.0	227	214
Romania	125	122	-2.4	81	95
Sweden	126	123	-2.5	338	364
Cyprus	126	124	-1.8	9	12
Slovakia	128	125	-2.2	78	89
Poland	129	126	-2.7	354	417
Bulgaria	130	126	-3.5	17	20
Hungary	130	126	-2.9	77	95
Luxembourg	128	126	-1.1	46	49
Lithuania	130	126	-2.9	17	20
Germany	128	127	-1.1	3,177	3,316
Latvia	137	129	-6.0	14	15
Estonia	137	134	-2.4	21	23
<b>Australia</b>	<b>175</b>	<b>173</b>	<b>-1.0</b>	<b>924#</b>	<b>927#</b>

\* Due to rounding, average emissions intensity appear the same for 2016 and 2017. However, the percentage change considers the unrounded figure.

# New car sales

**Table 24: Average emissions intensity and annual registrations for new light commercial vehicles by country, 2015 and 2016**

Country	Average emissions intensity (g/km)		Change from 2015 to 2016 (%)	Sales (thousands)	
	2015	2016		2015	2016
Portugal	142	140	-1.1	27	29
Bulgaria	144	141	-2.0	9	9
Cyprus	143	144	0.6	1	2
Italy	153	145	-5.4	117	167
Spain	155	148	-4.3	76	113
Denmark	151	152	0.4	29	34
Greece	156	155	-0.5	5	6
Sweden	163	155	-4.8	28	30
Netherlands	163	156	-4.8	49	63
Latvia	165	157	-5.3	2	2
France	155	159	2.7	309	283
Estonia	165	162	-1.9	4	4
Ireland	169	164	-3.4	22	26
<b>Europe</b>	<b>168</b>	<b>164</b>	<b>-2.7</b>	<b>1,455</b>	<b>1,582</b>
Finland	175	167	-4.4	10	12
Luxembourg	173	168	-2.9	3	4
Hungary	177	168	-5.1	15	19
Slovenia	175	168	-3.8	6	7
Lithuania	169	169	-0.2*	2	3
Belgium	176	169	-3.8	59	65
Romania	170	170	-0.1*	9	10
Poland	177	171	-3.3	47	47
Austria	178	172	-3.8	31	34
United Kingdom	178	173	-2.8	351	350
Germany	186	179	-4.1	224	245
Czech Republic	183	183	0.1*	13	11
Slovakia	187	186	-0.6	7	7
<b>Australia</b>	<b>229</b>	<b>222</b>	<b>-2.9</b>	<b>198#</b>	<b>216#</b>

\* Due to rounding, average emissions intensity appear the same for 2016 and 2017. However, the percentage change considers the unrounded figure.

# New car sales





