

Driving Ultra Low Emission Vehicles



October 2018



Produced with the support of
the Department for Transport

Introduction

There are more than 150,000 Ultra Low Emission Vehicles (ULEVs) and 14,000 public charging points in use in Great Britain. It is very likely that these numbers will increase in the coming years and eventually overtake the number of petrol and diesel vehicles.

The [Road to Zero Strategy](#) sets out the Government's plans for all new cars and vans sold in the UK to be effectively zero emission and to end the sale of new conventional petrol and diesel cars and vans by 2040. By 2050, it wants almost every car and van sold to be zero emission. The strategy aims to:

- Encourage the use of ULEVs in place of petrol and diesel engine cars.
- End the sale of new conventional petrol and diesel cars and vans by 2040.
- Substantially increase the number of public electric vehicle charging points.
- Provide subsidies to help fund the purchase and use of ULEVs.
- Require new homes and offices to install charging points as standard.
- Require new street lighting columns in areas with on-street parking to have charge points fitted.
- Allocate more funds for charging infrastructure.

Government subsidies that support the sale and use of ULEVs, include:

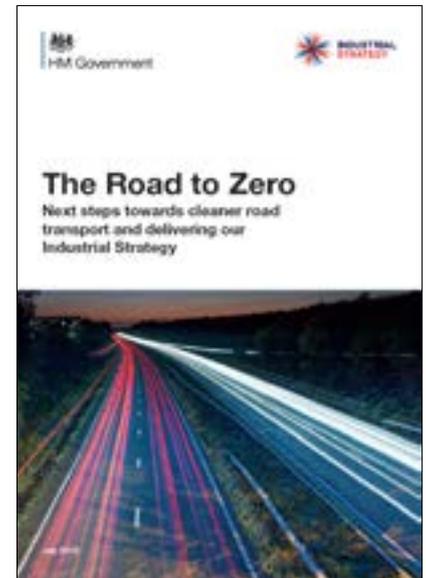
- [Electric Vehicle Homecharge Scheme](#)
- [Low Emission Vehicles Eligible for a Plug-in Grant](#)
- [Workplace Charging Scheme Guidance](#)

Grant schemes and eligibility criteria change over time, so it's important to check the latest information.

Some car sharing clubs, such as [Zip Car](#) and [e-Car](#), and some rental firms, such as [Enterprise Car Club](#) and [Co Wheels](#), offer electric cars for short hire periods. As well as checking the costs, don't forget to check the rules on mileage range, charge points, pick-up and drop-off points and payment methods.

The main advantages of ULEVs are that they emit very low or zero emissions, are less likely to harm the environment and can be cheaper than petrol or diesel cars to run and maintain. The distance that ULEVs can travel without being recharged, and the availability of charging points, are being improved.

This short guide is designed to raise awareness about safety issues when choosing or using an Ultra Low Emission Vehicle (ULEV).



There are four main types of ULEVs:

Electric Vehicles (EV)

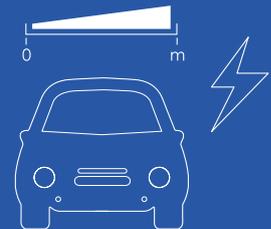
Electric vehicles, powered by an electric motor and battery, do not emit exhaust emissions. They are charged at home, at the workplace or at public charge points. Their range varies, with some offering around 100 miles per charge and up-to-date models achieving significantly more as battery technology improves. They offer a smooth driving experience and full power from a standstill with the ability to slow down more rapidly when releasing the throttle pedal.

They are very quiet, but European regulations will mandate sound generators on new types of electric and electric hybrid vehicles from 2019 (manufacturers may choose to fit sound generators before this date) to ensure they produce a sufficient noise level below 20 kph and when reversing. The sound should easily indicate the vehicle's behaviour and be similar to an internal combustion engine vehicle of the same category. New users may need to adapt their driving style when driving ULEVs.



Extended-Range Electric Vehicles (E-REV)

Extended-range electric vehicles have an electric motor, a plug-in battery, and a small back-up internal combustion engine. They run on electricity, and the small petrol engine acts as a generator to recharge the battery and extend the vehicle's overall range when needed. Their range is similar to a fully electric vehicle but when it reverts to its internal combustion engine, it will produce exhaust emissions.



Plug-in Hybrids (PHEV)

Plug-in hybrids are powered by a petrol or diesel engine and have an electric motor and battery. They often have a range of hundreds of miles with the internal combustion engine, and can run on electric-only power for short periods, or on a combination of both. The battery can be charged at home, at the workplace or at public charge points in the same way as an electric vehicle. After the battery range has been depleted the vehicle reverts to its conventional engine. When used in electric-only mode, it does not produce any exhaust emissions, but does so when using its internal combustion engine.



Hydrogen Fuel Cell Vehicles

These vehicles feature an electric motor with a fuel cell. Electricity produced to power the vehicle is provided by hydrogen and an initial network of hydrogen filling stations is being developed across the UK. Hydrogen fuel cell vehicles do not need to be connected to an electric charge point and generate power solely from hydrogen. These vehicles emit only water from the exhaust.



Driving an Ultra Low Emissions Vehicle (ULEV)

- Read your ULEV handbook fully to make sure you understand its components, accessories and any recommendations concerning the recovery of your vehicle in the event of a breakdown.

Performance

- When considering or using a ULEV, it's important to understand the difference in the way you drive compared to a petrol or diesel vehicle.
- Make sure you know the car's acceleration and braking characteristics and how they might affect your driving. Many ULEVs have very quick acceleration and low noise levels.
- Consider how this might affect other road users, especially pedestrians, cyclists, horse riders, children and the elderly, who may struggle to hear your vehicle as you approach.
- Be aware that aggressive driving will severely reduce the range you can achieve.
- Be aware that eco tyres may not always grip the road as well as conventional tyres.



Type of journey

- Think about how you normally use your vehicle. Consider journey length, boot carrying capacity and towing requirements.
- If you tend to make longer journeys, think about how far and how often you would need to charge the battery and consider opting for a plug-in hybrid, which can be powered by its petrol or diesel engine if the battery runs out of power, an extended range electric vehicle or a hydrogen fuel cell vehicle.
- Extra weight can affect the vehicle's range and handling. If you carry lots of luggage or larger loads, check how much you can fit in the boot or on a roof rack.
- If you tow a trailer or a caravan, check whether your vehicle (and your driving licence) allows you to do so. If it does, make sure you stay within the trailer weight limits and know how to check the trailer is safe and secure. Check whether any advanced vehicle technology, such as automatic braking, is affected by towing.



Vehicle safety rating

- Check the safety rating of the ULEV you are considering. Most have similar Euro NCAP ratings to petrol and diesel cars but older ones may have lower safety ratings.

Child car seats

- Make sure your child car seats and other accessories, can be safely fitted in your ULEV.



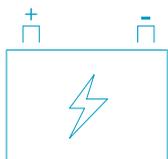
Charging

- Consider how you will charge the battery at home, at work or a public charging points, especially when travelling further distances.
- If you have a private parking space, such as a driveway, have a home charger fitted, if possible. You may be able to get financial assistance, through the [Electric Vehicle Homecharge Scheme](#) from the vehicle manufacturer or another incentive.
- Check that the wiring of your home is suitable to have a home charger fitted before it is installed. You must use a qualified electrician to fit it.
- Consider the connection leads, make sure they fit the battery in your ULEV.
- Be careful about trip hazards, especially if you don't have a driveway, when laying out cables to charge your ULEV. Consider the legal position if someone trips over a trailing cable (perhaps use cable protectors) and whether your home insurance covers this.
- Avoid using a standard 13A plug socket on a regular basis to charge your ULEV as this may strain the wiring systems of your home and become a fire hazard. Ask a qualified electrician to check your home's wiring.
- Never use an extension lead to charge your ULEV.
- If you only do a small annual mileage, consider signing up to a battery rental scheme, instead of purchasing the battery with the vehicle. But be aware that you may still be responsible for paying the monthly lease for the battery until the vehicle is sold to a new buyer.
- Consider opting for a vehicle with a fast-charger installed. It could make the difference between a charge taking 30 minutes and one taking several hours.
- If buying a used ULEV, consider the condition of the battery and replacement battery costs.

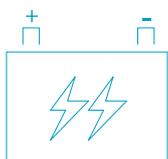


Charging speeds and connections

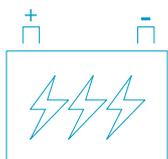
- The two main factors to consider when deciding your charging options are charging speed and connectors. Make sure you understand which systems can be used with your vehicle. Your vehicle handbook will tell you which connector is suitable for your vehicle.



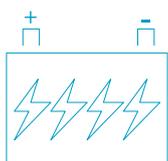
Slow chargers (3 kilowatt, 3kw) provide up to 15 miles per hour of charging and are most suited for the home or office where vehicles can be charged throughout the day or overnight. They also suit drivers who can top-up their vehicle while shopping or visiting an area, but not users who travel longer distances as it can take up to 14 hours to fully charge a vehicle. Costs are similar to 'fast chargers'.



Fast chargers (7 kilowatt, 7kw) provide up to 30 miles per hour of charging and are generally suited to drivers who can top-up their vehicle whilst shopping or visiting attractions, but less so for those travelling long distances. Some public 'fast chargers' may be free where others require the purchase of tokens locally.



Rapid chargers (50 kilowatt, 50kw) are usually found in public places or motorway service areas. They provide the maximum benefit for ULEV drivers, allowing many vehicles to obtain an 80% charge in about 30-45 minutes. Costs vary widely, with some operators requiring users to sign up to monthly subscriptions and others allowing payment by debit or credit card. 22kw chargers are also available but are not compatible with every vehicle.

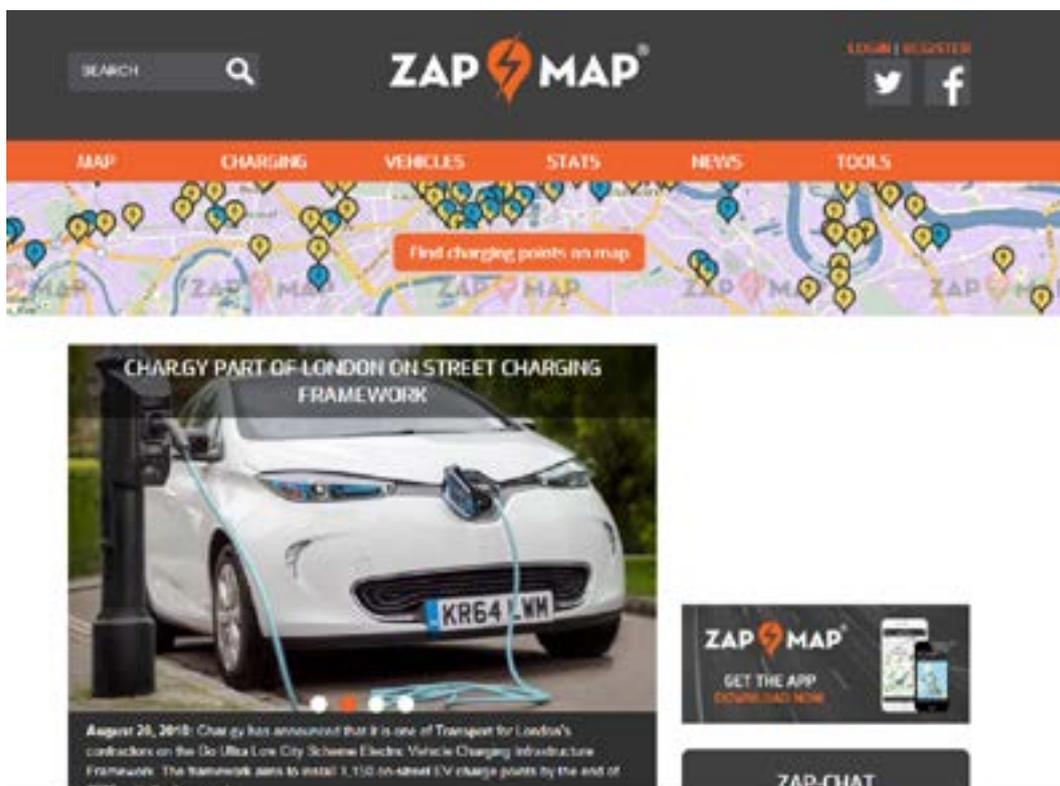


Superchargers charge at significantly faster rates than 'rapid chargers'. Costs vary, with some vehicle manufacturers offering free or subsidised charging.

- As technology improves, chargers may offer the ability to charge their vehicles in only a few minutes. Keep up to date with technology as it changes.

Range and charging when driving

- Know the location of charge points in your area and on routes you use, and how to find them. This will change as more charge points are installed, so check locations regularly.
- Websites and mobile phone applications such [Zap-Map](#) show the availability of chargers across the country, and associated costs. But, don't be tempted to check the app while driving.
- Consider the best time to go to public charging points and be aware of any rules such as length of stay and parking fees.
- Know how long it takes to recharge your ULEV. It could be several hours if it is not fitted with a fast-charger.
- Keep up to date with relevant charging infrastructure and vehicle developments.



Planning Journeys

- Identify charge points on long distance journeys on motorways, trunk roads and in rural areas.
- Allow sufficient time to cover the distance between charging points.
- Estimate how long the overall journey will take, including rest breaks, unexpected delays, and reaching charging points. Leave a margin for error in case you are delayed, if a charge point is already being used when you arrive, or there is a fault with that particular unit.
- Plan where to stop for regular rest breaks (about every two hours for at least 15 to 20 minutes). You may be able to plan rest breaks to coincide with charging.
- Check live traffic information on motorways and trunk roads. If you feel you need to change your route to avoid congestion, consider whether you could still reach convenient charging points.
- Avoid driving in the early hours of the morning, when you have had less sleep than normal, or in mid afternoon after a large meal - these are peak times for sleep-related accidents.
- Avoid driving in very poor weather, particularly fog, heavy rainfall, very high winds, ice, snow or flooding or where there is a danger of being stranded. Remember low temperatures and using devices, such as the heater, can severely affect the range of the vehicle and increase the risk of becoming stranded.

- Be ready to postpone your journey or change your route if the police and travel organisations advise against road travel due to weather conditions.
- Keep emergency equipment in your ULEV in case you get stranded, such a shovel, torch, mobile phone, warm clothes and a blanket. For more information, read our winter driving tips. <https://www.rosopa.com/roadsafety/advice/drivers/better-driving/winter-tips/>

Consider what to do if you run out of charge or breakdown.

- Check that your breakdown cover includes recovery, or a recharge, if you run out of power and make sure the operator knows you are using an ULEV.

If you begin to feel sleepy

- Do not try to complete the journey (you might never arrive).
- Find somewhere safe to stop (not the hard shoulder), drink one or two cups of strong coffee or another high caffeine drink, and then nap for about 15 minutes.
- If necessary, find somewhere safe to stay overnight.
- Remember, the normal rules and advice about safe driving (such as don't use a mobile phone while driving) still apply.



Driving a ULEV

- Check the latest version of the Highway Code as it changes periodically.
- Stay aware of the rules and advice that apply to drivers of ULEVs.
- Consider how you might change your driving style when driving a ULEV. Be aware of your vehicle's acceleration and braking characteristics, and its stopping distances, especially as your ULEV may be heavier than petrol/diesel alternatives.
- Be aware of your ULEV's low noise levels and that other road users not to be aware of your approach, especially pedestrians, cyclists, motorcyclists, horse riders, and anyone with hearing or sight issues.
- Consider how other road users may change their behaviour near your ULEV.
- Consider taking refresher driver training (or assessments) tailored to driving a ULEV.



Useful Links

[Go Ultra Low](#) is a Government and car industry campaign to provide information, advice and interactive tools to promote ULEVs and help people make informed decisions about them.

[Zap-Map](#) enables drivers to locate and update the status of electric vehicle charge points in UK and Ireland.

[The Highway Code](#) is essential reading for everyone who uses the road. Knowing its rules could significantly reduce the number of deaths and injuries that occur on our roads every day.

[Driver and Vehicle Standards Agency \(DVSA\)](#) conducts and sets standards for driving tests and recalls of vehicles, parts and accessories.

[RoSPA Road Safety](#) provides guidance, resources and services to help people live healthy, active lives unburdened by fatal and life-changing accidents and injuries.

[Road Safety GB](#) comprises representatives from groups across the UK, including local government road safety teams. It helps to raise awareness of road safety and safer road user behaviour.

[Road Safety Scotland](#) provides advice, resources and services to promote safer road use in Scotland.

[Highways England](#) operates England's motorways and major A roads, and a uniformed Traffic Officer Service which patrol its network.

[Road to Zero Strategy](#) is the Government's plan for new cars and vans sold in the UK to be zero emission and to end the sale of new conventional petrol and diesel cars and vans by 2040.

[Think Road Safety](#) provides road safety information for road users and aims to encourage safer behaviour to reduce the number of people killed and injured on our roads every year.

[Department for Transport](#) sets regulations, laws and guidance for road users, roads and vehicles. Its website is updated regularly.

[Driver and Vehicle Licensing Agency \(DVLA\)](#) registers and licenses drivers, motorcyclists and vehicles and maintains the records of over 48 million drivers and over 40 million vehicles.

[Euro NCAP](#) conducts vehicle tests to identify improvements and new technology. The tests go beyond legal requirements and evolve as new innovations are introduced.

[Transport for London](#) is committed to ending deaths and serious injuries on London's roads and transport networks by 2041 through its [Vision Zero campaign and action plan](#).

[Road Safety Wales](#) develops co-operation and interaction between key partners and agencies with responsibility for promoting road safety across Wales.



accidents don't have to happen



RoSPA Head Office

RoSPA House
28 Calthorpe Road
Edgbaston
Birmingham
B15 1RP

RoSPA Scotland

43 Discovery Terrace
Heriot-Watt University Research Park
Edinburgh
EH14 4AP

RoSPA Wales

2nd Floor
2 Cwrt-y-Parc
Parc Ty Glas
Cardiff Business Park
Llanishen
Cardiff
CF14 5GH

www.rospa.com

Registered Charity No. 207823
VAT Registration No. 655 131649

General Enquiries

+44 (0)121 248 2130
 help@rospa.com
 [twitter.com/@rospa](https://twitter.com/rospa)
 facebook.com/rospa