FREVUE

Freight Electric Vehicles in Urban Europe

GLA Group Fleet Meeting
08 December 2017

Agenda

- FREVUE project overview
- FREVUE vehicles
- Technical suitability
- Economics
- Environmental impacts
- Other findings

Objectives

Demonstrate suitability of electric freight vehicles for urban last-mile deliveries

Underpin future uptake of these vehicles

Provide evidence for policy intervention

FREVUE Vehicles

Oslo
Stockholm
London
Amsterdam
Rotterdam
Madrid
Lisbon

Freigl

Example of 12t vehicle: Heineken

Supplier: Ginaf (NL)

Payload: 4t; Load volume: 25 m3

Battery capacity: 120 kWh; Range: 125 km

Example of 18t vehicle: Heineken

Supplier: EMOSS

Payload: 7.5t; Load volume: 38 m3

Battery capacity: 160 kWh; Range: 160 km

Example of 19t vehicle: Breytner

Supplier: EMOSS

Payload: 7-8t; Load volume: 47 m3

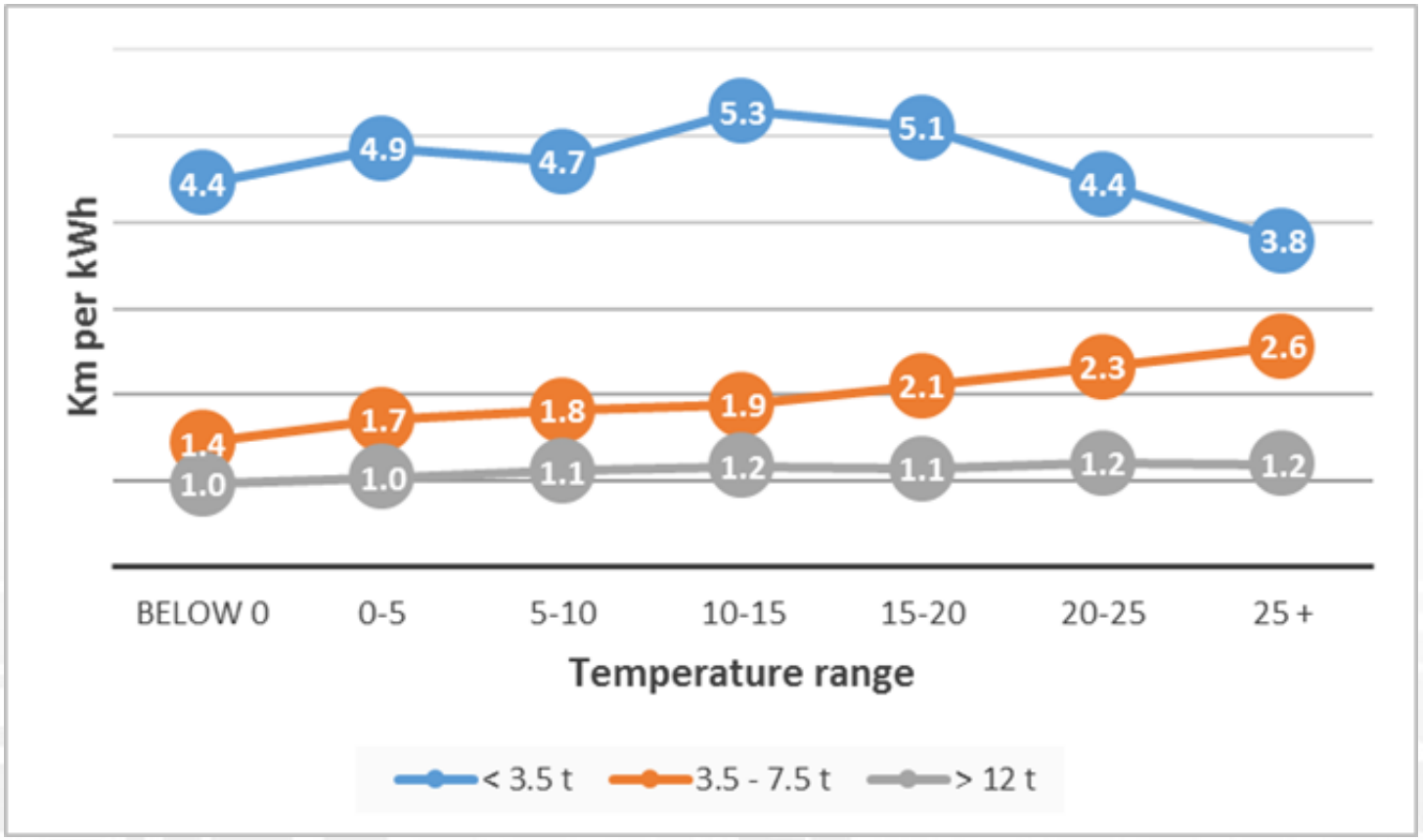
Battery capacity: 200 kWh; Range: 200 km

Technical suitability - Data

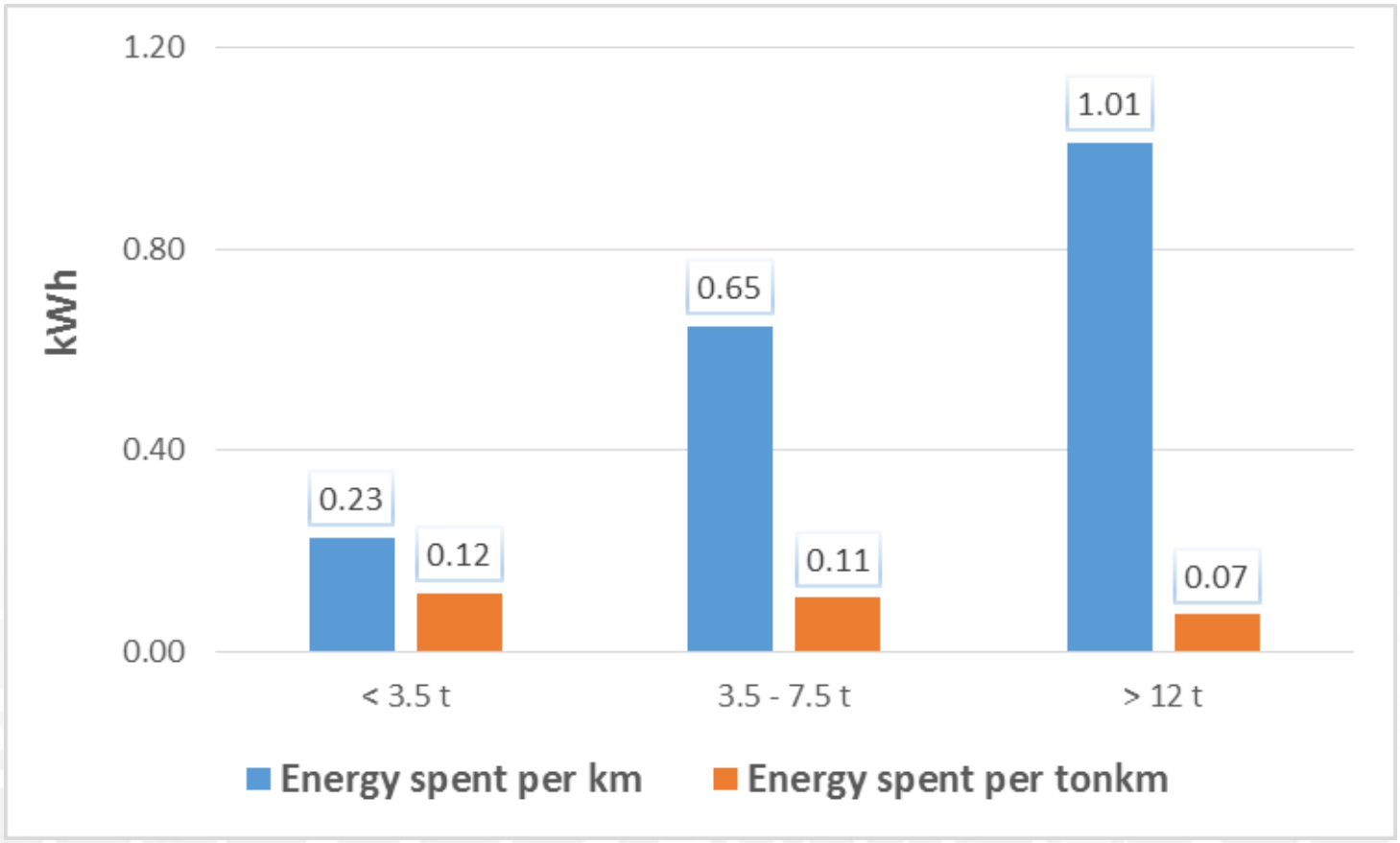
- Dynamic vehicle data with state-of-charge from 10 operators and 83 vehicles
- Covering 757,000 km – 19 times around the Earth at the equator

Technical suitability

Km per kWh, temperature and weight group



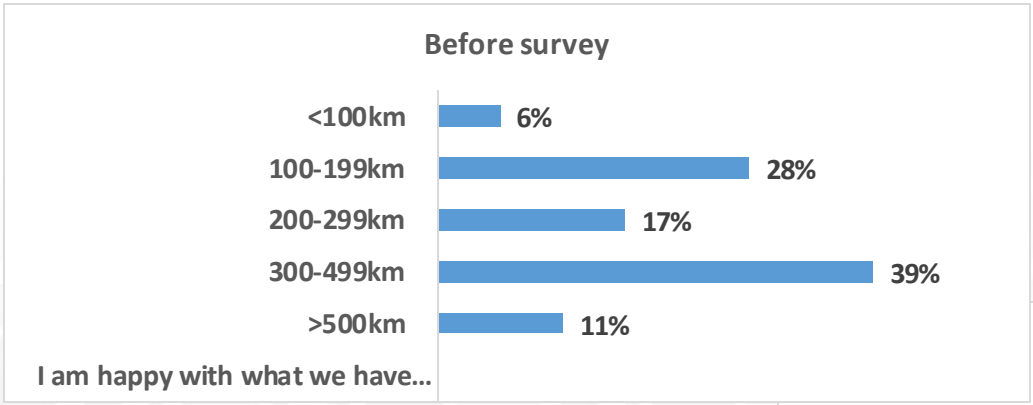
Technical suitability
Energy usage taking GVW into account

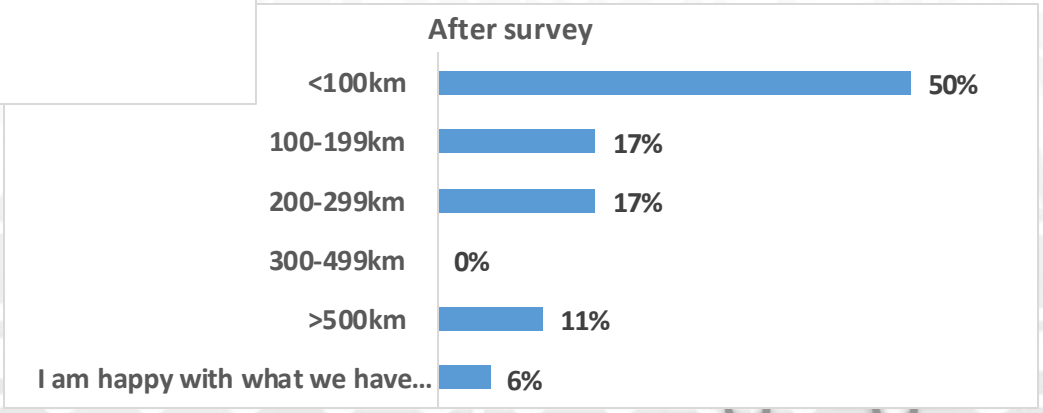


Technical suitability

Range – Mixed messages

- Operators consistently ask for more range
- FREVUE research shows that range sufficient for most urban freight operations
- Range perception changes over time





Technical suitability
Charging

- Most operators charge once a day – at night at the depot
- Some, especially the smaller ones, opportunity charge during the day, typically at lunch time
- Grid infrastructure constraints
- Most large vehicles have excess battery capacity
- Inner city fast charging infrastructure and new battery packs with higher capacity will further remove barriers

Environmental impact

- Low penetration level (10%), 2021:
  - NOx reduction of 402Kt
  - PM reduction of 3.8t
  - Local GHG savings of 284Kt CO_2e
- Monetisation, 10% penetration level, 2021:

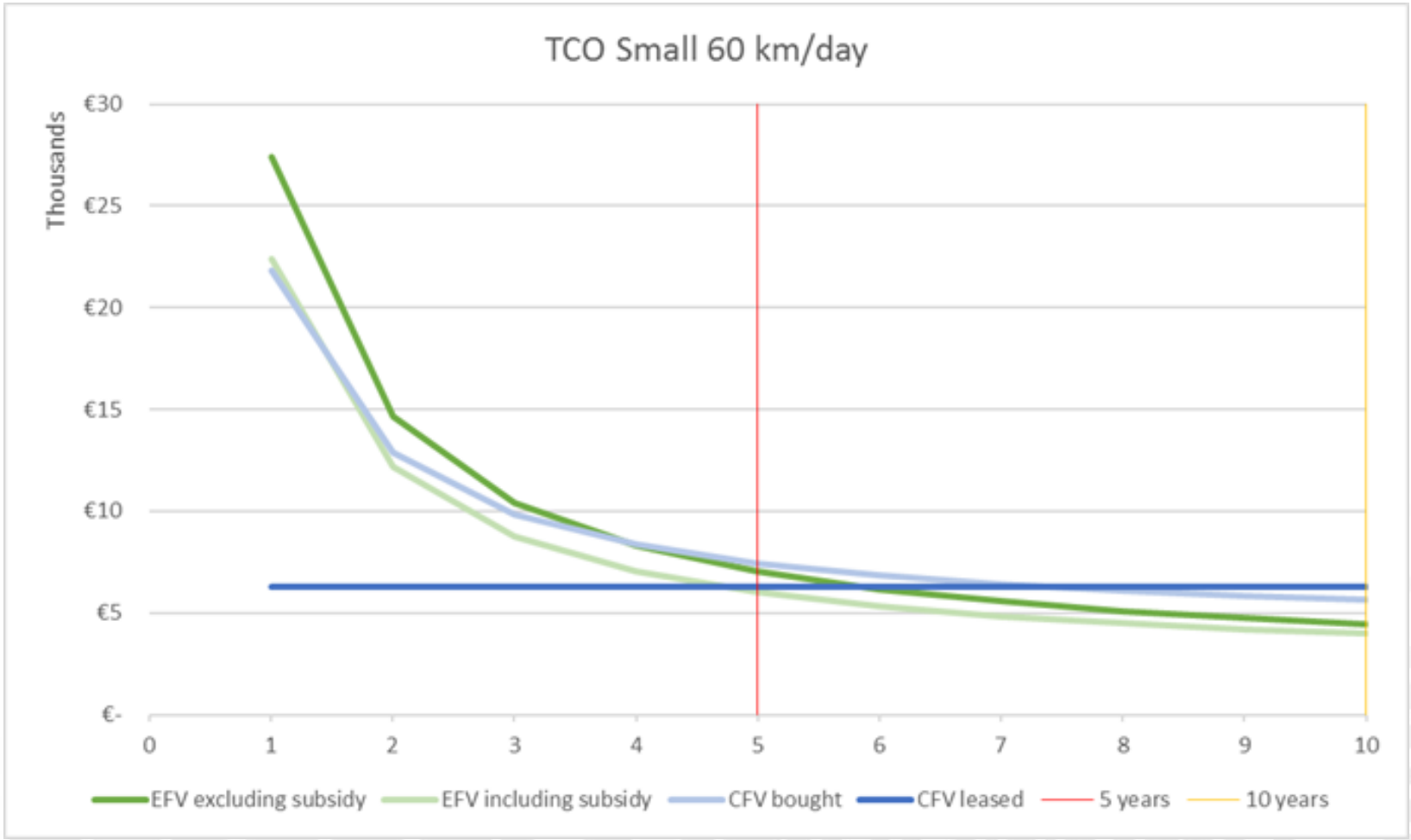
Direct impacts - Noise

- Many factors contribute to road traffic noises, including vehicle, road, geo-spatial and weather related parameters
- However, EFVs only reduce engine noise
- In the FREVUE project, the impacts are impossible to measure
- Previous studies show that noise reductions from an EFV significant at lower speed

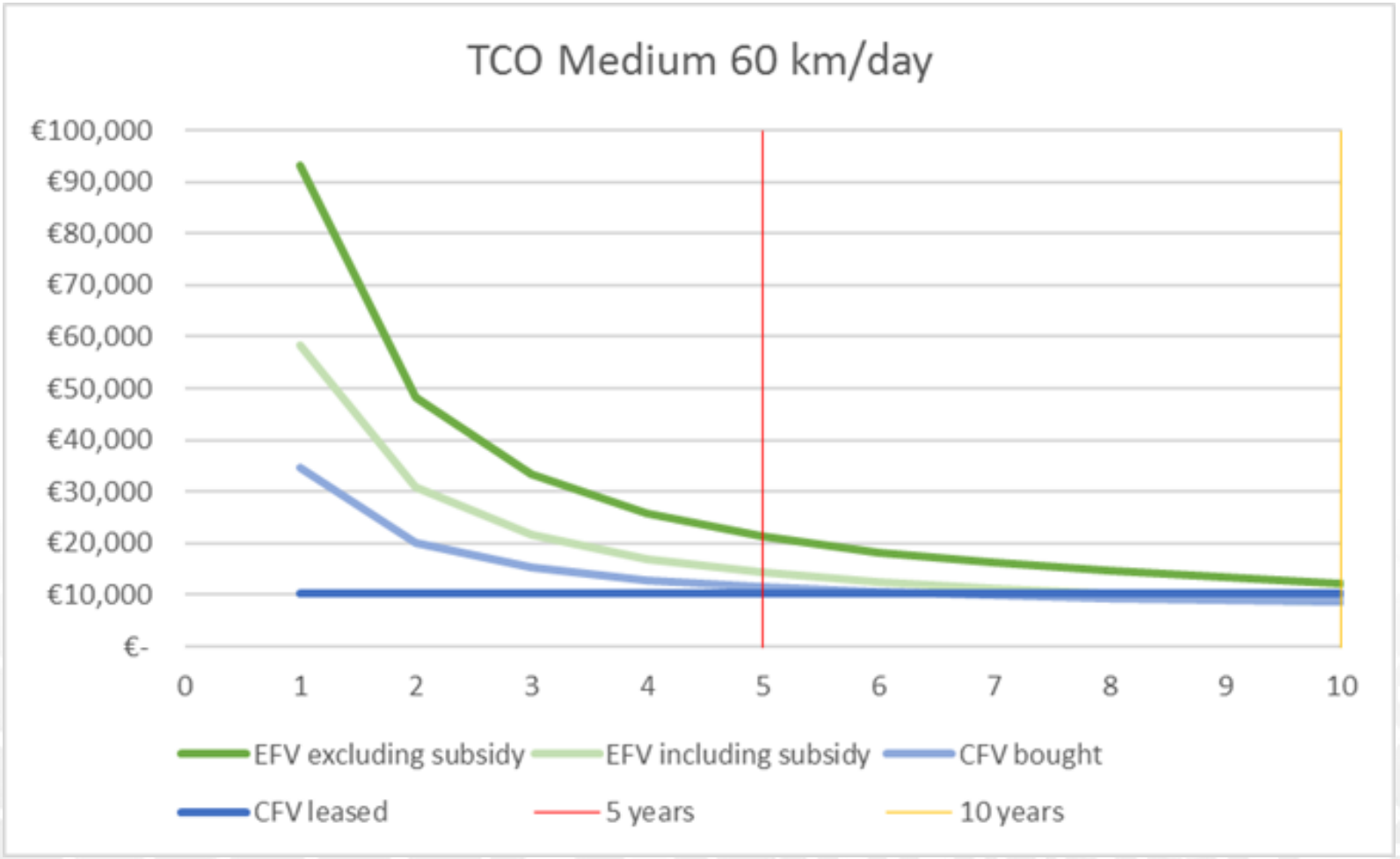
Economics of EVs for City Logistics

- A positive business case is achievable for small and medium EFVs
- For large EFVs this remains difficult

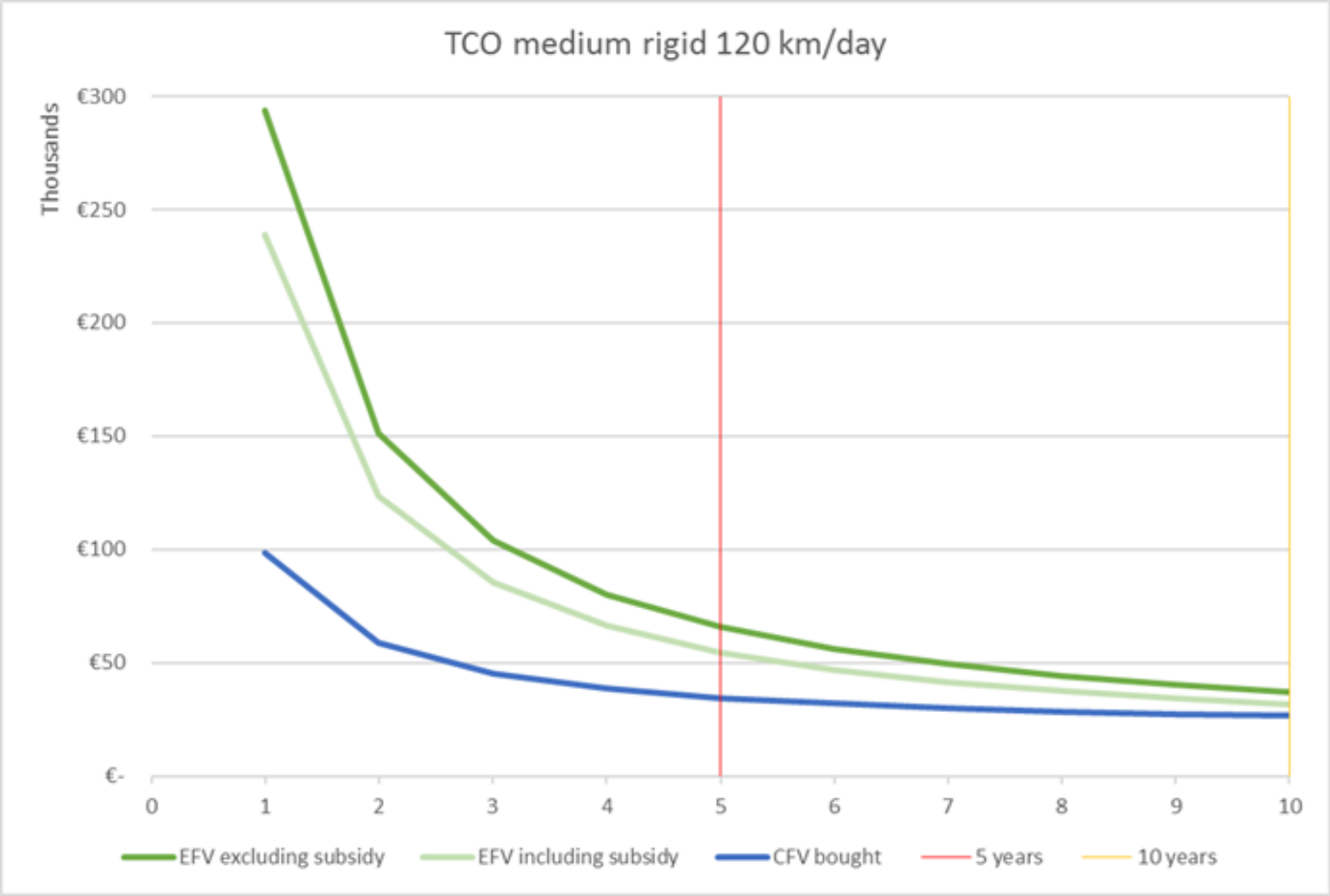
TCO comparison (small EFV)



TCO comparison medium EFV

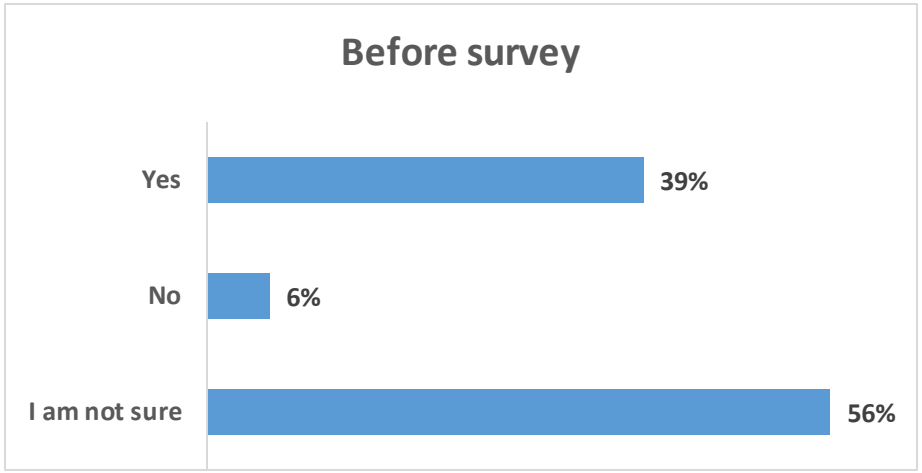


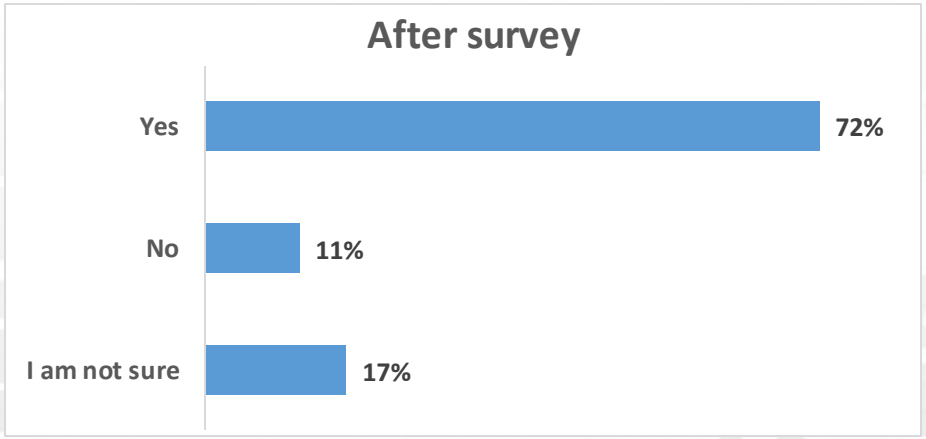
TCO comparison large EFV



Attitudes towards EFVs

Question to fleet managers: Are EFVs a viable alternative to ICEs?





Thank you

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