Transit X™

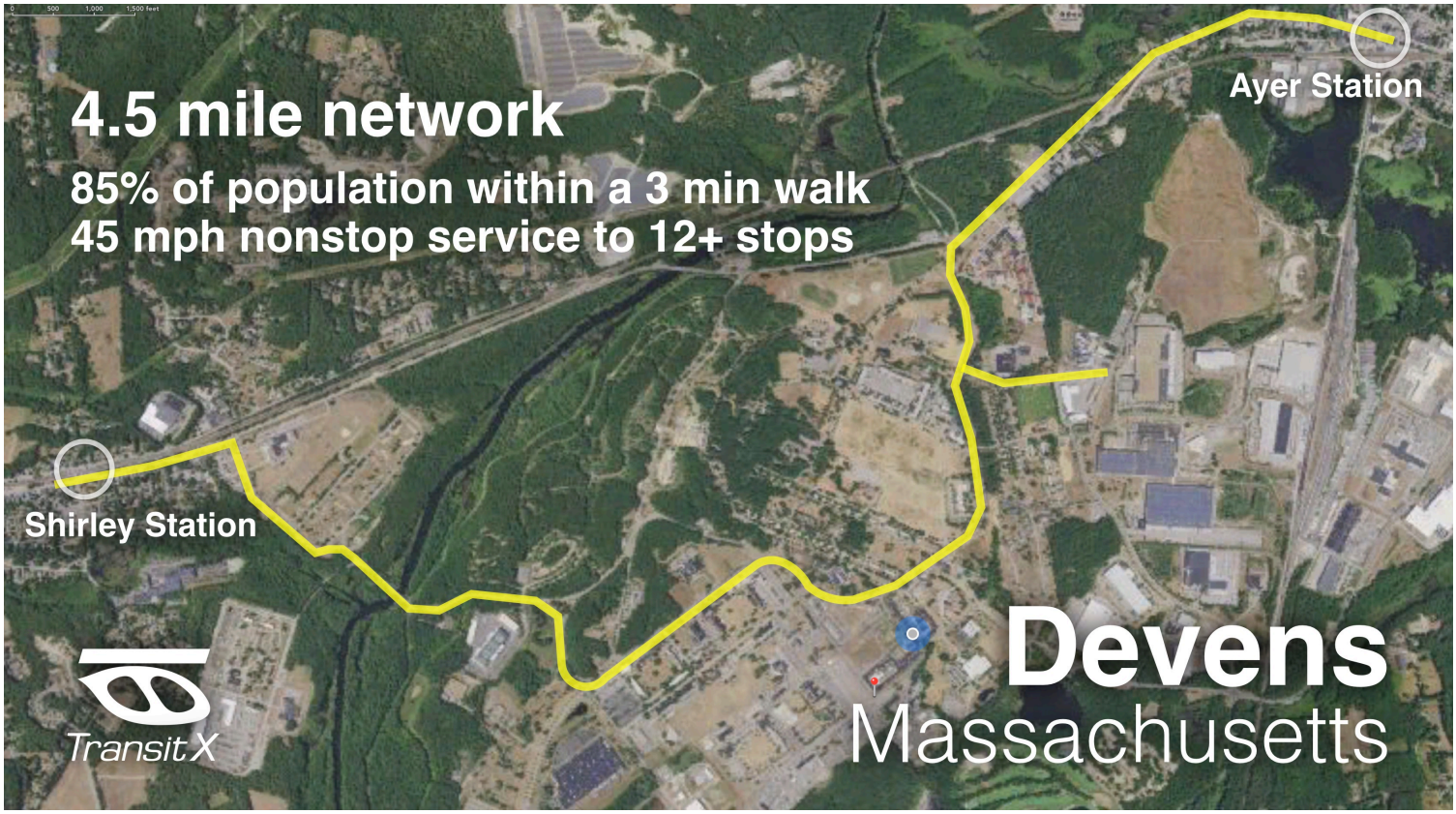
Transit X, LLC offers a preliminary proposal for

Devens, 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 Devens, MA

Inputs are underlined.

Size of region	9.3	km^2	3.6 sq miles
Number of people in region (residents + visitors)	8,000		
Travel distance per year by all people (residents and visitors)	116,000,000	km	72,049,689 mi
Percentage of all travel that occurs within the region	25%		
Road coverage (percent of area conveniently served by paved roads)	45%		
Service area size	4.185	km^2	1.6 sq miles
Coverage: percent of people convenient (3 min walk) to Transit X	85%		
Estimate #1 for network length based on desired coverage	7	km	4.5 miles
Length of paved roads (non-highway) in region	10	km	6.5 miles
Estimate #2 for network length based on paved roadways	4	km	2.8 miles
Transit X network length	**7**	km	4.5 miles
Route density ratio (route length to service area)	1.73		
Total fixed costs for Transit X	$16,878,788		
…per person	$2,110		
Mode share of travel on Transit X	72%		
Distance traveled on Transit X, per year	20,952,500	km	13,013,975 mi
…per day	57,404	km	35,655 mi
Daily number of people riding Transit X	5,780	customers	
Distance per Transit X customer per day	10	km	6.2 mi
Average trip distance	3	km	2.1 miles
Cost for an average trip (at $0.56 per km)	$1.86		
Distance traveled during peak hour	5,740	km	3,565 mi
Breakeven (customers per day)	**1,255**	customers	
Number of pods needed to meet peak demand	**50**	pods	
Pod shed parking volume [in cubic 40' shipping containers (sc)]	1	sc^3	
Cost of pods	$250,000		
Cost of pods per person	$31		
Yearly payment from Transit X to municipality for air rights (5% of revenue)	$589,289		

System Economics

Total system cost (privately financed from Transit X)	$17,128,788		
OPEX (O&M) per year	$1,445,728		
Private equity	$8,564,394		
Financed	$8,564,394		
Gross Revenue from fares	$11,785,781		
EBITA (Profit)	$10,340,053		
Debt service	$1,113,371		
OPEX + Debt service	$2,559,100		
Net income	$9,226,682		
Operating Margin	88%		
One-time project costs (per person)	**$2,141**		
Operating costs (per passenger-mile)	**$0.20**		
Equivalent number of cars taken off the road	**1,445**	motor vehicles	
Yearly cost of cars removed (per person)	**$1,626**		
Breakeven revenue distance per day	12,464	km	7,742 mi
IRR (Internal rate of return)	**54%**		
Payback period (profits pays back equity)	**10**	months	
Network capacity (number of pods)	216	pods	
Peak demand as % of maximum track capacity	**23%**		

Externalities (estimated)

Reduction in CO2 emissions	**2,482,871**	kg CO_2	
Public cost for maintaining roadways per year	**$533,588**		
Reduced waste products per year	**135,469**	kg	
Travel time saved (hours per person per year)	176		
Cost savings per household per year over personal car ownership	$208		
Increase in household income from time saving and car costs	**5%**		
Reported injuries avoided per year	**13**		
Lives saved per year	**0**		
Land freed from less street parking and parking lots	TBD	km^2	
…and its value	TBD		

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

Assumptions	Value		
Ratio of road length to track length	**2**		
Convenient walk time to Transit X route	**3**	min.	
Walking speed	**4.9**	km/h	(3 mph)
Width of convenient swath along track	***0.49***	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	**$60,000**		
Typical fare per km	**$0.56**		
(per mile)	**$0.91**		
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	**$15**		
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%**		

	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)	***0.14***	***0.62***
Fare per km	***$0.56***	**$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