



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

📌 Wednesday, 26 November 2025

🕒 14:30 - 16:00

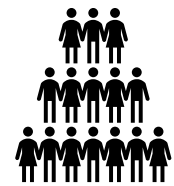
SESSION 2E

CLEAN ROUTES AHEAD? LOW AND ZERO-EMISSION PUBLIC TRANSPORT

SPEAKERS

Alvaro Rodriguez, EMT Madrid

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



EMT MADRID

SERVICE 24/7
ALL YEAR ROUND

476 MILLION BUS PASSENGERS IN 2024

OTHER SERVICES PROVIDED

PARKING FACILITIES,

TOW TRUCK

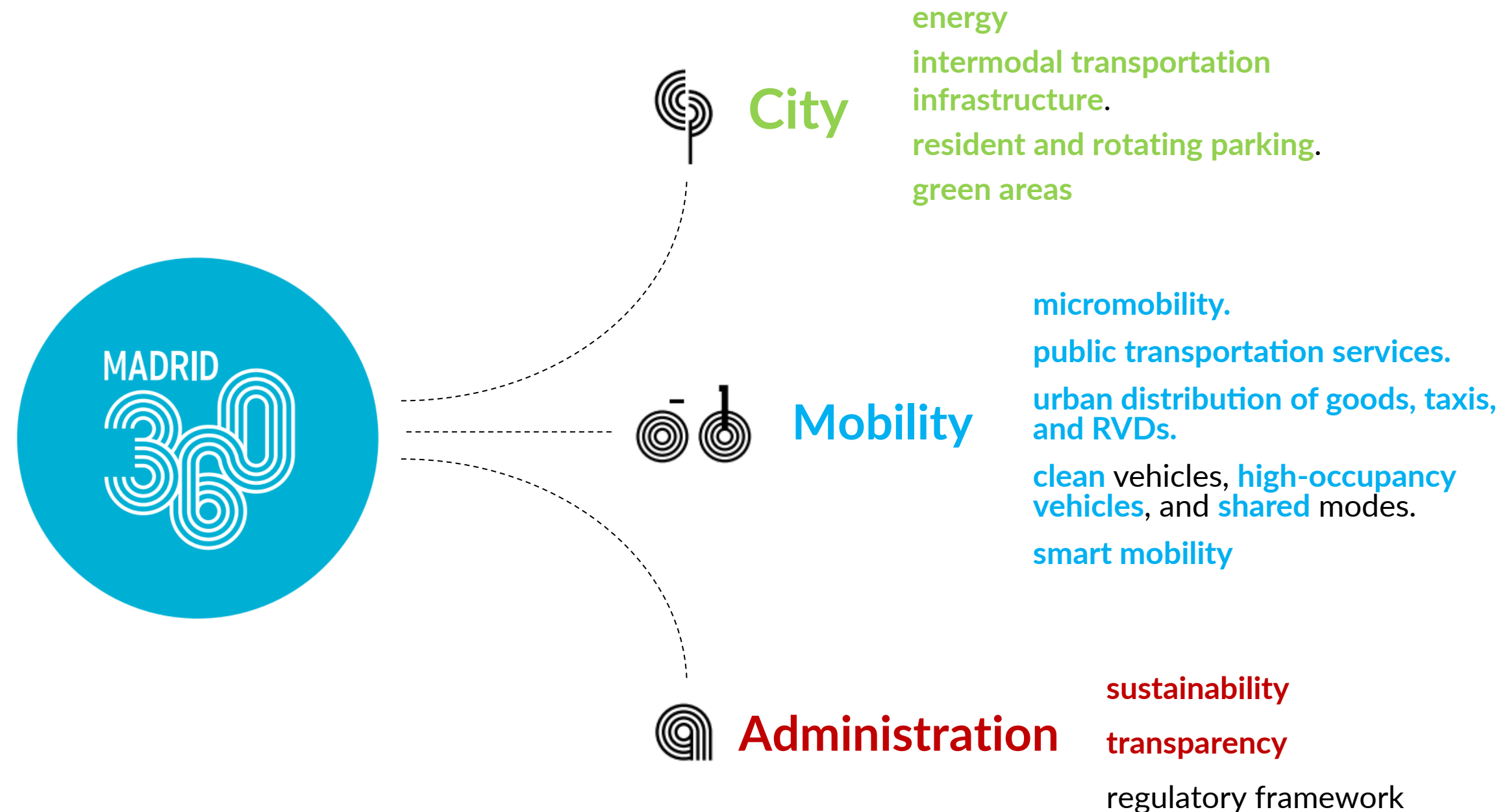
BICIMAD (PUBLIC E-BIKE SHARING)

CABLE CAR SYSTEM

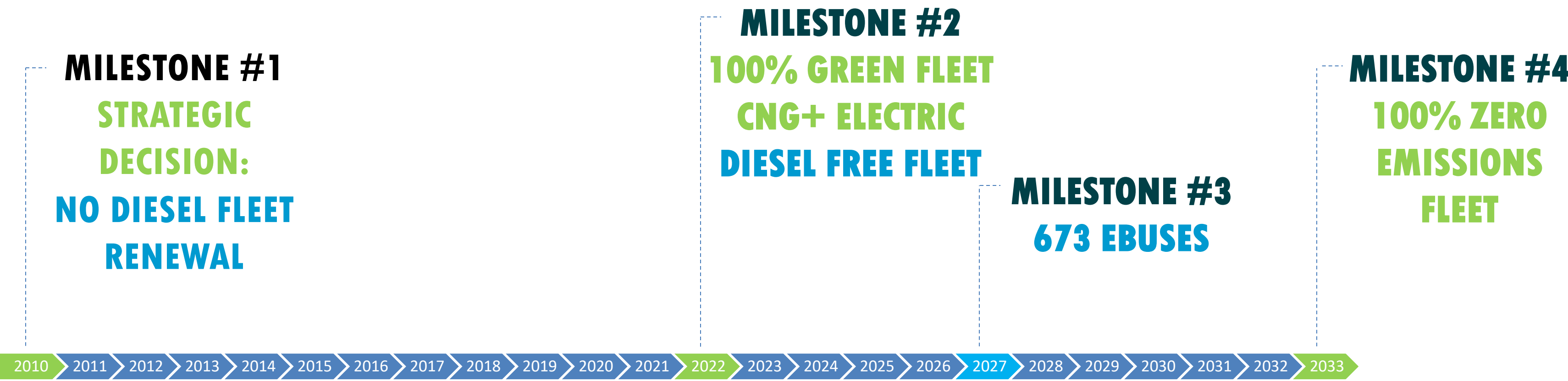
MADRID 360

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

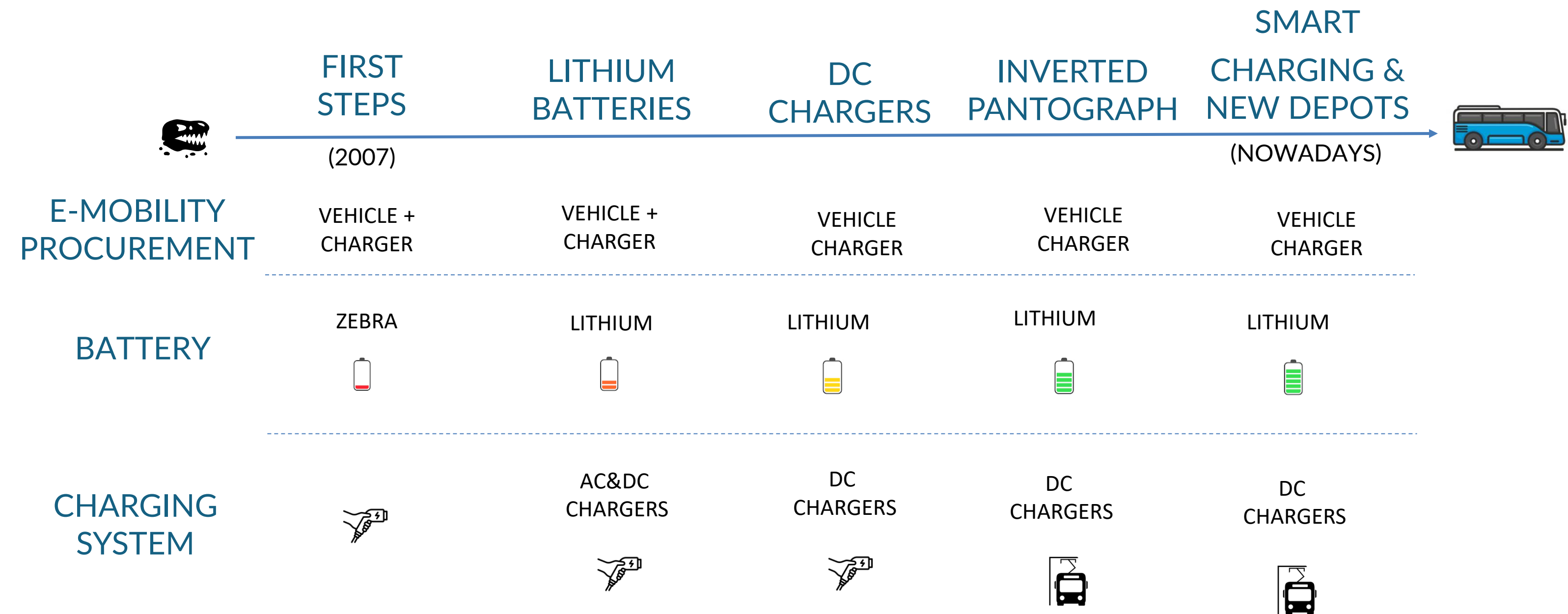
Fight against climate change with economic development, by promoting the transition to efficient climate control systems, fleet renewal, the **promotion of public transportation**, the integration of all means of transportation, the strengthening of road safety, and innovation.



TRANSITION TO ELECTRIC BUSES



eVOLUTION



eVOLUTION

Charging technology

Opportunity ✗

On depot ✓

Optimal charging model

considering local context:

For us (EMT) charging by night at bus depot, inverted pantograph + conductive charging

Charging method

Induction ✗

Conductive

Plug-in

Pantograph

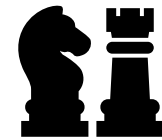
AC ✗

DC ✓

up ✓

down (inverted)

DEPOT ELECTRIFICATION



STRATEGIES

ADAPTATION

Carabanchel	Entrevías	Sanchinarro
65.000 m2 458 buses	52.000 m2 413 buses	59.000 m2 460 buses
Electric/CNG	CNG / H2	CNG

NEW DEPOT

Fuencarral	La Elipa
133.000 m2 440 buses	40.000 m2 334 buses
Electric/CNG	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

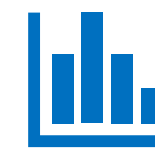
Investment planned (2021-2025): € 1.000M



Buses Acquisition
535M €



Infrastructure
290M €



Other investments
177M €

European Funds (2021-2024): € 172M

NextGEN
ERDF
H2020

RESEARCH AND INNOVATION THROUGH EUROPEAN FUNDED PROJECTS



'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



POLIS25
ANNUAL CONFERENCE

26-27 November 2025
Royal Jaarbeurs | Utrecht, Netherlands

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