Transit X™

Transit X presents a preliminary proposal for a privately-financed public transit system — a fleet of automated electric vehicles (pods) for passengers and freight on a local and inter-city micro-guideway providing equitable transportation for

Incheon, South Korea

This proposal is downloadable at transitx.com/proposals/Transit_X_for_Incheon,South_Korea.pdf

High capacity • High speed • Nonstop • 24/7
Sustainable • Zero Wait • Door-to-door • Resilient

A companion Transit X Handbook is available at transitx.com/transitxhandbook.pdf

2020-04-18

Transit X proposes to finance, build and operate a sustainable micro-guideway to carry passengers and freight for Incheon that makes a podway convenient to 95% of the population.

Transit X efficiently services both suburbs and cities and provides for a higher quality of life. See transitx.com for more details. This 3-minute video (transitx.com/video) describes our innovative solution.

Major benefits

- Reduce congestion
- Provide parking relief
- Reduce pollution
- Improve safety

The Transit X Handbook (transitx.com/transitxhandbook.pdf) answers many questions about our service, the company, our technology, and the way we address: congestion, parking, road safety, pedestrian safety, accessibility, sustainability, fares, renewable energy & storage, construction, aesthetics, operations, economic development, quality of service, security, station footprint, equitability, carbon footprint, transit integration, resiliency, reliability, rights-of-way, and open space.

Congestion, parking, pollution, and safety

Most regions suffer from traffic congestion, limited parking, air pollution, and unsafe roads. Potential solutions are costly, but Transit X can solve these challenges without public funding. The Transit X podway can integrate into the built environment, providing both short term relief and a long term solution.

High Capacity & High Speed

A single guideway carries 12,000 pods per hour (20,000 to 50,000 passengers per hour). Two landing areas fit in a single car space and provide 2,000 boardings per hour. For urban commutes, pods trips are 3 times faster than car trips and the high-speed podway provides faster door-to-door trips than air travel for distances of 1,000 miles or less.

Zero Footprint and Minimal Disruption

Transit X features stops that don't interfere with pedestrians or other forms of transportation. We use space alongside highway and roads and integrate utility lines and poles. Non-stop interchanges fit above existing intersections. Factory-built infrastructure enables fast installation with minimal disruption. Multiple options for long crossings using bridges or underground tunnels. Posts are typically spaced at 23 m (25 yds). Multiple options for pods to traverse any grade or slope.

Low-cost Infrastructure & equitable fares

Transit X projects do not require government funding because revenue from fares, freight, and advertising is much higher than our costs. We have reduced or eliminated many costs of transportation including the cost of materials, land, construction, fuel, debt service, and labor. Our projects are typically financed by impact investors, private wealth funds, commercial banks, sovereign wealth funds, and governments.

Proven technology

Our team and partners have built fully automated systems that are now in operation around the world. Transit X may look unique, but the underlying design is very similar to systems that have been operating for 40 years with an exemplary safety record. The rollout and maiden flight occurred on Oct 29, 2018 in Leominster, Massachusetts. The first project groundbreaking will be in 2020.

Service Quality

Transit X provides on-demand, last-mile service that is superior to cars or buses. An operating agreement will guarantee high levels of availability and reliability. Our use of small vehicles (pods) makes this possible. By reducing car use, podways create walkable and bike-friendly neighborhoods.

Less pollution: Air, Sound, Light, Visual, Water

Transit X podways offer a much higher quality of life by eliminating many forms of pollution. Pods are quiet, efficient and have zero emissions. Pods offer less visual impact than the existing roads and vehicles, and utility lines can be hidden within the guideway. At night, there is no light pollution from headlights or taillights. Water pollution from road runoff is significantly reduced. Parking lots and roadways can be converted into green space and community paths as they become unnecessary.

Sustainable and Efficient

Pods weigh only 55 kg (121 lbs) and achieve over 20 times the efficiency of electric cars. Renewable energy and storage installed on our guideways and posts provide 100% of the clean energy needed to power the system.

More Transit & Fewer Cars

Podways provides the convenience and privacy that people value in cars, yet without their negative impacts. Transit X combines the best of mass transit and personal transportation modes which leads to greater use of public transit and fewer cars.

De-risking Projects

Transit X partners with large, established firms to provide fixed-price contracts for the engineering, certification, construction, and operations of a podway. These partnerships enable Transit X to de-risk all of the major elements of the project, and provide performance guarantees. We work with local construction firms.

Jobs and Workforce Development

Many regional jobs will be created to build a new transportation infrastructure, as well many new types of jobs will be created from economic growth. The majority of the construction jobs will be locally sourced and preferential hiring is given to those displaced by the transition. We welcome labor unions.

Revenue Generator

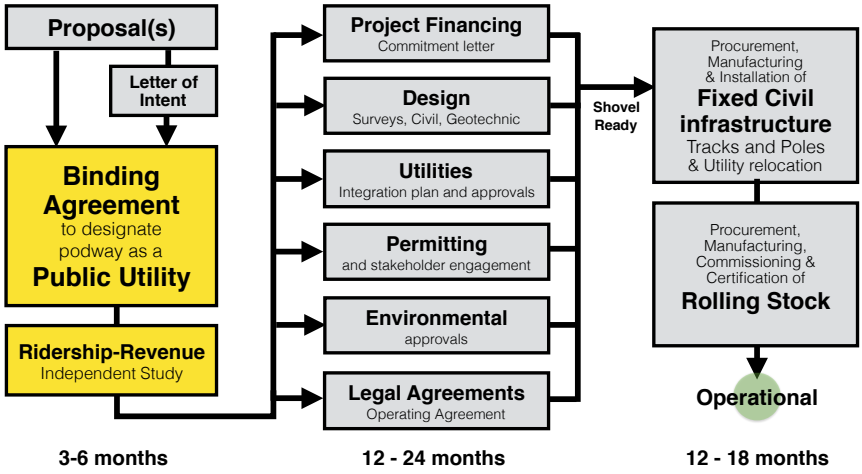
Projects do not require government funding, and owners of the rights-of-way receive a Toll Share that is 5% of gross revenue for rights-of-way, estimated to be US$95 million per year at the revenue target.

Short and Long Term Solution

A project could be operational within 24 months from the start of a project. Transit X offers a rapidly-deployable solution that provides long term benefits. We would form a local company to build, operate, and maintain the network. At least 75% of the profits are re-invested in the community and region.

Moving Forward

The diagram shows our process for a project. We submit a project proposal, then ask for a commitment for Transit X to build and operate a podway along rights-of-way. Example documents and a sample project schedule can be viewed at: transitx.com/process



Evaluation

Please review our preliminary proposal, and then ask us any questions. We would be happy to provide further information, address specific concerns, or meet with specific people or groups. Any routes or coverage areas shown on the map are only preliminary suggestions and actual routes would be determined based on needs, rights-of-ways, utility corridors, location of trees, and many other factors.

We expect this proposal to be reviewed by one or more committees or working groups. Familiar transportation options, such as buses, light rail, subways, and ride-sharing services (including autonomous vehicles) may have already been considered. Very few options offer the convenience of cars with at least the capacity of buses, and most, if not all, require public funding and subsidies.

Private cars have a dominant mode share because people like the privacy and convenience of a car — despite the significant risks and negative impact associated with them. People won't give up their cars unless the alternative is both better and cheaper. That is what Transit X can provide.

We hope you agree that this proposal offers a way to address your challenges in both the short and long term, providing an option that is better and lower risk than any alternative — including continuing with the status quo.

We hope you will conclude that moving forward with Transit X is an excellent opportunity to meet your current and future challenges.

We look to a commitment enabling Transit X to build and operate podways along public rights-of-way, similar to other public utilities.

Other Resources

The links below provide general information about Transit X:

- Video presentations: transitx.com/video (2 min) transitx.com/v (5 min)
- Transit X Handbook (transitx.com/transitxhandbook.pdf)
- Company profile (transitx.com/about.pdf)
- Other proposals (transitx.com/w)
- The process and templates for agreements (transitx.com/process)

Addendum

The remaining pages of this proposal provide project-specific details:

- Project Overview and Impact — *pages 6 and 7*
- Toll Share — *pages 8 and 9*
- Fares — *page 10 and 11*
- Jobs Report — *page 12*

We look forward to working with you to improve the quality of life for Incheon through better transportation.

Sincerely,

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Telephone: +1 508-596-7024 (WhatsApp connected)
Zoom e-room: https://zoom.us/j/8229009123
Website: transitx.com
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Mail: 1127 Commonwealth Ave #30, Boston, MA 02134 USA

Green & Walkable

1	**Podway network length**	**741.9**	km	**459.0 mile**
2	People (resident-equivalent) in region	2,954,955	resident-equivalent population	
3	Route density ratio (route length to service area)	1.16		
4	Number of stops	2,998		
5	Triple-speed route length	0	km	
6	Water crossing route length	0	km	
7	**Cost of fixed infrastructure**	$2,690,982,331		
8	…per resident	$911		
9	Target podway mode share	81%		
10	Distance traveled by passengers on podway, per year	21,475,135,463	km	**13,338,593,455 miles**
11	…per day	58,835,988	km	**36,544,092 miles**
12	Daily potential energy generation on podway	8,547.0	MWh	
13	Sustainable energy use per day	265.9	MWh	
14	Energy storage capital cost for 1 day(s) of supply at $200 per kWh	$53,183,188		
15	Nominal power of solar installation to meet self-demand	61,821	kW	
16	Cost to generate sustainable energy (at $1,000 per kW)	$61,821,221		
17	Cost to buy sustainable energy at $0.08 per kWh	$21,273	per day	
18	Daily podway passengers	2,386,126	customers	81% of the pop.
19	Distance per passenger per day	25	km	**15.3 miles**
20	Average distance per trip (assuming 3 trips per day)	8	km	**5.1 miles**
21	**Single passenger fare for shared 8 km trip**	**$0.80**		
22	Revenue from Base Fare	$0.09	/vehicle-km	
23	Revenue from Market Fare	$0.09	/vehicle-km	
24	Total Fare Revenue	$0.18	/vehicle-km	
25	Passenger distance traveled during peak hour	11,767,198	km	**7,308,818 miles**
26	Boarding capacity	1,079,280	passengers per hour (45% of customers)	
27	**Number of pods for peak demand**	**62,324**	**pods at 81% mode share**	
29	Percentage of peak demand to break even	16%		
28	Number of customers per pod	38.3	and 47 residents per pod	
29	Distance per pod per year	168,192	km	
30	Operating costs (including Toll Share)	$0.05	/vehicle-km	
30	Pod garage area (9% of route with side–parking)	68,556	m^2	0.1% of car parking
31	Cost of pods	$405,106,000	is $105 per resident	
32	Capital cost of energy generation and storage	$149,505,732	is $51 per resident	

33 Project Finances

34	Total Project Cost	$3,245,594,063		
35	Project cost per km	$4,374,525	per km	US$7.1M per mi.
36	Project costs — per resident	$1,098		
37	Net Revenue	$1,898,187,618		
38	Toll Share	$94,909,381		
39	Operating Expenses	$379,637,524		
40	Interest	$113,595,792		
41	Taxes	$131,004,492		
42	Net Operating Income (NOI)	$1,179,040,429		
43	Cap Rate (NOI / Project Cost)	0.36		
44	Number of motor vehicles displaced	2,147,514	motor vehicles	
45	Yearly cost of cars displaced — per resident	$6,541		

Impact of proposed network

1	**Reduction in GHG emissions** (metric tons CO2-eq)	2,120,670	MTCO2-eq annually
2	**Estimated cost to maintain public roadways**	$257,723,265	annually
3	**Reduced waste products**	344,139	metric tons annually
4	**Travel time saved** (non-stop travel and congestion)	438	hrs/person annually
5	**Cost savings from reduced car ownership**	$4,112	per person annually
6	**Increase in household income** (from time savings and car costs)	30%	
7	**Reported injuries avoided**	13,315	annually
8	**Lives saved** (from safety)	133	annually
9	**Land freed from parking (12,205 acres)**	49,392,812	m^2
12	**Temperature reduction** (from heat island effect & GHG reductions)	0.5 to 2	°C
11	**Health care savings** (from pollution, injuries)	High	

Inputs and Assumptions

15	Ratio of road length to guideway length	4		
16	Walking speed	4.9	km/h	3 mph
17	Width of convenient swath along podway	0.82	km	1 mile
18	Fixed cost per km (track & posts)	$2,790,000		
19	Water crossing: additional cost per km	$8,370,000		
20	Triple-speed: additional cost per km	$5,580,000		
21	Rate factor for water crossings or high-speed links.	2.2		
22	Average distance traveled per person per year in a developed county for trips under 1600 km)	10,000	km	6,211 miles
23	Average distance per day per person	27	km	
24	Mode share % of people convenient to a podway	85%	at 5 min walk.	
25	Percentage of daily demand during peak hour	20%		
26	Maximum capacity per guideway	35,401	pph	
27	Average dwell time during peak hour	10	seconds	
28	% of pods traveling on route with highest demand	18%		
29	Average speed of pod	72	km/h	45 mph
30	Average # of trips for a daily customer	3	per day	
31	Average passengers per pod during peak hours	3.3	passengers	
32	Average passengers per pod	2.0	passengers	
	Average discount per passenger	24%		
33	Maximum passengers per pod	5	passengers	
34	Empty pods: Percentage non-revenue	25%		
35	Ex-Factory cost per pod	$5,000		
36	Worldwide Median Income per Household (US$)	$10,000		
37	Average number of residents per household	2.3	people/house	
38	Base fare per km	$0.16		
39	(per mile)	$0.26		
40	Market rate revenue factor	2.1		
	Percentage of revenue from passenger fares	60%		
40	O&M as % of revenue	20%		
41	Percentage debt financed	70%	debt	
42	Interest rate for debt	5.0%	interest	
43	kg CO2 emissions per liter of gasoline	2.37	kg/liter	
44	Monetary value of 1 hour personal time (USD)	$5.47		
45	Est. roadway maintenance per year per km	$100,000		
46	Area of one parking lot space	23	m^2	247 sf
47	Commercial income of land (annual)	$0.44	per m^2	
48	Distance from roadway that is convenient	0.25	km	
49	Stops per km	4	stops/km	
50	Boarding capacity per stop	360	pph	
51	Solar panel area per meter of podway	3	m^2	
52	Cost to buy sustainable energy	$0.08	per kWh	
57	Cost of sustainable energy storage	$200	per kWh	
54	Capital cost to generate sustainable energy	$1,000	per kW	
53	Global Horizontal Irradiance (GHI)	3.8	kWh/m^2/day	
55	Storage per column	40	kWh	
56	Typical span	23	m cols/km:	44
58	Energy storage capacity	1	days	
59	Area of parked pod	2.20	m^2	
60	Distance discount at max distance	40%		
61	Max distance discount	500	km	
62	Max usage discount at 10,000 km per capita	50%		
63	Shared Pod Discount	20%		
64	Shared Pod Compartment Discount	40%		
65	Price on Carbon	$40	/tCO2e	
66	Toll Share (% of revenue for use of rights-of-way)	5%		

1	Name of region or project	Incheon, South Korea
2	Currency name	
3	Equal to US$1	1
4	Energy in CAPEX or OPEX	CAPEX
5	Land area of region (sq. km)	1,063
6	Number of residents in region	2,954,955
7	% travel within region	90%
8	% of land area served by roads	60%
9	Coverage: % of pop. convenient (5 min walk) to a podway	95%
10	Annual median household income (US$)	$21,882
11	Convenient walk time to stop (min)	5
12	Triple-speed route length (km)	0
13	Water crossing route length (km)	0.0
14	Visitors per year	0
15	Average length of visit (days)	2
16	Solar production ratio	1.57
17	Regional Fare Factor	1.0
18	Price adjust (EPC costs & contingency)	30%
19	Triple-speed (km/h)	242
20	Daily Passengers Adjustment	100%
21	Number of Stops Adjustment	100%
22	Mode Share Adjustment	100%
23	Corporate Tax Rate	10%
24	Interest Rate on Debt	5.0%

		Pod	Car
25	Service life (years)	20	12
26	Full cost of vehicle per year	$200	$9,000
27	Public cost to maintain infrastructure per year per km	$0	$100,000
28	Energy consumption (MPGe)	3564	24
29	Energy consumption (liters/100km)	0.07	9.8
30	Energy consumption (Watt-hours/km)	9	1375
31	mass of CO2 per vehicle per km (kg)	0	0.09875
32	Vehicle mass (kg)	45	1950
33	Average speed of urban travel (km/h)	*72*	16
34	Typical travel time (in minutes) for 8 km trip	*7*	*31*
35	Fare/cost per km	*$0.16*	$0.62
36	Number of deaths per 100M passenger-km	*0.00001*	0.62
37	Number of injuries per 100M passenger-km	*0.0006*	*62*
38	Volume to park (cubic meters)	5.7	70.9

Rights-of-Way owners' Toll Share is 5% of gross revenue

with a minimum payment based on the Footprint and the Transit X Commercial Rate (TXCR).

Toll Share Payment (inclusive of all fees and taxes)

Estimated Annual Payment at target revenue	**$94,909,381** annually		$32 per resident
with a minimum of	$606,262 annually		

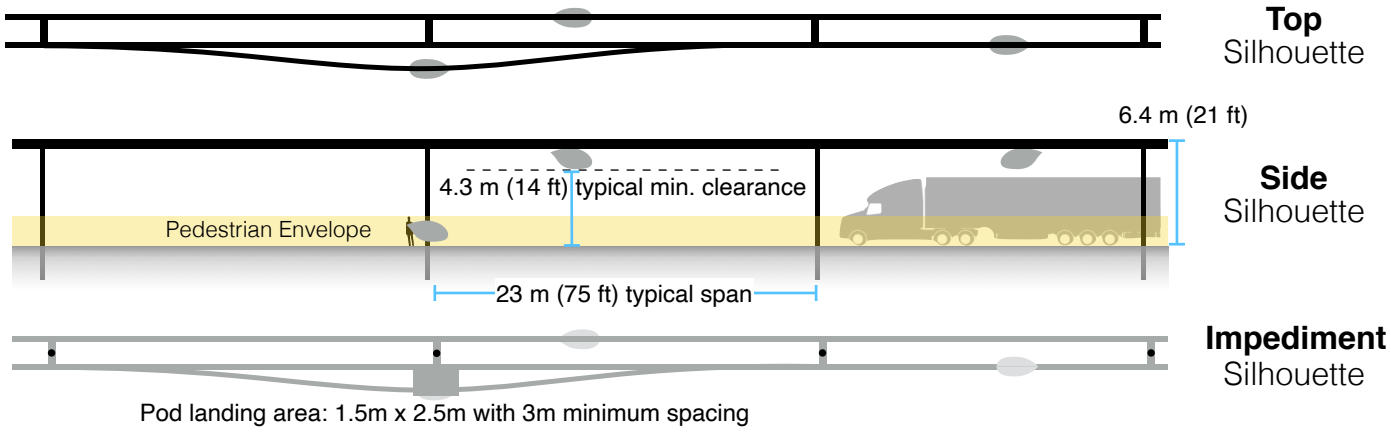
Other financial benefits to Owners of Rights-of-way and/or Local Government:

- Less road maintenance from lower VMT
- Public land made available from less parking and lanes
- Reduced emergency and police services for road-related incidents
- Less investment needed in road-based infrastructure (charging stations, signals, BRT, etc)

Minimum payment calculations

Total commercial land (estimated)	63,780,000 m^2		**15,760 acres**
Total commercial gov't revenue (US$)	$27,912,679		
TXCR (Transit X Commercial Rate)	$0.44	per m^2 (estimated)	
TXCR is the yearly tax rate per land area. Calculation: total land area of commercial properties in the governmental region, divided by all the governmental income generated by those properties. The TXCR is used to calculate the minimum tax/fee.	$4.71	per sf (estimated)	

Toll Share Minimum Calculation



1	**Footprint Calculations**	Metric		Imperial	
2	Guideway width	0.35	m	13.8	inches
3	Guideway height	0.65	m	25.6	inches
4	Post diameter	0.4	m	15.7	inches
5	Post cross section	0.13	m^2	1.4	sf
6	Stop landing area	3.75	m^2	40.4	sf
7	…width	1.5	m	59.1	inches
8	…length	2.5	m	98.4	inches
9	Ramp length	21	m	68.9	feet
10	Typical Span	23	m	75.5	feet
11	Number of posts per unit length	43.5	poles per km	70.0	poles per mile
12	Post height	6	m	19.7	feet
13					
14	**Single guideway**	1172.2	m^2	12612	sf
15	…Area of Side Silhouette	754.3	m^2	8117	sf
16	…Area of Top Silhouette	363.2	m^2	3908	sf
17	…Impediment Area (adjusted)	54.6	m^2	588	sf
18					
19	**Dual guideway**	1522.2	m^2	16378	sf
20	…Area of Side Silhouette	754.3	m^2	8117	sf
21	…Area of Top Silhouette	713.2	m^2	7674	sf
22	…Impediment Area (adjusted)	54.6	m^2	588	sf
23					
24	**Stop**	86.3	m^2	928	sf
25	…Area of Side Silhouette	27.3	m^2	294	sf
26	…Area of Top Silhouette	21.5	m^2	231	sf
27	…Impediment Area (adjusted)	37.5	m^2	404	sf
28					
29	Stops with dedicated landing areas	4.0	stops per km	6.5	stops per mile
30	% of dual guideway	100%			
31					
32	**Average area per unit length**	1,867	m^2 per route-km	**32,404**	**sf per route–mile**
33					
34	Impediment Factor	10			

Fair Fare Formula

Summary	Faster travel saves a household 295 hours per year.* **At 0.16 per mile, a typical commute on Transit X is 17% less than public transit and 74% less than a Taxi.***

All prices in USD		Trip Length 1.2 mile	6 mile	25 mile
Transit X		**0.20** **to 0.33** 2 min., 3.6x faster	**0.97** **to 1.62** 8 min., 3.6x faster	**3.71** **to 6.31** 33 min., 3.4x faster
Public transit average		**1.09**	**1.74**	**2.55**
Common public modes	**Taxi**	**1.52** 2 to 6 minutes	**6.61** 8 to 30 minutes	**25.69** 30 to 120 minutes
	Uber/Lyft	**1.15** 2 to 6 minutes	**4.76** 8 to 30 minutes	**18.26** 30 to 120 minutes
	Public Bus	**0.88** 3 to 12 minutes	**0.88** 15 to 60 minutes	**1.35** 60 to 240 minutes
	Train	**1.32** 2 to 12 minutes	**1.56** 8 to 60 minutes	**2.44** 30 to 240 minutes
Personal car		**1.27** 2 to 6 minutes	**3.98** 8 to 30 minutes	**14.15** 30 to 120 minutes

	Avg. Speed	Low Speed	High speed				Min Dist	Max Dist.	Time cost	Mode share 6%	70%	24%
										Distance (km)		
Travel mode	km/h	km/h	km/h	Base	Includes km	Over per-km	km	km	per min	2	10	40
Taxi	30	20	80	0.88	1	0.44	0.5	100	0.39	5%	4%	1%
Uber/Lyft	30	20	80	0.70	1	0.35	0.5	100	0.20	10%	10%	2%
Public Bus	15	10	40	0.88	20	0.02	0.5	50	0	50%	50%	40%
Train	30	10	80	1.32	2	0.03	2	100	0	35%	36%	57%
Transit X	72	72	72	0	0	0.10	0.1	50	0	-	-	-
Personal car	30	20	80	0.59	0	0.29	0.1	400	0.09	-	-	-

* All numbers on mode shares, speeds, and costs are estimates based on global averages.

Base fares are set for first 3 years, then adjusted by formula. A 20% discount on a shared pod and a 40% discount on a shared compartment. Trips are discounted proportional to their length reaching a maximum of a 40% discount on a 500 km trip. No congestion–based pricing. Fares are proportional to the median income of the area and inversely proportional to per capita use, so the more use of Transit X, the lower the base fare up a to 50% discount. The amount of market–rate fares must be less than the amount of discounted fares. Transit X Fair Fare Formula and Fair Freight Formula is universal and applies to all regions and all times. Market rate fares must account for less than half of all fares.

Fair Fare Formula

Fare rates are updated annually using this formula

	Name	Value	Units	Description of the value or model input
1	GlobalIncome	10,000	USD	Global median household income. Updated annually based on most recent standard published data.
2	AllTravel	20,000	km	Travel distance per household per year on any mode for trips under 1600 km. A global constant
3	PercentIncomeForTransport	25%		% of median household income for all transportation under 1600 km trips. A global constant.
4	GlobalRate	0.13	USD/km	Global minimum rate: **GlobalIncome * PercentIncomeForTransport / AllTravel**
5	IncomeFirst	$21,882	USD	Median household income at first stop (per person per day). External input. Based on reliable public data source updated annually. Maximum is 8 times **GlobalIncome**
6	IncomeDest	$32,823	USD	Median household income at destination per trip. External input. Based on reliable public data updated annually. Maximum is 8 times **GlobalIncome**
7	RegionalRate	0.27	USD/km	Regional rate based on median income: **MedianIncomeFirst * PercentIncomeForTransport / AllTravel**
8	UnderIncomeRate	0.00	USD/km	Under global income adjustment: **if (RegionalRate < GlobalRate, GlobalRate - RegionalRate, 0)**
9	NominalRate	0.27	USD/km	Nominal rate: **RegionalRate + UnderIncomeRate**
10	RegionalFactor	1.00		Regional Fare Factor. Negotiated upfront to make network financially viable.
11	AdjustedRate	0.27	USD/km	Regional adjusted rate: **NominalRate * RegionalFactor**
12	Population	2,954,955		Population in region. Updated annually based on trusted public data source.
13	UsageMaxDiscount	50%		Fare Discount when Transit X travel per household equals AllTravel. Global constant.
14	ModeShare	81%		Percent of Total Travel Per Capita on Transit X podways. Based on target mode share for first 3 years, then adjusted based on actual travel. **PassengerTravel / (Population x AllTravel)**
15	BaseRate	**0.16**	USD/km	**Base rate for single-passenger pod (without discounts)** **(1 - UsageMaxDiscount x min(1,ModeShare)) x AdjustedRate**
16	SpecialRateFactor	2.20		Rate factor for water crossings or high-speed links. Global constant.
17	SpecialBaseRate	0.36	USD/km	Base rate for high-speed travel or water crossings: **BaseRate * SpecialRateFactor**
18	DistanceDiscount	40%		Distance discount at max distance. Global constant.
19	MaxDistanceDiscount	500	km	Max distance discount. Global constant.
20	DistanceDiscountPerKm	0.000130	USD/km	Discount amount per km: **BaseRate x DistanceDiscount / MaxDistanceDiscount**
21	SeniorDiscount	20%		Senior discount set according to local regulations
22	StudentDiscount	20%		Student discount set according to local regulations
23	DisabilityDiscount	20%		Disability discount set according to local regulations
24	DiscountBaseRate	**0.13**	**USD/km**	**Discounted base rate: BaseRate x (1 - SeniorDiscount)**
25	SharedPodDiscount	20%		Discount for requesting a shared pod. 15% minimum and 30% maximum.
26	SharedPodRate	**0.13**	**USD/km**	**Rate for a shared pod: BaseRate x (1 - SharedPodDiscount)**
27	SharedCompartmentDiscount	40%		Discount for requesting a shared compartment. 25% minimum and 40% maximum. At least 10 percentage points higher than SharedPodDiscount.
28	SharedCompartmentRate	**0.10**	**USD/km**	**Rate for shared compartment** **BaseRate x (1 - SharedCompartmentDiscount)**
29	SingleOccupancyMaxDistance	0.11	**USD/km**	Rate for 500 km in single–passenger pod.
30	Senior + SharedCompartmentRate	0.05	USD/km	Rate for a Senior taking a 500 km trip in a shared compartment. **BaseRate x (1 - SeniorDiscountAmount) x (1 - SharedCompartmentDiscount) x (1 - MaxDistanceDiscount)**
31	50PctIncomeAtDest	25%		% Higher fare rate if Destination has 50% higher median income than First **(IncomeDest / IncomeFirst - 1) / 2**
32	DistanceBase	-	km	Passenger distance under base fare.
33	PercentBase	74%		Percent of passenger distance under base fare. Audited value from operational data. **DistanceBase / PassengerTravel**
34	AverageDiscount	24%		Average fare discount from Base Rate. Audited value from operational data. **1 - (BaseRevenue / (DIstanceDase x BaseRate))**
35	MarketFactor	1.0		Market rate factor. Negotiated value for setting ratio of AverageDiscount
36	MarketRateCap	24%		Cap on passenger travel distance at market rate: **AverageDiscount x MarketFactor**

Jobs Report*

This project would create 35,600 new jobs in manufacturing, construction, and operations. About 35,500 existing transportation jobs would be impacted — of which 5,700 workers would need significant retraining. Improving the transportation infrastructure will boost the economy overall and lead to 85,100 new jobs. Lowering the cost of transportation and reducing travel times raises household income by 30%.

1	Annual median household income (US$)	$21,882	
2	**CAPEX**		
3	Average gross CAPEX salary (% of median HH)	125%	
4	Average gross CAPEX salary	$27,353	
5	% of CAPEX as salary	15%	
6	Years of CAPEX	2	
7	# of CAPEX jobs	8,900	
8	% of jobs that are manufacturing vs. construction	75%	
9	**Manufacturing jobs**	**6,680**	
10	**Construction jobs**	**2,230**	
11	Supply chain jobs factor	3	
12	**Jobs in supply chain**	**26,730**	
13	Average gross OPEX salary (% of median HH)	115%	
14	Average gross OPEX salary	$25,164	
15	% of OPEX as salary	30%	
16	**Operations and Maintenance jobs**	**4,530**	
17	Secondary-effect jobs factor	7%	
18	**Secondary effect jobs**	**85,080**	
19	Job transitioning and training		
20	Expected mode share at 10 years (from page 6, line 9)	*81%*	
21	% of population with a full-time job	60%	1,772,973
22	…jobs in transportation	10%	177,297
23	…jobs impacted with this proposed network	20%	35,459
24	…jobs requiring significant retraining	20%	7,092
25	Jobs needing retraining with this proposed network (over 10 years)	0.3%	5,730
26	Training cost per person as % of salary (from line 13)	100%	$25,164
27	Number of years that training is divided across	10	
28	Ratio (as %) of training costs vs. gov't revenue from Transit X project	15%	$14,419,144

* Numbers are approximations based on a universal model. A regional study could analyze data based on local conditions.