

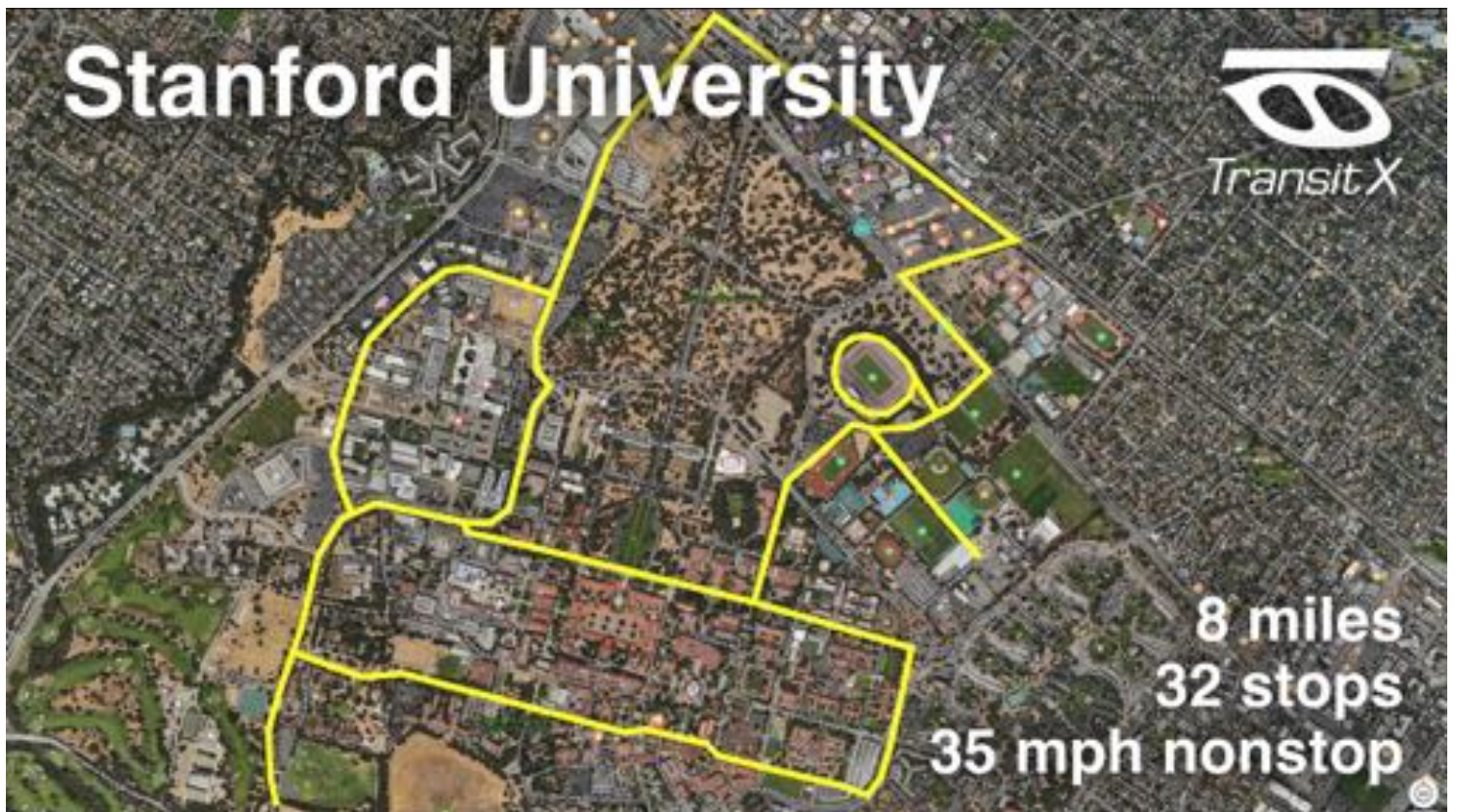


Transit X, LLC offers a concept proposal for

## **Stanford University**

For a privately-funded mobility service that is

**No waiting • High Capacity • Automated  
Solar powered • Final destination • Resilient**





# Economics for Stanford University

Inputs are underlined.

Size of region	<u>33</u> km <sup>2</sup>	12.7 sq miles
Number of people in region (residents + visitors)	<u>29,123</u>	
Percentage of all travel that occurs within the region	<u>25%</u>	
Region's area that is conveniently served by paved roads	<u>40%</u>	
Desired coverage (percent of people convenient to Transit X)	<u>70%</u>	
Estimate #1 for network length based on desired coverage	<u>28</u> km	17.6 miles
Length of paved roads (non-highway) in region	<u>33</u> km	20.5 miles
Estimate #2 for network length based on paved roadways	<u>12</u> km	7.2 miles
<b>Transit X network length</b>	<b>12</b> km	<b>7.2</b> miles
Mode share of travel on Transit X	<u>60%</u>	
Daily number of people riding Transit X	<u>17,328</u>	
Average trip distance	<u>3</u> km	2.1 miles
Number of pods needed to meet peak demand	<b>149</b> pods	
Pod parking volume equivalent	<u>12</u> car spaces	
Yearly payment to municipality for RoW	<b>\$960,518</b>	

## System Economics

One-time fixed costs (per person)	<b>\$948</b>
Operating costs (per passenger-mile)	<b>\$0.10</b>
Equivalent number of cars taken off the road	<b>4,332</b> cars
Yearly cost of cars removed (per person)	<b>\$1,339</b>
Breakeven (people riding daily)	<b>3,654</b> people
<b>IRR (Internal rate of return)</b>	<b>50%</b>
Payback period (profits pays back equity)	<b>11</b> months

## Externalities (estimated)

Reduction in CO2 emissions	<b>7,443,538</b> kg CO <sub>2</sub>
Public cost for maintaining roadways per year	<b>\$1,683,000</b>
Reduced waste products per year	<b>406,129</b> kg
Increase in household income from time saving and car costs	<b>8%</b>
Reported injuries avoided per year	<b>39</b>
Lives saved per year	<b>0</b>
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	<u>2</u>		
Convenient walk time to Transit X route	<u>2</u> min.		
Walking speed	<u>4.9</u> km/h	(3 mph)	
Width of convenient swath along track	<u>0.33</u> km	(0 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	<u>50%</u>		
Average cost of fixed infrastructure per km	<u>\$2,325,000</u>		
Distance traveled per person per year across all modes	<u>14,500</u> km	(9,006 mi)	
Mode share % of people convenient to Transit X	<u>85%</u>		
Percentage of daily travel during peak hour	<u>10%</u>		
Max capacity: number of pods per km of track	<u>149</u> pods		
Max track capacity during peak hour as % of capacity	<u>20%</u>		
Average speed of pod	<u>72</u> km/h		
Average # of trips for people riding Transit X	<u>3</u> per day		
Occupancy per pod	<u>2</u> people		
Maximum occupancy per pod	<u>4</u> people		
Empty pods: Percentage non-revenue vehicle travel	<u>25%</u>		
Cost per pod	<u>\$5,000</u>		
Median household income	<u>\$30,000</u>		
Typical fare per km	<u>\$0.28</u>		
(per mile)	<u>\$0.45</u>		
O&M per year as a % of capital costs	<u>7%</u>		
Percentage debt financed	<u>50%</u>		
Length of loan/debt	<u>20</u> years		
Interest rate for financing	<u>8%</u>		
kg CO2 emissions	<u>2.37</u> per liter of gasoline		
Monetary value of 1 hour personal time	<u>\$8</u>		
Public roadway maintenance costs per year per km	<u>\$51,000</u>		
Infrastructure's footprint per km	<u>5.78</u> m <sup>2</sup>	(62 sf)	
Lease rate per m <sup>2</sup>	<u>\$1,156</u>		
Parking footprint for road vehicle	<u>23</u> m <sup>2</sup>	(247 sf)	
Cost of land per km <sup>2</sup>	<u>\$100,000</u>		

	Transit X	Car
Service life (years)	<u>20</u>	12
Full cost of vehicle per year	<u>\$200</u>	\$9,000
Public cost to maintain infrastructure (per km)	<u>\$0</u>	\$100,000
Energy Efficiency (MPGe)	<u>1000</u>	20
mass of CO2 per vehicle per km (kg)	<u>0</u>	0.1185
Vehicle mass (kg)	<u>45</u>	1950
Average speed of travel (km/h)	<u>72</u>	16
Average travel time (hours)	<u>0.14</u>	0.62
Fare per km	<u>\$0.28</u>	\$0.62
Number of deaths per 100M passenger-km	<u>0.00001</u>	1
Number of injuries per 100M passenger-km	<u>0.0006</u>	62
Volume to park (cubic meters)	<u>5.7</u>	70.9

Assumptions	Value		
% of HH income for 16km travel	<u>15%</u>		
Width of convenient swath for road	<u>0.4</u> km		

### Currency conversion

Currency name	
Equal to US\$1	<u>1</u>