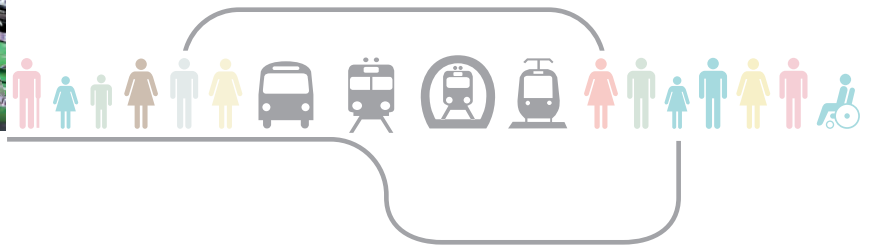
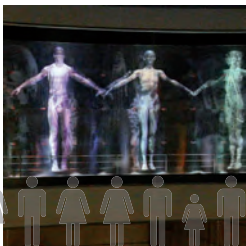


Madrid, a world reference



we bring People together

Consortio de Transportes de Madrid.
Tu sistema de transportes



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Studies and Planning Department

Plaza Descubridor Diego de Ordás, 3 · 28003 Madrid. Spain.

Tel. + 34 - 91 580 4532 · Fax: + 34 - 91 580 3310

e-mail: estudios@crtm.es

Photographs: Archivo Consorcio de Transportes · Technical Photographs · Blanca Berlín · Javier Aldecoa · Miguel Angel Delgado · Juan Carlos Melero · Emiliano Durán · Jose Manuel Luna · Kerygma

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The Regional Transport Consortium of Madrid was set up in 1985 as a Public Transport Authority to coordinate infrastructures and services for the different modes of transport in the Madrid Region.

Ever since, as well as implementing this essential function to organise a truly integrated public transport system, the Consortium has also consolidated its essential role as a network planning body. It is now considered a model and a benchmark for many other regional systems.

This document provides you with all the relevant information and a detailed description of our system's resources and activities. "Madrid A World Reference" presents a comprehensive overview of what our Public Transport System is and what it represents. The people of Madrid justifiably consider this Public Transport System to be one of their major sources of pride and it is used by an enormous number of citizens.

The different infrastructure Plans between 1995 and 2011 developed by the Regional Government have resulted in the most significant enlargement in the history of our underground system, the third largest in the world, including 36 km of a new light rail network and the construction of several new generation metropolitan interchanges. These Plans together with other actions have transformed the public transport system of Madrid into a world class reference.

During the last years, recession is playing a significant role in the economy of Western Europe and on the daily habits of the citizens. This situation has led to an overall reduction of mobility, both private car and public transport. We have to achieve a more efficient public transport system, in which infrastructure and service management is improved, offering the same levels of quality in the system.

Despite the success and importance of what has already been achieved, the Madrid Regional Government is facing new challenges, dealing with the fact that a modern and dynamic society requires ongoing commitment, permanently seeking new solutions. The time has arrived in which infrastructure is not the main issue, but mobility management and application of new technologies is a key part of public transport provision.

In this new stage, the main challenges of public transport development are focused on the consolidation of the Modernisation Plan of suburban buses, involving more than 2,000 buses in the region which provide high technological solutions for information, operation and coordination issues, at the same time with the comprehensive introduction of the new Public transport smart contactless card, which is being currently set up, all magnetic transport passes will be changed into this new high technologic support. Moreover, the development of the integrated management centre CITRAM, for all public transport networks is a challenge done reality. The role of CRTM as a key reference in sustainable mobility in the region, linking public transport with other environmentally friendly modes and with a coordination between administrations and private sector is also another increasing need that we are addressing.

With these projects, we hope to increase the efficiency of our system, maintaining and improving its quality and facing the new challenges of sustainability that we have to meet. A sound financial framework of the whole system seeking new funding sources and partnerships are also part of the objectives to be met. We aim to offer the people of Madrid an increasingly faster and more efficient service of public transport.

Being an international reference in Public Transport has made us to receive visits from different countries and also to be present worldwide in different associations (UITP, EMTA,...), actions and projects, exporting the know-how of the region and learning from other cities working in a global and coordinated environment.



Tu sistema de transportes

www.crtm.es

Pablo Cavero Martínez de Campos
President of the Regional Transport Consortium
Regional Minister for Transports, Infrastructures and Housing

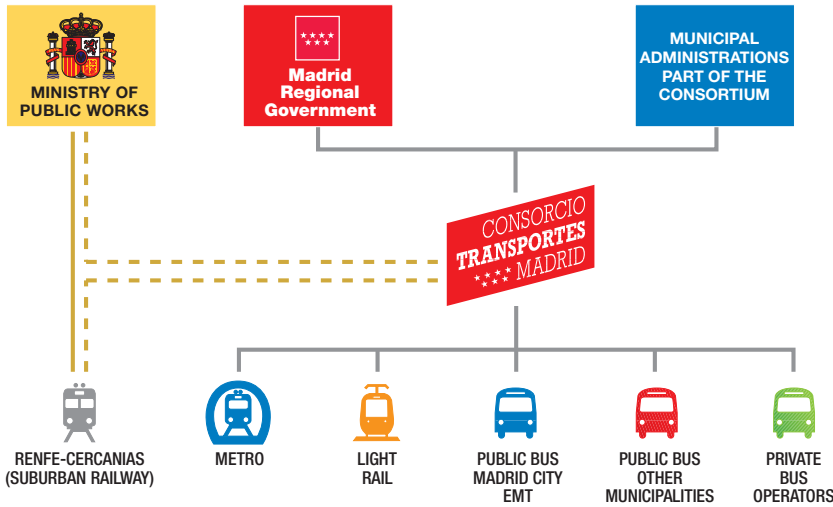


Surface interchanger at Plaza de Castilla

The Regional Transport Consortium of Madrid



INSTITUTIONAL FRAMEWORK OF THE MADRID REGION PUBLIC TRANSPORT SYSTEM



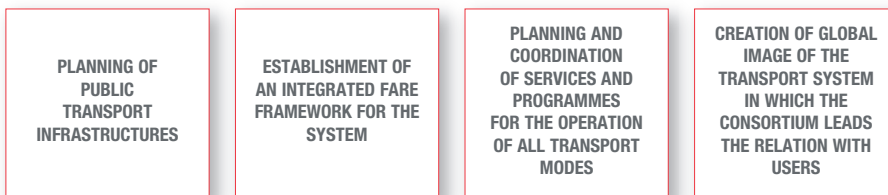
The Regional Transport Consortium (CRTM) was founded by the Madrid Regional Government under Act 5/1985 of May 16th, just two years after the creation of the Region of Madrid itself.

As an Autonomous Body of the Regional Government, the responsibilities of the Regional Transport Consortium (CRTM) cover the provision of public transport services to the inhabitants of the entire Madrid Region and associated municipalities.

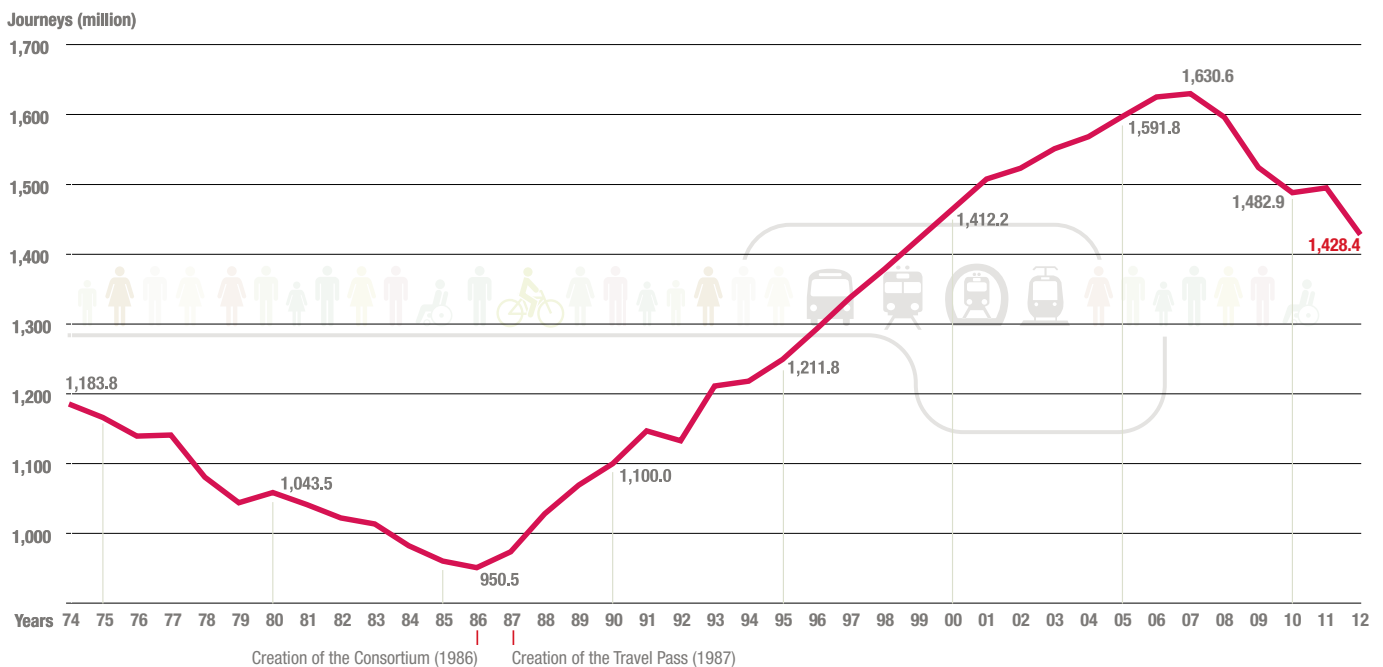
CRTM's Board of Management is made up of members from a number of public and private bodies, including representatives from the Region of Madrid (7 representatives), associated towns and municipalities (6 in total, 3 from Madrid City Council), the Spanish Government (2), private transport operators (2), trade unions (2) and user and consumer associations (1).

The CRTM has no authority over RENFE CERCANÍAS (suburban train), although there is an agreement for the use of the Travel Pass.

FUNCTIONS OF THE CRTM



EVOLUTION OF PUBLIC TRANSPORT DEMAND



Since the creation of the Regional Transport Consortium of Madrid, use of public transport has risen by 50.3%, whilst population in the same period (1986-2012) has grown by 36.0%. Nevertheless, since 2008, the economic crisis has had a significant impact on the use of transport in the region.

Territorial Structure



The current organisation of the Spanish state, apart from the national government, is based on Autonomous Communities, which have extensive responsibilities at regional level, and municipalities, which represent local territorial bodies. Madrid region is one of Spain's 17 autonomous communities and its territory is made up of 179 municipalities, with a clearly defined functional structure in three zones, or "rings":

- **Municipality of Madrid**, as the area's main body, concentrating the majority of activities.
- **Metropolitan Ring**, which consists of a number of large and medium-sized municipalities around the municipality of Madrid, closely related with each other.
- **Rest of the region**, with small and medium-sized municipalities.

In 2012, the city of Madrid had a population of 3.2 million inhabitants, accounting for 49.8% of the region's total population. Its central core, the so-called "Central Almond", is home to 31.0% of the population and provides a large proportion of the region's jobs.

Since the final quarter of last century, the population's distribution in these three functional rings has shown a dynamic process characterised by a population loss from the municipality of Madrid. This trend slowed around 1996, a year in which the municipality's population recovered. During this whole period, population in the metropolitan and regional rings have increased in growing proportions, giving rise to radical changes in mobility in the region, with a significant increase in metropolitan journeys.

TERRITORIAL STRUCTURE OF THE REGION OF MADRID

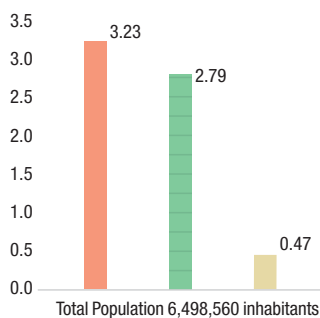


INHABITANTS IN THE REGION OF MADRID

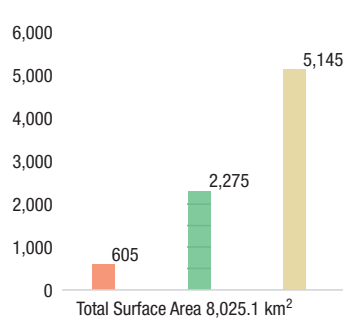
	Municipalities	Population		Surface area (km ²)	Density (inhab/km ²)
		1986	2012*		
Madrid City Ring A	1	3,058,182	3,233,527	605.0	5,345
- Central Core		1,029,010	1,022,029	41.8	23,972
- Suburban area		2,029,172	2,231,498	563.2	3,962
Metropolitan Ring B	49	1,533,184	2,797,454	2,275.5	1,229
Regional Ring C	129	189,206	467,579	5,144.6	91
Total	179	4,780,572	6,498,560	8,025.1	810

*Population as of 1 January 2012

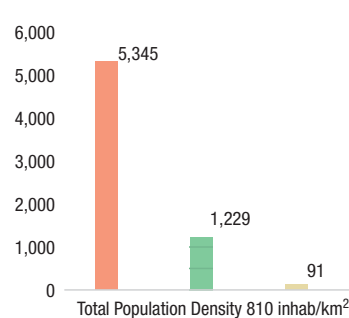
INHABITANTS (millions)



SURFACE AREA (km²)



DENSITY (inhab/km²)



- Madrid City Ring A
- Metropolitan Ring B
- Regional Ring C



Travellers in a transport interchange

The total number of journeys in the Madrid Region during a single working day (according to the last Household Mobility Survey, EDM 2004), was 15.2 million, or an average of 2.6 journeys per inhabitant. These journeys are distributed more or less equally between the three major modes of transport; thus, 31.2% are made on foot, 34% use public transport, and 34.8% are made using private vehicles.

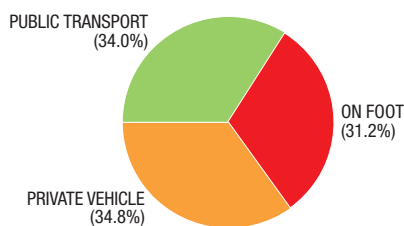
The most important reasons for travelling are mandatory travel, firstly for reasons of work (37.1%) followed by study (19.3%). Non-mandatory travel accounts for 43.6% of the total, which would indicate that the purposes for making journeys are increasingly varied. The issue of mobility is, therefore, gradually becoming more complex.

Mobility by spatial area shows some significant differences:

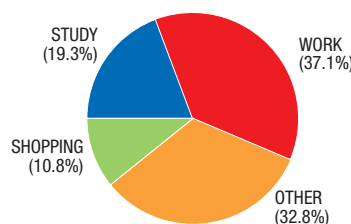
- Mobility within the municipality of Madrid: public transport predominates, with 42.2%, followed by journeys made on foot (33.6%).
- Radial mobility between the municipality of Madrid and the metropolitan ring: in this case, there is a balance (50/50) between public transport and the use of private vehicles.
- Mobility within the municipalities of the metropolitan ring: journeys made on foot clearly predominate (56.5%), followed by private vehicles (33.7%).
- Mobility between municipalities in the rest of the Region: more than two thirds of journeys are made by private vehicle (69.4%).

Of the 2.8 million jobs recorded in the Household Mobility Survey (EDM 2004), 63.5% were located in Madrid city. The population of the city of Madrid itself mostly works in the city (82.1%), and of the population living in the rest of the Region, 42.5% work in Madrid city. As for the location of jobs, it was found that 68.5% of employment in the city of Madrid corresponds to people who live in the capital, whereas 74% of employment in the rest of the Region corresponds to people living there.

DISTRIBUTION BY MODES*



JOURNEYS ACCORDING TO PURPOSE*



DISTRIBUTION OF MOBILITY BY SPATIAL AREA*

Spatial area of mobility	%	Walking (%)	Public transport (%)	Private vehicle (%)
Internal mobility in the Madrid Municipality	50.3%	33.6%	42.2%	24.2%
Radial mobility between Madrid municipality and the rest of the Region	15.6%	0.6%	49.0%	50.4%
Internal mobility in municipalities in the rest of the Region	24.8%	56.5%	9.8%	33.7%
Mobility between municipalities in the rest of the Region	9.3%	2.0%	28.6%	69.4%
Total mobility	100%	31.2%	34.0%	34.8%

DISTRIBUTION OF THE WORKING POPULATION BY RESIDENCE AND EMPLOYMENT*

Area of residence	Place of employment			Total
	Madrid municipality	Rest of the region	Outside the region	
Madrid municipality	43.5%	9.2%	0.3%	53.0%
Rest of the Region	20.0%	26.2%	0.8%	47.0%
Total	63.5%	35.4%	1.1%	2,793,132

* Household Mobility Survey (2004)

The Road Network



The Madrid road network is fundamentally a radial system, with seven corridors located along seven national trunk roads. There are also two ring roads, the M-30 and the M-40, a third ring road, the M-50, with the northern part of the loop not connected and the M-45 allowing the redistribution of the traffic within Madrid's metropolitan area. This network is complemented with a series of radial toll motorways that basically run parallel to the national highways.

On the M-30, a large urban transformation project has been undertaken which entailed remodelling the motorway (tunnels in some sections and improvements to junctions). The project also involved improving the area through which it runs (the recovery of the River Manzanares, creation of new green zones and leisure areas, improving the soft mobility of the population) ensuring greater functionality and enhanced traffic efficiency.

The high-capacity road network is 979 kilometres long, 68% of which is run by the Central Government and the remainder is the responsibility of the Community of Madrid. This figure gives a ratio of 150.9 km of high-capacity roads per one million inhabitants or 12.2 km per 100 km² of surface territory.

In 2011 the number of vehicle-km travelled per day was 62.1 million on the total network, of which 68% was on national roads. Heavy vehicles accounted for 8.4% of traffic on the total network.

The Average Daily Traffic (ADT) on the Madrid regional road network is 8,114 vehicles per day. The national road network in Madrid Region accounts with one of the busiest roads in the country, the M40 ring road, which in 2011 had an ADT of 120,000 vehicles per day.

In recent years, trends in road safety parameters have shown certain variations, but with a downward trend in the number of accidents. In 2011, the number of accidents with victims in the Community of Madrid was 13,962, however, the number of fatalities in these accidents did fall enormously, by 48.7% in the period 2006-2011, standing at 132 deaths in 2011. Even so, reducing these figures is still a fundamental objective for the Madrid Regional Government.



ROAD NETWORK IN THE REGION OF MADRID (km)			
Highway category	Competent Authority		2011
	State	Region	TOTAL
LARGE CAPACITY HIGHWAYS	662	318	979
- Toll motorways	144	0	144
- Free motorways and expressways	510	125	635
- Dual carriageways	8	192	200
REST OF THE NETWORK	106	2,267	2,373
Total	768	2,585	3,353

TREND IN NETWORK AND MOTORISATION INDICATORS					
Indicator	1991	1996	2001	2006	2011
Large capacity network/100 km ²	7.5	7.9	9.4	11.7	12.2
Large capacity network/million de inhab.	120.3	124.8	135.9	156.1	150.9
Vehicles/Large capacity network (km)	3,910	4,497	4,826	4,378	4,425
Vehicles/1,000 inhabitants	474	565	675	638	668

AVERAGE DAILY TRAFFIC (ADT) ON THE ROADS OF THE REGION				
Network	ADT 1991	ADT 2011	heavy ADT 2011	% heavy
Main	12,697	22,194	1,728	7.79
Secondary	3,178	5,084	447	8.80
Local	1,528	2,302	212	9.20
Total	3,905	8,002	652	8.15



The Public Transport System



Plaza de Castilla Interchange Station



Line 3 station, Embajadores

The public transport system for the Madrid region is a complex intermodal system, consisting of various modes of transport. Two major sub-systems can be distinguished:

- The urban area of the city of Madrid: around 200 urban bus routes (EMT), 12 underground Lines (Metro), one light rail line and 37 suburban train stations.
- Metropolitan area of the region: over a hundred urban bus routes, over 300 suburban lines, 5 Metro lines, 3 light rail lines and 9 suburban railway lines.

Both subsystems are connected by a series of large interchanges that surround the central area of the city of Madrid, channelling radial mobility between the capital and its metropolitan rings.

The system has various operating companies, both public and privately-owned:

- Metro de Madrid, S.A., a public company owned by the Madrid Region.
- EMT, a municipal company of the Madrid City Council, is responsible for the urban bus lines in the municipality of Madrid.
- 30 private companies that operate the suburban and urban bus services in rings B and C.
- Cercanías Renfe, a public company dependent on the Spanish Ministry of Public Works, operates suburban rail services.
- Transportes Ferroviarios de Madrid (TFM), the company awarded the tender for the extension of Metro line 9 to Arganda del Rey.
- The company MetroBarajas, S.A., concessionaire of the connection with the airport's terminal T-4.
- The 3 light rail concessionaires: Metro Ligero Oeste S.A., Metros Ligeros de Madrid S.A. and Tranvía de Parla S.A.

The annual demand for public transport in the year 2012 was in the order of 1,428.4 million journeys, representing an average of 220 journeys per inhabitant, placing the Madrid Region at a very high level among Spanish and European cities.

PUBLIC TRANSPORTM SYSTEM: SUPPLY AND DEMAND (2012)

	SUPPLY					DEMAND*	
	Number of lines	Lenght of lines (km)	Stations/ Stops	Number of vehicles	Vehicles-km (millions)	Passengers (millions)	
METRO	12+1	287	238	2.303	191,3	604,1	
Urban bus zone A	216	3.940	11.032	2.009	93,6	408,2	
Urban bus Rings B and C	118	1.724	4.171	286	20,3	39,5	
Suburban bus	348	20.278	17.729	1.761	169,5	180,9	
RENFE** Suburban train	9	384	92	1.058	141,5	179,9	
Light rail	4	36	56	44	13,3	15,8	

* Provisional data 2012. Underground (Metro) and suburban rail (Cercanías-Renfe) data are provided for the network. Data for the bus networks are provided for routes.

** Suburban rail data is for Cercanías-Renfe in the Madrid Region, with some sections of Lines C-2, C-9 and C-3 going beyond the limits of the Region of Madrid (to Guadalajara, Segovia and Toledo, respectively).

The Travel Pass



The Travel Pass is a multimodal, integrated travel ticket for unlimited personal use on all public transport modes (buses, metro, suburban railways, ...) within specified tariff zones. It is valid for a specific period of time (a month or a year).

Thanks to this Travel Pass, public transport is now an affordable option for users in Madrid, fostering its use all over the network.

There are three types of monthly travel passes:

- **Standard Pass:** for users aged 23-64.
- **Young persons Pass:** until the user turns 23.
- **Senior Pass:** for over-65s.

Apart from these monthly passes, annual standard and senior passes are also available.

A total of 16.1 million travel passes were sold in 2012 and over 1.3 million people a day use these tickets.

Proportional use of the Travel Pass in the different modes of transport is 67.0% on the Metro, 72.9% on EMT urban buses, 71.8% on interurban buses, 66.6% on suburban trains and 66.9% on rail concessions.

Since the beginning of 2004, the fare system in operation in the Region has been further enhanced by the creation of a Tourist Pass. This is identical to the standard travel pass but offers unrestricted travel for one, two, three, five or seven days for two areas: Madrid city (Zone A) and the Region of Madrid (Zone T).

There are also passes for large families and for persons with a disability more or greater than 65%.

The Consorcio Regional de Transportes de Madrid has initiated in 2012 the introduction of contact-less technology as a support of the tariff system. The new Public Transportation Card (TTP), provides greater comfort and safety for customers, and in the future will contain all kind of tickets managed by CRTM, including the tourist pass destined to visiting people.



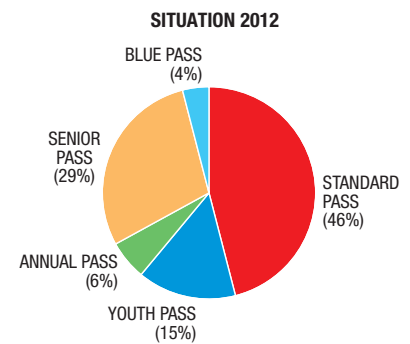
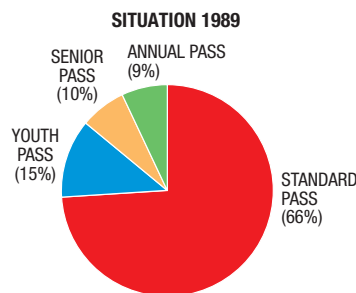
New contact-less travel card

ZONES



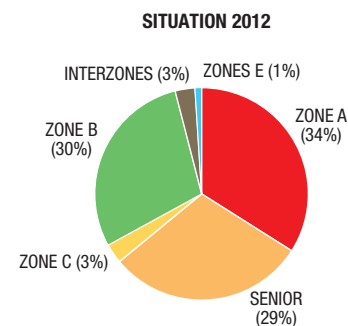
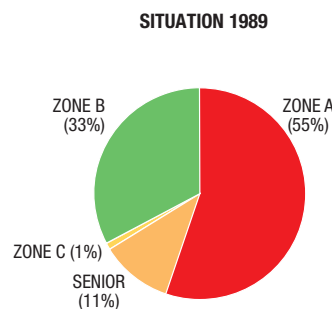
The Madrid Region is divided into 6 fare zones, with the outer zones successively incorporating the inner zones. Two additional outlying zones, E-1 and E-2 from the adjacent Region of Castilla - La Mancha, were incorporated into the system in 2001.

SALES BY PASS TYPE



The Standard Pass is the most sold, although Senior Passes have grown in market share with respect to other passes in recent years, as a result of demographic change in the Region of Madrid.

SALES BY FARE ZONES



Changing sales patterns reflect population shifts in the Region of Madrid. In 1989, sales for Zone A amounted to 55% of the total, a figure which since then has fallen to 34%.



Accessibility



One of the Madrid Region's priority goals is to adopt the necessary measures to extend the concept "Accessibility for all" on every mode of transport that makes up our public transport system. Some data are presented below:

Metro network:

- The total number of lifts is 508 (2012).
- A plan for the implementation of complementary accessibility measures in older stations: 102 stations.
- Accessible ticket vending machines, with "user-friendly" options, set in all stations.
- New accessible rolling stock series 3000 and 9000, with access ramps and specific accessibility features.

EMT urban and suburban bus networks of Madrid:











- At bus stops:
 - Ramps, visual and aural information and Braille. Installation of new Variable Messaging Panels.
 - Mobile Customer Attention Personnel.
- On buses:
 - External loudspeaker systems.
 - Access ramps or platforms.
 - Reserved seats for PRMs.
 - Spaces designed for wheelchairs and pushchairs.

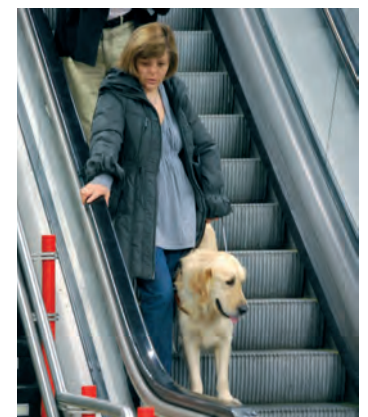
- Information in Braille on stop buttons.
- External button to call for the ramp to be deployed.
- Audiovisual information of the next stop.
- Gradual incorporation of new technologies: the increasing use of mobile phones as a platform for in-journey information.
- New contactless card with useful possibilities related to requirements of accessibility measures for the passengers in need.

Web page, Accessible Transport Information System and new information points:

- The web page has a "Level AA" awarded by the Web Accessibility Initiative (WAI).
- A new functionality has been developed for the Transport Information Service (TIS), on the internet, at Information Points and for mobile phones, that allow users to request information on routes and accessibility.
- Working together with the Technological Innovation Department of the CRTM, a project about "open data" based on Web Semantic techniques is being developed in order to have easier access to transport facts.
- In the near future smartphones applications developed by CRTM will reproduce mp3 format files in order to inform users.



ACCESSIBILITY TO MODES OF PUBLIC TRANSPORT (2012)		
 	Madrid EMT urban buses	100%
 	Urban buses in different municipalities of Madrid	100%
 	Suburban buses	100%
 	Metro stations	62.7%
 	Light Rail stations and vehicles	100%



Metro Extension Plan 1995-1999



The Metro Extension Plan 1995-1999, implemented by the Regional Government of Madrid, marked a milestone in the extension of the Madrid Metro system. 56.3 kilometres of new track were laid, increasing the length of existing track by almost 50%. 38 new stations were built, 9 of which were interchangers, 6 for changing to other Metro lines and 3 for changing to the Renfe suburban rail network. Total investment was €1,622.7 million, €223 million of which was assigned to acquiring new rolling stock.

This Extension Plan was based on the following objectives:

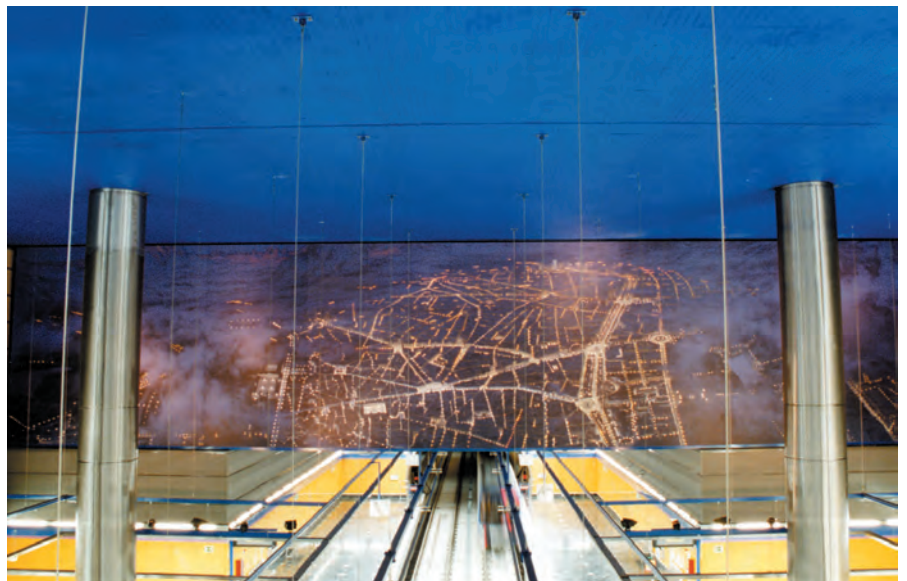
- Extension of the Metro to the densely populated outskirts of Madrid, with the extension of Lines 1, 4, 7 and 9, and the new Line 11.
- Improvements to the structure and layout of the existing Metro network, such as the works carried out on the central sections of Lines 7 and 10.
- Improved access to strategic areas of the city, like the Trade Fair Centre and Madrid-Barajas Airport, with the new Line 8.
- Extension of the network beyond the city limits to commuter towns without any rail links, such as the extension of Line 9 to Rivas-Vaciamadrid and Arganda del Rey.



BASIC EXTENSION DATA	
Length:	56.3 km
Stations:	38
Interchanges:	9
Investment:	€ 1,622.7 million



Tunnelling machine entering a Metro station



T1-T2-T3 Airport Metro station



Private Concession of Metro Line 9 to Rivas and Arganda



Line 9 on its way over the River Jarama bridge

The territorial structure of the metropolitan area of Madrid is based on a radial road network, so the towns around the metropolitan area have developed in keeping with this structure, as has the railway system. By 1996, all of Madrid's radial corridors were linked to the city centre by rail, except for the corridor along the A-1 and A-3 motorways. This corridor did, however, have a railway line at one point, but passenger services were suspended in 1960, and only one section remained in operation for the transportation of cement.

In February 1996, the Regional Transport Consortium conducted a study to examine the feasibility of establishing a rail service for the people living and working along this corridor. The study revealed that the A-3 corridor, between the municipalities of Madrid and Arganda del Rey, offered considerable potential in terms of commuter numbers. Initial estimates of the investment required to carry out this project rounded the €90 million mark, which meant that hopes of funding the initiative purely through public funds did not prosper.

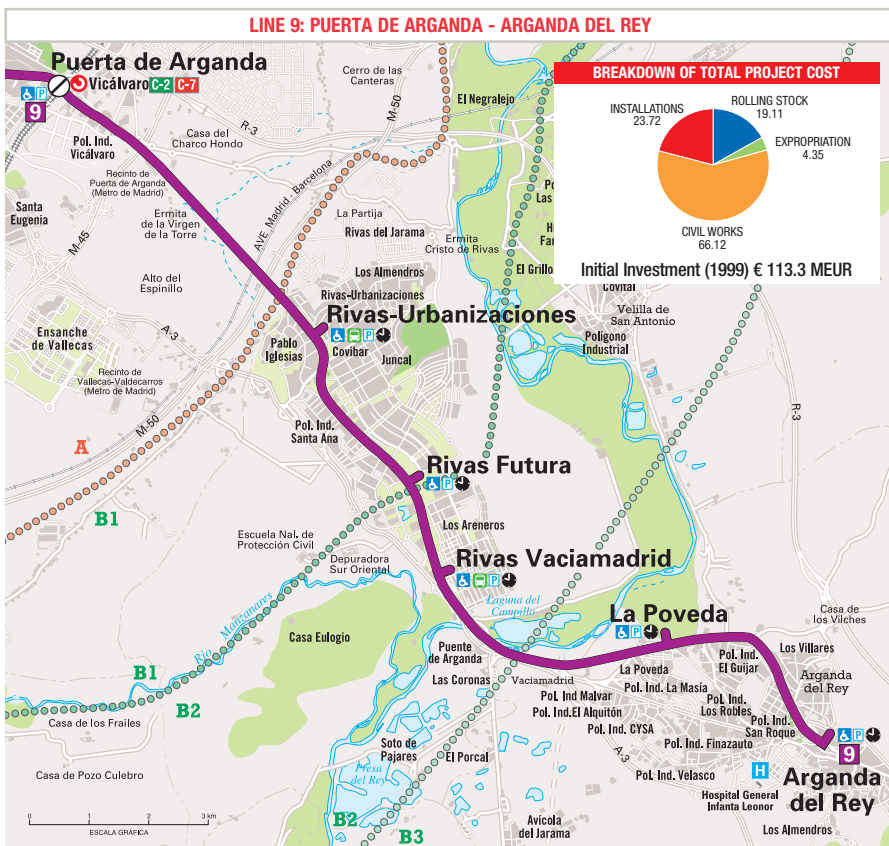
In May 1996, the Regional Government of Madrid decided to build the required infrastructure with private funding and called for tenders from private companies to design, build and operate the line for a period of 30 years. In February 1997, the contract was awarded to Transportes Ferroviarios de Madrid, S.A.

The 18 km line was inaugurated on 7 April 1999. In less than three years (including the planning stage) this innovative project had become a reality.

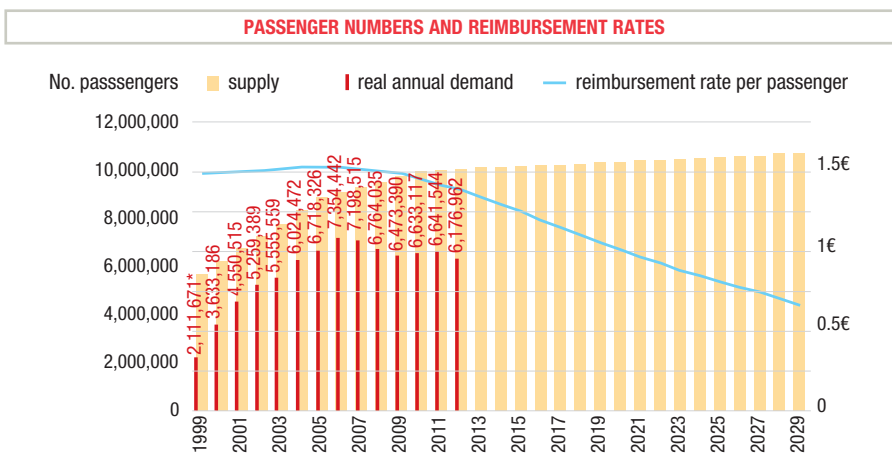
The concession holder receives income from two sources.

- Direct proceeds from ticket sales.
- Public subsidies earned on a per-passenger basis. This amount is calculated by multiplying the average rate per passenger by the total daily number of passengers who use this service, to a ceiling equal to the maximum number of journeys estimated by the concessionary for each year of the contract.

The line currently transports over 20.000 passengers daily.



This section of line 9 links the towns of Rivas and Arganda with Madrid and connects with MetroMadrid and Cercanías-RENFE at the Puerta de Arganda-Vicálvaro interchange



*The line started operating in April 1999

Metro Extension Plan 1999-2003



The Metro Extension Plan for the Madrid Region for the period between 1999 and 2003 involved the construction of 54.6 additional kilometres of Metro line, along with 36 new stations, 11 of which are interchange stations. The total investment was €2,787.7 million, €419.3 million of which was invested in rolling stock.

Three major operations were undertaken:

- MetroSur, a circular line 40.5 kilometres in length that connects five of the most important municipalities to the south of the city, with a combined population of around one million inhabitants.
- An extension of line 8 between Mar de Cristal and Nuevos Ministerios. This 5.9 kilometre extension allows passengers to travel to the main business and services area of Madrid directly and quickly.



In less than 15 minutes, passengers can now travel between Madrid-Barajas airport and Nuevos Ministerios station, which has become a large terminal with three Metro lines and seven suburban train lines.

- Three-fold actions carried out on Line 10: an extension of 8.2 kilometres to Alcorcón to connect with MetroSur, conversion from a narrow-gauge 2.4 m to a wide-gauge 2.8 m rolling stock, and a changeover to a 1.5 kV voltage.

With this Plan, the length of the Madrid Metro network increased to more than 210 km and the network branched out to several metropolitan areas.



Getafe Central Station on the day it opened



DATA BY MUNICIPALITIES

Municipality	Population census 2012	Number of stations	Population coverage (radius<600 m)	Passengers boarding and alighting/day 2012
Móstoles	206,031	5	54.6%	48,247
Fuenlabrada	198,132	5	50.7%	51,342
Leganés	187,125	6	70.8%	55,064
Alcorcón	169,308	4	60.6%	47,641
Getafe	171,280	8	71.5%	63,863
TOTAL	931,876	28	61.2%	266,157

BASIC DATA (Opened on April 11th, 2003):

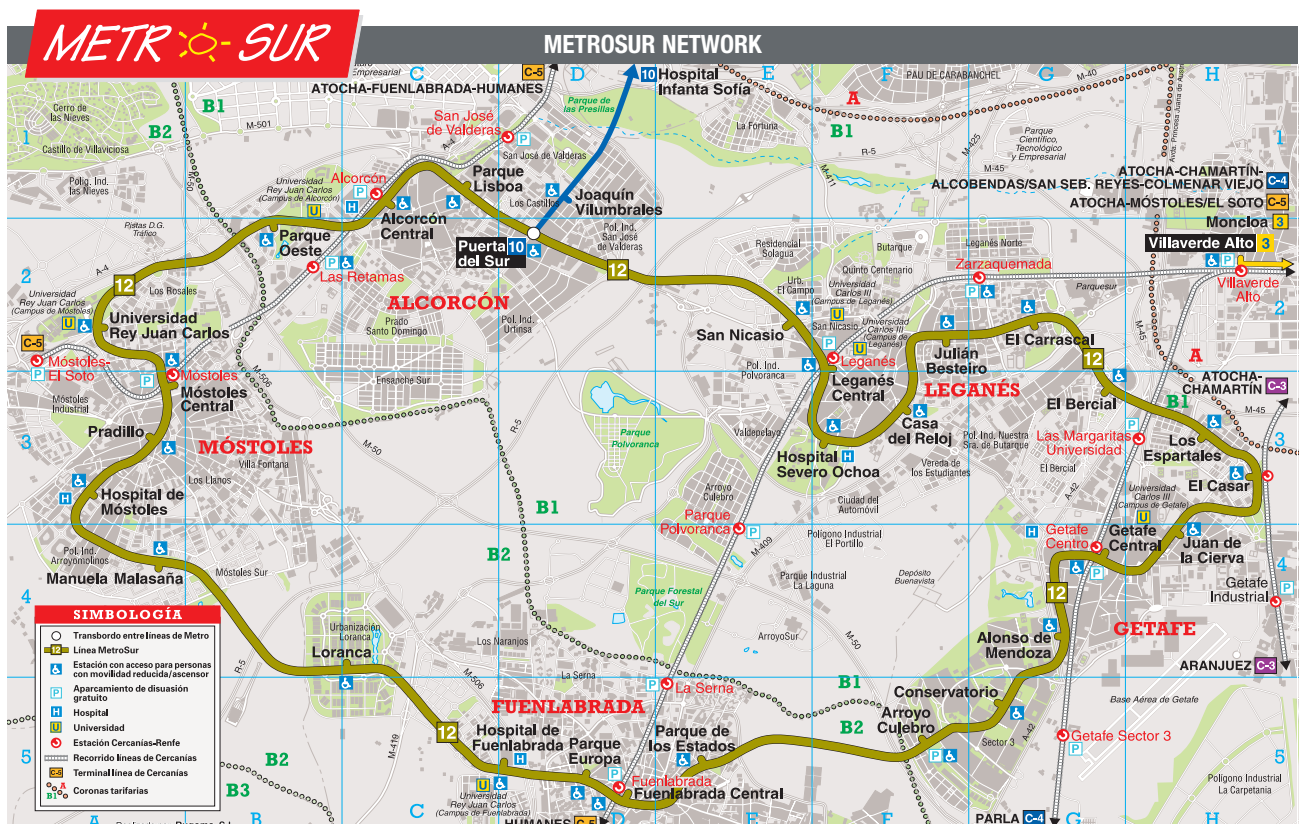
- **Length:** 40.5 kilometres, 26.6 kilometres of which were constructed using tunnelling machines, 6.6 km using the cut and-cover method, 5.7 km between cut-off walls and 1.6 km using traditional methods.
- **Stations:** 28 new stations, 6 of which are interchangers that connect to the suburban rail network and 1 interchange station with Line 10 of the Metro at Alcorcón. A further 3 stations are planned as part of future urban development projects.
- **Total investment:** €1,640 million, including rolling stock.
- **Rolling stock:** Series 8000 three carriage compositions, voltage 1.5 kV. Equipped with the latest technology in terms of passenger safety and comfort, the trains can reach speeds of 110 km/hour.
- Six months after the line was opened, 134,000 people were using it every day. 162,000 passengers were using the service daily in 2012.
- The opening of this line changed the travelling habits of many users. Six months after the line was opened, it was found that 61.5% of MetroSur passengers had been travelling between the same two places via different means before the new service was available.
- MetroSur has attracted over 12,000 passengers who used to travel in private vehicles, representing 15% of the commuters who used to do the same journey before the line was opened.
- In 2004, 57% of the journeys made on this line were journeys within the MetroSur area, 37% of which were journeys between municipal boroughs and 20% within the same borough. Although there is a large number of journeys to or from Madrid, they only amount to 35% of the total. The rest, 8% of the journeys, are made to or from the rest of the municipalities in the Region of Madrid.

Over a million people live in the southern metropolitan area of the Madrid Region, distributed among the five large municipalities of Alcorcón, Leganés, Getafe, Fuenlabrada, Móstoles and other smaller neighbouring towns.

These towns are now all interconnected by MetroSur, but until recently, they were enormously dependent on Madrid, a dependence which was exacerbated by the radial nature of the road and public transport networks.

The transformation of these towns in recent years has given rise to the emergence of an entire network of essential facilities and services, such as cultural and sports centres, schools and universities, health centres and hospitals, shopping and leisure centres, etc. This means that their dependence on the capital is gradually declining, and what could be termed dormitory towns back in the 1970s and 1980s have now developed into modern towns in their own right.

The Regional Government of Madrid made a clear bid to support and consolidate the development of the southern metropolitan area through the creation of a circular Metro line, fully interlinked with the C-3, C-4 and C-5 suburban rail lines, as well as with Line 10 of the Metro network.



Metro and Light Rail Extension Plan 2003-2007



The Regional Government of Madrid remains committed to developing the region's public transport network in all its modes. Throughout the 2003-2007 legislature, 92 kilometres of new Metro and light rail lines were built and major improvements were made to the existing system, with new interchange stations, etc., all with the following objectives:

- To extend the conventional Metro, which has grown by over 55 kilometres. Lines now reach suburbs via the extension of Lines 1, 2, 3, 4, 5 and 11.
- To provide a Metro connection between Madrid and adjacent municipalities, like Alcobendas and San Sebastián de los Reyes to the north, and Coslada and San Fernando de Henares to the east.
- To connect the major urban planning developments to the transport network, either with the conventional Metro or with a light railway: Las Tablas, Montecarmelo, Sanchinarro, Carabanchel and Vallecas.
- The extension of Line 7 connects the Olympic Stadium and the future Olympic Village with the city centre, as part of the Madrid Olympic Bid project.

- Improvements to the existing Metro network in the city centre. This included the ambitious improvement programme for Line 3, which has extended the length of station platforms and facilitated access for people with reduced mobility.
- New Metro stations that were part of original projects have also been built, as well as stations in sections of the network where there have been major urban changes, such as Aviación Española on Line 10, Arganzuela-Planetario on Line 6 and Pinar del Rey on Line 8.
- Extension of line 8 to the new T4 terminal in Madrid-Barajas Airport, using a 20-year concession system.

- Finally, the Madrid Region has constructed 36 km of light rail lines in different municipalities of the region, such as Pozuelo de Alarcón, Boadilla del Monte and Parla, and in other areas, such as the new development areas in the north of Madrid, where population density, planning infrastructure and morphology mean that a light railway system is the ideal mode of transport, as has been demonstrated in other European and Spanish cities.





Parla Tramway



Parla Centro-Bulevar Norte Station

Part of the 2003-2007 Infrastructures Plan, Parla Tramway is a unique initiative that has gone beyond the transport system, making it a symbol of the city's development and image, involving the whole population in the project.

It comprises 8.5 km of surface track within the city of Parla with intermediate right-of-way platform capacity, wholly inside the urban area and connected to the Parla suburban train station.

The project is a cooperation initiative between the Madrid Regional Government and Parla town council that form part of the Transport Consortium, which is in charge of managing the public service.

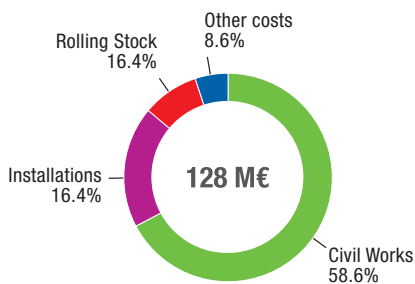
33% of the €128 million in capital investment for the project came from urban levies on the development of the new Parla Este district, which benefits directly from increased accessibility. The rest is provided by Parla town council in a series of installments.

The consolidated city centre has improved significantly, increasing activity and the quality of life around the tramway.

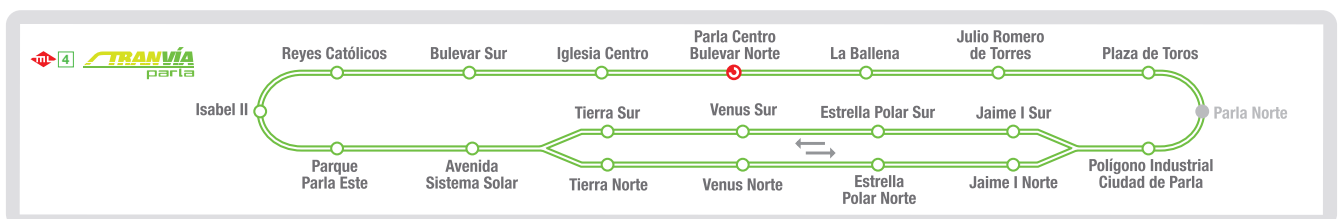
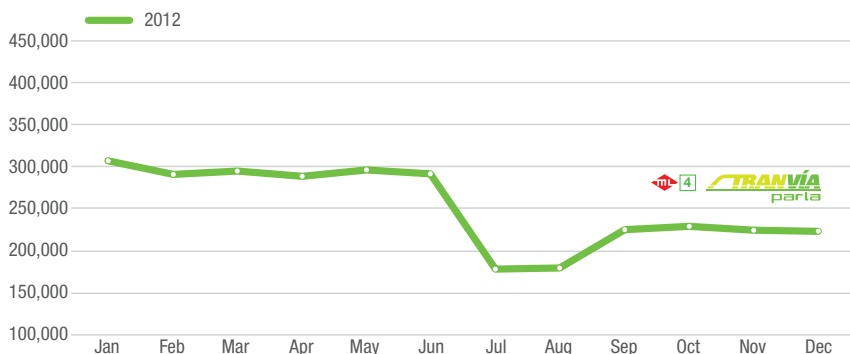
The contract model is concessionary, for 40 years, including the project, works and operation of the tram line, to a company made up of Globalvía (75%), Detren (10%) and Caja Castilla-La Mancha (15%).

The result is a demand greater than initial estimates suggested, one of the highest levels of user satisfaction in the public transport system in the Region of Madrid (over 8 points on 10) and an improvement for Parla, making it more attractive and more sustainable.

TOTAL PROJECT INVESTMENT



MONTHLY TREND IN DEMAND



Layout of line and stations

Public Transport Infrastructure Plan 2007-2011



With the 2007-2011 Infrastructure Plan, the regional government's aim was to keep its commitment to public transport. This plan is no less ambitious in concept than its predecessors and it was designed to integrate the region's Metro and railway networks. It will provide the inclusion of the suburban railway which will run underground to the urban area of Torrejón de Ardoz.

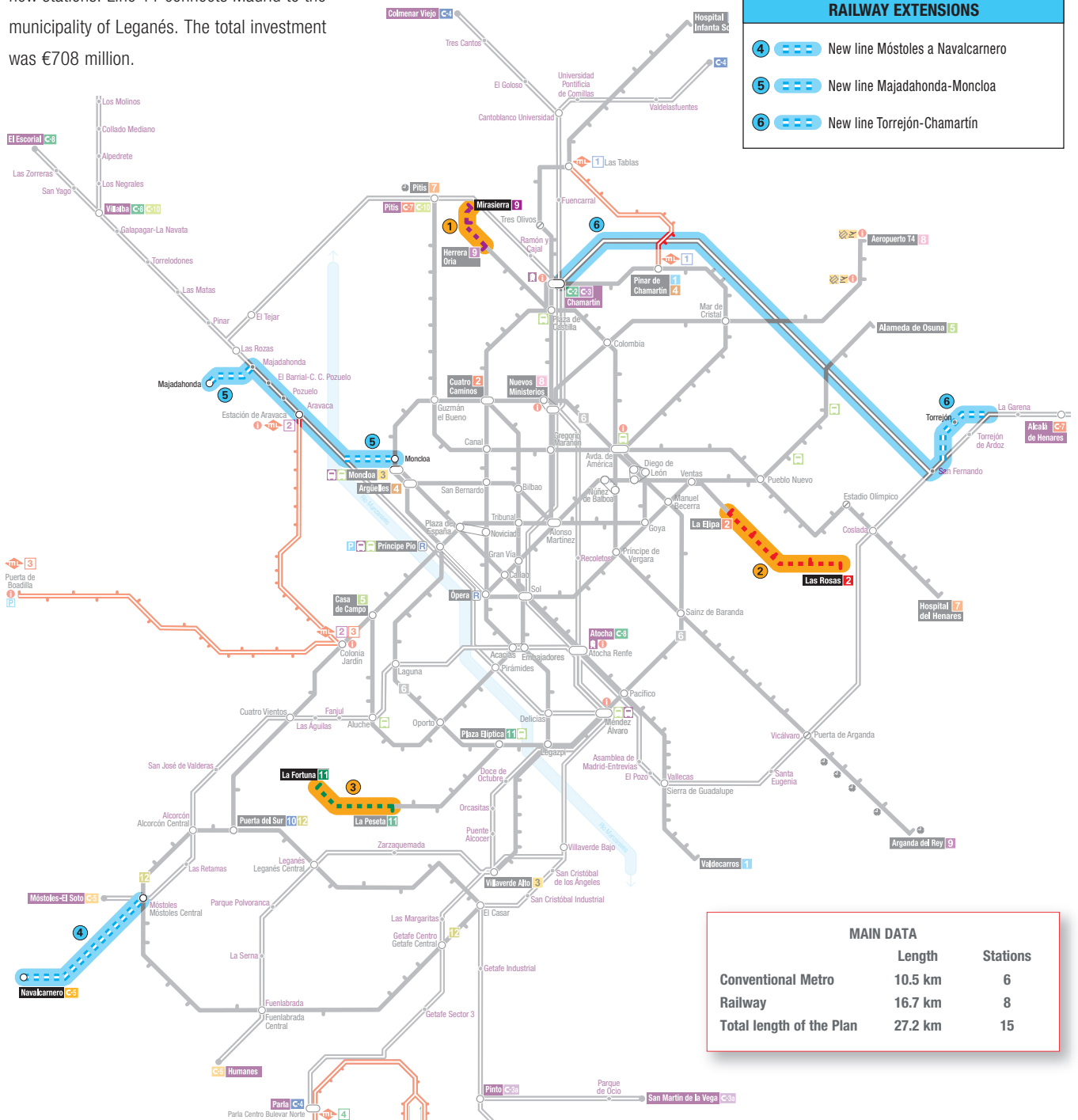
The Plan includes the following:

- **Convencional metro:** Lines 2, 9 and 11 were extended with 10.5 kilometres and 6 new stations. Line 11 connects Madrid to the municipality of Leganés. The total investment was €708 million.



- **Railway:** 2 projects will be carried out: the Mostoles-Navalcarnero connection and the Torrejón-Chamartín line. The total plan will involve 16.7 km of lines, 8 new stations and an investment of €519 million.

METRO EXTENSIONS	
1	LINE 9: Extension Herrera Oria-Mirasierra
2	LINE 2: Extension a Las Rosas
3	LINE 11: Extension La Peseta-La Fortuna
RAILWAY EXTENSIONS	
4	New line Móstoles a Navalcarnero
5	New line Majadahonda-Moncloa
6	New line Torrejón-Chamartín



MAIN DATA		
	Length	Stations
Conventional Metro	10.5 km	6
Railway	16.7 km	8
Total length of the Plan	27.2 km	15



Madrid Suburban Railway Infrastructures Plan 2009-2015

TOTAL INVESTMENT IN THE PLAN (IN MILLIONS OF EUROS)

INFRASTRUCTURE CONSTRUCTION PROGRAMMES

- Network enlargement: New arterial line	1,350
Line extensions	1,600
- Capacity enlargement (quadruplications of track)	620
- Stations and interchanges	650

PROGRAMMES TO MODERNISE AND IMPROVE THE NETWORK **780**

TOTAL **5,000**

The Suburban Rail Infrastructure Plan 2009-2015 is a joint initiative between the State and Madrid Regional Government to improve and reinforce the rail network for Madrid and surrounding area. The plan is based on the modernisation, renovation, and expansion of the network's capacity. It establishes a medium to long-term action plan, based on the principle objectives of extending coverage, improving the accessibility and connectivity of the network, and improving the quality of service.

The series of initiatives contained in the plan will result in 115 km of new lines, 66 km of quadruplicated tracks, and the construction of 25 new stations and 5 interchanges. It also includes a programme for improving and modernising the existing network.



EXTENSION OF THE SUBURBAN RAIL NETWORK	
1	Chamartin - Barajas T4 Line
2	Extension of line C-4 from Alcobendas/S.S. Reyes to San Agustín de Guadalix and Algete
3	Extension of line C-4 from Colmenar Viejo to Soto del Real
4	Extension of line C-4 from Parla to Torrejón de la Calzada/Torrejón de Velasco
5	Extension of line C-5 from Humanes to Griñón and Illescas
6	Majadahonda-Las Rozas new line
7	East-Southwest Transversal Axis
EXTENSION OF CAPACITY (TRACK QUADRUPLED)	
8	Section San Cristóbal de los Ángeles - Pinto - Aranjuez
9	Las Rozas - Villalba and Villalba - Alpedrete / Collado Mediano
MADRID REGION INITIATIVES	
10	New C-2 line in Torrejón de Ardoz
11	New line Majadahonda - Moncloa
12	New line Móstoles to Navacerrero
NEW INTERCHANGES	
○	Canillejas, Avda. de América, Príncipe Pío, Alonso Martínez and Aluche / Oporto
STUDY FOR THE EXTENSION OF SUBURBAN RAILWAY	
↔	Extensions to Villaviciosa de Odón and Mejorada del Campo



Between 17 October 1919, when the first section of the Madrid Metro was opened to the public, and today, Metro de Madrid has undergone a process of considerable, continuous growth.

After completion of the most recent extension plan (2011), the network is now 287 kilometres long and has 238 stations distributed over its 12 Metro lines and an additional branch.

The average speed of commercial trains throughout the network was 30.02 km/h. Around 2,196,800 passengers (2012) used the Metro daily, with demand peaking at 18,600 passengers (2012) on sections of line 10. Throughout 2012, 604.1 million passengers travelled on the network.

Metro de Madrid is committed to modernity, using state of the art equipment and the best possible safety measures for its passengers.

This commitment is supported by our continuous plans to extend and modernise the network. Since 1991, the Region of Madrid has implemented a number of extension plans, of which, the 2003-2007 plan, marked a milestone in extending and modernising the Madrid Metro network. Madrid Metro has also carried out an ambitious Renovation Plan, which focused on increasing capacity and accessibility and making general improvements to rolling stock and facilities in the old network.

Rolling stock, which has increased by 50% in the last 5 years, is made up of 2,303 carriages with an average age of 10.7 years. New 8000 and 9000 series trains, with their new, exceedingly comfortable designer carriages and 21st century technology, are now in use. These trains are very energy efficient and boast automatic signalling and control systems, integrated access, an attractive design and bright interiors.



Metro control post at the Alto del Arenal station



Model 8000 train at the El Carrascal station





Madrid Urban Bus Services: EMT



EMT bus next to the Puerta de Alcalá

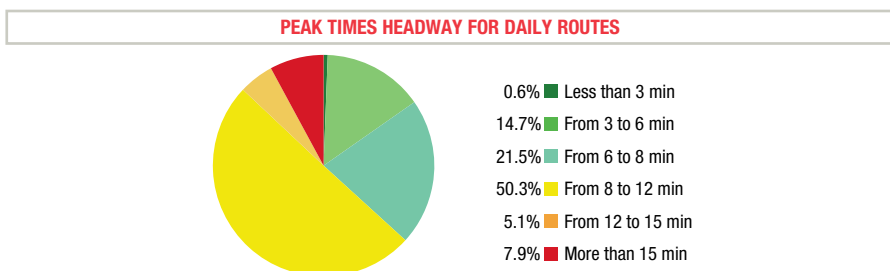
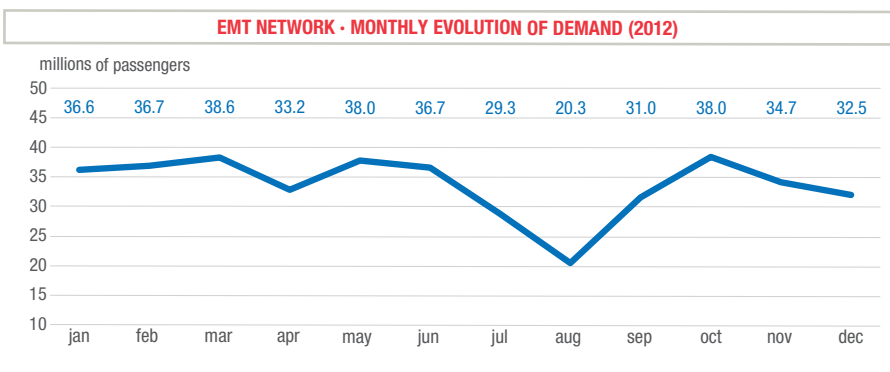
The current bus network serving the city of Madrid consists of 216 different routes, covering a distance of 3,940 km. The bus service is managed by the Empresa Municipal de Transportes (EMT). Around 1,475,000 journeys are made daily, equivalent to an annual demand of 405.5 million journeys.

The typical features of an EMT bus route are that it covers a distance of 9,000 metres, serving 25 bus stops in each direction located at intervals of 330 metres. The average journey distance per passenger is 3.0 kilometres.

The bus fleet consists of 2,000 vehicles with an average 6.2 years, 100% with low floors. 742 ecological buses, powered by compressed natural gas. Another 20 buses are electric and 4 buses are powered by hybrid diesel-electric engines.

The EMT network has 94.5 km of bus lanes, of which 35 km are protected with a specifically designed barrier that Madrid City Council plans to continue expanding in the future.

EMT has an Automated Vehicle Management System (AVMS) for the whole fleet, consisting of locating buses by GPS and communicating in real time with a Central Control Post. The system offers multiple options for providing information to users in real time. The EMT network has 351 Realtime Information Points at the stops with greatest demand, showing the arrival time of the next bus on the different lines that use the stop. Since 2006, this information can be obtained from any stop on the network, by means of SMS messaging, for travellers who have a mobile phone. Also, in order to improve service quality, timetables at each stop have begun to be implemented on low-frequency lines.



15.3% of routes operate with a headway of less than 6 minutes during peak times



Suburban Train Services: RENFE



The Madrid conventional railway network, dating back to the mid 19th century, has become a modern suburban rail network. Since 1989, demand for suburban rail transport has increased by 400%, making it an essential mode of transport in the region.

The current network consists of 400 km of track, 94 stations and 8 lines. On a week day, the trains make 864,511 stages, corresponding to a demand of 180.0 million journeys per year. Line C-5 carries 270,000 passengers a day (33.6% of the total), making it the most heavily used commuter rail line in Spain.

The present rolling stock (1,058 units) consists of modern carriages, fully air conditioned, making 1,400 journeys each day.

Over the last 5 years the network has seen major changes. The most emblematic initiative, has been, without doubt, the opening of the new Atocha-Chamartín tunnel in 2008. The tunnel, which is 8.3 km long, has allowed the number of trains in the most heavily-used section of the network to be doubled, thus resulting in a considerable reduction in journey time for users of the C-3 and C-4 lines. It has also improved the flow of traffic in the centre of the city. These significant works had their culmination in 2009 with the opening of the Sol station, in the very heart of the city. This station allows passengers to transfer to a further 3 Metro lines, thus making this station one of the main public transport nodes in the region.

More recently, the acces to Barajas airport T4 became part of the Madrid suburban rail network in 2011 thus facilitating connections between the new airport terminal and the city center.

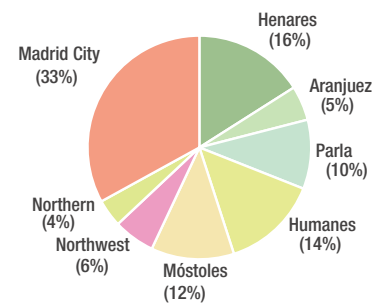
Future plans for Madrid's urban rail network lie within the framework of the Railway Infrastructure Plan 2009-2015, with an expected investment of €5,000 million. The objective is to extend the network by 115 km, build 25 new stations increase the capacity and modernise the existing network.



CIVIA commuter train at Sol station

RENFE SUBURBAN TRAINS IN MADRID REGION DEMAND BY CORRIDOR (2012)

Corridor	Passengers	%
Henares (eastern C-2 C-7 lines)	135,843	15.7%
Aranjuez (southern C-3 line)	43,087	5.0%
Parla (southern C-4 line)	85,367	9.9%
Humanes (southern C-5 line)	124,821	14.4%
Mostoles (sothwest C-5 line)	103,631	12.0%
Northwest (C-3 C-8 C-10 lines)	48,259	5.6%
Northern (C-4 line)	36,486	4.2%
Madrid City Center stations	287,016	33.2%
	864,511	100.0%





Light Rail in the Region of Madrid

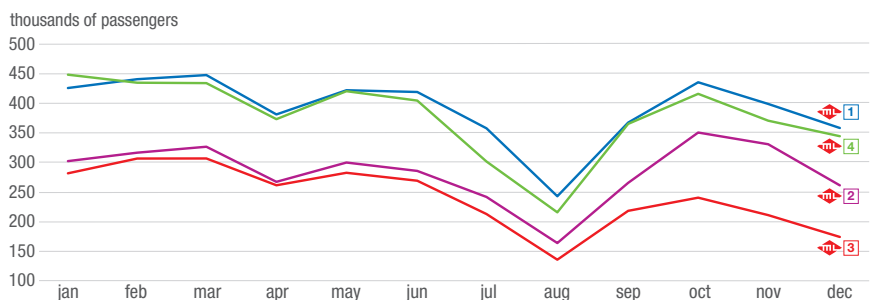


Light Rail in Boadilla Centre Station

MAIN DATA ON LIGHT RAIL IN MADRID

Line	Peak time headway (minutes)	Length (km)	Stops (number)	Rolling Stock	Investment (million €/km)	2012 millions of passengers	2012 million trains-km
1	5	5.4	9	8	47.0	4.7	0.48
2	6	8.7	13	12	29.9	3.4	0.61
3	6	13.7	16	15	19.1	2.4	0.95
4	7	8.2	15	9	15.6	4.2	0.61
TOTAL		36.0	53	44	25.1	15.2	2.65

MONTHLY EVOLUTION OF DEMAND (2012)



BASIC DATA ON THE CONCESSIONARY MODEL OF LIGHT RAILWAYS AND TRAMWAYS IN MADRID

Line	Concessionary	Shareholders	Type of concession	Term (years)	Investment (€millions)	% Investment private
1		42.5% 42.5% 15%	BOT	30	254	100%
2		51.3% 30% 18.7%	BOT	30	260	100%
3		51.3% 30% 18.7%	BOT	30	262	100%
4		75% 10% 15%	DBOT	40	128	67%

BOT: Contract for construction, operation and maintenance

DBOT: Contract for project desing, construction, operation and maintenance

Modern and accessible, Light Rail Transit (LRT) systems are becoming an integral part of the landscapes and daily life of many advanced cities.

Over the last decade the number of modern tramway networks has increased, particularly in cities that lost tramways in the past.

Since 2007, Madrid Region has followed this trend with 36 kilometres of light rail and tramway network. The 4 existing lines ML1: Pinar de Chamartín-Las Tablas, ML2: Colonia Jardín-Estación de Aravaca, ML3: Colonia Jardín-Puerta de Boadilla and ML4 Tranvía de Parla, have greatly differing functions which clearly show the enormous versatility of this new mode of transport. The system meets transports needs in medium-density urban areas and towns and also acts as the main transport link between outlying areas and the high-capacity transport networks.

The concept of the light rail networks is based on:

- A reserved platform that merges well with the urban environment, with a user-friendly transport system that helps regenerate the neighbourhoods and towns it passes through.
- The intensive use of new technologies to aid users, providing easy access to information, which in conjunction with innovatively-designed, high-performance vehicles, offers a regular and reliable service.
- A global concept of accessibility to all kinds of users over the whole system, and providing high-capacity transport modes with convenient connections.

In short, a modern tramway, never far from its users and perfectly capable of dealing with increasing demands. It has received one of the highest quality ratings in the annual ranking of the CRTM's quality survey.

The international acknowledgement came in 2010, when Madrid won the UITP Award as best LRT system initiative.

Suburban Bus Services: Private Operators



Fleets of suburban buses operated by private companies are largely responsible for public transport road connections between the different municipalities in the Region of Madrid and between Madrid and the metropolitan ring.

27 private companies operate 348 suburban bus routes, covering 20,278 kilometres, using a fleet of 1,761 buses with an average age of 4.8 years. These 27 operators are governed by 30 administrative concession contracts.

The total supply of programmed transport for the whole network amounts to 22,632 services per working day, of which 1,000 are single-direction peak hour services.

Although most urban transport services in the municipalities within the Region of Madrid are provided by the same companies as the suburban bus routes, in 2012 a total of 38 municipalities, plus Madrid, had their own specific network of urban bus routes, all dependent on the Regional Transport Consortium. These include 7 urban concessions and 1 municipal company service. The total number of these urban lines is now 118, programmed for a total of 8,691 services per weekday. The annual demand for these routes is 39.5 million journeys. The municipality of Alcalá de Henares has the largest network with 11 routes, 58 buses and 9.9 million passengers/year.

Both networks (suburban and urban lines in rings B and C) move a daily total of 793,000 passengers, corresponding to an annual demand of 220 million journeys.

In December 2009, the Madrid Regional Transport Consortium started a Modernisation Plan for suburban buses and extended the concession term by 10 years (with the option of an additional 5-year extension). This Plan, which includes the whole fleet of suburban and urban buses in rings B and C, with over 2,000 buses, seeks to enhance quality, improve the service and management, make a commitment to new technologies and renew the fleet, in order to offer the citizens more efficient solutions in terms of mobility.



Suburban bus at the Plaza de Castilla interchange



MAIN SUBURBAN AND URBAN BUS OPERATORS IN B AND C RINGS (2012)

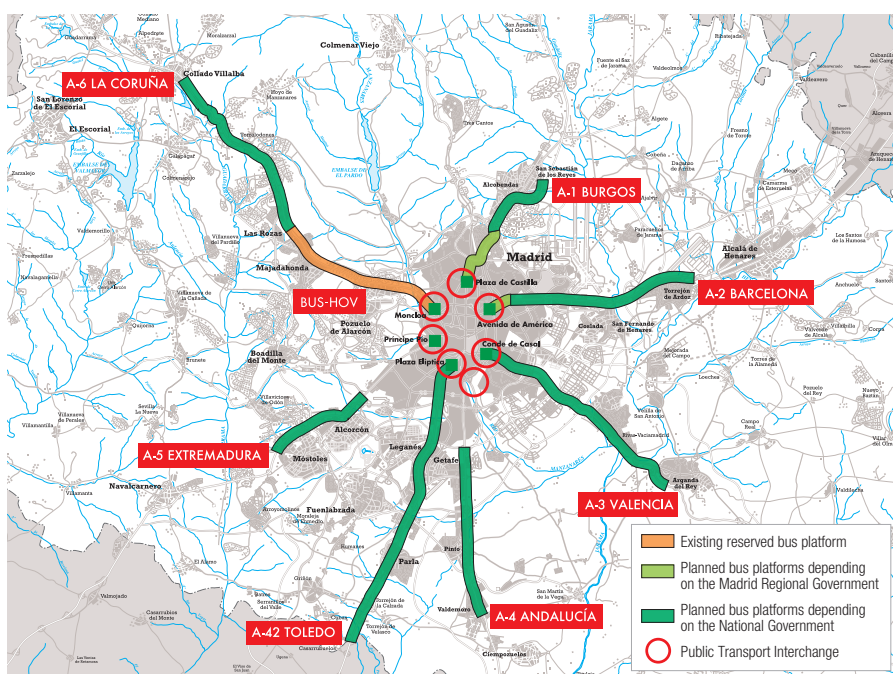
Company	No. buses	Services/day	Passengers/year
De Blas	222	4,063	31,258,481
Continental	212	2,737	22,820,207
Llorente	143	2,641	20,021,568
Martín	160	2,296	17,320,572
Avanza Interurbanos	168	2,700	15,948,085
Interbús	118	2,072	13,168,978
Autoperiferia	86	1,176	10,863,896
Etasa	84	1,329	9,764,613
Alcalabus	58	1,638	9,967,749
La Veloz	94	1,349	8,191,293
LARREA	108	1,048	7,751,717
Rest of companies	594	8,274	48,092,618
TOTAL	2,047	31,323	216,169,777



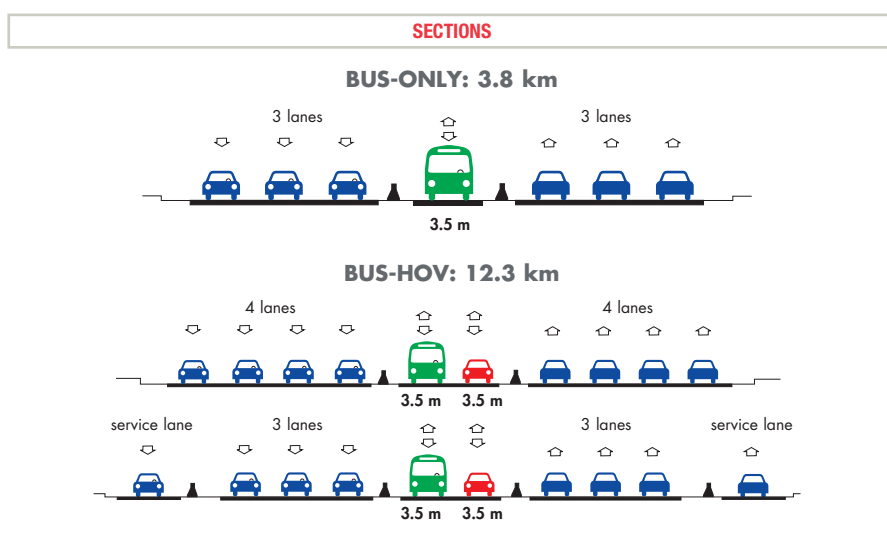
Reserved bus platforms on roads



BUS-HOV lane on the A-6



Layout of future bus platforms and interchanges



Due to the importance of the suburban bus network for mobility between the greater metropolitan region and the city of Madrid, the CRTM has been strengthening this network for years, not just in terms of improving the quality and quantity of services offered via new lines, better buses, etc., but also by carrying out specific programmes to foster this mode of transport.

This is the context in which two programmes of wide-ranging scope are being developed: the Madrid plan for metropolitan bus terminal interchanges and the plan for bus platforms on national and regional roads.

The programme for bus platforms on roads came about at the beginning of the 90's with the BUS-HOV (High Occupation Vehicles) initiative along the A-6 road to the northwest of Madrid. The area along this road was experiencing a considerable increase in population and employment, a trend which has continued, with almost 550,000 inhabitants in 2012.

The initiative consisted of a system with 4 basic elements: the BUS-HOV lane for buses and high occupation vehicles; a BUS-ONLY section when approaching the city itself; an underground interchange (Moncloa) for the bus terminals; and a good connection with the metro system and the city as a whole, via two metro lines and a number of EMT bus lines.

The system operates reversibly (with traffic heading towards the city in the morning and towards the suburbs in the afternoon and evening). It is located in the middle of the dual-carriageway and is separated from the road by means of rigid barriers. The access points to the BUS-HOV system are located at its two end points (beginning and end) and via 3 intermediate tunnel access points. The performance of the system has been highly satisfactory. More than 110,000 passengers use the buses every day.

The success of this initiative has resulted in the Ministry for Public Works considering similar solutions for other access roads into Madrid (A-1, A-42, etc.). Some of these are already at advance study phase. This will give the towns located in the greater metropolitan area direct access to Madrid. The Region of Madrid has also planned a series of initiatives to complement the Ministry's programme.

Madrid Interchange Bus Stations Plan



Modal integration unquestionably plays a fundamental role in the success of any metropolitan transport system.

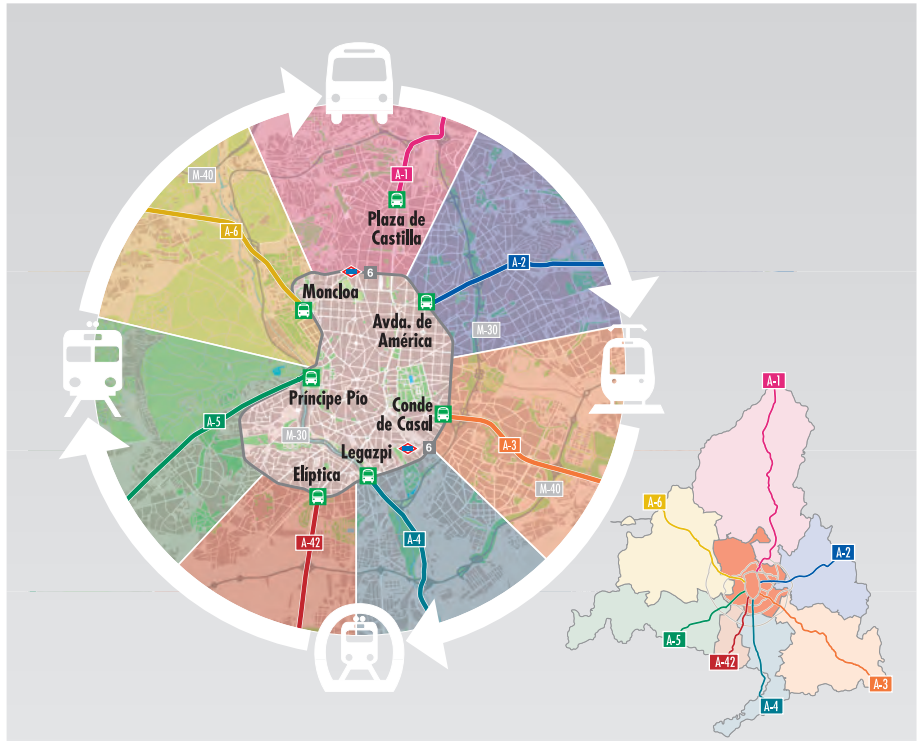
The interchange terminals represent a crucial aspect of Madrid's public transport system, allowing users to make a wide range of journeys comfortably and easily, highlighting the fact that the old concept of train or bus stations has now ceased to be valid.

The transport interchanges act as access gateways to Madrid's public transport (suburban buses and suburban trains), optimising accessibility to the mainly urban modes of transport.

The Metro network, owing to its high capacity, acts as the core mode of transport in the city, complemented by the network of urban buses.

The Madrid Transport Consortium's Interchange Bus Stations Plan represents the culmination of a process intended to unify the suburban bus line terminals of each corridor, ensuring the system's optimal modal integration.

Location in the city, integration with the public transport system and concentration of terminals are the three basic elements in this Interchange Stations Plan for suburban buses.

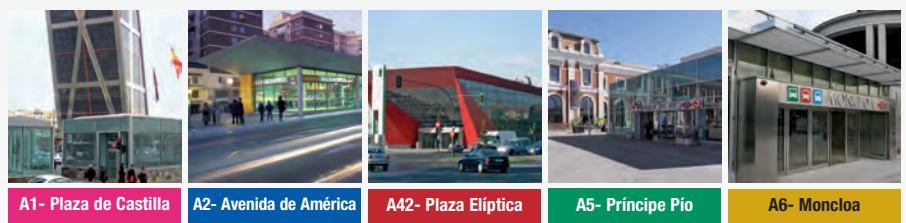


MADRID TRANSPORT INTERCHANGE PLAN MAIN FEATURES (2010)

	Plaza de Castilla	Avenida de América Current	Avenida de América Extension	Plaza Elíptica	Príncipe Pio	Moncloa
Investment (€millions)	143.9	24	43	54.5	56.3	113.9
Surface area (m ²)	59,829	40,548	6,350	40,200	28,300	46,000
Tunnels (m)	1,250	400	160	600	400	500
Total demand (pass/day)	199,544	156,683		67,747	185,255	266,267
No. of urban lines (EMT)	25	18		9	17	20
No. of suburban lines	55	14		20	27	56
No. of long-distance lines	-	19		1	2	1
No. of bus bays	48	36		24	30	36
No. of car park spaces	400	645		363	-	-
No. of Metro lines	3	4		1	3	2
No. of suburban rail lines	-	-		-	2	-



Moncloa Interchange: Ground level



MADRID INTERCHANGE STATIONS PLAN - AWARDS



ANTI-FIRE SAFETY MEASURES 2009.



AWARD FOR BEST URBAN DEVELOPMENT PROJECT 2009



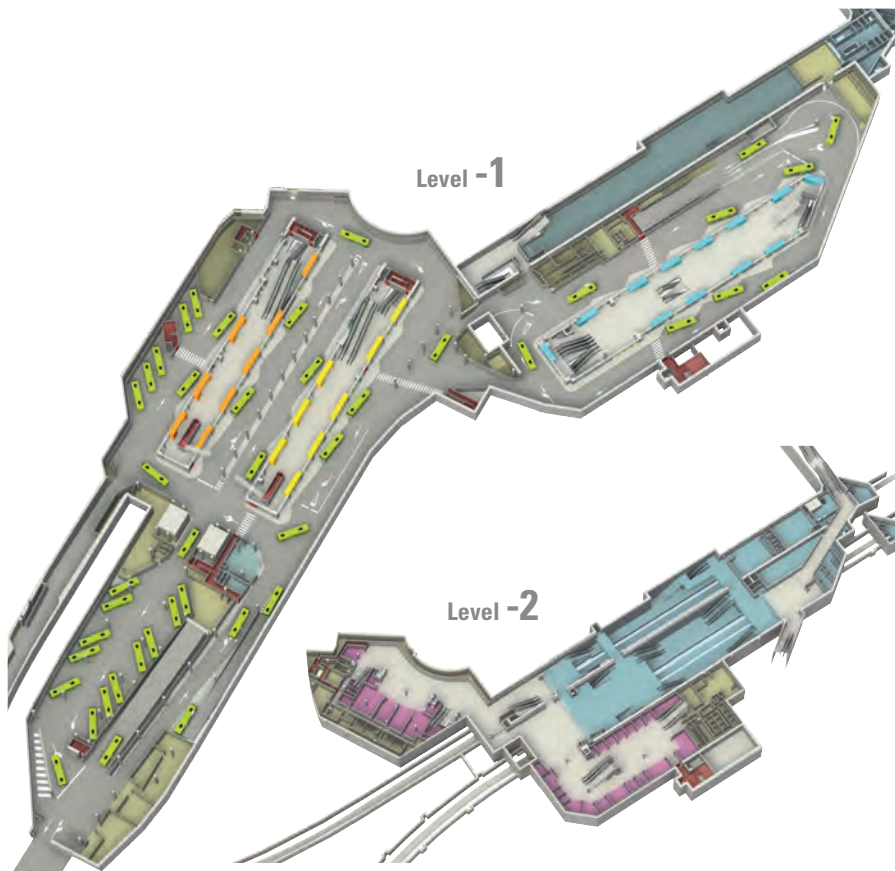
PRODIS 2009
AWARD IN THE CATEGORY OF ENTITIES



AWARD IN THE URBAN DEVELOPMENT CATEGORY 2009



Moncloa Interchange



Moncloa interchange station was inaugurated in 1995 with around 50,000 users, dispatching 1,400 suburban buses every day and serving the population along the A-6 corridor. Since February 2009, the Moncloa interchange has been enlarged, below the *Plaza del Arco de la Victoria*, by 20,000 m² and 20 new bays. It currently comprises 56 suburban bus lines from the north-east corridor, providing connections with Metro lines 3 and 6, and 20 urban bus lines (EMT). A total of 266,267 passengers per day (2010) have seen their daily travelling conditions improve.

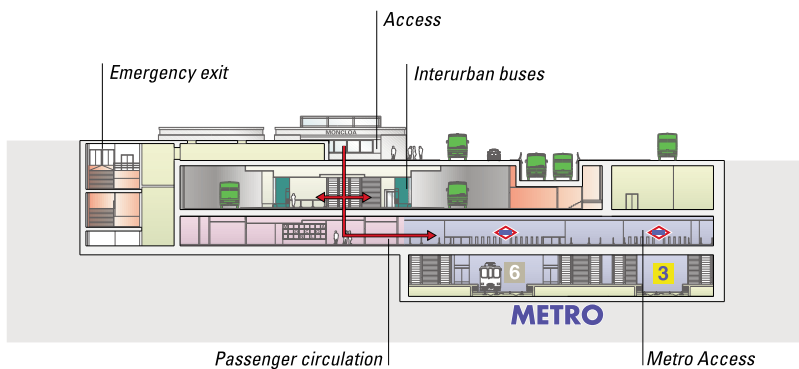
The construction of a connection directly linking the BUS-HOV lane with the interchange reduced journey times for the 5,000 suburban buses that circulate every day in the Moncloa area. The extension has bus regulation areas, which help streamline operations and improve surface traffic, giving rise to benefits for the environment and for transport, both public and private.



At present, the interchange consists of 3 islands with 36 bays on the main bus level, a lower level for connections to Metro lines 3 and 6, a shopping and passenger services area, plus 4 access points from Calle Princesa, Paseo Moret and Plaza de la Junta Municipal de Moncloa.

Like the rest of the interchange bus stations created in the 2004-2008 Plan, Moncloa has modern traffic management, safety and maintenance systems to guarantee high service quality. The whole operation is controlled, in real time, from a Local Control Post, which forms part of the CRTM's Integrated Public Transport Management Centre.

INTERCHANGE SECTION



MADRID INTERCHANGE STATIONS PLAN - AWARDS



INTERMODES AWARD 2010



ITF-UITP AWARD 2010 FOR THE BEST INNOVATION IN PUBLIC TRANSPORT



MADRID DEMARICATION OF CIVIL ENGINEERS ASSOCIATION (CICCP): AWARD FOR BEST PUBLIC WORK 2010



INTERNATIONAL OSMOSE AWARDS 2011 EFFICIENT PLANNING AND USE OF INFRASTRUCTURE AND INTERCHANGES

Plaza de Castilla Surface Interchange Station



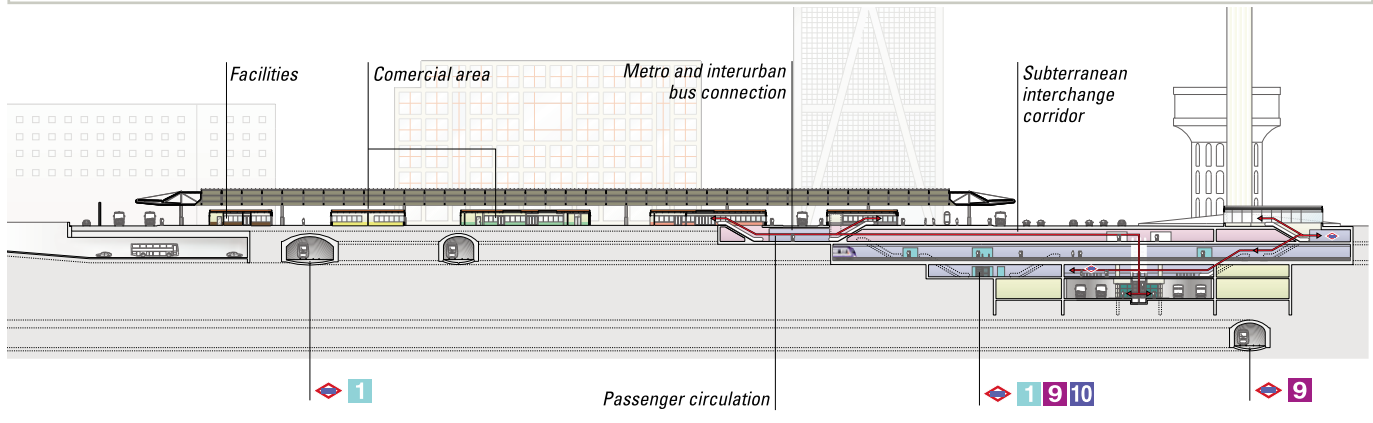
The goal of the surface bus terminal is to improve the conditions for waiting and transferring between modes of public transport. Additionally, the saw-tooth arrangement of bays, as in the subterranean terminals, creates a safer, more convenient space for public transport users.

The terminal consists of 18 bus bays, and it is designed in line with the typology of differentiating between zones for passengers and zones for buses to circulate. An overhanging shelter joins both zones and protects users from the inclemency of the weather. Access to the metro network and the subterranean interchange is via two hallways located on each of the islands. The islands are equipped in turn with a series of spaces that act as waiting areas and service zones, key points for improving service quality.

In short, the terminal has been designed in keeping with the qualities and conveniences that exist in the transport interchange stations carried out in Madrid in recent years and which will stand as a benchmark for surface urban bus terminals.



SURFACE INTERCHANGE SECTION



MADRID INTERCHANGE STATIONS PLAN - AWARDS



ENGINEERING INNOVATION AWARDS 2011 OF CIVIL ENGINEERS ASSOCIATION (CICCP): MADRID TRANSPORT INTERCHANGES PLAN. INNOVATIVE INFRASTRUCTURES



XXV SECURITY AWARDS OF SEGURITECNIA MAGAZINE: MADRID TRANSPORT INTERCHANGES PLAN FOR THE SECURITY RESEARCH



V POTENCIA MAGAZINE AWARDS: MADRID TRANSPORT INTERCHANGES PLAN AWARD IN THE URBAN WORKS CATEGORY 2011



Park and Ride



Pay park-and-ride car park at Majadahonda station



Free park-and-ride car park at Aranjuez station

Park and ride car parks act as an interface between private vehicles and public transport and represent a key factor in the modal chain intended to orient the public transport system towards residents in the outlying urban and metropolitan areas most inclined to use automobiles.

Madrid's commuter train network has 56 park and ride car parks. On a weekday, 7.1% of commuter train passengers arrive at the network's different stations by private vehicle, of which 4.0% are drivers and 3.1% are companions.

When we look at the stations in the different metropolitan rings, the number of cars using the car parks increases the further away they are from Madrid.

Car park capacity in 2012 was 20,758. Average size is 371 spaces per car park, although pay car parks are of a larger size: more than 690 spaces compared to 300 spaces in the rest.

All the Park and Ride facilities in the metropolitan area of Madrid have free access (or free of charge), except five located in the north-western A-6 highway corridor, named El Barrial Centro Comercial Pozuelo, Majadahonda, Las Rozas, El Pinar and Las Matas. Rates vary according to length of stay (1, 5, 10 or 30 days), and it is necessary to be in possession of a public transport ticket valid for an equal or greater period of time.

Certain Metro stations, such as Canillejas, Aluche, Miguel Hernández and Colonia Jardín (in Madrid) and the 5 stations on the Line 9 extension to Rivas and Arganda del Rey, also have park and ride facilities.

Finally, the Region of Madrid is setting up free park and ride car parks linked to small suburban bus stations, particularly in the municipalities of Villa del Prado and Moralarzaral.



TYPOLOGY, NUMBER AND SPACES IN PARK-AND-RIDE CAR PARK AS ASSOCIATED WITH COMMUTER TRAINS

Type of car park	No. of parkings	No. of spaces
Free Access	46	13,852
Pay-per-use	10	6,906
TOTAL	56	20,758

RATES FOR PAY-PER-USE SUBURBAN PARK-AND-RIDE CAR PARKS

Period	Rate	Validity associated with public transport ticket
1 stay	1.15 euro	1 stay on the same day of purchase
5 stays	4.50 euros	5 stays (which may coincide on the same day)
10 stays	9.00 euros	10 stays (which may coincide on the same day)
Monthly	17.00 euros	1 stay/day for 30 days as of the purchase date

DISTRIBUTION OF SUBURBAN PARK-AND-RIDE CAR PARKS ACCORDING TO CAPACITY

Car park capacity	Number	Percentage
50 spaces or less	11	26.8
51 – 100 spaces	4	14.0
101 – 250 spaces	14	25.0
251 – 500 spaces	14	25.0
501 – 1,000 spaces	6	10.7
Más de 1,000 spaces	7	12.5
TOTAL	56	100.0

Bus Stop Facilities and Information



Since 1987, the CRTM has been developing an Suburban Bus Stop Fittings and Signage Plan. The objective of the plan is to promote the use of this mode of transport by improving the quality of the service by: clearly identifying and marking bus stops; providing information to users about the services; protecting users from inclement weather while waiting for buses; and creating a coordinated, integrated image of surface transport.

Apart from the classic model of shelter, two new models began to be installed in 2009: the "Consortio Renovada", based on the previous model, and the "Enthoven".

The concepts that define them are appearance and accessibility, including full information on transport as provided by the old model.

In those stops which do not have a shelter, posts are used to indicate the location of the stop for potential public transport users (by december 2012 there were 5,009 post). These posts include a space for information about the routes of the different bus lines and the timetables for the buses which run along the routes.

In the municipality of Madrid, the Transport Consortium has carried out an Information Plan which has defined new information for EMT lines. This plan has been implemented over the last few years. Each EMT bus stop contains up-to-date information regarding the lines which stop at the bus stop, their routes, basic timetables and ticket price information. In bus stops which have shelters the information also includes a map of the entire Madrid public transport network.



New models of shelters and post stops



NUMBER OF SUBURBAN BUS SHELTERS INSTALLED (December 2012)		
"Consortio Normal" model	2,447	80.3%
"Consortio Renovada" model	63	2.1%
"Enthoven" model	310	10.2%
Other models	227	7.4%
TOTAL	3,047	100%



CITRAM · Integrated Public Transport Management Centre



CITRAM coordinates the information on infrastructure and services of the different modes of transport that operate in the region of Madrid.

Focused on real time information the center manages the status of public transport as a whole and provides a coordinated, integrated response to all public transport stakeholders (customers, transport operators, emergency services,...).

Thanks to CITRAM, the Madrid Region Organising Authority, can take decisions faster and more effectively when coordinating the operation of the entire transport system.

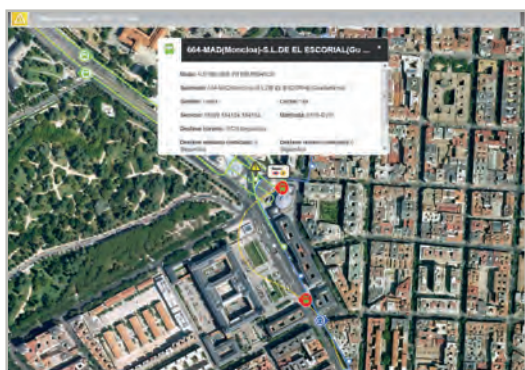
The coordination among the different PT modes in the real time is specially remarkable in case of big events (as World Youth Day 2011, for instance), major disruption or security threats.

Information for the different modes of transportation (Metro, EMT, suburban trains, interchanges, etc.) which are conceived as parts of a single multi-modal information system, allows customers to plan the most convenient route depending on the status of the PT system.

CRTM is working to provide Public Transport customers with real time information on any incidents on the lines of any PT mode that they normally use.

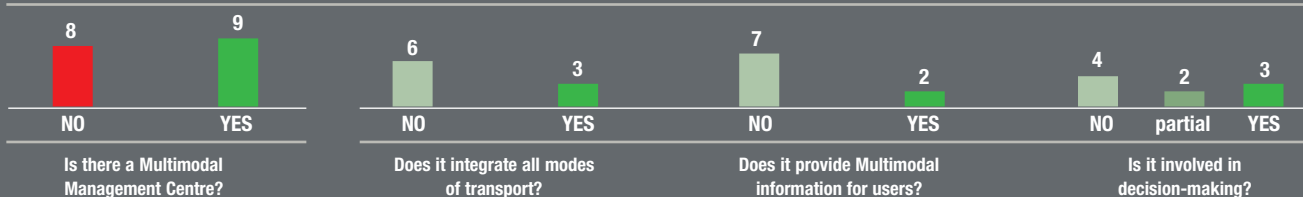


Integrated Public Transport Management Centre. CITRAM



CITRAM, A WORLD CLASS CENTRE

Functionality of European Multimodal Management Centres



Source: survey of EMTA members

New Technologies



The CRTM boosts technological innovation through actions such as the Modernization Plan for Suburban Road Transport, ticketing systems based on "contact-less" technology with the BIT project and the control centres integration of all modes of transport (CITRAM), as well as to improve the access to the information with regard public transport by using new technologies based on semantic web.

In CRTM we are planning and executing actions to:

- Provision of information on multimodal trips.
- Information integration of PT, with information on traffic and incidents.
- Improve management and security. infrastructures in complex multimodal areas such as underground Interchange Stations.
- Integration Control between operating systems of PT from Suburban Road Transport operators and different technological innovation systems implemented by the CRTM.
- Security and monitoring systems centralized and located in the CRTM, for Intelligent Transport Ticketing called HSM (Hard Security Module).

Also, smart ticketing systems based on "contact-less" technology, as it is the BIT project (Billeteaje Inteligente de Transporte: Smart Ticketing Systems, STT) or the emerging NFC, they both are another technological actions where the CRTM is exploring their application in public transport in Madrid.

The current unfolding BIT system in Madrid Region is as follows:

- More than 1,000 points of sale tickets TTP (Public Transport Card).
- More than 7,000 "contact-less" validation systems distributed in all transport modes of the Madrid Region.
- More than 550,000 customers have the TTP.

On December 31st, 2011 ended the period in which interurban bus operators should be provided with all the elements, protocols and actions defined in the Modernization Plan for suburban road transport. The Plan implementation has effect on:

- 30 companies among them administrative concessions, urban concessions and municipal enterprises.
- More than 2,100 vehicles, between suburban and urban buses.
- More than 470 lines, between suburban and urban buses.
- More than 21,000 stops.

And they have been synthesized as follows:

- Operational Aid Systems
 - Centres of Control for each operator
 - Geo-location in real-time
 - Data exploitation (Km, expeditions, ticketing, etc.)



- "Contact-less" Smart Ticketing Systems
- Integration with CRTM
- Information systems in real-time for costumers, both on board and in special points of the transport network
 - More than 420 TFT information screens and more than 1,500 LED screens, on board.
 - 600 information screens in the stops of the network.
- Interactive information systems for costumers.
- Security systems and generation of alarms on all lines, and complemented with systems based on closed-circuit television CCTV in the night lines.

The overall goal of these actions is to get the technologic integration that ensures inter-operability between systems and operators.





Public Transport Financing

FINANCING OF OPERATIONS

The Transport Consortium's existence as a regulating and coordinating body creates a stable framework for financing the Region of Madrid's transport services. To do so, it enters into agreements and commitments with the different authorities, interacting with political departments, in order to meet the cost of any subsidy necessary that has not been covered through fares.

From the perspective of financial needs, the Consortium must basically cover operating expenses and, as the case may be, the investment expenses of the public companies that are part of it, railway concessions, as well as compensation to the private suburban companies and Renfe suburban lines that may be payable, through the use of Transport Passes.

FINANCING OF NEW INFRASTRUCTURES

For several years, the Region of Madrid has been using alternative systems for the financing of investment transport infrastructures.

Accordingly, the Metro Extension Plan 1995-1999, with a total investment of €1,632 million, was partly financed through the public company ARPEGIO, whose assets included several million square metres of land, used as surety for the loans obtained to fund the work. For example, the extension of Line 9 Arganda del Rey, was financed through a DBOT concessionary scheme with a 30-year term.

Subsequently, the Metro Extension Plan 1999-2003 (a total investment of €2,788 million) and the Metro and Light Rail Extension Plan 2003-2007 (€5,126 million) were developed through the publicly owned MINTRA. Certain parts of the 2003-2007 Plan have been removed from the responsibility of MINTRA and were financed through concessions for construction and operation over 30 years (light rail network, the extension of Metro Line 8 to the new terminal at Madrid's Barajas Airport and the purchase of new trains).

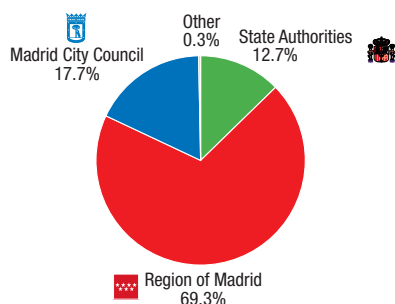
Standing out in the 2003-2007 Plan was the financing of a system whereby the financing of part of some of the infrastructure is to be

funded privately by land developers, as in the case of the Metro Line 1 extension to Ensanche de Vallecas, where part of the investment was made by property developers, and another part was financed by public companies, as in the case of the Parla Tramway, which has received a contribution of €42 million from benefits generated by value capture from the Consorcio Urbanístico Parla Este.

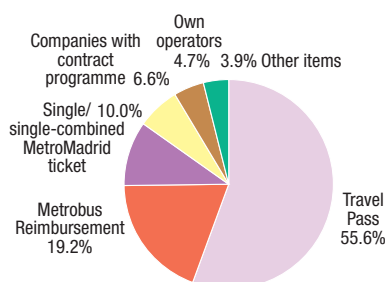
Finally, it is worth noting the innovative public/private partnership, which, based on the experience of the Avenida de América interchange transfer station in 2000, enabled the development of the Interchange Stations Plan 2004-2008, building 4 new interchange stations with a total budget of €369 million. These are 30-year concessions for the construction and operation of infrastructures (which occasionally include adjoining car parks), where private partners recover their investment by means of collecting a fare from each regular bus passenger that gets on or off at the interchange. This also includes the operation of retail outlets, advertising areas, vending machines, etc.

PLAN FOR TRANSPORT SYSTEM FINANCING REQUIREMENTS: 2011 FISCAL YEAR (€ MILLION)

ORIGIN OF FUNDING. YEAR 2011
(€ 1,246.8 MILLION)



INCOME FROM FARE COLLECTION. YEAR 2011
(€ 978.0 MILLION)



ALLOCATION OF FUNDS / EXPENDITURE / REIMBURSEMENT / SUBSIDIES	
CONSORCIO TRANSPORTES MADRID Current expenditure 49.4 Operational 48.4 Investment 1.0 Minus: Own income 3.7 TOTAL NEEDS 45.7	Madrid Metro REAL NEEDS 944.0 TAKINGS 437.9 Travel Pass Reimbursement 202.8 Metrobus Reimbursement 132.0 Other items 103.1 SUBSIDY TO BE SETTLED 506.1*
	Municipal Transport Company REAL NEEDS 427.5 TAKINGS 241.7 Travel Pass Reimbursement 139.4 Metrobus Reimbursement 56.1 Company collection 46.2 SUBSIDY TO BE SETTLED 185.8
	Renfe REAL NEEDS 729.3
	Suburban COLLECTION 298.4
	TFM SUBSIDY TO BE SETTLED 430.9
	Other urban SUBSIDY TO BE SETTLED 430.9
	Other needs REAL NEEDS 64.7
	Total funds applied (needs) 2,211.2

* Of which € 263.4 million are from MINTRA payments for the use of infrastructures

Madrid, A World Reference



Madrid is a region in constant renovation and growth, not only in terms of new urban developments, but also socially and culturally. Madrid is located at the geographic centre of the Iberian Peninsula and it is the central node of one of the largest high speed railway networks of the world, connecting in less than three hours with cities like Barcelona, Seville, Malaga or Valencia. The airport of Madrid Barajas is one of the most important hubs for flights connecting Europe and America, particularly with Latin-American countries linked closely with Madrid. Modern infrastructures, the efficiency of Public Transport and the quality of hotels and restaurants make Madrid one of the preferred destinations to organize congress, conventions and international events.

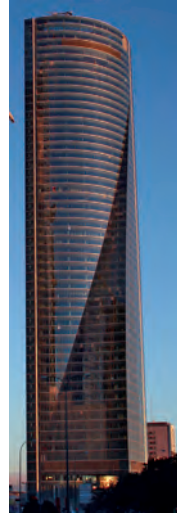
Social housing projects by the British architect David Chipperfield and the Dutch architect Jacob Van Rijs are already underway.

In the transport area, the enlargement of Madrid – Barajas International Airport with new terminals T4 and T4s, entrusted to Richard Rogers and Antonio Lamela has doubled the airport's capacity allowing for 70 million passengers annually.

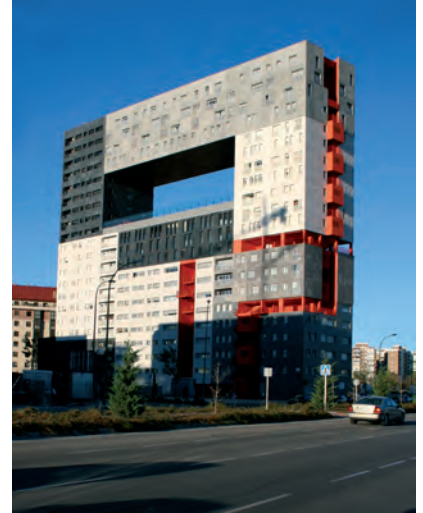
Henry Cobb is the architect of the spectacular Torre Espacio project, an impressive 40-floor spiral in Real Madrid FC's old grounds. Cultural projects have included Jean Nouvel's enlarged Centro de Arte Reina Sofia, Rafael Moneo's work at the Prado Museum, work by Bohigas, Plá and Baquero at the Thyssen-Bornemisza Museum, and the new Caixaforum by Herzog and De Meuron.

In short, Madrid is marching towards modernity, not merely in words, but in an attitude of betterment of all environments, infrastructure, city planning, facilities and transport. Madrid is also renovating its major historic centre, opening up pedestrian areas, promoting its culture, expanding its museums, and building new centres for music, theatre and the arts in general. In short, Madrid is moving into the future with confidence.

The Madrid Río project originated when the section of the M-30 ring road running near the Manzanares River was moved underground, resulting in an area of parkland 10 kilometres long. The river bank has thus become a part of the city centre, and now offers Madrilenians and visitors an area surrounded by vegetation and filled with wide a range of sports, leisure and cultural facilities.



Torre Espacio.
Henry Cobb



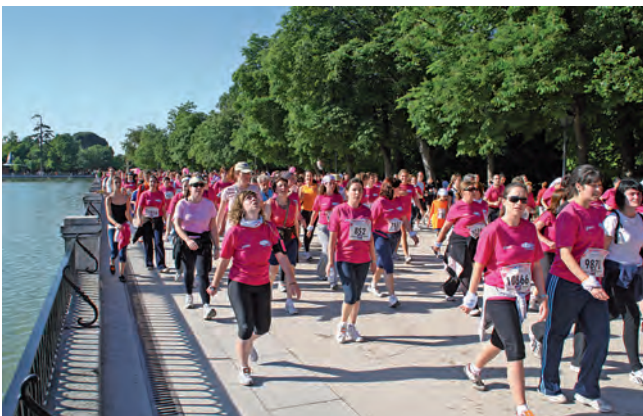
Housing in Sanchinarro:
MVRDV and Blanca Lleó



Madrid-Barajas Airport. Rogers and Lamela



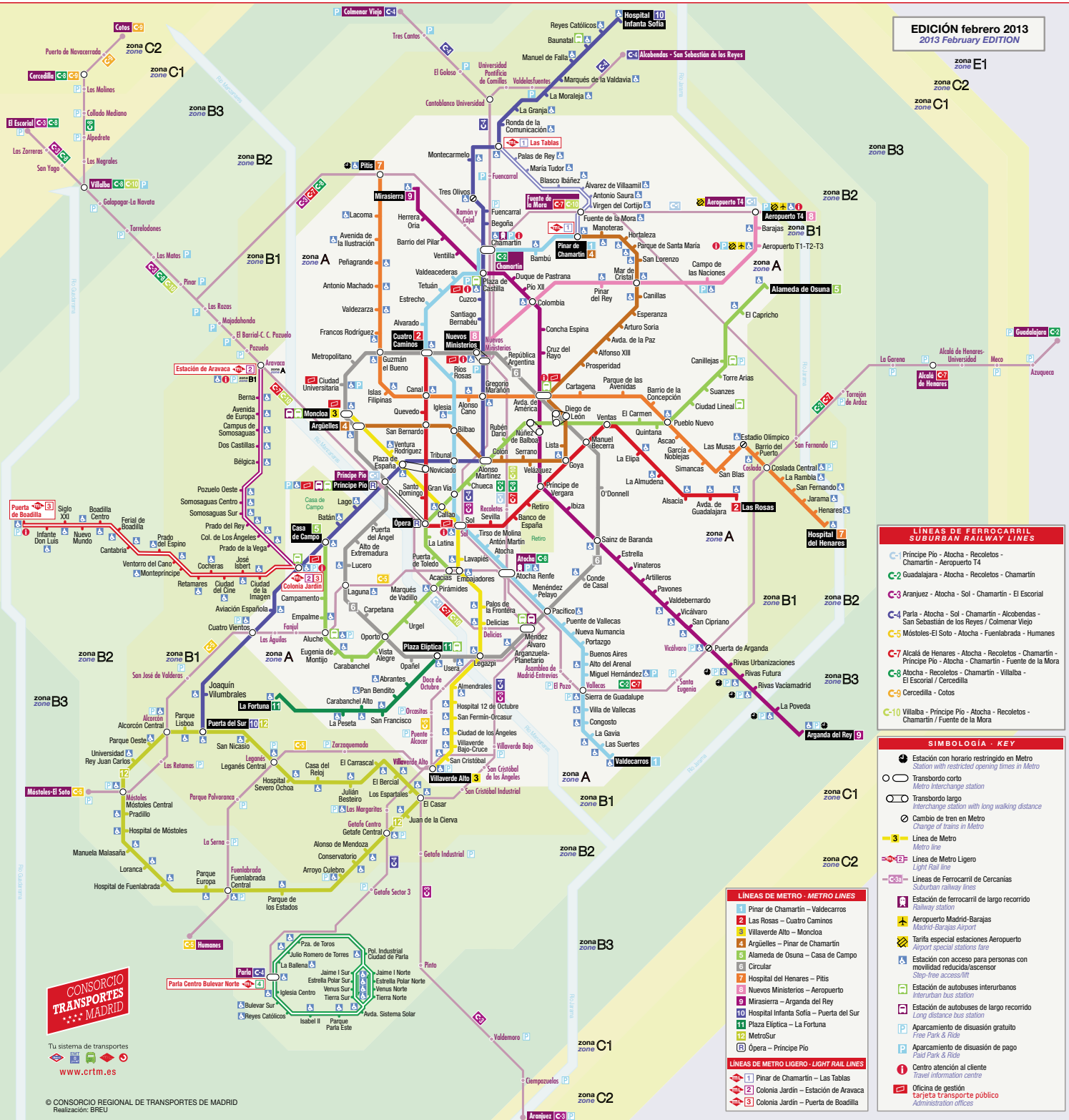
AVE. High speed trains



2013 Women Race



Madrid Río river line. Puente de Toledo



LÍNEAS DE FERROCARRIL SUBURBAN RAILWAY LINES

- C-1 Príncipe Pío - Atocha - Recoletos - Chamartín - Aeropuerto T4
- C-2 Guadalupe - Atocha - Recoletos - Chamartín
- C-3 Aranjuez - Atocha - Sol - Chamartín - El Escorial
- C-4 Parla - Atocha - Sol - Chamartín - Alcobendas - San Sebastián de los Reyes / Colmenar Viejo
- C-5 Mostoles-El Soto - Atocha - Fuenlabrada - Humanes
- C-6 Alcalá de Henares - Atocha - Recoletos - Chamartín - Príncipe Pío - Atocha - Chamartín - Fuente de la Mora
- C-7 Atocha - Recoletos - Chamartín - Villalba - El Escorial / Cerdilla
- C-8 Cerdilla - Cotos
- C-10 Villalba - Príncipe Pío - Atocha - Recoletos - Chamartín / Fuente de la Mora

SIMBOLOGÍA - KEY

- Estación con horario restringido en Metro / Station with restricted opening times in Metro
- Transbordador corto / Metro interchange station
- Transbordador largo / Interchange station with long walking distance
- Cambio de tren en Metro / Change of trains in Metro
- 3 - Línea de Metro / Metro line
- Light Rail Line
- Cercanías / Suburban railway lines
- Estación de ferrocarril de largo recorrido / Railway station
- Aeropuerto Madrid-Barajas / Madrid-Barajas Airport
- Tarifa especial estaciones Aeropuerto / Airport special stations fare
- Estación con acceso para personas con movilidad reducida/ascensor / Station free access lift
- Estación de autobuses interurbanos / Interurban bus station
- Estación de autobuses de largo recorrido / Long distance bus station
- P - Aparcamiento de disuasión gratuito / Free Park & Ride
- P - Aparcamiento de disuasión de pago / Paid Park & Ride
- Centro atención al cliente / Travel information centre
- Oficina de gestión tarjeta transporte público / Administration offices

LÍNEAS DE METRO - METRO LINES

- 1 Pinar de Chamartín - Valdecarros
- 2 Las Rosas - Cuatro Caminos
- 3 Villaverde Alto - Moncloa
- 4 Argüelles - Pinar de Chamartín
- 5 Alameda de Osuna - Casa de Campo
- 6 Ciudad
- 7 Hospital de Henares - Pitis
- 8 Nuevos Ministerios - Aeropuerto
- 9 Mirasierra - Arganda del Rey
- 10 Hospital Infanta Sofía - Puerta del Sur
- 11 Plaza Elíptica - La Fortuna
- 12 MetroSur
- 13 Opera - Príncipe Pío

LÍNEAS DE METRO LIGERO - LIGHT RAIL LINES

- 1 Pinar de Chamartín - Las Tablas
- 2 Colonia Jardín - Estación de Aravaca
- 3 Colonia Jardín - Puerta de Boadilla

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