

Line 4 of Urban Train

Overview of the project

Proposed project	Line 4 of Urban Train
Length of the line	14 km
Length of the tunnel	14 km
Number of stations	14 underground stations
Origin and destination	From north to the east (from Khaje Rabi to Shahrak Rajae)
Length of each station	100 m
Depth of each station	About 22 m (11 to 43 m)
Tunnel diameter	8.7 m
Passenger transfer in the first phase	16,000 people an hour in the peak in each direction
Passenger transfer in the second phase	24,000 people an hour in the peak in each direction



Line 4 of Urban Train

The main advantages of the Line 4 of Mashhad Urban Train

- Connecting the north and the east of Mashhad Metropolitan
- Crossing the major streets and squares of the city such as Khaje Rabi Street, Navab Street and Mosala Street as well as Imam Hussein Square, Shohada Square, Shahid Abbaspour Square, etc.
- High capacity public transportation system (16,000 people per hour in phase 1 and 24,000 people in phase 2)
- Facilitating public transport
- Facilitating the access of the less-developed districts to the downtown
- At each station, there will be 3 to 8 business units each ranging from 5 m to 15 m
- Reduced downtown traffic

The main advantages of stationary complexes

- Reducing traffic in the city
- Reducing unnecessary urban travels and consequently fuel consumption
- Supporting the existing lines of work in the area
- Creating new lines of work in the area
- Job creation
- Drawing on the added value and the facilities created in the areas adjacent to the Urban Train stations to help provide required resources for its development (people's participation, private sector, foreign investors)
- Increased values of the properties around the station complex
- Improved physical conditions and organization of the city in the range of station complexes
- Promoting the urban order by organizing the urban transport
- Increased comfort and peace of the citizens



Line 4 of Urban Train

Project location

- From Khaje Rabi to Shahrak Rajae (from the north to the east of Mashhad)
- Crossing major roads and streets such as Khaje Rabi St, Ayatollah Shirazi St, Navab Safavi St, Mosala St and Hor St.
- Crossing the major city squares such as Imam Hussein Square, Shohada Square, Panj-Rah Square, Shahid Abbaspour Square
- With 14 stations along the route

Table positioning station

No	Station	Location
1	A4	Khaje Rabi Shrine
2	B4	Imam Hussein Square
3	C4	Gaz Intersection
4	D4	Railway Intersection
5	E4	Khaje Rabi Intersection
6	F4	Shohada Square
7	G4	Tabarsi Square
8	H4	Panj-Rah Square
9	I4	Neishaboori-Rostami
10	J4	The end of Ibrahimi
11	K4	Amir Sheida Three-way
12	L4	Abbaspour – Ghale Sakhteman
13	M4	Sarakhs Road
14	N4	Shahrak Shahid Rajae

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Physical planning table

General Characteristics of Line 4 of Urban Train

Proposed project	Line 4 of Urban Train
Length of the line	14 km
Length of the tunnel	14 km
Number of stations	14 underground stations
Origin and destination	From the north to the east (from Khaje Rabi to Shahrak Rajae)
Length of each station	100 m
Depth of each station	About 22 m (11 to 43 m)
Tunnel diameter	8.7 m
Approximate area of each station	3000 to 5000 m ²
Commercial	At each station, there are 3 to 8 business units each ranging from 5 m to 15 m
Passenger transfer in the first phase	16,000 people an hour in the peak in each direction
Passenger transfer in the second phase	24,000 people an hour in the peak in each direction
Each central station	Each depot at the beginning and end of the line is about 22 hectares

selected stationary complexes of Line 4 of Mashhad Urban Train

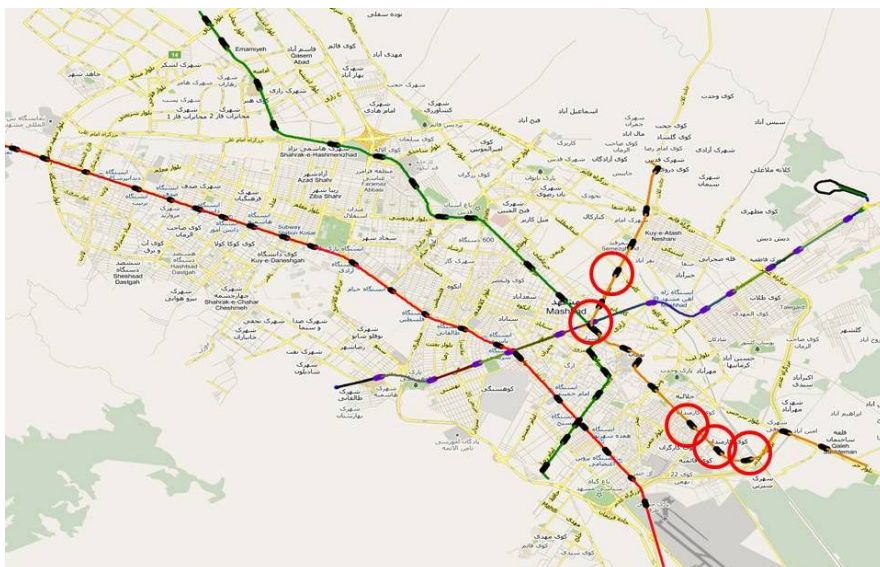
No	station	location
1	4D	Railway Intersection
2	4F	Shohada Square
3	I4	Neishaboori-Rostami
4	J4	The end of Ibrahim
5	K4	Amir Sheida Three-way

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Physical planning table

Technical specifications of the selected stationary complexes of Line 4 of Mashhad Urban Train

No	Project	Total area (m ²)	Base (m ²)						Proposed use	Construction regulations		
			Trade	Trade & office	Parking	Warehouse	Restaurant & fast foods	Total		Proposed density	Occupancy area of GF (net land)	Number of floors above GF
1	Railway Intersection	4000	14400	-	7200	-	-	21600	Trade - parking	%210	%70	3
2	Shohada Square	3000	6600	4200	5400	-	-	16200	Trade-administrative offices, parking	%280	%70	4
3	Neyshaboori-Rostami Squares	4000	4800	5600	5200	4800	-	20400	Trade (Food market)-commercial, administrative offices - parking - warehouse	%240	%80	3
4	Ibrahimi Blvd	3000	3600	2400	3600	3600	1200	12000	Trade (food market)-commercial, administrative offices-restaurant & fast foods-parking - warehouse	%240	%80	3
5	Amir-e Sheida Blvd	2000	2400	1600	2000	2400	-	8400	Trade (food wholesale)-commercial, administrative offices-parking - warehouse	%160	%80	2



Line 4 of Urban Train

Financial Assessment

Assumptions

1. Average growth rate of cost and revenue items: 25%
2. Project discount rate: 30%
3. Euro rate: 48000 rials
4. Participation of Mashhad Municipality in the project by providing the land and paying the licensing fees

Estimated investment needed for Line 3 of Mashhad Urban Train

In this section, we will give an estimation of the investment funds required for constructing Line 3 of Mashhad Urban Train based on the comparative study of the similar projects (especially Line 1)

The investment fund required for Line 4

No	Cost description	Land area (m ²)	Unit price (million rials)	Cost estimate (million rials)	Descriptions
1	Cost of purchasing the land for Line 3 and its stations	88000	15	1,320,000	Transportation and warehousing are the main uses of this Line, and since only the underground area is exploited, the surface land use can be still preserved. (Average area of 4000 m ² for land acquisition, multiplied by 22 stations)
2	Cost of purchasing depots in both ends	440000	10	4,400,000	Each station has two depots at both ends in an area of 22 hectares.
3	Cost of building tunnels and stations	-	252,632	3,536,842	-
4	Cost of purchasing machineries and equipment	-	-	163,243,333	Total cost of carriages and spare parts (described in tables below)
5	Cost of project design and management	-	-	8,625,009	5% of the costs
Total		528000	-	181,125,184	-

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Cost of purchasing machineries and equipment

No	Description	Unit price (million rials)	Total cost (million rials)
1	Price of each carriage (million rials)	1,560,000	156,000,000
2	Carriage transportation and spare parts costs	4,346,000	7,243,333
Total		-	163,243,333

The number of carriages in phase 1: 100

Estimated costs of the projects in selected stationary complexes

Total expenses of the project

No	Cost description	Base (m ²)	Unit price (million rials)	Estimated expense (million rials)	Percent age	Descriptions
1	16,000	15.0	240,000	13%	16,000	15.0
2	57,600	8.5	489,600	27%	57,600	8.5
3	78,600	13.5	1,061,100	58%	78,600	13.5
4	-	-	42,444	2%	-	-
Total		-	-	1,833,144	100%	-

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The total estimated cost of the project excluding (annual) inflation rate

No	Cost description	Year 1		Year 2		Year 3		Year 4		Year 5		Total cost excluding inflation rate
		Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	
1	Land	50%	120,000	30%	72,000	20%	48,000	0%	-	0%	-	240,000
2	Permits	50%	244,800	30%	146,880	20%	97,920	0%	-	0%	-	489,600
3	Buildings	0%	-	30%	318,330	30%	318,330	30%	318,330	10%	106,110	1,061,100
4	Other costs	30%	12,733	20%	8,489	20%	8,489	30%	12,733	0%	-	42,444
Total		-	377,533	-	545,699	-	472,739	-	331,063	-	106,110	1,833,144

The total estimated costs of the project including (annual) inflation rate

No	شرح هزینه	Year 1		Year 2		Year 3		Year 4		Year 5		Total cost excluding inflation rate
		Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	
1	50%	120,000	30%	90,000	20%	75,000	0%	-	0%	-	285,000	50%
2	50%	244,800	30%	183,600	20%	153,000	0%	-	0%	-	581,400	50%
3	0%	-	30%	397,913	30%	497,391	30%	621,738	10%	259,058	1,776,099	0%
4	30%	12,733	20%	10,611	20%	13,264	30%	24,870	0%	-	61,477	30%
Total		-	377,533	-	682,124	-	738,654	-	646,608	-	259,058	2,703,977

Estimated revenues of the projects in selected stationary complexes

Estimated revenues of the project

No	Description	Salable base (m2)	Sale price per square meter (million rials)	Total revenues (million rials)
1	Commercial	31,800	80	2,544,000
2	Commercial office	13,800	40	552,000
3	warehouse	10,800	80	864,000
4	resturant	1,200	80	96,000
total		57,600	-	4,056,000

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Estimated revenues of the project by including (annual) inflation rate

No	Use	Year 1		Year 2		Year 3		Year 4		Year 5		Total revenue including inflation rate
		percent	amount	percent	amount	percent	amount	percent	amount	percent	amount	
1	Commercial	0%	0	0%	0	50%	1,987,500	30%	1,490,625	20%	1,242,188	4,720,313
2	Commercial office	0%	0	0%	0	50%	431,250	30%	323,438	20%	269,531	1,024,219
3	warehouse	0%	0	0%	0	40%	540,000	40%	675,000	20%	421,875	1,636,875
4	resturant	0%	0	0%	0	30%	45,000	40%	75,000	30%	70,313	190,313
	total		0		0		3,003,750		2,564,063		2,003,906	7,571,719

Cash flow of the project

Cash flow of the project including inflation rate

No	Description	Year 1	Year 2	Year 3	Year 4	Year 5
1	Cash flow of the project's costs	377,533	682,124	738,654	646,608	259,058
2	Total outputs	377,533	682,124	738,654	646,608	259,058
3	Revenues derived from- pre-sale of the units	-	-	1,987,500	1,490,625	1,242,188
4	Total inputs	-	-	1,987,500	1,490,625	1,242,188
5	New financial process	377,533-	682,124-	1,248,846	844,017	983,130
6	Net cumulative financial process	377,533-	1,059,657-	189,189	1,033,206	2,016,336

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Calculating economic factors

Calculation Table

No	Description	Cost (million rials)	
		Excluding inflation	Including inflation
1	Construction costs	1,833,144	2,703,977
2	Sale revenues	4,056,000	7,571,719
3	Revenues derived from- implementation and sale	2,222,856	4,867,742
4	Benefit to Cost Ratio (BCR)	139%	133%
5	Net present value (NPV)	13,321	2,016,336
6	Internal return rate (IRR)	31%	64%

Estimated Share of the Municipality and the Investor

Partner	Contribution	The current value of the contribution (million rials)	Participation share (percentage)
Investor	Costs of constructing complexes	1,103,544	60%
Municipality	Land and permit	729,600	40%
Total	-	1,833,144	100%