CiViTAS
Cleaner and better transport in cities

DYN@MO
AACHEN • GDYNIA • KOPRIVNICA • PALMA

Summer University: Implementing city and citizen friendly electric vehicles

May 16th, 2014

Palma de Mallorca, Spain

Madrid e-mobility experience

Sergio Fernández Balaguer, Empresa Municipal de Transportes de Madrid S.A.

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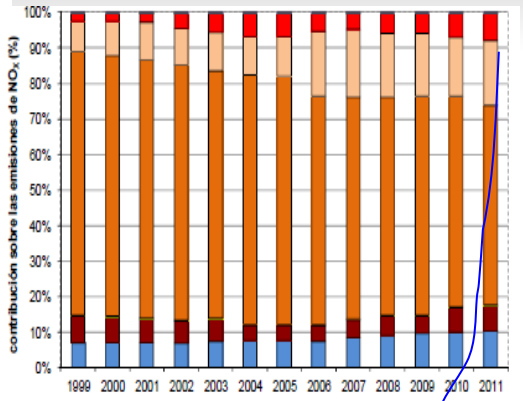
Context

Road Transport is the main responsible for pollutants and GHG emission in the City of Madrid

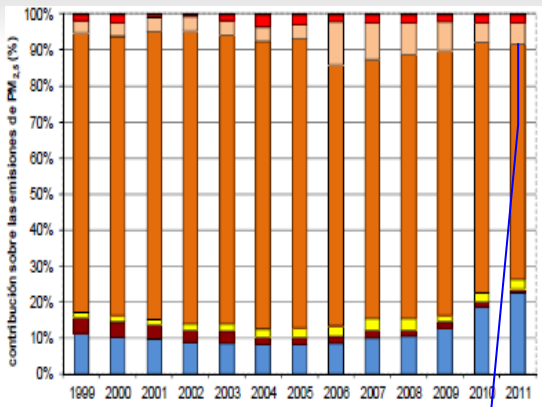
Evolution of the transport sector by type of emissions:

NOx



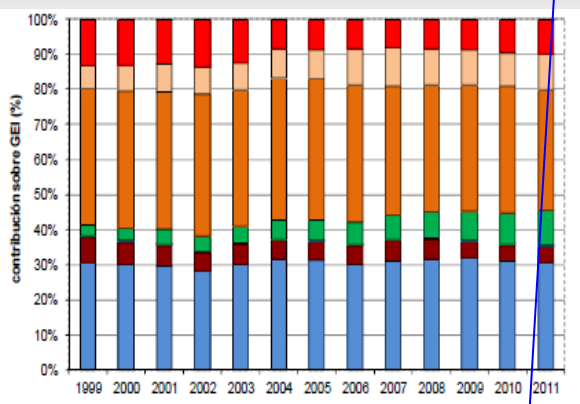
56 %

Particle matter



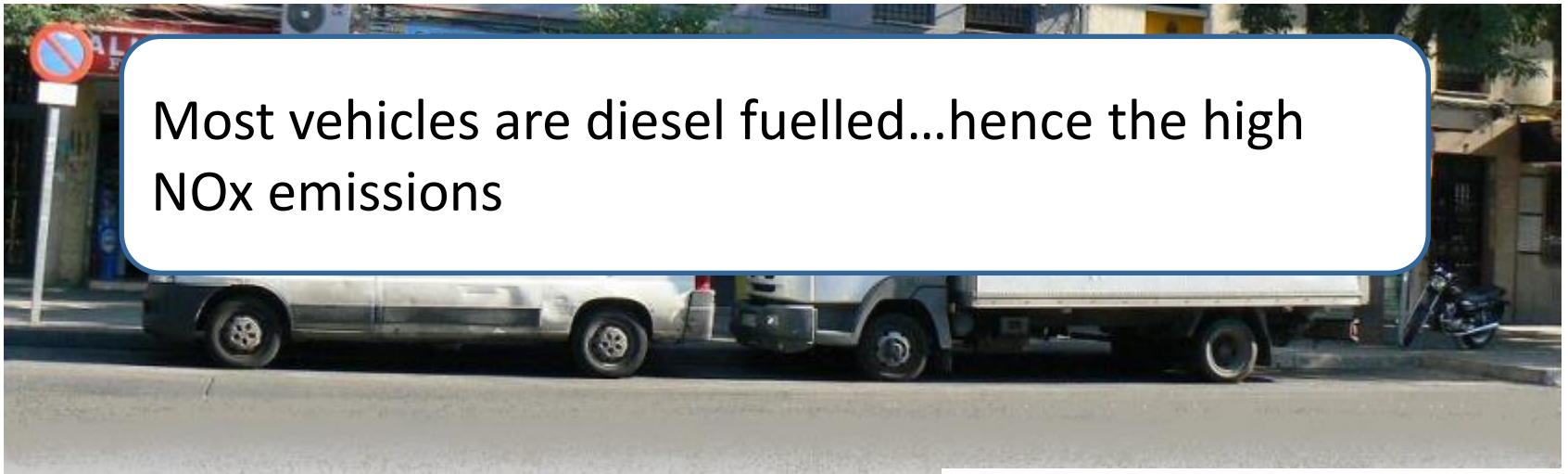
65 %

GHG



34 %

Context

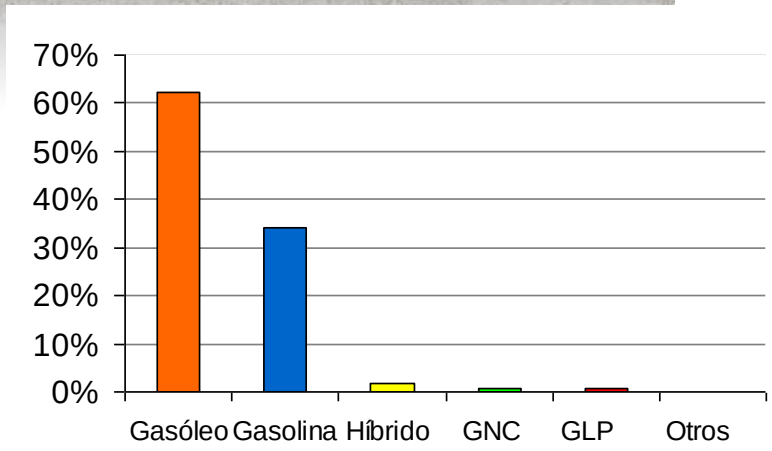


Most vehicles are diesel fuelled…hence the high NOx emissions

Trips by type of fuel (inside inner ring M-30)

Vehicule	using	Diesel	62,4 %
"	"	Gasoline	34,2 %
"	"	Hybrids	1,8 %
"	"	CNG	0,8 %
"	"	LPG	0,7 %
"	"	Other	< 0,1 %

Source. Characterization of Madrid fleet. 2013

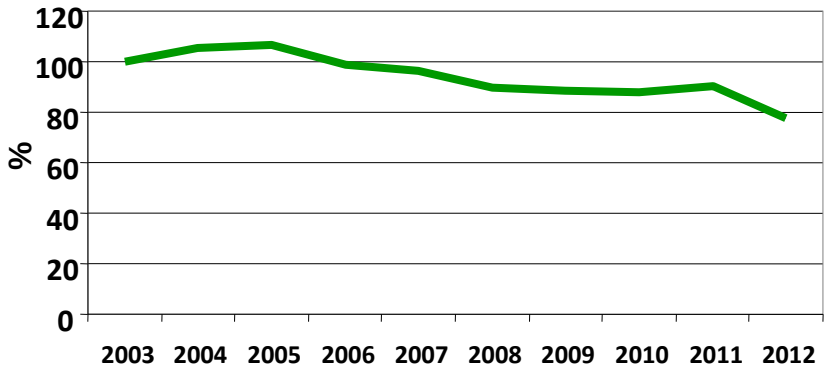


Context

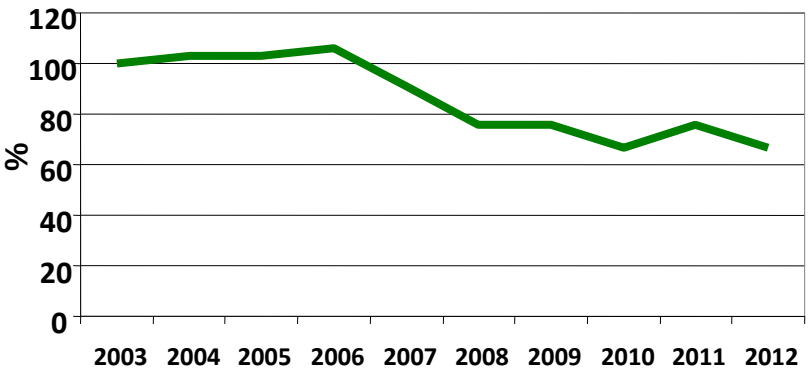
Decreasing trend since 2005 regarding urban pollutant emissions and immision values

Last decade annual evolution. Madrid City Council air quality surveillance network data:

NO_2 % compared to 2003



PM10 % compared to 2003



Strategic framework

Air Quality Plan 2011-2015

Energy Efficiency and Climate Change Plan

Sustainable Urban Mobility Plan

Promotion of alternative fuels and sustainable technologies

MADRID SUSTAINABLE URBAN MOBILITY PLAN

8 STRATEGIC LINES	15 MEASURES	96 ACTIONS

Fostering sustainable modes of transport: public transport	2 3 4 7 8 11 14	PULL	1 2 3 4 5 7 8 11 14
Fostering sustainable modes of transport: walking + cycling	1 4 5 14		
Encourage a safer and more accessible city	4 14		
Private car demand management	6 7 9 13	PUSH	6 7 9 13
Decreasing indiscipline	6 9		
Freight distribution	10	TRANSVERSAL MEASURES	10 12 14 15
Mobility Emissions reduction	12		
Participation, and awareness raising	14 15		

PULL

PUSH

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MADRID SUSTAINABLE URBAN MOBILITY PLAN

15 MEASURES → **96 ACTIONS**

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PULL

1. Promoting walking
2. Promotion of public transport
3. Multimodality improvement
4. Accessibility improvement
5. Cycling mobility promotion
7. Improved mobility management (private vehicles)
8. Completing transport system with collaborative mobility models
11. Promoting motorbike mobility
14. Communication and education for habits change

PUSH

6. Taxi optimisation
7. Improved mobility management (private vehicles)
9. Improvements in traffic management
13. Improvements in management of tourism and unscheduled transport

TRANSVERSAL MEASURES

10. ~~Optimization of urban freight distribution~~
12. Promotion of clean energy technology in vehicles
14. Communication and education fro habits change
15. Encourage private sector involvement in mobility management

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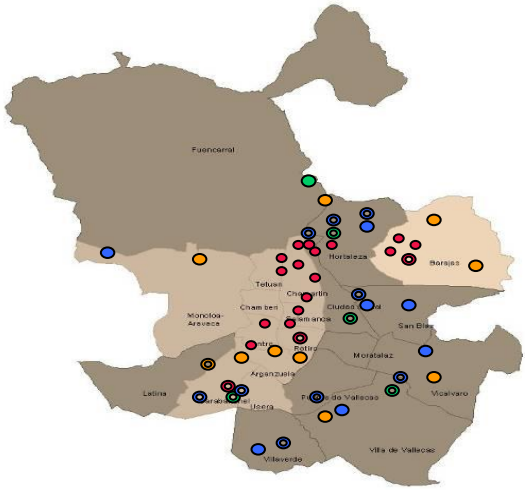
Promotion of clean energy technology in vehicles

Local administrations must act with an integrated perspective: on alternative fuel supply and on the vehicles fleet (“parque circulante”)



Alternative fuels supply network

Tailor made actions depending on the target sector

SECTORS

Municipal fleet

Private Logistic fleet

Buses

Taxis

Private vehicles

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“Extra help”: Madrid Mobility Board

2006-today

The tool fort mobility governance of the city, created in November 2006 through a process of dialogue, shared understanding and consensus among different actors involved in the mobility of the City of Madrid.

Functions:

To Reach an agreement on the mobility roadmap of the city, which facilitates the implementation of measures from local government bodies.

To analyse the evolution through the Annual Report of the State of Mobility.

Components

- ✓ President: **Councillor on Environment, Security and Mobility**
- ✓ Technical secretariat: **Sustainability and Mobility General Direction**
- ✓ Regional Federation of Neighbourhood Associations of Madrid (FRAVM)
- ✓ Chamber of Commerce
- ✓ Unions (CCOO y UGT)
- ✓ Madrid Business Confederation (CEIM)
- ✓ Political groups in the City Council (PSOE, IU y UPyD)
- ✓ Transport Regional Authority (CRTM)
- ✓ Public Transportation Company(EMT)
- ✓ Local Police (Police Municipal)
- ✓ Madrid City Council departments:
  - ✓ Environment, Security and Mobility
  - ✓ Economy and Employment
  - ✓ Urban planning and housing
- ✓ Universities
- ✓ **Private stakeholders (depending on the subject**)
- ✓ etc

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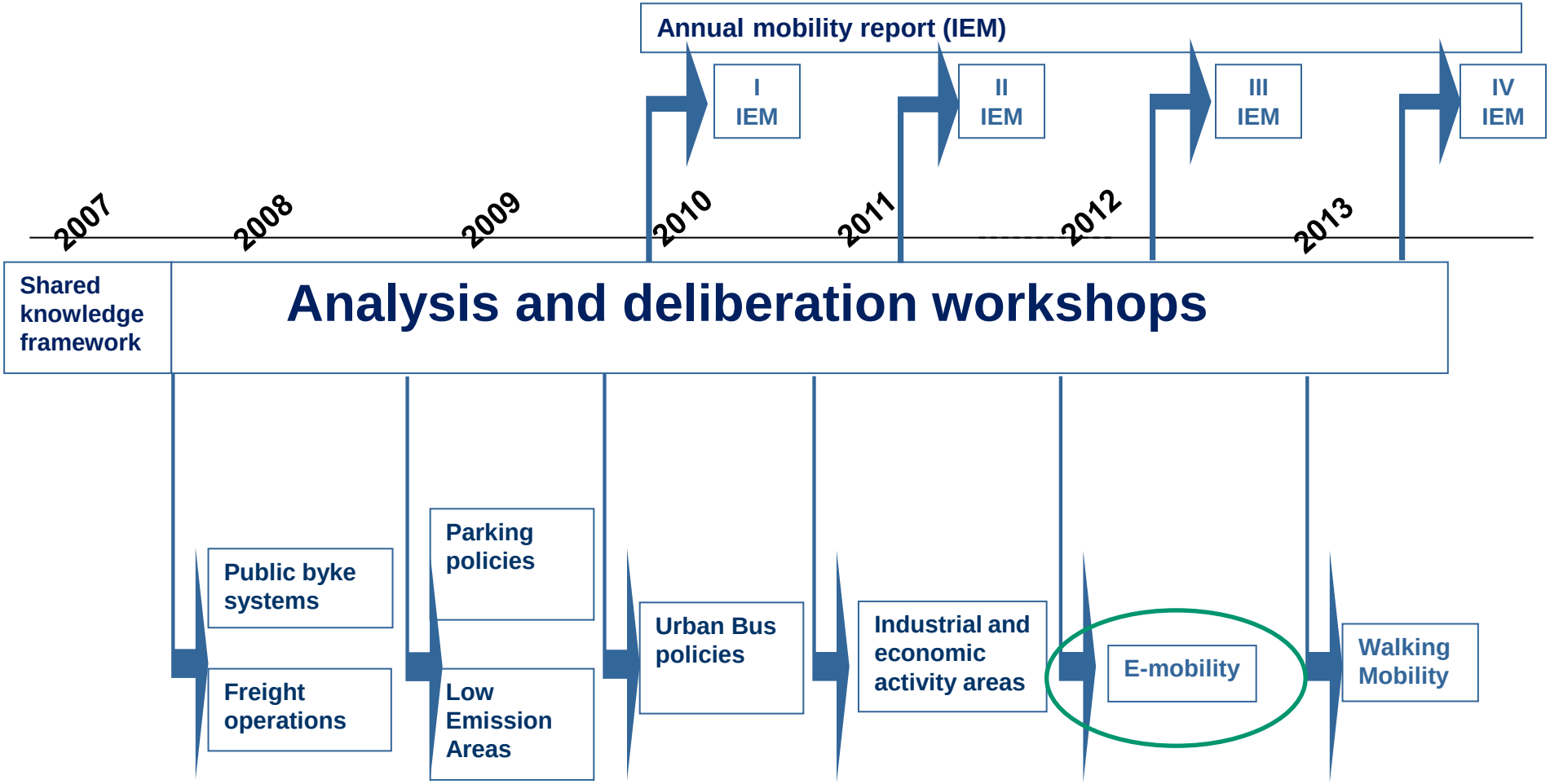
“Extra help”: Madrid Mobility Board



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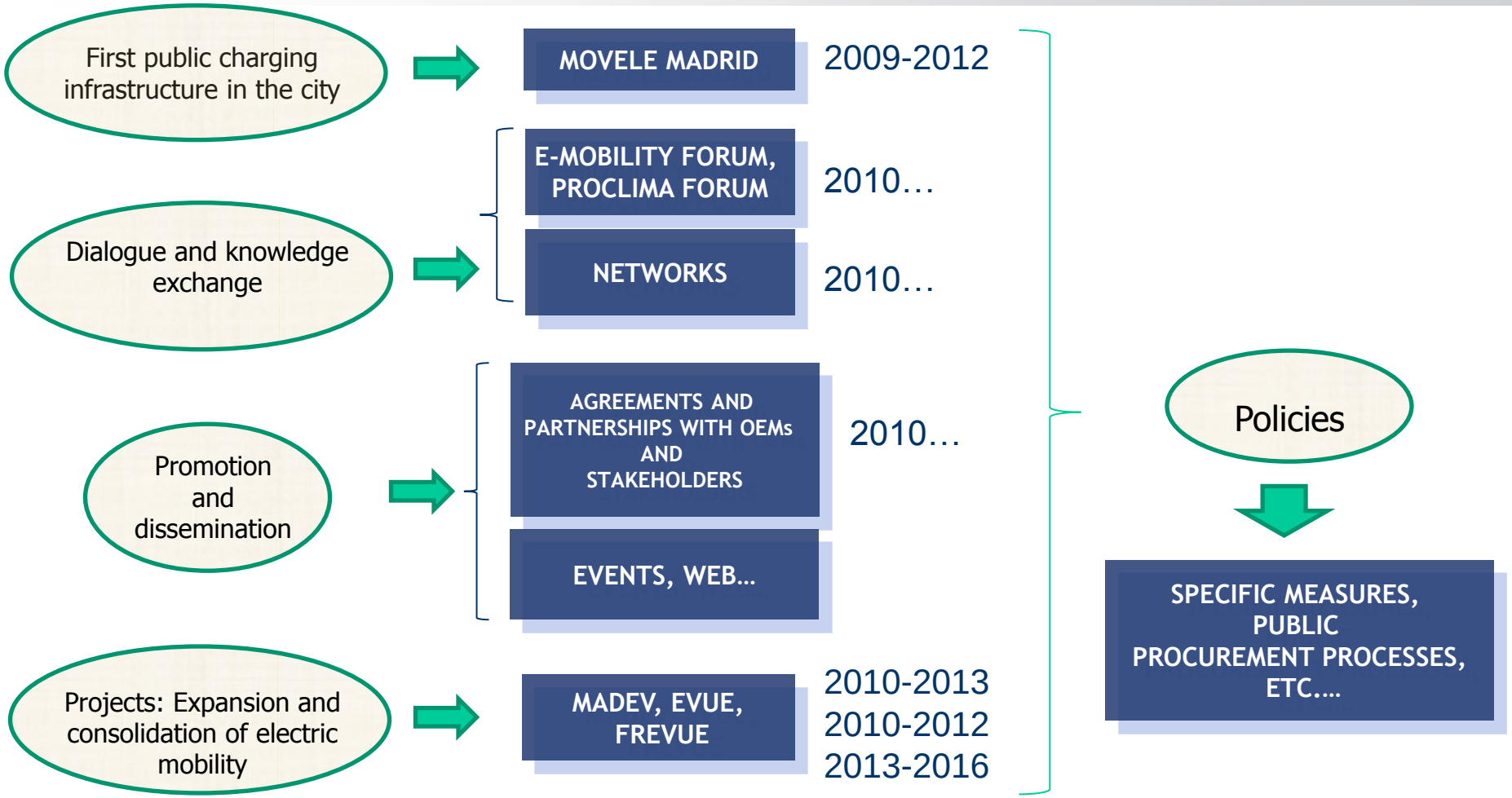
Madrid integrated approach: e-mobility strategy



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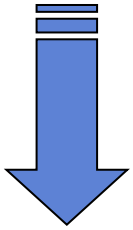
MOVELE PROJECT: 2009-2012

ORIGIN:

2008-2012 Action Plan under Spain's Energy Saving and Efficiency Strategy (E4)

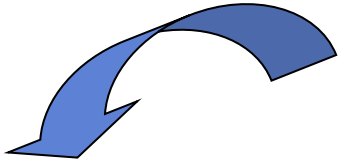
The Action Plan consists of a set of specific and different measures (59 actions have been identified, of which 36 take the form of financial incentives) which specifically target seven disaggregated sectors: Industry, **Transport**, Construction, Public Services, Household and office automation equipment, Agriculture, and Energy transformation.



IDAE*

*** The IDAE (Spanish Institute for Diversification and Saving of Energy) is a state-owned business entity that reports to the Ministry of Industry, Tourism and Trade through the State Secretary for Energy. The IDAE coordinates and manages both the measures and funds destined for these plans in conjunction with the autonomous regions**

In the **transport and mobility area**, these measures include, among others, a **pilot project** to introduce electric vehicles which will be carried out in collaboration with the governments of the Autonomous Regions and local authorities.



MOVELE PROJECT

The **aim of the pilot** is to demonstrate the feasibility of electric vehicles in technical, energy and economic terms. This project, reached through a consensus with the automotive industry, will set itself the target of a million electric and hybrid vehicles in 2014, giving precedence to domestic production as far as possible.

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MOVELE PROJECT: 2009-2012

STAGES:

The **first stage** of MOVELE project consists in the installation of **500 charging points all around Spain before the end of 2010**.

The **second stage** of MOVELE project consists in the staging or introduction of **2,000 electric vehicles within urban areas before the end of 2010**.

To get this goal, in December'08 the IDAE **invited the 13 biggest municipalities in Spain** (each one with more than 300,000 inhabitants) to participate in MOVELE project.

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MOVELE PROJECT: 2009-2012

STRATEGIC CRITERIA

- **Smart loading (usage information, communication with the control center, control process, peak hours, rate, security, etc. .)**
- **Slow charge**
- **Scheme open for testing all types of points from a minimum of "intelligence“ (INTEROPERABILITY):**

1. **Development of a technical requirements (already developed by the technical group)**
2. **After consulting with manufacturers and suppliers (already made, aproach very open)**
3. **In line with European standards in processing**

The strategic approaches of the MOVELE Madrid project have been recognized in the Spanish Strategy to Promote Electric Vehicle (April 6, 2010)

MADRID INITIAL TARGET	**CHARGING POINTS**	**280** in 2012	**•40 in fleets parking** (some kind of public access) **•200 in public parking** **•40 on street**

MOVELE PROJECT: 2009-2012

FIRST STEP: STRATEGIC CRITERIA, THE MOVELE PROJECT

- **Fit as a demonstration project ("stage 0") (living lab).**
- ***-Large-* number of charging points in fleets bases (agreement with companies)**
- **Minimize the number of charging points on the street ("opportunity charging")**
- **Parking concession for "opportunity charging“**
- **Opting for a centralized management in demonstration phase**
- **Joint communication project**
- **OPEN PROCESS (catalist):**
  - **Consultation process for mapping**
  - **Ongoing dialogue- manufacturers and potential clients**

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MOVELE PROJECT: 2009-2012

PPP

ACS endesa IBERDROLA gasNatural fenosa

BUDGET → € 1,366,000

IDAE contribution → € 586,000 (42,9%)

Madrid Council contribution → € 780,000 € (57,1%)

Private companies: charging points in private locations

Movele partners: for municipal points (public espaces, public buildings, others...)

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Some lessons:

1. Lack of demand (too high expectations not covered)

2. Lack of regulation

2. Lack of knowledge and stardards

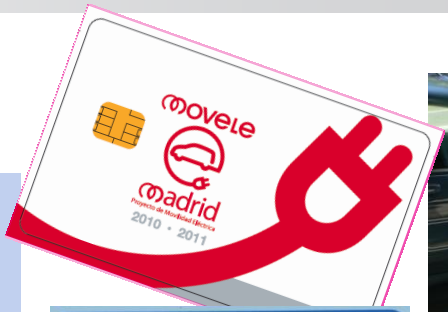
Results:

4. Just 60 charging points were installed, with great difficulties

5. Nevertheless, it was useful to set the first e-mobility incentives, and to start talking about e-mobility

MADRID E-MOBILITY INCENTIVES

FREE CHARGING (2010-2014)	“Oportunity charging”: 3 hours
SER PAYMENT EXCLUDED	Regulated parking service: Zero Emissions Label
REDUCTION ON TAXES	75% for EVs



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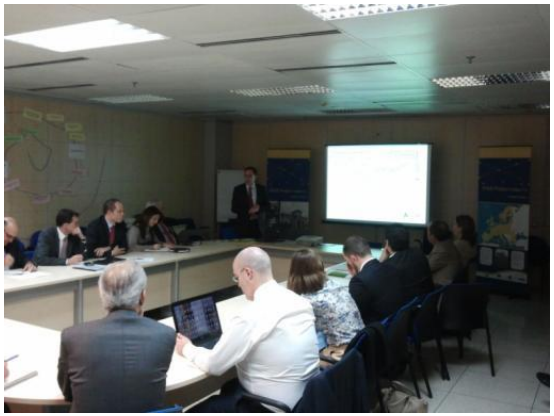
DIALOGUE AND PARTICIPATION: 2010…

- **<u>Electric mobility forum in the city of Madrid:</u> to facilitate synergies between the private sector and to collect demands, proposals and actions in the field of electric mobility**

- **1st session (launch): November 28, 2011**
- **2nd session: March 27, 2012**

- **Up to date two working groups (started in 25 January 2012)**
- **GT1: on infrastructure**
- **GT2: Communication**



NETWORKING

C40

Specific group on e-mobility “EVC40”. Forum for exchange of information and experiences of participating cities and germ entrepreneurship

CIVINET

CiViNET CiViTAS España y Portugal: Hispanic Portuguese network of cities interested in sustainable mobility

www.civitas.eu/civinet

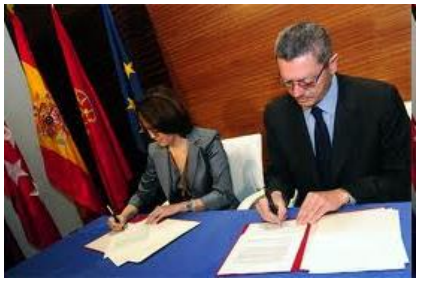
NETWORKING

POLIS/EUROCITIES → **Network of cities and regions for the development and promotion of sustainable mobility**

Green eMotion → **Madrid participates in the External Stakeholders Forum**

AGREEMENTS, MoU's, etc.

MoU Renault-Nissan. April 2010
Nissan Leaf Tour. October 2011



Madrid-Pamplona. April 2010

Toyota
September
2010

MoU
SEAT.
February 2011

Madrid
Ecocity. April
2012

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E-mobility web

MADEV PROJECT: 2010-2013

European Investment Bank

Programa ELENA (European Local ENergy Assistance): funds for technical assistance related to energy efficiency projects, which included electric vehicles.

First project on electric vehicles included in Europe.

The European Investment Bank also chose Madrid to study the introduction of electric vehicles. One of the most valued aspect was the major participation of the private sector (PPP Movele example).

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MADEV PROJECT: 2010-2013

Promoting energy saving and reducing GHG emissions

- **Incorporate electric vehicles into public fleet through public procurements (police, cleaning and maintenance services, public transportation, etc.) considering all levels of Spanish administration (which is widely represented in Madrid, as capital of the country).**
- **Promote and facilitate the implementation of charging points, both public and private, with special attention to the implications for the municipal grid.**
- **Promote the introduction of electric vehicles into other regulated sectors, such as taxi sector, car sharing, renting, etc.**
- **Facilitate the relationship between supply and demand.**
  Encourage the private use of electric vehicles (through fiscal and mobility incentives).

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MADEV PROJECT: RESULTS

DIRECT INVESTMENT

DIRECT INVESTMENT	total costs (EUR)	Electric vehicle quantity	Public CP including civil works	Private CP	Electric vehicle budget	Charging point budget
2011	3.179.987	50	154	0	679.037	2.500.950
2012	9.189.814	35	0	17	9.114.962	74.852
2013	734.545	35	0	13	708.123	26.422
Committed investment (2014 onwards)	1.805.542	60	8	-	1.801.542	4.000
Total period	**14.909.889**	**180**	**162**	**30**	**12.303.664**	**2.606.224**

INDIRECT INVESTMENT

INDIRECT INVESTMENT	total costs (EUR)	Electric vehicle quantity
2011	2.610.840	138
2012	3.245.000	207
2013	5.369.000	183
Total period	**11.224.840**	**528**

Estimated reduction of emissions of 4,851 CO2 eq. tons., saving 15,1 GWh

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MADEV PROJECT: LESSONS

1. Economic crisis. Targets downsized

2. Great difficulty collecting information on investments made by the private sector

3. Difficulties in replication of joint procurement processes launched by other European cities (Stockholm, London)

EVUE: ELECTRIC VEHICLES IN URBAN EUROPE

EVUE (Electric Vehicles in Urban Europe), URBACT II project: London, Madrid, Frankfurt, Lisbon, Oslo, Stockholm, Beja, Suceava and Katowice

- Information exchange
- Implementation of a local support group (ULSG)
-Electric Mobility Forum
- Development of a local action plan

URBACT Connecting cities Building successes

evue electric vehicles in urban europe

http://urbact.eu/en/projects/low-carbon-urban-environments/evue/homepage/

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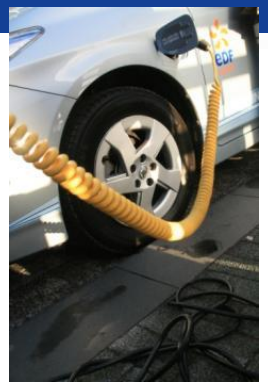
EVUE: LESSONS LEARNT



Some results:

1. European cities face the same challenges regarding e-mobility, and there are not that significant differences among them (but exceptions)

2. Importance of including criteria in the public procurement policies of cities (fleet and services), as well as promotion policies and incentives

3. Provide assistance and facilitate demonstration projects in different strategic areas, such as taxi and urban freight distribution sectors; areas with high visibility and importance in urban areas

4. Foster cross collaboration through funding initiatives (European projects)

5. Encourage charging at origin and at destination.

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EVUE…TO FREVUE: fostering cooperation

Madrid FREVUE partners

- SEUR
- TNT Spain
- GRUPO LECHE PASCUAL
- ITENE

+ ¡MADRID! EMT

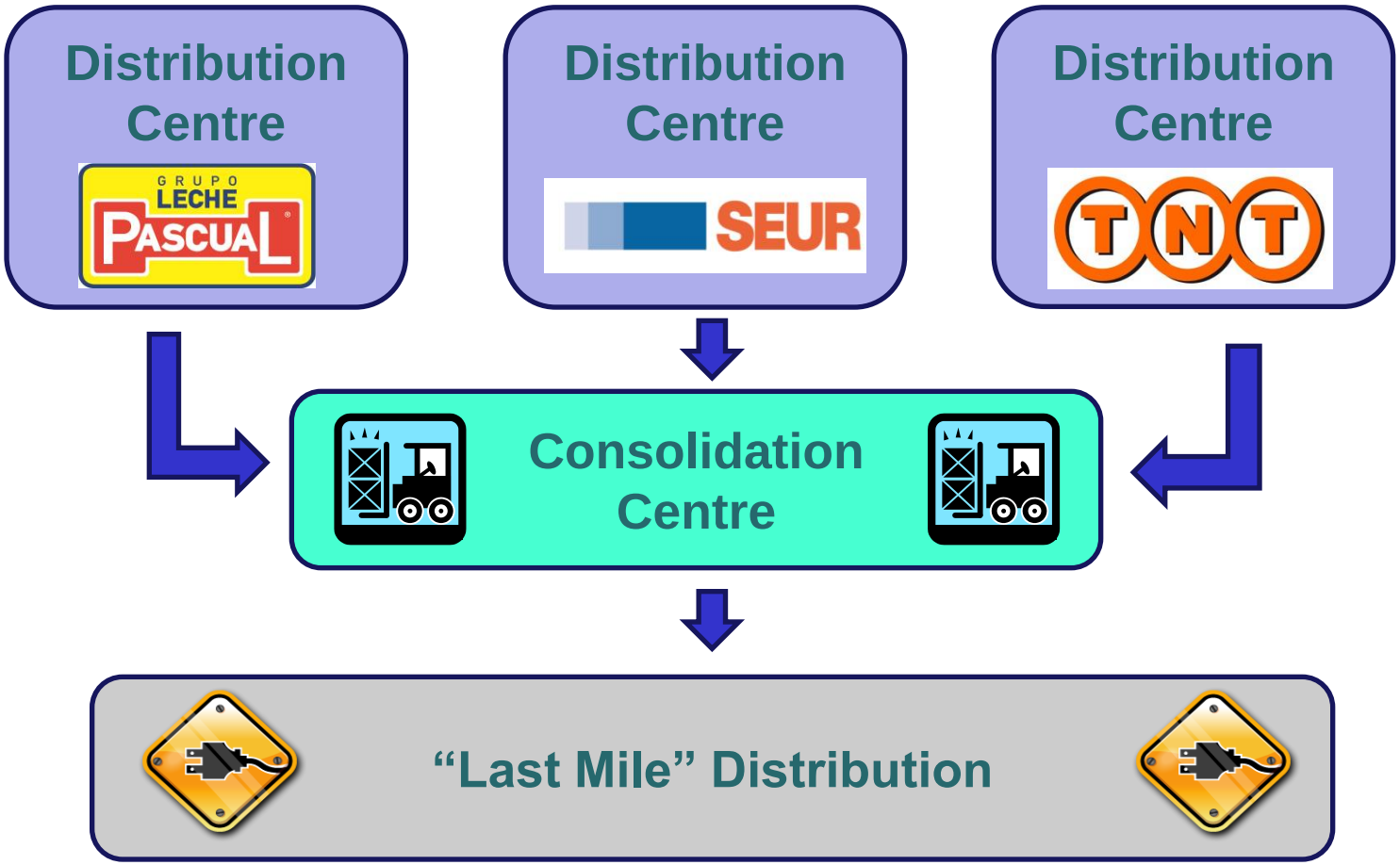
Total budget: € 926.662 (EU contribution € 562.749)

Main stakeholders:

CITET – Centro de Innovación para la Logística y el Transporte por Carretera

UNO

Madrid pilot



Madrid FREVUE vehicles

GRUPO LECHE PASCUAL

SEUR TNT

IVECO

Mercedes-Benz

RENAULT

+ 2014…

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Searching process started in April 2013…
…and we found the former Legazpi Market

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Why Legazpi Market?

- Municipally owned (Madrid City Council contribution to the project)
- Landmark and representative (one of the very first concrete buildings in Spain, dating back from 1910).
- Giving it back its original use
- Complies with the requirements in terms of surface area, clearance, enough space for vehicles manoeuvring, cargo warehouses, toilets, 24 hours surveillance, etc.)
- Excellent accessibility by road (first ring of the city, area with minimal interference with bus stops, traffic roundabout, etc.)

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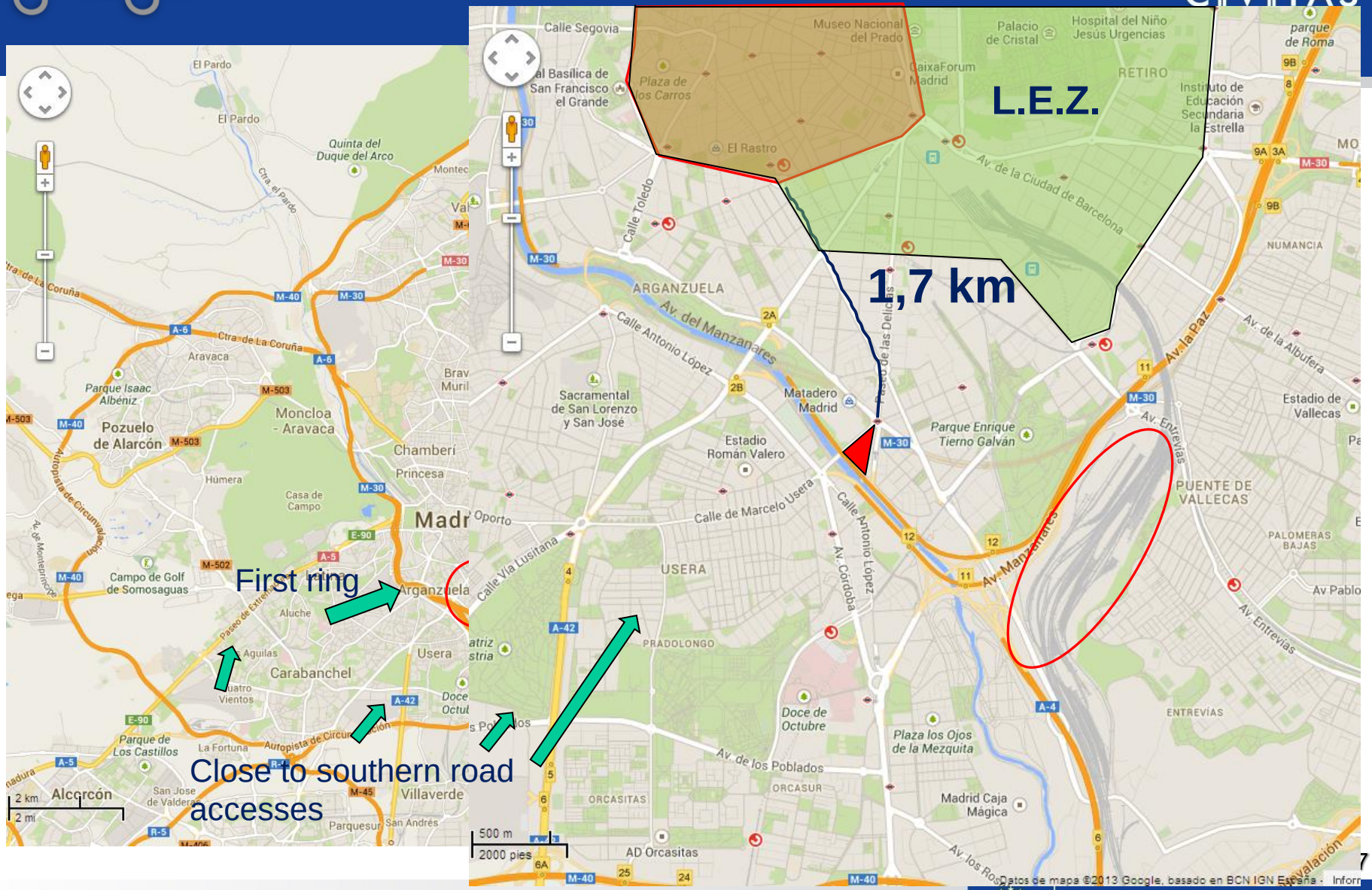
Location of the consolidation centre



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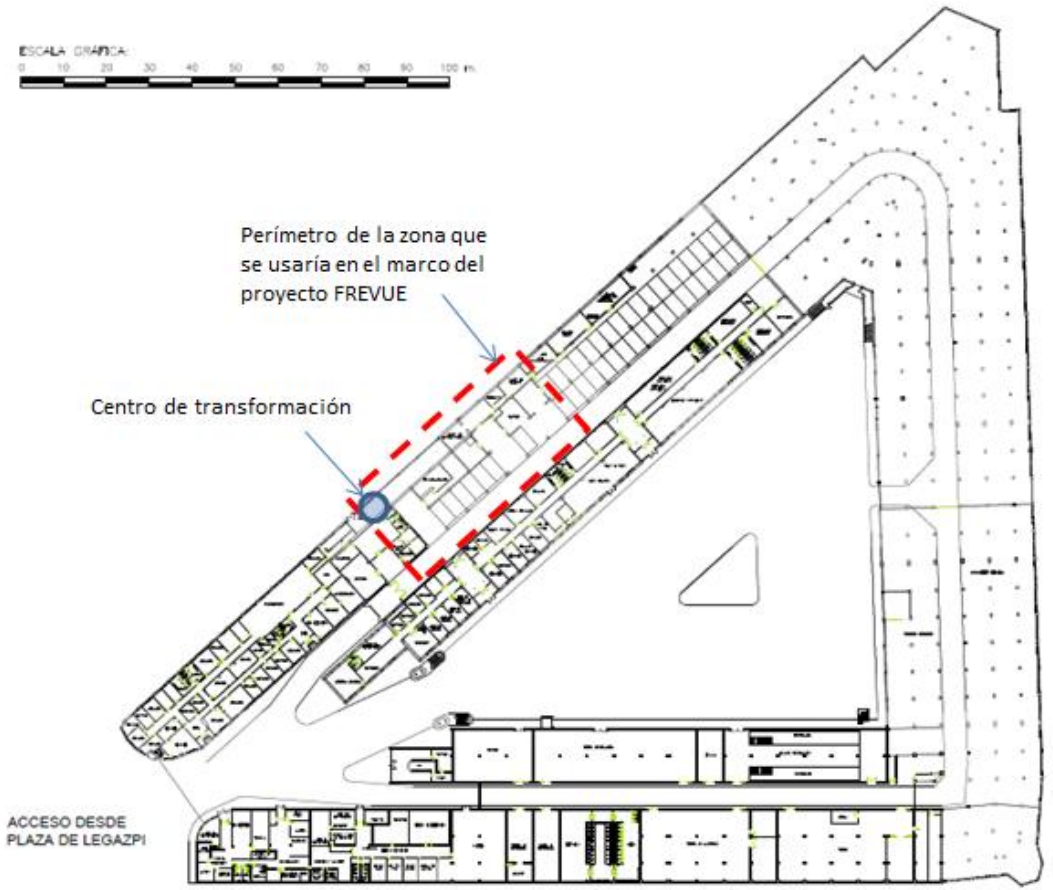
Consolidation Centre

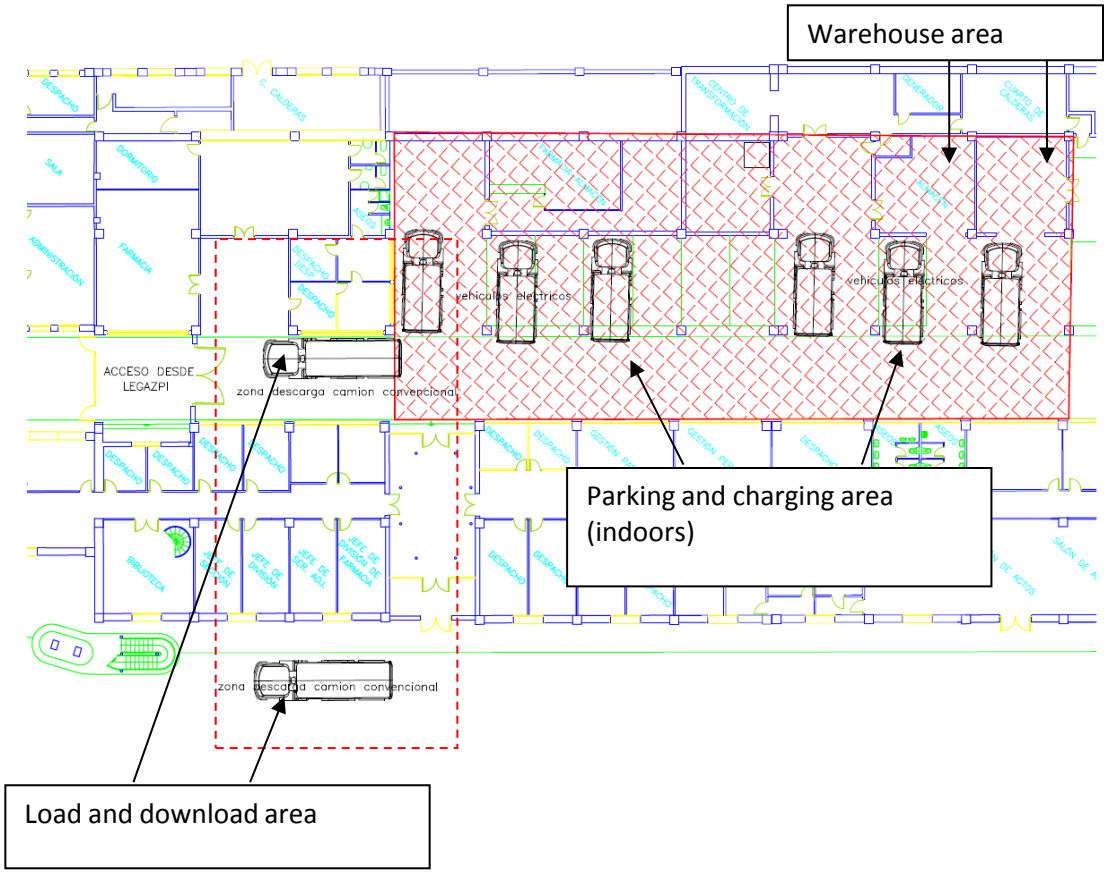


Refinishing and refurbishment started in august 2013 (cleaning, damages, fixing…)





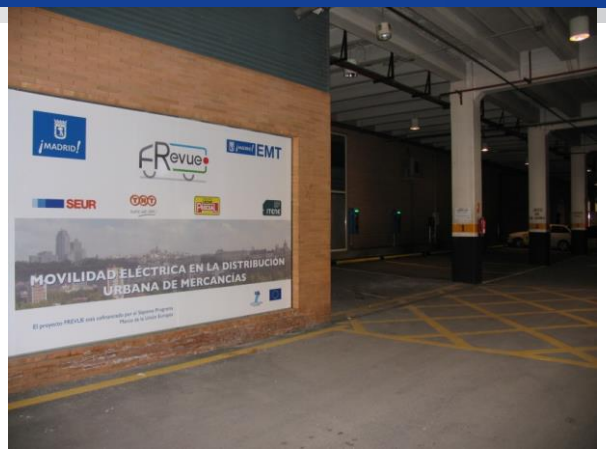

Consolidation Centre



IBIL: installs and manages electric charging stations

- 1 three-phase charging station of 32 A for the IVECO
- 1 three-phase charging station of 16 A for the Mercedes Vito
- 2 single-phase charging stations of 16 A for the Renault Kangoo

Consolidation Centre on duty



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ICT development

- **Development of Electric Fleet Management tool.**

➢ Monitoring of CAN Bus data and GPS position of the vehicle:




➢ Real-time monitoring of:

- ✓ GPS Position
- ✓ Speed
- ✓ Electricity consumption
- ✓ Battery level
- ✓ Vehicle range
- ✓ Driving hours
- ✓ Starts and stops

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Charging Infrastructure

CAN Bus data logger

Data from operators activity

Electric Fleet Management Tool

KPIs

MUNICIPAL FLEET

PUBLIC PROCUREMENT CRITERIA:

- RENTING

In 2013: <u>61 hybrids and 4 electric</u>
(renting A.G. Economía, Hacienda y A.P.)

- INTEGRAL CONTRACTS

MUNICIPAL SERVICES FLEET
<u>110 electric veh.</u> In urban services companies

PRIVATE LOGISTIC FLEET

- NEW MOBILITY BYLAW
- "0 EMISIONES" LABEL
- 75% REDUCTION ON LOCAL ROAD TAX
- VOLUNTARY AGREEMENTS THROUGH "FORO PRO CLIMA"
- FR-EVUE PROJECT

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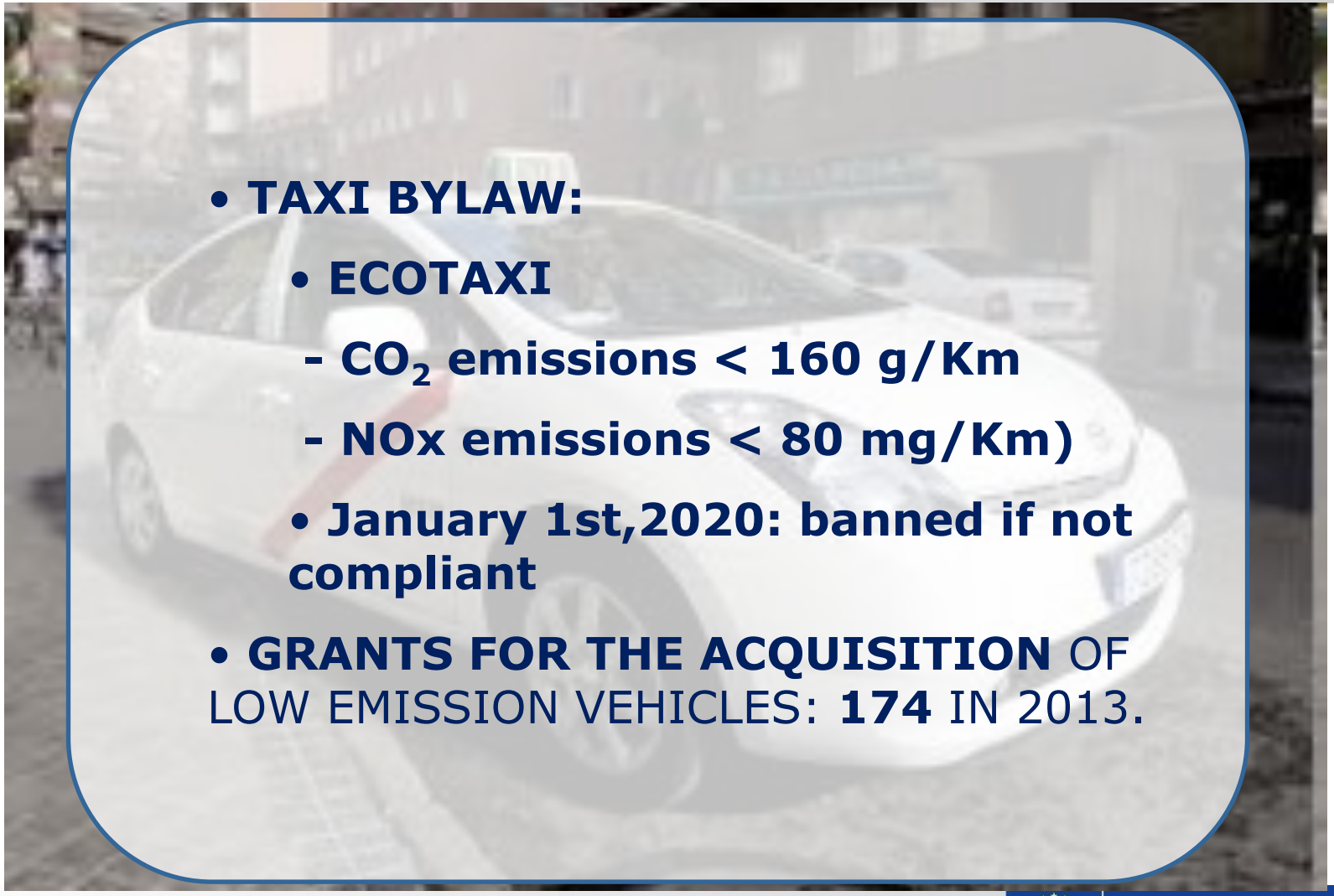
TAXI



- **TAXI BYLAW:**
  - **ECOTAXI**
    - **- CO_2 emissions < 160 g/Km**
    - **- NOx emissions < 80 mg/Km)**
  - **January 1st,2020: banned if not compliant**
- **GRANTS FOR THE ACQUISITION** OF LOW EMISSION VEHICLES: **174** IN 2013.

BUSES (EMT MADRID)

BUS FLEET (1.964 buses)
-767 CNG
-20 ELECTRIC
-10 HYBRID-CNG
-13 PLUG-IN HYBRIDS CNG
-1 HYBRID CNG/diesel
-4 HYBRIDS – Diesel

OTHER EMT VEHICLES:
-10 electric-SACE
-1 hybrid

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EMT MADRID: BUSES

First tests in 2000-2001

MOTOR
- Corriente continua
- Voltaje nominal: 85 V
- Potencia: 27,2 kW
- Recuperación de energía

PROPULSION
- Totalmente eléctrica
- Tracción: Delantera
- Sin caja de cambios.

Longitud: 5,32 m
Anchura: 2,035 m
Altura: 2,85 m
Tara: 3.800 kg
7 plazas sentadas y 18 de pié
2 asientos reservados PMR

MOTOR

- De corriente continua, excitación en serie
- Voltaje nominal: 85 V
- Potencia: 27,2 kW = 37 C.V.
- Revoluciones máximas: 1.890 rpm.
- Regulación electrónica MOSFET.
- Recuperación de energía durante el frenado
- Peso 127 kg
- Refrigeración: Aire forzado

TRANSMISIÓN

- Tracción: Delantera
- Sin caja de cambios. Directa al grupo cónico por medio de dos juntas cardan

- Suspensión neumática con 4 muelles de aire
- Disponibilidad de arrodillamiento o “kneeling”
- Dirección y frenos con asistencia hidráulica

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El vehículo dispone para su propulsión de 2 baterías de Ni / NaCl con las siguientes características:

- Número de baterías por vehículo: 2
- Peso de cada batería: 294 kg
- Tensión: 85 V
- Capacidad de cada batería: 418 Ah
- Capacidad total: 836 Ah
- Energía total producida: 71.060 Wh

El peso total del conjunto, incluido cajones y accesorios electrónicos es de 730 kg.

Las baterías deben funcionar en un rango de temperaturas comprendido entre 240 y 330ºC. A temperaturas inferiores se bloquea su "software".

A 270ºC, temperatura nominal de trabajo, tienen una pérdida energética por calor de 128 W.

Para cargar las baterías “ZEBRA”, el vehículo dispone de dos conectores (uno por batería) y un tercer conector de toma de datos.

El “cargador” está conectado a la red eléctrica por medio de 2 tomas: una a 380 V y otra a 220V.

La toma de 220 V sirve para transmitir datos y para mantener la baterías caldeadas por encima de 240ºC.

La toma de 380 V se encarga de cargar las baterías “ZEBRA”. Al inicio de la carga son capaces de soportar picos de más de 150 amperios.
El sistema es totalmente automático. El “software” se encarga de evaluar el nivel de carga de cada batería y suministrar la energía necesaria.

El autobús está diseñado para que sea accesible a Personas de Movilidad Reducida (PMR).
Dispone de:

- Piso bajo
- Rampa para acceso en silla de ruedas marca Hubner
- Arrodillamiento ó “Kneeling”

En el interior, su diseño también está pensado para todos:

1. Espacio reservado para silla de ruedas homologado según directiva europea:
   - con cinturón de seguridad
   - pulsador accionable con la palma de la mano.

Este espacio puede ser ocupado por un carrito de niño si no hubiese una silla de ruedas antes

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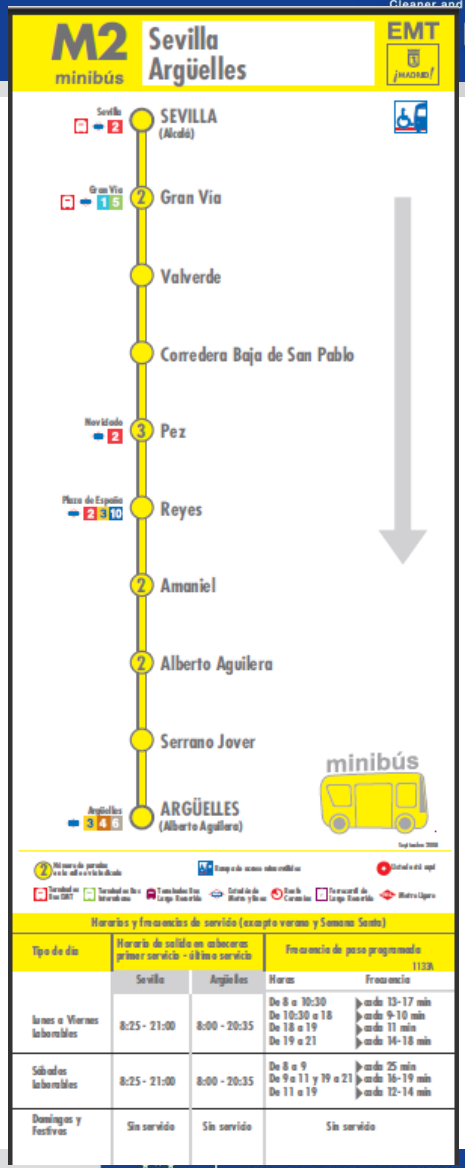
Actualmente dos líneas: M1 y M2



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EMT

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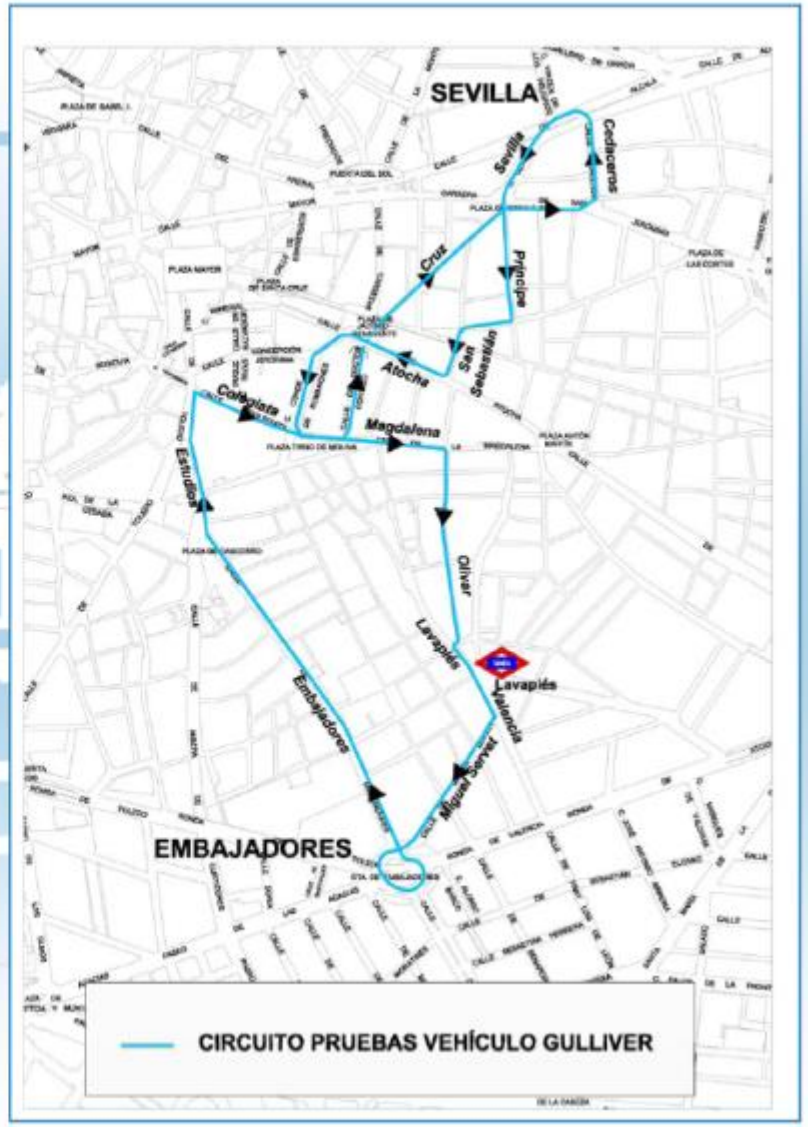
LÍNEA M1

La línea diseñada para estos autobuses debía tener las siguientes características:

* Muy céntrica
* Calles muy estrechas
* Para baja o muy baja velocidad comercial
* Muy versátil

Esta línea, en principio de pruebas, quedó como definitiva. Se ha denominado M1.



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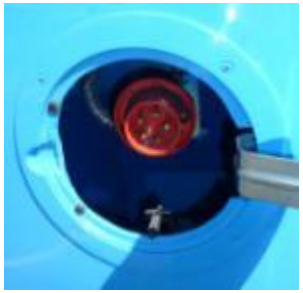
CASTROSÚA TEMPUS GNC

- Dos motores:
- 1. Térmico Iveco de Gas Natural Comprimido (GNC) 100kW
- 2. Eléctrico de Tracción Siemens de 134 kW
- Hibridación en serie
- Recuperación de energía en el frenado
- **Enchufable** a la red eléctrica.
- Sistema Stop & Start
- Capacidad de circular en **modo eléctrico puro.**
- Autonomía en tracción eléctrica pura (en minutos y en km):
  60 minutos ó 150 km
- Tracción **sólo** eléctrica a las ruedas traseras
- Potencia eléctrica a la rueda de : 67x2 kW
- Tensión: 520 V c.a.
- Intensidad máx.: 145 A



- 3 baterías de tracción tipo «ZEBRA» (Ni-Na/Cl_2) sobre el autobús:
- Tensión: 620 V c.c.
- Potencia: 19 kW/h
- Intensidad: 32 A/h
- Intensidad máx. descarga 90 A
- Intensidad máx. de carga con freno regenerativo 30 A
- Temperatura interna de funcionamiento 245º C – 360º C
- Temperatura máx. ambiente 50º C
-Capacidad total: 96 Ah (32 Ah x 3)
-13 unidades

Ahorro consumo (en €) hasta un 45%

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TATA HISPANO TML CS25 GNC

- Dos motores:
- 1. Térmico Cummins de Gas Natural Comprimido (GNC) de 145 kW
- 2. Eléctrico de Tracción Siemens de 134 kW
- Hibridación en serie
- Recuperación de energía en el frenado
- Sistema Stop & Start

- Tracción **sólo** eléctrica a las ruedas traseras
- Potencia eléctrica a la rueda de : 67x2 kW
- Tensión: 520 V c.a.
- Intensidad máx.: 145 A

- 8 módulos de baterías de iones de litio sobre el autobús:
- Tensión: 660 V c.c.
- Intensidad: 8.8 Ah
- Temperatura interna de funcionamiento: 16ºC – 40ºC
- Temperatura máx. ambiente 50ºC
-Capacidad total: 58 kWh
-10 unidades

Ahorro consumo (en €) en torno a un 30 %

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Madrid e-mobility data

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PUBLIC CHARGING INFRASTRUCTURE

- ON-STREET: 24 CP
- OFF-STREET: 153 CP AT PUBLIC PARKINGS
- OFF-STREET: 117 AT RESIDENT PARKINGS (SERRANO)
- METROLINERA: 1 FAST CP (CHADEMO, SEMI ON-STREET)

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MUNICIPAL E-FLEET , dec 2013)

Área Municipal	Total Vehículos (1)	Vehículos Convencionales	Total Vehículos de máxima eficiencia y con tecnologías/Combustibles alternativos							Flota verde
		Diesel, gasolina (excepto clase A)	GASOLINA Clase A	Veh. pesados Euro V	Bioetanol	GNC	GLP	Híbrido	Eléctrico/ Hibrido enchufable	
GESTIÓN CENTRALIZADA (Área Hacienda)	254	1	73		4		85	91		**253**
SAMUR PROTECCIÓN CIVIL (Renting y Propiedad)	166	132	29				5			**34**
POLICÍA, D.G Gestión y vigilancia circulación (Renting y Propiedad	520	446	21					53		**74**
BOMBEROS	180	169	11							**11**
Otros Renting (MEDIO AMBIENTE, MOVILIDAD, OO.AA.)	50	47	3							**3**
OTROS (propiedad)										
EMT (2)	1970	699		445		768		15*	43*	**1271**
CONTRATAS MEDIO AMBIENTE (3)	1708	1090	16		15	459	1	17	110	**618**
MADRID MOVILIDAD	97	77				18		2		**20**
Total Flota	**4945**	**2661**	**153**	**445**	**19**	**1245**	**91**	**178**	**153**	**2284**

1 Excluidas motocicletas, vehículos industriales y remolques
2 Datos de flota EMT a cierre de febrero 2013
3 Las contratas de Medio Ambiente pertenecen: Residuos, Limpiezas y Zonas Verdes. También se incluye el servicio Madrid Avisa

De acuerdo con estos datos el porcentaje de flota verde sobre el total de vehículos sería el 46.24 %

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ZERO EMISSION VEHICLES

¡MADRID! ÁREA DE GOBIERNO DE MEDIO AMBIENTE Y MOVILIDAD

Vehículos Cero Emisiones

664 3

Dpto. Jurídico del Servicio de Estacionamiento Regulado

Evolución

Datos

Clasificación

Turismos	429	64,61%
Furgonetas	34	5,12%
Cuatriciclos	174	26,20%
Cuatriciclos Ligeros	24	3,61%
Mixtos Adaptables	3	0,45%

Tipos de Propiedad

Personas Físicas	114	17,17%
Personas Jurídicas	550	82,83%

Tipos de Propulsión

Eléctricos	634	95,48%
Híbridos Enchufables	22	3,31%
Eléctricos Rango Extendido	8	1,20%

Principales Empresas

Going Green SL	18	2,71%
Automoviles Citroen España SA	21	3,16%
Renault Retail Group Madrid SA	33	4,97%
Overlease SA	84	12,65%
Nissan Iberia SA	36	5,42%
Remica Servicios Energéticos SA	30	4,52%
Otros	442	66,57%

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ZERO EMISSION VEHICLES

	Eléctrico	Híbrido Enchufable	Eléctrico Rango Extendido	Total Distintivos
Enero	7		1	8
Febrero	12		1	13
Marzo	18			18
Abril	11		1	12
Mayo	2			2
Junio				
Julio				
Agosto				
Septiembre				
Octubre				
Noviembre				
Diciembre				
Total Anual	50		3	53
Total Acumulado	636	40	9	667

Elaboración: Dpto Jurídico del Servicio de Estacionamiento Regulado **Fecha:** 05/05/2014

WHAT's NEXT?

CONVENIO DE COLABORACIÓN ENTRE EL AYUNTAMIENTO DE MADRID, EMPRESA MUNICIPAL DE TRANSPORTES DE MADRID, S.A., IBIL GESTOR DE CARGA DE VEHÍCULO ELÉCTRICO S.A. Y GESTIÓN INTELIGENTE DE CARGAS S.L. PARA LA PUESTA EN MARCHA DE UN PROYECTO PILOTO DEMOSTRATIVO DE INTEROPERABILIDAD DE LA INFRAESTRUCTURA DE RECARGA INSTALADA EN VÍA PÚBLICA EN LA CIUDAD DE MADRID

¡MADRID!

IBIL

GIC

¡MADRID! EMT

AGREEMENT WITH IBIL AND GIC TO DEVELOP AN INTEROPERABILITY PROJECT

- COMPLY WITH CURRENT LEGISLATION
- CP RENEWAL AND SET UP A MAINTENANCE SERVICE (24/7)
- REAL TIME INTELLIGENT CONTROL

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Thank you!

Sergio Fernández Balaguer

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