



Department  
for Transport

## The Last Mile

A Call for Evidence on the opportunities  
available to deliver goods more  
sustainably

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# 1. Foreword



In recent years the Department for Transport has taken steps towards encouraging sustainable last mile delivery, including through the Road to Zero strategy, the Clean Air Fund, the creation of one of the most comprehensive global programmes of support for ultra low emission vehicles and through the £246 million Faraday Battery Challenge.

Now we are seeking your thoughts, experience, evidence and expertise on how we can harness new opportunities for greener delivery in the commercial and residential parts of our cities and towns.

Last mile deliveries have been transformed in recent years by the growth of home deliveries driven by the boom in internet shopping. This has led to a marked rise in van traffic. According to the latest road traffic estimates van traffic increased by 4.7% to 49.5 billion vehicle miles in 2016 alone.<sup>1</sup> Most of these vans are diesels. Thus this shift has had immediate economic benefits for consumers, but it has also led to congestion, poor air quality and other environmental problems.

However, we believe new electrical modes of delivery, including e-cargo bikes, micro vehicles and e-vans, can play a key role in the last mile delivery of goods.

The Government has supported using e-cargo bikes through the 2015 Shared Electrically Assisted Pedal Cycle (EAPC) Programme and the 2017 Innovation Challenge Fund. This sits alongside the Government's emphasis on the huge benefits of cycling, shaped through the first-ever Cycling and Walking Investment Strategy, which identifies £1.2 billion which may be invested in cycling and walking from 2016-2021.

For their part, e-vans have been supported via an Office of Low Emission Vehicle (OLEV) grant which will pay for 20% of the purchase price for an eligible van, up to a maximum of £8,000.

In this Last Mile Call for Evidence, we are particularly interested to explore:

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<sup>1</sup> Department for Transport, Road Traffic Estimates: Great Britain 2016

- how electrically powered e-vans, micro vehicles and e-cargo bikes may be able to provide more efficient, lower impact and greener cargo transport in comparison to current light commercial vehicles;
- what the scale is of potential environmental and other benefits;
- what barriers exist to sustainable last mile delivery, and how they can be removed;
- what incentives might be appropriate to encourage a large-scale shift to these clean, last-mile delivery options and;
- what scope exists for other measures to improve logistical efficiency (e.g. via urban consolidation centres/hubs).

Any contributions addressing these issues will be most welcome.

The purpose of this review is thus for us to learn from as wide a range of stakeholders as possible as to the scale of the opportunity. We want the UK to explore all modes of e-cargo and emerging transport technologies for last mile deliveries, so we can help create beautiful, liveable, green and connected towns and cities.

The results of this Call for Evidence will in turn form part of the Government's [Future of Mobility Grand Challenge](#).

Thank you very much in advance for taking part. Over to you!

**Jesse Norman**  
**Parliamentary Under Secretary of State for the Department for Transport**

## 2. Introduction

### The Road to Zero

- 2.1 As set out in its recently published Road to Zero strategy, the Government is committed to the UK's transition to road vehicles with zero tailpipe emissions. It has launched an Industrial Strategy mission to put the UK at the forefront of the design and manufacturing of zero emission vehicles, in a world in which all new cars and vans should be effectively zero emission by 2040. This Call for Evidence seeks ideas and evidence from those with an interest in the movement and delivery of goods for the last mile of their journey, which often takes place using unsustainable forms of transport and in areas where infrastructure and buildings are not designed for the instant services offered by the modern digital world.

### What Will Happen Next

- 2.2 This Call for Evidence seeks ideas and evidence from those with an interest in the movement and delivery of goods for the last mile of their journey. It is intended to be a catalyst for policy, resource and technological innovation.
- 2.3 Analysis of responses will inform the Department for Transport of what may be possible, the limitations of possible solutions and how we can move forward.

### How to Respond

- 2.4 The consultation period will run between 30 July 2018 and 10 September 2018. You are invited to respond to the consultation via the online form. Alternatively, you may send your response by email to: [lastmilecfe@dft.gov.uk](mailto:lastmilecfe@dft.gov.uk). Please ensure that your response reaches us before the closing date. If you would like further copies of this document you can request copies by e-mailing [lastmilecfe@dft.gov.uk](mailto:lastmilecfe@dft.gov.uk)
- 2.5 A summary of responses, including the next steps, will be published within three months of the close of the consultation. Paper copies will be available on request. The consultation is being conducted in line with the Government's key consultation principles. Further information is available at: <https://www.gov.uk/government/publications/consultation-principles-guidance>.

If you have any comments about the consultation process please contact the Consultation Co-ordinator at [consultation@dft.gsi.gov.uk](mailto:consultation@dft.gsi.gov.uk). Please do not send consultation responses to this address.

## Freedom of Information

- 2.6 Information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the Freedom of Information Act 2000 (FOIA) or the Environmental Information Regulations 2004.
- 2.7 If you want information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory code of practice with which public authorities must comply and which deals, amongst other things, with obligations of confidentiality.
- 2.8 In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.
- 2.9 The Department will process your personal data in accordance with relevant data protection law.

## 3. Opportunities and Challenges

- 3.1 This call for evidence recognises that there are significant potential opportunities to protect the environment, support business and improve road safety through the increased use of e-cargo bikes, micro-vehicles and e-vans in last mile deliveries.
- 3.2 Opportunities to protect the environment includes:
  - Improved air quality;
  - Reduced greenhouse gas emissions;
  - Reduced environmental noise.
- 3.3 Opportunities for business include:
  - Helping businesses of all sizes to mitigate the impact of deliveries in Clean Air Zones;
  - Reduced congestion and improved productivity;
  - Reduced costs for transporting freight for operators and customers;
  - Growing local economies and UK industry;
  - Supporting UK innovation as a hub for innovation (e.g. e-HGVs, e-cargo bikes/vans) or services (consolidation centres/hubs).
- 3.4 E-cargo bikes, micro-vehicles and e-vans may also provide opportunities to improve the safety of people in delivery areas by reducing the number of large vehicles and the obstructions to other road users caused by large delivery vehicles.

## Scope

- 3.5 This call for evidence is looking at infrastructure as well as vehicles, from the point of loading goods in a local area to the final destination. This includes homes, businesses and other local collection points (see figure 3.1 below) and the electric solutions highlighted in figure 3.2. The transportation of goods via drones and autonomous road vehicles lies outside the scope of this review.

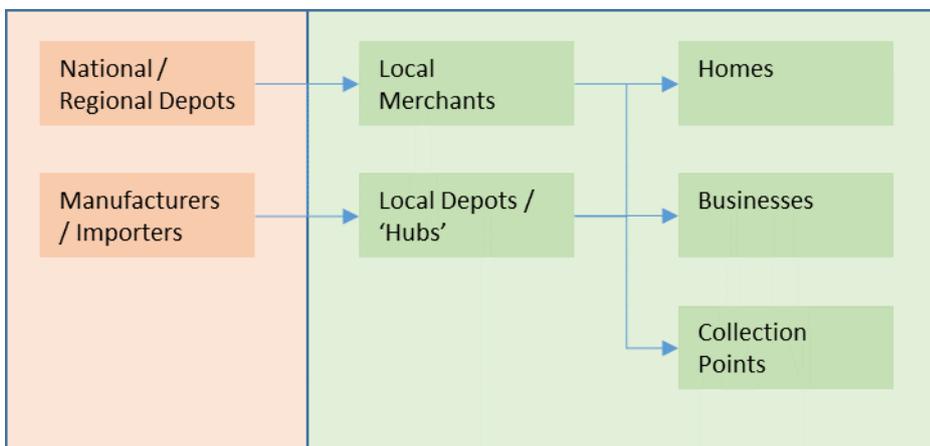


Figure 3.1: Scope of call for evidence (in green)

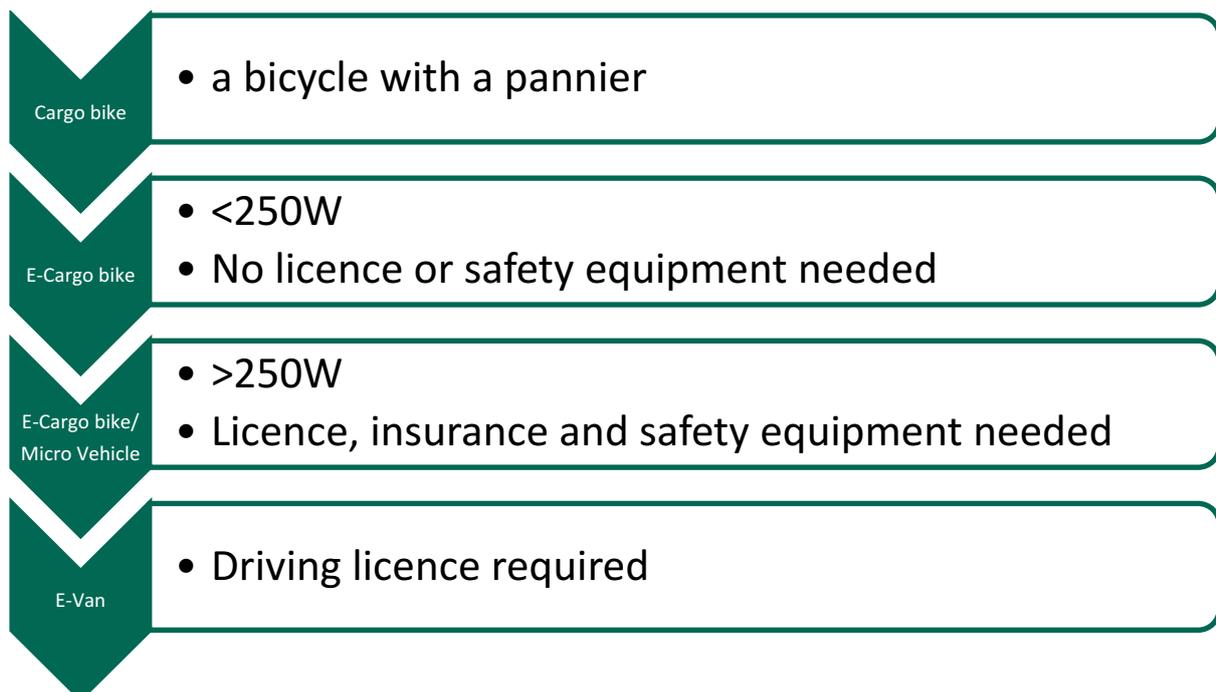


Figure 3.2: Range of electric solutions from cargo bike to e-vans

## Considerations

- 3.6 There are a number of considerations concerning the scale and nature of last mile deliveries and the potential role of e-cargo bikes, micro vehicles and e-vans. These include:
- Current reliance on conventionally-fuelled vehicles: there are an estimated 300,000 HGVs and over 4,000,000 vans on our roads;
  - Range of loads: commodities are extremely varied and can include anything from medicines and food, to building materials;
  - Varied economics: there are many smaller operators where efficiencies of scale are limited;
  - Long tail of transportation industry: over 90% of licensed operators have fewer than 61 vehicles.

## Barriers to Sustainable Last Mile Delivery

- 3.7 There appear to be a number of potential barriers to the use of e-bikes and e-vans in last mile deliveries, highlighted below.
- 3.8 **Commercial viability** – There is a potential trade-off between cheaper vehicles (e.g. the purchase cost of an e-cargo bike is the fraction of that for a delivery van), and higher labour costs (e.g. more e-cargo bike delivery cyclists would be required than van drivers). There is also a trade-off between the higher purchase costs of e-vans against their lower running costs compared to diesel vans.
- 3.9 **Vehicle/bike limitations** – Electric forms of delivery have capacity limitations and are not suitable for delivery of some types of specialised loads. E-cargo bikes can carry up to approximately 100-125kg.
- 3.10 **Insurance & licensing** – There is some complexity over insurance and licensing requirements for different e-bikes, micro vehicles and e-vans.
- 3.11 **Training & operations** – More sustainable forms of last mile delivery require investment in rider / driver training and different operational procedures and equipment (e.g. the establishment of local partnerships for delivery hubs).
- 3.12 **Current infrastructure** – Urban infrastructure to date has not been designed for use with electric solutions and would require major changes to the way goods are currently distributed, which is typically from large, out-of-town warehouses. There are opportunities to improve the logistical efficiency of urban road freight and last mile deliveries through urban consolidation centres, which could lead to financial savings for operators, congestion benefits and emission reductions.

### **Consultation questions on opportunities and challenges:**

- 1.** What is the potential scale of the opportunity here? How big a role could e-cargo bikes, micro-vehicles and e-vans play in reducing congestion and pollution in our towns and cities?
- 2.** What would the environmental, economic and congestion benefits be? What impact would it have on jobs?
- 3.** What other barriers need to be considered? Can these be overcome without Government support or intervention?
- 4.** What can we learn from the experiences of other countries in this area?

## 4. Potential Solutions: E-Cargo Bikes

- 4.1 E-cargo bikes have huge potential for last mile delivery. They could reduce congestion and pollution, and operate from small hubs or local stores, reducing the need for fleets of delivery vans to drive into urban centres from out of town depots. Although they have less capacity than more conventional forms of delivery, they can make many deliveries in one day if supported by a local hub or micro-hub. This means that e-cargo bikes can provide economic benefits through the delivery of smaller but higher value freight in cities, such as electrical components and medical supplies. E-cargo bikes can also carry refrigerated goods in specifically designed courier boxes.
- 4.2 Whilst e-cargo bikes might not be the appropriate delivery mode for every location, they are of particular benefit in high-density urban areas as well as narrow streets in historical city centres. A network of national e-cargo bike hubs has the potential to support a wide range of clients and consumers. Hubs could assist national and local government in meeting carbon emissions reduction and pollution targets. As with vans, if companies choose to lease e-cargo bikes, the bikes can display and interchange the logos of user companies and carry advertising as well as providing local employment for riders.
- 4.3 There is a clear opportunity to expand the use of e-cargo bikes for freight delivery in urban centres, but so far there is a lack of structured research into the use of cargo cycles within city logistics. In principle, however, one study has suggested that e-cargo bikes could form 25% of city centre commercial traffic, whilst another has suggested that 51% of all motorised trips in European cities that involve transport of goods could be moved to bikes or cargo bikes.<sup>2</sup>
- 4.4 Due to their size e-cargo bikes potentially offer higher rates of space utilisation than traditional vans. Research on van use undertaken by Transport for London showed that in London vans are poorly utilised, with 66% being half full or less than half full, with an average load factor (as a proportion of its capacity, by either weight, volume, or both) of 38%.<sup>3</sup>

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<sup>2</sup> Schliwa, G., et al., Sustainable city logistics — Making cargo cycles viable for urban freight transport, Research in Transportation Business & Management (2015)

<sup>3</sup> RAC Foundation – The Implications of Internet Shopping Growth on the Van Fleet and Traffic Activity (2017)

## e-Cargobikes trials

In May 2018 *e-Cargobikes.com*, with funding from the Department for Transport's Innovation Challenge Fund, worked in tandem with the supermarket chain Sainsbury's to trial the use of electric cargo bikes to deliver groceries. The e-cargobikes used have a capacity of up to 480 litres and a payload of 125kg.

A fleet of five zero emission e-cargobikes was located at the Streatham Common store, delivering up to 100 orders a day to local customers who shopped via the retailer's groceries online website. The trial tested whether delivering groceries by electric cargo bike could be an efficient way of getting groceries to customers living in busy cities.



(image courtesy of e-cargobikes.com)

The findings from the trials exceeded expectations in its potential commercial viability and efficiency, which showed that 96.7% of orders could be fulfilled in a single e-cargo bike drop. It also demonstrated shorter delivery routes and journey times, due to the ability of e-cargobikes to make use of cycle and bus lanes and road speeds greater than delivery vans. Finally, it provided evidence of shorter 'doorstep' times, due to the ability of e-cargobikes to park at or closer to delivery locations.

## Consultation questions on e-cargo bikes:

5. What are the opportunities for e-cargobikes for delivery organisations, manufacturers and retailers; for companies which maintain and service bicycles and for other, e.g. training, organisations?
6. Further to Q3 (page 11), what form of financial support, if any, is required to make e-cargobikes commercially viable, or to increase speed of uptake? Should this take the form of e.g. positive incentives or tax relief?
7. If financial incentives for businesses were introduced to increase the uptake of e-cargobikes a clear definition of e-cargobikes would be required, including load capacity and weight (under 250W; see Figure 2 as per EAPC Regulations). How could this operate in practice?
8. As e-cargobikes are bicycles and do not need to be registered by the DVLA we would welcome your views regarding how purchases of e-bikes could be verified in order to qualify for financial support. How could this work in practice?
9. What legal changes – regulatory or deregulatory – would support the increased use of e-cargo bikes e.g. licensing, parking and insurance of bikes and riders? Should these be national or local? Would the current electrically assisted pedal cycle regulations be sufficient?
10. What emerging technologies can support the deployment of e-bikes e.g. batteries, regenerative energy storage, route mapping, electric trailers?
11. If e-cargo bikes are to be widely taken up, what infrastructure changes would be required to change the way goods are currently distributed, which is at present often from large, out-of-town warehouses e.g. changes to roads, parking, loading zones, hubs, cycle lane design?
12. E-cargo bikes, electric or solely pedal powered are larger/heavier than everyday bicycles. What level of training should riders have? Should riders be required to have e.g. additional training on efficient cycling and the safe use of bikes?
13. Should common standards be introduced for e-cargo and cargo bike design e.g. the design and standards of panniers and containers, volume limits and the refrigeration standards for carrying perishable goods?
14. Are there any other points you wish to raise?
15. [For e-cargobike operators] To assist DfT with evidence-gathering, how many e-cargobikes are there in your fleet, and what are the range of costs for their maintenance and upkeep?

## 5. Potential Solutions: Micro Vehicles

- 5.1 This category covers a broad range of light vehicles, including e-cargo bikes over 250W. These can be 3- or 4-wheeled, and can range from quadricycles to Powered Two-Wheelers (PTW) such as mopeds, through to milk floats. All are in scope of this review (see table below).

	<b>Electric moped/ three wheel moped/light quadricycle</b>	<b>Electric Motorcycle/tricycle/quadricycle</b>
Registration	In scope	In scope
Max power	4kW	16kW
Max speed	28mph	No limit (mostly though some quad types have a speed limit)
Driving licence category needed	AM (age 16+)	A (age 17+)

**Table 5.1 Different categories of micro vehicle**

- 5.2 The micro vehicle market is still in its infancy, with just 16,000 quadricycles licensed in the UK between 2010 and 2018,<sup>4</sup> there appears to be significant potential for future growth, which would also improve air quality and reduce congestion.

<sup>4</sup> Department for Transport, VEH0130: [Licensed ultra-low emission vehicles by body type: United Kingdom](#) 2017

## Consultation questions on micro vehicles, further to Qs 5-15:

16. Should measures to support micro vehicles and e-bikes over 250W be considered as part of this review?
17. Is anything needed from government to encourage the use of pedal cycles and e-bikes to tow cargo trailers, or the use of electrically assisted trailers to enable carriage of higher payloads?
18. [For micro vehicle operators] To assist DfT with evidence-gathering, how many micro vehicles are there in your fleet, and what are the range of costs for their maintenance and upkeep?
19. Are there any other points you wish to raise?



(Image courtesy of Fernhay)

## 6. Potential Solutions: Ultra Low Emission Vans and Trucks

6.1 Electric vans offer a huge potential opportunity to reduce emissions from last mile deliveries. Diesel vans represent a significant source of air pollution and carbon emissions. In 2015, 30% of nitrogen oxide (NO<sub>x</sub>) emissions from road transport were from vans. Some 96% of vans on the road are diesels. However, there is a range of vans in the UK available now that produce zero emissions at the tailpipe. With their lower running costs, electric vans can also offer potentially significant financial savings for firms.

6.2 The Government currently offers a range of policies to support electric vans, including:

**i) Grants and cost saving schemes:**

— **Plug-in van grant** – offering 20% off an electric van, up to £8k.

**ii) Tax** – there are a range of tax measures that support the uptake of electric vans, including:

— **Vehicle Excise Duty (VED)** – for most light goods vehicles (up to 3.5t), VED is payable, at a flat rate of £250. Her Majesty's Treasury is due to report shortly on a consultation on incentivising the take up of the cleanest vans.

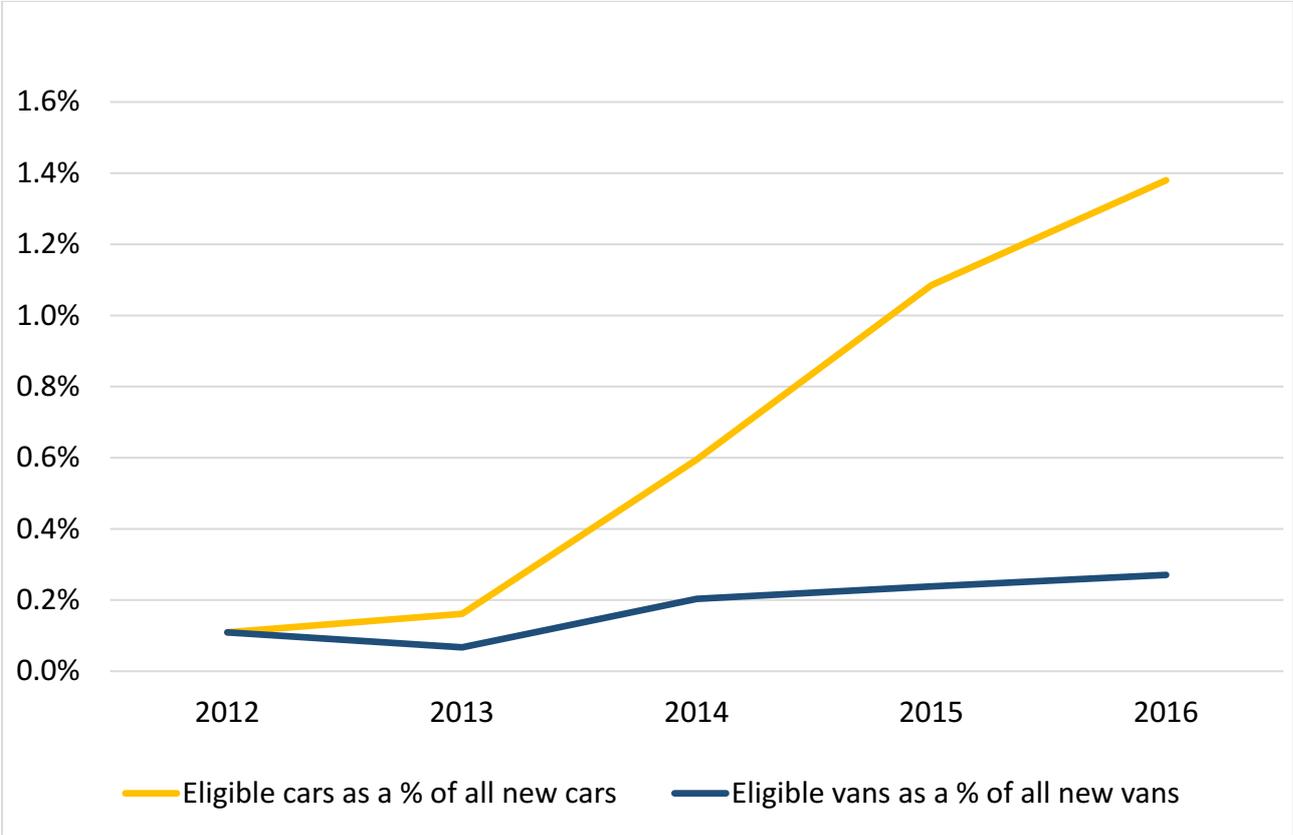
— **Benefit in Kind (BIK)** – currently employees using company vans for private use incur a flat BIK rate of £3,350 (e.g. at 20% income tax £670 per year). Zero emission vans are currently only liable for a proportion of the full van benefit charge and pay £1,340, 40% of the standard rate (e.g. at 20% income tax £268 per year).

**Enhanced Capital Allowances (ECAs)** are in place to support the development and installation of recharging equipment for electric vehicles, and the purchase of zero emission goods vehicles. The 100% first-year allowances allow businesses to deduct investments in charge points and eligible vehicles from their pre-tax profits in the year of purchase. Autumn Budget 2017 set out that this would be extended for the next three years.

**iii) Local authority benefits** – some local authorities offer benefits for the use of electric vans. These include free parking in Milton Keynes or exemption from the congestion charge in London.

**iv) Category B Driving Licence Derogation** – many urban delivery companies use diesel vans 3.5t and under, as these can be driven using a standard driving licence. With the additional battery weight, an ultra-low emission van in this category either tips over 3.5t, requiring a professional licence, or cannot carry the same amount of goods. This is a significant barrier to uptake. We are bringing forward legislation to extend to 4.25t the weight at which an ultra-low emission van can be driven on a standard licence.

6.3 However, take-up of these vehicles has been relatively slow so far. The market for electric vans is well behind that for cars. In 2017, 0.3% of new van sales were electric compared to 1.8% of new car sales (see Figure 6.1 below).



**Figure 6.1 Plug-in van grant sales have remained flat, while plug-in car grant sales have taken off**

6.4 In part, this may reflect a lack of available products. There are currently just eight vans available for the plug-in van grant, as opposed to 38 eligible vehicles for the plug-in car grant.

- 6.5 There are also very few plug-in hybrid vans on the market so far.<sup>5</sup> Plug-in hybrid vans can achieve better range, or carry a larger payload, between charges than 100% electric vehicles. The current range of electric vans is not suitable for some businesses that need to carry heavy payloads.
- 6.6 Manufacturers have announced plans to launch new vehicles that offer a longer range and larger payloads. Mercedes are expected to launch medium and large electric vans in 2019 and Ford has announced plans to launch a plug-in hybrid transit van in 2019.<sup>6</sup>
- 6.7 However, product availability is not the only thing that is holding back businesses from adopting electric vans. There is a range of other factors:
- i) Charging infrastructure** – in order for businesses to operate fleets of electric vans, they need charging facilities:
    - If opting for public charging, these charging points will need to be easily accessible and in key strategic locations.
    - If opting for private (i.e. depot) charging, other considerations will need to be taken into account, including the type of chargers installed, the time and frequency of use, and whether the site has sufficient electrical capacity to accommodate this.
  - ii) Grid Capacity** – where the site does not have sufficient capacity, the connection may need to be reinforced, which will require working with the Distribution Network Operator (DNO) to upgrade this connection. Other potential options include smart charging or battery storage.
  - iii) Acceptance and understanding** – adopting electric vans can require changes to the way that vans are driven and used. For smaller firms, grappling with these issues can present significant challenges, which may require advice and support.

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<sup>5</sup> Plug-in hybrid vans have both electric motor and an internal combustion engine, and can switch from one to the other once the battery has been depleted.

<sup>6</sup> <https://www.ford.co.uk/shop/specialist-sales/fleet/phev>

## Consultation questions on ultra-low emission vans and trucks:

**The consultation questions below are designed to get stakeholders' perspectives on the barriers preventing further uptake of electric vans.**

20. What do you perceive as the key barriers to further uptake of electric vans in your organisation?
21. What do you perceive as the biggest infrastructure barriers to further uptake of electric vans?
22. Do you have any evidence where the cost or process of obtaining or reinforcing a grid connection has been a barrier?
23. Thinking about the sector that you work in, are there any particular barriers in your sector that prevent increased electric van uptake?
24. What action or policies would you like to see from government that would help you increase the share of electric vans in your fleet?

**We are keen to understand existing industry plans to adopt electric vans. The consultation questions below are designed to evidence the existing use of electric vans amongst businesses, and plans to increase uptake.**

25. How many vans are there in your fleet?
26. How many of these are electric (either 100% electric or plug-in hybrid)?
27. If you do have electric vans, what are they principally used for?
28. What, if any, plans do you have for introducing more electric vans into your fleets?