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THE BMW GUIDE

TO ALTERNATIVE FUELS



INTRODUCTION

The market for alternatively fuelled cars has expanded dramatically in recent years, and there are now many available with different systems. These include 100% battery-electric vehicles (BEV), plug-in hybrids (PHEV), traditional hybrids and, to a lesser extent, hydrogen fuel cell cars.

Each has its own advantages and disadvantages, with all generally classed as ultra-low emission vehicles. Government incentives have aligned with the requirement for lower carbon emissions, and there are grant schemes available to assist the acquisition of the new generation of electrified cars. Choosing

the right vehicles for your business can offer significant savings and also enable a more efficient fleet. This BMW Group Guide to Alternative Fuels explains what complementary mobility technologies are available, how they work and the benefits they could bring to your fleet.



GOVERNMENT GRANTS AND INCENTIVES

Government Plug-in Grant

The Government Plug-in Car Grant of up to £2,500 is available only to wheelchair accessible vehicles priced up to £35,000* with zero CO₂ tailpipe emissions and a zero-emission range of at least 70 miles. Grants are also available for motorcycles, mopeds, taxis vans, large vans and trucks.

Click **here** for more information and details of Government-approved vehicles.

The grants are administered by the Office for Zero Emission Vehicles (OZEV), and the process of application is managed by the vehicle manufacturer and its retailer network rather than the purchaser.

*The definition of recommended retail price includes VAT (including VAT reclaimable by a business) vehicle manufacturer or dealer's mandatory extras including delivery charges or administration fees, the battery cost (including where the battery is leased), any non-standard option fitted by the manufacturer or dealer affecting the capacity of the battery, drivetrain configuration or maximum net power, and excludes any non-standard option fitted by the manufacturer or dealer which does not affect the capacity of the battery, drivetrain configuration or maximum net power, modifications such as 'police packs', ambulance/fire engine modifications, modifications for disabled users, including WAV conversions, warranty/insurance and service packages etc, first registration fee and cost of first-year VED and any discounts (including rebates). **UK model specifications may vary**

Electric Vehicle chargepoint grant

The EV chargepoint grant replaces the Electric Vehicle Homecharge Scheme (EVHS) and is open to homeowners (including those with mortgages) living in flats and rental accommodation from 1 April 2022.

Those living in single-unit properties such as bungalows and detached, semi-detached or terraced housing, are no longer eligible for the grant.

The Grant provides a 75% contribution to one OZEV-approved homecharge unit per eligible electric or plug-in vehicle, capped at £350 including VAT. The unit must be installed by an OZEV-approved chargepoint installer who must confirm ownership of the property. Customers are no longer be able to claim for two chargepoints if they own a second electric vehicle.

Click **here** for further information on the Grant. To find out if your vehicle qualifies for the Grant, click **here**.

- **Wheelchair Access Vehicles** – Government-approved wheelchair access vehicles priced up to £35,000* with zero CO₂ tailpipe emissions and a zero-emission range of at least 70 miles qualify for a grant of up to £2,500.
- **Motorcycles** – motorcycles with zero CO₂ tailpipe emissions while riding and a range of at least 31 miles benefit from a maximum grant of £500.
- **Mopeds** – mopeds or scooters with zero CO₂ tailpipe emissions while riding and a range of at least 19 miles benefit from a maximum grant of £150.
- **Taxis** – taxis with CO₂ emissions of less than 50g/km and a zero-emission range of at least 70 miles benefit from a maximum grant of £7,500.
- **Vans** – N1 vans under 2.5 tonnes GVW with CO₂ emissions of less than 50g/km and a zero-emission range of at least 60 miles benefit from a maximum grant of £2,500, or £5,000 for vans between 2.5t and 3.5t.
- **Large vans and trucks** – vehicles with zero CO₂ tailpipe emissions range of at least 60 miles, benefit from a maximum grant of £16,000 (N2 - 3.5t-12t GVW) or £25,000 (N3 - 12t + GVW). Volume limits apply.

For more on low-emission vehicles on the Office for Zero Emissions website, click **here**



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BENEFIT-IN-KIND TAX

Benefit-in-kind (BIK) tax

Company car BIK tax is based on a car's P11D price and CO₂ emissions. From 1 April 2022 all company cars are taxed according to WLTP CO₂ emissions, with the BIK percentage rates shown in the table opposite applying until 31 March 2025.

Drivers of cars with zero emissions of CO₂ when driving, such as battery-electric vehicles (BEV), are liable for BIK tax based on 2% of taxable value, up from 1% in 2021/22.

For cars with CO₂ emissions of 1-50g/km, the number of miles they can drive with zero emissions of CO₂ has a significant bearing on tax liabilities.

For diesels that do not meet the Real Driving Emissions Step 2 (RDE2) standard, a 4% tax charge applies (shown in brackets).

BIK TAX BANDS FOR LOW-EMISSION CARS

All company cars

WLTP CO ₂ emissions (g/km)	Zero CO ₂ emissions range (miles) ¹	BIK band 2022 – 2025 (%) ²
0	All	2
1-50	Over 130	2 (6)
1-50	70-129	5 (9)
1-50	40-69	8 (12)
1-50	30-39	12 (16)
1-50	Up to 30	14 (18)

Source: HMRC. Figures in brackets apply to diesels. Diesel hybrids and diesel cars that meet the Real Driving Emissions Step 2 (RDE2) standard are exempt from the diesel tax charge.
¹Measured in miles when driving. ²Rates apply until 31 March 2025.



PRACTICAL CONSIDERATIONS

Fuel duty

Fuel duty is paid on each litre of road fuel purchased (or per kilogram in the case of gases). Therefore the fuel efficiency of a vehicle, the way a vehicle is driven and the distance driven will determine the total amount of duty paid. Electricity is not subject to fuel duty, so battery electric vehicles (BEV) are duty-exempt.

Government Advisory Fuel Reimbursement Rates (AFR)

AFR petrol reimbursement rates apply to petrol hybrids and AFR diesel reimbursement applies to diesel hybrids. There is no HMRC-set AFR equivalent for electric vehicles because electricity is not considered a fuel for the purposes of Fuel Benefit Charge (FBC) legislation.

Fuel Benefit Charge (FBC)

As electricity is not considered a fuel, there is currently no fuel benefit charge. This means that if an employer allows an employee with a company or personally owned car to top up the battery of their battery-electric vehicle (BEV) or plug-in hybrid electric vehicle (PHEV) at work, this does not constitute a fuel benefit and no tax is payable.

Enhanced capital allowances (ECA)

Eligibility for enhanced capital allowances (ECA) for cars is based on CO₂ emissions while driving. If a car has zero emissions of CO₂ while driving, it qualifies for a 100% first-year capital allowance (FYA) in 2022/23, but the vehicle must be a new registration.

Cars with CO₂ emissions of 1-50g/km qualify for an 18% allowance while those with CO₂ emissions exceeding 51g/km qualify for a 6% allowance. Leased cars are not eligible for the 100% FYA.

130% 'super deduction'

A 130% first-year allowance is available until 31 March 2023, applying to expenditure on new main pool items, such as vans and electric charging equipment but excluding company cars. The 'super deduction' allows companies to cut their tax bill by up to 25p for every £1 invested. Businesses can also take advantage of a 50% first-year allowance for qualifying special rate expenditure.



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PRACTICAL CONSIDERATIONS (CONTINUED)

Vehicle Excise Duty (VED)

VED exemption in 2022/23 applies only to cars with zero CO₂ tailpipe emissions costing £40,000 or less, with an exception made for cars over £40,000 with zero CO₂ emissions. Cars costing over £40,000 (except those with zero CO₂ emissions) attract an additional £355 a year for five years from the second year. For details of 2022/23 VED rates, see the table (right).

VAT

Vehicles are subject to standard levels of VAT (20%) regardless of their emissions of CO₂, but electricity has varying treatment. Electricity that is supplied for domestic, non-business and charity use attracts 5% VAT, while electricity that is supplied for business use is subject to VAT at 20%.

Petrol, diesel and hydrogen are considered to be road fuels and therefore also attract the standard level of 20% VAT while electricity that is used to recharge a wholly battery-electric vehicle (BEV) or plug-in hybrid vehicle (PHEV) at home attracts VAT at 5%.

Electricity for low-emission vehicles that are recharged at work attract 20% VAT. Hydrogen used to refuel fuel cell electric vehicles (FCEV) also attracts VAT at 20%.

VED rates 2022/23

VED Band	CO ₂ emissions (g/km)	First year rate (£)	First year rate (diesels) (£)*	Standard rate Yr2 on (under £40,000) (£)	Standard rate Yr2 on (over £40,000) (£)**
A	0	0	0	0	0
B	1-50	10	25	165	520
C	51-75	25	120	165	520
D	76-90	120	150	165	520
E	91-100	150	170	165	520
F	101-110	170	190	165	520
G	111-130	190	230	165	520
H	131-150	230	585	165	520
I	151-170	585	945	165	520
J	171-190	945	1,420	165	520
K	191-225	1,420	2,015	165	520
L	226-255	2,015	2,365	165	520
M	Over 255	2,365	2,365	165	520

* Applies to diesel vehicles that do not meet the Real Driving Emissions Step 2 (RDE2) standard. Alternative fuel vehicles, including hybrids, bio-ethanol and LPG, pay £155 a year. ** Cars with a list price over £40,000, except those with zero CO₂ tailpipe emissions, pay an additional rate of £355 on top of the standard for five years following the first year rate, after which the rate reverts to the standard rate. 2022/23 rates apply from 1 April 2022



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ALTERNATIVE FUEL VEHICLE COMPARISONS

Driveline	Plug-in hybrid (PHEV) Eg BMW 530e (Parallel Hybrid)	Battery Electric vehicle (BEV) Eg BMW iX
Description	A petrol or diesel engine works with a battery powered electric motor. Both power units can be used together or individually, and the combustion engine can charge the battery.	A car which carries a battery to power an electric motor that drives the wheels. It is charged by plugging it into an electricity supply.
Government Plug-in Grant eligibility	Only wheelchair-accessible vehicles with zero CO ₂ tailpipe emissions and a zero emissions range of 70 miles qualify for the maximum grant of £2,500, subject to Government approval and a price cap of £35,000*. Click here for a list of eligible vehicles. Click the Government grants and incentives tab above for details.	Only wheelchair-accessible vehicles with zero CO ₂ tailpipe emissions and a zero emissions range of 70 miles qualify for the maximum grant of £2,500, subject to Government approval and a price cap of £35,000*. Click here for a list of eligible vehicles. Click the Government grants and incentives tab above for details.
BIK tax and VED implications	Company car BIK tax is based on a car's P11D price and CO ₂ emissions. From 1 April 2022 all company cars are taxed according to WLTP CO ₂ emissions. For PHEVs with CO ₂ emissions of 1-50g/km, the number of miles they can drive with zero emissions of CO ₂ has a significant bearing on BIK tax liabilities. Click the BIK tax tab above for details. For diesels that do not meet the Real Driving Emissions Step 2 (RDE2) standard, a 4% BIK tax charge applies.	Company car BIK tax is based on a car's P11D price and CO ₂ emissions. From 1 April 2022 all company cars are taxed according to WLTP CO ₂ emissions. In 2022/23, drivers of Government-approved BEVs are subject to BIK tax based on 2% of taxable value, with this rate then frozen until 2024/25. Click the BIK tax tab above for details. As BEVs are classified with zero CO ₂ emissions, they are exempt from VED in 2022/23. Click the Practical Considerations tab above for more details.
London Congestion Charge exemption	No. On 25 October 2021, the cleaner vehicle discount changed so that only battery electric or hydrogen fuel cell vehicles are eligible. From 25 December 2025, the cleaner vehicle discount will be discontinued. From this date, all vehicle owners, unless in receipt of another discount or exemption, will need to pay to enter the Congestion Charge zone during charging hours. Taxis and Private Hire Vehicles are exempt from the charge if actively licensed with London Taxi and Private Hire (TPH). To find out if your car qualifies for exemption or a discount, click here .	Yes. Government-approved BEVs are classified with zero CO ₂ emissions and so qualify for Transport for London's 100% cleaner vehicle discount. From 25 December 2025, the cleaner vehicle discount will be discontinued. From this date, all vehicle owners, unless in receipt of another discount or exemption, will need to pay to enter the Congestion Charge zone during charging hours. Taxis and Private Hire Vehicles are exempt from the charge if actively licensed with London Taxi and Private Hire (TPH). To find out if your car qualifies for exemption or a discount, click here .
Refuelling	Recharging or conventional refuelling – the combustion engine drives the car and also charges the battery. PHEVs can top up with fuel or recharge.	Recharging only. There are over 18,000 UK public charge points in over 10,000 locations, of which 2,500 are rapid chargers. Tax advantages apply to new and existing cars.
Advantages	Capable of electric running for longer than a traditional hybrid. Significant BIK tax advantages available and eligible for reduced rates of VED. Drivetrain eliminates 'range anxiety', while the combustion engine and electric motors together offer increased power.	Near silent running, smooth acceleration, improving battery life and fast-charging gives greater range. Electricity is cheaper than petrol or diesel and generates zero tailpipe emissions. BEVs are exempt from VED in 2022/23 and drivers pay BIK tax at just 2%.
Disadvantages	Not eligible for the Government Plug-in Car Grant. Fuel cost savings may take longer to realise than with a battery electric vehicle (BEV).	Longer journeys may require planning with access to rapid charging en route but, although availability can be infrequent, the chargepoint network is rapidly improving.
Summary	PHEVs are still popular with the BIK tax rule changes in April 2020. Established choice for fleet operators and drivers. However, much improved battery technology means battery-electric vehicles give greater zero emission mileage with the associated tax and fuel cost advantages.	Range anxiety is less of an issue with the latest BEVs and they are exempt from VED in 2022/23. BIK tax is payable at 2% and then frozen until 2024/25. Advantages include strong performance, quiet running, low operating costs and exemption from congestion charging, ULEZ and low emission zones.

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ALTERNATIVE FUEL VEHICLE COMPARISONS (CONTINUED)

Driveline	Electric range-extended vehicle (EREV) Eg BMW i3 with range extender (Series Hybrid)	Fuel cell electric vehicle (FCEV) Eg Toyota Mirai
Description	A car driven by an electric motor, and fitted with a small petrol engine which recharges the battery but does not drive the wheels. None, however, are currently in production.	A vehicle fuelled by hydrogen and oxygen in a fuel cell stack which generates electricity to drive the car using an electric motor, with water vapour the only exhaust emission.
Government Plug-in Grant eligibility	Only wheelchair-accessible vehicles with zero CO ₂ tailpipe emissions and a zero emissions range of 70 miles qualify for the maximum grant of £2,500, subject to Government approval and a price cap of £35,000*. Click here for a list of eligible vehicles.	Only wheelchair-accessible vehicles with zero CO ₂ tailpipe emissions and a zero emissions range of 70 miles qualify for the maximum grant of £2,500, subject to Government approval and a price cap of £35,000*. Click here for a list of eligible vehicles.
BIK tax and VED implications	In 2022/23, drivers of Government-approved EREVs are subject to BIK tax at 2% regardless of registration date, frozen until 2024/25. As EREVs are classified with zero CO ₂ emissions, they are exempt from VED in 2022/23. Click the BIK tax tab above for details.	In 2022/23, drivers of Government-approved FCEVs are subject to BIK tax at 2% regardless of registration date, frozen until 2024/25. As FCEVs are classified with zero CO ₂ emissions, they are exempt from VED in 2022/23. Click the BIK tax tab above for details.
London Congestion Charge exemption	Yes. EREVs are classified with zero CO ₂ emissions and so qualify for Transport for London's 100% cleaner vehicle discount. From 25 December 2025, the cleaner vehicle discount will be discontinued. From this date, all vehicle owners, unless in receipt of another discount or exemption, will need to pay to enter the Congestion Charge zone during charging hours. Taxis and Private Hire Vehicles are exempt from the charge if actively licensed with London Taxi and Private Hire (TPH). To find out if your car qualifies for exemption or a discount, click here .	Yes. FCEVs are classified with zero CO ₂ emissions and so qualify for Transport for London's 100% cleaner vehicle discount. From 25 December 2025, the cleaner vehicle discount will be discontinued. From this date, all vehicle owners, unless in receipt of another discount or exemption, will need to pay to enter the Congestion Charge zone during charging hours. Taxis and Private Hire Vehicles are exempt from the charge if actively licensed with London Taxi and Private Hire (TPH). To find out if your car qualifies for exemption or a discount, click here .
Refuelling	Recharging and conventional refuelling.	Hydrogen refuelling only. There are very few hydrogen refuelling stations at present in the UK, with most located near London, and no established network yet.
Advantages	Less 'range anxiety' than a BEV as the combustion engine is refuelled conventionally to charge the battery, although with improved battery technology range is becoming less of an issue. EREVs are exempt from VED in 2022/23 and drivers pay BIK tax at 2%, frozen at this level until 2024/25.	Ultra-clean operation and silence on the road. Hydrogen is abundant and refuelling is quick. Performance is similar to a conventional car with a range of around 300 miles before refuelling is needed. Drivers of FCEVs are subject to BIK tax at 2% in 2022/23, frozen at this level until 2024/25. FCEVs are exempt from VED in 2022/23.
Disadvantages	No EREVs are currently manufactured so used cars only. Much improved technology in battery electric vehicles (BEVs) has made EREVs less attractive. Fuel economy when the combustion engine is running can be disappointing, extra weight can compromise handling and fuel tanks for the range extender motor often tend to be small.	Expensive to buy and, at present, impractical as there is only a small established refuelling network in the UK. Hydrogen requires large storage tanks in the car that impact on interior space.
Summary	With improvements in battery technology and range benefiting BEVs, manufacturers have moved away from range extender technology. But EREVs have no range anxiety issues and are classed as zero-emission so drivers of cars already registered are exempt from VED in 2022/23 and BIK tax is payable at just 2%.	In its infancy as a practical mobility solution but with potential. Infrastructure is needed to make it viable, but production and current purchase costs make it prohibitively expensive for most users.

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ALTERNATIVE FUEL VEHICLE COMPARISONS (CONTINUED)

Driveline	TRADITIONAL HYBRID Eg Toyota Prius non Plug-in (Parallel Hybrid)
Description	A vehicle, sometimes known as a self-charging hybrid) with a combination of a petrol or diesel engine and an electric motor to reduce fuel consumption and emissions.
Government Plug-in Grant eligibility	Only wheelchair-accessible vehicles with zero CO ₂ tailpipe emissions and a zero emissions range of 70 miles qualify for the maximum grant of £2,500, subject to Government approval and a price cap of £35,000*. Click here for a list of eligible vehicles.
BIK tax and VED implications	Traditional hybrids have reduced CO ₂ emissions, but are more in line with the best petrol and diesel cars for BIK tax and fuel-efficiency. VED applies according to emissions.
London Congestion Charge exemption	No. From 25 October 2021, the cleaner vehicle discount changed so that only battery electric or hydrogen fuel cell vehicles are eligible. Hybrid Taxis and Private Hire Vehicles are exempt from the charge if actively licensed with London Taxi and Private Hire (TPH). To find out if your car qualifies for exemption or a discount, click here .
Refuelling	Traditional forecourt refuelling only.
Advantages	Can be less expensive to buy than a 100% electric car or plug-in hybrid. Does not require plugging in and is refuelled like a conventional car. Several manufacturers offer traditional hybrids and the technology is now well understood after over 20 years on the market.
Disadvantages	Electric assistance to the combustion engine makes it attractive in town and for short distances, while BIK tax can be reduced compared with conventional cars. Long-range motorway economy can be worse than for a conventionally powered non-hybrid that doesn't carry a hybrid's weight burden.
Summary	Traditional, or self-charging, hybrids have been accepted as an alternative to diesel by some fleets, particularly those based in urban areas.

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