



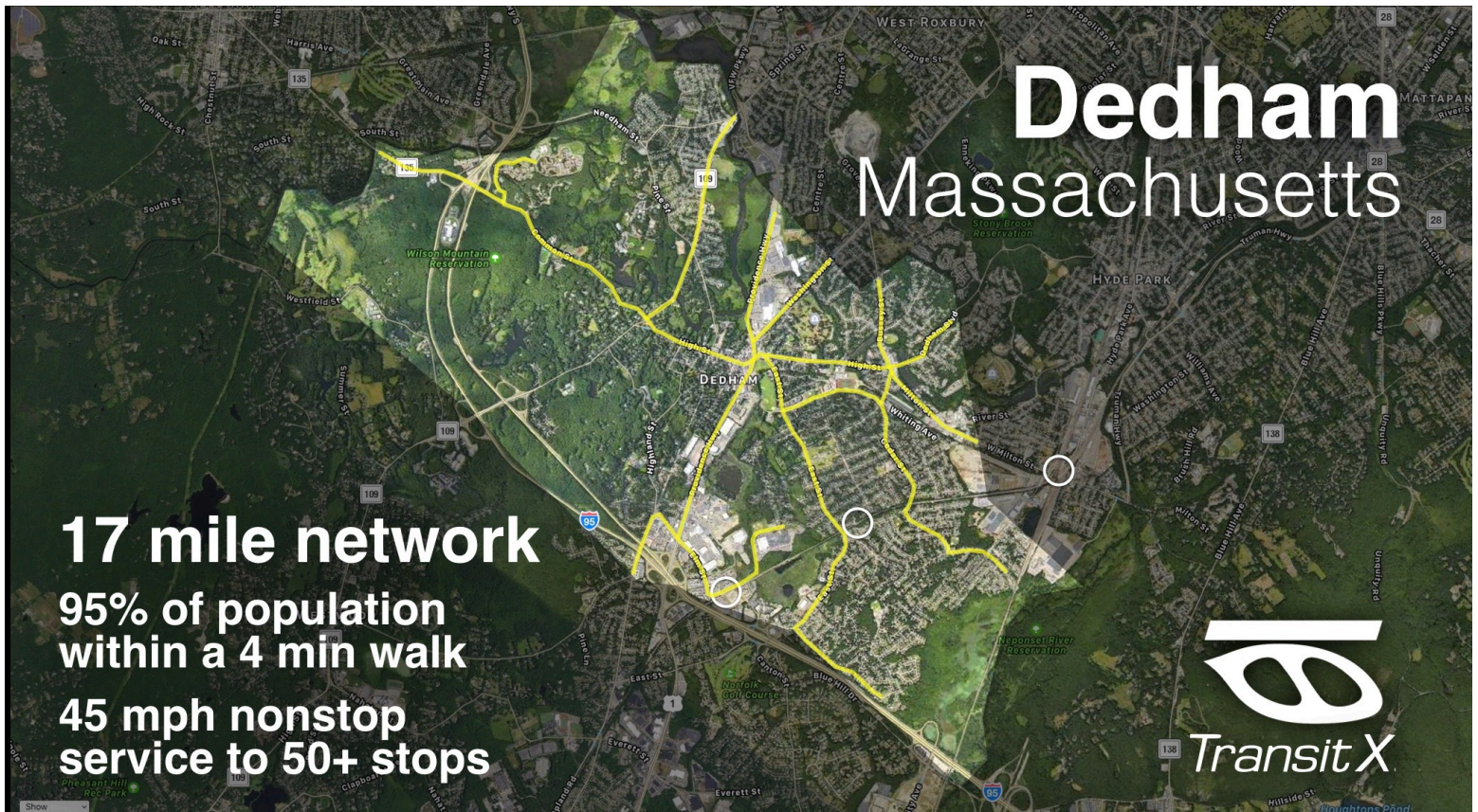
Transit X, LLC offers a preliminary proposal for

Dedham, MA

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 is available at transitx.com/transitxhandbook.pdf





Economics for Dedham, MA

Inputs are underlined.

Size of region	<u>27</u> km ²	10.4 sq miles
Number of people in region (residents + visitors)	<u>24,729</u>	
Travel distance per year by all people (residents and visitors)	358,570,500 km	222,714,596 mi
Percentage of all travel that occurs within the region	<u>60%</u>	
Road coverage (percent of area conveniently served by paved roads)	<u>70%</u>	
Service area size	<u>18.9</u> km ²	7.3 sq miles
Coverage: percent of people convenient (4 min walk) to Transit X	<u>95%</u>	
Estimate #1 for network length based on desired coverage	<u>27</u> km	17.1 miles
Length of paved roads (non-highway) in region	<u>47</u> km	29.3 miles
Estimate #2 for network length based on paved roadways	<u>22</u> km	13.9 miles
Transit X network length	<u>27</u> km	17.1 miles
Route density ratio (route length to service area)	1.45	
Total fixed costs for Transit X	\$63,895,982	
...per person	\$2,584	
Mode share of travel on Transit X	81%	
Distance traveled on Transit X, per year	173,727,407 km	107,905,222 mi
...per day	475,965 km	295,631 mi
Daily number of people riding Transit X	19,969 customers	
Distance per Transit X customer per day	24 km	14.8 mi
Average trip distance	8 km	4.9 miles
Cost for an average trip (at \$0.28 per km)	\$2.23	
Distance traveled during peak hour	47,597 km	29,563 mi
Breakeven (customers per day)	<u>4,099</u> customers	
Number of pods needed to meet peak demand	<u>413</u> pods	
Pod shed parking volume [in cubic 40' shipping containers (sc)]	3 sc ³	
Cost of pods	\$2,065,000	
Cost of pods per person	\$84	
Yearly payment from Transit X to municipality for air rights (5% of revenue)	\$2,443,042	
System Economics		
Total system cost (privately financed from Transit X)	\$65,960,982	
OPEX (O&M) per year	\$5,741,091	
Private equity	\$32,980,491	
Financed	\$32,980,491	
Gross Revenue from fares	\$48,860,833	
EBITA (Profit)	\$43,119,743	
Debt service	\$4,287,464	
OPEX + Debt service	\$10,028,555	
Net income	\$38,832,279	
Operating Margin	88%	
One-time project costs (per person)	<u>\$2,667</u>	
Operating costs (per passenger-mile)	<u>\$0.09</u>	
Equivalent number of cars taken off the road	<u>11,981</u> motor vehicles	
Yearly cost of cars removed (per person)	<u>\$4,361</u>	
Breakeven revenue distance per day	97,691 km	60,677 mi
IRR (Internal rate of return)	<u>59%</u>	
Payback period (profits pays back equity)	<u>9</u> months	
Network capacity (number of pods)	819 pods	
Peak demand as % of maximum track capacity	50%	
Externalities (estimated)		
Reduction in CO2 emissions	<u>20,586,698</u> kg CO ₂	
Public cost for maintaining roadways per year	<u>\$2,409,750</u>	
Reduced waste products per year	<u>1,123,238</u> kg	
Travel time saved (hours per person per year)	423	
Cost savings per household per year over personal car ownership	\$2,947	
Increase in household income from time saving and car costs	20%	
Reported injuries avoided per year	108	
Lives saved per year	1	
Land freed from less street parking and parking lots	TBD km ²	
...and its value	TBD	

Health care cost savings from lower pollution
 Change in local temperature heat island (degrees C)
 Change in global temperature
 Decrease in sea level

TBD
 TBD °C
 TBD °C
 TBD mm

Assumptions	Value		
Ratio of road length to track length	2		
Convenient walk time to Transit X route	4 min.		
Walking speed	4.9 km/h (3 mph)		
Width of convenient swath along track	0.65 km (0 mi)		
Fixed cost for main route per km	\$3,100,000		
Fixed cost per km for branch	\$1,550,000		
Percentage of main route vs. all routes	50%		
Average cost of fixed infrastructure per km	\$2,325,000		
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 as % of project cost	5%		
O&M as % of gross revenue	5%		
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	\$1,156		
Parking footprint for road vehicle	23 m ² (247 sf)		
Cost of land per km ²	\$100,000		
Fee for leasing air rights (percentage of gross revenue)	5%		

8/13/17

	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)	0.33	1.49
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		

Currency conversion

Currency name	
Equal to US\$1	1.