



Transit X, LLC offers a preliminary proposal for

Guayaquil, Ecuador

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 Guayaquil, Ecuador

Inputs are underlined.

Size of region	<u>316</u> km ²	121.9 sq miles
Number of people in region (residents + visitors)	<u>2,400,000</u>	
Travel distance per year by all people (residents and visitors)	34,800,000,000 km	21,614,906,832 mi
Percentage of all travel that occurs within the region	<u>95%</u>	
Road coverage (percent of area conveniently served by paved roads)	<u>85%</u>	
Service area size	268.6 km ²	103.6 sq miles
Coverage: percent of people convenient (5 min walk) to Transit X	<u>30%</u>	
Estimate #1 for network length based on desired coverage	<u>99</u> km	<u>61.3</u> miles
Length of paved roads (non-highway) in region	<u>672</u> km	<u>417.1</u> miles
Estimate #2 for network length based on paved roadways	<u>101</u> km	<u>62.6</u> miles
Transit X network length	101 km	62.6 miles
Total fixed costs for Transit X	\$234,185,625	
...per person	\$98	
Mode share of travel on Transit X	26%	
Distance traveled on Transit X, per year	8,430,300,000 km	5,236,211,180 mi
...per day	23,096,712 km	14,345,784 mi
Daily number of people riding Transit X	612,000	
Distance per Transit X customer per day	38 km	23.4 mi
Average trip distance	13 km	7.8 miles
Cost for an average trip (at \$0.09 per km)	\$1.18	
Distance traveled during peak hour	2,309,671 km	1,434,578 mi
Number of pods needed to meet peak demand	20,049 pods	
Pod shed parking volume (in cubic shipping containers)	10 cubic sc	
Cost of pods	\$100,245,000	
Cost of pods per person	\$42	
Yearly payment to municipality for RoW	\$39,517,031	
System Economics		
Total system cost	\$334,430,625	
OPEX (O&M) per year	\$23,410,144	
Equity	\$167,215,313	
Financed	\$167,215,313	
Revenue from fares	\$790,340,625	
EBITA (Profit)	\$766,930,481	
Debt service	\$21,737,991	
OPEX + Debt service	\$45,148,134	
Net income	\$745,192,491	
Operating Margin	97%	
One-time project costs (per person)	\$139	
Operating costs (per passenger-mile)	\$0.01	
Equivalent number of cars taken off the road	581,400 motor vehicles	
Yearly cost of cars removed (per person)	\$2,180	
Breakeven revenue distance per day	1,319,398 km	819,502 mi
Breakeven (people riding daily)	34,960 people	
IRR (Internal rate of return)	223%	
Payback period (profits pays back equity)	3 months	
Network capacity (number of pods)	3,003 pods	
Peak demand as % of maximum track capacity	668%	
Externalities (estimated)		
Reduction in CO2 emissions	998,990,550 kg CO ₂	
Public cost for maintaining roadways per year	\$34,246,500	
Reduced waste products per year	54,506,250 kg	
Travel time saved (hours per person per year)	670	
Cost savings per household per year over personal car ownership	\$7,249	
Increase in household income from time saving and car costs	89%	
Reported injuries avoided per year	5,227	
Lives saved per year	52	
Land freed from less street parking and parking lots	TBD km ²	
Health care cost savings from lower pollution	TBD	
Change in local temperature heat island (degrees C)	TBD °C	

Change in global temperature		
Change in sea level		
Assumptions	Value	
Ratio of road length to track length	2	
Convenient walk time to Transit X route	5 min.	
Walking speed	4.9 km/h (3 mph)	
Width of convenient swath along track	0.82 km (1 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	\$10,000	
Typical fare per km (per mile)	\$0.09 (\$0.15)	
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	\$3	
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	

TBD °C			
TBD mm			
	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)	0.52	2.36	
Fare per km	\$0.09	\$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.