



Capital Cost Escalation for Canadian Rail Transit Projects

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Summary

There has been an alarming escalation in capital costs -- well in excess of inflation so far in the 21st-century -- for construction of rail public transit projects in Canada and other anglophone countries such as the United States. It threatens Canada's ability to fund and construct additional transit infrastructure and/or meet other government priorities like housing or health care. Various studies, largely US-based, have pointed out some of the causal factors and potential remedies to mitigate this cost escalation. We recommend an investigation by the House of Commons TRAN committee on this pressing matter.

1. Introduction

Transit is a vital public service. It contributes to Canada's economic growth, provides social equity and reduces pollution and climate change.

In recent years, all levels of government in Canada, but especially the provincial and federal governments, have increased their spending on public transit. As an example, governments have committed more than \$80 billion for rapid transit projects in Greater Toronto since 2010, ranging from regional rail (GO Transit) projects, new subways and new Light Rail Transit/Bus Rapid Transit (LRT/BRT) lines¹. The federal government has committed more than \$15 billion to these projects² and has announced a Permanent Transit Fund that will contribute \$3 billion annually to projects starting in 2026.

It is in everyone's interest that this money be invested wisely. Unfortunately, there is solid evidence that capital costs are escalating rapidly, threatening how much public transit or other government priorities can be achieved.

¹ Metrolinx Staff Report "Capital Project Quarterly Report", September 8, 2022

² Transport Action Ontario, May 15, 2021 [Update on Federal Funding for GTA Transit Projects – Transport Action Ontario](#)

2. Rail Transit Capital Cost Escalation in Greater Toronto

In a ground-breaking 2020 report for the Residential and Civil Construction Alliance of Ontario (RCCAO)³, transit researcher and journalist Stephen Wickens tabulated the unit cost per km in **constant 2019 dollars** for 15 Greater Toronto rail rapid transit projects from 1954 to present day.

Figure 1: Toronto Transit Capital Cost History

Project	km	Stns	Stns/km	Cost	Open	In 2019 \$ [*]	2019 \$/km ^{**}
Yonge ^{***}	7.4	12	1.6	\$67M	(1954)	\$648M	\$87.6M
Uni-BD ^{***}	16.0	25	1.6	\$206M	(1966)	\$1.6B	\$100.0M
BD exts.	9.9	9	0.9	\$77.8M	(1968)	\$565.7M	\$57.1M
YSNE	8.0	4	0.5	\$140M	(1974)	\$751.8M	\$94.0M
Spadina ^{***}	10.0	8	0.8	\$220M	(1978)	\$833.8M	\$83.4M
Kip. + Ken.	4.3	2	0.47	\$127M	(1980)	\$402.6M	\$93.6M
Downsview	1.6	1	0.63	\$117M	(1996)	\$179.0M	\$111.9M
Sheppard	6.4	5	0.78	\$934M	(2002)	\$1.3B	\$203.1M
TYSSE	8.6	6	0.70	\$3.2B	(2017)	\$3.3B	\$383.7M
Xtown ^{***}	19.0	25	1.31	\$5.3B	n.a.	\$6.2B	\$326.3M
Finch W ^{***}	11.0	18	1.63	\$2.5B	n.a.	\$2.6B	\$236.4M
XtownW	9.2	7	0.76	\$4.7B [*]	n.a.	\$4.7B	\$510.9M
ON Line ^{***}	15.5	15	0.97	\$10.9B [*]	n.a.	\$10.9B	\$703.2M
SSE	7.6	3	0.39	\$5.5B [*]	n.a.	\$5.5B	\$723.7M
Yonge N	7.4	6	0.81	\$5.6B [*]	n.a.	\$5.6B	\$756.8M

Source: Taken from Station to Station report (April 2020), with updated figures for the Eglinton Crosstown West extension (September 2020).

Note that until about 1995, costs per km were relatively flat at about \$100M/km, in constant 2019 dollars. Since then, dramatic escalation has occurred, with costs approaching \$800M/km, even before the pandemic and supply-chain issues added costs and complications to project delivery. The problem is not only for largely underground subways – surface LRTs now cost as much as fully tunnelled subways 20 years ago.

The issues in Toronto also extend to smaller projects. The five new GO rail stations being built under the SmartTrack program are costing about \$300M each, roughly 5-10 times more than historical average. Toronto staff recently estimated the cost of adding another station (Cummer) on the Yonge North Subway Extension to be \$450M, well beyond the City's ability to pay⁴

Wickens identified several ways total costs can be reined in, including:

- Expand the cost-crisis conversation beyond the usual transit experts.
- Plan for and protect transit corridors.
- Standardize station design.

³ RCCAO, April 20, 2020. [RCCAO-STATION-TO-STATION-REPORT-APRIL2020.pdf](#)

⁴ Report to Toronto City Council, June 14, 2023. [Update on Metrolinx Subways Program – Second Quarter 2023 \(toronto.ca\)](#)

- Approve long-term transit plans based on evidence. Politicians should approve projects from a menu of options prepared by transit experts who are free to speak truth to power.
- Minimize the use of tunnels and keep tunnels as shallow as possible. Best practice is to build using shallow box tunnels and, in less dense areas, at-grade and above-grade corridors.
- Create tools and processes to ensure station-catchment areas deliver full return on investment.
- Examine effectiveness of current contracting models.

3. Rail Transit Cost Escalation Elsewhere in Canada

While definitive studies like that of Wickens are not available, there is plenty of anecdotal evidence that cost escalation extends all across Canada, well beyond the rate of inflation⁵:

- Montreal Blue Line extension (subway) is estimated at \$900M/km, more than five times the cost of the subway extension to Laval in 2002-2007 of \$150M/km (\$745M/5.2 km)
- Waterloo Region's ION LRT Phase 2 costs are anticipated at \$260M/km (\$4.5B/17 km), which is more than five times the \$50M/km cost of the constructed Phase 1 (\$900M/19 km).
- Calgary Green Line Phase 1 (LRT) is estimated at \$300M/km (\$5.5B/18 km), versus previous LRT extensions between 2008 and 2014 (Rocky Ridge, Saddle Ridge, Blue Line) which averaged \$130M/km (\$1740M/13km)
- Vancouver's Broadway extension project is estimated to cost \$500M/km (\$2830M/5.7km) which is more than five times higher than previous SkyTrain projects (Millennium Phase 1, Canada Line, Evergreen), which averaged under \$100M/km (\$4680M/49 km).

4. Rail Transit Costs – World Wide Comparison

There are at least two US studies that compare the costs of world-wide rail transit projects and draw conclusions. While both focus on the US, Canadian project data is included, and many learnings apply to Canada also.

4.1 On the Right Track: Rail Transit Project Delivery Around the World – Eno Center for Transportation (Washington, US)⁶

In 2022, this centre compared 132 completed rail transit projects in 10 countries, including 12 in Canada. It found the US suffers from disproportionate high costs and long build times compared with international peers. Canada was midpoint in both primarily tunnelled (\$400M Cdn/km) and at-grade (\$80M Cdn/km) projects (both in 2022 dollars).

Key recommendations included:

- Avoid political interference, with Toronto specifically cited as a problematic example.
- Most successful projects use traditional contracting methods.
- Develop expertise within public agencies.
- Streamline environmental assessments, with Ontario's Transit Project Assessment Process (TPAP) and its pre-construction streamlining process both cited as positive examples.

⁵ See reports in footnotes 6 and 7 for details

⁶ Eno Center for Transportation. [On-the-Right-Track.pdf \(enotrans.org\)](https://www.enotrans.org/On-the-Right-Track.pdf)

4.2 Transit Cost Project – New York University Marron Institute - Goldwyn, Levy, Ensari, Chitti

A larger study was conducted by researchers at the Marron Institute of NYU⁷. The team assembled information on 900 completed and in-progress rail transit projects from 59 countries, including 14 from Canada. The US was found to be an extremely high cost jurisdiction, despite having a low proportion of tunnelling. Therefore other physical, institutional and social factors must be at play. The study also identified similar issues in other anglosphere countries – UK, Australia, Canada, Singapore. Much of Western Europe (Scandinavia, Switzerland, Spain, Italy) had unit costs at least 50% below Canada.

To drill deeper, they focussed on two higher cost jurisdictions – Boston and New York – and compared them with numerous lower- and medium-cost areas, including Toronto. Key factors and recommendations included:

- Politics are always a factor in decision making, but must avoid political micromanagement, eg route or construction methods.
- Need strong civil service capability to direct consultants and conduct oversight of procurement and delivery. Avoid consultants directing consultants.
- Procurement model is vital – do not privatize risks as it leads to higher costs; permit flexible design to allow changes; itemize project costs and make contract details transparently available to public to allow comparisons and facilitating change orders; and lastly, optimize project to minimize absolute costs rather than minimizing cost overrun (drives excessive contingency, which always gets spent).
- Utility and agency coordination needed. Set clear expectations.
- Use cost-effective design – standardization eg elevators, ventilation; stations as shallow as possible; minimize tunnelling; right-size stations.

5. Conclusions/Next Steps

Public transit is vital for Canada. The studies above show Canada has a problem with cost escalation. If we could build rapid transit at Western Europe costs, our dollars would go 50% further, opening up funding for more transit, High Frequency Rail or VIA's long distance fleet renewal.

The studies raise many questions for rail transit projects in Canada:

- Are the right projects being selected?
- Can we minimize deep tunnelling, despite pressure from residents and local politicians?
- How can we redevelop civil service expertise and capability?
- Can we increase transparency in contracts?
- How can risk be allocated between owner and contractor to avoid huge contingencies and litigation?
- Does the P3 contract approach need to be modified, especially in light of issues with Ottawa Confederation Line and Toronto Eglinton Crosstown projects?
- How has the performance of “revised P3 contracts”, such as Alliance, Progressive or Co-Development P3s, recently used on several large Canadian transit projects, worked out?

The first step is for Canada to admit it has a cost escalation problem. Step 2 is a study to identify Canadian factors affecting project costs. We urge the House of Commons TRAN committee to initiate such a study.

⁷ NYU Marron Institute. [TCP_Executive_Summary.pdf \(transitcosts.com\)](https://www.transitcosts.com/TCP_Executive_Summary.pdf)