



# Improving Mobility with Rapid Transit

[www.CodeRedTO.com](http://www.CodeRedTO.com)



# Who is CodeRedTO?

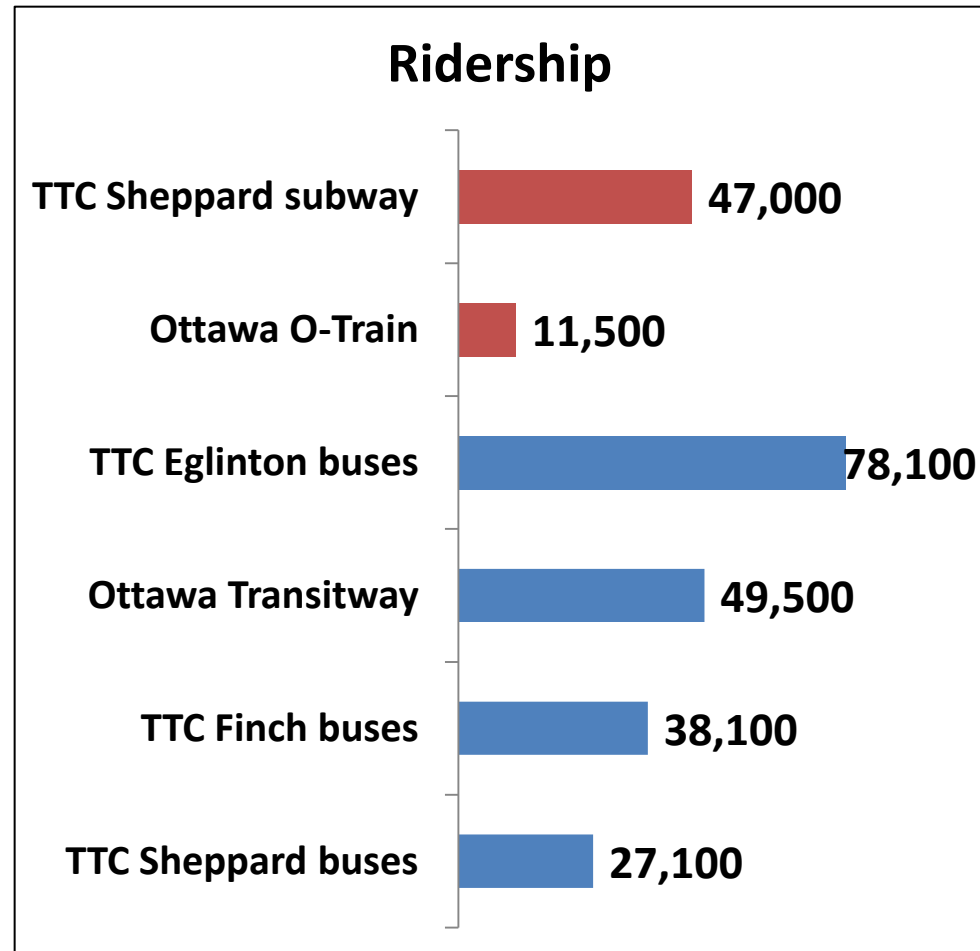
- Toronto residents advocating for:
  - Transit expansion that helps the most people and happens faster
  - Honest, factual discussions of pros, cons, and costs
  - Increased, stable, predictable, funding to build and run better transit
- Stay informed!
  - [www.CodeRedTO.com](http://www.CodeRedTO.com)
  - **@CodeRedTO** on Twitter, **CodeRedTO** on Facebook
- Founders: Joe Drew, Cameron MacLeod, Laurence Lui (*now inactive*)
- All volunteer, and no conflicts of interest
- No funds or “talking points” from any group or councillor
- Available to present facts for any group or MPP who invites us

**HOW DID WE GET HERE? 3 Reasons.**

# 1. We have a congestion problem

The problem is growing:

- Average daily Toronto commute is 80 minutes
- No room for new roads but we will have more commuters as population grows
- Congestion is a PEOPLE thing, not a CAR thing

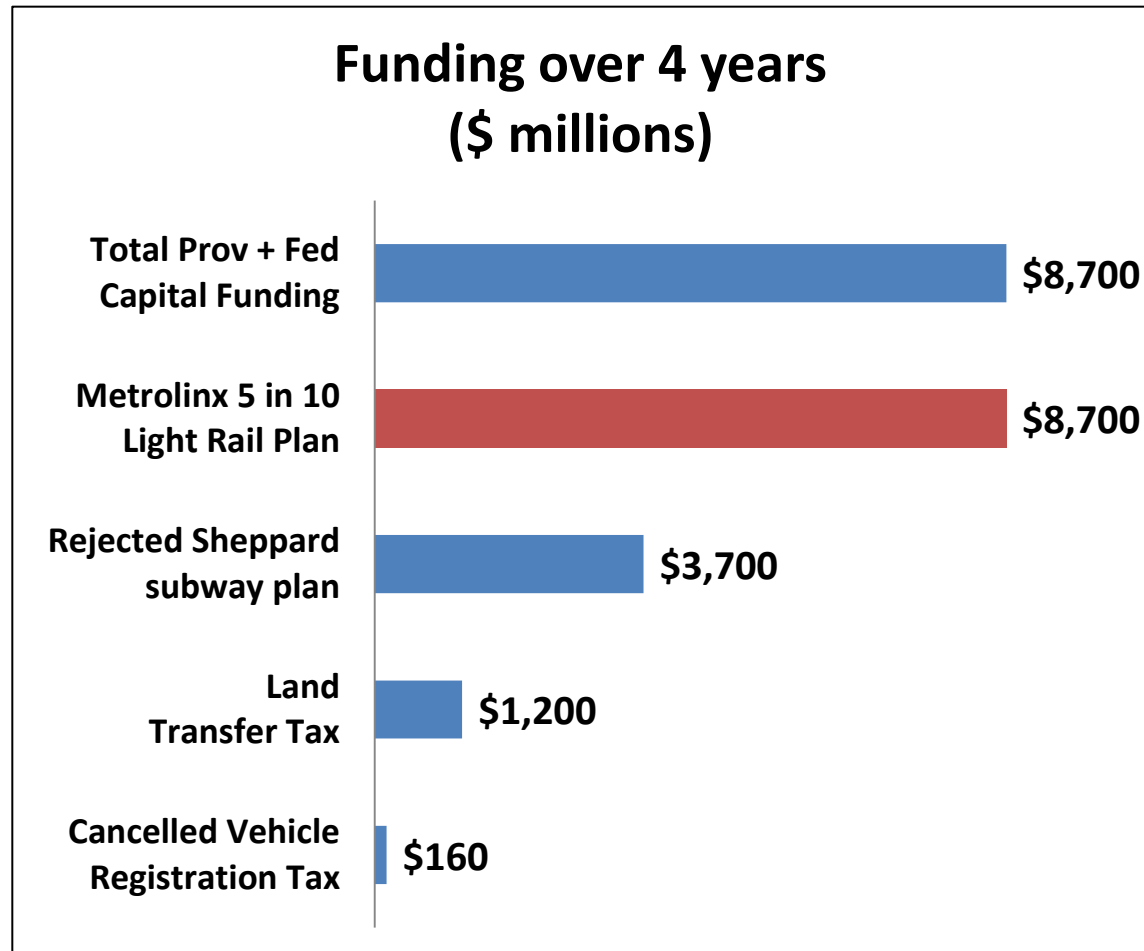


(Toronto's Yonge subway carries over 700k/day)

## 2. We have a funding problem

### Our funding is limited:

- Toronto's cancelled Vehicle Registration Tax raised about \$40M/year
- Toronto's Land Transfer Tax raises about \$300M/year
- Subways cost \$350M/km to build



# 3. We have an approval problem

**1910:** Referendum passes on a Queen St subway; **Toronto Mayor refuses to approve**

**1954:** Yonge subway opens

**1966:** Bloor-Danforth subway opens

**1992:** Scarborough RT extension to Malvern proposed

**1994:** **Toronto City Council refuses SRT extension due to required tax increases**

**1994:** Premier upgrades Eglinton busway (“BRT”) plan to a subway

**1995:** **New Premier cancels Eglinton subway**

**2002:** Sheppard subway opens

**2006:** Ottawa City Council approves O-Train expansion; **New Ottawa Mayor cancels it**

**2007:** Toronto Mayor and Council approve 120 km (7 lines) Transit City plan

**2009:** Province announced tentative funds for 63 km (4 lines)

**2010:** **Province provides confirmed funds for only 52 km (4 shorter lines)**

# So how do we fix it? 3 Steps.

- 1. We reduce future congestion by increasing mobility for Ontario:**
  - Expanded transit coverage
  - Increased transit frequency
- 2. Depoliticize transit by creating predictable, stable, dedicated fund:**
  - Move transit funding out of general revenue
  - Create named revenue sources targeted at specific needs
- 3. We stick to our plans, and stop waving in the wind:**
  - Ontario has 4 rapid transit lines in operation
  - Ontario has 6 rapid transit lines in design/construction
  - Ontario has 10 cancelled rapid transit lines since 1994

**What we are doing now isn't working. "Ignore it" is not an option.**

# If we had stuck to the 1985 'Network 2011' plan...

Not better or worse, but an example of past plans never getting off the drawing board.



How do we actually get stuff built?



# Predictable, Stable, Dedicated Funding

## Case Study: Los Angeles County's "Measure R"

- Referendum on new 0.5% sales tax. Passed with over 67% support.
- Voters were told where money would go, affected cities were given guaranteed slice of pie, and tax was set to expire 30 years in future.
- Generates ~\$1.3B/year, and costs average resident \$25/year.
  
- County using long-term revenue as collateral for bonds/loans to build 30 years' worth of transit in just 10 years: 12 key rapid transit projects
  
- 15% of revenue dedicated to municipality where collected
- 20% of revenue dedicated to county-wide bus service
- Annual independent audit and report to taxpayers

Learn more: <http://www.metro.net/projects/measurer/>

# A logical conclusion:

To grow economy  
we must grow the population.



To grow the population  
we must move more people around.



To move more people around  
we must create more mobility.



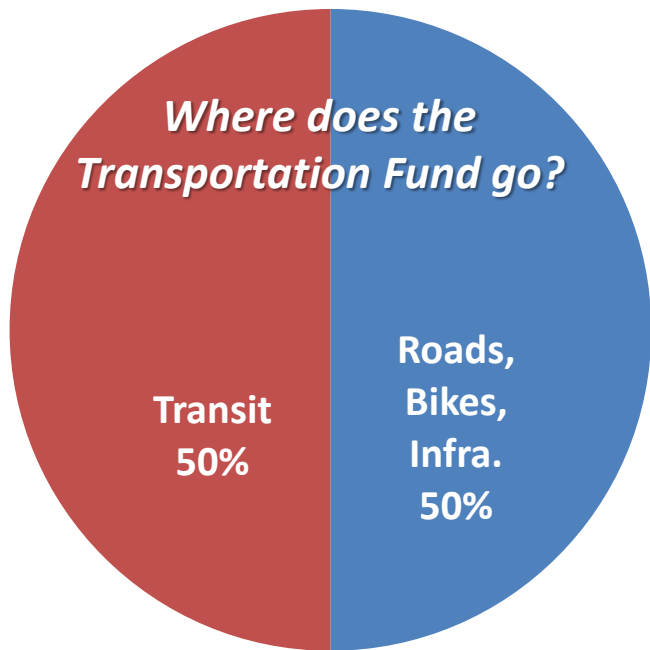
To create more mobility  
we must increase rapid transit.



To increase rapid transit  
we must pay for it.

# Idea: 1% Transportation Fund Tax

- Equivalent to an HST increase of 1% = at least \$1.5B/year
- “Transpo Fund” shown on receipts to tell residents where their taxes go
- Explained visually before implementation and on annual tax bill



# APPENDIX: WHAT IS LRT?

# What is LRT?

- Light Rail Transit uses electric vehicles in their own right-of-way to provide speed and capacity that are lower than subways, but much higher than buses and streetcars.
- Due to construction being mostly above-ground, LRT construction costs and timeframes are significantly lower than subways.



# Construction Impact Comparison



**Subway construction at Keele and Finch:  
Just one lane each way, for multiple years.**

- All underground station construction (LRT or subway) has a large impact on surface travel for multiple years
- Surface light rail has a smaller impact on surface travel by other vehicles during construction, and a small impact on other vehicles during operation.

# Vehicle Comparison (2012 fleet)



**Bus:** 10 metres, 50 riders



**Streetcar:** 15 metres, 75 riders



**Scarborough RT:** 50 metres, 220 riders  
(must be shut down in 2015)



**Sheppard subway:** 100 metres, 667 riders



**YUS / BD subway:** 150 m, 1000-1100 riders



# Vehicle Comparison (2016 fleet)



**Bus:** 10 metres, 50 riders



**Streetcar:** 15 metres, 75 riders



**New on-street LRV:** 30 metres, 130-250 riders  
(delivery 2013-2018)



**Sheppard subway:** 100 metres, 667 riders



**YUS / BD subway:** 150 m, 1000-1100 riders



# Vehicle Comparison (2020 fleet)



**Bus:**

10 metres, 50 riders



**New on-street LRV:**

30 metres, 130-250 riders



**3-vehicle LRT trains:**

90 metres, 390-750 riders



**Sheppard subway:**

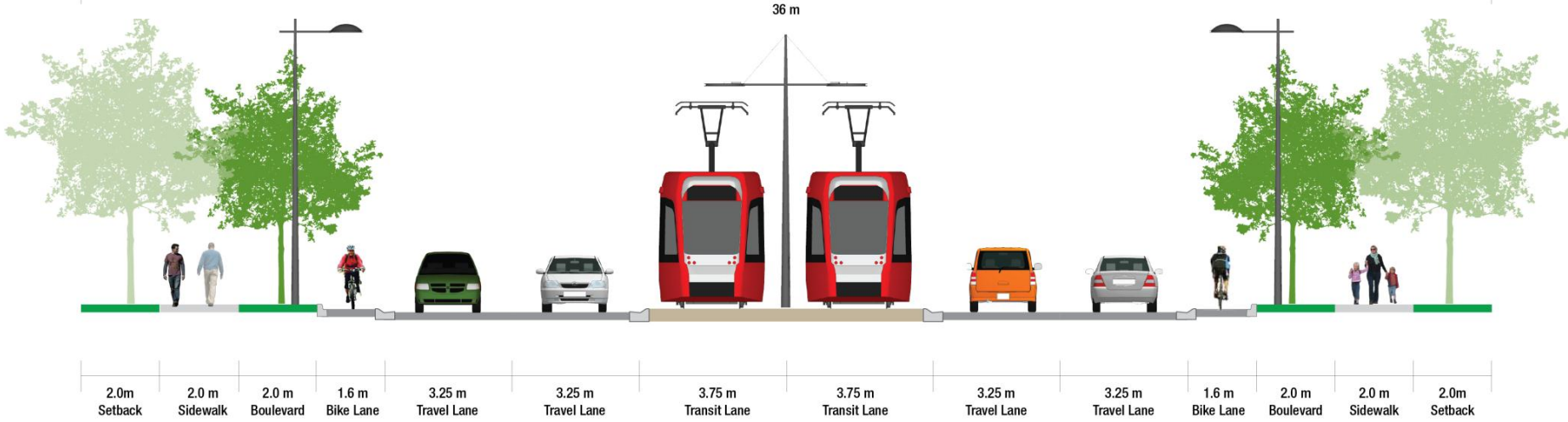
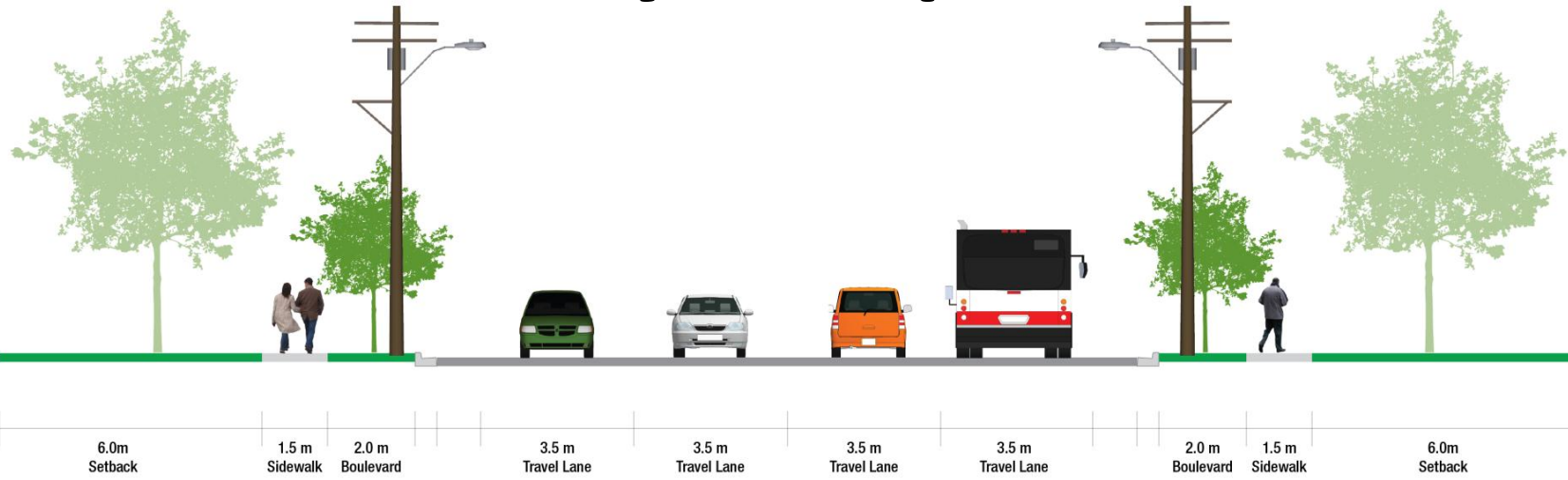
100 metres, 667 riders



**YUS / BD subway:**

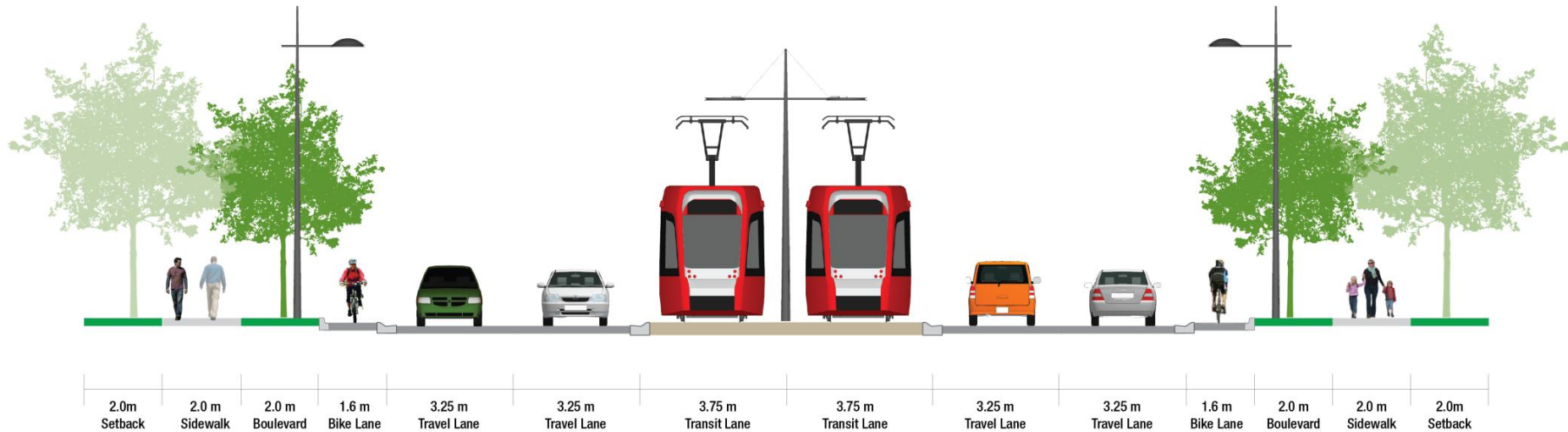
150 m, 1000-1100 riders

# Roadway Comparison



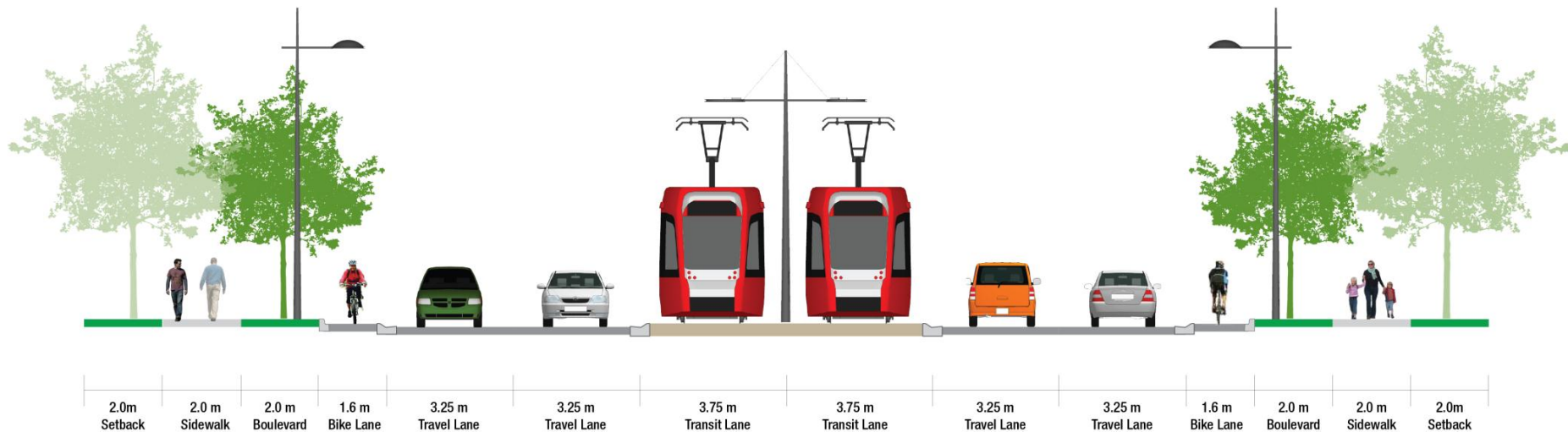
# Roadway Notes 1

- LRT travels in its own lane, not in front of or behind cars
- LRT crosses traffic at signalized intersections, but has traffic light priority (i.e. rarely stops at a red)
- Replaced buses removed entirely from mixed-traffic lanes



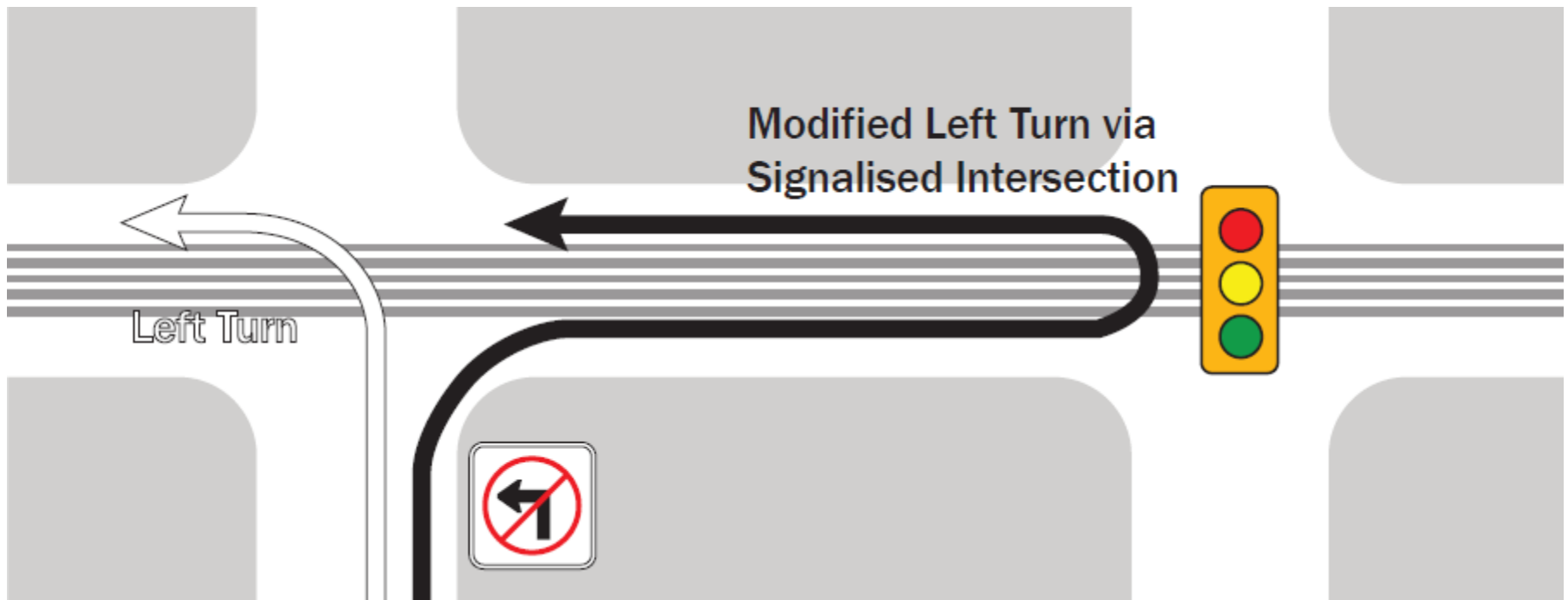
# Roadway Notes 2

- At least 4 mixed-traffic lanes will be maintained at all times. On some streets, roadway will shrink from 6 lanes to 4 + LRT from for small portion of rapid transit route. (e.g. just 10% of Sheppard East)
- Curb cuts are being evaluated, so emergency vehicles can access LRT lanes to skip traffic.



# How will I turn left?

- If no traffic light, you must turn right, then U-turn.
- Example: only about 15 of 55 streets on Sheppard East, plus business driveways, require this U-turn.



# Overall Travel Time Comparison

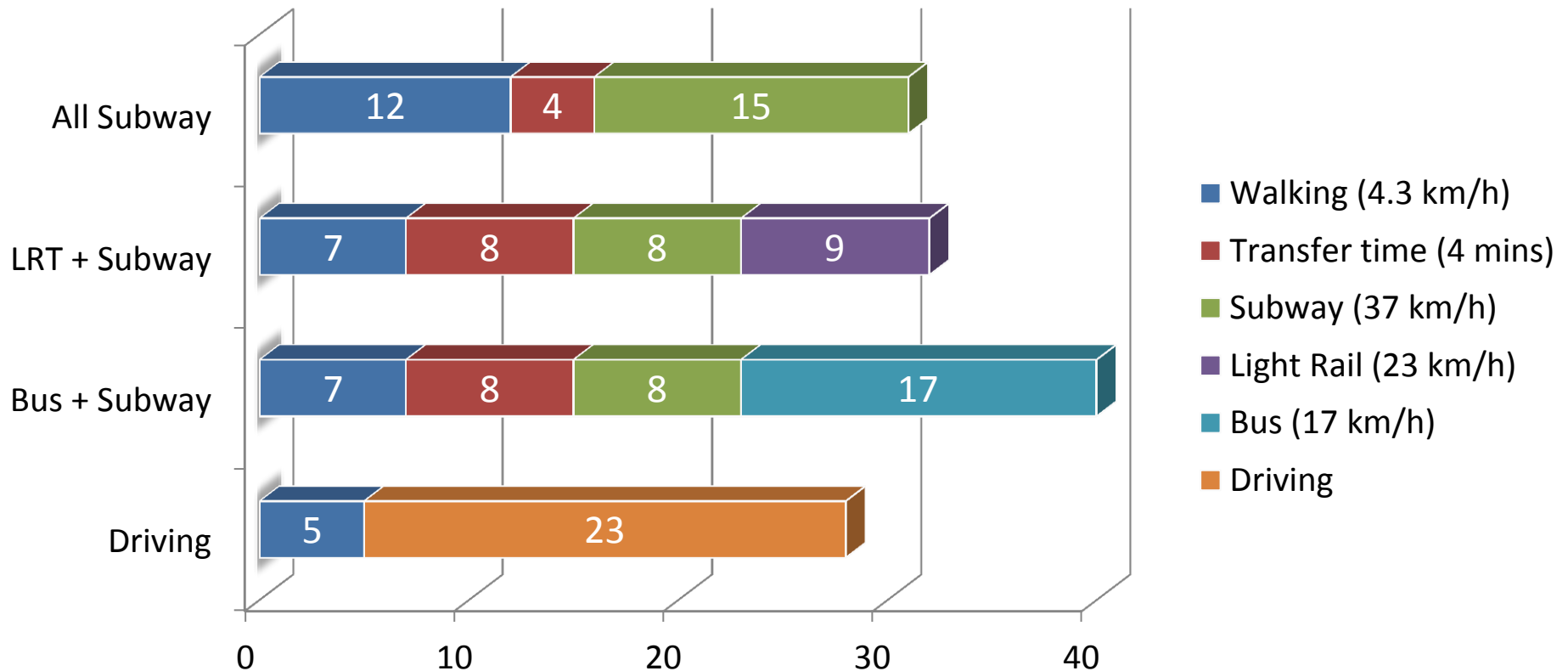
<u>Transit Mode:</u>	<u>Speed:</u>	<u>Stop spacing:</u>	<u>Walking time:</u>
Sheppard East bus	17 km/h	325 m	2:15
St. Clair streetcar	14 km/h	300 m	2:05
LRT (surface)	22-25 km/h	458 m	3:10
(underground)	30 km/h	833 m	5:45
Sheppard Subway (Yonge-Don Mills 5.5km)	35+ km/h	1.36 km	9:30

- “Stop spacing” is the average spacing in the approved Environmental Assessment design maps
- (Underground from Eglinton EA, surface from Sheppard EA, both still subject to change)
- “Walking time” =  $\frac{1}{2}$  average stop spacing x 1.2 metres per second walking speed

# Real Travel Time Example

(estimated using Google Maps and proposed travel times)

From apartment building 1 block from Sheppard & Kennedy, to Sheppard & Yonge by car, by bus + subway, by subway only, or by the planned LRT + subway, in rush hour.



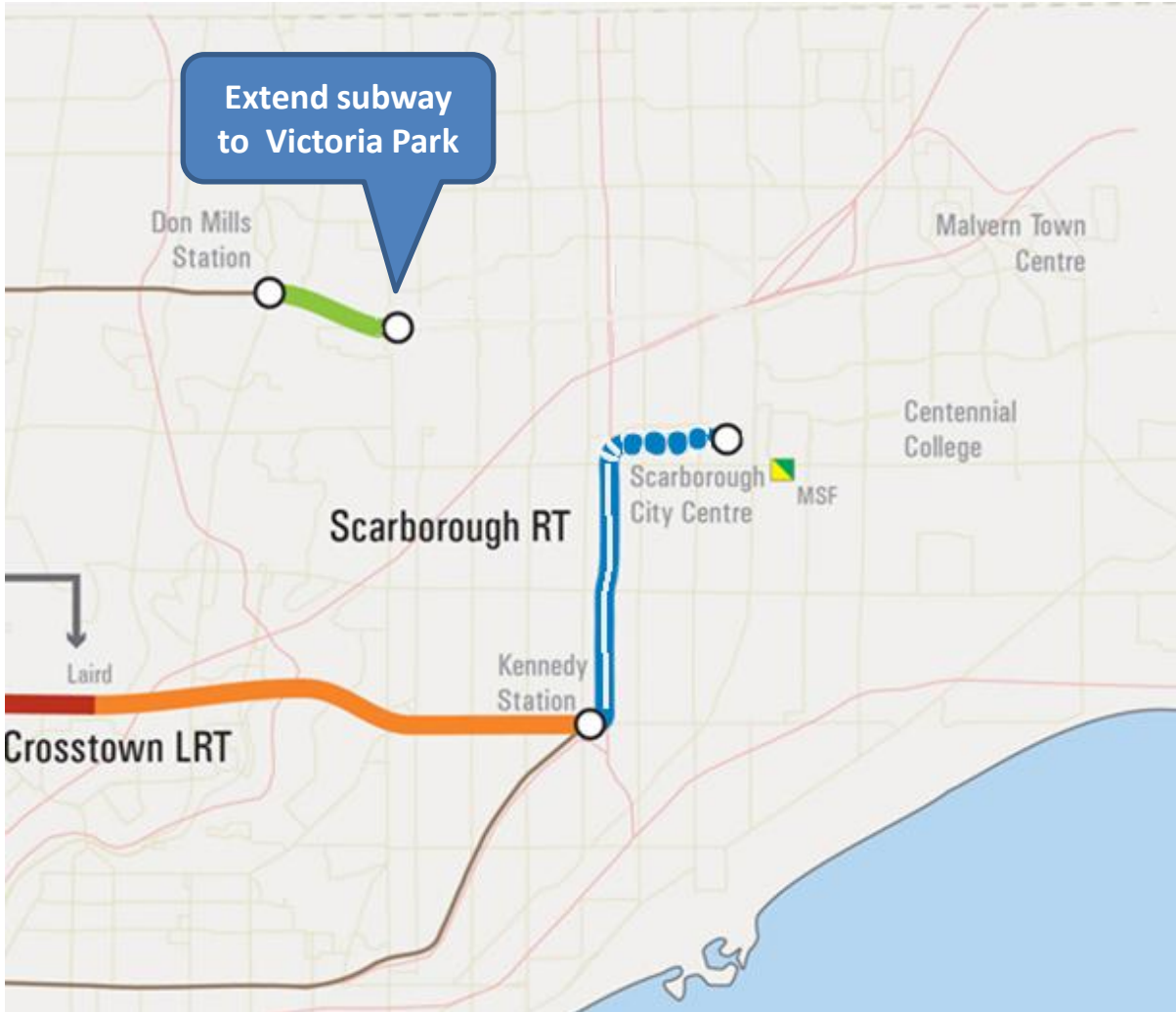
# Costs Comparison

Transit Mode	Construction Cost	Vehicle Cost	Road Space Required	Time Cost (from Council approval to opening)
Mixed-traffic bus	-	\$500K	Varies (mixed traffic)	-
BRT (bus RT)	\$40 M/km	\$500K	3-4 dedicated lanes (to allow buses to pass)	Roughly same as regular road reconstruction
LRT (surface)	\$85 M/km	Included	2 dedicated lanes (roads usually widened)	Sheppard East original schedule: 7 years for 12 km
LRT (underground)	\$130-225 M/km	Included	None (post- construction)	Eglinton Crosstown original schedule: 13 years for 25 km
Subway	\$250-350 M/km	\$18.2M	None (post- construction)	Spadina-York subway extension: 11 years for 8.6 km



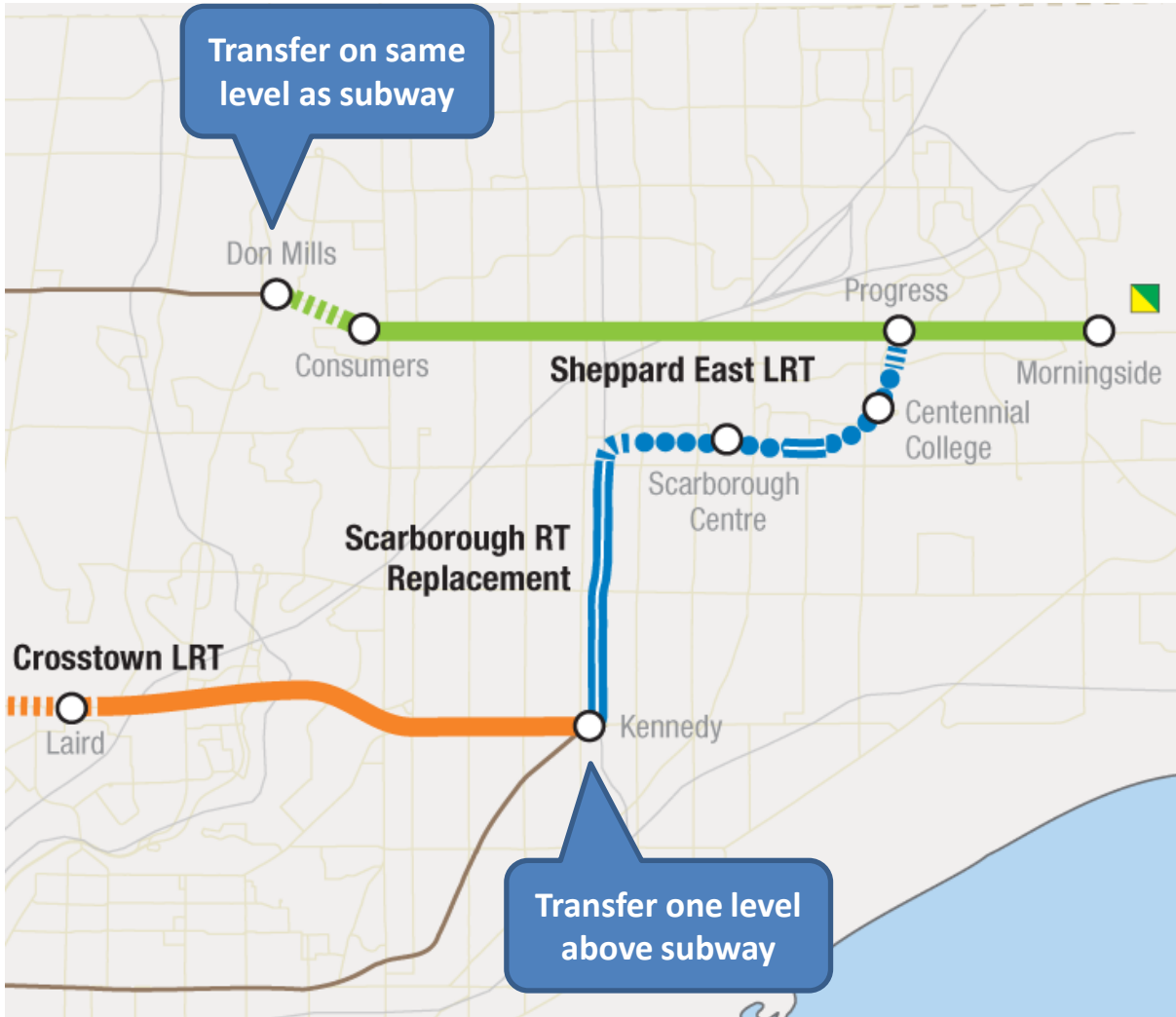
# **APPENDIX: WHAT IS BEING BUILT?**

# The rejected plan for Scarborough:



- 1.9 km: Subway extension on **Sheppard East** from **Don Mills to Victoria Park** (1 or 2 stations only)
- No extension from Scarborough Town Centre to Sheppard and Progress
- **Less new rapid transit in Scarborough**

# The approved plan for Scarborough:



- 12 km: New LRT on Sheppard East from Don Mills to Morningside
- 6.2 km: Replace aging Scarborough RT
- 3.4 km: New LRT from McCowan Station to Sheppard, partly elevated & partly underground
- 3.2 km: New LRT on Eglinton to Kennedy (full line is 19.5km)
- 24.8 km in Scarborough

# What is being built in Toronto?



# When will it be built?

- Delay from December 2010 to April 2012 due to Mayor's preference and lack of council vote caused schedule delays.
- Metrolinx has recommended new accelerated schedule to complete all lines by 2020, which Ontario government must confirm. (likely in Summer 2012)

Line:	Cost:	Planned Construction Dates:
Sheppard East LRT	\$1.0b	2014-2018
Etobicoke Finch West LRT	\$0.94b	2015-2019
Scarborough old RT □ LRT replacement and extension	\$1.8b	2015-2019
Eglinton-Crosstown LRT	\$5.0b	2010-2020

# **APPENDIX: COMMON TRANSIT TECHNOLOGY & ROUTING CONCERNS**

# Common Concerns

- **LRT is slower than subways**
  - **True**: subway averages 20-40 km/h, and the Sheppard above-ground LRT will average 22-25 km/h. However, LRT at surface requires less walking time (elevators/escalators/stairs, hallways).
- **LRT is slow like buses**
  - **False**: buses average 12-20 km/h depending on traffic congestion. Sheppard East LRT will be 30-50% faster than the 85A Sheppard East bus, but also more reliable & consistent during rush hours.
- **LRT is the same as a streetcar / trolley**
  - **False**: while the technology basics are the same, many elements are different. Exclusive right-of-way, larger stop spacing, all-door boarding, multi-vehicle trains, and traffic-skipping tunnels all increase their speed and capacity.

# Common Concerns

- **Will create more road congestion**
  - **False:** all roadways will maintain two or more traffic lanes in each direction, unimpeded by any transit vehicles, and all intersections will have signalized left turn signals.
- **LRTs have low capacity**
  - **False:** light rail vehicles carry the equivalent of 3-5 buses, and can be linked into trains carrying 390-750 riders.
- **LRT can't handle our winter weather**
  - **False:** the current downtown streetcar fleet can safely handle extreme winter weather, and rail transit modes also have greater stability than buses due to weight and rail connection.
  - Many cities much farther north than Toronto use surface LRT, such as Calgary, Edmonton, Minneapolis, Stockholm, and Zurich.



# Common Concerns

- **Same “disaster” as St. Clair streetcar**
  - Construction on St. Clair did suffer delays, legal disputes, project scope changes, and poor coordination between different city departments (hydro burial, water mains, and streetscaping)
  - The TTC was approximately on time & on budget according to its Chief General Manager in February 2012. Almost all the delays and added costs were caused by the other departments’ requirements and project scope changes.
  - The City has created a new coordination office to ensure construction coordination problems do not occur in future.
- **Which costs more to maintain?**
  - Subways require considerably more station infrastructure and staffing (attendants, cleaners, security, etc) compared to surface LRT. This means construction and ongoing labour costs are much higher.
  - 20 years ago, one study found subways cheaper to maintain, but more recent investigations have contradicted this.



# Future Rapid Transit Costs

**Other potential rapid transit expansion projects, with most recent cost estimates:**

- Pearson extension of Eglinton line (\$1b)
- Finch West extension to Yonge (\$0.5b)
- Downtown Relief Line East (\$3b) & West (\$2.9b)
- Yonge subway to Richmond Hill (\$3.1b)
- Don Mills LRT (\$1.8b)
- Jane LRT (\$1.5b)
- Scarborough-Malvern LRT (1.4b)
- Waterfront LRT (west) (\$0.5b)

Note: no committed funding exists yet for these projects.

# Appendix: Resources

St. Clair project review: <http://stevemunro.ca/?p=3191>

[www.ttc.ca](http://www.ttc.ca), <http://lrv.ttc.ca>, <http://spadina.ttc.ca>, [www.metrolinx.ca](http://www.metrolinx.ca), [www.thecrosstown.ca](http://www.thecrosstown.ca)

<http://www.urbanrail.net>, <http://lrt.daxack.ca>, <http://transit.toronto.on.ca>

Sheppard Expert Advisory Panel Report (March 2012): <http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/backgroundfile-45908.pdf>

Eglinton-Crosstown LRT EA and documentation: [http://www.toronto.ca/involved/projects/eglinton\\_crosstown\\_lrt](http://www.toronto.ca/involved/projects/eglinton_crosstown_lrt)

Sheppard East LRT EA and documentation: [http://www.toronto.ca/involved/projects/sheppard\\_east\\_lrt](http://www.toronto.ca/involved/projects/sheppard_east_lrt)

Finch West LRT EA and documentation: [http://www.toronto.ca/involved/projects/etobicoke\\_finch\\_w\\_lrt/](http://www.toronto.ca/involved/projects/etobicoke_finch_w_lrt/)

Scarborough LRT EA and documentation: [http://www.toronto.ca/involved/projects/scarborough\\_rapid\\_transit/index.htm](http://www.toronto.ca/involved/projects/scarborough_rapid_transit/index.htm)

Metrolinx Board Presentation (April 2012);

[http://www.metrolinx.com/en/docs/pdf/board\\_agenda/20120425/TorontoTransitPlan\\_BoardPresentation\\_25April2012.pdf](http://www.metrolinx.com/en/docs/pdf/board_agenda/20120425/TorontoTransitPlan_BoardPresentation_25April2012.pdf)

LRT Videos to see it in action: <http://www.youtube.com/watch?v=9k86lBV5824> and <http://www.streetfilms.org/phoenixs-metro-light-rail-takes-flight/>

Los Angeles “Measure R”: <http://www.metro.net/projects/measurer/>