



Moscow Department
for Transport and Road
Infrastructure Development

Moscow International Transport Expert Council

Topic of the meeting: Development of public transport in Moscow

August, 2013



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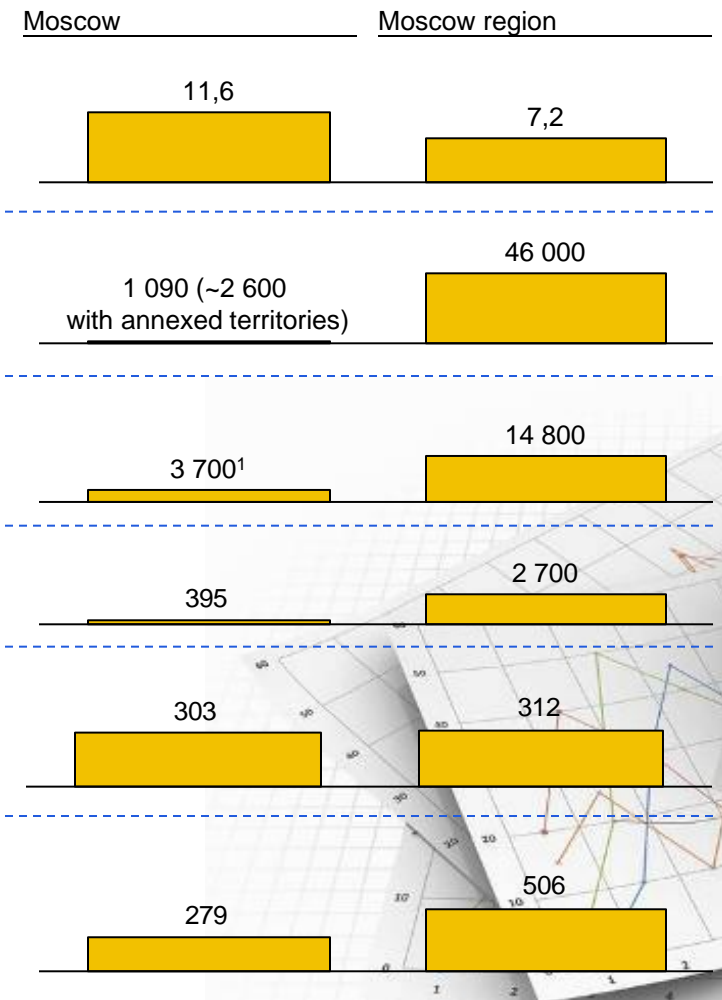
- **General description of Moscow Transport Hub**
- Development scenario
- Annex



The Moscow Transport Hub is the largest transport hub in Russia



Moscow and the Moscow region is a unified area in terms of employment, transport infrastructure and passenger traffic flow





Three types of public transport in Moscow

Transport type

Main objectives

Moscow Metro (subway)

Mainline radial and circle-line passenger carrying channels. Long-distance traveling at high speed

Suburban railway transport

Passenger transportation to suburban areas, mainline radial passenger carrying channels. Long-distance travelling at high speed.

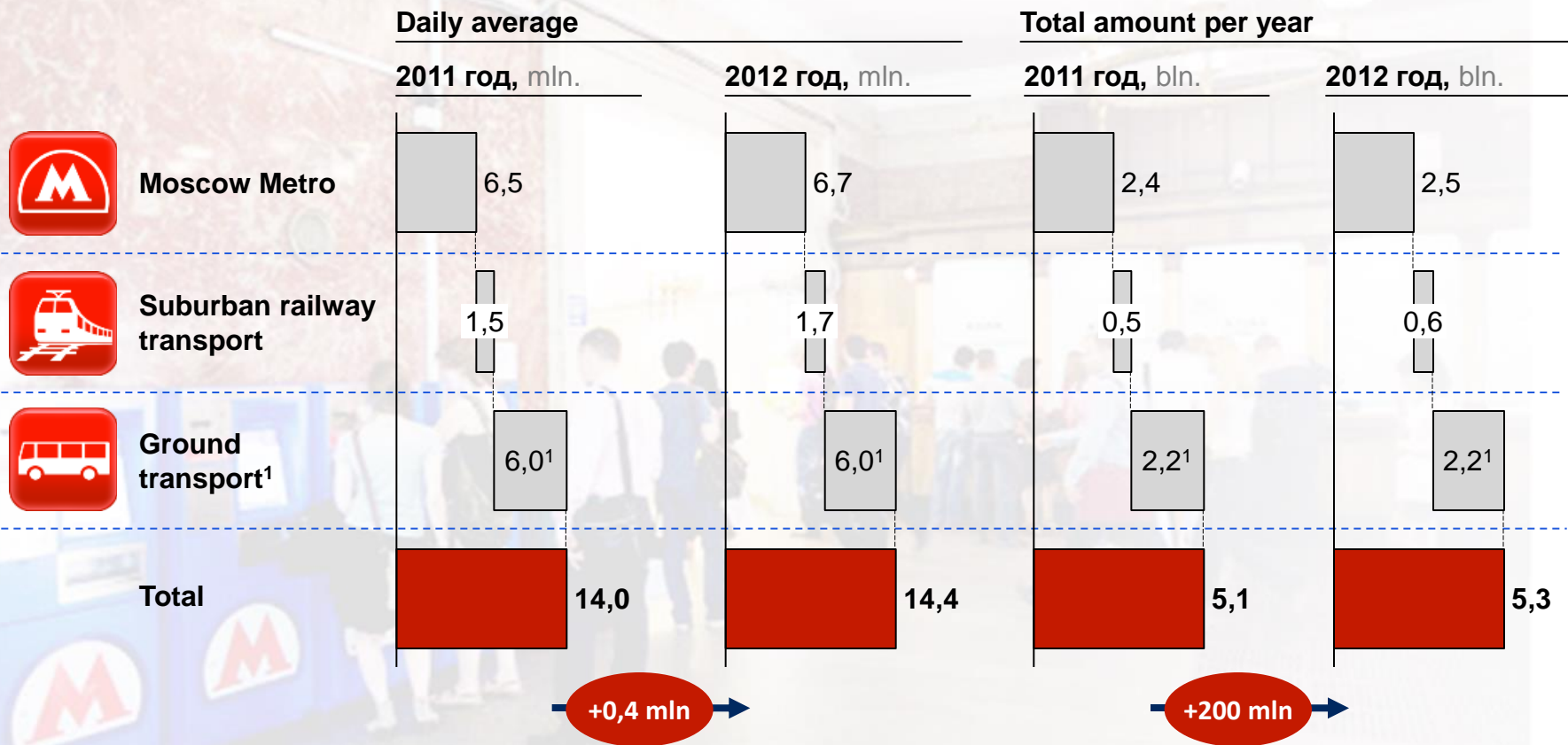
Ground transport

In-city transport aimed at delivering passengers from residential areas to larger transportation hubs. Trips to metro stations or social facilities mainly last from 15 to 20 minutes.



Public transport facilities in Moscow augmented by 200 million passengers in 2012

The number of passengers who use public transport on a daily basis grew by 200 million people since 2011



¹ The traffic volume by municipal and commercial carriers of Moscow

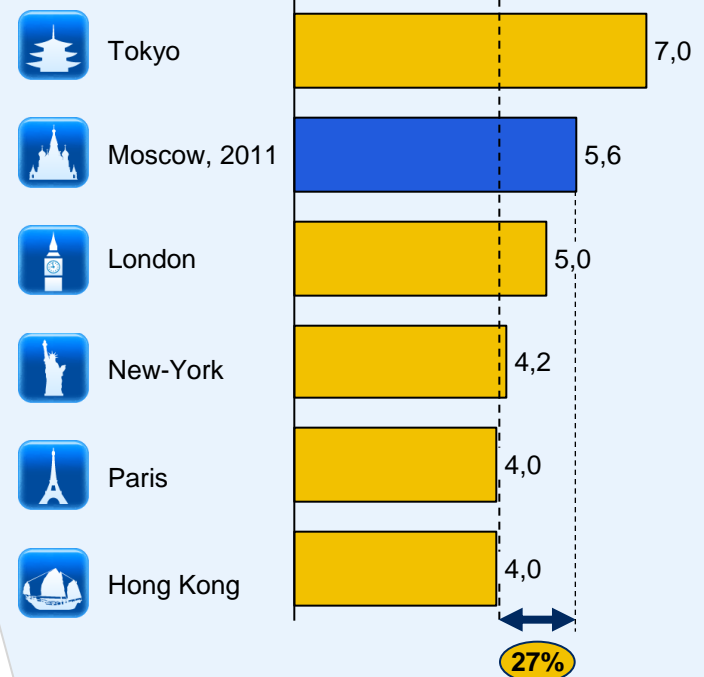


Public transport is excessively overloaded by commuting passengers during the morning rush hours

Public transport capacity when travelling to the centre¹, 2011.
(average weekday 8:00 - 9:00)

	Carrying capacity ² Th. of men	Actual capacity Th. of men	Carrying capacity excess Percentage
Personal transport	95	135	42
Total amount of public transport	870	1 050	20
Moscow Metro	700 ³	845	21
Ground transport	45 ⁴	30	-33
Suburban railway	125 ⁵	175	40
Total amount of personal and public transport	965	1 185	23

Public transport loading (Moscow Metro as example)
The average number of passengers per m² at the busiest hubs in the morning rush hours



- Significant overload (by 23% on average for all types of transport) of the transport infrastructure carrying capacity during rush hours leads to a significant reduction of comfort for passengers
 - The average passenger flow of the metro cars in Moscow is 5.6 persons per m², which is over 25% more than in New York, Paris and Hong Kong
- The passenger flow of the public ground transport in Moscow is below the carrying capacity, which provides for opportunities for its more active use in order to solve the traffic problems of the city



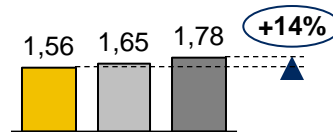
There are three main development directions for improving the overall transportation climate in Moscow

2

Increasing the carrying capacity of public transport

Carrying capacity

Thousands of passengers in rush hours



2012 2016 2020

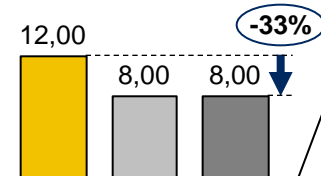
The project of improving the quality of service on public transport is in progress, target level will be determined later

1

Reducing the use of personal motor transport

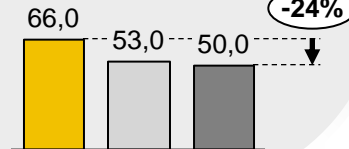
Share of the personal transport during the morning rush hours (8:00-9:00)

Percentage



Average time of travelling during rush hours for all types of transport

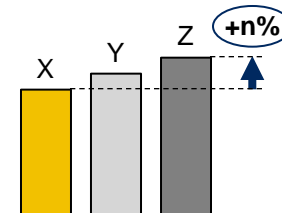
Min.



Improving the quality of service on public transport

Satisfaction level according to the accepted method of measurement

% of satisfied



Procedures to decrease the average travel time on public transport:

- Reduce the number of personal vehicles commuting during morning rush hours by approx. 30% or 40-50 thousand motorists per hour (7 am - 10 am: approx. 125 thousand people, about 100 thousand ATS).
- Expand the carrying capacity of public transport by approx. 40% by adding 360 thousand available passenger seats per hour to create the conditions for comfortable travelling²
- Significantly increase the quality of public transport facilities (speed, frequency, usability, navigation) by reducing the travel time by approx. 25% (from 67 to 50 minutes)

1. 360 thousand passenger seats = lack of public transport carrying capacity in 2012 (180 thousand people). + Servicing of car owners who changed their cars for other transport types in 2012 (40 thousand people) + Additional traffic flow due to expected population growth by 2025 (140 thousand people).

2. The existing suburban railway plans and metro plans for increasing the carrying capacity by approximately 130 thousand people.



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Actions aimed at improving the overall transport situation:

Goals



- Decrease the travelling time for public transport passengers and personal car drivers to 50 min ave.



- Eliminate road congestions within the city.



- Comfortable, regular and reliable public transport.



- Comfortable and safe pedestrian and bicycle areas.



- Safe taxi service with unified quality standards

Development areas



1. Moscow Metro



2. Railway service



3. Ground transport



4. Ticket and rate decisions



5. Transport exchange hubs



6. Intellectual transport system



7. Bicycle and pedestrian systems



8. Freight transportation



9. Common parking area



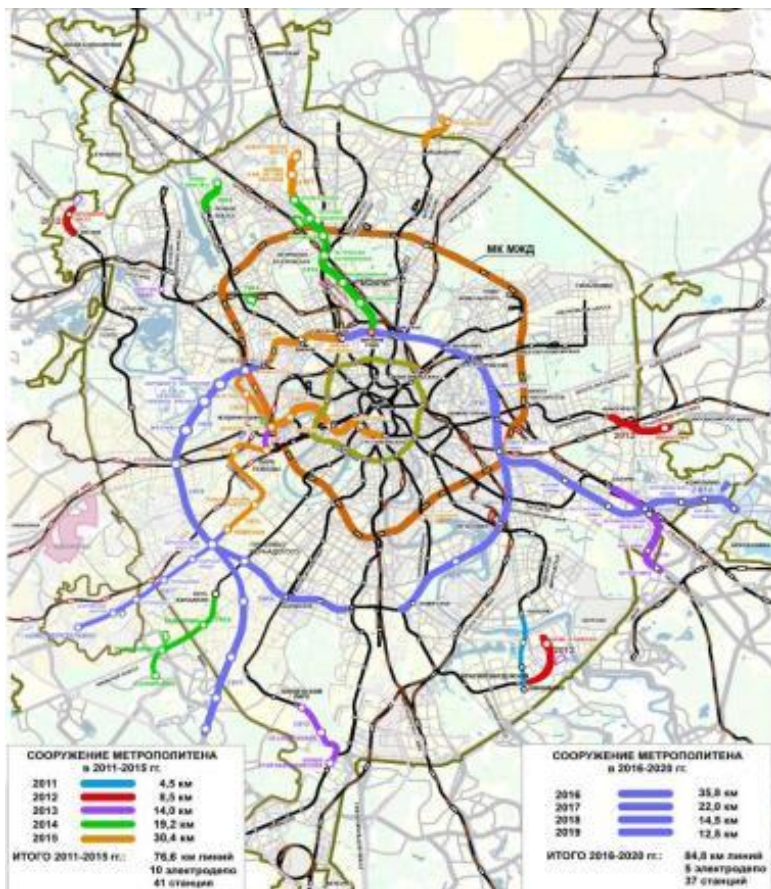
10. Licensed taxi market



1. A more comfortable and affordable Moscow Metro service



Metro map in 2020



Affordability

State in 2012

305 km of lines

185 stations

79% of population is provided with subway

Plans for 2013

14 km of lines

7 new stations

82% of population is provided with subway (+2%)

Objectives for 2020

471 km of lines (+157 km / + 50%)

252 stations (+76 stations / + 38%)

93% of population is provided with subway (+15%)

Comfort

4800 of subway vehicles

Correct subway operation and schedule observance

342 of new generation subway vehicles

Wi-fi and sign system for all subway system

2450 of new generation subway vehicles

Comfortable integrated environment "from door to door"



Metro development results 2011-12



Metro map

New metro map design is chosen within open tender limits



Life cycle contract for vehicle supply and vehicle maintenance provides for private business investment possibilities

The results of 2011-12

Affordability

6 stations and 13 km of new lines are introduced

- 150 000 people on an average weekday, each passengers saves 15-20 minutes
- Ability to remove a part of ground transport routes and unload adjacent SRN

Comfort



539 new vehicles are purchased

1 000 000 passengers started travelling in new comfortable trains



Novogireevo depot – pilot project of life cycle contract (LCC) – costs are fixed, savings are 15%

A consortium is developed that will provide **the delivery and service of vehicles according to life cycle contract**



Wi-fi pilot project for the circle line



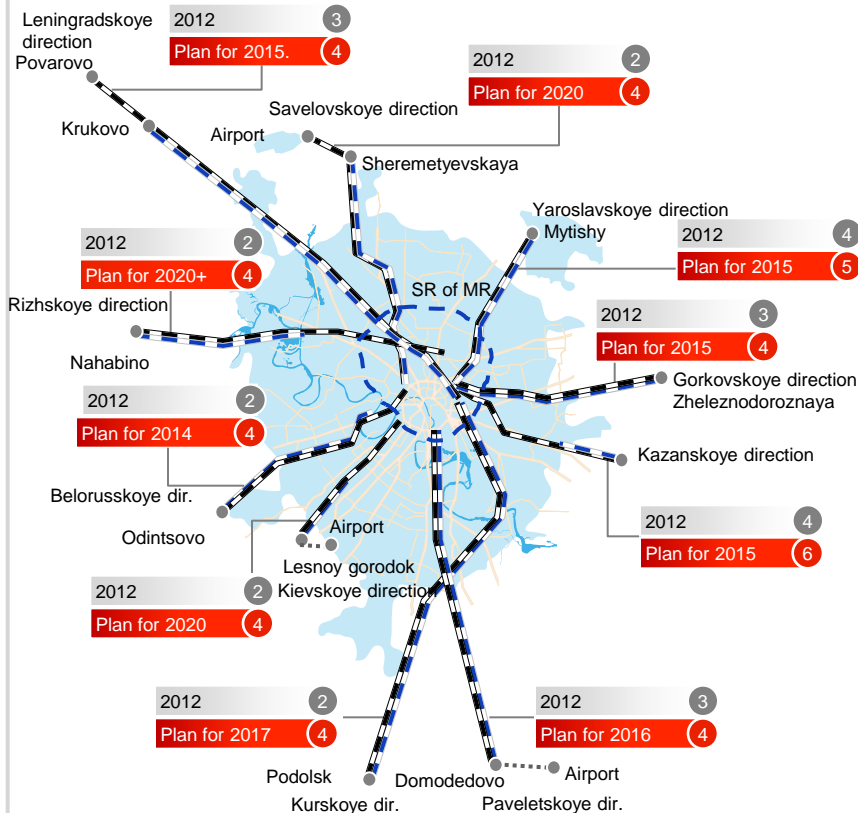
New comfortable **layout and sign system**



2. An electric train as an alternative to personal vehicles for everyday commuting



Railway development program 2012 - 2020



Current suburban railway lines
Suburban railway lines
Planned in 2013-20

2012 (X) Number of constructed railways
2012 (X) Number of additional lines within the limits of the program development first stage for suburban rail service by 2020.

Plan for 2018 (X)

Speed and availability

The current state in 2012

Line were not constructed for a long time

Number of places increased by 15% (from 950 thousand up to 1090 thousand of places per month)

Average interval during the rush hour: ~7 minutes

Works of passenger traffic provision at the small ring of Moscow Railway started

- The agreement was signed between JSC "Russian Railways" and the Moscow Government concerning the construction of new main lines co-financing

Plans for 2013

New line commissioning:

Solnechnaya ar.– Novoperedelkino ar. (2,2 km)

Number of places increased by 10% (+109 thousand of places per month)

Speed train traffic interval decrease by ~5%

Small ring of Moscow Railway infrastructure construction beginning

- Additional distance (43 km)
- Projecting of the 31-st station
- The contract for rolling stock supply

Objectives for 2020

240 km. of additional main lines

846 mln. Passengers per year (+60% in comparison with the year 2012)

Average interval: 3-4 minutes within 5 main directions in rush hours

Passenger traffic provision at the Small Ring of Moscow Railway:

- Interval – 5 minutes in rush hours
- Up to 1 mln. Of passengers in a weekday
- Special train sets for city transfers

Comfort

50 trains of high comfort are introduced, the purchase of 490 new vehicles is performed, 500 of ticket machines are installed (1091 units)

Upgrade of 35 trains, purchase of 60 vehicles

70% of new trains (~300 units)



3. Ground transport development for increasing affordability and comfort



Results in 2011-2012

- **New model of management of carriers has been developed**(common route network, schedule, standard bus park, standardised tickets, regulated tariffs, unified fees for disabled and privileged passengers within all routes)
- **GLONASS navigation system installed** on all municipal carrier's vehicles and licensed carriers

Plan of 2013

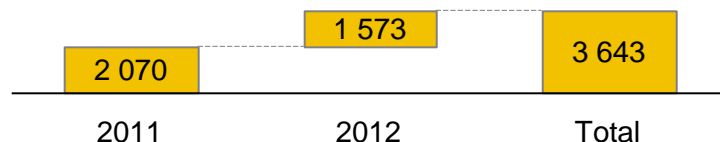
- **Pilot project of new management model** (route #22)
- **Route network optimisation**

Objectives for 2015

- **Average intervals approx. 5-7 minutes during rush hours**
- **High schedule accuracy**
- **Service quality increase**

Affordability

New buses supply, Un.

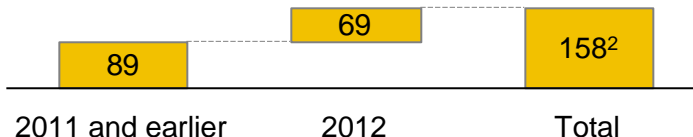


- **Supply plan for 2013:** buses – 655 units., trolleybuses – 51 units, trams – 67 units.

- **More than 70% of vehicles are new low-clearance buses, trolleybuses and trams**

Comfort

Bus lanes, km.



- 1 million passengers per day
- Speed increase by 10-20% on bus lanes

- **Introduction of additional 40 km bus lanes**

- **Approx. 240 km of bus lanes in total**

1 Single way length

2 In 2013 1,1 km of lanes closed. The total length of bus lanes is 157 km now



4. The purpose of the new ticket menu is to increase comfort and save time for passengers



The objectives of the new ticket menu



- Reduce ticket queues



- Simplify and reduce costs for transport interchange



- To establish a comfortable and transparent payment system

The factors that will be changed for passengers



- Reusable tickets are cheaper and are valid 90 days instead of 45
- Electronic ticketing via “Troika” card is introduced
- Updating the price policy for faster cash operations



- All tickets (including “Troika” cards) from the new menu are valid on all types of transport
- New 90 minute-tickets are introduced. They are single-use only and save up to 40% of the passengers money during trips with interchanges



- Electronic ticketing “Troika” card:
- “Troika” can be topped up at one of the 25 thousand payment terminals available on stations
 - Online topping up is coming soon
 - “Troika” card automatically selects the cheapest payment plan for the passenger



5. Transport exchange hubs (TEH) system development will combine all current programs into a unified transport system



Transport exchange hubs

Results of 2012



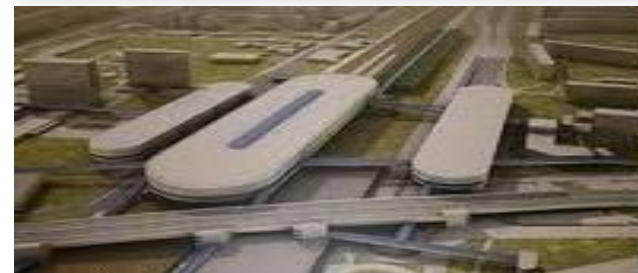
34 surface transport exchange hubs under construction

Plans for 2013



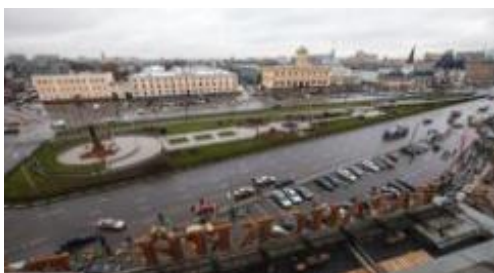
Construction of 191 surface TEHs, including the upgrade of suburban railway stations

Program objectives by 2020



255 transport exchange hubs
▪161 of TEH in capital construction
▪94 of TEH in surface construction

Stations and bus stations



5 train station squares under construction



Reconstruction of 8 train stations



13 new bus stations



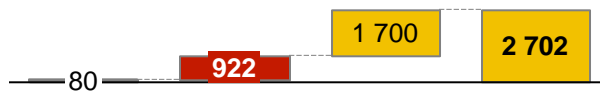
6. The development of the Intelligent Transportation System will increase the average speed of traffic and reduce traffic accidents



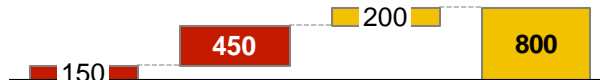
Units



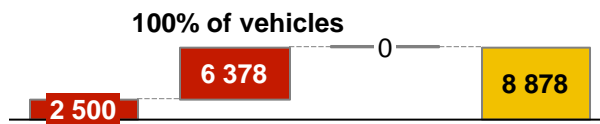
Traffic detectors - online monitoring of traffic volume on the roads



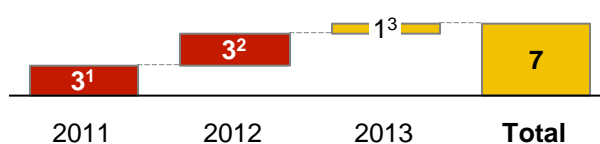
Installing intelligent traffic lights that automatically adjust to the traffic on road



Video control over traffic law violators – installing a system that would record vehicle movement and report violators to the police



Installing GLONASS positioning system on all ground transport vehicles in order to monitor how public transport operates



Automatic lane reversal regulation depending on traffic load and time of day

1 Volgogradsky Ave, Yaroslavskoye highway, Entuziastov highway

2 Ryazan Ave from Akademika Skryabina street up to Moscow Ring Road. Sheremetyevskaya street: from TTC up to Kalibrovsky overpass; Mira Av. from the Sadovoye koltso up to TTC

3 Volokolamskoe highway.

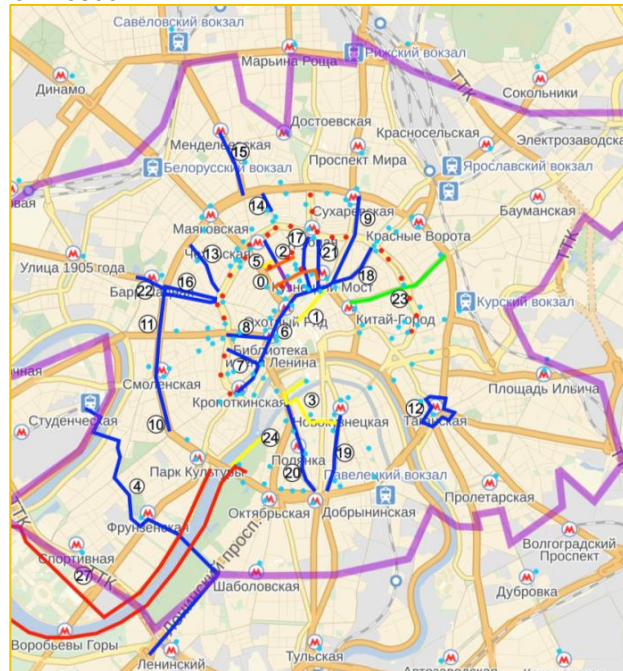


7. Developing pedestrian areas, creating bicycle infrastructure: lanes, parking, a public bikeshare system



Plan for 2013

Improving bicycle and pedestrian areas in the center of Moscow



- Central District of Moscow
- Sidewalks due for renovation
- Planned pedestrian areas
- Planned bike lanes
- Expanding of pedestrian area

Bicycle rental and bicycle parking

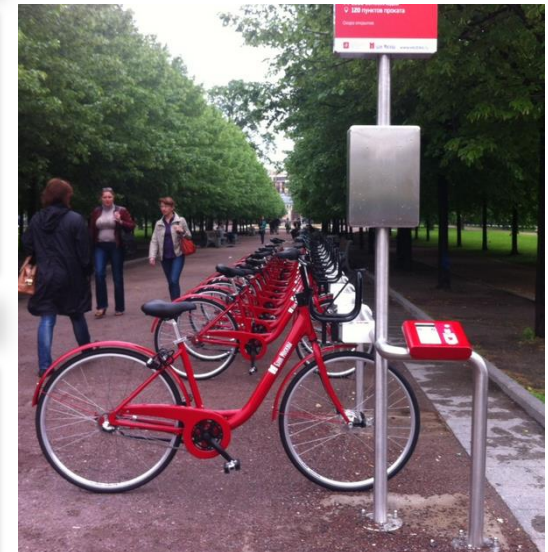
- Bikeshare program sponsored by the Bank of Moscow: 1,000 vandal-proof bikes, and 100 solar-powered stations
- 1045 parking spaces for more than 10 thousand bicycles were created

Bicycle lanes

- 98 km of bicycle lanes were created (including the recently introduced Muzeon – Park Pobedy lane -16,3 km)
- It is planned to build over 51 km of bicycle lanes in parks

Pedestrian areas

- 1,9 km of the city center from Stolesnikov lane to Kuznetsky Most have been made pedestrian only
- 54 central areas with the total length of 53,9 km will be given away to pedestrian in the nearest future





8. City entrance of heavy vehicle has been limited to increase speed and improve the city's ecology



New restrictions on truck traffic for Moscow Circle Road were accepted on 01.03.2013

01.03.2013

Max. permitted
carrying capacity

6:00-22:00¹

Transit way trucks over 12 tons

Eco-standards

All trucks below Euro-2 standard 24-hour

01.05.2013

6:00-22:00¹

All trucks more than 12 tons

All trucks below Euro-2 standard 24-hour



- Road signs and the units of photo and video registration are set for the effective administration of restrictions
- A large-scale information campaign is implemented



- Simplified procedure for obtaining permissions - there is no need to provide the original TCP, the certificate of vehicle registration, and a number of documents (waybill, consignment notes, etc.)
- The possibility of granting permits to service MR needs is created

1 — the afternoon traffic is allowed by permit

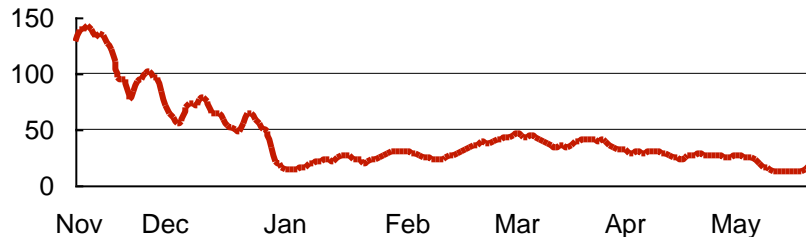


9. The introduction of paid parking increase the average traffic speed

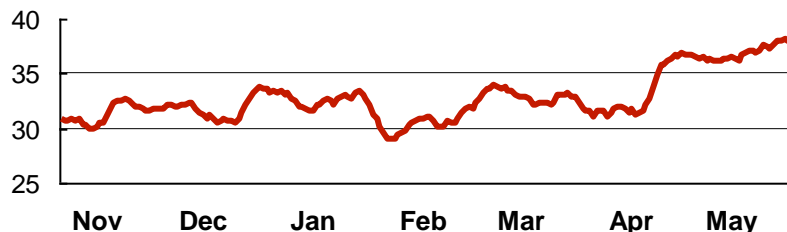


Pilot project results: reducing of violated parkings and speed increase

The number of traffic violations for 1 IFC per day,
Units., pilot project area



Average traffic speed
km/h



In order to provide and monitor the key operations of **БЦСЦЗ** **зфклштп** **ызфсцPI** AMPA body was established.

In 2013 paid parking area was expanded



Pilot project area

Expansion area

Launch period: 1 of June, 2013

Paid area

- The streets within the Bulvarnoye Koltso

Parking lots on streets: ~4 thousand

Equipment

- ~150 parking machines
- ~50 information boards

Capital parkings

- There are no less than 4000 parking lots within the walking distance area from it

1 In 2011, parkings are free of charge completely, 100% of paid parkings by 2016

2 Yards, houses, cooperatives, garages, guest houses



10. Taxi development programm is purposed to provide a required number of comfortable safe taxis with a common rate system



Element

Current situation



Market provision

- The number of carriers is ~ 49 thousands
- Illegal transfers - more than 50% of the market



Cars and taxi drivers

- Taxi park is diverse
- No minimum quality standard
- Low requirements for drivers



Passenger Rates

- Rate "from the curb" is negotiated on the spot
- Concentration on legal taxis at long trips



Other

- Lack of passengers security and urban service of complaints and suggestions

Target model

- **The total number of taxis is 50-55 thousand**
- Additional opportunities for private sector development:
 - Maintenance centers for taxis
 - Learning Centers for taxi drivers
 - New taxi companies
- **The absence of an illegal segment**
- Setting of minimal parametres for a car: **safety** (vehicle inspection, vehicle age: no more than 5 years, security system), **comfort** (taximeter, cabin size), **appearance** (yellow color, taxi symbols, indication of employment)
- **A clear set of requirements for drivers** (experience: no less than 3 years, physical examination, knowledge of the city, etc.)
- **Common rates** for all taxis
- **The cost of short trips reduction**
- Compulsory **insurance of passengers**
- Urban service complaints and suggestions
- Parkings for urban taxis and taxi lines at railway stations, airports and TIH
- Installation of GLONASS sensors
- taxi access for dedicated lanes











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Annex. The Moscow transport hub in 2011-2012 (1/2)

Areas of development	2011	2012
Moscow metro (subway) 	<ul style="list-style-type: none">4.5 km of new linesEstablishment of 3 stations (Borisovo, Zyablikovo, Shipilovskaya)206 of new generation subway vehicles700 ticket machines	<ul style="list-style-type: none">8.5 km of new linesEstablishment of 3 stations ("Novokosino" - established, "Alma-Atinskaya", "Pyatnitskoe highway" - will be established by the end of 2012)340 of new generation subway vehicles500 ticket machines (total number: 1200 pieces)
Passenger railways 	<ul style="list-style-type: none">50 trains a superior comfort (the numbering from 7 000)"Sputnik" - 16 train sets"Regional Express" - 23 train sets"Mezsubyektnye" - 11"Big Moscow" subscription	<ul style="list-style-type: none">15% more seats (164 thousand of places per month) (rearrangement of subway vehicles, interval reduction)500 ticket machines (1,091 total)Construction work start on Presnya-Kanatchikovo area (MRR)
Ground transport 	<ul style="list-style-type: none">1,479 of new buses and trolleybuses25 km of upgraded tramway lines89.3 km of dedicated lanes	<ul style="list-style-type: none">1,512 of new buses and trolley buses - 17.6% of municipal carrier's vehicles (total amount of new vehicles - 40% of all municipal carrier's fleet)60.7 km of modernized tram lines68.8 km of dedicated lanes (increased travelling speed by 11.7%, the loss of flight reduction by 17%, passenger flow growth at 11.3% per day)
Parkings 	<ul style="list-style-type: none">63 thousand of parking lots495 thousand of parking lots (including 62 thousands at SRN, and 425 thousand at yard area)	<ul style="list-style-type: none">16 thousand of parking lots120 thousand of parking lots (including 10 thousand at SRN and 108 thousand at yard area)
Transport exchange hubs 	<ul style="list-style-type: none">1 TIH: Glider	<ul style="list-style-type: none">11 planar TPU: River Station, Exhibition Center (VDNH), Swimming Stadium, Voikovskaya, Altufyevo, Domodedovo, Dmitry Donskoy Boulevard, Yaseneva, Lianozovo, Tsaritsyno, Bibirevo
Intelligent transport system 	<ul style="list-style-type: none">ITS coverage: 30%30% of municipal carrier's vehicles are equipped with GLONASS system150 sets of traffic violations video recording	<ul style="list-style-type: none">Urban ITS coverage: 65%100% of municipal carrier's vehicles are equipped with GLONASS system450 sets of traffic violations video recording (600 sets total)100 parking areas



Annex. The Moscow transport hub in 2011 to 2012 (2/2)

Areas of development

	2011	2012
Roads 	<ul style="list-style-type: none"> 56.8 km of roads 49 pedestrian crossings 24 overpasses 6 tunnels 4 pedestrian crossings (2010) 87 widenings of carriageways 437 of bays 	<ul style="list-style-type: none"> 50 kilometers of roads, including the stages of outbound routes reconstruction (Varshavskoye, Kashirskoye, Leningradskoye, Yaroslavskoye) Interchanges Individual objects of the road-traffic network 30 pedestrian crossings 594 widenings of the carriageway 231 of bay
Bicycle infrastructure 	<ul style="list-style-type: none"> 5 km of bicycle roads are introduced (1 line – Vorobyovy gory) 	<ul style="list-style-type: none"> 11.3 km of bicycle roads are introduced (2 tracks: Marino-Kapotnya, Belyaev - Cheratnovo subway)
Metro (subway): struggle with the absence of tickets and passenger carrying control	<ul style="list-style-type: none"> 1.3 million of non-ticket passages restraints 24.7 thousand of fines are issued 26.0 million seized social cards are confiscated (SCM + SKMO) 	<ul style="list-style-type: none"> 2.0 million of non-ticket passages restraints 14.0 thousand of fines are issued 45.7 million seized social cards are confiscated (SCM + SKMO)
Ground transport: struggle with the absence of tickets and passenger carrying control	<ul style="list-style-type: none"> 870.5 million of non-ticket passages restraints 10.7 thousand of fines are issued 24.0 million seized social cards are confiscated (SCM + SKMO) 1 1.4 thousand reports on RA2 cases in the area of passenger carrying services 	<ul style="list-style-type: none"> 1.6 million of non-ticket passages restraints 130.3 thousand of fines are issued 57.4 million seized social cards are confiscated (SCM + SKMO) 12.0 thousand reports on RA cases in the area of passenger carrying services

1 Confiscation of illegal travel cards started since 27.06.2011

2 Administrative offenses