LeasePlan

What's next?

Electrify your LCV fleet

Content

Businesses of all sizes, large and small, count on their trusty light commercial vehicles[1] (LCVs) for their business operations. More and more enterprises drive LCVs whether to replenish their store inventory, carry the tools or for last-mile delivery in response to the ever-rising number of e-commerce orders. **All in all, the LCV sector is expected to grow by more than 8% per year**, outpacing other vehicle categories[2].

[1] A light commercial vehicle (LCV) is a vehicle with a gross vehicle weight of less than 3,500kg
[2] Source: Roland Berger

Introduction

LCVs with internal combustion engines (ICE) will always produce tail-pipe emissions containing CO_2, NO_x and particulate matter. This makes the future of ICE LCVs particularly uncertain as **more and more city centres are striving to improve local air quality by deterring or banning ICE vehicles**. Diesel, which is the fuel of choice for LCVs, is especially targeted as the NO_x and particulate-matter emissions of older diesel engines are higher than those of comparable petrol engines or new clean diesel engines.

There are currently low-/zero-emission zones, urban road tolls and access regulation schemes in more than 200 European cities. **London, Madrid and Rome are planning to ban ICE vehicles in certain parts of their cities altogether**. Additionally, the European Union is further heightening the pressure, requiring OEMs to cut CO_2 emissions from LCVs by 31% between 2021 and 2030.

Many fleet operators will feel the impact of these governmental and municipal measures. For example, **today's diesel LCVs with a new five-year operational lease term might not be allowed access to city centres (at certain times) over the course of the lease term**, and/or the operational costs for diesel LCVs will be higher due to surcharges to gain access to those areas. This could put companies with an ICE-powered fleet at a disadvantage compared to competitors operating electric light commercial vehicles.

At LeasePlan we not only strongly advocate electrification of LCVs to tackle such accessibility challenges, but we also firmly believe that electrification of fleets is necessary to combat climate change. **In this white paper we discuss the main topics that arise when transitioning to an electric light commercial vehicle (E-LCV) fleet**.

Availability

Until recently, the availability of e-LCVs was very limited, and the conversion of an internal combustion engine to an electric drivetrain was sometimes the only way to go if an e-LCV was needed. **Now, however, major OEMs are embracing this market**. Driven by the growing demand for e-LCVs as described above, they are gradually introducing electric variants of their entire LCV product range and increasing production volumes.

Figure 1: Major expansion of the e-LCV product offering

		RENAULT	NISSAN	PSA GROUPE	VW	Mercedes-Benz	TOYOTA	STREETSCOOTER	FIAT
Large LCV	• 1,000 - 1,100 kg payload • 120 km range • Price around € 50-70 k	Master ZE		Boxer/ Jumpr EV (2020)	E-Crafter	Sprinter EV (Nov 2019)		Work XL	Ducato EV (2020)
Medium LCV	• 1,000 - 1,100 kg payload • 120 km range • Price around € 50-60 k			Expert/ Jumpy EV (2020) Opel Vivaro EV (2020)		Vito EV	Pro Ace	Work L	
Small LCV	• Perfect for last-mile delivery. Expect a real range of about 160 km • Price around € 25 k	Kangoo EV	E-NV200	Partner/ Berlingo (major change 2021) Opel Combo (2021)	E-Caddy	Citan EV (2020)	Pro Ace City	Work	

In the Small LCV category (vehicles with a cargo volume of approximately 4m³), for example, Renault, Nissan, Peugeot, Citroen, Streetscooter and Toyota currently have vehicles available with a payload capacity of up to 710kg. Volkswagen and Mercedes plan to complement this offering with the E-Caddy and E-Citan respectively. In the Medium LCV category (with a cargo volume of around 6m³), the availability is limited to the Mercedes eVito, Opel eVivaro and the Streetscooter Work L Box. Meanwhile, there are some exciting developments under way in the Large LCV category (with a cargo volume of around 10m³ and upwards). The current options are the Renault Master ZE, Volkswagen e-Crafter and Streetscooter Work XL. The Mercedes eSprinter will be added to this line-up later this year, followed by the Peugeot Boxer/Citroen Jumper in 2020.

In late 2018 the European Union set the goal to cut CO_2 emissions from LCVs by 31% between 2021 and 2030. Manufacturers failing to achieve this average will face fines. This goal will stimulate manufacturers to focus on selling more e-LCVs, which is why we expect the availability of e-LCVs to grow strongly in the coming years.

Battery

Electrically powered LCVs will only be a viable alternative to ICE-powered LCVs if they are at least equally as practical. In order to judge this, we need to understand the required range and charging speed and compare that against what is currently available.

In terms of the range, the growth of e-commerce is leading to last-mile delivery becoming a rapidly expanding LCV use case. Digital purchases accounted on average for more than one tenth (10.2%) of total retail sales in Western Europe for the first time in 2018, and even exceeded 20% in the UK. This trend will lead to a strong increase in delivery density, meaning that LCVs will need to cover fewer miles to deliver their payload. Approximately 50% of LCVs currently drive less than 100km per day (and 80% less than 200km per day), and that this percentage is expected to rise due to the expected increase in delivery density. Therefore **a range of between 100km and 200km is sufficient for trips which all the E-LCVs mentioned above can cover in a single charge**.

The second point is about charging speed; the battery of an E-LCV needs to be able to be charged quickly enough during downtime, which often is during the driver's lunch break and during the night. Lunch breaks are usually shorter than 60 minutes, but both the Mercedes-Benz eSprinter and the Volkswagen eCrafter can gain 80% of their range after 45 minutes of charging at a DC fast charging station.

As stated above, a daily range of between 100km and 200km is sufficient for most LCV use cases, and all available E-LCVs currently offer that range. Next to this, the majority of currently available E-LCVs can be fully charged in under six hours. **Night time charging therefore seems to be the way to go and the current charging speed sufficient**.

Cost

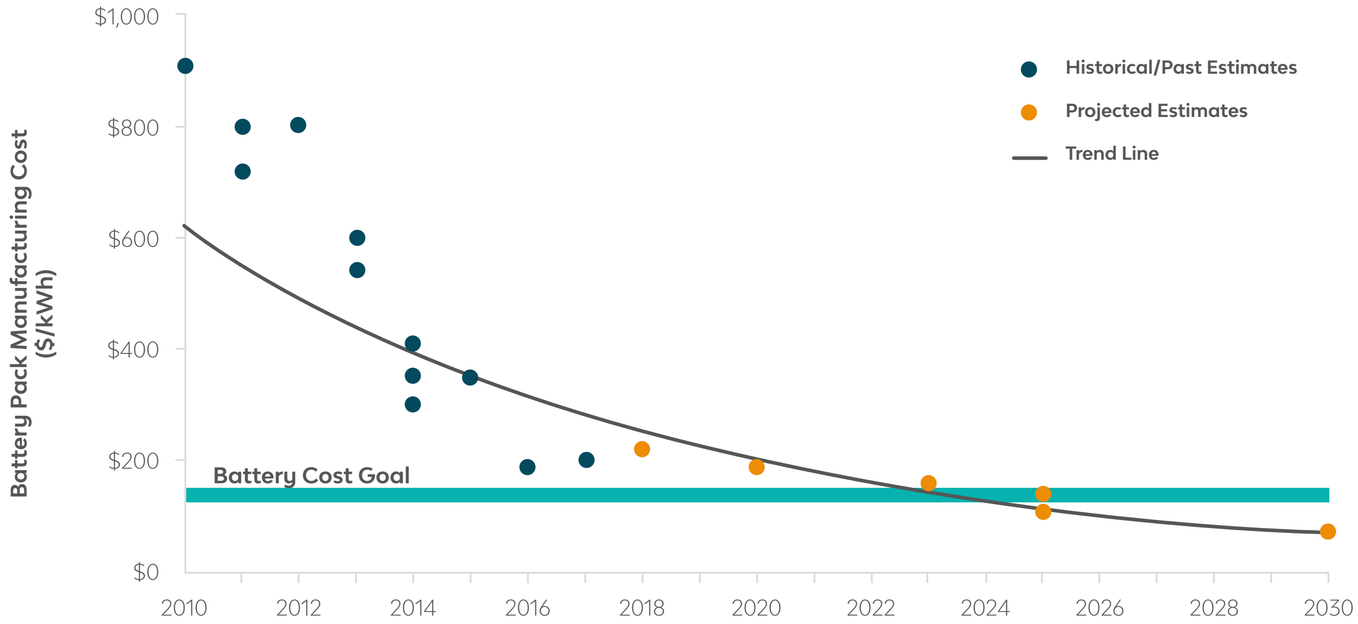
LCVs are a business necessity for many companies, so it is important that the switch to e-LCVs does not increase costs. To understand the total cost of ownership (TCO) of e-LCVs, three cost components need to be taken into account: purchase price, running costs and taxation.

Starting with purchase price, the investment value of e-LCVs is currently higher than of a like-for-like conventional diesel LCV, mainly due to the battery cost. However, the price of a battery has fallen, from approximately US$800/kWh in 2010 to around US$200/kWh today. This downward trend is expected to continue, reaching the US$125/kWh to US$150/kWh point within five years[3].

Besides the purchase price, running costs are an important part of the total cost of ownership. The difference between the running costs for diesel LCVs and e-LCVs mainly lies in the fuel cost versus electricity cost and maintenance costs. e-LCVs can benefit from lower workplace charging rates; in many countries this rate is just 3 cents per kWh.

As electric powertrains feature far fewer moving parts than diesel powertrains, OEMs claim that repair and maintenance costs for e-LCVs will be lower compared to their ICE counterparts. It remains to be seen how much lower the actual repair and maintenance costs will be for e-LCVs versus diesel vehicles. In the case of passenger cars, the maintenance costs for EVs are on average 23% lower than for comparable ICE vehicles[4].

Figure 2: Battery manufacturing cost



[3] Source: UCSUSA
[4] Source: LeasePlan EV TCO white paper

Right now, there is a wide array of government benefits for electric commercial vehicles across Europe. However, it is a complex and ever-changing regulatory landscape which includes EV tax benefits (such as road tax exemption, investment deduction on corporate income tax), EV government subsidies, surcharges for diesel vehicles, EV toll exemptions for bridges/tunnels and parking privileges. All these exist at both national and local level and there is no uniformity, neither within the European Union nor within countries themselves.

Figure 3: EV benefits in major European markets

	Purchase subsidies	Reg. tax benefits	Ownership tax benefits	Company tax benefits	VAT benefits	Other fin. benefits	Local incentives
	✓	–	✓	✓	–	✓	✓
	✓	✓	✓	✓	–	–	✓
	✓	✓	✓	✓	–	–	✓
	–	–	✓	–	✓	–	–
	–	✓	✓	✓	✓	✓	✓
	–	✓	✓	✓	–	–	–
	✓	✓	–	✓	–	–	✓

Source: EAFO

In France, for instance, there is a €6,000 purchase subsidy for e-LCVs, and in Paris this is doubled by an additional €6,000 purchase subsidy. In Germany there is a €4,000 purchase subsidy and ten-year exemption from motor vehicle ownership taxation, and in the Netherlands the City of Amsterdam provides a €5,000 subsidy for e-LCVs which are operated in Amsterdam for the majority of the time. An overview of EV benefits in other countries can be found in Figure 3.

Demand

In 2016, LCVs accounted for 85% of commercial vehicle sales[5], **and LCV sales are expected to grow by more than 8% in the coming years**. This general rise in demand for LCVs is compounded by the growing interest in e-LCVs based on guaranteed access to city centres and customer preferences.

As described above, government incentives and a wider choice of e-LCV models are two important drivers of the growth in demand for e-LCVs. But another important factor is **the introduction of zero- and low-emission zones in many European cities**, most of which only allow access to Euro 6 diesel vehicles. We expect that more cities will gradually introduce charges to discourage the use of diesel vehicles or even ban them altogether.

The Congestion Charging Zone in Central London is one example of a low-emission zone in which charges discourage the use of diesel-powered commercial vehicles. All vehicles passing through the zone are charged £11.50 per day, but there is also a Cleaner Vehicle Discount in place. However, the discount is slowly becoming more restrictive. Since April 2019, only pure electric vehicles or vehicles which meet the Euro 6 emission standard, emit less than 75g/km CO_2 and have a minimum zero-emission capable range of 20 miles have been eligible for this discount. From October 2021 onwards, only pure electric vehicles will be eligible for it.

[5] Source: IHS

Examples of limited access for ICE-powered commercial vehicles include:

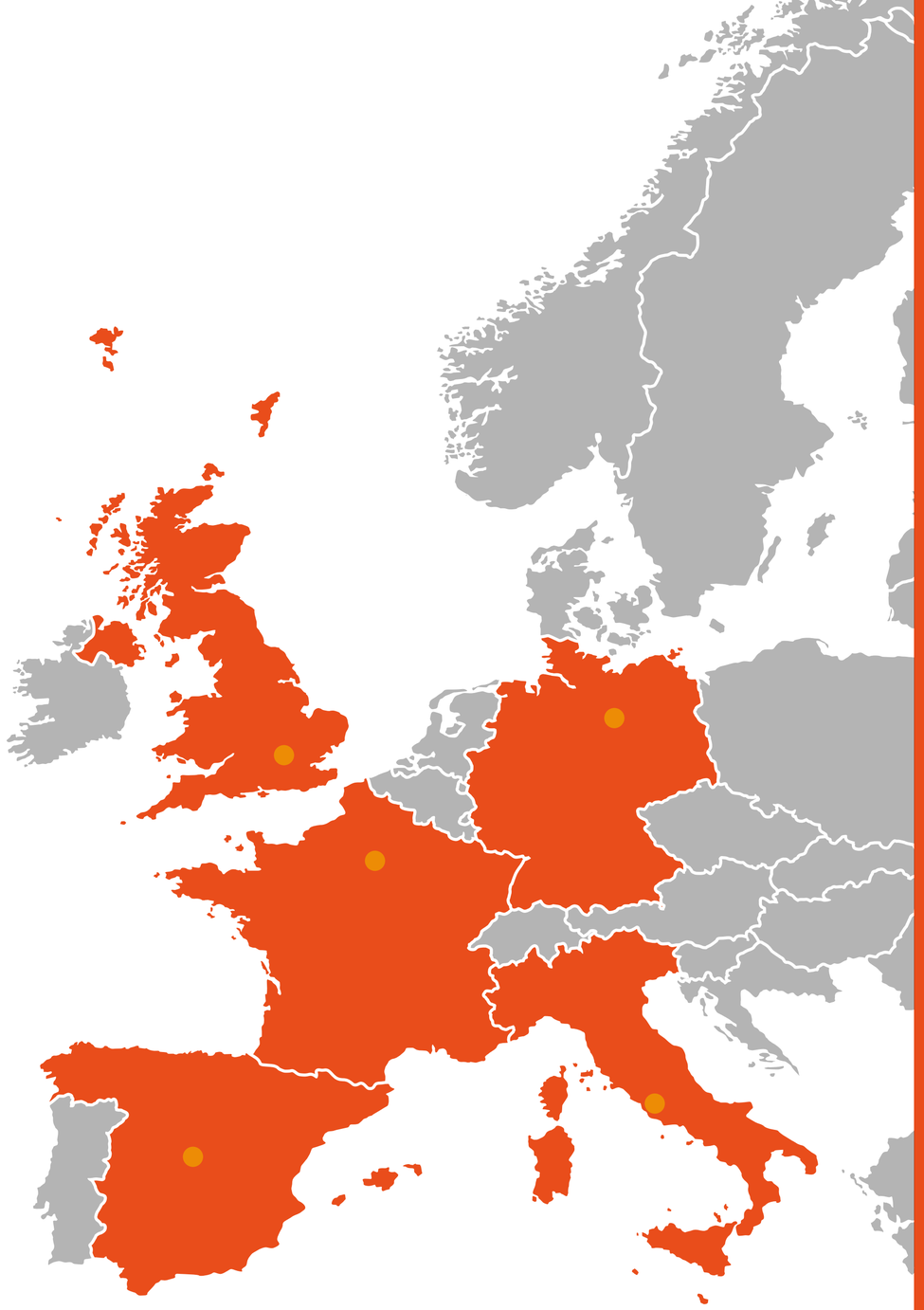
London, where since April 2019, only pure electric vehicles or vehicles which meet the Euro 6 emission standard, emit less than 75g/km CO_2 are eligible for the Cleaner Vehicle Discount in the Congestion Charging Zone.

Madrid, where since 30 November 2018 only residents and zero-emission vehicles have been allowed to enter the low-emission zone in central Madrid.

Berlin, where since 1 April 2019 there has been a total diesel ban on Leipziger Strasse, which is a key transportation route in the heart of Berlin.

Paris, where from 2020 selected streets will be open to electric cars only.

Rome, where the council has pledged to ban diesel vehicles from the city centre altogether by 2024.



Clearly this is an accelerating trend that will have a positive effect on the demand for e-LCVs. Another driver of e-LCV demand is the increasing interest from businesses driven by the ever-increasing importance of the carbon footprint and transportation-related emissions as part of corporate sustainability. IKEA, for instance, pledged in 2018 to deliver every item worldwide by electric vehicle by 2025 and is aiming to switch to e-LCVs in five cities – New York, Los Angeles, Paris, Amsterdam and Shanghai – by 2020. On 23 January 2019 the retailer ticked Shanghai off its list; all home deliveries there are now carried out by electric vehicles. Another major player, Amazon, has a similarly ambitious target. In February 2019 the e-commerce giant announced its plans to make half of all its shipments carbon neutral by 2030.

Ecosystem

The limited – and, in some areas, lack of – charging infrastructure for electric vehicles is often raised as an issue when considering a switch from an ICE fleet to an EV one. The charging infrastructure is of course a key enabling factor for e-LCVs too, but the solution requires a slightly different approach than for electrically powered passenger cars due to different charging behaviour.

In the case of an EV, the required charging infrastructure is usually a combination of home charging – in which the driver charges the passenger car at home overnight – and workplace charging, so that the car can be charged during the day. Public charging is used when people do not have the option to install a home charger and/or during trips.

In the case of e-LCVs, workplace charging is the main charging requirement. As most e-LCVs will be in use during the day and as they have sufficient range to satisfy the daily range requirement, they will usually be charged overnight. However, rather than being taken home by drivers, LCVs are usually parked up at depots and other workplace locations, which makes workplace charging infrastructure essential for an e-LCV fleet. Installing workplace charging is usually quite straightforward, as companies usually have enough space and sufficient electrical infrastructure options to accommodate the necessary charging points. At LeasePlan we have substantial experience in installing both home and workplace charging solutions.

Conclusion

This paper clearly shows that much is changing in the commercial vehicles sector, all seemingly in favour of electric light commercial vehicles. While as a fleet manager you may still be unsure of when exactly to start to electrify your commercial fleet, it is evident that e-LCVs will become a reality sooner rather than later. At LeasePlan Consultancy Services we are able to provide extensive insights and advice regarding when and how to electrify fleets, including relevant business cases, charging infrastructure implementation plans and driver impact studies.

Get in touch
Contact us at https://www.leaseplan.com/en-ix/international-consultancy/ to discuss your unique business context, sustainability policy and fleet strategy in more detail.

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