## $\bar{\infty}$

## TransitX



Transit X presents a preliminary proposal for a sustainable micro-rail network a fleet of automated electric vehicles (pods) for passengers and freight on a local and regional podway providing equitable public transportation for

## Perth, Australia

This proposal is downloadable at transitx.com/proposals/Transit X for Perth,Australia.pdf

# High capacity • High speed • Nonstop • 24/7 Solar powered • Zero Wait • Door-to-door • Resilient 

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


## Proposal Overview

## Transit X proposes to finance, build and operate a sustainable microrail podway to carry passengers and freight for Perth that makes the Transit X service 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, ADA compliance, sustainability, fares, solar+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. Transit X can integrate into the built environment, providing both short term relief and a long term solution.

## High Capacity \& High Speed

A single track carries 12,000 pods per hour ( 20,000 to 50,000 passengers per hour). Two boarding 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 easements alongside highway and roads and integrate utility lines and poles Non-stop interchanges fit above existing intersections. Factory-built tracks and posts enable fast installation with minimal disruption. There are options for long crossings using bridges or underground tunnels. Posts are typically spaced at 23 m ( 25 yds ).

## Low-cost Infrastructure \& equitable fares

Transit X does not require government funding because our revenue from fares, freight, and advertising is greater 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 investment banks, private equity firms, banks, 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 Transit X system will be demonstrated by the end of 2019.

## 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, Transit X creates walkable and bike-friendly neighborhoods.

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

Transit $X$ offers 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 track. 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. Solar, wind, and storage installed on our tracks and posts can provide $100 \%$ of the clean energy needed to power the system.

## More Transit \& Fewer Cars

Transit X provides the convenience and privacy that people value in cars, yet without the negative impacts of personal cars. Transit $X$ combines the best of mass transit and personal transportation modes which will lead 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 Transit X system. Theses 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.

## Revenue Generator for Government

Not only does Transit X not require public financing, but the government and private easement owners receive $4-5 \%$ of gross revenue, which would be US $\$ 311$ million per year average over the first 10 years.

## 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 would be invested back into the 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 easements. 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 ridesharing 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.
Once we agree to move forward, we look to receive a commitment for Transit X to build and operate a podway along rights-of-way easements.

A podway network is rolled out in phases that each take less than 24 months.

## Other Resources

The links below provide general information about Transit X :

- One minute video overview (transitx.com/video)
- Transit X Handbook (transitx.com/transitxhandbook.pdf)
- Letters of Project Financing, Due Diligence, Contracts (transitx.com/letters.pdf)
- Memorandum of Understanding template (transitx.com/process/mou.html)
- Example Right-of-Way agreement (transitx.com/process/resolution.html)
- Operating Agreement (transitx.com/process/operating_agreement.html)
- General Q \& A (transitx.com/QandA.html)
- Other proposals (transitx.com/proposals)


## Addendum

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

- Project Overview and Impact - pages 6 and 7
- Taxes and Fees - pages 8 and 9
- Fares - page 10 and 11
- Financial Project Summary with Pro Forma - pages 12 and 13

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

## Sincerely,

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


```
            Transit X network length
            People (resident-equivalent) in region
            Route density ratio (route length to service area)
                    Number of stops
                    Triple-speed route length
                    Water crossing route length
            Cost of fixed infrastructure
                    ...per person
            Mode share of travel on Transit X (25% after first year)
            Distance traveled by passengers on Transit X, per year
                    ...per day
            Daily potential energy generation with standard panels on tracks
            Sustainable energy use per day
    Energy storage capital cost for 1 day(s) of supply at $250 per kWh
                    Size (rated power) of solar installation
            Cost to generate sustainable energy (at $1,000 per kW)
            Cost of buying sustainable energy at $0.15 per kWh
                    Daily passengers riding Transit X
                    Distance per passenger per day
            Average distance per trip (assuming 3 trips per day)
            Single passenger fare for shared 8 km trip
            Passenger distance traveled during peak hour
                    Breakeven
                    Boarding capacity
            Number of pods for peak demand
                Number of customers per pod
                    Distance per pod per year
            Two-layer pod garage area (6% of route with side-parking)
                    Cost of pods
            Capital cost of energy generation and storage
Project Finances
```

1,120 km
2,022,044 resident-equivalent population
0.58

2,260
0 km
0 km
\$4,061,788,476

## \$2,009

$75 \%$ after 10 years
$13,595,052,587 \mathrm{~km}$
37,246,719 km
8,600.6 MWh
234.8 MWh 3.0\% of max capacity
\$58,702,473
54,590 KW
\$54,589,561
$\$ 35,221$ per day $6 \%$ of OPEX
$1,510,561$ customers $\quad 75 \%$ of the pop.
25 km
8 km
$\$ 1.83$ 2.69 AUD
7,449,344 km
347,782 customers per day ( $23 \%$ of expected and $18 \%$
813,600 passengers per hour ( $54 \%$ of customers)

## 55,034 pods at $75 \%$ mode share

27.4 and 37 people per pod $168,191 \mathrm{~km}$
$60,537 \mathrm{~m}^{2}$
$0.2 \%$ of car parking
$\$ 357,721,000$ is $\$ 136$ per person
$\$ 147,279,645$ is $\$ 73$ per person

| $\$ 4,566,789,121$ | $6,713,180,007$ |
| :---: | :---: |
| AUD |  |
| $\$ 4,077,944$ | per km |

\$543,447,905 798,868,421 AUD
\$390,190,317 573,579,766 AUD

| $\$ 2,259$ | 3,320 AUD |
| :---: | :---: |
| $1,359,505$ | motor vehicles |
| $\$ 6,051$ | 8,895 AUD |
| $\$ 0.02$ |  |
| $\$ 0.09$ |  |
| $8,575,450 \mathrm{~km}$ |  |
| 0.39 |  |


| Ratio of road length to track length | 4 |  |  |
| :---: | :---: | :---: | :---: |
| Walking speed | $4.9 \mathrm{~km} / \mathrm{h}$ |  |  |
| Width of convenient swath along track | 1.63 km |  |  |
| Fixed cost per km (track \& posts) | \$2,790,000 | 4,101,300 | AUD |
| Water crossing: additional cost per km | \$8,370,000 |  |  |
| Triple-speed: additional cost per km | \$5,580,000 |  |  |
| Rate factor for water crossings or high-speed links. | 2.2 |  |  |
| Average distance traveled per person per year (for trips under 1600 km ) | 10,000 km |  |  |
| Average distance per day per person | 27 km |  |  |
| Mode share \% of people convenient to Transit X | 85\% at 5 min walk. |  |  |
| Percentage of daily demand during peak hour | 20\% |  |  |
| Maximum capacity per track | 25,380 pph |  |  |
| Average dwell time during peak hour | 10 seconds |  |  |
| \% of pods traveling on route with highest demand | 18\% |  |  |
| Average speed of pod |  | km/h | 45 mph |
| Average \# of trips for a daily customer | 3 per day |  |  |
| Average passengers per pod during peak hours | 2.4 passengers |  |  |
| Average passengers per pod | 1.5 passengers |  |  |
| Average discount per passenger | 19\% |  |  |
| Maximum passengers per pod | 5 passengers |  |  |
| Empty pods: Percentage non-revenue | 25\% |  |  |
| Ex-Factory cost per pod | \$5,000 | 7,350 | AUD |
| Worldwide Median Income per Household (US\$) | 10,000 | 14,700 | AUD |
| Average number of residents per household | 2.3 |  | AUD |
| Base fare per km | \$0.37 | 0.5 | AUD |
| (per mile) | \$0.60 | 0.9 | AUD |
| O\&M as \% of project cost | 5\% |  |  |
| Percentage debt financed | 70\% |  |  |
| Length of loan/debt | 10 years |  |  |
| Interest rate for debt | 7\% |  |  |
| $\mathrm{kg} \mathrm{CO2} \mathrm{emissions} \mathrm{per} \mathrm{liter} \mathrm{of} \mathrm{gasoline}$ | 2.37 |  |  |
| Monetary value of 1 hour personal time (USD) | \$12.50 | 18 | AUD |
| Eat. roadway maintenance per year per km | \$51,000 74,970 AUD |  |  |
| Area of one parking lot space | $23 \mathrm{~m}^{2}$ |  |  |
| Commercial income of land (annual) | \$1.00 per m² ${ }^{2}$ AUD |  |  |
| Distance from roadway that is convenient | 0.49 km |  |  |
| Stops per km | 2.0 |  |  |
| Boarding capacity per stop | 360 pph |  |  |
| Solar panel area per meter of track | 2.0 |  |  |
| Cost of sustainable energy and storage | \$0.15 per kWh |  |  |
| Global Horizontal Irradiance (GHI) | $3.8 \mathrm{kWh} / \mathrm{m}^{2} /$ day |  |  |
| Cost to generate sustainable energy | \$1,000 per kW |  |  |
| Storage per column | 40 kWh |  |  |
| Typical span | 23 m cols/km: 44 |  |  |
| Energy storage cost | \$250 per kWh |  |  |
| Energy storage capacity | 1 days |  |  |
| Area of parked pod | $2.20 \mathrm{~m}^{2}$ |  |  |
| Distance discount at max distance | 40\% |  |  |
| Max distance discount | 500 km |  |  |
| Max usage discount at 10,000 km per capita | 50\% |  |  |
| Shared Pod Discount | 20\% |  |  |
| Shared Pod Compartment Discount | 40\% |  |  |
| Mode share starting discount | 67\% |  |  |

## Model Inputs

## Impact of proposed network

## Reduction in GHG emissions (metric tons CO2-eq) Estimated cost to maintain public roadways <br> Reduced waste products <br> Travel time saved (non-stop travel and congestion) <br> Cost savings from reduced car ownership <br> Increase in household income (from time savings and car costs) <br> Reported injuries avoided <br> Lives saved (from safety) <br> Land freed from parking (7,726 acres) <br> Temperature reduction (from heat island effect \& GHG reductions) <br> Health care savings (from pollution, injuries)

Model Inputs (continued)
$1,342,511$ MTCO2-eq annually
$\$ 198,394,788$ annually
217,861 metric tons annually
438 hrs/person annually
$\$ 2,239$ per person annually
$15 \%$
8,429 annually
84 annually
$31,268,621 \mathrm{~m}^{2}$
0.5 to $2^{\circ} \mathrm{C}$
High

| 68 | Name of region or project | Perth, Australia |
| :---: | :---: | :---: |
| 69 | Currency name | AUD |
| 70 | Equal to US\$1 | 1.47 |
| 71 | Sustainable energy/electricity generation \& storage as | CAPEX |
| 72 | Land area of region (sq. km) | 6,418 |
| 73 | Number of residents in region | 2,022,044 |
| 74 | \% travel within region | 90\% |
| 75 | \% of land area served by roads | 30\% |
| 76 | Coverage: \% of pop. convenient (10 min walk) to Transit X | 95\% |
| 77 | Annual median household income (US\$) | \$50,000 |
| 78 | Convenient walk time to stop (min) | 10 |
| 79 | Triple-speed route length (km) | 0 |
| 80 | Water crossing route length (km) | 0.0 |
| 81 | Visitors per year | 0 |
| 82 | Average length of visit (days) | 2 |
| 83 | Solar production ratio | 1.57 |
| 84 | Regional Fare Factor | 1.0 |
| 85 | EPC costs \& contingency | 30\% |
| 86 | Triple-speed (km/h) | 242 |
| 87 | Daily Passengers Adjustment | 100\% |
| 88 | Number of Stops Adjustment | 100\% |
| 89 | Mode Share Adjustment | 100\% |


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## Pod \& Car

|  |  | Pod | Car |
| ---: | ---: | ---: | ---: |
| 87 | Service life (years) | 20 | 12 |
| 88 | Full cost of vehicle per year | $\$ 200$ | $\$ 9,000$ |
| 89 | Public cost to maintain infrastructure | (per km) | $\$ 0$ |
| 90 | Energy consumption (MPGe) | 3564 | 24 |
| 90 | Energy consumption (liters/100km) | 0.07 | 9.8 |
| 91 | Energy consumption (Watt-hours/km) | 9 | 1375 |
| 92 | mass of CO2 per vehicle per km (kg) | 0 | 0.09875 |
| 93 | Vehicle mass $(\mathrm{kg})$ | 45 | 1950 |
| 94 | Average speed of urban travel $(\mathrm{km} / \mathrm{h})$ | 72 | 16 |
| 95 | Fare/cost per km | $\$ 0.37$ | $\$ 0.62$ |
| 96 | Typical travel time (in minutes) for km trip | 7 | 31 |
| 97 | Number of deaths per 100M passenger-km | 0.00001 | 1 |
| 98 | Number of injuries per 100M passenger-km | 0.0006 | 62 |
| 99 | Volume to park (cubic meters) | 5.7 | 70.9 |

## Taxes and Fees

## 5\% of gross revenue is paid for air rights and local taxes.

A minimum payment is based on the Footprint and the Transit X Commercial Rate (TXCR).
Air-rights and Local Taxes

(for calculating minimums)
Total commercial land (estimated)Total commercial gov't revenue (US\$)TXCR (Transit X Commercial Rate)TXCR is the yearly tax rate per land area. Calculation:total land area of commercial properties in thegovernmental region, divided by all the governmentalincome generated by those properties. The TXCR isused to calculate the minimum tax/fee.
Private Easement Fees4\% of gross revenueMinimum per year

| $192,540,000 \mathrm{~m}^{2}$ | acres |
| ---: | ---: |
| $\$ 192,540,000$ | 283,033,800 AUD |
| $\$ 1.00$(er m <br> (estimated) <br> (2 | 1.5 AUD |

For example

$$
\$ 69.68 \text { per route-meter }
$$

$$
\$ 1.49 \text { per route-meter }
$$Other financial benefits to GovernmentAUD

Less road maintenance from lower VMT ..... AUD
Public land made available from less parking and lanes ..... AUD

## Transit X payment to Government

\% of route on government easements 98\% estimated

| Total air-rights and local taxes | $\$ 383,947,272$ per year | $564,402,490$ AUD |
| ---: | :---: | :---: |
| per resident | $\$ 190$ | 279 AUD |
| with a minimum of | $\$ 1,664,368$ per year | $2,446,621$ AUD |
|  |  | 0 AUD |

Reduced emergency and police services for road-related incidents ..... AUD
Less investment needed in road-based infrastructure (charging stations, signals, BRT, etc) ..... AUD


| 1 | Footprint Calculations | Metric | Imperial |
| :---: | :---: | :---: | :---: |
| 2 | Track width | $\underline{0.30} \mathrm{~m}$ |  |
| 3 | Track height | 0.60 m |  |
| 4 | Post diameter | 0.3 m |  |
| 5 | Post cross section | $0.07 \mathrm{~m}^{2}$ |  |
| 6 | Stop landing area | $3.75 \mathrm{~m}^{2}$ |  |
| 7 | ...width | 1.5 m |  |
| 8 | ...length | 2.5 m |  |
| 9 | Ramp length | $\underline{21} \mathrm{~m}$ |  |
| 10 | Typical Span | $\underline{23} \mathrm{~m}$ |  |
| 11 | Number of posts per unit length | 43.5 poles per km |  |
| 12 | Post height | 6 m |  |
| 13 |  |  |  |
| 14 | Single track | $1022.1 \mathrm{~m}^{2}$ |  |
| 15 | ...Area of Side Silhouette | 678.3 m² |  |
| 16 | ...Area of Top Silhouette | 313.1 m² |  |
| 17 | ...Impediment Area (adjusted) | 30.7 m² |  |
| 18 |  |  |  |
| 19 | Dual track | $1322.1 \mathrm{~m}^{2}$ |  |
| 20 | ...Area of Side Silhouette | 678.3 m² |  |
| 21 | ...Area of Top Silhouette | 613.1 m² |  |
| 22 | ...Impediment Area (adjusted) | 30.7 m² |  |
| 23 ( ${ }^{2}$ |  |  |  |
| 24 | Stop | $82.1 \mathrm{~m}^{2}$ |  |
| 25 | ...Area of Side Silhouette | 25.2 m² |  |
| 26 | ...Area of Top Silhouette | $19.4 \mathrm{~m}^{2}$ |  |
| 27 | ...Impediment Area (adjusted) | $37.5 \mathrm{~m}^{2}$ |  |
| 28 |  |  |  |
| 29 | Stops with dedicated landing areas | $\underline{2}$ stops per km |  |
| 30 | \% of dual track | 100\% |  |
| 31 |  |  |  |
| 32 | Average area per unit length | 1,486 m² per route-km |  |
| 33 |  |  |  |
| 34 | Contract values |  |  |
| 35 | \% gross revenue for government on private prop. | 1\% |  |
| 36 | \% gross revenue for private easement | 4\% |  |
| 37 | \% gross revenue for government easement | 5\% |  |
| 38 | Impediment Factor | 10 |  |

Fair Fare Formula

## The average commute would be 3.5 times faster saving each commuter 295 hours per year.*

At 0.33 AUD per km, a typical commute on Transit $X$ is $17 \%$ less than public transit and $74 \%$ less than a Taxi.*

Trip Length

|  | All prices in AUD | 2 km | 10 km | 40 km |
| :---: | :---: | :---: | :---: | :---: |
|  | Transit X | 0.65 <br> to 1.09 <br> 2 min., $3.6 x$ faster | $3.23$ <br> to 5.41 <br> 8 min., 3.6x faster | $12.40$ <br> to 21.13 |
|  | Public transit average | 3.66 | 5.82 | 8.54 |
| $\begin{aligned} & \mathscr{0} \\ & \stackrel{0}{0} \end{aligned}$ | Taxi | $\begin{gathered} 5.08 \\ 2 \text { to } 6 \text { minutes } \end{gathered}$ | $22.10$ <br> 8 to 30 minutes | $\begin{gathered} 85.95 \\ 30 \text { to } 120 \text { minutes } \end{gathered}$ |
| .을 | Uber/Lyft | 3.86 <br> 2 to 6 minutes | 15.91 <br> 8 to 30 minutes | $\begin{gathered} \mathbf{6 1 . 1 0} \\ 30 \text { to } 120 \text { minutes } \end{gathered}$ |
| $\begin{aligned} & \text { 믇 } \\ & \stackrel{\rightharpoonup}{\mathrm{C}} \end{aligned}$ | Public Bus | $\begin{gathered} 2.95 \\ 3 \text { to } 12 \text { minutes } \end{gathered}$ | $\begin{gathered} \mathbf{2 . 9 5} \\ 15 \text { to } 60 \text { minutes } \end{gathered}$ | 4.52 <br> 60 to 240 minutes |
| ¢ | Train | 4.42 <br> 2 to 12 minutes | 5.21 <br> 8 to 60 minutes | $\begin{gathered} 8.15 \\ 30 \text { to } 240 \text { minutes } \end{gathered}$ |
|  | Personal car | $4.14$ <br> 2 to 6 minutes | $\begin{gathered} 12.83 \\ 8 \text { to } 30 \text { minutes } \end{gathered}$ | $45.42$ <br> 30 to 120 minutes |


|  | Avg. Speed | Low Speed | High speed |  |  |  | Min Dist | Max Dist. | Time cost | Mode | $\begin{aligned} & \text { share } \\ & 70 \% \end{aligned}$ | 24\% |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Travel mode | km/h | km/h | km/h | Base | Includ es km | $\begin{array}{r} \text { Over } \\ \text { per-km } \end{array}$ | km | km | per min | 2 | 10 | 40 |
| Taxi | 30 | 20 | 80 | 2.95 | 1 | 1.47 | 0.5 | 100 | 1.31 | 5\% | 4\% | 1\% |
| Uber/Lyft | 30 | 20 | 80 | 2.36 | 1 | 1.18 | 0.5 | 100 | 0.65 | 10\% | 10\% | 2\% |
| Public Bus | 15 | 10 | 40 | 2.95 | 20 | 0.08 | 0.5 | 50 | 0 | 50\% | 50\% | 40\% |
| Train | 30 | 10 | 80 | 4.42 | 2 | 0.10 | 2 | 100 | 0 | 35\% | 36\% | 57\% |
| Transit X | 72 | 72 | 72 | 0 | 0 | 0.33 | 0.1 | 50 | 0 | - | - | - |
| Personal car | 30 | 20 | 80 | 1.96 | 0 | 0.98 | 0.1 | 400 | 0.21 | - | - |  |

* All numbers on mode shares, speeds, and costs are rough estimates..

Transit $X$

## Fair Fare Formula

## Fare rates are updated annually using this formula

|  | Name | Value | Units | Description of the value or model input | In USD |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Globallncome | 14,700 | AUD | Global median household income. Updated annually based on most recent standard published data. | 10,000 |
| 2 | AllTravel | 23,000 | km | Travel distance per household per year on any mode for trips under 1600 km . A global constant |  |
| 3 | PercentIncomeForTr ansport | 20\% |  | \% of median household income for all transportation under 1600 km trips. A global constant. |  |
| 4 | GlobalRate | 0.13 | AUD/km | Global rate: Globallncome * PercentIncomeForTransport / AllTravel | 0.09 |
| 5 | IncomeFirst | \$73,500 | AUD | Median household income at first stop (per person per day). External input. Based on reliable public data source updated annually. | \$50,000 |
| 6 | IncomeDest | \$110,250 | AUD | Median household income at destination per trip. External input. Based on reliable public data updated annually. | \$75,000 |
| 7 | RegionalRate | 0.64 | AUD/km | Regional rate based on median income: <br> MedianIncomeFirst * PercentIncomeForTransport / AllTravel | 0.43 |
| 8 | UnderIncomeRate | 0.00 | AUD/km | Under global income adjustment: <br> if (RegionalRate < GlobalRate, GlobalRate - RegionalRate, 0) | 0.00 |
| 9 | NominalRate | 0.64 | AUD/km | Nominal rate: RegionalRate + UnderIncomeRate | 0.43 |
| 10 | RegionalFactor | 1.00 |  | Regional Fare Factor. Negotiated upfront to make network financially viable. |  |
| 11 | AdjustedRate | 0.64 | AUD/km | Regional adjusted rate: NominalRate * RegionalFactor | 0.43 |
| 13 | Population | 2,022,044 |  | Population in region. Updated annually based on trusted public data source. |  |
| 12 | UsageMaxDiscount | 50\% |  | Fare Discount when Transit X travel per household equals AllTravel. Global constant. |  |
| 14 | PassengerTravel 1 | ,595,052,58 |  | Total passenger distance traveled previous calendar year. Based on expected mode share for first 3 years. Based on actual passenger trips. Audited. |  |
| 15 | ModeShare | 29\% |  | Percent of Total Travel Per Capita on Transit X: PassengerTravel / (Population x AllTravel) |  |
| 16 | BaseRate | 0.55 | AUD/km | Base rate for single-passenger pod (without discounts) <br> (1-UsageMaxDiscount x min(1,ModeShare)) x AdjustedRate | 0.37 |
| 17 | SpecialRateFactor | 2.20 |  | Rate factor for water crossings or high-speed links. Global constant. |  |
| 18 | SpecialBaseRate | 1.20 | AUD/km | Base rate for high-speed travel or water crossings: BaseRate * SpecialRateFactor | 0.82 |
| 19 | DistanceDiscount | 40\% |  | Distance discount at max distance. Global constant. |  |
| 20 | MaxDistanceDiscou nt | 500 | km | Max distance discount. Global constant. |  |
| 21 | DistanceDiscountPe rKm | 0.000437 | AUD/km | Discount amount per km: <br> BaseRate x DistanceDiscount / MaxDistanceDiscount |  |
| 22 | SeniorDiscount | 20\% |  | Senior discount set according to local regulations |  |
| 23 | StudentDiscount | 20\% |  | Student discount set according to local regulations |  |
|  | DisabilityDiscount | 20\% |  | Disability discount set according to local regulations |  |
| 24 | DiscountBaseRate | 0.44 | AUD/km | Discounted base rate: BaseRate x (1-SeniorDiscount) | 0.30 |
| 25 | SharedPodDiscount | 20\% |  | Discount for a shared pod. Set by Transit X per year. $15 \%$ minimum and $30 \%$ maximum. Maximum yearly change is one percentage point. |  |
| 26 | SharedPodRate | 0.44 | AUD/km | Rate for a shared pod: BaseRate x (1-SharedPodDiscount) | 0.30 |
| 27 | SharedCompartment Discount | 40\% |  | Discount for shared compartment. Set by Transit $X$ per year. $25 \%$ minimum and $40 \%$ maximum. Maximum yearly change is one percentage point. |  |
| 28 | SharedCompartment Rate | $0.33$ | AUD/km | Rate for shared compartment <br> BaseRate x (1-SharedCompartmentDiscount) | 0.22 |
| 29 | SingleOccupancyMa xDistance | 0.37 | AUD/km | Rate for 500 km in single-passenger pod. |  |
| 30 | Senior + SharedCompartment Rate | 0.16 | AUD/km | Rate for a Senior taking a 500 km trip in a shared compartment. <br> BaseRate x (1-SeniorDiscountAmount) x (1-SharedCompartmentDiscount) x (1MaxDistanceDiscount) | 0.11 |
| 31 | 50PctIncomeAtDest | 25\% |  | \% Higher fare rate if Destination has 50\% higher median income than First (IncomeDest / IncomeFirst - 1) / 2 |  |
| 32 | DistanceBase 10 | ,060,338,91 |  | Passenger distance under base fare. Audited value from operational data. |  |
| 33 | PercentBase | 74\% |  | Percent of passenger distance under base fare: DistanceBase / PassengerTravel |  |
| 34 | BaseRevenue 4 | 452,106,85 | AUD | Annual revenue from all travel under base rate. Audited value from operational data. |  |
| 35 | AverageDiscount | 19\% |  | Average fare discount from Base Rate: <br> 1- (BaseRevenue / (DlstanceDase x BaseRate)) |  |
| 36 | MarketFactor | 1.0 |  | Market rate factor. Negotiated value for setting ratio of AverageDiscount |  |
| 37 | MarketRateCap | 19\% |  | Cap on passenger travel distance at market rate: AverageDiscount x MarketFactor |  |
| 38 | MarketTravelCap 1 | ,902,027,93 | km | Cap on passenger travel distance at market rate: DistanceBase x MarketRateCap |  |

Project A fully-automated, solar-powered, micro-rail Description network. A transportation utility.

Project type Sustainable Transportation Infrastructure Design, Build, Finance, Own, Operate, Maintain (DBFOOM)

Project equity US\$1.37 billion (30\% of total)
Cost to Gov't \$0
Structure Privately financed equity and debt
Debt term 10 years @ 7\%
Equity terms A waterfall profit distribution per year with:

1. $90 \%$ until capital payback,
2. then $50 \%$ until Target $\%$ is reached
3. then $10 \%$

Taxes \& Fees $\$ 383,947,272$ per year
Benefits to society and Extremely high environment

Estimated return 60\% average IRR at 5 yrs $66 \%$ average IRR at 10 yrs

| Financials <br> (US\$ in millions) | Year 1 | Total |
| ---: | ---: | ---: |
| Years 1-12 |  |  |

ESG (Environmental, Social, Governance) Benefits

| Clean Energy yes | Improve Resiliency | yes |  |
| ---: | ---: | ---: | :--- |
| Energy security yes | Sustainable yes |  |  |
| Zero Emissions yes | Equitable yes |  |  |
| Zero GHG yes | Recyclable Materials | yes |  |
| Lowers Pollution yes | Affordable Housing | yes |  |
| Clean Water yes | Improved Health | yes |  |
| Improved Safety yes | Economic Development | yes |  |
| Add Green Space | yes | Access to Food | yes |
| Accessible yes | Add Quality Jobs | yes |  |

Transit X presents a preliminary proposal for a sustainable micro-rail network a fleet of automated electric vehicles (pods) for passengers and freight on a local and regional podway providing equitable public transportation for

## Perth, Australia

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


## About Transit $\mathbf{X}$

Transit X finances, designs, builds, and operates solar-electric micro-rail public transit podways to supplant buses, trains, cars, and trucks. Transit X offers its service to governments and commercial developers. Maiden Flight was on Oct 29, 2018 and pilot projects started in 2018. First pilots will break ground in 2019 and begin operations in 2020. Transit X is a privately held company founded in 2015, based in Boston, Massachusetts.

## Status

|  | Now | Prior to close |
| ---: | :--- | :--- |
| Project financing | Available | Yes |
| Outdoor Test Track | Nov 2019 | Yes |
| Rider-Revenue study | Preliminary | Yes |
| Environmental study | Per region | Yes |
| Air rights | Per project | Yes |
| Permitting | Per project | Yes |
| Safety certification | Per country | Yes |
| Construction firm | Per project | Yes |
| Design and major subs | Per project | Yes |
| Operations \& Maint | Partners | Yes |
| Utility relocation | Per project | Agreements |

General information available at transitx.com. Detailed information and references can be provided under appropriate non-disclosure/non-compete/non-circumvent agreements. Contact: Mike Stanley, CEO, Transit X, mike@transitx.com, 508-596-7024

## Model Inputs and Assumptions

| Route length (km) | $\mathbf{1 , 1 2 0}$ | Travel per year per pod (km) 168,191 |
| ---: | :--- | ---: |
| Starting number of pods | 18,161 | Revenue per vehicle-km (US\$) 0.84 |
| Projected revenue growth | $15 \%$ | OPEX as \% of project cost $5 \%$ |
| Project Cost (Privately funded) | $\$ 4,566,789,121$ | Debt Interest rate $7 \%$ |
| \% Debt financed | $70 \%$ | Debt term (yrs) 10 |
| Debt | $\$ 3,196,752,385$ | Profit share when below capital return $90 \%$ |
| Equity | $\$ 1,370,036,736$ | Profit share when below Target IRR $50 \%$ |
| Debt payment (per year) | $\$ 223,772,667$ | Profit share when above Target IRR $10 \%$ |

Pro Forma

|  | Years | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Revenue |  | 0 | 2,575,224,898 | 2,961,508,633 | 3,405,734,928 | 3,916,595,167 | 4,504,084,442 | 5,179,697,108 | 5,956,651,675 | 6,850,149,426 | 7,877,671,840 | 9,059,322,616 | 10,418,221,008 | 11,980,954,159 |
| 5\% RoW - tax -fee |  | 0\% | 128,761,245 | 148,075,432 | 170,286,746 | 195,829,758 | 225,204,222 | 258,984,855 | 297,832,584 | 342,507,471 | 393,883,592 | 452,966,131 | 520,911,050 | 599,047,708 |
| Debt service |  | 0 | \$223,772,667 | \$223,772,667 | \$223,772,667 | \$223,772,667 | \$223,772,667 | \$223,772,667 | \$223,772,667 | \$223,772,667 | \$223,772,667 | \$223,772,667 | \$223,772,667 | \$223,772,667 |


| Investor share | 0 | 1,615,424,740 | 373,840,723 | 408,277,101 | 447,878,936 | 493,421,046 | 545,794,473 | 606,023,913 | 675,287,770 | 754,941,205 | 846,542,656 | 951,884,324 | 1,073,027,242 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Investor share (\%) |  | 90\% | 18\% | 17\% | 16\% | 15\% | 14\% | 14\% | 13\% | 13\% | 12\% | 12\% | 12\% |
| Share / Orig Capital | 0\% | 118\% | 27\% | 30\% | 33\% | 36\% | 40\% | 44\% | 49\% | 55\% | 62\% | 69\% | 78\% |
| IRR to date | loss | 18\% | 38\% | 49\% | 56\% | 60\% | 62\% | 64\% | 65\% | 65\% | 66\% | 66\% | 66\% |

## Important Notices

The information contained in this document is not an offer to sell or a solicitation to buy any security. These materials and documents and information from which they are derived or which are referred to by or accessible from them may contain forward looking statements within the meaning of Section 27A of the Securities Act of 1933, Section 2E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical fact are forward looking statements and are subject to risks and uncertainties. Forward looking statements generally can be identified by the use of forward looking terminology such as "may," "will," "expect," "intend," "estimate," "project," "anticipate," "believe" or "plan" or the negative thereof or variations thereon or similar terminology. Although Transit $X$ believes that the expectations reflected in such forward looking statements are reasonable, it can give no assurance that such expectations will prove to be correct. All forward looking statements speak only as of the date made. Except as required by law, Transit X undertakes no obligation to update any forward looking statement to reflect events or circumstances after the date on which it is made or to reflect the occurrence of anticipated or unanticipated events or circumstances. These materials and documents and information from which they are derived or which are referred to by or accessible from them represent Transit X's best estimate as to the allocation of the funding proceeds based upon its present business plan and financial condition. The costs and expenses to be incurred in pursuing the Company's business plan cannot be predicted with certainty. There can be no assurance that unforeseen events will not occur or that the Company's business plan will be achieved or that it will not be changed, and it is possible that the funding proceeds may be applied in a manner other than that described herein.

## Jobs Report

## Annual median household income (US\$)

2 CAPEX
${ }^{3}$ Average gross CAPEX salary (\% of median HH) 125\%
4 Average gross CAPEX salary

$$
\$ 62,500
$$

5 \% of CAPEX as salary
Years of CAPEX
7 \# of CAPEX jobs
15\%
2

8 \% of jobs that are manufacturing vs. construction

- Manufacturing jobs
" Construction jobs


## 75\%

## OPEX

12 Average gross OPEX salary (\% of median HH)
Average gross OPEX salary
4,110
1,370
${ }^{14} \%$ of OPEX as salary
115\%

Operations and Maintenance jobs

