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Rapid Transit Rescue For Toronto



Photo from Canadian Dimension, Article by Nick Grover

Every day, 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. 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 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.

The Ontario Ministry of Transportation’s Greater Golden Horseshow Transportation Plan (GGHTP) also an “Ontario Line Loop Connection”, a long rapid transit circle line around the edges of Toronto that would be a hugely expensive undertaking that will not produce enough transit ridership to make it operationally viable.

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.

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 Sbwly extn to Richmond Hill	5,600	11.4
Scarborough Sbwly 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

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 be giving our kids and grandkids?

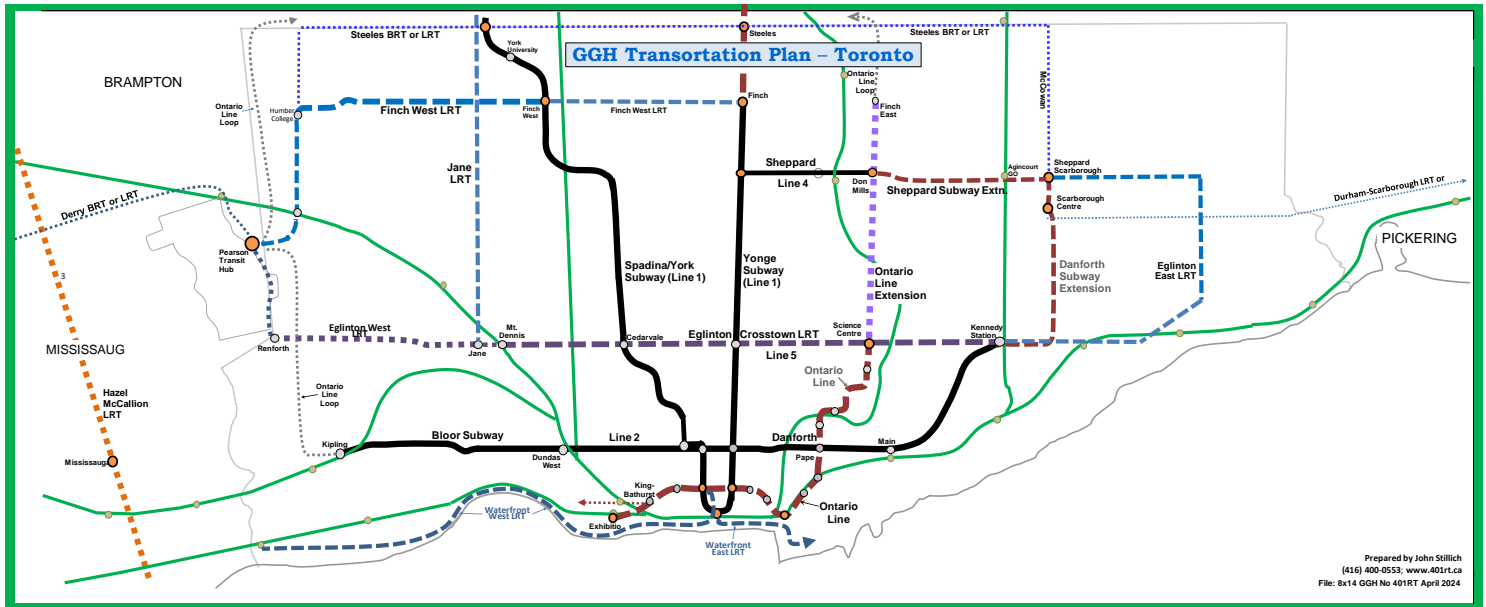
True progress requires that the number of kilometres traveled by motor vehicle plunges from today’s volumes. It means that fewer and shorter trips will need to be taken by fewer cars. In general, that is not happening.

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 that a study will be undertaken to determine whether a new highway tunnel of at least two lanes in each direction under Highway 401 will be feasible. 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. Enormous multi-year disruptions for travelers would be created during its construction, including massive removals of earth, and all that will happen is that more cars will be added to city streets. While gridlock on Highway 401 would be temporarily relieved, everywhere else traffic will worsen.



High-occupancy lanes on Highway 401 for buses have been suggested as one solution, but that would require hundreds of buses 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 – 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.

For example, getting from Scarborough’s Neilson Road at Ellesmere Road (near the hospital) to Pearson International Airport by public transit will continue to be a struggle. Even if the planned Sheppard Subway and Finch West LRT extensions are built, it would mean a bus trip to Sheppard Avenue, a wait, another bus to the Sheppard subway at McCowan Road, 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, about an hour and 50 minutes. 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

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 stifling 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. This can take the form of a \$2 billion (or more) in new capital grants for the purchase of transit vehicles and for local transit infrastructure. It also means bringing back the long-lost 50% provincial subsidy for all municipal transit operating deficits. Those initiatives 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 important 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 solution is a seamless rapid transit line that extends from Pickering through the northern half of Toronto and deep into Mississauga – one that’s 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, plus an Ontario Line that’s extended north of Eglinton East, the Line 2 Subway extension at 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 Pickering Town Centre north of Highway 401 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 adds a branch line off the Highway 401 corridor alignment 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 continues above existing transportation corridors to Mississauga’s downtown core, and terminates 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.

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.

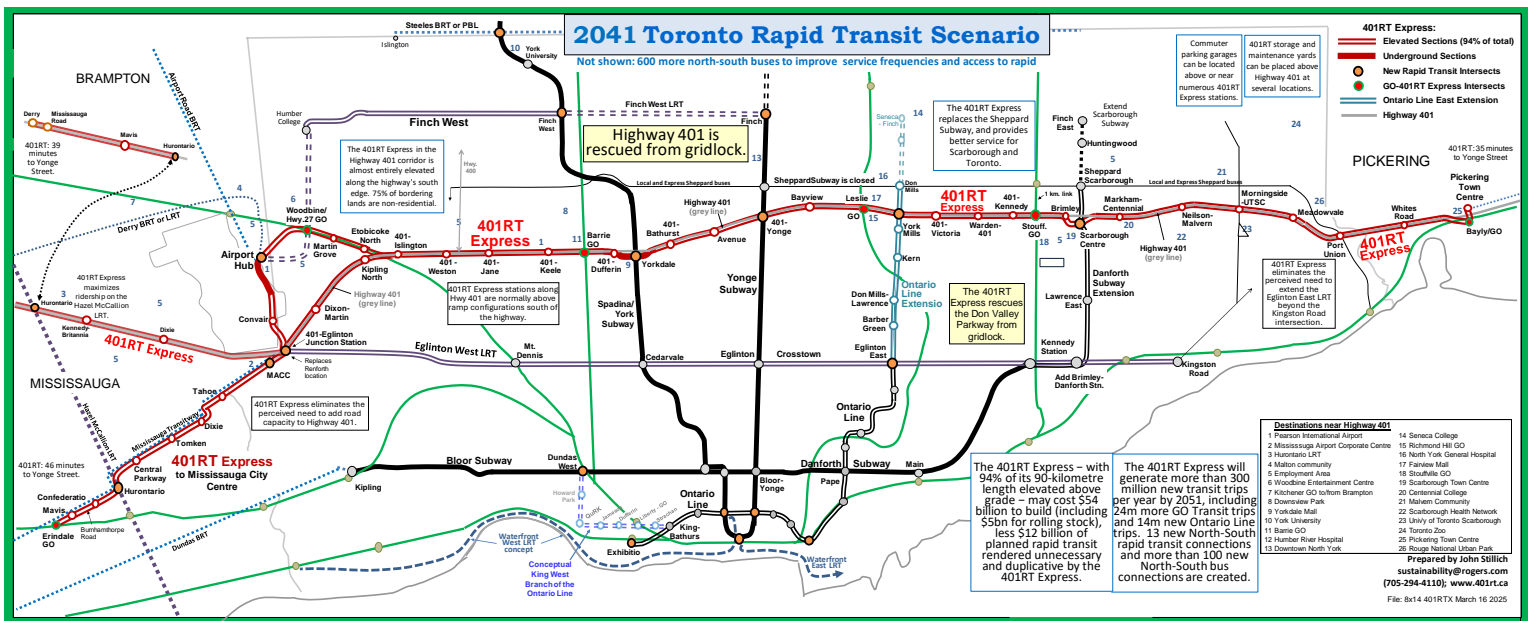
Elevating the 401RT also means it can be built faster than tunneling, and at less than half the per-kilometre cost of the highway tunnel. One additional cost-saving measure may be to enable land developers to build and, at least in part, pay for 401RT stations. In exchange, they would be permitted to build residential and/or office towers above them.

Commuter parking would be possible at both ends of the 401RT. 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 the 401RT segment running alongside Highway 401, several commuter parking garages are possible. At Pickering Town Centre, some land would need to be acquired from retailers.

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.

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.

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.

Success In the Suburbs

It is sometimes said that high-capacity rapid transit doesn't work in the suburbs because urban densities are too low. But GO Transit's Lakeshore Line shows that it can. It works because it brings commuters from suburban locations directly into Toronto's downtown core. In comparison, the 401RT Express has key destinations across all of its route, the most noteworthy being Pearson International Airport and its adjacent employment zone, and the Line 1 subway. As with GO Rail Transit, most 401RT Express users arrive at stations by car or bus. The success of the 401RT Express also stems from the fact that, for many longer-distance travelers, the only two practical travel options are Highway 401 or the 401RT Express, and if the highway is too often congested or affected by motor vehicle crashes, the 401RT Express may be considered the best and most reliable option.

The 401RT Express will entice enough new ridership to ensure its success, including its speed, continuous length and comfortable ride, high visibility above grade, central location in the core of the Greater Toronto Area, population growth, gridlock on roads and highways, smart urban development, the increasingly unaffordable cost of personal automobiles and other costs of living, intensified bus services on intersecting arterial roads, connections to GO Transit, much easier access to Pearson and its employment area from across Toronto and from Mississauga, and latent transit demand for rapid transit.

Although latent demand for an alternative to driving is important and has not been measured, it is likely that a sizable portion of today's Highway 401 users would prefer to use a viable rapid transit alternative. The 1.3 million trips per day on Highway 401 in 2019 will rise to approximately 2.0 million by 2051. Major 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 carry travelers whose destinations are not the 401RT Express; an estimate is 52 million new transit trips per 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 more than 300 million new transit trips per year by 2051 (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 northwestern arm of 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 shared by 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 300+ million new transit trips per year by 2051 is a seemingly high volume of new transit trips, it is similar to the trips per-kilometre than forecasted by Metrolinx for the Ontario Line from Exhibition GO to Eglinton Avenue East; overall, the average per-station usage of the 401RT Express would be somewhat less than for the Sheppard Subway; however, because 401RTX trips are likely to be longer, occupancies per train are likely to be higher.

An extension of the Ontario Line from Eglinton Avenue East to the 401RT Express will be necessary to keep Express users from overcrowding the Yonge Street subway. A northerly extension of the Ontario Line 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.

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 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 travel to or from west of Yonge Street. 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.

OMG! How is the 401RT Express Affordable?

The 401RT Express will cost up to \$49 billion to build; rolling stock (trains and more intersecting buses) will cost \$5 billion. No doubt, 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 built.

And there's more that will bring costs down a great deal. The 401RT would mean some of the Ontario Government's GGHTP's currently-planned rapid transit initiatives can be eliminated— including fairly high-profile initiatives that have been around for decades and hoped for by many. Altogether, they will save about \$12 billion in future infrastructure costs. There are four unneeded projects:

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

	Gross Infra. Cost \$m	New Trips per Year Millions	Cost per New Trip	Kms. Of Track	Cost per Km. of Track	
401RT Express - Pickering to Erindale GO	38,500	295	131	69.8	\$558	
401RT Express - Derry to Islington/401	10,900	48	227	16.0	\$4,113	
401RT Express - Rolling Stock	5,100		17			
401RT Express Effect on GO Transit	400	27				
Total Recommended Infrastructure	54,900	370	\$148	85.8	\$640	
Recommended Expenditure Offsets:						
Sheppard Subway Extn. to Scarboro Ctr.	6,300	6	} \$465	9.0	\$614	
Decommissioning Sheppard Sbwly; net	-750					
Eglinton West LRT - Renforth to Pearson	1,200	4			7.6	\$750
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	\$888	
Total Expenditure Offsets*	12,050	26	\$465	47.7	\$252	
Net New Cost Commitment	42,850		} \$116			
Potential Gain in New Trips per Year		370				

* 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.

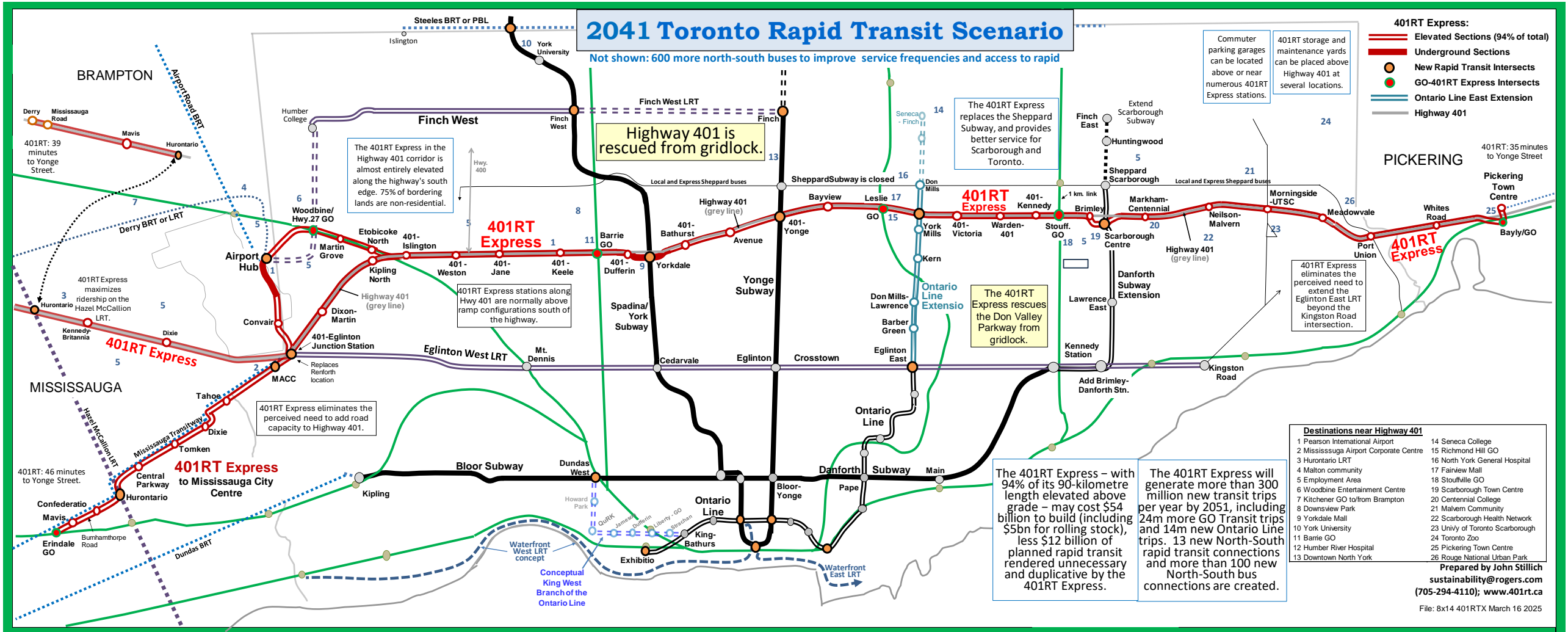
For a 401RT Express across the underserved northern half of Toronto and into Pickering and Mississauga, and more than 400 million new transit trips per year by 2051, a net \$42 billion cost (\$54bn less \$12bn) above current plans for rapid transit is a huge bargain, even before potential federal funding participation, which can reach 40%.

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 2051 to build the 401RT Express would grow to about 18 cents per day (see figure below). Ontarians 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)	
42,500	Gross Cost - Pickering to Erindale
11,900	Gross Cost - Islington to Derry/401
54,400	
0	Less unneeded Rapid Transit
54,400	Net additional cost
21,800	Canada Share @ 40%
32,600	Net Ontario cost
3%	Interest rate (N.B. 2023 w as 3.2%)
978	million\$\$ per year
46.0%	Household share (per Ontario Budget)
449.88	Household share - millions\$
18,000,000	Ontario population 2031
2.6	Avg. hshld size
6,923,000	Ontario Households in 2031
\$ 64.98	Cost per avg. hshld per year
\$ 0.18	per day (excluding household tax share of Gov't of Canada cost)



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.



