

## **EXPERIENCES IN OTHER EUROPEAN CITIES:**

- ✓ Stockholm, Göteborg and Malmö (vehicles with more than 14 years are not allowed to circulate)
- ✓ Milan and Rome (traffic restrictions in city center)
- ✓ Londres (survey for the implementation of a LEZ)



## **OBJECTIVES**

To achieve a reduction in inmission levels for  $PM_{10}$ ,  $NO_x$  and hydrocarbons in the city areas with higher values. These values are normally encountered in city centers





## ***ACCESS CONTROL***

- Fixed points, in areas with high traffic intensity, mainly in LEZ access points
- Moving points, randomly located. They will be combined with traffic guards in charge of LEZ surveillance



madrid

ÁREA DE GOBIERNO DE MEDIO AMBIENTE  
Y SERVICIOS A LA CIUDAD

## ***ADDITIONAL ASPECTS***

- To choose a name for the area allowing its clear identification
- To set up a schedule explaining traffic restrictions
- Communication and Dissemination Campaign on a municipal and regional basis



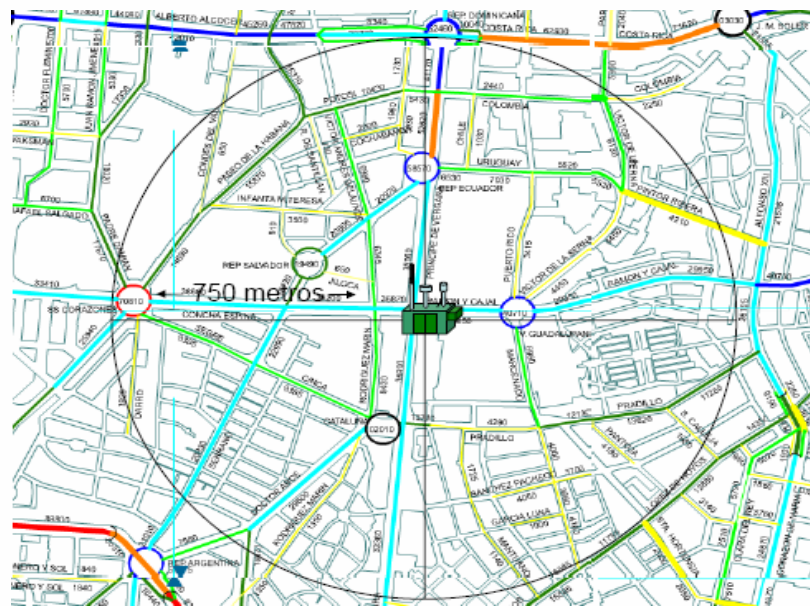
## ***EMISSIONS REDUCTION***

- It is the most beneficial measure out of this Strategy.
- It is a consequence of the enormous reduction of new vehicles compared to the older ones
- It allows the assessment of the results of its implementation



## MAIN CHARACTERISTICS

- Average speed of circulation used 27 km/h. This speed is taken from the software VMD 2003, property of Madrid City Council, Mobility Department
- Total length of city street network **4.500 km**
- Knowledge of daily average intensity data of 1.142 km, by means of software IMD 2002
- The rest not registered, 3.358 km, corresponds to streets with low traffic intensity
- The number of km made per year is **14.363.260.000 km**



### IMDs EN LAS PROXIMIDADES ESTACIONES REMOTAS

#### ESTACIÓN 11 RAMÓN Y CAJAL

IMD x1000 vehículos/día	m. x100
Más de 150	2,0
100 – 150	0,0
80 – 100	2,7
60 – 80	1,8
40 – 60	5,4
20 – 40	37,2
10 – 20	15,2
5 – 10	33,7
1 – 5	46,5
Menos de 1	7,4
IxD (x1000)	267,9
IxD <sub>1000</sub> (x1000)	267,5
IxD <sub>2000</sub> (x1000)	253,6



## IMPLEMENTATION OF LEZ

- At a first stage limitation to:

- ✓ Heavy vehicles not complying with Euro 2 Norm
- ✓ Taxis not complying with Euro 2 Norm
- ✓ Light transport vehicles not complying with Euro 1 Norm



- In a second stage

- ✓ Cars not complying with Euro 1 Norm
- ✓ Revision of the criteria applied in the first stage



## **PROGRAMA COPERT III**

- Each type of vehicle has different emission factors, what makes very complex the study of total emissions with different vehicles
- Estimation based on an "average vehicle" composed of a percentage of each type of vehicle. This percentage is proportional to its presence in the city (percentage data obtained by direct sampling in city street network)
- It means the withdrawal of 50.000 cars (aproximately 1.000.000 of entrance and exit operations), which means a 10 %
- Trip average distance 12 km
- A vehicle makes 15.000 km per year in trips to/from Madrid
- Temperatures used provided by National Institute of Metheorology (INM)





## ESTIMATION OF ENVIRONMENTAL BENEFITS

- Application of model COPERT III to emissions calculation, methodology proposed for road traffic by the European Environmental Agency
- Reduction of daily average intensity values in the city: 10 %
- Enlargement and improvement of public transport
- Pollution reduction: especially relevant for nitrogen oxides, main goal of this Strategy
- Total reduction amount close to 8.000 tons

Pollutant	Emissions			
	2004	1 <sup>st</sup> Stage	2 <sup>nd</sup> Stage	Reduction (%)
NO <sub>x</sub> (t)	16.750	12.270	8.789	47,53
CO (t)	96.431	91.985	82.477	14,47
PM (t)	1.120	687	704	37,14
CO <sub>2</sub> (kt)	4.227,7	4.223,3	3.895,8	7,85

