



Transit X, LLC offers a preliminary proposal for

Greater Boston Shore

For a privately-funded shared mobility service that is

High capacity • Automated • Wait-free
Solar powered • Final destination • Resilient

26-page companion Transit X Handbook available at transitx.com/transitxhandbook.pdf





Economics for Greater Boston Shore

Inputs are underlined.

Size of region	<u>210</u> km ²	81.0 sq miles
Number of people in region (residents + visitors)	<u>1,200,000</u>	
Percentage of all travel that occurs within the region	<u>65%</u>	
Region's area that is conveniently served by paved roads	<u>90%</u>	
Desired coverage (percent of people convenient to Transit X)	<u>21%</u>	
Estimate #1 for network length based on desired coverage	<u>49</u> km	30.2 miles
Length of paved roads (non-highway) in region	<u>473</u> km	293.5 miles
Estimate #2 for network length based on paved roadways	<u>50</u> km	30.8 miles
Transit X network length	50 km	30.8 miles
Mode share of travel on Transit X	18%	
Average trip distance	9 km	5.3 miles
Cost per trip	\$2.42	
Number of pods needed to meet peak demand	4,801 pods	
Pod parking volume	384 car spaces	
Yearly payment to municipality for RoW	\$28,721,420	

System Economics

One-time fixed costs (per person)	\$116
Operating costs (per passenger-km)	\$0.004
Equivalent number of cars taken off the road	139,230 cars
Yearly cost of cars removed (per person)	\$1,044
Breakeven (people riding daily)	7,097 people
IRR (Internal rate of return)	394%
Payback period (profits pays back equity)	1 months

Externalities (estimated)

Reduction in CO2 emissions	239,231,948 kg CO ₂
Public cost for maintaining roadways per year	\$24,097,500
Reduced waste products per year	13,052,813 kg
Increase in household income from time saving and car costs	22%
Reported injuries avoided per year	1,251.7
Lives saved per year	12.5
Land freed from less street parking and parking lots	TBD
Health care cost savings from lower pollution	TBD

Assumptions	Value	
Ratio of road length to track length	2	
Convenient walk time to Transit X route	5 min.	
Walking speed	<u>4.9</u> km/h (3 mph)	
Width of convenient swath along track	<u>0.82</u> km (1 mi)	
Fixed cost for main route per km	<u>\$3,100,000</u>	
Fixed cost per km for branch	<u>\$1,550,000</u>	
Percentage of main route vs. all routes	50%	
Average cost of fixed infrastructure per km	<u>\$2,325,000</u>	
Distance traveled per person per year across all modes	14,500 km (9,006 mi)	
Mode share % of people convenient to Transit X	85%	
Percentage of daily travel during peak hour	10%	
Max capacity: number of pods per km of track	149 pods	
Max track capacity during peak hour as % of capacity	20%	
Average speed of pod	72 km/h	
Average # of trips for people riding Transit X	3 per day	
Occupancy per pod	2 people	
Maximum occupancy per pod	4 people	
Empty pods: Percentage non-revenue vehicle travel	25%	
Cost per pod	\$5,000	
Median household income	\$30,000	
Typical fare per km (per mile)	\$0.28 (\$0.45)	
O&M per year as a % of capital costs	7%	
Percentage debt financed	50%	
Length of loan/debt	20 years	
Interest rate for financing	8%	
kg CO2 emissions	2.37 per liter of gasoline	
Monetary value of 1 hour personal time	\$8	
Public roadway maintenance costs per year per km	\$51,000	
Infrastructure's footprint per km	5.78 m ² (62 sf)	
Lease rate per m ²	\$1,196	

	Transit X	Car
Service life (years)	20	12
Full cost of vehicle per year	\$200	\$9,000
Public cost to maintain infrastructure (per km)	\$0	\$100,000
Energy Efficiency (MPGe)	1000	20
mass of CO2 per vehicle per km (kg)	0	0.1185
Vehicle mass (kg)	45	1950
Average speed of travel (km/h)	72	16
Average travel time (hours)	0.36	1.61
Fare per km	\$0.28	\$0.62
Number of deaths per 100M passenger-km	0.00001	1
Number of injuries per 100M passenger-km	0.0006	62
Volume to park (cubic meters)	5.7	70.9

Assumptions	Value	
% of HH income for 16km travel	15%	
Width of convenient swath for road	0.4 km	
Rights-of-way payment per km	\$0.014 \$/km	
Revenue % for RoW	5%	

Currency conversion

Currency name	
Equal to US\$1	1