

# The Low Emission Van Guide

Sustainable Transport for Future Business – Today



**LowC<sup>VP</sup>**  
Low Carbon Vehicle Partnership

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**LowCVP: A unique public-private membership organisation;  
building evidence and creating robust policies and innovation in the UK**



# Introduction to the Low Emission Van Guide

A low emission van operates using efficient technology or alternative fuels rather than fossil diesel. Low emission vans can help lower the running cost and environmental impact of a fleet.

Aimed at small to medium sized fleet operators using vans up to 3.5t, the guide is designed to assist **purchasing decisions** by providing **useful information** on different low emission fuels and technologies:

- 1) Sets out the business, environmental and operational case for using low emission vans.
- 2) Gives van operators the knowledge and resources required to assess which vans are right for them.
- 3) Provides case studies showing the cost savings achievable from different types of low emission fuels and technologies.



*The LEV Guide was produced in partnership with CENEX  
Industry overview from FTA, ARVAL, BVRLA, Commercial  
Group and SMMT*

# Why Choose a Low Emission Van?

## Better for Local Air Quality and Health

- Vans contribute to poor air quality – estimated 36,000 premature deaths per year in the UK.
- Stricter control of **vehicle emissions** in cities and creation of Clean Air Zones – emphasis on Euro 6 and ultimately zero emission capability.

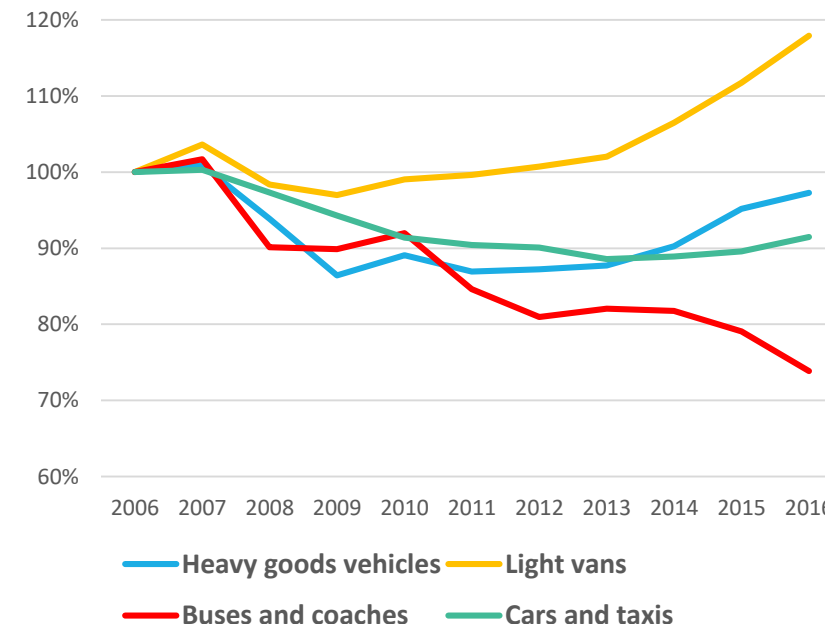
## Better for Carbon Management

- LEVs help **lower overall UK CO<sub>2</sub> emissions**, at a time when van CO<sub>2</sub> levels are rising.

## Better for Business

- Reducing the emissions from a van often means using less fuel resulting in **financial savings**.
- Improve an organisation's **environmental image** and **CSR**.
- Public sector is setting vehicle procurement standards for contracted services – **competitive advantage**.
- Some cities/Local Authorities offer financial **incentives** for low emission vehicles

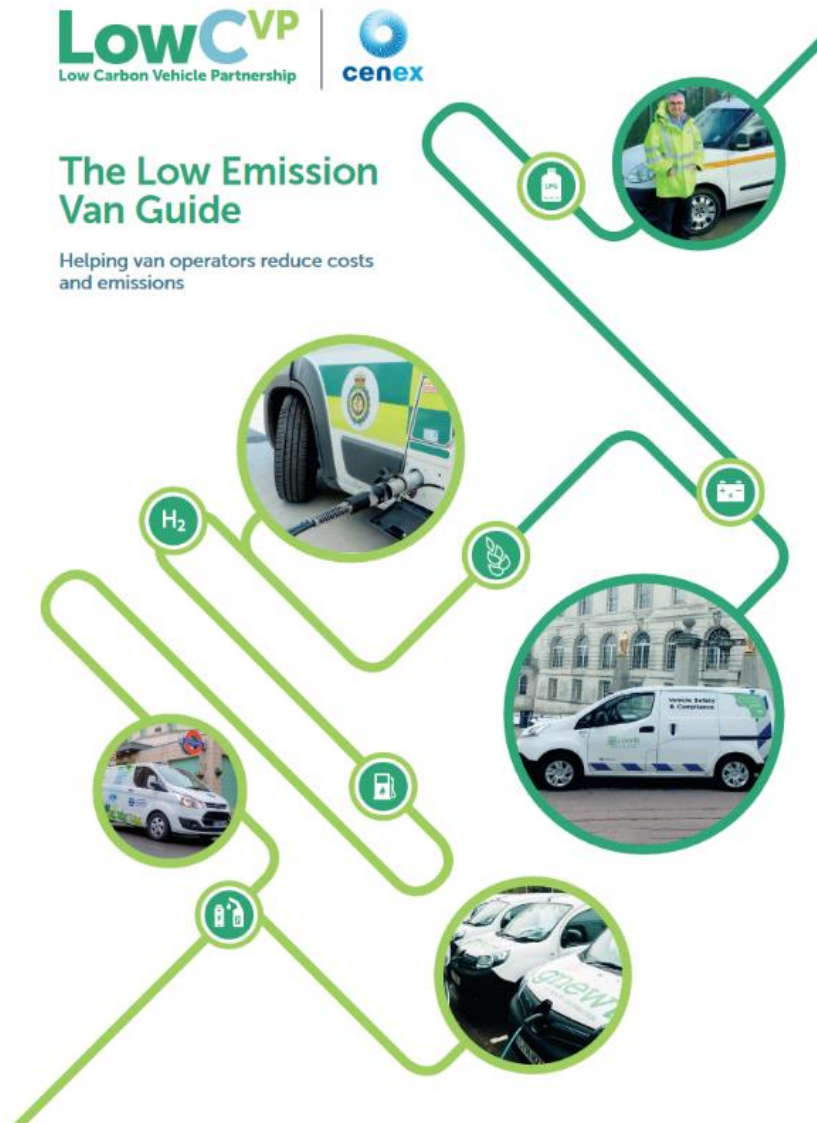
Growth in Transport GHG Emissions  
over 10 years



Source: DfT ENV0201



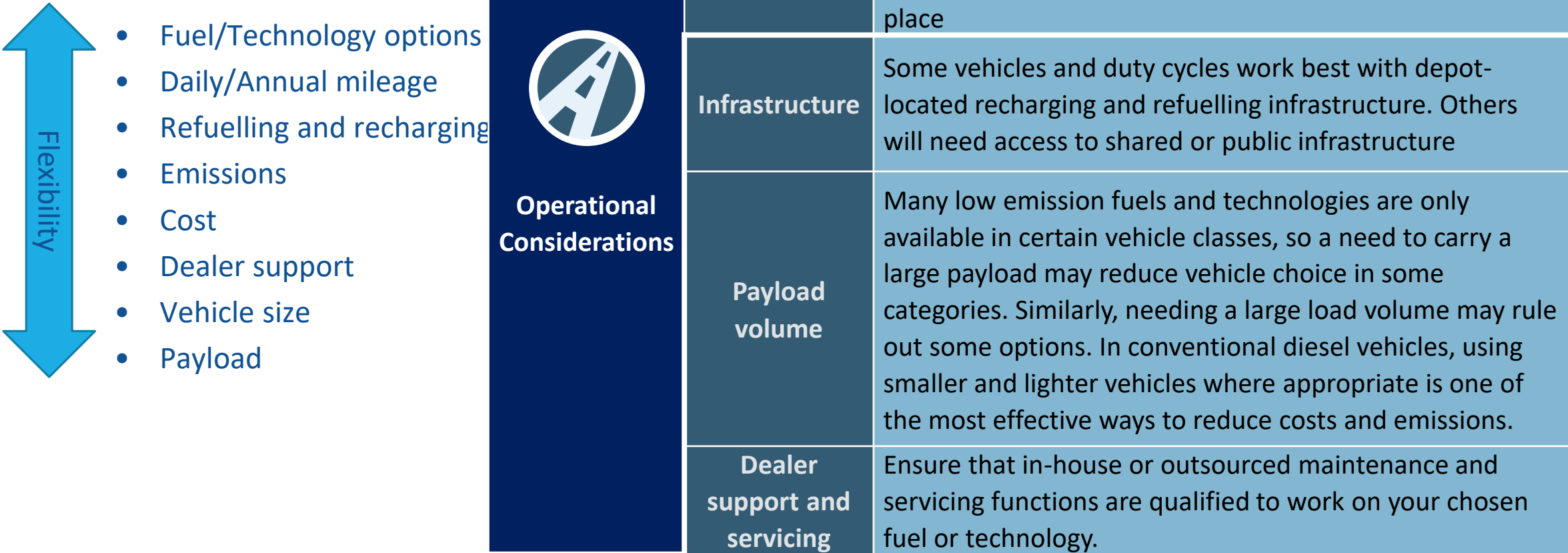
# Low Emission Van Guide - Contents



- Why choose a Low Emission Van?
- What factors to consider?
- What grants and incentives are available?
- Topic sheets for seven technologies and fuels covering:
  - operational, environmental, financial case studies
- Best Practice – Making existing van operations more efficient
- What to do next? Van cost and comparison tool
- Further information

# What To Consider When Choosing Low Emission Vans?


For a fleet of vans, it may be possible to specify vehicles differently in order to arrive at a mix of van types to deliver the variety of duties required. This allows low emission van to play a role in your fleet which is best suited to their capabilities.





# Evaluating the Cost of Low Emission Vans

- Currently, most low emission vans cost more upfront but deliver monetary savings in the long run due to their lower running costs. Understanding the whole life costs of a low emission van helps identify which are the best options for different fleet application.
- The LEVan Guide provides outline of the whole life costs and financial savings associated with different low emission vans fuels and technologies, and highlights a range of available incentives:

|   |  |   |
|---|--|---|
| <br><b>Grants and Incentives</b> | <b>OLEV Plug-in Van Grant</b>                            | <b>20% off the purchase price, up to a maximum of £8,000.</b>   |
|   | <b>EV charging points schemes (home &amp; workplace)</b> | <b>75% towards the cost of charging infrastructure (up to £500).</b>  |
|   | <b>Road Tax</b>  | <b>Up to £262 reduction (VED = £0 on zero tailpipe emission vehicles).</b>  |
|   | <b>Fuel Duty</b>   | <b>There is reduced duty on LPG, natural gas and biomethane. Electricity and Hydrogen are exempt.</b>   |
|   | <b>London Congestion &amp; ULEZ Charges</b>              | <b>100% discount for vans emitting less than 75g CO<sub>2</sub>/km that meet Euro 6 standards (diesel). However, as of Oct 2021 only pure electric vehicles will be eligible for 100% discount.</b> |
|   | <b>Van Benefit Charges</b>                               | <b>Reduced charge for using company van for personal use if using a battery electric van.</b>   |

# Low Emission Van Guide - Technologies and Fuels



**Battery Electric (BEV)**



**Plug-in Hybrid Electric Vehicle (PHEV)**



**Compressed Natural Gas/  
Biomethane**



**Liquefied Petroleum Gas**



**Biodiesel**



The right low emission van for you is the one that saves you **money**, reduces your **environmental impact** and does not restrict your **operations**



# Example – Battery Electric Vans



Technology  
introduction



Fit for  
purpose?



Environmental  
Performance?



Market Status?

### Technology overview

A battery electric vehicle (BEV) stores energy in a battery (usually lithium-ion) and delivers its power to the wheels through an electric motor. Braking energy is captured by the electric motor and stored as electrical energy in the battery.

#### Vehicle availability

Battery electric vans are a high maturity technology, with products available from a range of major manufacturers (OEMs). Examples of vehicles are:

- **Small vans:** Porter chassis, panel and tipper light duty vehicles
- **Medium vans:** Nissan eNV200, Citroen Berlingo Electric, Peugeot Partner Electric, Renault Kangoo Z.E. Additional products such as the Mercedes-Benz e-Vito are expected to be on the market soon.
- **Large vans:** LDV EV80, Iveco Daily, BD Auto, Renault Master Z.E. More vehicles are expected to be on the market soon including Volkswagen e-Crafter and Mercedes-Benz eSprinter.

#### Deployment

- **Ideal operation:** BEVs are best suited to city and urban environments. Vehicles are typically returned to their base or depot to recharge, although some organisations allow employees to take them home to recharge. The growing number of fast and rapid public charging stations allows top-up charging during the day. Links to charging station maps are provided in the 'What to do next?' section.
- **Example fleet types:** City courier, light delivery, service engineer, public sector.

#### Operational

**Range:**  
BEVs have a typical real-world range of up to 150 miles on a single charge, depending on battery capacity. Aggressive driving, carrying heavy payloads, and use of heating and air conditioning will all reduce range.

**BEV range testing**  
Battery electric vans were tested by TfL's LoCITY programme ([www.locity.org.uk](http://www.locity.org.uk)) and the results are expected to be published soon. A selection of electric vans was tested over a range of representative driving cycles and conditions to better understand range impacts. A summary of results from individual tests is as follows:

*Typically, vehicles covered 25% fewer miles on higher speed driving cycles, compared to a city centre environment. This is consistent with the new WLTP based testing regime.*

*An aggressive driving style reduced city centre range by up to 50%, compared to a sedate driving style.*

*Running a van with a full payload may decrease the range by up to 30% compared to a lightly loaded van.*

*Heavy use of cabin heating in cold ambient temperatures can reduce range by up to 25% in city driving.*

*The LoCITY work will help buyers of new electric vans and they should also look for the new WLTP data to help assess the range performance.*

**Payload:**  
The increased GVW allowance on the B category driving licence from 3.5 tonnes to 4.25 tonnes for alternatively fuelled light commercial vehicles may compensate for any lost payload due to the additional weight of the batteries.

**Load volume:**  
Load volume is the same as for an equivalent diesel model.

**Recharging:**  
There are over 11,000 public chargepoint devices (20,000 connectors) in the UK at around 7,000 locations<sup>18</sup>, although not all will be suitable for vans due to space and access constraints. BEVs typically take up to 10 hours to recharge from a slow chargepoint, but some models can take an 80% charge in 30 minutes from a rapid chargepoint.

#### Financial

**Upfront cost:**  
Cost premiums are as little as £2,000 for small panel vans (including the OLEV Plug-in Van Grant), although this rises significantly for larger vehicles.

**Running cost:**  
Electricity is substantially cheaper than diesel on a pence per mile basis. BEVs have fewer moving parts and reduced brake wear due to regenerative braking, so maintenance costs are usually lower as well.

**Whole life costs:**  
Savings can often be achieved at moderate mileages and vehicle lifecycles. Additional incentives such as a 100% discount on London's Congestion Charge can help strengthen the business case.

#### Environmental

**Pollutant emissions:**  
BEVs produce zero tailpipe emissions, making them ideal for improving air quality in cities.

**CO<sub>2</sub> emissions:**  
They deliver CO<sub>2</sub> savings of 50% to 70% on a WTW basis<sup>21</sup>, which accounts for the carbon intensity of electricity production. This benefit will increase as the electricity grid decarbonizes.

**Noise:**  
BEVs are quiet in operation, particularly at low speeds, helping reduce noise in urban environments. Legislation requires Acoustic Vehicle Alerting Systems to be fitted to all new pure electric and plug-in hybrid vehicles to improve the safety of vulnerable road users.

<sup>18</sup> <https://www.zap-map.com>, <sup>21</sup> Derived from analysis using the LoCITY Fleet Advice Tool of vehicles under different duty cycle conditions

# Topic Sheet Example - Battery Electric Van

| Whole Life Cost Example <span>£</span>              |   |                                  |
|---|---|----------------------------------|
|   | Nissan NV200 1.5dCi Acenta 110hp (Diesel) | Nissan e-NV200 Acenta (Electric) |
| Vehicle cost  | £16,960                                   | £27,219                          |
| Plug-in van grant discount                          |   | £5,444                           |
| Fuel costs  | £7,686                                    | £2,859                           |
| Road tax  | £1,250                                    | £0                               |
| Maintenance costs                                   | £2,730                                    | £1,913                           |
| Resale value  | £3,078                                    | £4,697                           |
| Life time cost                                      | £25,549                                   | £21,860                          |
| Cost per mile                                       | £0.341                                    | £0.291                           |
| Whole life cost savings                             |   | £3,688                           |
| If used in the London Congestion Zone (5 days/week) |   |                                  |
| Life time cost                                      | £41,799                                   | £21,860                          |
| Whole life cost savings                             |   | £19,938                          |

**Vehicle:**  
2.2t Small panel van

**Annual mileage:**  
15,000 miles (60 miles per week)

**Ownership period:**  
5 years

**Emissions:**  
Tailpipe CO<sub>2</sub> = 100% saving  
Well-to-wheel CO<sub>2</sub> = 64% saving

*The electric van grant covers all work to convert the van into the electric version.*

Compare with baseline model to get the idea of costs over the whole lifetime of the vehicle.

### Case study: Leeds City Council


The Leeds City Council (LCC) van fleet supports departments including property maintenance, highway maintenance, greening, parks, and waste management. LCC has an ambition for all vehicles to operate using an alternative fuel by 2025. It has deployed more than 80 Nissan eNV200 vans and has a further 12 EVs on order.

The Nissan eNV200 was selected as it is a proven product in the market and performed well during trials. The use of EVs has been so successful that LCC now views them as the default option, with diesel vehicles to be provided only where it can be shown that an EV is not suitable. LCC needs to procure an additional 300 vans and intends to acquire EVs in all possible cases.

The council has upskilled its 30 engineers to enable them to work on EVs. Fleet engineers have completed level one City and Guilds training for EVs, which means they can work on the vehicles safely and carry out servicing and maintenance. LCC aims to offer City and Guilds levels two and three so that by the time the warranties expire, they can carry out whatever work is required.

LCC's biggest challenge is ensuring there are enough chargepoints to support these vehicles. It undertook an innovative trial in which drivers took vans home and plugged them in to a domestic chargepoint, with costs paid by the council. Based on the success of this trial, LCC is now poised to roll this out across the fleet supporting the fleet strategy.

LCC aims to act as a flagship authority for deploying EVs and offering advice and guidance to public and private sector organisations.



**Next steps** Go to the 'What to do next?' section to find links to the LoCITY whole life cost tool, maps of public charging station locations and other resources.

Followed by a case study of how an other fleet got on with implementing this tech

# Best Practice – Making Existing Van Operations More Effective

|   |                            |   |
|---|----------------------------|---|
| <b>Drive and<br/>manage clean,<br/>vehicles<br/>efficiently</b> | <b>Vehicle Maintenance</b> | Well maintained vehicles run efficiently. For example, a 20% drop in tyre pressure can increase fuel consumption by 2%. A blocked diesel particulate filter can increase pollutant emissions.   |
|   | <b>Fleet Management</b>    | Measuring your fleet's fuel consumption is the first step to driving reductions. Consider appointing a "Fuel Champion" to monitor individual vehicle MPG and implement fuel efficiency improvements.  |
|   | <b>Fleet benchmarking</b>  | Getting an accurate baseline of your fleet's performance, and then tracking improvements, is critical to reducing costs and emissions.  |
|   | <b>Driver Behaviour</b>    | <p>Provide in-cab driver training, which can improve MPG on the day of training by around 15%. This should be supported by careful monitoring of fuel and mileage data, with league tables and incentives to encourage efficient driving.</p> <p>Driver aids that provide real-time feedback to the driver, delivering efficiency improvements up to 20%.</p> |

- Web-based version of the LEV Guide, further information on low emission van models on the market, locations for EV charging, Government funding

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## Low Emission Van Hub

A low emission van is one that operates using efficient technology or alternative fuels rather than diesel. Low emission vans can help lower the running cost and environmental impact of your fleet. Click on the links below to [download the guide](#) and estimate savings using the VC<sup>3</sup>.

**VC<sup>3</sup>**  
Van Guide  
Van Cost & Carbon Calculator

Find out about Low Emission Vans

- Battery
- Plug-in Hybrid
- Biodiesel
- Natural Gas / Biomethane
- Liquefied Petroleum Gas
- Hydrogen

This website and the accompanying Low Emission Van Guide and Van Cost and Carbon Calculator serve as valuable resources to help you choose the most suitable low emission van for the type of work you do. The information provided is aimed at operators of small to medium sized fleets of commercial vehicles, covering vans up to 3.5t GVW (gross vehicle weight) i.e. a Ford Transit sized van.

The VC<sup>3</sup> Van Cost and Carbon Calculator allows you to enter your own data and compare different low emission fuels and technologies suitable for your fleet showing you what cost and CO<sub>2</sub> emissions savings can be achieved.

How these resources can help you:

- Shows the business, environmental and operational case for using low emission vans.
- Gives van operators the knowledge and resource required to assess which vans are right for them.
- Provides case studies showing the cost savings achievable from the different types of low emission fuels and technologies.
- Provides useful information on the low emission van market, government policy, infrastructure and where you can obtain more detailed assistance for assessing your fleet.

## In this section

Low Emission Bus Hub

Low Emission Van Hub

- › Why choose a Low Emission Van?
- › What to consider when choosing a LEV
- › Technologies and Fuels
  - › Battery Electric
  - › Incentives
  - › Fleet Operator Information
  - › BEV Market
  - › EV Charging
  - › Factors to consider

## Battery Electric

Battery electric vans operate entirely on electricity using an electric motor instead of a diesel or petrol engine. A high capacity battery (usually lithium ion technology, the same as we have in our phones and laptops) powers the vans. Battery electric vans are classed as ultra-low emission vehicles.

### Fit for purpose

- › Electric vans are suitable for regular and low mileages due to their limited driving range between recharging.
- › Electric vans can offer up to an 106 mile range in the real-world, which reduces if driven aggressively or with high heater use in winter. Range can be increased by using specialist routing software to optimise daily journeys for EV use.
- › The daily range can be extended by topping up the battery during the day.
- › Fleets would normally drive back to base to recharge. The growing number of fast and rapid public

[LowCVP.org.uk/LEV](https://LowCVP.org.uk/LEV)



# Van and Carbon Cost Calculator

- The Van and Carbon Cost Calculator identifies the low carbon technology or fuel that is most suited to a fleet operation and shows money and emissions savings.
- Users enter information relating to their operation
  - The size of the van ( 2.2t or 3.5t GVW)
  - Define a typical driving habit
  - Annual Mileage.
  - Vehicle ownership duration.
  - Fuel costs.

**Low Emission Van Hub:**  
**[LowCVP.org.uk/LEV](https://LowCVP.org.uk/LEV)**

A screenshot of the Van and Carbon Cost Calculator web application. The interface is blue and white. At the top, it says 'Select Vehicle'. Below this, there are two options: 'Small Van' with a white van icon and 'Large Van' with a dark blue van icon. The 'Small Van' option is selected, indicated by a white border. Below the vehicle selection, it says 'Select your driving habits'. There is a dropdown menu currently showing 'Mainly suburban driving'. Below this, it says 'Or choose your own' and 'All driveways must add up to 100%'. There are three sliders for different driving environments: 'Urban / Inner-City' (with a building icon), 'Rural / B-road' (with a house icon), and 'Motorway / A-road' (with a road icon). Each slider has a percentage scale from 0% to 100% in 10% increments. The 'Urban / Inner-City' slider is set to 40%, the 'Rural / B-road' slider is set to 40%, and the 'Motorway / A-road' slider is set to 20%.



# Van Cost and Carbon Calculator Results

Electric Small Van  
Saving:  
**£7,988 and 7.3 Tonnes CO<sub>2</sub>**

Electric Battery Lease Small Van  
Saving:  
**£5,172 and 7.3 Tonnes CO<sub>2</sub>**

CNG Small Van  
Saving:  
**£465 and 0.9 Tonnes CO<sub>2</sub>**

Diesel Start-Stop Small Van  
Saving:  
**£141 and 0.9 Tonnes CO<sub>2</sub>**

Biodiesel (B30) from UCO Small Van  
Saving:  
**£-445 and 6.4 Tonnes CO<sub>2</sub>**

BioCNG (15% biomethane) Small Van  
Saving:  
**£-853 and 3.4 Tonnes CO<sub>2</sub>**

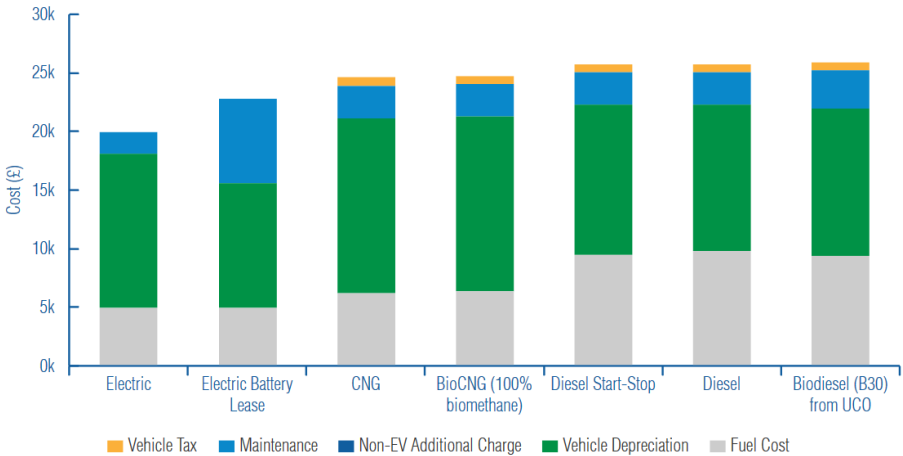
## Your selections

- Urban / Inner-City: 40%
- Rural / B-Road: 40%
- Motorway / A-Road: 20%
- Driving Style: Normal
- Annual Mileage: 15000 miles
- Years Ownership: 5 years

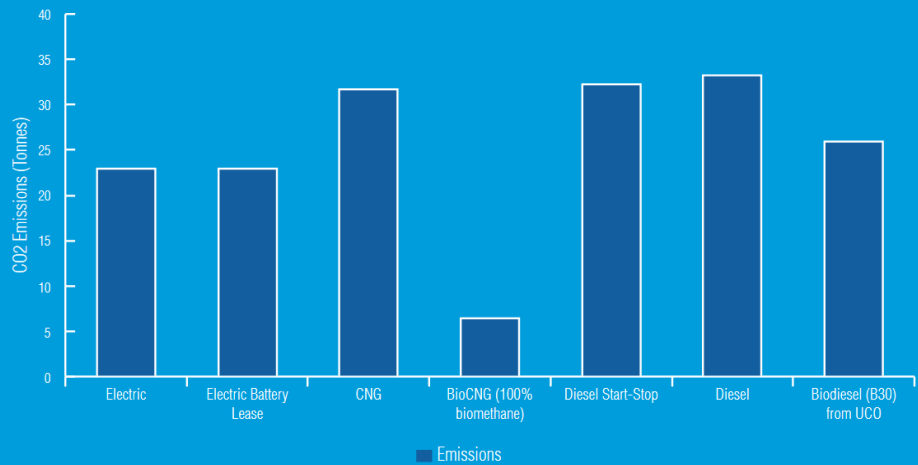
Diesel: £1.11 (£ / litre)  
Electricity: £0.10 (£ / kWh)  
Biodiesel (B30) from UCO: £1.07 (£ / litre)  
Natural Gas: £0.85 (£ / kg)  
BioCNG (15% biomethane): £1.00 (£ / kg)

All fuel prices are excluding VAT

Small Van Whole Life Cost



Well-To-Wheel CO<sub>2</sub> Emissions



# Any questions?

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**[LowCVP.org.uk/lev](http://LowCVP.org.uk/lev)**



And it's not just vans.

We have produced several guides to help inform businesses of their options

Interested in joining the Partnership?

Get in touch.

**[LowCVP.org.uk/Join](http://LowCVP.org.uk/Join)**

# Coming Soon



Just announced on Monday, LEVC's new light commercial van

*"Targeting those who travel around 100 miles a day, LEVC's LCV will offer 'distribution to door' – not just last mile – providing the link between out of town depots and city centres, capable of collecting goods outside of a major city in range extender mode, before switching to EV mode in an Ultra-Low Emissions Zone."*

# LowCVP Activity & Benefits of Membership



## **Access to relevant resources, publications and reports**

*Low Emission Bus Guide, Transport Energy Task Force, Good Practice Guides, Transport and Infrastructure Roadmaps, E10 Deployment Recommendations...*



## **Build and develop your professional network within the low carbon community**

*Innovation, Buses, Passenger Cars, Fuels and Commercial Vehicles working groups.*



## **Participate in high profile members-only events and conferences**

*Parliamentary Reception, Annual Conference, Low Carbon Champion Awards.*



## **Keep up-to-date with the latest industry news and government announcements**

*Monthly newsletter, press releases, industry insights, Twitter, YouTube and LinkedIn.*

Passenger Car  
Working Group



Innovation Working  
Group



Fuels Working  
Group



Bus Working  
Group



Commercial Vehicle  
Interest Group

