



2025

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EMT Madrid zero-emission buses: Procuring a model for sustainable urban mobility

📌 Wednesday, 26 November 2025

⌚ 14:30 - 16:00

SESSION 2E

CLEAN ROUTES AHEAD? LOW AND ZERO-EMISSION PUBLIC TRANSPORT

SPEAKERS

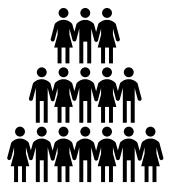
Alvaro Rodriguez, EMT Madrid

POLIS25
ANNUAL CONFERENCE

26-27 November 2025

Royal Jaarbeurs | Utrecht, Netherlands

MADRID



Capital and largest city in Spain: 3,5M inhabitants

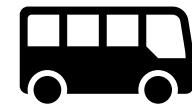
Second most populated Functional Urban Area in the European Union: 7% of Spain's total population



Key role in the country's economy (12% of the country's total GDP)



1st airport in Spain and 5th in Europe (66,1M passengers in 2024)



605.77 km²

15.8 million daily trips at the regional level, 13 million at the city level

EMT MADRID

100% PUBLIC
CREATED IN 1947

OWNED BY MADRID CITY COUNCIL

2.100 BUSES

5 DEPOTS

10.000 PEOPLE WORKFORCE

OPERATES AND MANAGES THE
WHOLE NETWORK OF PUBLIC
URBAN BUSES IN MADRID CITY

WE ARE THE REFERENCE OF SURFACE
MOBILITY IN THE CITY OF MADRID



SERVICE 24/7
ALL YEAR ROUND

476 MILLION BUS PASSENGERS IN 2024

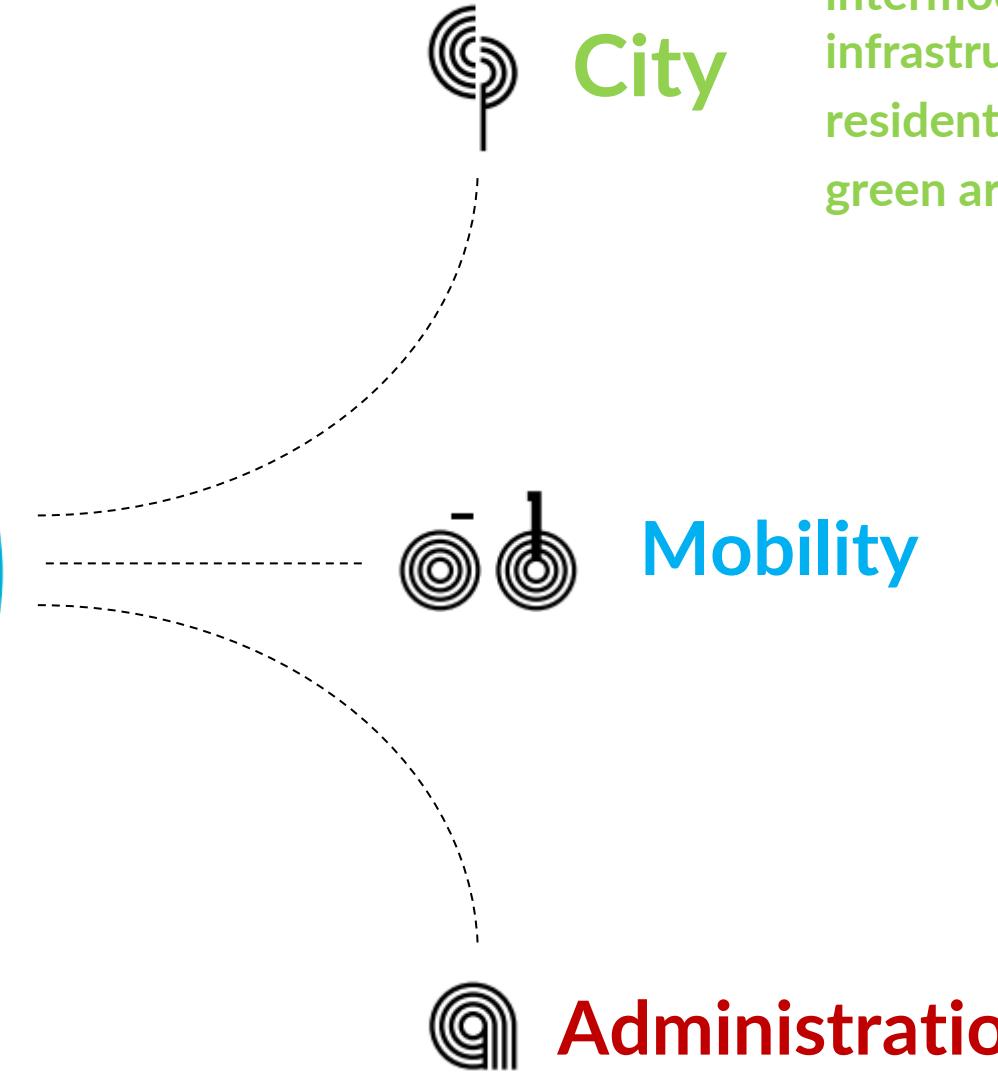
OTHER SERVICES PROVIDED

PARKING FACILITIES,
TOW TRUCK
BICIMAD (PUBLIC E-BIKE SHARING)
CABLE CAR SYSTEM

MADRID 360

An Environmental Sustainability Strategy **born to reduce the polluting and GHG emissions** of the capital by transforming it into a sustainable city.

Fight against climate change with economic development, by promoting the transition to efficient climate control systems, fleet renewal, the **promotion of public transportation**, the integration of all means of transportation, the strengthening of road safety, and innovation.

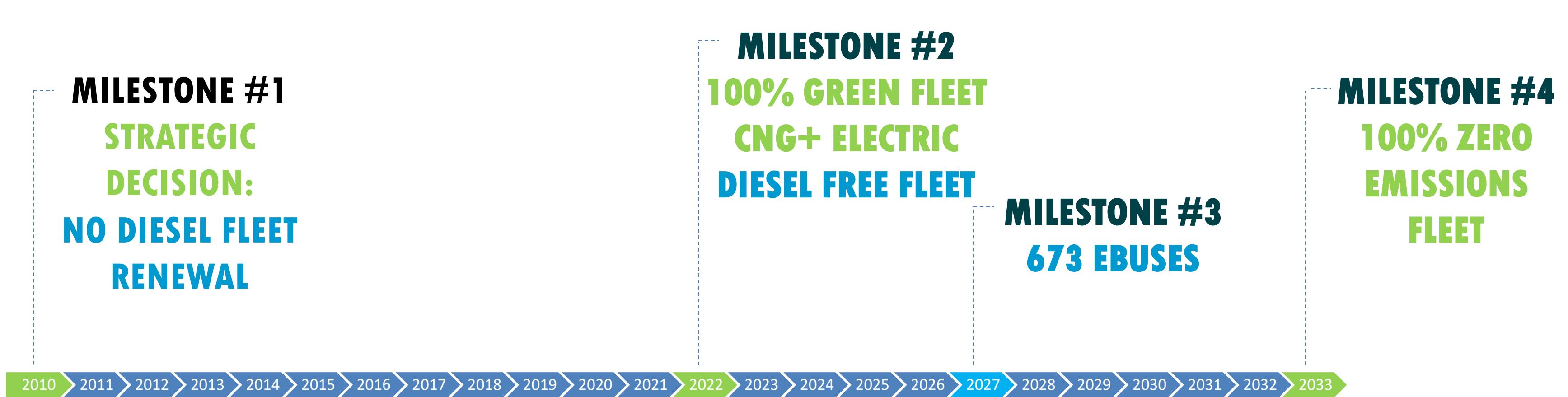


energy
intermodal transportation infrastructure.
resident and rotating parking.
green areas

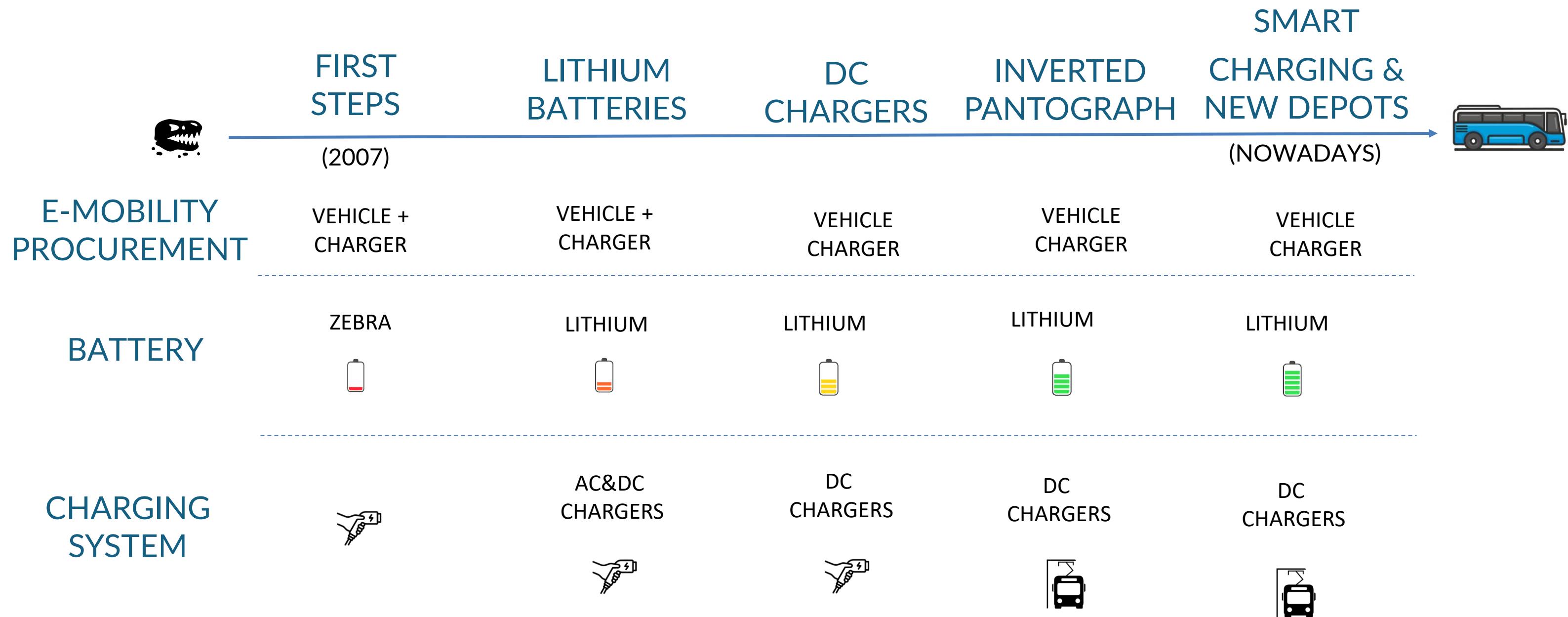
micromobility.
public transportation services.
urban distribution of goods, taxis, and RVDs.
clean vehicles, high-occupancy vehicles, and shared modes.
smart mobility

sustainability
transparency
regulatory framework

TRANSITION TO ELECTRIC BUSES



eVOLUTION



eVOLUTION

Charging technology	Opportunity	✗	For us bus de + cond
	On depot	✓	
Charging method	Induction	✗	AC ✗ DC ✓
	Conductive	Plug-in Pantograph	
	up down (inverted)	✓	up ✓ down (inverted)
		✓	

**Optimal charging model
considering local context:
For us (EMT) charging by night at
bus depot, inverted pantograph
+ conductive charging**

DEPOT ELECTRIFICATION



STRATEGIES

ADAPTATION

Carabanchel **Entrevías** **Sanchinarro**
65.000 m² 52.000 m² 59.000 m²
458 buses 413 buses 460 buses

Electric/CNG **CNG / H₂** **CNG**

NEW DEPOT

Fuencarral
133.000 m²
440 buses

La Elipa
40.000 m²
334 buses

UNDER CONSTRUCTION



CHALLENGES

- 1 Coexistence of **different technologies** (GNC, electric...) and **suppliers** (batteries, chargers...)
- 2 Constraints of **parking** area
- 3 Guarantee **grid supply** (enough electric connection power and electric supply guarantee with redundant design)
- 4 **Workshop** adaptations

CARABANCHEL DEPOT





LA ELIPA DEPOT: UNDER CONSTRUCTION

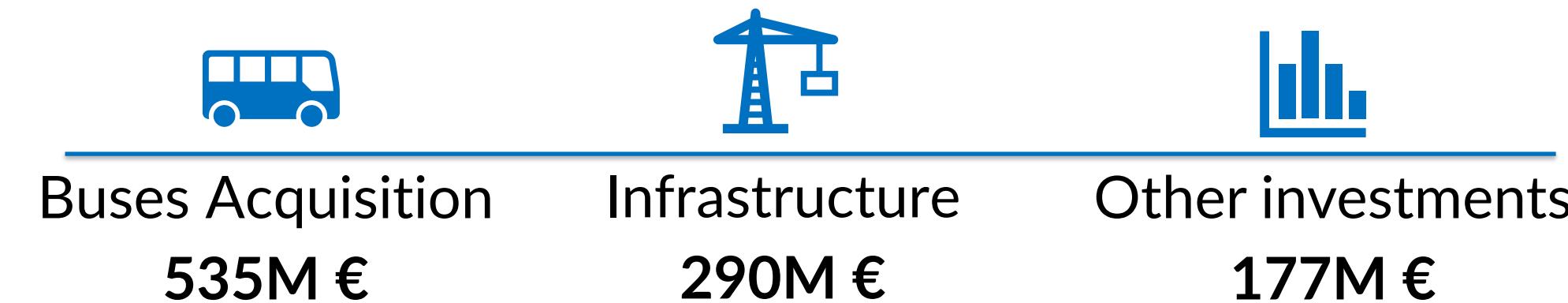


MAIN FEATURES:

- 1 318 BUSES PARKING CAPACITY (100% E-FLEET)
- 2 INVERTED PANTOGRAPH
- 3 20 MW POWER SUPPLY
- 4 SUSTAINABLE ENVIRONMENTAL CRITERIA DESIGN:
 - PHOTOCATALYTIC ROOF TO REDUCE GREENHOUSE GAS EMISSIONS
 - 34,000 M2 SOLAR PANELS
 - NEAR ZERO EMISSIONS BUILDING

INVESTMENT

Investment planned (2021-2025): **€ 1.000M**



European Funds (2021-2024): **€ 172M**

NextGEN
ERDF
H2020

RESEARCH AND INNOVATION THROUGH EUROPEAN FUNDED PROJECTS



**MOBILITIES
FOR EU**

'MOBILITIES FOR EU' IS A PROJECT FUNDED BY HORIZON EUROPE WITH THE GOAL OF IMPLEMENTING NEW MOBILITY AND FREIGHT TRANSPORT CONCEPTS IN THE EU. THE PROJECT FORMS ONE OF THE APPROACHES TO IMPLEMENTING THE EUROPEAN GREEN DEAL AND IS EXPECTED TO LAST FOR FIVE YEARS.



**Thank you for
your attention!**

For more information:

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POLIS
CITIES AND REGIONS FOR TRANSPORT INNOVATION



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