

LeasePlan



What's next in LCVs?

**Smarter, cleaner
and greener**

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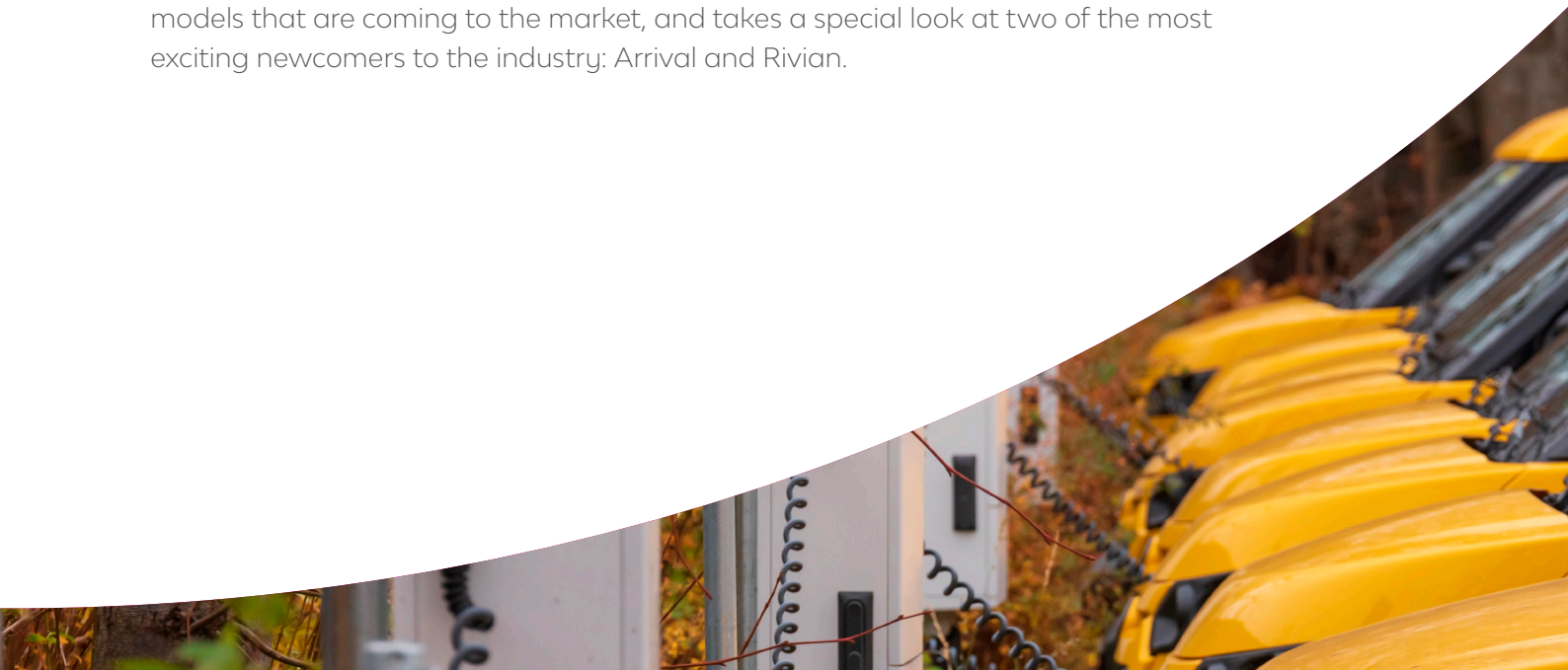
Executive Summary

Research from McKinsey puts it clearly: as a result of Covid, e-commerce has – seemingly overnight – replaced the brick-and-mortar shopping experience. Furthermore, in the New Normal, consumers are expected to continue, to at least some degree, to trade their physical shopping carts for digital baskets, as e-commerce becomes part and parcel of their (post-)pandemic lives.

Skyrocketing online orders of course means more packages, and more packages means more LCVs (light commercial vehicles, or vans) are needed than ever before to get those parcels delivered on time. But the introduction of ultra-low emission zones across Europe and beyond – combined with the ever-increasing environmental consciousness of responsible corporates and consumers – means LCV operators are faced with a challenge: how to manage this explosive growth without increasing emissions?

Enter the eLCV (electric light commercial vehicle): the perfect way to meet this booming demand for online shopping and delivery services, without sacrificing air quality in our towns and cities. As this report shows, there is now an entire range of next generation electric delivery vehicles about to come onto the market that will transform urban commercial mobility, and literally deliver the future of e-commerce directly to your doorstep.

In addition, this report offers an overview of the latest trends in LCV and last-mile delivery, including the emergence of 'city logistics hubs' and the role big data plays in making deliveries smarter than ever. It also provides an overview of the major eLCV models that are coming to the market, and takes a special look at two of the most exciting newcomers to the industry: Arrival and Rivian.



The big trends shaping *What's next in LCVs*

We distinguish between two major forces shaping *What's next in LCVs*: the evolving last-mile delivery ecosystem, and an exciting array of technological advancements that are improving the safety, security and efficiency of the next generation of LCVs. In this section we explore these trends in more detail.

How the evolving last-mile delivery landscape is driving advancements in LCVs

Last year, global retail e-commerce traffic stood at 22 billion monthly visits, with exceptionally high demand not only for everyday essentials, but also for discretionary items. Today, shopping is one of the most popular online activities worldwide and e-commerce sales are projected to grow to USD 6.54 trillion in 2021. But last-mile delivery is not only growing, it is also fundamentally changing and driving innovation in LCVs, thanks to three main trends:

1. Ultra-low emission zones

The implementation of ever more – and stricter – ultra low emission zones (ULEZs) in cities across Europe is continuously strengthening the business case for the eLCV, and driving rapid innovation in eLCV technology. Companies cannot afford to run the risk of being unable to enter a city centre to conduct their core business activities. Whilst today's ICE (internal combustion engine) LCVs, which are cleaner than older diesel are petrol models, are still allowed in many city centres, the increasing speed with which new ULEZs are being introduced means that eLCVs are unquestionably the future.



Figure 1: Low Emission Zones across Europe
(<https://urbanaccessregulations.eu/userhome/map>)

2. Local and sustainable 'city hubs'

The shift towards e-commerce, growing consumer demand for local products, and increasing pressure to cut emissions (due to widespread concern about climate change and related regulation) are all driving innovation in last-mile delivery logistics. In particular, we are seeing the emergence of new 'city hubs' – essentially distribution hubs based on the outskirts of major cities – from which products can be delivered to their final destination. In addition, these hubs increasingly offer opportunities for vehicle charging and act as a service point for the growing number of eLCVs in other sectors beyond last-mile delivery.

3. Big data and digital applications for an optimized delivery process

Real-time insights and information from the LCV are crucial to optimize last-mile delivery fulfilment processes. As a result, leading last-mile delivery companies are increasingly using LCV-generated data to perform predictive analysis as a way of improving their profitability and competitiveness. This is one example of a best practice that can be adapted by other sectors operating LCV fleets.



Technological advancements shaping the modern LCV

Looking beyond last-mile delivery and turning to the LCV itself, there are a wide range of technological advancements transforming the LCV as we know it and make safer, securer and more efficient.

Safety

Safety features protect drivers and pedestrians alike from accidents, while also protecting businesses against accident-related costs. Beyond the features found in passenger cars, manufacturers are increasingly developing custom technology specifically for the LCV, such as:

- 1. Autonomous emergency braking systems** using radar, Lidar or conventional cameras to detect hazards near the vehicle
- 2. Crosswind assistance technology** using on-board sensors to detect and automatically compensate for high crosswinds, which can be a significant problem for larger LCV models
- 3. Driver assistance** such as lane keeping assistance, hill descent control, automatic cruise control, driver drowsiness alerts and speed sign recognition
- 4. Emergency or 'Rescue Assist' QR codes** on the fuel filler cap or B pillar of LCVs to enable the emergency services to quickly understand the vehicle's technical layout during rescue or recovery activities



Security

Security technology can have a direct impact on a company's bottom line by reducing the risk of theft or damage, lowering insurance premiums and reducing the costs of repair or replacement. Today's LCVs increasingly come with:

1. **High-tech security systems** including highly sensitive alarms, battery-powered sirens and passively set immobilizers
2. **Electronic GPS trackers** for monitoring the exact position of the LCV and immobilising the vehicle remotely if stolen
3. **Camera technology** to record 'dash cam' footage for use in accident and insurance claims

Efficiency

For any LCV operator, efficiency and maximization of uptime is crucial for success. To that end, the next generation of LCVs is delivering key innovations that make life easier for fleet managers, customers and drivers, including:

1. **Modular skateboard platform technology**, which allows customers to easily customize their LCV. Because all the critical powertrain and drivetrain components are located in a flat rectangular package (hence the name 'skateboard'), automotive manufacturers can fit various bodies on top of the platform to produce various LCV configurations tailored to specific needs (e.g., last-mile delivery, medical equipment transportation, cleaning services, etc.)
2. **Mechanical vehicle efficiency solutions**, such as improved aerodynamics (which improve fuel performance) and electrically powered auxiliary units (APUs), which increase uptime for LCV managers
3. **Advancements in vehicle maintenance**, including sensors to ensure that tyres are fully inflated, oil analysis to monitor the engine's state of wear, and high-tech lubricants that help to increase fuel economy, reduce component wear and extend oil drain intervals

Taken together, changes to the last-mile delivery ecosystem outlined above, combined with an exciting array of technological advancements, are revolutionizing the LCV as we know it, creating a next generation of smarter, cleaner and greener models.

Case Study: Arrival

Arrival bets on microfactories to bring eLCVs to the next level

London-based EV startup Arrival has created a lot of buzz since its inception in 2015. The company has received funding from Hyundai-Kia and BlackRock, among others. In March, it debuted on Nasdaq with a \$13.5-billion valuation – the highest debut ever for a UK-based company.

Arrival's eLCV will have a 4x2 axle configuration, a payload of around two tons and a range approximating 300 km. The price tag should be around €40,000.

'Microfactories' leading the way

Although there are many eLCV players setting their eyes on rapid growth, Arrival in particular has a competitive advantage in terms of manufacturing cost, with their eLCVs set to be competitive in price with comparable ICE alternatives, and substantially lower than similar EVs. How? While other EV manufacturers are going big – like Tesla with its gigafactories – Arrival is opting for smaller production units and a decentralised manufacturing model with its concept of 'microfactories'.

Lightweight robotics

Using lightweight robotics that fit into existing warehouses, these microfactories are designed to be set up quickly and

cheaply close to Arrival's major markets. Each one can produce up to 10,000 eLCVs (or 1,000 e-buses) per year with a workforce of no more than 250. Many of Arrival's components were designed in-house, further lowering costs.

One microfactory for eLCVs is already being set up in Bicester (UK), with two more planned in the US. By 2024, Arrival plans to have 31 microfactories in operation around the world.

Huge promise

Customer trials for Arrival's eLCV are slated for this summer, with the company's e-bus trials scheduled for the end of the year. The eLCV will go into production from mid-2022. Arrival has recently secured a major order from UPS for 10,000 eLCVs, which will go into production in 2022. UPS has an option to purchase an additional 10,000 vans. Arrival says it already has \$1.2 billion worth of orders on its books.

The latest and greatest eLCVs

There is at least one perfect eLCV model for every customer

Today's emerging range of eLCVs tick many boxes for corporates and SME operators, but the big challenge of reconciling load capacity and driving range remains. If you want to increase your range, you need a bigger – and heavier – battery pack, which in turn reduces the payload. If you choose to increase the payload, that means the battery pack needs to be lighter and your range will be lower. For that reason, it is no coincidence that many carmakers offer two battery sizes, particularly for their larger vans.

Small vehicles

Citroën e-Berlingo

The award-winning French compact LCV comes in two sizes (M and XL) and has generous safety equipment while offering a range of 275 km.



- > **Battery size:** 50 kWh
- > **Range:** +/- 275 km
- > **AC charging (0-100% SoC time):** 11 kW (5 hrs)
- > **DC charging (10-80% SoC time):** 100 kW (30 min)
- > **Payload:** up to 800 kg
- > **Load volume:** up to 4.4 m³



Peugeot e-Partner

Borrowing its powertrain from the Peugeot e-208, the e-Partner has an i-Cockpit which differentiates it from the Combo and the Berlingo.



- > **Battery size:** 50 kWh
- > **Range:** +/- 275 km
- > **AC charging (0-100% SoC time):** 11 kW (5 hrs)
- > **DC charging (10-80% SoC time):** 100 kW (30 min)
- > **Payload:** up to 800 kg
- > **Load volume:** up to 4.4 m³

Opel Combo-e

Whereas the previous Combo was the result of a joint venture with FCA (Doblo), the current generation is a 100% PSA product. Unsurprisingly, it has the same specs as the Berlingo and the Partner.



- > **Battery size:** 50 kWh
- > **Range:** +/- 275 km
- > **AC charging (0-100% SoC time):** 11 kW (5 hrs)
- > **DC charging (10-80% SoC time):** 100 kW (30 min)
- > **Payload:** up to 800 kg
- > **Load volume:** up to 4.4 m³

Addax MT

This Belgian-built utility vehicle is available with open or closed cargo box, as a chassis cabin and can be custom developed for last-mile delivery, warehouse logistics, and use by local authorities.



- > **Battery size:** 14.4 kWh
- > **Range:** 132 km
- > **AC charging (0-100% SoC time):** unknown
- > **DC charging (10-80% SoC time):** not applicable
- > **Payload:** up to 1,024 kg
- > **Load volume:** 5 m³

Midsized vehicles

Maxus e-Deliver3

This Maxus eDeliver3 is positioned in between the small and the midsized segment. It brings a host of strong arguments to the table.



- > **Battery size:** 35 or 53 kWh
- > **Range:** 150-240 km
- > **AC charging (0-100% SoC time):** 7.2 kW (5.5-9 hrs)
- > **DC charging (10-80% SoC time):** 28-42 kW (1 hr)
- > **Payload:** up to 1,020 kg
- > **Load volume:** 4.4-6.3 m³

Citroën e-Jumpy/e-Dispatch

With a choice of three body lengths and two battery sizes, this e-LCV spans several segments. Its limited height makes it ideal for low-roofed garages.



- > **Battery size:** 50 or 75 kWh
- > **Range:** 230-330 km
- > **AC charging (0-100% SoC time):** 7.4-11 kW (5-12 hrs)
- > **DC charging (10-80% SoC time):** 100 kW (30-45 mins)
- > **Payload:** up to 1,275 kg
- > **Load volume:** up to 6.6 m³

Opel Vivaro-e

Opel has developed the new Vivaro-e for a diverse customer group and therefore offers various body variants, such as crew cab, platform cab or people carrier.



- > **Battery size:** 50 or 75 kWh
- > **Range:** 230-330 km
- > **AC charging (0-100% SoC time):** 7.4-11 kW (5-12 hrs)
- > **DC charging (10-80% SoC time):** 100 kW (30-45 mins)
- > **Payload:** up to 1,275 kg
- > **Load volume:** up to 6.6 m³

Peugeot e-Expert

As a PSA product, the e-Expert features the same specs as the Vivaro and the Jumpy/Dispatch. Notably, it has no i-Cockpit to set it apart.



- > **Battery size:** 50 or 75 kWh
- > **Range:** 230-330 km
- > **AC charging (0-100% SoC time):** 7.4-11 kW (5-12 hrs)
- > **DC charging (10-80% SoC time):** 100 kW (30-45 mins)
- > **Payload:** up to 1,275 kg
- > **Load volume:** up to 6.6 m³

Nissan e-NV200 XL Voltia

If the regular Nissan e-NV200 doesn't fit the bill in terms of cargo capacity, then this XL Voltia conversion may be the answer. Interestingly, existing e-NV200s can be retro-converted.



- > **Battery size:** 40 kWh
- > **Range:** 230-330 km
- > **AC charging (0-100% SoC time):** 6.6 kW (7 hrs)
- > **DC charging (10-80% SoC time):** 46 kW (45 mins)
- > **Payload:** up to 580 kg
- > **Load volume:** up to 6-8 m³



Large vehicles

Fiat e-Ducato

The all-new Ducato comes in a variety of body types and lengths, including panel van and chassis cab. It also offers two battery pack sizes.



- > **Battery size:** 47 or 79 kWh
- > **Range:** 230-360 km
- > **AC charging (0-100% SoC time):** 7-11 kW (4.5-8 hrs)
- > **DC charging (10-80% SoC time):** 50 mins - 1 hr 25 mins
- > **Payload:** up to 1,950 kg
- > **Load volume:** up to 10-17 m³

Ford E-Transit

The E-Transit is powered by a 198kW electric motor and comes in 25 different configurations. It carries a 2.4kW power outlet which can be used to charge power tools.



- > **Battery size:** 67 kWh
- > **Range:** 350 km
- > **AC charging (0-100% SoC time):** 11 kW (8 hrs)
- > **DC charging (10-80% SoC time):** 115 kW (40 mins)
- > **Payload:** up to 1,950 kg
- > **Load volume:** 15.1 m³

Arrival

This UPS-backed start-up plans to produce modular vans that use lightweight thermoplastic composites for body panels. Arrival claims its e-LCVs will generate 40-50% savings compared to comparable diesel vans.



- > **Battery size:** 44-130 kWh
- > **Range:** tbc
- > **AC charging (0-100% SoC time):** tbc
- > **DC charging (10-80% SoC time):** tbc
- > **Payload:** tbc
- > **Load volume:** tbc

Case Study: Rivian

Amazon already testing Rivian's eLCV

In 2019, Amazon placed an order for 100,000 electric delivery vans with Rivian – the largest eLCV order ever. The first prototypes are now on the road, with production starting by year's end. Meanwhile, boosted by the backing of the e-commerce giant, Rivian is taking on the EV industry's goliath: Tesla.

Founded in 2009, Rivian is headquartered near Detroit, with plants in California and Illinois, and an engineering facility in the UK. Its focus is EVs with an autonomous capacity, with the ambition to eventually capture the ride-sharing and driverless vehicle markets.

\$8 billion

But the company is not waiting around for autonomous technology to catch up with its ambition. In 2017, it launched its first two models: an electric pick-up and an electric SUV, and later announced its first eLCV. In 2019, Rivian received a total of \$1.5 billion in investments from Ford, Cox Automotive and Amazon. The company has since raised a total of \$8 billion in funding.

Custom-designed

The design for Rivian's eLCV, which was unveiled last autumn, is box-chic – which seems to be a trend in eLCV exteriors (see the case study about

Arrival). The zero-emission vans also feature upgraded safety features, such as ADAS and exterior cameras, offering a 360° view of the van's surroundings. Each van has a range of 150 miles (242 km) per charge.

Scouting in Europe

Like Tesla's Superchargers, Rivian's Adventure Network of charging stations aims to offer a mix of fast and slow public chargers, as well as home charging solutions. The plan is for 3,500 fast chargers to be placed at locations with high-density traffic, with an additional 10,000 standard chargers called Waypoints – open to all EV drivers – available at various popular destinations and such as retail, lodging and dining establishments.

All of this is a purely American story – for now. Recent reports say Rivian is scouting for a factory to build the Amazon eLCV in Europe. Germany, Hungary and the UK are all named as potential locations, but nothing official has yet been announced. Watch this space!

How LeasePlan can help

Our approach to LCVs-as-a-Service

LCVs make up 23% of LeasePlan's fleet, and we understand that the LCV market is inherently different from the traditional passenger-oriented lease car market. As such, LeasePlan's LCV proposition is underpinned by detailed knowledge and understanding of LCV fleet operators' needs, such as custom configuration and compliance with local legislation. It's this expertise that allows us to develop the right proposition and deliver this digitally through our online platforms.



Figure 2: How LeasePlan supports LCV fleet operators.

Our offer

LeasePlan offers a full service leasing solution for both new and used LCVs, aimed at maximizing LCV uptime and minimizing downtime. More recently, we have introduced a new range of telematics solutions leveraging the latest digital intelligence technologies to provide additional real-time insights to LCV operators.



Pre-Order

The route to the right LCV for each business operation

1. Qualification of needs
2. Cost analysis
3. Procurement
4. Third-party supplier management



In Life

Maximising vehicle uptime

1. Digital products and services
2. LCV-capable repairer network
3. Account management and insight



End of Contract

No unexpected charges

1. LCV-specific wear & tear policies
2. Accurate LCV RV setting
3. LCV disposal channels

Figure 3: LeasePlan's end-to-end LCV solution

Our LCV contact

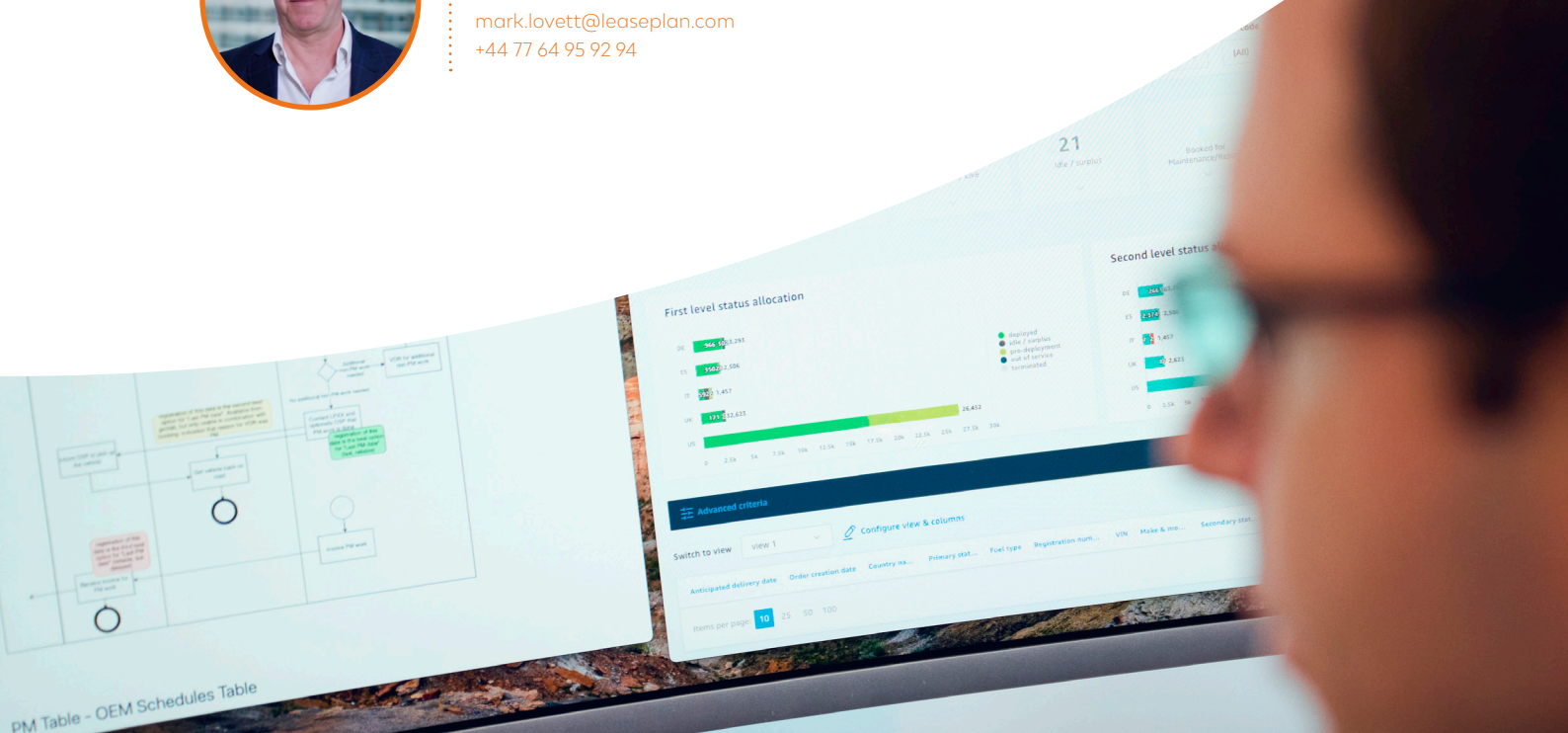


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