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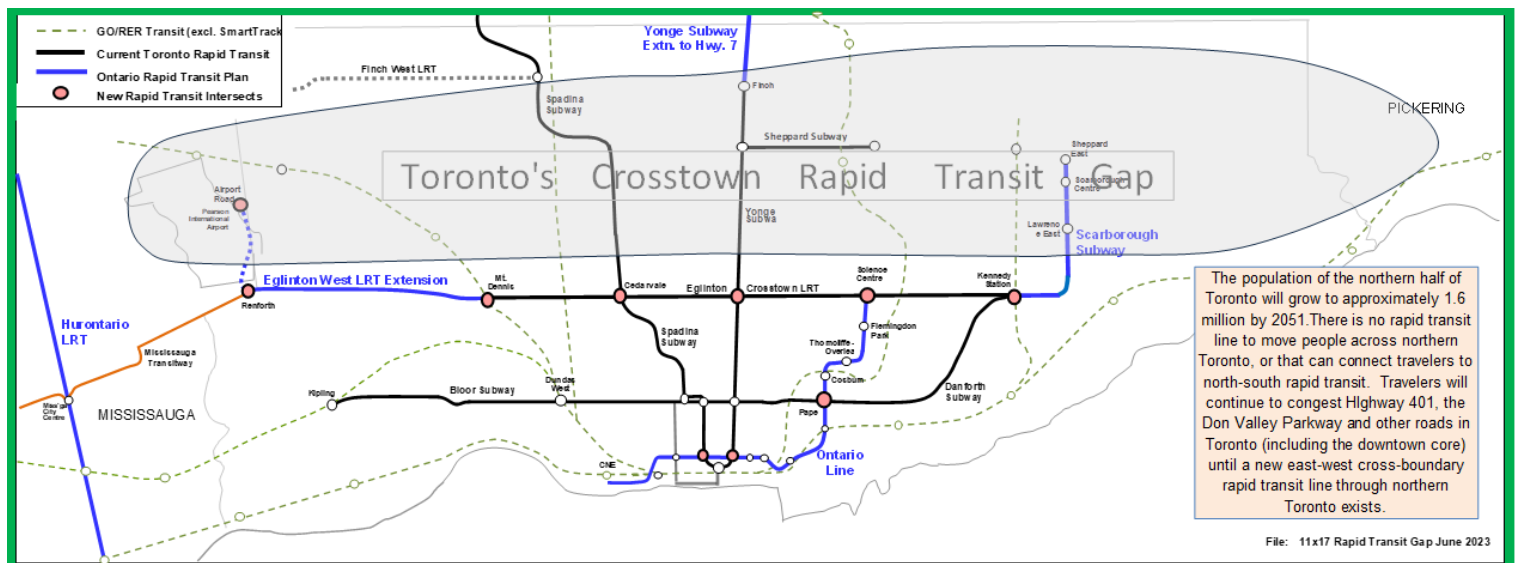
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The 401RT Express: Rescuing Transportation in Toronto

By 2051, a million more people will call Toronto home, and many thousands more will commute into the city from neighbouring municipalities. This magnitude of growth will offset the expected transit ridership growth of current public transit expansions and other rapid transit initiatives identified in the Ontario Government's Greater Golden Horseshoe Transportation Plan for Toronto. ^{Fig.1}

The path to achieving a sustainable transportation system in Toronto must recognize that **downtown Toronto's traffic problems originate in the suburbs**, including in the northern half of Toronto, where 1.3 million residents and 400,000 jobs today will increase by 30% or more by 2051. Until there is an alternative to driving across northern Toronto or to/from northern Toronto that is practical for travellers, congestion on Highway 401, the Don Valley Parkway, the Gardiner Expressway, and many other roads will worsen. The number of cars and trucks that use Highway 401 between Mavis Road and Liverpool Road – 1.8 million daily – will increase to the point of gridlock for long period each day. That must not be allowed to happen.

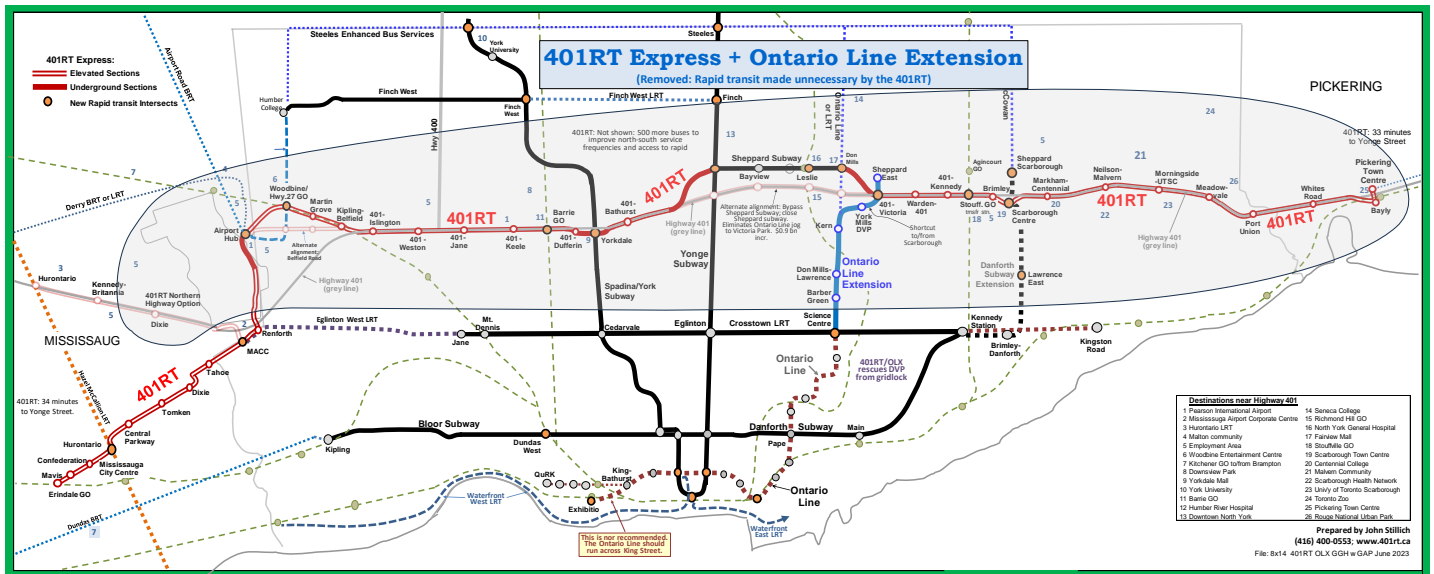
The enormous rapid transit gap across northern Toronto must be resolved.



The most significant public transit infrastructure element preventing major modal shifts to public transit in Toronto is the absence of a singular east-west inter-municipal rapid transit line through the underserved northern half of Toronto that can take people across the region and can connect them to rapid transit to take them to the downtown core.

The rapid transit line illustrated below – the 401RT Express – is a full-scale rapid transit line with 39 stations that extends 67 kilometres from Pickering Town Centre through northern Toronto to Pearson International Airport and to Mississauga's City Centre area. **Without it, or something similar, there is no hope – none – of achieving levels of reductions in the use of automobiles necessary to reduce or end road traffic congestion by 2051, or to approach zero GHG emissions.** ^{Note 2} The 401RT would connect to at least ten north-south rapid transit lines and 100+ municipal bus routes. Its impacts would transform transportation in the core of the Toronto area and increase quality of life significantly. The 401RT Express would ease the financial burdens of many thousands of

householders struggling with costs of a second or third car. While a car costs between \$10,000 to \$20,000 per year, a TTC transit pass costs just \$1,900 per year.



The 401RT will generate 181 million new transit trips per year by 2051, plus 16 million trips on GO Transit. The combination of its length, seamlessness, comfort, speed, connectivity, and high visibility will make it work. Ridership estimates for the 401RT are based on a trip origin-destination matrix analysis (45m), estimates of new urban development at/near 401RT stations (16m), effects of GO Rail intersects (32m), congestion-induced modal shifts after 2041 (39m), exceptional modal shifts re traffic to/from Pearson International Airport (9m), the effect of approximately 600 new buses on intersecting surface bus routes (44m), and affordability and other factors (11m).

Key destinations directly served by the 401RT would be Pickering Town Centre, Scarborough City Centre, the Line 1 subway and the Ontario Line, Yorkdale, Pearson International Airport and its surrounding employment area, and the Mississauga City Centre area. Private shuttle buses shared by employers can deliver employees to and from locations not served by municipal bus routes.



The 401RT would require a 7-kilometre Ontario Line Extension (OLX) from Eglinton Avenue East to the 401RT and Sheppard Avenue East. The OLX is essential if the 401RT is to avoid overloading the Yonge Street subway. Partly elevated, it would cost approximately \$3.8 billion to build, and generate ten million new transit trips per year by 2051.

The 401RT is proposed to be mostly elevated above ground – 55 kilometres, mostly over the Highway 401 corridor – and 12 kilometres tunneled, including the 5-kilometre Sheppard Subway. It would cost a maximum of \$24 billion to build, including rolling stock and maintenance yards, not including several significant expenditure offsets.

As an option, the 401RT can bypass the Sheppard Subway entirely, and remain aligned in the Highway 401 corridor. In this scenario, the Sheppard subway would be closed and replaced by buses providing seamless services from Port Union Road to Weston Road. In the West, a secondary 401RT route above Highway 401 from the Mississauga Airport Corporate Centre to Hurontario Street can be a future consideration.

The 401RT would render some currently planned rapid transit initiatives operationally non-viable – most of the Eglinton East LRT extension, the Eglinton West LRT extension Renforth to Pearson, the Sheppard Subway extension to McCowan, the Finch West LRT extension to Pearson, the Jane LRT and the Finch West LRT extension to Pearson.^{Note 3} Not building these would avoid an unnecessary cost commitment of \$13.3 billion. Altogether, the

401RT+OLX would be almost six times as cost-effective as the five initiatives, based on new transit trips generated. These impacts are critical and should not be overlooked.

The 401RT/OLX would generate major financial, social, environmental and congestion benefits for households and the region overall. A full list of more than 50 benefits is available at www.401rt.ca.

Given the rapidity of growth and road congestion in the Toronto area, the construction of the 401RT should begin as soon as current rapid transit projects begin to wind down – perhaps by 2028, with advance planning beginning as soon as possible. 401RT construction can be phased to focus on key segments (for example, Yorkdale to Pearson). Because almost all of the 401RT would be elevated over transportation rights-of-way, it is faster and easier to build than current rapid transit projects under construction.

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Comparative Cost Effectiveness	Gross Cost (\$m)	New trips /yr 2051	Cost per New Trip
401RT + OLX	27,400	207.6	\$132
Unneeded Rapid Transit*	-13,300	17.7	\$750
OLX already in GGHTP	-3,800	incl. above	
Net Additional Investment	10,300	225.3	\$46
401RT/OLX Cost Effectiveness Advantage 5.7			

* Eglinton W LRT Phase 2, most of Eglinton E LRT, Sheppard E Subway extn, Jane LRT, Finch W LRT to Pearson. Excludes minor adjustments for increases in active transportation.

Updated Sept 1 2023

Figure 1:	Millions per Yr.
Estimated Increase in trips per year by Auto+Truck in Toronto by 2051*	417.0
Less approximate GGH Transportation Plan increases in transit trips per year to 2051 (funded and unfunded):	
GO Transit Enhancements (net; to 200m)	172.5
Eglinton Crosstown LRT	16.0
Finch West LRT Humber College to Finch W subway stn.	5.9
Finch West LRT extension to Yonge	2.8
Finch West LRT Humber Coll. to Pearson	1.0
Ontario Line Eglinton East to CNE	49.6
Eglinton West LRT Mt. Dennis to Renforth	3.7
Eglinton West LRT Renforth to Pearson	2.2
3-Stop Scarborough Subway to Sheppard East	11.6
Yonge subway extension to Richmond Hill	3.7
Eglinton East LRT to Malvern to McCowan Rd.	4.0
Ontario Line Extension to Sheppard East	9.9
Ontario Line - Sheppard East to Richmond Hill Hub	4.6
Sheppard Subway extension to McCowan	7.7
Jane Street LRT	4.5
Waterfront West LRT	5.5
Waterfront East LRT	1.8
Steeles Avenue LRT - Pioneer Vill. To SheppE@McCowa	7.9
Scarborough-Durham BRT (Toronto impact)	0.9
Dundas BRT - Kipling to West Mall	4.7
	320.5
Net increase in Toronto road traffic by 2051	96.5
Daily equivalent	31,341
*Adjusted for increases in active transportation and work-from-home office employment. Figures are not official.	

Note 2: A zero-GHG transportation system can only be achieved by urban design that increases active transportation and the use of public transportation for most trips. Electricity-powered vehicles cannot reduce GHGs significantly until all power sources for their production and use are from zero-GHG sources. EVs will continue to congest roadways.

Note 3:

1. The \$4.4 billion Eglinton East LRT to Malvern, less a useful \$1.1 bn extension of the LRT to Kingston Road. Access to Malvern and the University of Toronto Scarborough Campus is faster for many travelers via the 401RT than the LRT.
2. The \$4.8 billion Sheppard Subway extension to McCowan Road, which would run closely parallel to the 401RT.
3. The \$2.6 billion Jane Street LRT. The 401RT, Finch West LRT, and Eglinton LRT (extended to Jane) would offload many longer-distance trips from Jane buses.
4. The \$2.0 billion Eglinton West LRT Renforth to Pearson. The Line 1 subway and 401RT combination would deliver most downtown trips to Pearson as fast as the Eglinton West LRT and provide direct transit trips to Pearson from northern Toronto.
5. The \$1.2 billion Finch West LRT extension to Pearson; it will not have enough ridership to justify it.

401RT Express + OLX

	Gross Infra. Cost (\$Mil)	New Trips (Millions/yr)	Kms. Of Track	Cost per New Trip	\$m Cost per km.
401RT: Pickering Town Centre. to Erindale GO (Mississauga) -- Elevated : increase in GO Ridership	23,600	181.7 16.0	62.2	\$130	\$379
Ontario Line Extn. (OLX) to Sheppard East	3,800	9.9	7.1	\$384	\$535
Total Recommended Infrastructure	27,400	207.6	69.3	\$132	\$395
Less potential infrastructure cost avoidances:*					
Eglinton East LRT (full length)	4,400	4.0	29.9	\$1,095	\$147
Eglinton E LRT to Kingston Rd. (build)	-1,700	-1.8	4.5	\$919	-\$378
Eglinton W LRT - Renforth to Pearson	2,000	2.3	4.7	\$889	\$426
Sheppard East Subway to McCowan	4,800	7.8	7.2	\$612	\$667
Jane Street LRT - Bloor to Hwy 7	2,600	4.5	16.5	\$580	\$158
Finch W LRT - Finch/27 to Pearson	1,200	1.0	7.0	\$1,200	\$171
Total Cost Avoidances	13,300	17.7	69.8	\$750	\$191
Subtotal - Net for 401RT/OLX	14,100	189.8	69.3	\$74	\$203
Ontario Line extension to Sheppard East - already in GGH Plan	3,800				
Potential Net 401RT/OLX Investment	10,300	189.8	69.3	\$54	\$149

* The 401RT draws ridership from these higher-order transit routes, rendering them operationally non-viable. Overall, these trips are not lost; they would be served by existing bus services.

The 401RT Express and Ontario Line Extension (With Redundent Rapid Transit Lines Removed)

200 million new transit trips per year by 2051. Highest cost-effectiveness. Elevated and aligned to avoid NIMBY. Far more de-congestive than current plans. Rescues Highway 401 and the Don Valley Parkway from gridlock.

