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Rapid Transit Rescue For Toronto



Photo from Canadian Dimension, Article by Nick Grover

Every day, close to 1.4 million people use Highway 401 in the core of the Greater Toronto Area, from Mississauga to Pickering. The flow of cars and trucks is slowing down in ever-longer peak periods, and it's not going to get better. Thousands of people get caught in the massive gridlock on Highway 401 between Dixie Road in Mississauga and Highway 400. It's brutal and hellish, not only for the average commuter, but also for enormous numbers of trucks. Even now during peak periods, there is barely room for more traffic.

Population growth over the next thirty years – a million more people in Toronto alone – means that Highway 401 in Toronto will become nonfunctional for much of every day. That must not happen. The highway needs a relief valve to ensure that essential traffic moves efficiently across the region.

Many of the daily commuters who are slogging through it dream for another way to get to where they want to go. It now costs them \$11,000 and more per year to buy and operate a used car, and \$16,000 and more per year for a new car. It's essentially a massive hidden road toll that cuts deeply into the budgets of moderately income households, preventing them from investing in other household priorities.

Personal relationships are affected, too. Family gatherings, softball games, special events and much more are falling victim to the city's gridlock – people just can't get from here to there in reasonable time.

The Ontario government is rushing to build new rapid transit lines to try to keep things moving in Toronto. The Finch West and Eglinton LRTs will be completed soon, and other projects – the Ontario Line, extensions of the Line 1 and Line 2 subways, and more GO Transit – are underway. Beyond 2030, nine more rail rapid transit expansions and bus rapid transit are planned for Toronto.

But will rapid transit expansions keep pace with travel demand growth? If everything in the GGHTP for Toronto is implemented, and improvements to the Toronto Transit Commission's existing services inch forward, it looks like it might – sort of, maybe. One reason it's uncertain is because about half of forecasted boardings on new rapid transit system expansions will be current transit users rather than new transit users.

Offsetting demand for travel by automobile also needs to include good municipal growth planning focused on increasing population and employment densities that boost transit ridership growth, and planning for walking and bicycling as modes of travel.

Will it be enough just to keep pace?

But just keeping pace with congestion and its impacts won't do. Few people will be happy if all that can be said in 2051 will be "Well, at least it hasn't gotten much worse". That would mean unending road congestion and failure in the war on the climate crisis. Is that what Torontonians want to give our kids and grandkids?

True progress requires that the number of kilometres traveled by motor vehicle plunges from today's volumes. It means that fewer and shorter trips will need to be taken by fewer cars. In general, that is not happening.

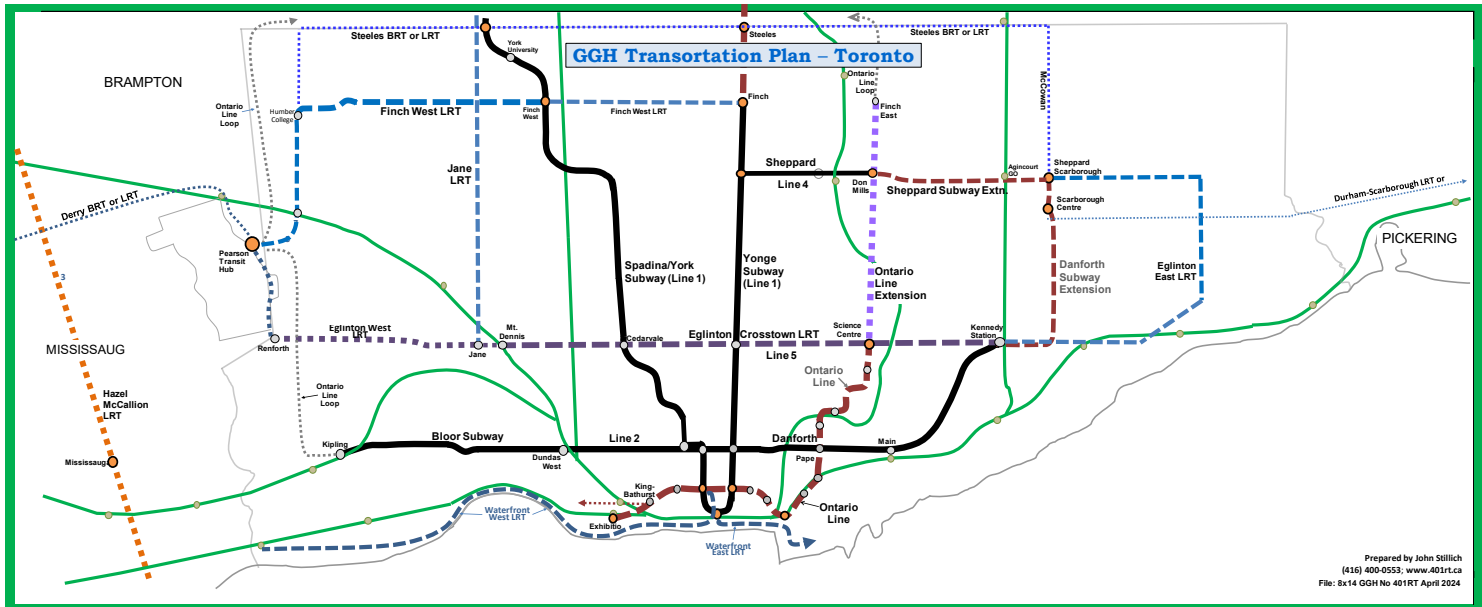
Toronto's Northern Rapid Transit Gap

The crux of Toronto's road congestion and Highway 401's slow crawl to death by strangulation lies in the dismal planning for rapid transit in the northern half of Toronto. The Toronto portion of the GGHTP is mostly a collection of scattered pieces that have been around for decades, without anything that can enable rapid travel across the whole of the northern half of the city, or to connect to north-south rapid transit. It is why people drive into the downtown core, clogging the Don Valley Parkway and other arteries across the city.

It is assumed that traffic on Highway 401 will continue to increase as the Toronto region's population continues to increase rapidly. That is why the GGH Transportation Plan includes a stated policy to add road capacity to Highway 401, rather than providing a rapid transit alternative to driving across the city. This has been actualized by the Premier of Ontario, who has announced a study to determine whether a new highway tunnel of at least two lanes in each direction under Highway 401 will be feasible or affordable.

2051 Rapid Transit Scenario (Figures in Millions)		Approx. Cost to Build	Approx. New Transit Trips per Yr.
Finch W LRT to Humber Coll		2,500	6.4
Eglinton LRT Mt.Dennis to Kennedy		12,800	19.0
Eglinton W LRT to Renforth		4,700	9.0
Ontario Line - Exhibition to Eglinton		14,000	72.4
Yonge SbwY extn to Richmond Hill		5,600	11.4
Scarborough SbwY to Sheppard E		5,500	13.9
GO Transit 2051		1,600	21.5
		46,700	153.5
Other Rapid Transit initiatives:			
Eglinton East LRT to UTSC& Malvern		4,650	11.0
Sheppard Subway to McCowan		4,800	6.5
Eglinton LRT Renforth to Pearson		1,200	3.9
Finch W LRT extension to Yonge		1,900	5.7
Finch W LRT extension to Pearson		1,200	1.1
Jane Street LRT		2,600	8.0
Ontario Line extn to Finch		6,900	19.5
Waterfront West LRT		1,900	13.7
Waterfront East LRT		900	2.4
Go Transit Enhancements		11,900	118.0
Varous BRT Routes		16,500	21.2
		54,450	210.9

The tunnel plan will not work. It would require massive property acquisitions for on and off ramps and may cost \$1.5 billion per kilometre to build – between \$70 billion and \$120 billion to construct, depending on length. Multi-year disruptions on Highway 401 would be created during its construction, including massive removals of earth. It may be that by the time the tunneled highway is complete, it will be filled, and the number of motor vehicle trips on municipal roads going to and coming off the highway will have increased, by approximately 33%. Highway 401 itself will already have been rendered gridlocked and non-functional.



High-occupancy lanes on Highway 401 for buses have been suggested as an alternative solution, but hundreds of buses would be required to make a dent in traffic volumes. Moreover, the costs and complexities of managing scores of new bus routes will be daunting for transit operators and for travelers.

What do Torontonians want? Do they want more highway lanes, or do they just want – somehow – less traffic congestion, not only on the 401, but everywhere?

The only east-west rapid transit lines that exist north of Eglinton Avenue are the Finch West LRT – which will be too slow and too remote to make a noticeable difference in Toronto's traffic volumes even if extended to Yonge Street and to Pearson – and the five kilometre long Sheppard Subway. Even if the Sheppard subway's planned extension to McCowan Road happens, it will be only 13 kilometres long. Toronto is 40 kilometres wide. It will not likely attract the number of new transit trips to make it worthwhile.

For example, getting from Scarborough's Neilson Road at Ellesmere Road (near a hospital) to Pearson International Airport by public transit will continue to be a struggle. It would mean a bus trip to Sheppard Avenue, a wait, another bus to the Sheppard subway at McCowan Road, another wait, the subway ride to Yonge Street, a wait for the Yonge subway, a ride to Finch Station, a wait for the Finch West LRT, and a trip on the Finch West LRT past Humber College to the airport. Altogether, almost a two-hour trip. The Eglinton LRT, geographically in the southern half of Toronto, won't be of much help.

The only sensible way to travel will seem to be to drive to Pearson on Highways 401 and 409; however, the 401 will also be congested for most of the day, and be gridlocked during peak periods.

Parking lots across the northern half of the city will remain full. The downtown core will continue to be congested with cars from Toronto's northern suburbs. As air travel continues to increase, Pearson's

expanded parking lots and garages will be full, despite light rail transit extensions from Finch and Eglinton Avenues. The Don Valley Parkway and other roads will remain clogged for most of the day, even with the Ontario Line nearby. And too many households will have to bear the burdensome costs of owning and operating personal automobiles, often one for every adult in the home.

Filling the Rapid Transit Gap

While the Province implements its existing rapid transit expansion plans, it also needs short term solutions that will help municipalities expand their transit services to attract more transit users. **A short term solution** can take the form of a \$2 billion (or more) in new capital grants for the purchase of municipal buses and for local transit infrastructure. It also means bringing back the long-lost 50% provincial subsidy for all municipal transit operating deficits. Those initiatives invigorate transit services and transit use by travelers. They will enable more frequent bus services, new express bus services, new community bus services and industrial shuttles, experimental autonomous vehicle services, transit shelters at all stops, and more. In various ways, that will encourage transit ridership that reduces motor vehicle traffic on local roads, including the congestion caused by cars coming off Highway 401 and other highways.

The Premier hinted at the long term solution to looming gridlock on Highway 401 when he suggested adding space for rapid transit to his highway tunnel vision. This is a significant consideration because there is currently no transit initiative in the Ministry of Transportation's Greater Golden Horseshoe Transportation Plan that will have a meaningful congestion-reducing effect on Highway 401 through Toronto.

That needs to be fixed. The most effective solution is a seamless rapid transit line that extends from Pickering through the northern half of Toronto and deep into Mississauga – one that is fast and comfortable enough to compete directly with driving across Toronto on Highway 401, and that provides easy connections to both legs of the Line 1 subway, an Ontario Line that's extended north of Eglinton East, the Line 2 Subway extension to Scarborough Centre, any of six GO Transit rail lines, Pearson airport and its massive surrounding employment area, and to myriad other destinations and a hundred bus connections along the way.

Rather than tunneling this rapid transit line, the most cost-effective alignment for this **"401RT Express"** would be one that is elevated above and adjacent to Highway 401's eastbound collector lanes, from Liverpool Road in Pickering to Highway 401 at Derry Road in Mississauga, where it is close to Brampton.

However, the alignment along the 401 bypasses several highly significant destinations, including Pearson International Airport and its surrounding employment area, and downtown Mississauga.

That can be resolved. Westward from its Islington/401 station, the 401RT Express is envisaged to include a seamless branch line off the Highway 401 corridor alignment, from Islington Avenue to Pearson International Airport and its employment area, and southward from there to a junction of Highway 401, Eglinton Avenue, the Eglinton West LRT, and the Mississauga Transitway. From there it would continue above existing transportation corridors to Mississauga's downtown core, and terminate at the Erindale GO Station. 401RT users traveling westward from anywhere east of Islington



Avenue can choose to board a train that continues along Highway 401 to Derry Road, or to board a train that travels to Pearson and to Mississauga's downtown core. No transfers would be needed.

Illustrations of the 401RT Express alignments can be accessed at www.401rt.ca.

Locating the 401RT Express (or just 401RT) above existing corridors means that property acquisition costs or neighbourhood disruptions would be minimal. 75% of the lands bordering the highway are non-residential. Careful separation of the 401RT from the closest residential lands bordering the highway should minimize NIMBY (Not-In-My-Backyard) reactions. Most stations along Highway 401 would be above the on- and off-ramps along the highway's south edge.

Elevating the 401RT also means it can be built faster than tunneling, and at less than the per-kilometre cost of the highway tunnel. Rail beds would be supported by dual pillars. Speed of construction can be maximized by multiple fully dedicated construction teams working simultaneously at several locations along the 401RT Express (e.g., one between Yonge and Pearson, another east of Derry Road, etc.) and modular construction of rail beds where possible.

Commuter parking would be possible at numerous locations. At Erindale GO Station and at the Pickering Town Centre stations, existing ground-level lots can be replaced by with new multi-level garages. Along 401RT Express segments running in the Highway 401 corridor, commuter parking garages are possible at several locations. At Pickering Town Centre, some land would need to be acquired from retailers. Elevated parking garages can be constructed at several 401RT Express stations, and are also possible at the base of Highways 400 and 404 to enable commuters from the North to transfer to the 401RT Express. Maintenance yards can be constructed over Highway 401 east of Jane Street, east of Dixie Road, and at Kennedy Road in Scarborough, and above Eastgate Parkway.

Operating speeds can entice many people out of their cars and onto transit. For example, the 401RT Express will get travelers from its Yonge Street station to Pearson International Airport in about 26 minutes. End-to-end travel time from Pickering to Erindale GO station could be 80 minutes. These times reflect an average 85 kilometre per hour cruising speed between stations.

Travel time for the arduous trip example between Neilson Road and Pearson airport would be cut in half, from 110 minutes to just 56 minutes. That kind of change would have a transformative effect – Scarborough and Etobicoke would be reachable and feel closer together, particularly for people who cannot or do not drive automobiles. End-to-end trip time can be reduced by eliminating some stations stops.

With a 401RT operational, many travelers flying out of Pearson International Airport can leave their cars at home instead of fighting traffic and paying for airport parking. Friends and families won't need to drive them to or from the airport.

Highly importantly, the 401RT Express would have enough capacity to offset all non-commercial traffic growth on Highway 401 for many decades after it becomes operational. The perceived need to add road capacity to any part of Highway 401 would end.

shifts from driving to the 401RT Express will occur because travel on Highway 401 and on alternative local roads will be significantly slower than traveling on the 401RT Express for the east-west segment of most trips. In effect, commuters will have little or no choice but to use the 401RT Express if they need to travel. Numerous other ridership effects arising from the 401RT Express will occur by 2051:

- GO Transit's six intersects with the 401RT Express will generate approximately 27 million new GO Transit trips and 24 million new 401RT Express trips.
- The Islington-to-Pearson-to-Erindale GO branch of the 401RT Express will generate additional trips to and from downtown Mississauga, the Mississauga Airport Corporate Centre, and other points;
- The transit modal share of trips to and from Pearson International Airport and its adjacent employment area will be much higher than is currently the case;
- Additional buses on north-south routes intersecting with the 401RT Express will attract new transit users whose destinations are not the 401RT Express; an estimate is 52 million new trips / year by 2051;
- Some urban development in the form of high density housing and office uses at and near the 401RT Express will have a higher than average transit modal share;
- High costs of automobile ownership and use, and other economic effects, will accelerate the shift of trips to the 401RT Express.
- The growth in truck movements will contribute to the shift to transit for commuters.

Without the 401RT Express or a similar rapid transit line, those additional transit trips will not occur. Overall, the 401RT Express can generate close to 400 million new transit trips per year by 2051 (more than one million trips per day). Together with other planned transit initiatives, the shifts to transit should be enough to offset the growth in demand for use of Highway 401. The 401RT Express should reduce dramatically the high levels of congestion on the 401 between west of Dixie Road and Highway 400.

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

Overall, the 401RT will attract ridership from a wide swath of geography, from north of Lawrence Avenue to Steeles Avenue, and from numerous points of origin in Pickering and Mississauga. While 400 million new transit trips per year by 2051 is a seemingly high volume of new transit trips, it is less than the trips per-station than forecasted by Metrolinx for the Ontario Line from Exhibition GO to Eglinton Avenue East; however, because 401RTX trips are likely to be longer, occupancies per train kilometre are likely to be higher.

An extension of the Ontario Line from Eglinton Avenue East to the 401RT Express will be necessary to keep 401RT Express users from overcrowding the Yonge Street subway. A northerly extension of the Ontario Line from Eglinton Avenue East to past Highway 401 is already included in the GGH Transportation Plan.

All of this is a lot to process. It's huge. The 401RT Express would be 90 new kilometres of rapid transit. There would be 50 new stations and 13 new rapid transit connections. But it has to be done – it's critically important. And in reality, it's not a significantly larger project than the sum of rapid transit expansion projects currently underway for Toronto and Mississauga. The critical point is that the 401RT Express is adequate to the scale of the transportation crisis facing Toronto, and necessary if the Premier of Ontario's ill-conceived highway tunnel is to be avoided.

The effects of the 401RT Express would be transformative for the core of the Toronto area. A list of 64 general benefits can be accessed at www.401rt.ca.

Goodbye to The Sheppard Subway

Despite many years of discussion and planning about extending the Sheppard subway to McCowan Road in Scarborough, the 401RT Express will make the entire Sheppard Subway, including its proposed extensions, obsolete. According to TTC statistics, people use the Sheppard subway mostly to go to Yonge Street or to catch a Don Mills bus, or to go to points east of the subway's Don Mills terminus. With a 401RT Express operating, most travelers who want to get to Yonge Street from, for example, somewhere along Markham Road or Kennedy Road, will prefer to take a bus to the nearby 401RT, two minutes south of Sheppard Avenue. **Very importantly**, the 401RT will enable seamless travel to or from west of Yonge Street and eastward to Pickering. Closing the Sheppard Subway could mean replacing it with a seamless bus service that can run from Toronto's eastern border to Weston Road. The extension of the Sheppard Subway, if extended to Scarborough Town Centre, would be approximately \$6.3 billion. Because the 401RT Express will render the entire Sheppard Subway operationally non-viable, the extension costs should be avoided. Lands at the current Bayview, Bessarion and Leslie stations can be repurposed for much-needed multi-storey affordable housing – for seniors, lower-income households, currently homeless persons, and for other persons who need support.

How is the 401RT Express Affordable?

The 401RT Express will an estimated \$49 billion to build; rolling stock (trains and buses) will cost \$5 billion. People of thrift, and perhaps others, will argue “That’s Too Much!! I can’t afford this!! My taxes will go through the roof!” Not so.

The \$54 billion is deceptively overstated. Today's Toronto taxpayers won't be digging into their wallets to pay that much. For one thing, the cost would be carried forward by public debt; in that way, future users of the 401RT would, very appropriately, contribute to the cost. Debt financing also greatly reduces the annual cost to taxpayers. Moreover, the cost will rise slowly, as the 401RT Express is being built.

As a cost-saving measure (and as a land use efficiency measure), members of the development industry may be contracted to build and, at least in part, pay for 401RT stations in exchange for air rights to build residential and/or office towers above the stations.

A highly significant cost-saving measure will be the elimination of some of the Ontario Government's currently-planned rapid transit initiatives, including fairly high-profile initiatives that have been around for decades and hoped for by many. Altogether, they produce a cost-avoidance of about \$12 billion in future infrastructure costs. There are four transit projects that would be rendered unnecessary by the 401RT Express:

1. The proposed \$6.3 billion Sheppard Subway extension to McCowan Road and to Scarborough Centre, less decommissioning costs. The subway would run closely parallel with the 401RT and not have the ridership volumes to justify its construction. Instead of a 13-kilometre Sheppard Subway, Toronto would have the 90-kilometre 401RT.
2. Most of the proposed \$4.5 billion Eglinton East LRT extension in Scarborough. It's long been thought that an eastern extension from Kennedy subway station to the University of Toronto's Scarborough campus and to the Malvern community, and then westward to the Sheppard Subway extension, should be a priority. However, a 401RT through Scarborough provides much better and faster access between the northern half of Scarborough and the rest of Toronto. However, it is worthwhile to extend the LRT to Kingston Road (roughly \$1.8 billion), but not further.

3. The 401RT and the Eglinton LRT would divert some ridership from a proposed \$2.6 billion Jane Street LRT. For example, a trip from Jane at Wilson Avenue to downtown Mississauga currently takes 78 minutes; a Jane LRT wouldn't make the trip much faster. Using the 401RT, the trip would take just 33 minutes. Overall average trip lengths on Jane buses would shorten, decreasing crowding on Jane buses.

Comparing Rapid Transit Effectiveness

	Infra-structure Cost \$m	2051 Trips per Year Millions	Cost per New Trip	Kms. Of Track	Cost per Km. of Track
401RT Express - Pickering to Erindale GO	37,200	303	123	142.1	\$265
401RT Express - Derry to Islington/401	10,300	61	168	16.0	\$3,994
401RT Express - Rolling Stock	4,900		16		
401RT Express Effect on GO Transit	400	27			
Bus ridership increases	800	52			
Total Recommended Infrastructure	53,600	443	\$121	158.1	\$339
Recommended Expenditure Offsets:					
Sheppard Subway Extn. to Scarboro Ctr.	6,900	6	\$479	9.0	\$675
Decommissioning Sheppard Sbw; net	-800				
Eglinton West LRT - Renforth to Pearson	1,000	4		7.6	\$724
Eglinton E LRT - Kndy to Malvern to McCowan	4,500	11		19.1	\$141
Eglinton E LRT - Kndy to Kingston Rd (build)	-1,800	-3		-4.5	\$400
Jane Street LRT - Steeles to Bloor	2,600	8		16.5	\$909
Total Expenditure Offsets*	12,400	26	\$479	47.7	\$260
Net New Cost Commitment	41,200		\$93		
Potential Gain in New Trips per Year		443			

* 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 or trips are diverted to the 401RT Express.

4. The planned \$1.2 billion extension of the Eglinton West LRT from Renforth Drive to Pearson would not be needed. Travelers to Pearson would transfer from the Eglinton LRT to the 401RT at a junction station east of Renforth.

For a 401RT Express across the underserved northern half of Toronto and into Pickering and Mississauga, and 400+ million new transit trips per year by 2051, a net \$41.2 billion cost (\$53.6bn less \$12.4bn) above current plans for rapid transit is a huge bargain. The cost to Ontario would very likely be further reduced by federal cost-sharing as a public transit project, and may be eligible as an environmentally-appropriate "Build Canada" initiative that increases economic productivity and maintains the essential functionality of Highway 401 for the movement of workers and goods. In the past, federal cost-sharing has reached 40% of eligible costs; for the 401RT Express, this can be a further \$16.8 billion (\$42 billion x 40%).

Critically, the 401RT Express eliminates the perceived need to build a new highway tunnel under Highway 401, at a potential cost of up to \$120 billion.

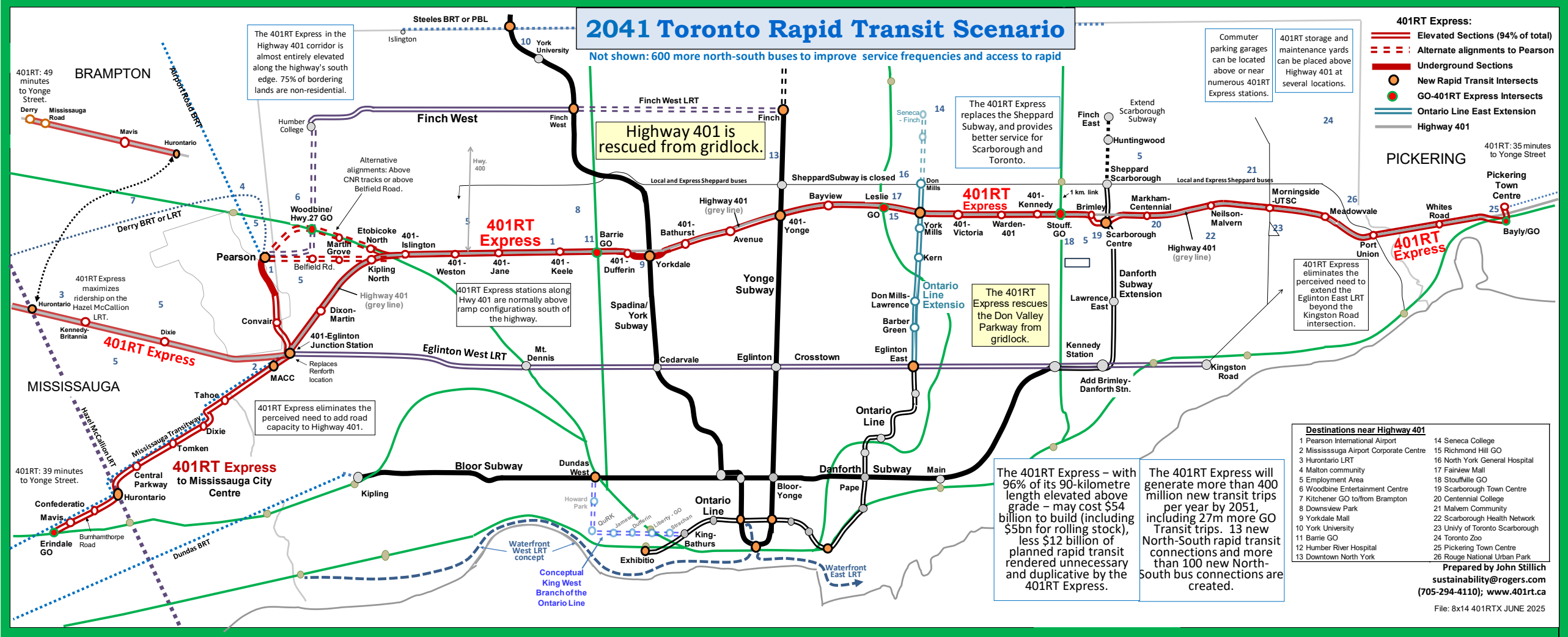
The tax cost to Toronto households would be highly affordable. Cost sharing by non-residential taxpayers and the federal government (assuming 40%), population growth, deficit funding and assuming a borrowing rate for the Ontario government of 3%, the average daily cost per household by 2041 to build the 401RT Express would grow to about **12 cents per day**. Ontarian's share of the 401 federal cost may add another **2 cents**.

And what's the comparison? The average cost per year to own and operate a new gasoline-powered car in Ontario can be, variably, \$15,000 per year. That's \$41 per day. So, in a way, switching from driving a car to using public transit can be a household budget bonanza.

All of a sudden, it's a 'no-brainer'.

401RT Express Infra. Cost - Per Household	
(Costs in millions of dollars)	
41,100	Gross Cost - Pickering to Erindale
12,400	Gross Cost - Islington to Derry/401
53,500	
-12,400	Less unneeded Rapid Transit
41,100	Net additional cost
16,400	Canada Share @ 40%
24,700	Net Ontario cost
3%	Interest rate (N.B. 2023 was 3.2%)
741	million\$ per year
46.0%	Household share (per Ontario Budget)
340.86	Household share - millions\$
19,700,000	Ontario population 2041
2.5	Avg. hshld size 2041
7,880,000	Ontario Households in 2041
\$ 43.26	Cost per avg. hshld per year
\$ 0.12	per day (excluding household tax share of Gov't of Canada cost)

file: 401RT Costs & Riders ELEVATED SIMPL



30+ years from now, there will be a million more people living in Toronto. The **401RT Express** is essential if highways and local streets in Toronto are to be decongested. Currently-planned rapid transit expansions will struggle to keep up with travel demand growth, and will not reduce overall use of motor vehicles on city streets. Adding road capacity to Highway 401 is not a solution; its impact will be to encourage driving and to increase congestion on local roads.

The **401RT Express** should be recognized as inevitable and urgent. The 401RT Express's seamless length, speed of service, connectivity, and high visibility will make it a success. It will render numerous current rapid transit initiatives unnecessary and operationally nonviable: the Eglinton West LRT Phase 2 extension to Pearson International Airport, the Sheppard Subway extn (and the Sheppard Subway itself), most of the Eglinton East LRT, and the Jane Street LRT. Spending on these will waste an estimated \$12 billion.

The \$54 billion **401RT Express** (including \$5bn rolling stock) is highly affordable, and is estimated to be three times as cost-effective as rapid transit initiatives currently being implemented, based on new transit trips generated. Its net cost to build would be as low as \$42 billion (after cost avoidances of aforementioned initiatives). Federal cost sharing can be 40%. The 401RT Express (or similar) would be transformative for transportation in Toronto, and is essential for achieving climate change goals. It is essential for tens of thousands of households that struggle with the high costs of automobile ownership and use. Visit www.401rt.ca for more information. Call John Stillich at 705-294-4110 or visit www.401rt.ca for more information.



