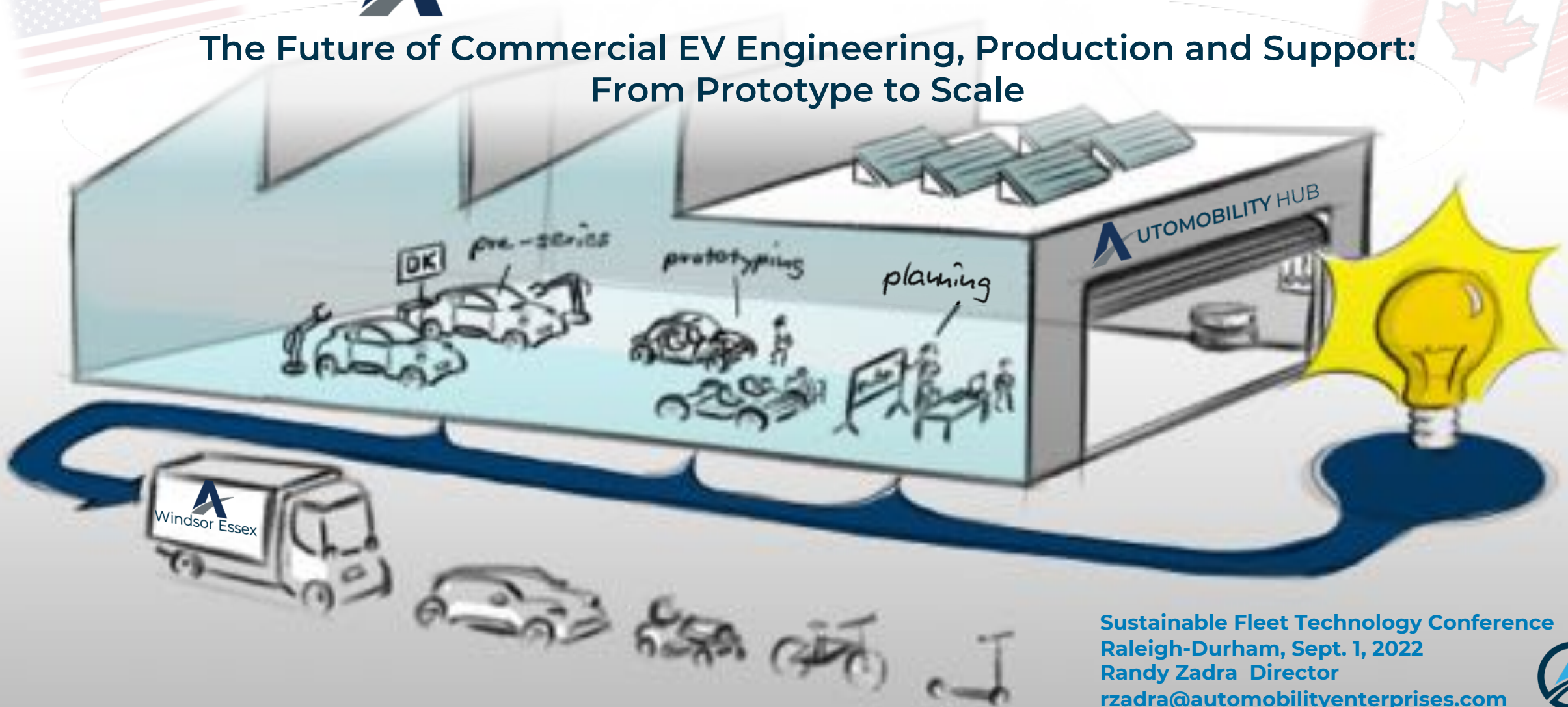




UTOMOBILITY Enterprises Inc.

**The Future of Commercial EV Engineering, Production and Support:
From Prototype to Scale**

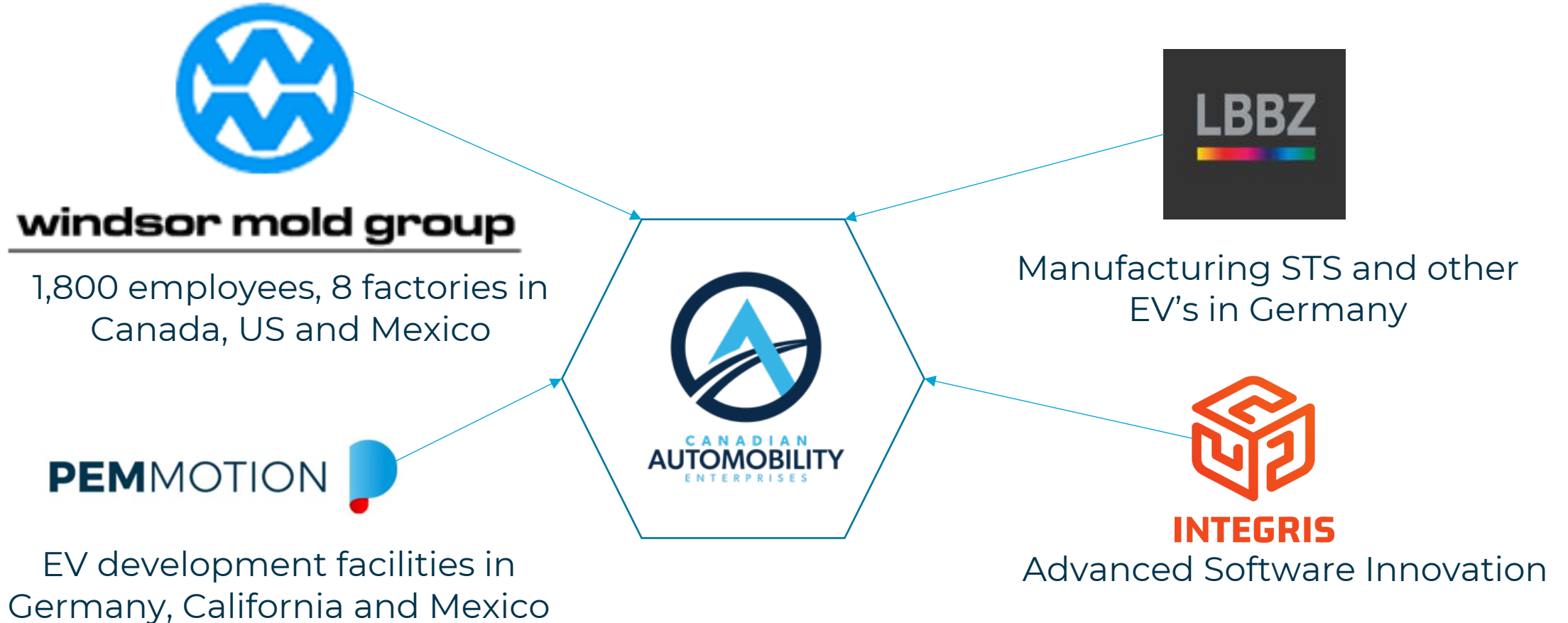


Sustainable Fleet Technology Conference
Raleigh-Durham, Sept. 1, 2022
Randy Zadra Director
rzadra@automobilityenterprises.com



About Automobility Enterprises

North American Joint Venture



60 years of automotive contract manufacturing experience to support commercial vehicle production in Canada, USA and Mexico



PEM Global Network



California Mobility Center
Sacramento, USA
85m€ investment ongoing



Automotive High-Tech
Cluster AHT
Monterrey, Mexico



Plant partner: eLab and Ramp-Up
Factory at RWTH Aachen University
(20m€ investment)



Plant partner:
Helmond, Netherlands
& Beijing, China



RoE-Factory
Aachen, Germany
10m € investment
ongoing

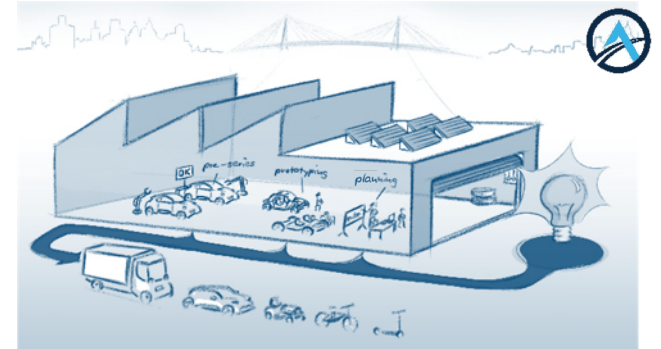


About Automobility Enterprises (AE)

e-mobility solutions provider focused on the development, manufacturing, and support of innovative products for **sustainable mobility**.

Supporting customers/brands from concept to series **production and assembly**, in the Detroit/Windsor area and through our shareholder facilities at the California Mobility Center and Aachen Germany.

Leveraging a proven model and **technology partnerships and innovation** from around the globe focused on fuel cells, battery technology, electric motors and propulsion technologies, AE offers **turn-key EV services** and solutions across several applications and markets, with a focus on **commercial vehicles**.



Our Services



Commercial EV Sales

- + Network of customers in the areas of
 - + Last mile delivery
 - + Utility fleets
 - + Transit fleets
 - + Government fleets
 - + Mining and agricultural
- + Can fast track market entry for foreign OEM's
- + Engaged with multiple Government Pilot programs and Incentives

Extract from our network



Volume series production

- + Scalable and innovative contract production for retrofits, SKD or BOM structure full manufacturing
- + Flexible production environment with ability to quickly change from manufacturing one type of vehicle to another
- + Agile factory that can scale up to meet your needs



Vehicle Support and Maintenance

- + Reliable maintenance solutions to support your electric vehicles
- + Our professionally trained and certified EV mobile technicians can provide remote or direct service on-site, or at AE facilities



Total Cost of Ownership Components: Comprehensive Approach



Capital Purchase Costs



Infrastructure Costs



Operating & Costs



Training Costs



Financial Factors Impacting TCO

- Financial Incentives & Rebates
- Depreciation Rates & Residual Value (leases)
- Maintenance Costs (including battery replacement)
- Electricity & Charging Costs



European Case Study Using 2 Last Mile Delivery Trucks: Comparing Gas vs Electric*

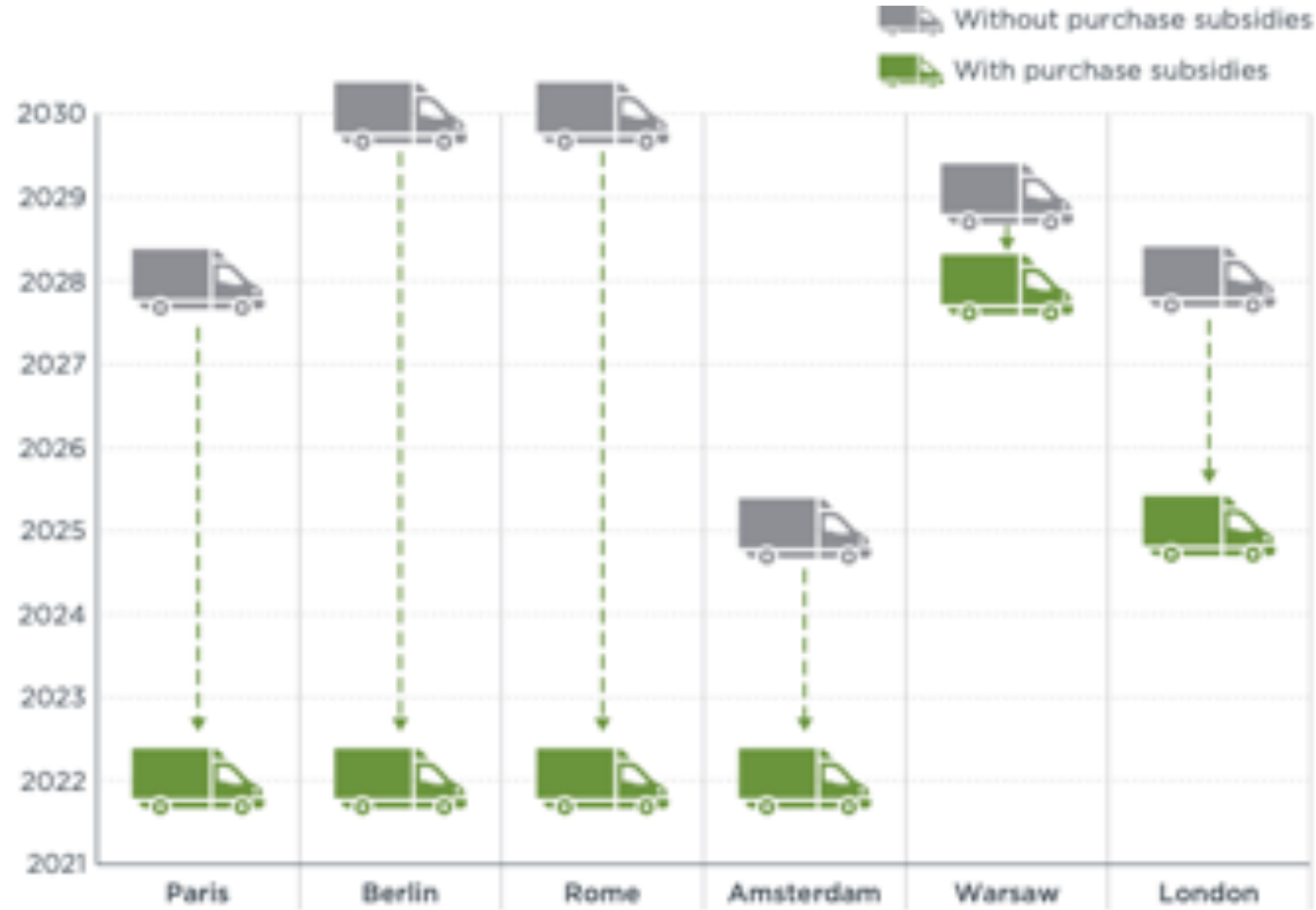


Figure ES1. The year battery-electric trucks achieve total cost of ownership parity relative to diesel trucks with and without purchase subsidies.



Critical Data in Determining TCO Parity*

Table 2. Battery-electric truck retail price breakdown in 2022, 2025, and 2030.

| Cost component | 2022 | 2025 | 2030 |
|---------------------------|----------------|----------------|----------------|
| Battery | €9,272 | €6,840 | €3,952 |
| Powertrain | €3,405 | €3,081 | €2,730 |
| Chassis and assembly | €23,995 | €23,995 | €23,995 |
| Indirect costs | €14,962 | €12,074 | €8,283 |
| Total retail price | €51,634 | €45,990 | €38,960 |

Vehicle Price

Table 13. Battery electric and diesel trucks' TCO parity year at different annual vehicle kilometers traveled (AVKT).

| AVKT (km) | Berlin | Paris | Rome | Amsterdam | Warsaw | London |
|-----------|--------|-------|------|-----------|--------|--------|
| 15,000 | 2030 | 2028 | 2030 | 2025 | 2028 | 2028 |
| 20,000 | 2029 | 2027 | 2029 | 2024 | 2027 | 2027 |
| 25,000 | 2028 | 2025 | 2028 | 2023 | 2026 | 2025 |
| 30,000 | 2028 | 2025 | 2028 | 2022 | 2025 | 2024 |
| 35,000 | 2027 | 2024 | 2027 | 2022 | 2025 | 2024 |
| 40,000 | 2027 | 2024 | 2027 | 2022 | 2024 | 2024 |
| 45,000 | 2027 | 2024 | 2027 | 2022 | 2024 | 2023 |
| 50,000 | 2026 | 2023 | 2026 | 2022 | 2024 | 2023 |
| 55,000 | 2026 | 2023 | 2026 | 2022 | 2023 | 2023 |
| 60,000 | 2026 | 2023 | 2025 | 2022 | 2023 | 2022 |

Annual Mileage Driven

Table 11. Impact of proper battery sizing on the total cost of ownership parity year between battery electric and diesel trucks without purchase incentives.

| City | Paris | Berlin | Rome | Amsterdam | Warsaw | London |
|--|-------|--------|------|-----------|--------|--------|
| TCO parity year with current battery size (76 kWh) | 2030 | 2030 | 2030 | 2028 | 2030 | 2030 |
| TCO parity year with proper battery size (35 kWh) | 2028 | 2030 | 2030 | 2025 | 2028 | 2028 |

Battery Sizing

Table 6. City-specific charging costs for the depot defined in this use case.

| City | Power prices incl. margin €/kWh | Network prices €/kWh | Taxes and levies €/kWh | VAT €/kWh | Charging costs €/kWh | Charging costs without VAT €/kWh |
|-----------|---------------------------------|----------------------|------------------------|-----------|----------------------|----------------------------------|
| Berlin | 6.5 | 1.7 | 9.6 | 3.4 | 21.2 | 17.8 |
| Amsterdam | 6.7 | 1.6 | 2.4 | 2.2 | 12.9 | 10.7 |
| Warsaw | 7.1 | 0.6 | 0.3 | 0.4 | 8.4 | 8 |
| Rome | 5 | 0.8 | 9.5 | 3.5 | 19.2 | 15.7 |
| Paris | 6.9 | 2.8 | 3.2 | 2.6 | 15.5 | 12.9 |
| London | 8.4 | 7.3 | 1.3 | 3.4 | 20.3 | 16.9 |

Smart Charging & Charging Costs

Table 9. Summary of purchase incentives offered for battery-electric trucks in the cities of interest in this study.

| City | Purchase Incentives |
|-------------------------|--|
| Berlin ⁴⁾ | 80% of price difference to diesel truck capped at €100,000 |
| Paris ³⁾ | 40% of the vehicle acquisition cost capped at €50,000 |
| Rome ²⁾ | €14,000 fixed premium |
| Amsterdam ⁶⁾ | 20% of the vehicle acquisition cost capped at €40,000 |
| Warsaw ⁴⁾ | 30% of price difference to diesel truck capped at €33,333 |
| London ⁵⁾ | €7,000 fixed premium |

Subsidy & Rebates



Conclusions

- Last Mile EV Delivery Truck economical today in multiple European cities with purchase subsidy
- Battery Sizing based on "real" duty cycle need Key to Reducing Capital Costs
- Smart Charging and Charging Costs Key to reducing overall costs
- Time required to reach TCO parity highly sensitive to diesel/gas costs and total annual mileage

