Electrifying your fleet
How feasible is it?
Cross River Partnership

Map of London with areas marked:
- Good Jobs
- Strong Businesses
- Clean Air
- Great Places
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The Case for Electric Freight Vehicles

- Traditionally focus on electrification of passenger cars and buses
- Freight vehicles contribute disproportionately to urban air pollution
- Freight movements remain crucial to well-functioning cities
- Fully electric freight vehicles offer no tailpipe emissions and significant reductions in CO$_2$ emissions
FREVUE
Freight Electric Vehicles in Urban Europe

- 4.5-year EU-funded project, 8 cities
- Objective to demonstrate the suitability of electric freight vehicles for inner city logistics
- Deployed over 80 fully electric vans and trucks <3.5 tonnes to >19 tonnes
- Provides evidence base
FREVUE Findings

- Current generation of electric vans and trucks technically and operationally suitable

- Available range sufficient for most urban operations

- Perception/attitude change over time

- Most operators increased numbers of EFVs in their fleet following FREVUE experience
FREVUE Findings (cont’d)

- Clear environmental benefits
- Resulting cost savings significant

"If, in London alone, we could electrify 10% of the freight fleet by 2021, we could save over €1 BILLION per annum in public spending on reduced health impacts and abatement costs."
FREVUE Findings (cont’d)

- Limited vehicle availability
  - OEMs entering the market
- High procurement prices
  - Falling battery prices
- Fast charging opportunities and impact on price
EFV Uptake

September 2017 McKinsey Report*:

eTruck market share could reach 15% by 2030

Our latest research reveals that eTrucks could account for 15% of global truck sales by 2030, with favorable segments like urban light duty trucks reaching sales as high as 25-35% in China and Europe.

EFV power requirements

- EFV power requirements and charging patterns different to passenger cars and buses

  An 18t single-shifted truck with a 200kW battery in daily operation requires an average of **163 kWh per day** to charge. In comparison, a medium-sized van requires approximately 30kWh per day

- Little diversity in charging patterns of large EFVs

  Large (over 12 tonnes) and medium (3.5 tonnes to 7.5 tonnes) EFVs within FREVUE tended to be **charged only once a day** in the late afternoon at the operator’s depot.

- Providing challenges but also opportunities
Local grid infrastructure capacity

- Overall impact still low but local constraints pose problems
- FREVUE partner UPS encountered grid infrastructure constraints when charging all EFVs at the same time
- Infrastructure upgraded to charge up to 63 vehicles
- Such infrastructure upgrade has proven:
  - Costly, lengthy and disruptive
  - Non-incremental
  - Requiring investment in 3rd party assets

Barrier to the large-scale deployment of EFVs
Smart Electric Urban Logistics

- An additional 20 EFVs at UPS central London depot
  - Bringing the number above the maximum that can theoretically be charged

- Design and implement an innovative smart charging system at this depot together with an energy storage system

- Design and implement a sophisticated network capacity assessment tool developed to take into account time of day variation in demand

- April 2017 to March 2019, funded by UK Office for Low Emission Vehicles
Thank you

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