

## Environmental impact

The FREVUE analysis confirms the significant environmental benefits of EFVs. The data for this analysis, collected from 105 vehicles, shows that their deployment alone led to NOx savings of up to 2,000 kg and PM<sub>10</sub> savings of over 70 kg. This is equivalent to total road transport NOx emissions in the City of London<sup>2</sup> on any any given three days in 2013 and total road transport PM10 emissions in the City of London on any given two days in 2013.

The analysis also shows that CO<sub>2</sub> savings, using well-to-wheel analysis, are between 176 and 190 tonnes CO<sub>2</sub>e. This represents an overall saving of 45 percent and is equivalent to the total road transport greenhouse gas emissions in the City of London for an entire given day in 2013. However, significant variations can be observed between different operators and cities. As the power sector is gradually decarbonised, the total GHG emission benefits of using EFVs would increase further.

The environmental benefits translate into significant cost savings too. As an example: If, in London alone, we could electrify 10% of the freight fleet by 2021, we could save over € 1billion in reduced health impacts and abatement costs.

Monetary savings from NOx reductions

**€995 million**

Monetary savings from CO<sub>2</sub> reductions

**€15 million**

<sup>2</sup> Please note this refers to the borough of London, not London as whole

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#### LOCAL DEMONSTRATION PARTNERS



# FREVUE

## Freight Electric Vehicles in Urban Europe



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## What is FREVUE?

Road-based freight transport delivers many benefits to our society. It allows for the movement of goods and services, supports economic growth and provides employment opportunities. However, despite these benefits and significant technological and efficiency improvements, road freight transport is a major contributor to greenhouse gases (GHGs) and air pollution. It also contributes considerably to urban traffic congestion. These negative impacts result in a deterioration of both human health and the environment, and thereby cause significant economic costs to our society.

To respond to these challenges, the FREVUE project is deploying 80 fully electric freight vehicles (EFVs), across eight European cities. The project aims to prove that the current generation of electric vans and trucks can offer a viable alternative to diesel vehicles - particularly when combined with state of the art urban logistics applications, innovative logistics management software, and with well-designed local policy.

## FREVUE demonstrations



FREVUE established demonstrators in eight of Europe's largest cities, including six capitals. These cities provided for diverse climates and topographies but also political and regulatory settings in which EFVs were tested.

Each of the FREVUE demonstrators was unique in the types of vehicles they deployed, the types of goods that were delivered and the logistics models that were tested. The close cooperation between local authorities, industry, and research partners in each FREVUE city was essential for the successful implementation of the project.

## Operational and technical performance

FREVUE demonstrates the success of EFVs in city logistics operations across more than 15 companies. The EFVs vary between small (<3.5 tonnes), medium (between 3.5 and 7.5 tonnes), and large (>7.5 tonnes). The data gathered from the vehicles covers 757,000 km of driving, the equivalent of 19 times around the earth's equator.

The FREVUE results show that EFVs are well suited to inner city freight operations and the range of vehicles currently available on the market is sufficient for most operations. A significant shift in attitude of fleet and depot managers as well as drivers has been observed over the duration of the project. The longer they work with EFVs, the more confident and positive they are towards adopting to the vehicles' requirements, including their range. Drivers in particular enjoy the instant power, quietness, as well as simple operation of the EFVs. The maintenance of EFVs is much simpler than for internal combustion engines (ICEs) due to the reduced number of moving parts and most of the FREVUE vehicles have proven to be very reliable.

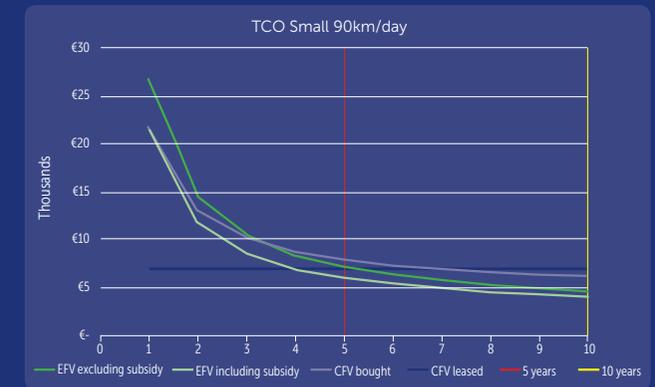


Most operators charge their vehicles overnight at their own depot but some also charge during the day if and when required. Where larger fleets are electrified and charged at the depot, the local electricity supply might prove insufficient. A lesson learnt as a result of FREVUE is that it is essential to work with the distribution network operator (DNO) in the process to identify possible constraints.

## The business case

High purchase costs for EFVs are still a barrier to their large-scale uptake. In-depth FREVUE analysis of the conditions required to reach a positive business case differentiates this further.

For small EFVs, ( $\leq 3.5$  t), the Total cost of Ownership (TCO) comparison can be favourable for an EFV within about five years, in the case the vehicle is driven at least 60 kilometres a day. For a medium-sized EFV (between 3.5t and 7.5t), this is more challenging but also possible. For large EFVs (>7.5t) even a long depreciation period and currently available purchase subsidies do, in most cases, not allow for a cost-neutral business case.



### Total cost of ownership comparison <3.5t vehicle (average 90km/day)

In general, the more kilometres the vehicle can be deployed on and the longer the depreciation period, the more pronounced are the advantages of the EFV. Specific circumstances, like the exemption from a congestion charge for EFVs, have a very positive effect on the business case.

Operators still have a limited choice of suitable EFVs, especially when it comes to vehicles over 7.5t. Information in the vehicle finders section of the FREVUE website helps locate options that are currently available.

To voice your vehicle demand and stimulate future vehicle supply, please sign the FREVUE Declaration of Intent.<sup>1</sup>

<sup>1</sup> <http://frevue.eu/declaration-of-intent/>