

Electric vans: your questions answered



Introduction

Electric vans are cheaper to run than diesel or petrol vans due to the lower cost of electricity per mile. As well as potentially large savings on fuel, vehicle maintenance is usually cheaper and for a pure electric van, there is no Vehicle Excise Duty (road tax) to be paid. There are no tailpipe emissions of carbon dioxide (CO₂) or nitrogen oxides, so you'll help improve the air quality in the area you drive.

This short guide will answer many of the questions you might have before making the switch to an electric van.

What is an electric van?

A battery electric vehicle (BEV or EV) is a vehicle powered only by electricity. The vehicle's battery is charged from mains electricity and incorporates the process of regenerative braking. This is when the electric motor generates electricity by slowing down or braking, which helps to extend the driving range.

Some electric vehicles have petrol or diesel engines as well. In a plug-in hybrid electric vehicle (PHEV), the engine can be used to drive the vehicle when the battery charge is depleted, or the battery can be saved for town and city driving.

An extended range electric vehicle (E-REV) also has a petrol or diesel engine fitted but it is only used to generate electricity when the battery charge is low. The vehicle is always driven by the electric motor and when the engine is used it can always operate at its most efficient speed.

What is available?

More than 20 electric van models are currently eligible for the plug-in van grant (see 'Are there any other benefits?') so many businesses can realise the benefits of switching to electric vehicles. Small and medium sized vans are now available with driving ranges of 200 miles, whilst many larger vans up to 3.5 tonnes are coming to market from the larger vehicle manufacturers with similar load volumes and payload as their diesel equivalents.

In the larger sized vans, a range of body options are available, including long and short wheelbase vans, dropsides, crew cabs and caged tippers.

Used electric vans are available, particularly smaller ones which have sold in greater numbers in recent years.



Will an electric van work for me?

To ensure your vans can be switched to electric, you will need to know how far they are driven and where and for how long they are parked when stationary. Some vans can be limited in terms of payload capacity so understanding the maximum weight to be carried is also important.

Mileage

As a large part of the savings to be made is based on the lower cost of electricity compared to diesel or petrol, then the higher the daily mileage covered, the quicker any purchase or lease cost premium will be recovered. However, where daily mileage exceeds an electric van's maximum single charge range, time will need to be available during the working day for recharging. It is possible that a van covering a very low daily mileage may seem to be a good candidate for an electric van, but it may be that the cost premium will not be recovered over the period the van is used by your business.

To identify vans which should work well as electric vehicles, a mileage log, mileage

logging phone app or, if fitted, telematics should be used to understand the daily distance driven over a month, or greater period if journeys change from month to month. The actual mileage driven can then be compared with the driving range of the van you have in mind, taking into account that the driver will want some range in reserve at the end of the day to cover unplanned diversions, for instance.

Driving cycle

If during the working day the vehicle is parked either between delivery runs or while the driver is working on-site, there may be opportunities to top up the battery. This will depend on the location of the downtime and may rely on public chargepoints, of which there are **over 20,000 at more than 13,000 locations**. Regular opportunities to charge will significantly increase the achievable daily range or allow for the purchase of a vehicle with a smaller battery, which will be at a lower cost.

Renault Kangoo Z.E. and Renault Master Z.E., Groupe Renault
Feb 2018, Jean-Brice LEMAL / Planimonteur





How do I charge an electric van?

No more than two cables are needed to charge an electric van; one that plugs into a 3-pin domestic socket and one with a 7-pin Type 2 connector to fit public chargepoints, will cover all situations. We strongly advise that 3-pin sockets are not used for all charging; a home or work chargepoint will be much faster and safer. If the van is capable of rapid charging, the cable and connector to fit your vehicle will be attached to the rapid charger, nearly all of which have both of the DC connectors used for rapid charging by vehicle manufactures.

Different van models will have different charging options available. The vehicle will always determine the maximum rate of charge and this depends on the rating of the charger on the vehicle. For example, a Nissan eNV200 connected to a 7 or 22kW AC chargepoint will only charge at a maximum 6.6kW determined by its on-board charger. Some of the recently announced new vans have 11kW charging, either as standard equipment or an option.

Many vans can be rapid charged at up to 50kW and some have an option of 100kW charging. The relevant vehicle brochures will state the maximum charging rates and time required to recharge at different power rated chargepoints.

The total time taken to recharge therefore depends on the chargepoint output, the vehicle charging specification and battery (kWh rating). Larger batteries take longer to charge from empty at any particular charging rate. A larger battery allows a greater driving range, but for any particular journey a van with a 33kWh battery will only use the same energy to drive 50 miles as one with a 50kWh battery. The charging time to replenish the mileage will be the same. The time needed to recharge is determined by the distance driven and the energy consumption of the vehicle (miles per kWh), not the size of the battery.

I need a refrigerated van, is electric an option for me?

It is possible to have a refrigerated electric van and some van conversion specialists are also fitting other “energy consuming” items such as light beacons, handwashers and tail lifts to customer vehicles.

The power drawn by these modifications may reduce driving range. For example, the use of a refrigeration unit may reduce a vehicle’s range by 10%, depending on how often the doors are opened on a delivery run and when power for the refrigeration unit is taken from the vehicle’s drive battery. However, an auxiliary battery can be fitted and will power the fridge unit independently of the van’s drive battery. Suppliers will advise on the best solution for your needs. Fitting curtains and remembering to close the loading doors when making deliveries will minimise battery consumption.

Is payload capacity lower with an electric van?

The smaller and medium sized electric vans usually have a similar payload capacity to a diesel or petrol van equivalent. Many larger vans up to 3.5 tonnes have a lower payload

than their diesel or petrol equivalents due to the weight of the battery. Some van manufacturers offer a choice of battery sizes on their larger vans, so it may be possible to increase payload by compromising on driving range (if it is not required).

Some large electric van manufacturers are taking advantage of special legislation to allow electric vans up to 4.25 tonnes to be operated with the same driving licence and terms as 3.5 tonne vans, providing drivers undertake a five hour training session. This restores any payload lost compared to a diesel van when large batteries are fitted.

Can I tow with an electric van?

Electric vans have a lot of torque from low speeds, which is an excellent characteristic for towing. However, many of the smaller vans that have been on the market a long time have zero or very low towing capacities. Some of the latest vans have towing capacities of 1 tonne or more. It is important to check the specification of the van you are considering to make sure it is suitable for your needs and take account of any reduction in range that towing a trailer may cause.



Nissan e-NV200 with fridge conversion, courtesy of CoolVan Refrigerated Vehicles

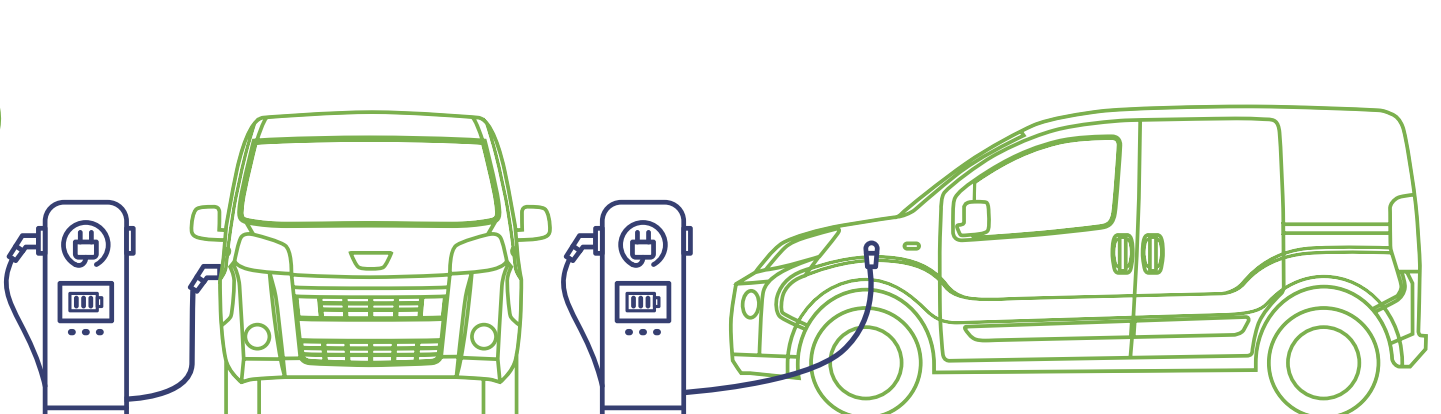
Are there any other benefits?

Financial benefits

- A plug-in van grant of 35% of the purchase price of the vehicle up to £3,000 for small vans less than 2.5 tonnes gross vehicle weight (GVW) or up to £6,000 for large vans 2.5–3.5 tonnes GVW is available. This will be taken off the price of the van by the supplying dealer or built into the lease rental by the leasing provider
- The Electric Vehicle Homecharge Scheme covers up to 75% (capped at £350 including VAT) for the supply and fitting of a home chargepoint
- The Workplace Charging Scheme covers 75% of the purchase and installation costs, up to a maximum of £350 for each chargepoint socket, up to a maximum of 40 sockets across all sites for each applicant
- Electric vans currently qualify for a 100% discount for the London Congestion Charge and are not charged for access into the ULEZ
- Electric vans will not be charged for access into the Clean Air Zones (CAZ) in Birmingham and Bath when they are operational during 2021
- Some local authorities provide free or discounted parking for electric vehicles and resident permit discounts are offered in some authorities

Operational benefits

- Electric vans are relaxing and easy to drive with no gear changing required
- The vans are quiet in operation, which is less stressful for the driver, and if your work involves driving at night, then an electric van is ideal for quiet night-time operation
- You are helping to reduce CO2 emissions by driving an electric van and with no tailpipe there are no emissions which contribute to poor air quality. You are making the environment a healthier place for everyone, including your drivers. Every year you own an electric van the emissions reduce because the electricity from the grid becomes cleaner as more and more renewables are used.



I'm interested, what do I do next?

Your new or used van specialist will be pleased to help you choose the best vehicle for your needs, as will your lease provider.



energy saving trust

Energy Saving Trust is an independent organisation dedicated to promoting energy efficiency, low carbon transport and sustainable energy use. We aim to address the climate emergency and deliver the wider benefits of clean energy as we transition to net zero.

We empower householders to make better choices, deliver transformative programmes for governments and support businesses with strategy, research and assurance – enabling everyone to play their part in building a sustainable future.

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