



Electric Cargo Vans

Cleaner, Cheaper, Ready



The cargo van, a class 3-5 vehicle, is a heavy-duty vocational vehicle and an essential component of the country's last-mile delivery system. In 2018, the last-mile delivery market in North America was sized at \$31.25 billion and is expected to grow to nearly \$51 billion in 2022.

There are numerous operational advantages associated with electric vans, such as reduced maintenance and lower fuel costs that can help offset their upfront sticker price. There are also incentives in the form of grants, which can lower the Total Cost of Ownership, making electric vans more cost competitive. And because electric vans eliminate tailpipe emissions, they have become an increasingly attractive choice among fleets and policymakers looking to address local air quality concerns, while also reducing noise and carbon pollution.

Electric cargo vans have lower lifecycle costs than diesel.

There are several reasons electric cargo vans boast a lower TCO than their diesel equivalent, including:

- **More fuel efficient:** Diesel cargo vans can drive 10.7 miles per gallon, whereas an electric cargo can drive 27.33 miles per diesel gallon equivalent — making them almost 60% more energy efficient.
- **Less maintenance:** Electric vans have fewer rotating and moving parts, requiring less maintenance, adding to their competitive cost advantage.
- **Higher annual savings:** Cargo vans are a prime candidate for electrification because the more you drive, the more you save. With a driving average of 300 days per year (6 days of operation per week) at 60 miles (city deliveries) to 200 miles (regional deliveries) of daily range, the upfront cost of switching to electric can be earned back in a short time.

Environmental Defense Fund analyzed¹ the life cycle costs of a diesel versus battery electric cargo van and found that the TCO of one electric cargo van is 34% lower over that van's 12-year lifetime.

This TCO is projected to fall further with growing gain in battery and other technological advancements, financial mechanisms, like Pay as you Save, battery leasing and public grants in the EV sector. The annual savings of reduced operations and maintenance would also help recover the initial vehicle cost within a short time.

Costs of Diesel vs. Electric Cargo Van

Based on 2018 prices



- Purchase cost
- Operations and maintenance
- Fuel and charging



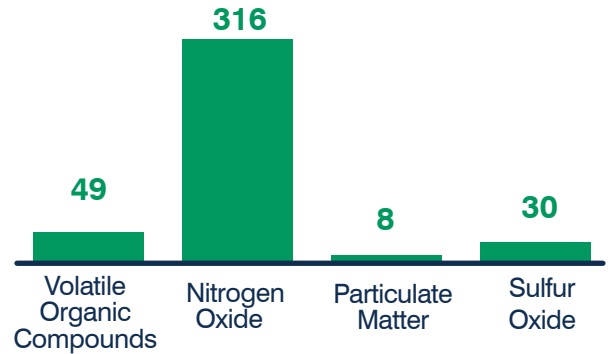
¹The VMT per vehicle for a cargo van is 20000 miles/vehicle-year; Battery electric vehicles are charged with 100% clean electricity.

Public Health Benefits of Electric Box Trucks



Each box truck prevents
297 metric tons
of climate pollution

Emissions Avoided Per
Electric Box Truck (kgs)



Corporate leaders demonstrate electric is the future

FedEx plans to add 1,000 Chanje electric cargo vans to its fleet of vehicles in a bid to save fuel and cut pollution. These vans will have a range of more than 150 miles, with maximum cargo capacity of about 6,000 pounds.

UPS is working on several electrification efforts and has committed to purchase 10,000 electric cargo vans from an EV startup called Arrival by the middle of the decade. These vans have a range of up to 186 miles.

Rivian, an EV startup, will deploy 100,000 cargo vans for Amazon by 2030.

Pollution from diesel-fueled box trucks causes serious harm to human health that can lead to higher rates of asthma, heart attacks and premature death.

The impact of this transportation pollution is usually concentrated in urban areas and is often centered around major freight hubs, such as distribution centers and port facilities, which frequently border or are located in disadvantaged communities.

Moreover, poor air quality poses a serious risk to employee health — with coughs, sore throats, asthma attacks and more sick days likely to become more frequent. This costs the global economy \$225 billion dollars every year in lost labor income. Cities that have severe air pollution problems will increasingly be seen as a less desirable place to work and live — thereby negatively impacting talent recruitment.

Switching to electric box trucks would not only address the tailpipe emissions that lead to poor air quality in communities, it would also dramatically decrease the life cycle greenhouse gas emissions of box trucks, depending on the electricity generation mix.

EDF analyzed the life cycle emissions of replacing a single diesel box truck with battery electric and found that the life cycle emission reductions are significant. Moreover, if the electric vehicle is charged with electricity generated completely by renewable energy, then the life cycle pollutants and GHGs are almost negligible. This is significant, as these pollutants contribute to poor air quality that can potentially cause serious health effects.