To compare fuel costs and CO\textsubscript{2} emissions of new cars, visit:
https://carfueldata.vehicle-certification-agency.gov.uk
Introduction

The purpose of this guide is to help consumers make an informed choice when buying a new car, enabling them to identify models which could save them money on fuel costs as well as reducing the impact on the environment through cutting emissions of both carbon dioxide (CO₂) and air pollutants. Owners and drivers have a key role to play through the choice of cleaner and quieter vehicles.

This guide lists the fuel consumption, CO₂, and other emissions performance figures of new cars currently on the market in the UK. It explains the impact of road transport on climate change and air quality, and ways of reducing these impacts. It provides answers to the typical questions that consumers may ask, as well as, provided in the Annex, information on what action government is taking. Guidance is also provided on fuel choice and how a vehicle is used and maintained.
Figures obtained from official tests, which are required before a model of car may be offered for sale are listed for most conventionally powered cars (petrol and diesel engines), alternatively fuelled vehicles, hybrid vehicles that combine an electric motor with a conventional engine, and pure electric vehicles. Table 1 describes these different technologies and fuels.

**IMPORTANT NOTE**

The fuel consumption figures quoted in this guide are obtained under specific test conditions, and may not necessarily be achieved by consumers on their typical journeys. A range of factors influence actual fuel consumption including driving style and behaviour, as well as the environment under which the vehicle is operated, such as the type of road and traffic flow. The test figures are intended to be used for the purpose of making comparisons between models. From 1 September 2018 a new method for measuring fuel economy and CO₂ emissions has become available, known as Worldwide Harmonised Light Vehicle Test Procedure (WLTP). Data will be provided where available for both this, as well as the earlier method, known as New European Driving Cycle (NEDC). Comparisons should only be made for data provided under the same method. Under NEDC several different specifications (variants or versions) of a given model may be grouped together in the list, these figures should be treated as indicative only. WLTP, which will be used for official fuel economy data from 1 January 2019, provides more vehicle specific data, covering all available options such as wheel size or body trim.

A searchable version of the data is available through the website: [https://carfueldata.vehicle-certification-agency.gov.uk/](https://carfueldata.vehicle-certification-agency.gov.uk/), as is some historic information. Please note that the web version of this guide is updated on a regular basis, and so will contain the most up to date information.

**Cars and Emissions**

Climate change, often referred to as global warming, is the greatest environmental threat facing the world. When fossil fuels - petrol, diesel and most alternative fuels, are burnt for energy in an internal combustion engine the main by-products are water and carbon dioxide (CO₂). Although not directly harmful to human health, CO₂ is the most significant of the greenhouse gases (GHG) contributing to climate change. In the UK road transport is now the largest source of CO₂ emissions.

The combustion process also results in gases and particles that can be hazardous to health: air pollution. Particulate pollution is also produced from tyre, brake and road wear. Poor roadside air quality causes immediate (acute effects) and/or longer term (chronic) impacts.

The official tests that are used to type approve vehicles in terms of their fuel economy, CO₂ and air pollutant emissions have been improved to provide data that is more representative. From 1 January 2019 the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) will be used for official consumer information on fuel economy. A later date of 6 April 2020 for WLTP derived CO₂ emissions has been set, to align with related changes to taxation and other motoring costs including incentives for some ultra low emission vehicles (ULEVs). Official point of sale information will be amended from these dates. Government continues to work with motor manufactures and other stakeholders to consider how information can be improved.

In July 2018 government set-out its strategy to meet both short and longer term reductions in CO₂ and air quality emissions including ending the sale of conventional petrol and diesel vehicles by 2040. Our ‘Road to Zero’ strategy sets out plans to enable a massive expansion of green infrastructure across the country, reducing emissions from the vehicles on the UK’s roads, and drive the uptake of zero emission cars and vans.

**Cars and Noise**

The external noise emitted by passenger cars has been controlled since 1929 when the Motor Cars (Excessive Noise) regulations were introduced. New cars are now required to meet Europe-wide noise limits. These have been progressively reduced from 82 decibels (dB (A)) in 1978 to the current limit of 74 dB (A) established in 2016. Information on the level of noise recorded for new models of cars at their type approval test is also listed in the data table.

When looking at this information please note that off-road vehicles are allowed to be 1dB (A) louder and wheelchair accessible vehicles or armoured vehicles are allowed to be 2 dB (A) louder.
The noise levels quoted above are the maximum levels that are permitted for new vehicle types. Many vehicles produce lower levels of noise, and it is illegal to modify the exhaust system of a vehicle to make it noisier than the level recorded for that model at type approval.

A new EU regulation was introduced from July 2016. Regulation (EU) No 540/2014, phases in tighter noise limits over 10 years, together with a revised, more representative test procedure. By 2026 the limit for most new passenger cars will be 68 dB(A).

Ultra Low Emission Vehicles (ULEVs)

ULEVs are currently defined as having less than 75 grams of CO\textsubscript{2} per kilometre (g/km) from the tail pipe. These are listed in table 2 for the consumer’s convenience. Pure electric vehicles, and other plug in electric vehicles in the electric mode, produce no tailpipe CO\textsubscript{2} or pollution, are cheaper to run than conventional vehicles and can attract financial incentives for example all ULEVs have free access to the London Congestion Charging Zone.

Recognising advancements in technology from 2021 we expect to define an ULEV as a car or van that emit less than 50g/km CO\textsubscript{2}. New cars with CO\textsubscript{2} emissions of less than 50g/km and a zero emission range of at least 70 miles are eligible for a government grant of £3,500 (the Plug in Car Grant (PICG)). Pure electric vehicles attract a zero first year Vehicle Excise Duty rate (car tax) and for those under £40,000 a zero rate for supplementary years. Electricity used to recharge a plug-in vehicle at home attracts only a 5% level of VAT, much lower than road fuels (20%).

Tyre Labelling

Tyres account for 20-30 % of a vehicle's fuel consumption, due to their rolling resistance. Decreasing rolling resistance is therefore important to increase fuel efficiency and reduce greenhouse gas emissions. In terms of rolling resistance there is a 7.5% loss of fuel economy between best and worst class for a full set of tyres fitted to an average car.

Using tyres only with the best external rolling noise class in the EU can reduce noise-related health impacts. Current United Nation regulations require all type approved C1 (car), C2 (van) and C3 (lorry and bus) tyres to have maximum noise limits between 70 and 77 Db (A) depending on the tyre type.

Since November 2012, the EU tyre labelling regulation has required tyre manufacturers and tyre distributors to display a consumer information label on all C1, C2 and C3 tyres. The Tyre Labelling Regulation ranks tyre on a scale from ‘A’ (best) to ‘G’ (worst) on both fuel efficiency and wet grip, whereas external rolling noise is shown as a measured value and a three-step scale. The label design is based on that from the Energy Labelling Directive for energy related products, since this design is well known by consumers.

The objective of this regulation is to increase the safety and the environmental and economic efficiency of road transport by promoting fuel-efficient and safe tyres with low noise levels. This regulation aims to allow end-users to make more informed choices when purchasing tyres by considering this information along with other factors normally considered during the purchasing decision process.

Air Quality

Emissions of the main air pollutants are regulated by the EU Euro emissions standards, under the vehicle ‘type approval’ process. The Euro emission standards have progressively reduced pollution emissions. It is an offence under the Road Vehicles (Construction and Use) Regulations (Regulation 61a(3)) to use a vehicle which has been modified (tampered) in such a way that it no longer complies with the air pollutant emissions standards it was designed to meet. The potential penalties include a maximum fine of £1,000 for a car. The Euro 6 emission standard was introduced for most new registrations in September 2015.

CO, NO\textsubscript{x}, and gaseous un-burnt HC\textsubscript{s} are not visible in the environment. Similarly, a modern car should emit no visible particulate matter (smoke/soot) unless the vehicle is defective for example burning excessive engine oil or having a faulty particulate filter. This could be an offense and could also result in the vehicle failing its MOT. Emission of air pollutants are not solely dependent on fuel consumption. Other factors, such as driving style, driving conditions and ambient temperature also affect them.
Pure electric vehicles produce no exhaust pollutant emissions. Where a pure electric or ULEV is not a practical or affordable option, those choosing to buy a new vehicle should consider one that meets the Euro 6d-temp and when available Euro 6d emission standard. These introduce Real Driving Emissions (RDE) so that on-road performance is closer to the results achieved in the laboratory. Purchasers/owners of Euro 6d diesel cars will not have to pay a first year supplement on the VED (for premium models this can be high at £520), and similarly business drivers are not subject to a supplement on company car tax. At present there are few or no cars that meet this new more stringent standard; these fiscal measures will help bring these to the market before the standard becomes compulsory - in January 2020 for new models and then from January 2021 for all cars.

The fuel efficient driving tips below can also help reduce air pollution emissions.

All new cars (irrespective of technology or fuel) meet the minimum standards for charging Clean Air Zones where these are introduced for cars (for example the London Ultra Low Emission Zone), and will not be charged for access.

**Fuel efficient driving tips**

No matter how good a driver you are there are always some things that you can do to reduce your fuel use and help the environment.

The best way to reduce fuel use is to use the car only when it is necessary. For example, instead of using it for short journeys, considering walking, cycling or public transport. Plan your journey time and route to avoid congestion, combine your trips, consider sharing journeys and for regular journeys such as commuting (carpooling). New technology enables vehicles to ‘communicate’ with the outside world and vehicles are becoming increasingly automated, for example with autonomous emergency braking and adaptive cruise control. This is likely to help improve fuel economy, as are other developments such as the stop/start technology referenced below. Ask your car dealer about how technology can improve fuel economy or look at the on-line and printed material. New cars with manual transmission will normally have gear shift indicators, and most cars will have displays that include MPG and other displays to help encourage more fuel-efficient driving.

There are also a number of simple ways that you can reduce emissions when you drive:

**Drive smoothly**

Anticipate the road and other road users as far ahead as possible to smooth out your driving and avoid unnecessary acceleration and braking. Harsh acceleration is particularly bad for fuel consumption and increases wear and tear on the engine. It’s also tends to be associated with heavy braking, which adds to wear and tear on tyres and brakes. Smoother driving is good for you, your passengers and your car, and helps reduce congestion.

**Change up at low revs**

When accelerating, the most efficient way to use the gears is to change up early (low revs) using a moderate amount of throttle. There are times when power rather than efficiency might be more important – e.g. accelerating up a motorway slip road – but in most cases low rev gear changes when accelerating are appropriate and they’re almost always more efficient.

**Driving for Free**

When a fuel injection vehicle is engine braking, the fuel cut-off switch activates and the engine burns virtually no fuel. So when approaching a junction, traffic lights or other situations in which you know you are going to have to slow down, step off the accelerator as early as possible, but remain in gear, and you will then be driving for free.

**Drive at an appropriate speed**

Driving at an appropriate speed to the road, and within the speed limit, gives you time to better anticipate traffic ahead helping you drive smoother and reduce fuel consumption. As well as being illegal and increasing the risk of collisions with pedestrians, cyclists and other road users, driving above the speed limit wastes fuel and can increase pollution. Reducing your speed, where it is appropriate, will also help. A steady speed of 50mph can improve fuel economy by 25% compared to 70mph.
**Less stopping and starting means less CO₂**

Every time you brake and then accelerate again, the engine uses more fuel and therefore produces more CO₂. Keeping an eye on the traffic ahead and slowing down early by gently lifting your foot off the accelerator while keeping the car in gear can help the vehicle operate more efficiently. In this way, the traffic may have started moving again by the time you approach the vehicle in front, so you can then change gear and be on your way.

**Over-revving accelerates emissions**

Modern car engines are designed to be efficient from the moment they are switched on, so revving up the engine unnecessarily will only waste fuel and increase engine wear. By using your gears wisely — usually by changing up a gear a little earlier — you can also reduce engine speed. If you drive a diesel car try changing up a gear before the rev-counter reaches 2000rpm. For a petrol car try changing up before 2500rpm.

**Idling is wasting fuel**

When the engine is idling you're wasting fuel and adding to CO₂ emissions. If you are likely to be at a standstill for more than a minute or so, simply switch off the engine. You should then immediately turn the ignition (but not the engine) back on to ensure the airbags and other safety systems are activated. Many new cars are now fitted with a feature that does this for you automatically commonly known as ‘stop start’. If your car has stop-start, use it rather than deactivating the system as it will save you money and reduce emissions. When you first start the car, drive off as soon as possible. It will “warm up” faster when the engine is under load. When you are parked, sitting idling not only wastes fuel but is also an offence under section 42 of the Road Traffic Act 1988.

**Choose an Ultra-Low Emission Car**

Ultra-Low Emission Vehicles emit 75g or less of CO₂ per kilometre from the tailpipe and have advantages in running costs and the environmental impact – see [www.goultralow.com](http://www.goultralow.com) for more details.

**Pump up to cut down**

Under-inflated tyres create more resistance when your car is moving, which means your engine has to work harder, so more fuel is used and more CO₂ emissions are produced. Simply checking and adjusting your tyre pressures regularly, and also before long journeys, can help reduce fuel consumption, as well as helping to increase the life of your tyres.

**Less clutter in your car means less CO₂**

Clutter in your boot is extra weight that your engine has to lug around. By removing any items you won’t need for your journey, you could reduce your engine’s workload and so burn less fuel and cut your CO₂ emissions. This also includes things like roof racks when not needed, as they add weight and increase drag, and as a result increase fuel consumption.

**Eco driving tips**

For more information on saving money while driving see the Energy Saving Trust fuel efficient driving tips: [http://www.energysavingtrust.org.uk/transport-travel/driving-advice](http://www.energysavingtrust.org.uk/transport-travel/driving-advice)
This guide contains data on vehicles running on petrol and diesel, as well as ‘alternative’ fuels, such as Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG), and hybrid and electric vehicles. Descriptions of the different fuel types and technologies are provided in the table below.

### Table 1: Summary of fuels and technologies

<table>
<thead>
<tr>
<th>Conventional Internal Combustion Engine (ICE) vehicles</th>
<th>Petrol</th>
<th>‘Spark ignition’ fuelled by petrol a light fuel oil usually obtained from fossil fuel sources (crude oil). Referred to as gasoline or ‘gas’ in North America. Current forecourt blends contain up to 5% ethanol (E5). Higher blends (E10, up to 10% ethanol) may be introduced. All new cars are compatible with E10. Forecourt labelling due to change to E5 (or higher blends) and filler cap label also expected to be introduced.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>Internal combustion engine, compression ignition, fuelled by diesel, a heavy petroleum fraction usually obtained from fossil fuel sources (crude oil). Current forecourt blends contain up to 7% of plant derived diesel (bio diesel). Forecourt labelling due to change to B7 and a filler cap label is also expected to be introduced.</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Compressed Natural Gas (CNG) or Liquefied Petroleum Gas (LPG)</td>
<td>Gas fuelled vehicles, either CNG (methane) or LPG (propane and/or butane). There is a small global market for such vehicles, usually dual fuel (gas/petrol) although few if any right hand drive LPG are available in the UK; one manufacturer has an arrangement for their models to be converted, a number of other companies offer after-market conversions. LPG ‘autogas’ is available from around 1400 filling station forecourts. CNG is available in about six stations.</td>
</tr>
<tr>
<td>Hybrid vehicles</td>
<td>Hybrid Electric Vehicle (HEV)</td>
<td>A vehicle powered both by a conventional petrol or diesel engine and an electric battery. The battery is charged using excess energy from the engine, as well as by reclaiming the car’s kinetic energy when it brakes. These vehicles have a battery and an electric motor but cannot be connected and recharged by mains electricity and are not eligible for a government grant. Most hybrid electric vehicles exceed 75 g/km, the current definition of a ULEV, and are not eligible other incentives such as free access to the London Congestion Charing Zone.</td>
</tr>
<tr>
<td>Plug-in Hybrid EV (PHEV)</td>
<td>PHEVs combine both a plug-in battery pack and electric motor with a conventional engine. Both the electric motor and the engine can drive the wheels. The battery is much smaller than in a battery electric vehicle, tending to only drive the wheels at low speeds or for limited range. This is sufficient in most models to cover the average journey length of the UK driver. After the battery range is utilised, the hybrid capability means that the vehicle can continue journeys powered by its conventional engine. Whilst these vehicles are no longer eligible for a grant there are environmental and cost benefits.</td>
<td></td>
</tr>
<tr>
<td>Range Extended Battery EV (E-REVs) *</td>
<td>E-REVs have a plug-in battery pack and electric motor, as well as a conventional engine. The electric motor always drives the wheels, with the engine acting as a generator to recharge the battery when it is depleted. Typically, these vehicles have a pure electric battery range of around 40 miles, before the vehicle switches to the range extender mode to continue the journey without range compromise.</td>
<td></td>
</tr>
<tr>
<td>Pure Electric Vehicles</td>
<td>Battery EV (BEV) *</td>
<td>BEVs are wholly driven by an electric motor, powered by a battery that can be plugged in to the mains. They rely entirely on electricity for fuel, which means they do not produce any tailpipe emissions. At present, most of the BEVs on the market typically offer a range of around 100 miles, though some offer more.</td>
</tr>
<tr>
<td>Hydrogen Fuel Cell Electric Vehicle (FCEV)*</td>
<td>FCEVs share a large proportion of the electric motor and drive train technology with other electric and plug-in hybrid vehicles. However, their energy storage and conversion devices are different. Instead of taking electricity directly from the mains, these vehicles use a fuel cell to produce electricity to drive its electric motor. A fuel cell is an electrochemical device which generates electricity when continuously fed with hydrogen from an onboard tank that can quickly be refueled at around twenty stations.</td>
<td></td>
</tr>
</tbody>
</table>
*usually eligible for a plug-in car grant to help with the purchase cost of a new car. Please visit the Office for Low Emission Vehicles (OLEV) website for a list of current eligible vehicles: https://www.gov.uk/plug-in-car-van-grants

The Road to Zero Strategy considers the importance of the choice of fuel options in meeting the UK's carbon and air quality objectives and advice presented here is drawn from the strategy.

The Government remains committed to policies and incentives that are technology neutral. But it is essential that we understand the relative environmental performance of different technologies in the real world.

Battery electric vehicles are highly energy efficient and have zero tailpipe emissions. The assessment shows that they also have substantially lower greenhouse gas emissions than conventional vehicles, even when taking into account the electricity source and the electricity used for battery production. Assuming the current UK energy mix, battery electric vehicles produce the lowest greenhouse gas emissions of all the energy sources and fuels assessed, irrespective of vehicle type and operation.

Hydrogen fuel cell electric vehicles also have zero tailpipe emissions. Like battery electric vehicles, their 'well-to-wheel' (the overall assessment of climate change impact) greenhouse gas emissions depend on the method of energy production.

Although the environmental performance of range extended, plug-in, and non-plugin hybrids depends on their use and zero emission range, these vehicles are amongst the cleanest vehicles on the market and can bring significant environmental benefits. They are an important way of helping motorists make the switch to a different way of powering their vehicles.

Petrol cars and vans tend to have higher greenhouse gas emissions than their diesel equivalents but significantly lower emissions of NOx. Real world particulate emissions from petrol cars and vans are variable, with some petrol cars and vans (particularly those with direct injection engines) emitting higher levels of particulates than diesel equivalents. We expect this to be addressed by the introduction of the Real Driving Emission (RDE) standards.

Real world emissions of NOx from diesel cars and vans that do not meet RDE standards (Euro 6d temp and Euro 6d) are typically much higher than from petrol equivalents. Cleaner diesel cars and vans can play an important part in reducing CO2 emissions from road transport during the transition to zero emission vehicles while meeting ever more stringent air quality standards. For diesel vehicles to play their part fully, their air quality impact must continue to be reduced. We want new cars and vans to be as clean as possible as fast as possible. We welcome the continued innovation and investment by vehicle manufacturers to develop cleaner diesel vehicles that meet the more challenging RDE requirements, delivering critical improvements in NOx emissions on the road.

Liquid petroleum gas (LPG) vehicles have similar well-to-wheel greenhouse gas emissions as diesel equivalents but generally have lower air pollutant emissions. Although a niche market, LPG vehicles may be a good current alternative to diesel in urban driving conditions. Natural gas vehicles also generally have lower air pollutant emissions than diesel equivalents but more efficient engines are required if they are to deliver significant greenhouse gas savings in heavy vehicles.

There are more than 150,000 ULEVs on UK roads and zero emission vehicles are an attractive option for many consumers today – offering the best environmental performance and in many cases cheaper running costs. If zero emission technologies are not currently practical options, the most appropriate vehicle technology will depend on individual circumstances, including location and usage pattern. For cars principally being used in urban areas where journeys tend to be shorter and at slower speeds, petrol hybrid, other alternatively fuelled or new conventional petrol cars are likely to be most suitable. Diesel is more suitable for cars that regularly drive long distances or carry heavy loads.

To help provide consumers with the information they need about the environmental performance of different vehicle and fuel options the Government will, in partnership with industry, consumer groups and motoring organisations, set up a Road Transport Emissions Advice Group to work together to ensure clear and consistent consumer messaging and advice. The Energy Saving Trust (EST) has produced an animation to help navigate around all these technologies: https://www.youtube.com/watch?v=Hs55JzcOg3s

To find out more about electric vehicles, please visit www.goultralow.com. This highlights the range of ultralow emission cars on the market today and address myths about driving electric cars, notably cost and range. With driving costs from 3p a mile and typical driving range exceeding 100 miles in a pure electric car on a single charge, pure electric vehicles, and range extended and plug in hybrid electric vehicles are an ever more attractive alternative to conventionally fuelled cars. Costs and range are based upon the official NEDC
economy and range figures which are obtained from official EU test data. These are intended for comparisons between vehicles and may not reflect real driving results.

EST has also produced a short film covering a range of issues around electric vehicles, running costs, maximising range and recharging: www.energysavingtrust.org.uk/Travel/Electric-vehicles

This covers most of the questions potential buyers may have including charging, range and the cost of fuel (electricity) for the vehicles. They offer a realistic and in-depth review of the viability of electric cars and vans, covering the choice, driving and living with an electric vehicle.

Main Information

Cars with CO₂ emissions of up to 75 g/km

To give a comparison and to show what is achievable, the following tables show cars which have CO₂ emissions of 75g/km or less. All the models shown are selected from the full list. The fuel cost is given for comparison purposes. For any given vehicle it will depend on the actual fuel consumption achieved and the price you pay for fuel. The purpose of the tables is to provide a representative sample. Where there are several specifications of a vehicle model with similar fuel consumption figures, only a single entry is given.

Most hybrid electric vehicles do not meet the current working definition of a ULEV, under 75 g/km and are therefore not eligible for this and most other incentives such as free access to the London Congestion Charging Zone.

Table 2: Cars with CO₂ emissions of up to 75 g/km

<table>
<thead>
<tr>
<th>Make</th>
<th>Model</th>
<th>Engine Capacity cc</th>
<th>Fuel Type</th>
<th>Fuel Consumption (mpg)</th>
<th>CO₂ g/km</th>
<th>Fuel / Energy cost of driving 12000 miles (£s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMW</td>
<td>i Series, i3</td>
<td>Electricity N/A</td>
<td>N/A</td>
<td>0</td>
<td>389</td>
<td></td>
</tr>
<tr>
<td>CITROEN</td>
<td>C-Zero</td>
<td>Electricity N/A</td>
<td>N/A</td>
<td>0</td>
<td>389</td>
<td></td>
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<tr>
<td>HYUNDAI</td>
<td>IONIQ Electric</td>
<td>Electricity N/A</td>
<td>N/A</td>
<td>0</td>
<td>353</td>
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<tr>
<td>HYUNDAI</td>
<td>Kona EV</td>
<td>Electricity N/A</td>
<td>N/A</td>
<td>0</td>
<td>424</td>
<td></td>
</tr>
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<td>JAGUAR</td>
<td>I-PACE, EV400</td>
<td>Electricity N/A</td>
<td>AT</td>
<td>0</td>
<td>658</td>
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<tr>
<td>KIA</td>
<td>Niro EV</td>
<td>Electricity N/A</td>
<td>N/A</td>
<td>0</td>
<td>454</td>
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<tr>
<td>KIA</td>
<td>Soul EV</td>
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<td>N/A</td>
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<td>NISSAN</td>
<td>E-NV200</td>
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<td>N/A</td>
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<td>NISSAN</td>
<td>Leaf</td>
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<td>465</td>
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<tr>
<td>PEUGEOT</td>
<td>iOn</td>
<td>Electricity N/A</td>
<td>N/A</td>
<td>0</td>
<td>389</td>
<td></td>
</tr>
<tr>
<td>RENAULT</td>
<td>Zoe</td>
<td>Electricity N/A</td>
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<td>0</td>
<td>444</td>
<td></td>
</tr>
<tr>
<td>SMART</td>
<td>forfour electric drive</td>
<td>Electricity N/A</td>
<td>N/A</td>
<td>0</td>
<td>398</td>
<td></td>
</tr>
</tbody>
</table>
## Cars with CO₂ emissions of up to 75 g/km (continued)

<table>
<thead>
<tr>
<th>Make</th>
<th>Model</th>
<th>Engine Capacity cc</th>
<th>Fuel Type</th>
<th>Transmission</th>
<th>Fuel Consumption (mpg)</th>
<th>CO2 g/km</th>
<th>Fuel / Energy cost of driving 12000 miles (£s)</th>
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</thead>
<tbody>
<tr>
<td>SMART</td>
<td>fortwo electric drive</td>
<td></td>
<td>Electricity</td>
<td>N/A</td>
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<tr>
<td>TESLA</td>
<td>Model S</td>
<td></td>
<td>Electricity</td>
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<td>561</td>
<td></td>
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<tr>
<td>TESLA</td>
<td>Model X</td>
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<td>Electricity</td>
<td>N/A</td>
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<td></td>
</tr>
<tr>
<td>VOLKSWAGEN</td>
<td>eGolf</td>
<td></td>
<td>Electricity</td>
<td>N/A</td>
<td>0</td>
<td>389</td>
<td></td>
</tr>
<tr>
<td>VOLKSWAGEN</td>
<td>e-UP</td>
<td></td>
<td>Electricity</td>
<td>N/A</td>
<td>0</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>BMW</td>
<td>i Series, i3 with Range Extender</td>
<td>647</td>
<td>Electricity / Petrol</td>
<td>N/A</td>
<td>470.8</td>
<td>12</td>
<td>485</td>
</tr>
<tr>
<td>TOYOTA</td>
<td>Prius Plug-in</td>
<td>1798</td>
<td>Electricity / Petrol</td>
<td>AT</td>
<td>283</td>
<td>22</td>
<td>451</td>
</tr>
<tr>
<td>HYUNDAI</td>
<td>IONIQ PHEV</td>
<td>1580</td>
<td>Electricity / Petrol</td>
<td>DCT6</td>
<td>256.8</td>
<td>26</td>
<td>542</td>
</tr>
<tr>
<td>KIA</td>
<td>Niro</td>
<td>1580</td>
<td>Electricity / Petrol</td>
<td>DCT6</td>
<td>217.3</td>
<td>29</td>
<td>602</td>
</tr>
<tr>
<td>KIA</td>
<td>Optima Sportswagen PHEV</td>
<td>1999</td>
<td>Electricity / Petrol</td>
<td>A6</td>
<td>201.8</td>
<td>33</td>
<td>704</td>
</tr>
<tr>
<td>KIA</td>
<td>Optima Saloon PHEV</td>
<td>1999</td>
<td>Electricity / Petrol</td>
<td>A6</td>
<td>176.6</td>
<td>37</td>
<td>742</td>
</tr>
<tr>
<td>AUDI</td>
<td>A3 Sportback e-tron 1.4</td>
<td>1395</td>
<td>Electricity / Petrol</td>
<td>D6</td>
<td>166.2</td>
<td>38</td>
<td>744</td>
</tr>
<tr>
<td>VOLKSWAGEN</td>
<td>Golf GTE</td>
<td>1395</td>
<td>Electricity / Petrol</td>
<td>D6</td>
<td>166.2</td>
<td>38</td>
<td>744</td>
</tr>
<tr>
<td>VOLKSWAGEN</td>
<td>Passat Estate Plug-In-Hybrid</td>
<td>1395</td>
<td>Electricity / Petrol</td>
<td>D6</td>
<td>156.9</td>
<td>40</td>
<td>838</td>
</tr>
<tr>
<td>VOLKSWAGEN</td>
<td>Passat Saloon Plug-In-Hybrid</td>
<td>1395</td>
<td>Electricity / Petrol</td>
<td>D6</td>
<td>156.9</td>
<td>40</td>
<td>838</td>
</tr>
<tr>
<td>BMW</td>
<td>3 Series Saloon F30, 330e</td>
<td>1998</td>
<td>Electricity / Petrol</td>
<td>A8</td>
<td>148.7</td>
<td>44</td>
<td>778</td>
</tr>
<tr>
<td>MITSUBISHI</td>
<td>Outlander PHEV</td>
<td>1998</td>
<td>Electricity / Petrol</td>
<td>CVT</td>
<td>148.5</td>
<td>44</td>
<td>852</td>
</tr>
<tr>
<td>BMW</td>
<td>2 Series Active Tourer F45, 225xe</td>
<td>1499</td>
<td>Electricity / Petrol</td>
<td>A8</td>
<td>141.2</td>
<td>46</td>
<td>820</td>
</tr>
<tr>
<td>BMW</td>
<td>5 Series Saloon G30, 530e</td>
<td>1998</td>
<td>Electricity / Petrol</td>
<td>A8</td>
<td>141.2</td>
<td>46</td>
<td>875</td>
</tr>
<tr>
<td>VOLVO</td>
<td>V90, T8 Twin Engine</td>
<td>1969</td>
<td>Electricity / Petrol</td>
<td>A8-AWD</td>
<td>141.2</td>
<td>46</td>
<td>1141</td>
</tr>
<tr>
<td>AUDI</td>
<td>Q7 e-tron 3.0 TDI</td>
<td>2967</td>
<td>Electricity / Diesel</td>
<td>QA8</td>
<td>156.9</td>
<td>48</td>
<td>989</td>
</tr>
<tr>
<td>Make</td>
<td>Model</td>
<td>Engine Capacity cc</td>
<td>Fuel Type</td>
<td>Transmission</td>
<td>Fuel Consumption (mpg)</td>
<td>CO2 g/km</td>
<td>Fuel / Energy cost of driving 12000 miles (£s)</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------</td>
<td>--------------------</td>
<td>-------------------------------</td>
<td>--------------</td>
<td>------------------------</td>
<td>----------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>MERCEDES-BENZ</td>
<td>C-Class Saloon, C 350 e</td>
<td>1991</td>
<td>Electricity / Petrol</td>
<td>A7</td>
<td>61.4</td>
<td>48</td>
<td>1398</td>
</tr>
<tr>
<td>VOLVO</td>
<td>V60 D5 Twin Engine</td>
<td>2400</td>
<td>Electricity / Diesel</td>
<td>6AT</td>
<td>155.2</td>
<td>48</td>
<td>838</td>
</tr>
<tr>
<td>VOLVO</td>
<td>V60 D6 Twin Engine</td>
<td>2400</td>
<td>Electricity / Diesel</td>
<td>6AT</td>
<td>155.2</td>
<td>48</td>
<td>838</td>
</tr>
<tr>
<td>BMW</td>
<td>3 Series Saloon F30, 330e</td>
<td>1998</td>
<td>Electricity / Petrol</td>
<td>A8</td>
<td>134.5</td>
<td>49</td>
<td>850</td>
</tr>
<tr>
<td>BMW</td>
<td>7 Series Saloon G11, 740e</td>
<td>1998</td>
<td>Electricity / Petrol</td>
<td>A8</td>
<td>134.5</td>
<td>49</td>
<td>889</td>
</tr>
<tr>
<td>BMW</td>
<td>i Series, i8</td>
<td>1499</td>
<td>Electricity / Petrol</td>
<td>A2/6</td>
<td>134.5</td>
<td>49</td>
<td>850</td>
</tr>
<tr>
<td>MERCEDES-BENZ</td>
<td>C-Class Estate, C 350 e</td>
<td>1991</td>
<td>Electricity / Petrol</td>
<td>A7</td>
<td>134.5</td>
<td>49</td>
<td>843</td>
</tr>
<tr>
<td>MERCEDES-BENZ</td>
<td>E-Class Saloon, E 350 e</td>
<td>1991</td>
<td>Electricity / Petrol</td>
<td>A9</td>
<td>134.5</td>
<td>49</td>
<td>850</td>
</tr>
<tr>
<td>MERCEDES-BENZ</td>
<td>S-Class Limousine, S 560 e</td>
<td>2996</td>
<td>Electricity / Petrol</td>
<td>A9</td>
<td>134.5</td>
<td>49</td>
<td>972</td>
</tr>
<tr>
<td>MINI</td>
<td>Countryman F60</td>
<td>1499</td>
<td>Electricity / Petrol</td>
<td>A6</td>
<td>134.5</td>
<td>49</td>
<td>889</td>
</tr>
<tr>
<td>VOLVO</td>
<td>S90, T8 Twin Engine</td>
<td>1969</td>
<td>Electricity / Petrol</td>
<td>A8-AWD</td>
<td>128.4</td>
<td>49</td>
<td>1240</td>
</tr>
<tr>
<td>VOLVO</td>
<td>V60, T8 Twin Engine</td>
<td>1969</td>
<td>Electricity / Petrol</td>
<td>A8-AWD</td>
<td>128.4</td>
<td>49</td>
<td>1240</td>
</tr>
<tr>
<td>VOLVO</td>
<td>XC60, T8 Twin Engine</td>
<td>1969</td>
<td>Electricity / Petrol</td>
<td>8AT</td>
<td>122.8</td>
<td>52</td>
<td>1359</td>
</tr>
<tr>
<td>BMW</td>
<td>7 Series Saloon G12, 740Le</td>
<td>1998</td>
<td>Electricity / Petrol</td>
<td>A8</td>
<td>117.7</td>
<td>54</td>
<td>958</td>
</tr>
<tr>
<td>PORSCHE</td>
<td>Panamera</td>
<td>2894</td>
<td>Petrol Hybrid</td>
<td>A8</td>
<td>113</td>
<td>56</td>
<td>574</td>
</tr>
<tr>
<td>VOLVO</td>
<td>XC90, T8 Twin Engine</td>
<td>1969</td>
<td>Electricity / Petrol</td>
<td>A8-AWD</td>
<td>108.6</td>
<td>59</td>
<td>1393</td>
</tr>
<tr>
<td>LAND ROVER</td>
<td>Range Rover, 2.0L PHEV</td>
<td>1997</td>
<td>Petrol Hybrid</td>
<td>A8-AWD</td>
<td>101</td>
<td>64</td>
<td>643</td>
</tr>
<tr>
<td>TOYOTA</td>
<td>Prius</td>
<td>1798</td>
<td>Petrol Hybrid</td>
<td>E-CVT</td>
<td>94.1</td>
<td>70</td>
<td>690</td>
</tr>
<tr>
<td>PORSCHE</td>
<td>Cayenne</td>
<td>2995</td>
<td>Petrol Hybrid</td>
<td>A8</td>
<td>85.6</td>
<td>75</td>
<td>758</td>
</tr>
<tr>
<td>TOYOTA</td>
<td>Yaris Hybrid</td>
<td>1497</td>
<td>Petrol Hybrid</td>
<td>E-CVT</td>
<td>85.6</td>
<td>75</td>
<td>758</td>
</tr>
</tbody>
</table>
How to use the data

In using the table of information, it may be helpful to note the following:

- Models are listed under the name of the manufacturer or importer.
- The figures are obtained by running an example of the listed vehicle over a fixed route in a laboratory on a rolling road under closely controlled conditions. The test cycle is described elsewhere in this guide.
- The results of the fuel consumption tests are shown both in litres per 100 kilometres (l/100km) and in miles per gallon (mpg). A conversion chart and conversion factors are given at the end of this guide.
- CO₂ emissions are shown in grams per kilometre (g/km). The other results of the exhaust emissions test are shown in milligrams per kilometre (mg/km).
- The cost of driving 12000 miles is calculated using the official combined fuel consumption figure and fuel prices which are assessed each year. Currently they are 119p/litre for petrol, and 123p/litre for diesel and 66p/litre for LPG (no fuel figures are available at this time for CNG). The electricity cost of driving 12000 miles is calculated using the electric energy consumption and an electrical cost per unit price, also assessed each year, currently this is 15.9p/kWh. A description of the calculation can be found in the Glossary of Terms. Note that, as indicated above, the official fuel consumption figures, and hence these cost figures, are for comparative purposes and actual fuel consumption and cost on the road may vary from this.
- The external noise emitted by a car is shown in decibels as measured on the A-weighted scale of a sound level meter (dB (A)). The A scale was devised to 'weight' the reading of a sound level meter so it more closely represented what is heard by the human ear.
- It is important to note that test figures shown in the guide are for comparison of different models and will not necessarily be the same as the fuel consumption, emissions levels, or noise levels actually achieved on the road. For this reason it is not advisable to rank a number of vehicles for which very similar figures are quoted.
- The test to test variability in type approval local pollutant emission figures means they are of only limited value in comparing vehicles and caution should be exercised when considering these figures. More detail is given later in this guide.
- CO₂ Information - The CO₂ figures shown are representative of the vehicle tested and may vary between specifications (variants or versions) of a given model. As such the figures are indicative only.

Passenger cars Vehicle Excise Duty (VED)

Vehicle Excise Duty (VED) – Different rates of VED apply depending on when the vehicle was registered as well as its powertrain technology (conventional/alternative fuel). Please see below.

Cars and light goods vehicles registered before 1 March 2001: In such cases, the rate of vehicle tax is based on engine size. Please see table below:

Table 3: Vehicle Excise Duty for cars and light good vehicles registered before 1 March 2001

<table>
<thead>
<tr>
<th>Engine size (cc)</th>
<th>Single 12 month payment</th>
<th>Single 12 month payment by Direct Debit</th>
<th>Total of 12 monthly instalments by Direct Debit</th>
<th>Single 6 month payment</th>
<th>Single 6 month payment by Direct Debit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not over 1,549</td>
<td>£155</td>
<td>£155</td>
<td>£162.75</td>
<td>£85.25</td>
<td>£81.38</td>
</tr>
<tr>
<td>Over 1,549</td>
<td>£255</td>
<td>£255</td>
<td>£267.75</td>
<td>£140.25</td>
<td>£133.88</td>
</tr>
</tbody>
</table>
Cars registered between 1 March 2001 and 31 March 2017: In such cases, the rate of vehicle tax is based on fuel type and CO2 emissions. Please see table below:

Table 4: Vehicle Excise Duty for cars registered between 1 March 2001 and 31 March 2017

<table>
<thead>
<tr>
<th>Band</th>
<th>CO2 emission (g/km)</th>
<th>Petrol and diesel cars (single 12 month payment)</th>
<th>Alternative fuel car (single 12 month payment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Up to 100</td>
<td>£0</td>
<td>£0</td>
</tr>
<tr>
<td>B</td>
<td>101-110</td>
<td>£20</td>
<td>£10</td>
</tr>
<tr>
<td>C</td>
<td>111-120</td>
<td>£30</td>
<td>£20</td>
</tr>
<tr>
<td>D</td>
<td>121-130</td>
<td>£120</td>
<td>£110</td>
</tr>
<tr>
<td>E</td>
<td>131-140</td>
<td>£140</td>
<td>£130</td>
</tr>
<tr>
<td>F</td>
<td>141-150</td>
<td>£155</td>
<td>£145</td>
</tr>
<tr>
<td>G</td>
<td>151-165</td>
<td>£195</td>
<td>£185</td>
</tr>
<tr>
<td>H</td>
<td>166-175</td>
<td>£230</td>
<td>£220</td>
</tr>
<tr>
<td>I</td>
<td>176-185</td>
<td>£250</td>
<td>£240</td>
</tr>
<tr>
<td>J</td>
<td>186-200</td>
<td>£290</td>
<td>£280</td>
</tr>
<tr>
<td>K*</td>
<td>201-225</td>
<td>£315</td>
<td>£305</td>
</tr>
<tr>
<td>L</td>
<td>226-255</td>
<td>£540</td>
<td>£530</td>
</tr>
<tr>
<td>M</td>
<td>Over 255</td>
<td>£555</td>
<td>£545</td>
</tr>
</tbody>
</table>

*Includes cars with a CO2 figure over 225g/km but were registered before 23 March 2006.

Cars first registered from 1 April 2017 onwards:

At Summer Budget 2015 the Chancellor announced amended VED rates for cars first registered from 1 April 2017 onwards. The First Year Rates (FYRs) of VED will vary according to the carbon dioxide (CO2) emissions of the vehicle. A flat Standard Rate (SR) of £140 will apply in all subsequent years, except for zero-emission cars for which the SR will be £0. Cars with a list price above £40,000 will attract a supplement of £310 on their SR for the first 5 years in which a SR is paid. All cars first registered before 1 April 2017 will remain in the previous VED system.

The new rates and bands for the post-2017 VED system are set out in the table below:

Table 5: Vehicle Excise Duty for cars first registered from 1 April 2017

<table>
<thead>
<tr>
<th>Emissions (g/CO2/km)</th>
<th>First year rate</th>
<th>Standard rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>£0</td>
<td>£0</td>
</tr>
<tr>
<td>1-50</td>
<td>£10</td>
<td>£140</td>
</tr>
<tr>
<td>51-75</td>
<td>£25</td>
<td>£140</td>
</tr>
<tr>
<td>76-90</td>
<td>£105</td>
<td>£140</td>
</tr>
<tr>
<td>91-100</td>
<td>£125</td>
<td>£140</td>
</tr>
<tr>
<td>Weight Range</td>
<td>Annual Tax</td>
<td>Weekly Tax</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>101-110</td>
<td>£145</td>
<td>£140</td>
</tr>
<tr>
<td>111-130</td>
<td>£165</td>
<td>£140</td>
</tr>
<tr>
<td>131-150</td>
<td>£205</td>
<td>£140</td>
</tr>
<tr>
<td>151-170</td>
<td>£515</td>
<td>£140</td>
</tr>
<tr>
<td>171-190</td>
<td>£830</td>
<td>£140</td>
</tr>
<tr>
<td>191-225</td>
<td>£1240</td>
<td>£140</td>
</tr>
<tr>
<td>226-255</td>
<td>£1760</td>
<td>£140</td>
</tr>
<tr>
<td>over 255</td>
<td>£2070</td>
<td>£140</td>
</tr>
</tbody>
</table>

* Cars over £40,000 pay £310 supplement for 5 years.

Further information about taxing your vehicle can be found on the Gov.uk website: [https://www.gov.uk/tax-disc](https://www.gov.uk/tax-disc).

A vehicle tax calculator is available on the VCA website: [https://carfueldata.vehicle-certification-agency.gov.uk/](https://carfueldata.vehicle-certification-agency.gov.uk/).

The purpose of this calculator is to provide an indicative view only of the tax that may be payable on a given new or used car.

**Company Car Tax (or Car Benefit Charge)** – This is levied when a car is made available for private use by an employer to an employee by reason of their employment. The taxable charge is calculated by taking the car's list price (plus accessories) and multiplying that figure by the "appropriate percentage" which is based on cars’ CO₂ emissions. Drivers of diesel cars (which are not euro 6d compliant) will add an additional 4% to the appropriate percentage. The cars CO₂ emissions will be that shown on the car’s V5 Registration Document. Further details can be found at: [https://www.gov.uk/tax-company-benefits/tax-on-company-cars](https://www.gov.uk/tax-company-benefits/tax-on-company-cars).

**Fuel Benefit Charge** – This is levied where an employee is provided with free fuel for private use by their employer. The taxable charge is calculated by taking the fuel multiplier (£23,400 in 2018-19) and multiplying (as company car tax) by the "appropriate percentage) which is based on the cars CO₂ emissions. Drivers of diesel cars (which are not euro 6d compliant) will add an additional 4% to the appropriate percentage. The fuel benefit charge can be reduced to nil if the employer fully reimburses their employer for the cost of the fuel used privately. There is no fuel benefit charge for battery electric cars. However, it can apply to plug-in hybrid cars.

**Van Benefit Charge** - This applies when an employee is provided with a van by their employer which is available for private use (excluding home to work commuting). The taxable charge is based on flat rate (£3,350 in 2018-19). Vans which do not emit CO₂ by being driven (zero emission vans) currently pay 20% of the van benefit charge.

**Van Fuel Benefit Charge** - If an employer gives an employee a van to use which is subject to the van benefit charge and pays their fuel, they will need to pay a fuel benefit charge. The taxable charge is based on a flat rate (£633 for 2018-19). There is no fuel benefit charge for 100% electric vans.

**Enhanced Capital Allowances** – Business cars and vans can qualify for capital allowances, depending on their level of CO₂ emissions and the date in which they were bought. Further details can be found here [http://www.hmrc.gov.uk/capital-allowances/fya/energy.htm](http://www.hmrc.gov.uk/capital-allowances/fya/energy.htm).
Responsibilities of vehicle manufacturers, importers and dealers

EU Directive 1999/94/EC requires new car fuel consumption and CO₂ emissions data to be made freely available to consumers. Car dealers are required to display a label on (or near to) every new car displayed for sale. The label will show the fuel consumption and CO₂ emissions. Fuel consumption figures will be expressed both in litres per 100 kilometres (l/100 km) and in miles per gallon (mpg). The label currently lists the figures achieved in urban, extra-urban and combined conditions, although this will change in January 2019 to show the WLTP test cycles: Low, Medium, High, Extra-high, Combined and for hybrid-electric cars Weighted combined. See the section headed ‘Fuel Consumption Test’ for more details on test conditions.

Car dealers often voluntarily display a colour coded ‘comparative’ label. That is, a label that shows both the mandatory fuel consumption and CO₂ figures mentioned previously, as well as information about the appropriate tax band for the vehicle. The label is similar in design to the energy efficiency labels that appear on many ‘white goods’, such as fridge freezers. An example of this label can be seen here. Although this label format (with the colour-coded banding) is not currently mandatory, the DfT, VCA and vehicle manufacturers have worked hard to ensure that the label is harmonised throughout the market sector in order to support, simplify and inform consumer choice.

Current version

Version from January 2018

A sample of the label is available at https://carfueldata.vehicle-certification-agency.gov.uk/downloads/default.aspx. Other labels may be used but they must conform to the requirements set out in the Directive, and adopted under national UK legislation.

Dealers are also required to display a poster in paper or as an electronic display, in a prominent position, showing the fuel consumption and CO₂ emissions for all new passenger car models displayed, or offered for sale. Furthermore, the Directive also requires manufacturers to include fuel consumption and CO₂ emissions data in all promotional literature (such as brochures and printed advertisements), provided that the literature relates to a specific model of car.

Trading Standards, which is a local authority service, enforce point of sale information (labelling and posters). Should you have concerns in this area of activity, you can find your local Trading Standards office at http://www.tradingsstandards.uk/home.cfm or by contacting your own local authority direct.

The Vehicle Certification Agency is responsible for enforcing the provision of information in advertising and promotional literature. If you have concerns in this area please e-mail them at adverts@vca.gov.uk, or telephone 0300 330 5797.

If you have more general concerns about your consumer rights in relation to car purchasing (either new or used), contact Consumer Direct at: https://www.gov.uk/consumer-protection-rights
Frequently asked questions

Q: Who does the testing?
A: Testing is carried out either by independent test organisations, or by the vehicle manufacturers or importers themselves, usually at their own test facilities. In the UK, and before the results are officially recognised, the DfT will inspect the test laboratories and witness some tests being carried out, or; check that the figures have been certified by a European member state competent national authority under the agreed arrangements for mutual recognition of test results.

Q: Are all vehicles tested?
A: Certain types of vehicles are excluded from the fuel consumption testing scheme. These are cars manufactured in low volume, cars adapted to carry more than eight passengers (excluding the driver), three-wheelers, invalid carriages, van-derived passenger cars and cars built specially for export. These vehicles will therefore not have a fuel economy label in the showroom.

Q: My vehicle does not produce the same fuel consumption figures as shown in the 'New Car Fuel Consumption and Emission Figures' guide and/or the Internet site. Why?
A: Because of the need to maintain strict comparability of results achieved by the standard tests they cannot be fully representative of real-life driving conditions. There are infinite variations in driving styles and in road, car and weather conditions. Following the tips provided in this guide will help you achieve closer results with the published figures.

Q: I have taken steps to improve my fuel economy, but there is still a significant difference between my results and the official figures.
A: If, after you are sure that following each of the recommended points, fuel consumption remains higher than you would expect this may indicate a fault with your vehicle and you should ask an authorised dealer or other competent organisation to examine it. For plug in hybrid electric vehicles remember to recharge the car at appropriate intervals as driving purely on the conventional motor will give radically different fuel economy results to the published figures.

Q: When purchasing a new car what information regarding fuel consumption can I expect to find at the point of sale?
A: The results of the standard tests have to be shown on labels fixed to every new car on display in showrooms and on forecourts and dealers must have fuel consumption figures of all new cars available for prospective car buyers to consult on request. These requirements do not apply in the Channel Islands or the Isle of Man.

Q: Where can I find more detailed information on the Graduated Vehicle Excise Duty scheme?
A: Further details are available from the Gov.uk site: http://www.gov.uk/vehicle-tax-rate-tables

Q: Where can I find more detailed information on the new Company Car Tax arrangements?
A: Further details are available from your local Inland Revenue office or are available on the Gov.uk site: http://www.gov.uk/tax-company-benefits/tax-on-company-cars

Useful links

Note that to follow any of the links shown below, an internet connection is required. Content will open in an Internet browser window. The Vehicle Certification Agency is not responsible for the contents or reliability of the linked web sites and does not necessarily endorse the views expressed within them. Listing shall not be taken
as endorsement of any kind. We cannot guarantee that these pages will work all of the time and we have no control over the availability of the linked pages.

**DVLA vehicle enquiry tool**
Find out the tax for your car or light goods vehicle (a registration number is required). You can also apply for a tax disc or declare SORN.

**Gov.uk website**
The best place to find government services and information. Follow this link to the motoring section for vehicle registration, driver licensing and much more.

**Go ultralow.com**
Facts and figures about the latest range of ultra-low emission vehicles available and government grants off the cost of purchase and installing home charging kits.

**Energy Saving Trust**
EST provide advice and a range of products for business and public sector fleets. General advice from EST on driving tips and vehicle choice is provided above. Alternatively EST can be contacted on 0845 602 1425.

- [Working with businesses](#)
- [Subsidised training](#)
- [Fleet support](#)
- [Monthly fleet briefing](#)
- [Best practice guides and advice](#)

**HM Revenue & Customs website**
Links to the HM Revenue & Customs page on company car benefits.

**DVLA - vehicle tax rates**
The latest rates – effective from 1st April 2018

**Van fuel data service**
You can check fuel consumption and emissions figures for any new van or other light goods vehicle on sale in the UK by using this service.

**Euro NCAP**
The Euro NCAP home page - provides information on a voluntary code adopted by manufactures on safety both for car occupants and for pedestrians in accidents.

**THINK!**
THINK! provides valuable road safety information for road users.

**Transport for London**
Includes information about the Ultra Low Emission Zone that is being introduced in the central Congestion Charging Zone on 8 April 2019 extending out to within the North and south Circulars in October 2021, on the current Low Emission Zone (covering vehicles other than cars), congestion charging and information on supporting low emission vehicles.

**LowCVP**
The Low Carbon Vehicle Partnership website for information on low carbon vehicle technologies.

**Department for Transport**
This will take you to the Department for Transport homepage.

**Legislation.gov - hosted by the National Archives**
Includes documents formerly available through HMSO / The Stationery Office.
Links to manufacturer websites

Note that the list of manufacturers shown do not include makers of low-volume cars, or those that build 4 wheeled 'L' class vehicles.

http://www.abarthcars.co.uk  Abarth
http://www.alfaromeo.co.uk  Alfa Romeo
http://www.astonmartin.com  Aston Martin
http://www.audi.co.uk  Audi
http://www.bentleymotors.com  Bentley
http://www.bmw.co.uk  BMW
http://www.chery.co.uk  Chery
http://www.chrysler.co.uk  Chrysler
http://www.citroen.co.uk  Citroen
http://www.corvette.co.uk  Corvette
http://www.ferrari.com  Ferrari
http://www.fiat.co.uk  Fiat
http://www.ford.co.uk  Ford
http://www.honda.co.uk  Honda
http://www.hyundai-car.co.uk  Hyundai
http://www.infiniti.co.uk  Infiniti
http://www.jaguar.co.uk  Jaguar
http://www.kia.com  Kia
http://www.lamborghini.com  Lamborghini
http://www.landrover.co.uk  Land Rover
http://www.lexus.co.uk  Lexus
http://www.lotuscars.co.uk  Lotus
http://www.lti.co.uk  LTi
http://www.maserati.co.uk  Maserati
http://www.mazda.co.uk  Mazda
http://www.mercedes-benz.co.uk  Mercedes Benz
http://www.mg.co.uk  MG Motors
http://www.mini.co.uk  Mini
http://www.mitsubishi-cars.co.uk  Mitsubishi
http://www.morgan-motor.co.uk  Morgan
http://www.nissan.co.uk  Nissan
http://www.perodua-uk.com  Perodua
http://www.peugeot.co.uk  Peugeot
http://www.porsche.com  Porsche
http://www.proton.co.uk  Proton
http://www.renault.co.uk  Renault
http://www.rolls-roycemotorcars.com  Roll Royce
http://www.seat.co.uk  Seat
General points

- The information provided by VCA is only a guide. When determining tax on first registration, it is the CO₂ figure shown on the registration certificate (V5C) that will determine the amount of tax payable.
- A new car is one that is currently available to buy or lease from a dealer and has not been previously registered.
- Model definitions are taken from the EC Type Approval documentation, so may differ slightly from final commercial descriptions that include trim levels.
- ‘Type Approval’ is the confirmation that the vehicle met a number of European environmental and safety standards.

Other abbreviations

Various acronyms are used in the model descriptions. This is not a complete list:

4WD – four wheel drive
4 x 4 – four wheel drive
CC – Cylinder Capacity
Di – direct injection diesel engine
DID – direct injection diesel
DOHC – dual overhead camshaft
DPF(S) – diesel particulate filter (system)
FAP – particulate filter
FDR – final drive ratio
GDi – gasoline direct injection
Hybrid – combined internal combustion engine and electric motor and battery
i – fuel injection
km/h – kilometres per hour
kW – kilowatt
l/100km – litres per 100 kilometers
LWB – long wheelbase
MPG – miles per gallon
SOHC – single overhead camshaft
SWB – short wheelbase
TD – turbo diesel
TDdi – turbo diesel direct injection
TDi – turbo charged direct injection diesel
TDI – turbo diesel with intercooler

**Glossary of terms**

**Transmission:**
A automatic
A4 automatic 4-speed
A5 automatic 5-speed
A7 automatic 7-speed
A8 automatic 8-speed
A/SAT5 automatic / semi-automatic transmission 5 speed
ASM automatic shift manual
CVT continuously variable transmission
D6 direct shift 6-speed (DSG)
M manual
M5 manual 5-speed
5MTx2 ditto, high and low range gearing
M6 manual 6-speed
M7 manual 7-speed
M6/S6 manual 6 speed / sequential 6 speed
MULTI5 multimode 5 speed
QA5 4-wheel drive, Auto 5-speed
QA6 4-wheel drive, Auto 6-speed
QD6 quattro direct shift 6 speed
QM5 4-wheel drive, Manual 5-speed
QM6 4-wheel drive, Manual 6-speed
S/A6 semi-automatic transmission 6-speed
SAT5 semi-automatic transmission 5-speed
SAT6 semi-automatic transmission 6-speed
SMG7 sequential manual gearshift 7 speed
Fuel cost

The fuel cost of driving 12,000 miles is calculated using the combined fuel consumption figure and the respective average fuel figures. The fuel figures used are those published by the Department of Energy and Climate Change for March, and appear on the ‘efficiency labels’ that can be seen in car showrooms. There are of course many changes to fuel prices during the course of a year, not to mention many regional variations. It is because of this that we have decided to use the average figure, taken at a given point in the year, as this ensures a level playing field for comparison purposes.

The fuel costs are calculated as follows:
\[
\frac{12,000 \times A \times 4.546}{B}
\]

\(A\) = The current cost per litre of Petrol, Diesel or LPG (as applies to the car), e.g. £1.19p, £1.23p or £0.66p

\(B\) = The Imperial combined Fuel Consumption figure (MPG)

4.546 = The figure for conversion of litres to imperial gallons.

The Electric costs are calculated as follows:
\[
\frac{12,000}{"Electrical energy consumption"} \times \text{current electrical cost per unit (£)}
\]

The “Electrical energy consumption” is calculated as follows:
\[
\frac{1}{wh/km} \times 0.621 \times 1000 = "miles/kW"
\]

\(wh/km\) is taken from the vehicles Certificate of Conformity (CoC)

Total cost 12000 miles
This is a combination of the fuel cost + the electricity cost
Annex

Measures to reduce car CO₂ emissions

On 23 June 2016, the EU referendum took place and the people of the United Kingdom voted to leave the European Union. Until exit negotiations are concluded, the UK remains a full member of the European Union and all the rights and obligations of EU membership remain in force. During this period the Government will continue to negotiate, implement and apply EU legislation. The outcome of these negotiations will determine what arrangements apply in relation to EU legislation in future once the UK has left the EU.

Car manufacturers are continuing to take action to reduce CO₂ emission in order to meet binding targets set by the European Commission and government has taken a number of fiscal steps to encourage the move to ULEVs and more fuel-efficient conventional vehicles. This includes changes to Vehicle Excise Duty (VED or ‘car tax’), Company Car Tax, and incentives including purchase grants for ULEVs.

In 1998, the European Commission and industry associations of the major motor vehicle manufacturers agreed to reduce the average CO₂ emissions of new cars. This voluntary agreement aimed to cut the average CO₂ emissions of new cars by over 25% by 2008/9 to 140g CO₂/km, and as a result to see a 25% improvement in average fuel consumption.

In 2009 a European Regulation setting binding targets to reduce the CO₂ emissions of new cars (EC Regulation No. 443/2009) entered into force. The main features of the Regulation are as follows:

- The target is for an overall European fleet average of 130g/km of CO₂ emissions from 2015 (phased in from 2012);
- In order to meet this average, manufacturers are set a specific emissions target to meet, based on the types of vehicles they actually sell in any given year — rather than requiring each individual vehicle to be less than 130g CO₂/km. This allows a broad range of vehicles to remain on sale with manufacturers deciding where they make improvements to ensure compliance;
- The 'type' of vehicle is currently determined by its mass. Manufacturers that sell predominately heavier cars will have a higher grams of CO₂/km target and vice versa;
- There are different arrangements for manufacturers that produce <300,000 and <10,000 cars in any year, so as to protect the diversity of the market;
- There is a further target for improvement from 2021, set at 95g CO₂/km (95% fleet phase in from 2020, with future targets to 2030 to be determined);
- Failure to meet their individual target sees manufacturers receive a fine; from 2019 this will be €95 per gram of exceedance per vehicle registered in the calendar year.

There are several facts to bear in mind for anyone owning or driving a car who is wondering how the Regulation will affect them:

- The regulation is purely a matter for manufacturers. It will not directly require drivers or car buyers to do anything different. However, manufacturers might encourage sales of their more fuel-efficient models in order to ensure that they meet the target that they have been given;
- It works on an average basis. It does not require individual cars to meet a particular threshold for CO₂ (unlike air quality legislation) or ban cars on the basis of their CO₂ emissions;
- It only applies to new cars. It does not mean that older, higher-emitting, cars have to be taken off the road;
- It applies to all new cars registered in the EU, Norway, Liechtenstein and Iceland. It does not just apply to European manufacturers;
- It is not about setting different targets for different countries. Whilst manufacturers may, of course, choose to vary what they offer between countries, the targets are for the EU as a whole;
- It does not tell governments how to set vehicle-related taxes. This will continue to be a matter for each country.

In the UK, a number of fiscal steps have been taken to promote the purchase and use of more fuel-efficient vehicles:

- In the March 2001 Budget the Chancellor announced the extension of the lower rate of Vehicle Excise Duty (VED) to cover cars in the Private and Light Goods (PLG) taxation class with an engine size of 1549cc or less;
- Since March 2001, a system of Graduated VED has been in operation for new cars based primarily on their level of CO₂ emissions. The system is currently comprised of 13 CO₂ bands. Since April 2010, a
different rate of tax applies to a vehicle at first registration (first licence). The standard year rate applies in subsequent years. Zero emission vehicles are exempt from all VED;

- Since April 2002, company car tax has been based on the CO₂ emissions of the vehicle provided to an employee for their private use;
- From January 2011, the Government has offered a grant off the price of certain Ultra Low Emission Vehicles (ULEV) – the Plug in Car Grant. Currently most pure electric vehicles and range extended electric vehicles receive a grant of £3,500.
- Since April 2013, news cars emitting less than 95g CO₂ per km can qualify for a 100% first-year allowance. Cars that are leased do not qualify;
- Electric vehicles are also exempt from the fuel benefit charge, as electricity is not classed as a fuel.

CO₂ Targets for Vans

In June 2011, Regulation EC/510/2011 entered into force. It follows a similar format to the Regulation for cars, but applies to light-duty vans (that is N1 vehicles, under the definitions used in European legislation). It set a near-term European fleet average target of 175g CO₂/km to be achieved from 2017 (phased-in from 2014). A longer-term target of 147g CO₂/km has been set from 2020. Different arrangements apply to manufacturers registering <22,000 vans in any given calendar year.

In the UK, a number of measures have been introduced to promote the purchase of zero-emission vans.

- Zero emission vans currently pay 20% of the van fuel benefit charge for vans which emit CO₂. In Budget 2014 the Government announced this support will be extended to 5 April 2020 on a tapered basis.
- Electric vans are also exempt from the van fuel benefit charge, as electricity is not a fuel.
- Since 2012, the Government has offered grants of up to £8000 off the price of an ULEV van.
- In January 2017, OLEV and Innovate UK awarded £20m of grant funding to 20 winning projects through the Low Emission Freight and Logistics Trial. The aim is to demonstrate and encourage the widespread introduction of new low and zero emission vehicle technologies for commercial fleets in the UK.
- The Plug-in Van Grant pays for 20% of the purchase price for eligible vehicles, up to a maximum of £8,000. Since late 2016 up to £4m funding has been available for low emission vans and HGVs between 3.5 and 44 tonnes, which are now eligible for plug-in grants worth up to £20,000 for the first 200 vehicles purchased using the grant.
- Government has recently published a response to the consultation on proposals to seek an EU derogation to allow Category B (car) driving licence holders to operate alternatively fuelled vehicles up to 4.25 (rather than 3.5) tonnes. Government has confirmed that it will seek this derogation. This should help address payload penalty issues and encourage uptake of cleaner vans.

Health Impacts of poor air quality and government measures to tackle air quality emissions from cars.

The effects of air pollution on health varies widely between individuals and sub-groups of the population. In particular air pollution is known to affect the elderly, children, and those suffering from chronic respiratory diseases (e.g. bronchitis and asthma) and heart disease.

The effects of these exhaust gases are described in more detail below:

**CO** - Carbon monoxide reduces the blood’s oxygen-carrying capacity which can reduce the availability of oxygen to key organs. Extreme levels of exposure, such as might occur due to blocked flues in domestic boilers, can be fatal. At lower concentrations CO may pose a health risk, particularly to those suffering from heart disease.

**NOx** - Oxides of nitrogen is the total amount of nitrogen dioxide (NO₂) and nitric oxide (NO); NO quickly reacts in the atmosphere to form NO₂. Exposure to NO₂ at roadside concentrations can have adverse effects on health, particularly among people with respiratory illness. The Committee on the Medical Effects of Air Pollutants has identified that the evidence associating exposure to NO₂ with health effects has strengthened substantially in recent years. NOx also contributes to smog formation, and acid rain, can damage vegetation, contributes to ground-level ozone formation and can react in the atmosphere to form fine particles (‘secondary particles’).
PM – Particulate matter. Exposure to fine particles has an adverse effect on human health, particularly among those with existing respiratory disorders. Particulate matter is associated with respiratory and cardiovascular problem. 29,000 equivalent deaths a year in the UK are attributable to fine particulate pollution.

HC - Hydrocarbons contribute to ground-level ozone formation leading to risk of damage to the human respiratory system. Some kinds of hydrocarbons, in addition, are both carcinogenic and indirect greenhouse gases.

The European Union Ambient Air Quality Directive sets maximum permissible levels for roadside concentrations of pollutants thought to be harmful to human health and the environment. The UK meets almost all these levels, however, achieving the air quality standards for nitrogen dioxide presents the greatest challenge, especially in urban areas the government is committed to meeting those standards in as short as time as possible.

Emissions of these air quality pollutants from road vehicles have been reduced by improving the quality of fuels and by setting increasingly stringent emission limits for new vehicles, which has encouraged the fitting by manufacturers of appropriate technology. As an example, it would take 50 new cars to produce the same quantity of particulate matter per kilometre as a vehicle made in 1970. Over the last twenty years increasingly stringent emission limits have been set at a European level, starting with the "Euro1" limits in 1993.

Since September 2015 virtually all newly registered cars have had to meet the Euro 6 standard, further details are shown in Table 1. Emissions of NOx will be further reduced due to the strengthening of test procedures with the adoption of real driving emissions (RDE). RDE step 1, (Euro 6d-Temp) is compulsory for new models registered from September 2017 and all new cars registered from September 2019. RDE step 2 (Euro 6d), which sets an even tighter margin between the laboratory limits and real world performance, will apply in January 2020 for new models and then from January 2021 for all cars.

Information on the level of air pollutant emissions recorded for new models of cars at their type approval test is listed in the data table, alongside the CO2 and fuel consumption figures. Unlike the CO2 and fuel consumption figures, the figures for air pollutant emissions should not be used to directly compare different models of vehicle. The figures for these emissions are indicative rather than absolute, and emissions of them will vary within an acceptable range between individual production vehicles for each model.

As well as being required to meet strict emission limits before a vehicle enters into service, all vehicles must be able to meet these limits whilst they are in service (unless specifically exempted).

Changes to the MOT test which affects emissions standards for diesel vehicles were introduced in the UK on 20 May 2018. If a vehicle’s emissions limit is listed on the manufacture’s plate (which is usually found on the bottom inside of a vehicle’s door frame) then a vehicle’s emissions at its next MOT will need to meet the maximum level listed on the plate. If no emissions value is listed on the plate then the vehicle will be tested, as it previously would have been, to the default limit set for the age of the vehicle. For all Euro 6 vehicles the default limit will be 0.7m-1 compared to the current 1.5m-1.

A vehicle will fail its MOT if any emissions control system or component has been removed or tampered with. One example of such a component which must be in working order is the Diesel Particulate Filter (DPF).

It is an offence under the Road Vehicles (Construction and Use) Regulations (Regulation 61a(3)) to use a vehicle which has been modified in such a way that it no longer complies with the air pollutant emissions standards it was designed to meet. The potential penalties include a maximum fine of £1,000 for a car.

Disclaimer

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Revisions to the New Car Fuel Consumption database to allow WLTP derived data to be shown will come into effect prior to January 2019.

Vehicle Excise Duty (or Vehicle Tax) rates are correct as at 1 April 2018.

Similarly, fuel costs - that are used to calculate a car’s fuel cost over 12,000 miles, were determined in March 2018 and will not necessarily reflect current forecourt prices.
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