1. The Mobility Master Plan of the Barcelona Metropolitan Region
MMP 2013-2018
Lluís Alegre
Director of Mobility Services
Autoritat del Transport Metropolità

2. Metropolitan Urban Mobility Plan
PMMU
Joan M. Bigas
Director of Technical Services
Àrea Metropolitana de Barcelona

3. Urban Mobility Plan of Barcelona
PMU 2013-2018
Adrià Gomila
Director of Mobility Services
Ajuntament de Barcelona
Overall aim

To plan the mobility of the Barcelona metropolitan region taking into account all means of transport, passengers and goods and fostering non-motorised forms of journeys.
The Mobility Master Plan (MMP) is a consequence of the National Mobility Directives, approved by the Regional Government of Catalonia in October 2006 and which are the guideline framework for the application of the 2003 Mobility Law (Article 7.1). ATM acts as regional mobility authority and has drafted the MMP (approved in 2008).
Minimum contents devised by:

1. Monitoring and management of regional mobility.
2. Planning of inter-urban car traffic.
3. Promotion of collective public transport.
4. Fostering the use of bicycles and journeys on foot.
5. Planning and operation of the principal road network in the zone.
6. Organisation of intrazonal parking.
7. Transport and distribution of goods.
The MMP also includes:

1. Guidelines for urban mobility plans to be developed by the municipalities.
2. Quantitative environmental targets to be reached.
3. Monitoring indicators.
4. Monitoring social impacts
Channelled through 75 measures

**EA1:** Coordinating urban development and mobility

**EA2:** Fostering a safe and well-connected network of mobility infrastructures

**EA3:** Managing mobility and favouring modal transfer

**EA4:** Improving the quality of railway transport

**EA5:** Achieving accessible, effective and efficient bus transport

**EA6:** Modernising logistics activity and accelerating railway infrastructures for freight transport

**EA7:** Guaranteeing sustainable access to job locations

**EA8:** Promoting energy efficiency and the use of clean fuels

**EA9:** Carrying out participative management of the Mobility Master Plan implementation
<table>
<thead>
<tr>
<th>Sample goals of pdM 2013-2018</th>
<th>units</th>
<th>2012 as observed</th>
<th>2018 target</th>
<th>Δ% 2018 /2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1: To rebalance modal shift in favour of sustainable transport means</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modal share of private cars</td>
<td>%</td>
<td>30.30%</td>
<td>27.40%</td>
<td>-9.57%</td>
</tr>
<tr>
<td><strong>2: To increase efficiency of transport services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean occupation of interurban buses</td>
<td>pax-km/ bus-km</td>
<td>14.94</td>
<td>16.05</td>
<td>+7.43%</td>
</tr>
<tr>
<td>Mean unit cost of freight transport</td>
<td>€/t-km</td>
<td>1.23</td>
<td>1.17</td>
<td>-4.88%</td>
</tr>
<tr>
<td><strong>3: To minimize travel distance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean travel distance of interurban trips by car</td>
<td>km</td>
<td>18.1</td>
<td>18.0</td>
<td>-0.55%</td>
</tr>
<tr>
<td><strong>4: To reduce the external costs of mobility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total external costs of metropolitan mobility</td>
<td>M€/yr</td>
<td>4,079</td>
<td>3,913</td>
<td>-4.07%</td>
</tr>
<tr>
<td><strong>5: To reduce energy consumption linked to mobility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean unit energy consumption in road transport</td>
<td>kwh/ veh-km</td>
<td>0.84</td>
<td>0.78</td>
<td>-7.14%</td>
</tr>
</tbody>
</table>
### 6: To diminish the contribution of mobility to climate change

| Total eq CO$_2$ emissions due to metropolitan mobility | 10$^3$teq CO$_2$/yr | 5,304 | 4,603 | -13.22% |

### 7: To reduce the atmospheric impacts of mobility

| Total emission of particles <10\(\mu\)m due to metropolitan mobility | t PM$_{10}$/yr | 1,669 | 1,285 | -23.01% |
| Total emission of NO$_2$ due to metropolitan mobility | t NO$_2$/yr | 5,585 | 4,780 | -14.41% |

### 8: To reduce the number of accidents

| Amount of fatal casualties on interurban roads | nr. | 40 | 30 | -25.00% |

### 9: To guarantee accessibility to the public transport system

| Amount of fully accessible railway stations | % | 64.0% | 92.0% | +43.75% |

### 10: To take advantage of new technologies for mobility management

| Number of operators providing real-time information to users | nr. | 18 | 74 | +311.11% |
Metropolitan Urban Mobility Plan

PMMU

Joan M. Bigas
Director of Technical Services
Àrea Metropolitana de Barcelona
Metropolitan Urban Mobility Plan

– According to the Law 31/2010, 3rd August 2010, the Metropolitan Area of Barcelona (AMB) was created and its organization, power and funding were regulated.

– This Law states the powers attributed to AMB and, in particular, states the competencies about the approval of the Metropolitan Urban Mobility Plan (PMMU) of AMB. This plan has a rank equivalent to SUMP at local level but affecting the metropolitan area of Barcelona, which is formed by 36 municipalities.

– It will be taken into account an integrated mobility analysis from its different aspects: public transport, pedestrians and bicycles, private cars, freight and logistics, smartmobility, environmental sustainability, etc.
Metropolitan Urban Mobility Plan

Organizational structure

Management AMB

Technical assistance

Management and coordination

Public transport
Pedestrians and bycicles
Private vehicles
Freight & Logistics
SmartMobility
Others

Sectorial studies

Environmental Impact
Participation process

Cross-sectorial studies
Metropolitan Urban Mobility Plan

Expected timeline:

- **Bidding process**
  - 2013

- **DIAGNOSIS**
  - Participation process
  - 2014

- **Strategical goals**
  - Participation process
  - 2015-2016

- **Proposal of measures**
  - 2015-2016

- **Action plan**

- **Approval**
  - 2017
Urban Mobility Plan of Barcelona
PMU 2013- 2018

Adrià Gomila
Director of Mobility Services
Ajuntament de Barcelona
REGULATORY FRAMEWORK

LAW OF MOBILITY OF CATALONIA 9/2003
Model of sustainable development
GROUNDBREAKING LAW

National Guidelines of Mobility (DNM)
Catalonia Area

Master Plan of Mobility for the Metropolitan Region of Barcelona (PDMRMB)
Metropolitan Area

Urban Mobility Plans (PMU)
Local Area

Metropolitan Plan of Urban Mobility (PMMU)
Metropolitan Area

Evaluation studies of generated mobility (EAMG)
OBJECTIVES OF PMU

SAFE MOBILITY
- Reduce the number of accidents associated with mobility.

SUSTAINABLE MOBILITY
- Facilitate modal shift towards more sustainable modes.
- Reduce air pollution resulting from transportation.
- Reduce noise pollution resulting from transportation.
- Moderate energy consumption in transportation and reduce its contribution to climate change.
- Increase the proportion of renewables and “clean” energies consumption.

EQUITABLE MOBILITY
- Encourage alternatives uses of public road.
- Ensure accessibility to the mobility system.

EFFICIENT MOBILITY
- Increase the efficiency of transportation systems.
- Incorporate new technologies in mobility management.
<table>
<thead>
<tr>
<th>Mobility</th>
<th>2012</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safe Mobility</strong></td>
<td>Implementation of Road Safety Local Plan</td>
<td>-20% serious injuries</td>
</tr>
<tr>
<td></td>
<td>249 serious injuries</td>
<td>-30% dead</td>
</tr>
<tr>
<td><strong>Sustainable Mobility</strong></td>
<td>Compliance of UE* parameters for NO$<em>2$ and PM$</em>{10}$</td>
<td>Compliance of UE parameters in all stations</td>
</tr>
<tr>
<td></td>
<td>NO$_2$: 4 stations don’t comply (out of 7)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual average value</td>
<td></td>
</tr>
<tr>
<td><strong>Equitable Mobility</strong></td>
<td>New bus network reduces waiting time by half</td>
<td>99% population has a bus stop &lt;250 m.</td>
</tr>
<tr>
<td></td>
<td>99% population has a bus stop &lt;250 m. Average frequency 12’</td>
<td>Average frequency 6’</td>
</tr>
<tr>
<td><strong>Efficient Mobility</strong></td>
<td>Improvement of the logistic management of mobility</td>
<td>Conventional urban distribution system 2013 Pilot Test Ciutat Vella</td>
</tr>
<tr>
<td></td>
<td>Conventional urban distribution system 2013 Pilot Test Ciutat Vella</td>
<td>Micro-logistics platforms and new technologies. Efficient use of public space and environmental improvements</td>
</tr>
</tbody>
</table>

* The annual average value of NO$_2$ and PM$_{10}$ must not exceed 40 microgr/m$^3$ in any of the measuring stations of the city. The daily limit value of PM$_{10}$ (50 microgr/m$^3$) must not exceed either more than 35 times a year, or hourly limit value of NO$_2$ (200 microgr/m$^3$) more than 18 times a year.
MAIN LINES OF ACTION

1. ORGANIZATION OF THE CITY’S URBAN PATTERN IN SUPERBLOCKS AND OTHER CALMING MEASURES

2. IMPLEMENTATION OF THE NEW ORTHOGONAL BUS NETWORK

3. TOTAL DEVELOPMENT OF CYCLING NETWORK

4. MANTAIN THE CURRENT LEVEL OF TRAFFIC SERVICE

5. COMPLIANCE WITH REGULATORY PARAMETERS OF ENVIRONMENTAL QUALITY

6. PROMOTION AND POSITIVE DISCRIMINATION MEASURES OF HIGH OCCUPANCY VEHICLES

7. REVIEW OF THE REGULATION OF PARKING ON AND OFF ROAD

8. IMPROVING THE EFFICIENCY OF LOADING AND UNLOADING
MOBILITY MODEL SHIFT

- Current situation
- Trend scenario
- Desired Mobility Model

Evolution
PMU Actions
MODAL DISTRIBUTION

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>Trend Scenario 2018</th>
<th>Scenario PMU 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31,9%</td>
<td>35%</td>
<td>35,1%</td>
</tr>
<tr>
<td>Walking</td>
<td>1,5%</td>
<td>2,3%</td>
<td>2,5%</td>
</tr>
<tr>
<td>Bus</td>
<td>39,9%</td>
<td>40,4%</td>
<td>41,3%</td>
</tr>
<tr>
<td>Car</td>
<td>26,7%</td>
<td>22,3%</td>
<td>21,1%</td>
</tr>
</tbody>
</table>

2011-PMU 2018:
- Walking: +10%
- Cycling: +67%
- Bus: +3,5%
- Car: -21%
### TOTAL STAGES

<table>
<thead>
<tr>
<th>SCENARIO</th>
<th>STARTING SCENARIO PMU</th>
<th>TRENDING 2007-2011→2018</th>
<th>FINAL SCENARIO PMU</th>
<th>INCREASE (%)</th>
<th>INCREASE (STAGES)</th>
<th>VEHICLES INCREASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT</td>
<td>3.126.796</td>
<td>3.088.781</td>
<td>3.236.234</td>
<td>3,50%</td>
<td>109.438</td>
<td></td>
</tr>
<tr>
<td>PV</td>
<td>2.088.348</td>
<td>1.703.367</td>
<td>1.649.795</td>
<td>-21,00%</td>
<td>-438.553</td>
<td>-350.842</td>
</tr>
<tr>
<td>BY FOOT</td>
<td>2.500.200</td>
<td>2.675.085</td>
<td>2.750.220</td>
<td>10,00%</td>
<td>250.020</td>
<td></td>
</tr>
<tr>
<td>BICYCLE</td>
<td>118.151</td>
<td>173.705</td>
<td>197.312</td>
<td>67,00%</td>
<td>79.161</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>7.833.495</td>
<td>7.640.937</td>
<td>7.833.561</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MODAL HIERARCHY

1. BY FOOT mobility
2. BICYCLE mobility
3. PUBLIC TRANSPORT mobility
4. Urban distribution of GOODS
5. PRIVATE TRANSPORT mobility
SUPERBLOCKS MODEL

Current Model

Superblocks Model

PUBLIC TRANSPORT NETWORK
BICYCLES MAIN NETWORK (BIKE LANE)
BICYCLES SIGNPOSTS (REVERSE DIRECTION)
FREE PASSAGE OF BICYCLES
PRIVATE VEHICLE PASSING
RESIDENTS VEHICLES
URBAN SERVICES AND EMERGENCY
DUM CARRIERS
DUM PROXIMITY AREA
ACCESS CONTROL
BASIC TRAFFIC NETWORK
SINGLE PLATFORM (PEDESTRIANS PRIORITY)
Current Model
SINGLE USE: RIGHT OF WAY

Superblocks Model
MULTIPLE USES AND FUNCTIONS