401RT Express

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Transforming Transportation in Toronto

December 2025

Rapid Transit Rescue For Toronto

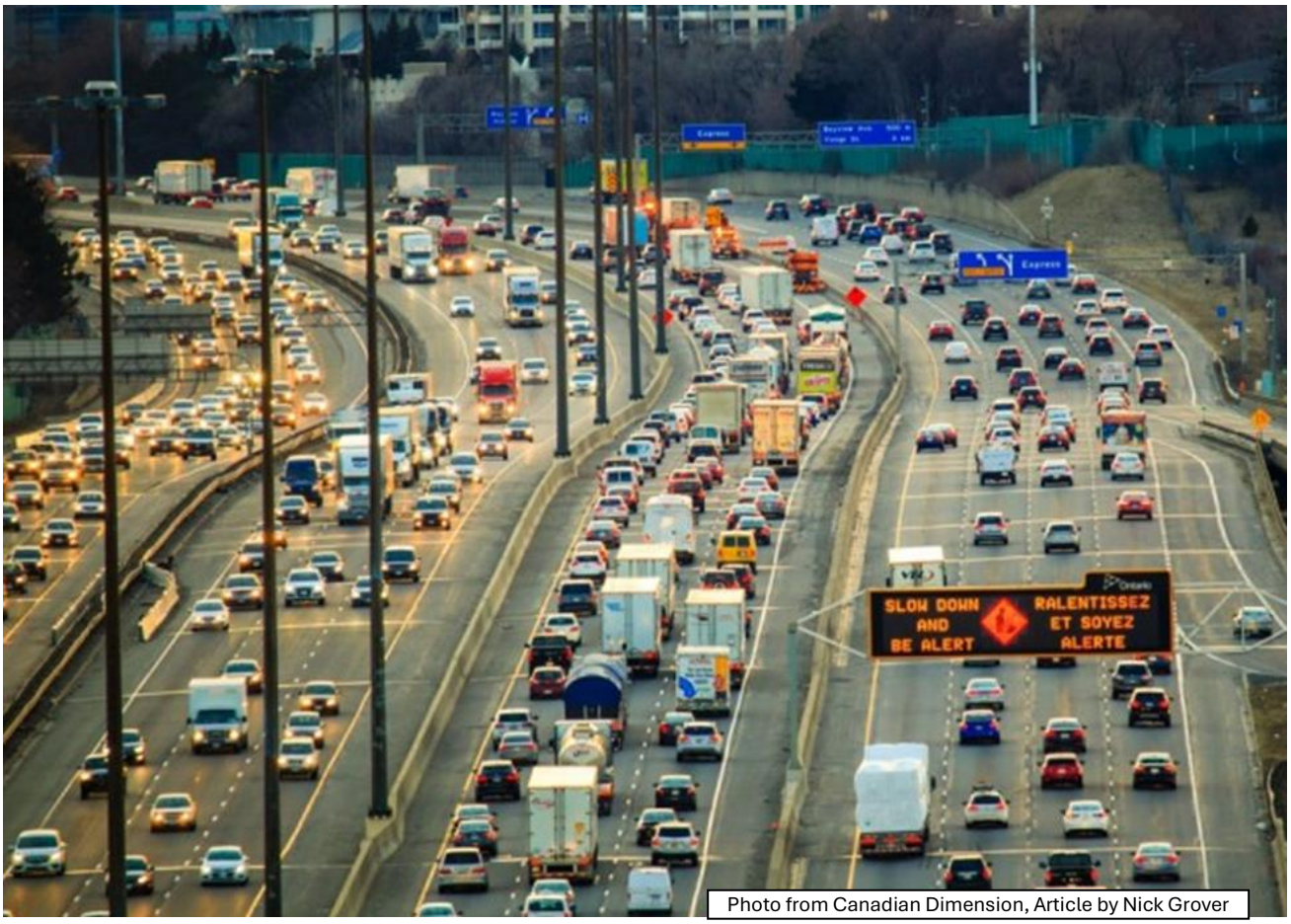


Photo from Canadian Dimension, Article by Nick Grover

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 incomed 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.

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

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?

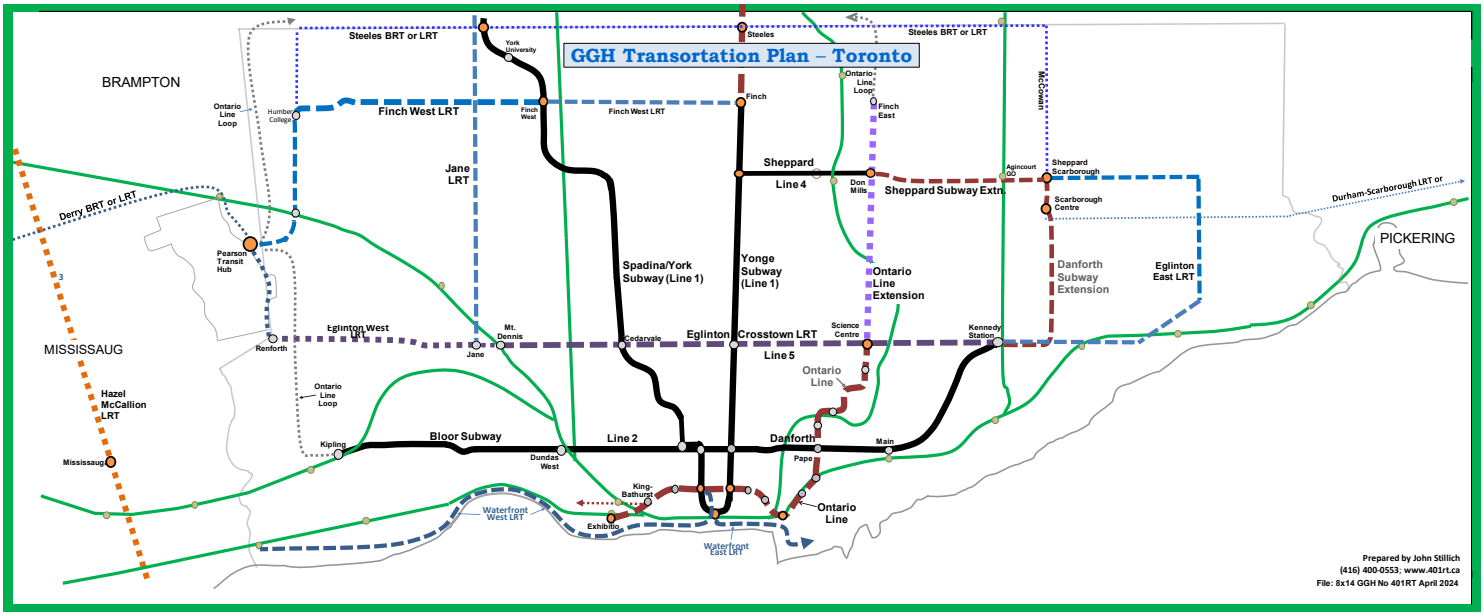
True progress requires that the number of kilometres traveled by motor vehicle plunges from today's volumes. It means that fewer and shorter trips will need to be taken by fewer cars. In general, that is not happening.

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.

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 – possibly $90 billion or more 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, to up to 40% by 2055. 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 is built, it will be only 13 kilometres long. Toronto is 40 kilometres wide. It will not 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 Internation 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

SHORT-TERM SOLUTIONS: 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.

LONG-TERM SOLUTION: 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 gap 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*** (or 401RTX) would be one that is almost entirely elevated above and adjacent to Highway 401's eastbound lanes (at most locations, the EB 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.

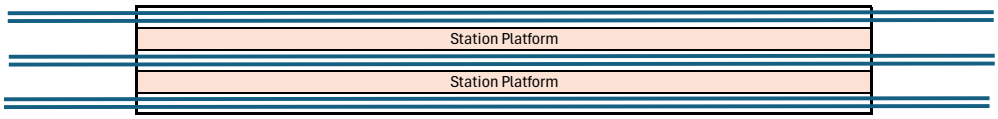
That can be resolved. Westward from its Islington/401 station, the 401RTX is envisaged to include a seamless branch line off the Highway 401 corridor alignment, from Islington Avenue to Pearson International Airport and its employment area, and southward from there to a junction of Highway 401, Eglinton 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. 401RTX 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. Overall, the 401RTX extends for 85 kilometres.

A summary illustration is shown on the next page. More detailed illustrations of the 401RTX alignments (using Google Earth) can be accessed at www.401rt.ca.

Locating the 401RT Express 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 401RTX from the closest residential lands bordering the highway should minimize NIMBY (Not-In-My-Backyard) reactions. Most rail beds would be supported by dual pillars.

Most stations along Highway 401 would be above the on- and off-ramps along the highway's south edge. Al stations are recommended to be enclosed, and be of basic design. The 401RTX concept recommends that it be constructed with three tracks, in order to enable bypassing of problem areas, storage of off-peak trains, and maintenance/emergency rail cars.



Elevating the 401RTX also means it can be built faster than tunneling it, and at much less cost per kilometre than that of the Ontario government's proposed highway tunnel. Of the 401RTX's 85 kilometres, only 3.5 kilometres will need to be underground – at Pearson International Airport, and at Yorkdale Mall and its Line 1 subway station.

Commuter parking would be possible at numerous locations. At Erindale GO Station and at the Pickering Town Centre station, existing ground-level lots can be replaced by with new multi-level garages. Along 401RTX segments running in the Highway 401 corridor, commuter parking garages are possible at several locations. Elevated parking garages can be constructed at several 401RTX stations, and are also possible at the base of Highways 400 and 404 to enable commuters from north of Toronto to transfer to and from the 401RTX. At Pickering Town Centre, some land would need to be acquired from retailers.

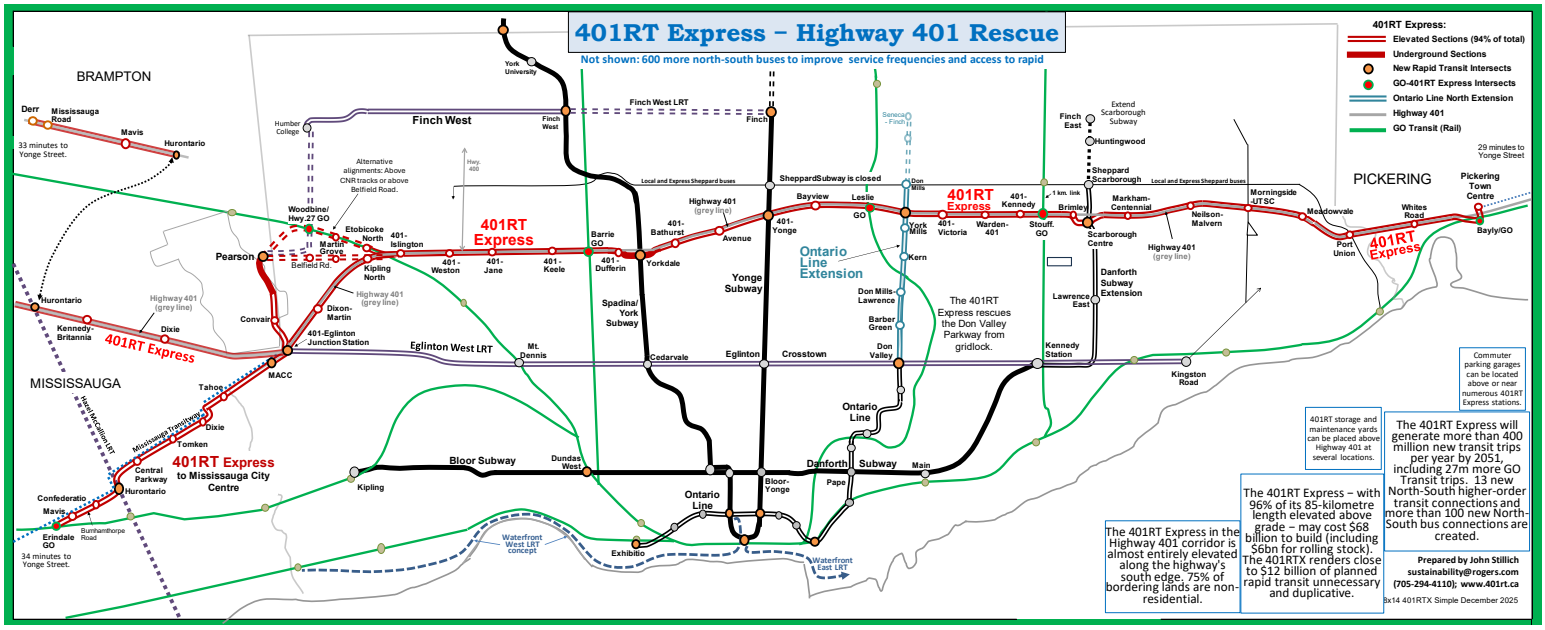
Maintenance yards can be constructed over Highway 401 east of Jane Street, east of Dixie Road, and at Kennedy Road in Scarborough, above Eastgate Parkway, and potentially at other locations.

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 as little as 64 minutes. These times reflect an average 85 kilometre per hour cruising speed between stations. The cruising speeds of the 401RTX and its approaches to stations are envisaged to be controlled by automated speed systems, similar to many systems around the world (including in Canada).

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 station stops.

With a 401RTX 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.

Importantly, the 401RTX 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 401RTX users arrive at stations by car (where parking exists) or bus. The success of the 401RTX would also stem from the fact that, for many longer-distance travelers, the only two practical travel options would be Highway 401 or the 401RTX, and if the highway is too often congested or affected by motor vehicle crashes, the 401RTX may be considered the best and most reliable option.

The 401RTX will entice enough new ridership to ensure its success. These include its

- High average cruising speed between stations (85 kph),
- Continuous length and comfortable ride,
- High visibility above grade,
- Central location in the core of the Toronto Area,
- Population growth (a million more Torontonians in thirty years),
- Congestion and 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 that create long-sought east-west rapid transit services to and from the radial GO system,
- 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 researched, 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 (commercial and non-commercial vehicles) is estimated to rise to approximately 1.9 million by 2055. Major shifts from driving to the 401RTX will occur because travel on Highway 401 and on alternative local roads will be significantly slower than traveling on the 401RTX for the east-west segment of most trips. In effect, many commuters will opt to use the 401RTX if they need to travel.

Ridership for the off-highway segment between the 401RTX's Islington-401 station, Pearson International Airport, downtown Mississauga and the Erindale GO terminus is estimated to exceed 500,000 by 2055.

Numerous other ridership effects arising from the 401RTX will occur by 2051:

- GO Transit's six intersects with the 401RTX will generate approximately 27 million new GO Transit trips and 24 million new 401RTX trips.
- The Islington-to-Pearson-to-Erindale GO branch of the 401RTX 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 401RTX will attract new transit users whose destinations are not the 401RTX; 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 401RTX 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 401RTX.
- 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 401RTX is estimated to generate more than 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 can offset the growth in demand for use of Highway 401. An equilibrium of use between Highway 401 and the 401RTX would be established that would keep traffic on the 401 moving. The 401RTX should reduce dramatically the high levels of congestion on the 401 between west of Dixie Road and Highway 400. A transit ridership scenario is attached to this document, based on a ridership volume that would keep, and reduce, growth in Highway 401 usage at 2024 volumes.

Key destinations directly served include 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 401RTX 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 number

of trips per station forecasted by Metrolinx for the Ontario Line from Exhibition GO to Eglinton Avenue East; however, because on average 401RTX trips are likely to be longer, occupancies per train kilometre would be higher.

An extension of the Ontario Line from Eglinton Avenue East to the 401RTX will be necessary to divert travelers from overcrowding the Yonge Street subway. A northerly extension of the Ontario Line from Eglinton Avenue East to north of Highway 401 is already included in the Ontario Ministry of Transportation's GGH Transportation Plan.

For some, the 401RTX seems too big an endeavour – 85 new kilometres of rapid transit, with up to 50 new stations and 13 new rapid transit connections. But it has to be done – it is 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 401RTX is appropriate to the scale of the transportation crisis facing Toronto, and is necessary if the Premier of Ontario's Highway 401 tunnel is to be avoided.

A Note Regarding the Effects of Artificial Intelligence

There is a probability that the increased use of Artificial Intelligence (AI) for many job functions in the economy will reduce total employment. In turn, that will change the number of trips taken by Toronto residents, and the mode by which people travel. Many outcome scenarios are possible.

In one scenario, in which 67% of jobs are lost to AI and the population of Toronto increases to stabilize at 4,000,000 by 2055, there would be a 12.3% increase in the total number of daily trips taken by residents and trips into Toronto from other municipalities, a rate of increase lower than that of population growth. The average number of trips taken by those who become unemployed will decrease. Overall, trips by automobile would decrease slightly (5%) from current levels even as Toronto's population increases, as the affordability of personal automobiles by unemployed persons decreases. In this scenario, if the mode of travel for half of those unemployed people shifts to public transit, there will be sn overall increase in the number of trips taken by public transit (49%) that is higher than population growth.

This is a scenario for trips in Toronto only; trips taken outside of Toronto by residents of municipalities are likely to be similarly proportional. The modal split of transit trips taken by Highway 401 users will also increase. The critical point is that if AI has this magnitude of effect on trips taken in Toronto, then the current proposal to add road capacity to Highway 401will not be needed; at the least, planning for it should be paused. In contrast, the essentiality of the 401RT Express from ridership, affordability, environmental and social perspectives will remain.

The effects of AI have not been incorporated into the transit ridership and cost figures used in this document.

Benefits of the 401RT Express

The effects of the 401RTX would be transformative for the core of the Toronto area. A list of more than 60 general benefits (excluding almost all site-specific benefits) is attached to the end of this document. No other rapid transit initiative or combination of rapid transit initiatives built or envisaged in Canada would produce as many benefits.

Goodbye to The Sheppard Subway

Despite many years of discussion and planning regarding an extension of the Sheppard subway to McCowan Road in Scarborough, the 401RTX 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 401RTX 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 401RTX, a two minute trip south from 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 401RTX will render the entire Sheppard Subway operationally non-viable, the extension and its costs should be avoided. Lands at the current Bayview, Bessarion and Leslie stations can be repurposed – such as for much-needed multi-storey affordable housing for seniors, lower-income households, currently homeless persons, and for other persons who need support.

An Implementation Scenario

The rapid march to gridlock on Highway 401 and other highways means that a wartime-like effort is needed to rescue the 401. During World War II, warships were built in a week or two, and a warplane rolled off the assembly line every hour. Given the seriousness of the Toronto area's transportation crisis, today's ten-year timeframes to build extensions of Toronto's subway lines are no longer good enough. According to the scenario below, the 401RT Express – all 85 kilometres of it – can be completed before 2040 – design and planning expertise exists, the labour force can be trained to construct it, and underused industrial spaces can be put to work. It is a massive project comparable to, but far more effective, than the Premier of Ontario's proposed Highway 401 tunnel.

The 401RTX will require multiple partners working simultaneously on segments of the 401RTX – a team of designers, teams of station builders (up to 50 stations of basic design), a team to construct the 401RTX's 3.5 underground kilometres, a team to build several maintenance and storage yards, multiple separate teams (seven?) to build the segments between stations, a team of software designers, and several teams to construct the rail tracks and operational systems to make it work. Add to that almost 800 Ontario-built rail cars. An implementation scenario may be as follows:

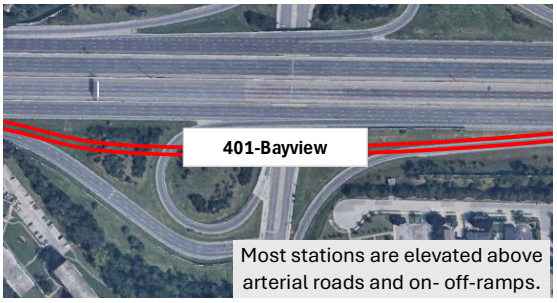
2026 – The 401RT Express and its benefits become widely known. Consultations with communities and other levels of government occur. There is acceptance that a feasibility study of the 401RTX is warranted; it begins late in 2026. The highway tunnel feasibility study is completed by year end, and awaits the outcome of the 401RTX study. The Eglinton LRT from Kennedy station to Renforth Drive becomes operational, and begins to attract more travelers to transit.

2027 – Before year end, the feasibility study of the 401RTX is completed; the decision is made to forgo the Highway 401 tunnel due to its congestion impacts on municipal roads, the complexities and risks of tunneling, and its permanent environmental costs. Negotiations with the government of Canada re cost sharing are initiated and succeed. Legal and technical issues are addressed, and enabling legislation for the 401RTX project proceeds through the Legislature by year's end. A single coordinating organization and decision centre is established. GO Transit becomes a partner in building the six GO Rail stations that intersect with the 401RTX. Offers to award air rights to development companies to build and fund stations occurs. Experts from Europe and Japan contribute advice. Planning for extensions of the Sheppard subway ends.

Detailed design and construction planning begins. Bus manufacturers have scaled up production for hundreds of new buses as a result of the Premier's capital and operating grant programs. Railcar manufacturers in Thunder Bay and elsewhere in Ontario gear up for the production of 130 six-car trains. Steel and concrete industry begin scaling up production facilities. Software development teams have been organized to design operating systems.

2028 – Planning & design for the 401RTX is completed; contracts with construction partners are completed by mid-year. Recruitment and training of workers by construction companies occurs. Manufacturing facilities for the 401RTX are acquired and developed in rapid fashion. The Greater Toronto Airports Authority modifies its plans for parking requirements and rail access configurations.

2029 – Construction begins. Multiple crews work simultaneously on stations, maintenance facilities, and track segments between stations. Because almost all of the 401RTX is elevated above ground, work proceeds faster than if it were underground. Tunneling begins at the Pearson and Yorkdale segments of the 401RTX.



Most stations are elevated above arterial roads and on- off-ramps.

During construction, the rightmost eastbound collector lane of Highway 401 is closed, and ramp access is adjusted for station construction. Traffic congestion worsens, and more people avoid Highway 401 or drive in ever-shorter off-peak periods, or use newly enhanced bus services; new buses continue to be put into service. The Alto High Speed Rail project between Toronto and Quebec City begins construction, (assumed to be) largely along rail lines near Lake Ontario in Toronto.

2030 – the Line 2 subway extension to Scarborough Centre is completed, and includes an intersect station for the 401RTX. Each of multiple crews (seven?) working separately on segments of the 401RTX complete an overall average of one support pillar and one elevated three-track rail bed section per week. Most stations are built using modular construction; some stations are built by urban development companies who are offered air rights over stations (and above their adjacent eastbound Highway 401collector lanes) in exchange for funding stations. Almost all of the work is within transportation corridors, avoiding almost all community concerns.

2031 – The extensions of the Finch West LRT to Yonge Street and to Pearson begin. Enhanced bus services are implemented on Highways 401, 400, 410/403, 427/Gardiner, and the 404/Don Valley Parkway, and connect to destinations nearby to 401RTX stations under construction.

2032 – The Ontario Line south of Eglinton Avenue East is completed. Its builders have been contracted to begin extending the Ontario Line northward to Sheppard Avenue East, elevated above Don Mills Road.

2033 – By 2033, a few other transit enhancements will have been completed or are near completion, such as the Eglinton East LRT to a Kingston Road intersect, several bus rapid transit (BRT) routes (Steeles Avenue, Airport Road, others), and GO Rail enhancements.

2034 – Highway 401 capacity is exceeded, with heavy congestion during most of each day. The high visibility of 401RTX construction brings hope for relief. Many thousands of car drivers wait to give up the frustrations and costs of driving, and to shift to rapid transit for their commutes. Rail cars begin to be delivered and are stored until the 401RTX comes into service.

2037 – Some segments of the 401RTX are completed and begin testing. By year end, some are brought into service (Examples: the Yorkdale-to-Pearson segment; the Yonge-to-McCowan segment). Construction

workers from these are reallocated to other 401RTX construction sites along Highway 401, such as from Derry Road to Islington Avenue at Highway 401, and the 401RTX segment from Pickering Town Centre to McCowan Road.

2038 – 401RTX construction is complete, the last being the elevated segment through downtown Mississauga. Full-length testing begins and operational systems are finalized; corrections and adjustments are made. Software engineers work to complete operational systems (such as automatic speed controls). The almost-entirely elevated Ontario Line extension to the 401RTX, needed to prevent 401RTX users from overcrowding the Line 1 subway at Yonge Street, is complete. Transit operators and other service staff are hired.

2039 – The 401RTX begins full operations by year's end, ten years after construction began. GO Transit's six links to the 401RTX become operational. The closely-parallel Sheppard Subway is closed and replaced by enhanced bus services. The extended Ontario Line becomes highly used, including for travel between Scarborough and downtown Toronto via the 401RTX. Major modal shifts to transit occur, and Highway 401 congestion is reduced and contained. A modal equilibrium is established, with user shifts between the 401 and the 401RTX depending on which is deemed faster or preferable by travelers. Buses on arterial roads that intersect with the 401RTX become heavily used. Toronto becomes renowned as the premier example of sustainable city-building.

How is the 401RT Express Affordable?

The 401RTX will cost an estimated $62 billion to build; rolling stock (trains and buses) will cost $6 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 $68 billion mat be significantly overstated, especially if modular construction is used for track segments and basic station designs, and if there is private sector construction of stations. In other ways, the cost of the 401RT Express to today's taxpayers is overstated. They won't be digging deeply into their wallets to pay for it. The cost to construct the 401RTX would be carried forward by public debt; in that way, its future users would, very appropriately, contribute to the cost. Debt financing also greatly reduces the annual cost to taxpayers. Moreover, the cost will rise slowly during a decade of planning and construction.

A significant cost avoidance measure will be the elimination of some of the Ontario Government's currently planned rapid transit initiatives, including fairly high-profile initiatives that have existed for decades and hoped for by many. Altogether, they produce an $11 billion savings in future infrastructure costs. There are several transit projects that would be rendered obsolete by the 401RTX:

1. The proposed $7.5 billion Sheppard Subway extension to McCowan Road and to Scarborough Centre. 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 85-kilometre 401RTX. The decommissioning costs of closing the Sheppard subway may be $800 million, after the sale of Sheppard Subway station lands. Station lands can also be repurposed for affordable housing and for supportive housing.
2. Most of the proposed $5.3 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 401RTX 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 $1.7 billion), but not further.

3. The planned $1.3 billion extension of the Eglinton West LRT from Renforth Drive to Pearson should not be built. Travelers to Pearson would transfer from the Eglinton LRT to the 401RTX at a junction station east of Renforth. The Eglinton LRT extension to Pearson would be an impediment to construction of the 401RTX.

Net of these three cost avoidances, the cost of the $68 billion 401RT Express would be reduced to $57 billion. Additionally, the 401RT and the Eglinton LRT would divert some ridership from a proposed $2.6 billion Jane Street LRT, reducing the Jane LRT's potential benefits. For example, a trip from Jane at Wilson Avenue to downtown Mississauga currently takes 78 minutes by transit; 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.

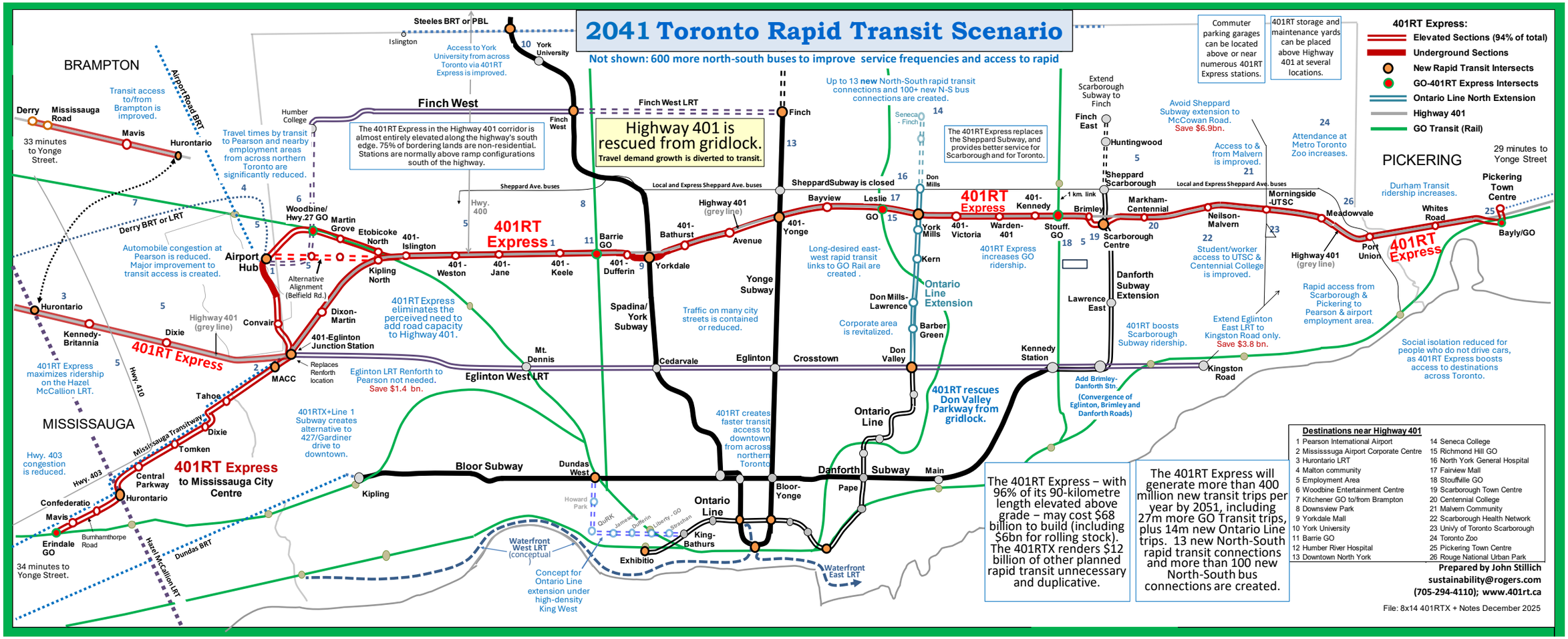
For a 401RTX across the underserved northern half of Toronto and into Pickering and Mississauga, and 400+ million new transit trips per year by 2051, a $68.4 billion cost for rapid transit is cost-effective. The cost to Ontario would very likely be reduced by federal cost-sharing as a public transit project, and may also be eligible as a "Build Canada" initiative that maintains the essential functionality of Highway 401 for the movement of workers and goods, increases economic productivity, is environmentally appropriate, has no negative First Nations impacts, and has a reasonable expectation of successful completion. In the past, federal cost-sharing for transit infrastructure has reached 40% of eligible costs; for the 401RTX, this can be a $27.4 billion federal share.

Of critical importance, the 401RTX eliminates the perceived need to build a new highway tunnel under (or perhaps over) Highway 401. Compared to the Premier of Ontario's Highway 401 tunnel plan, which may cost $90 billion to construct, the $68 billion 401RTX may cost Ontario $41billion ($68.4 billion x 60%), a $49 billion cost avoidance to Ontario's public debt. **This is a highly important consideration.**

The downstream tax costs to Toronto residents would be 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 taxpayer by 2041 for Ontario's costs to build the 401RTX will have grown to **18 cents per day**. The Ontario taxpayer share of the 401RTX's federal cost may add another **4 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 an easy decision.



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 close to $12 billion.

The $68 billion **401RT Express** (including $6 bn 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. 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.

Benefits of the 401RT Express Through Toronto

The 401RT Express (or 401RTX) is a concept for a seamless 85-kilometre 50-station rapid transit line through the core of the Greater Toronto Area that is almost entirely elevated over or alongside existing transportation corridors. It would operate from Pickering Town Centre to an Islington station at Highway 401 and, westerly from there, divided into two branches – one to Pearson International Airport and its employment area, and then southwesterly through Mississauga's downtown core to the Erindale GO station, and the second branch continuing along the Highway 401 corridor to Derry Road in northwestern Mississauga. An enlarged view of the proposed alignment of the 401RTX is shown at the end of this document.

The 401RTX is of transformative significance, and would affect other transit expansion and operational decisions in Toronto, Mississauga, and Durham Region. The scale of the 401RTX reflects the magnitude of the transportation and climate change problems facing the region; the overall traffic congestion problem in Toronto cannot be resolved with constrained approaches, or by supporting increases I the daily use of personal automobiles. The following list of general benefits is lengthy and significant, and highlights the strategic importance of the 401RTX in the Toronto area. Purely local benefits are generally not included in this list.

1. The first practical transit alternative to driving across northern Toronto is created, bringing rapid transit much closer to many thousands of today's car-driving commuters.
2. The first seamless and practical rapid transit connection is created between Toronto and downtown areas of Mississauga and Pickering.
3. Access to the ongoing movement of employment and other destinations from the downtown Toronto core to its northern suburbs becomes less car-dependent.
4. Up to thirteen new rapid transit connections are created (Hazel McCallion LRT, Mississauga Transitway, Union-to-Pearson Express, Woodbine GO, Barrie GO, Spadina/York Subway, Yonge Street Subway, Oriole GO, Pickering GO, an extended Ontario Line, the Scarborough Line 2 subway extension, a possibly-relocated Agincourt GO station or additional GO/401RTX transfer station south of the Agincourt GO station, and the Lakeshore East GO Transit line at Pickering.
5. Gridlock on Highway 401 is avoided as high volumes of transfers from the highway to rapid transit occur.
6. Gridlock and congestion on the Don Valley Parkway is ended as the 401RTX enables rapid transit access to the Ontario Line .
7. Plans to widen Highway 401 between Highway 427 and Highway 404, or to construct a highway tunnel under the 401, are rendered unnecessary. The 401RTX and Ontario Line reduce or end road congestion in downtown Toronto.
8. More than 100 new surface bus route connections to rapid transit are created.
9. North-south bus trips to east-west rapid transit are significantly shorter in time and distance.
10. The 401RTX enables the GO Rail system to be used for trips across Toronto's suburban North; east-west rapid transit access to/from the radial GO Rail system has been long desired.
11. The seamless 85-kilometre length of the 401RTX and its up to 50 stations maximize trip origin-destination opportunities.
12. The extremely high level of congestion on Highway 401 between west of Dixie Road and Highway 400 is eased or ended.
13. Truck transport is improved, and economic costs of transport delays on highway 401 are avoided as car drivers transfer to the highly visible 401RTX.

14. The trip capacity of the Highway 401 corridor in Toronto is more than doubled.
15. The 401RTX reduces or ends road congestion on the Don Valley Parkway, by providing east-west connectivity to the Ontario Line and Line 2 extension in Scarborough.
16. The 401RTX relieves potential over-capacity pressures on the Eglinton LRT.
17. Traffic congestion on city streets throughout Toronto and in parts of Mississauga and Pickering is reduced as major modal shifts to transit occur; all road trips begin and end on local streets.
18. Travel times across the northern half of Toronto are significantly reduced when compared to current transit services. End-to-end travel time on the 401RTX from Pickering Town Centre to Erindale GO station (69 kilometres) is approximately 80 minutes. This compares well to current travel times by automobile during peak periods.
19. The 401RTX increases transit ridership by more than 400 million per year by 2051, including a 52 million annually in local non-401RTX trips on enhanced intersecting bus services and 24 million new 401RTX trips resulting from new GO Rail intersects.
20. GO Transit ridership increases by approximately 27 million trips per year by 2051, 25% beyond current forecasts, as a result of six new Intersect stations with the 401RTX (Erindale GO, Kitchener Line at Highway 27, Barrie GO Line, Leslie-Oriole GO, the (potentially relocated) Agincourt GO station, and Pickering GO).
21. Overall, the "loose ends" of north-south rapid transit lines are connected to enable rapid access to destinations along the 401RT's east-west axis. This is highly significant.
22. Overcrowding of the Yonge Subway as a result of high 401RTX ridership is avoided once the Ontario government's plan to extend the Ontario Line to Sheppard Avenue East is completed; this essential extension should coincide with 401RTX implementation.
23. The 401RTX may reduce the number of automobiles on Highway 401 and other roads by approximately 15%, a reduction that can enable some streets to have more and safer bicycle lanes, wider sidewalks, and more greenscaping.
24. The addition of large multi-level garages above the Weston and Jane 401RTX stations (plus access ramps) may enable the creation of a transfer point for drivers having come into Toronto on Highway 400. This enables people to avoid using city streets to get to downtown Toronto or other destinations.
25. In general, access to services and to employment across Toronto and to/from Mississauga, Pickering and Brampton become much faster and easier, especially for persons of modest incomes, or who do not own cars or cannot drive. This is a significant enhancement of quality of life for them.
26. The northwest arm of the 401RTX brings parts of Milton and Brampton within rapid transit commuter range of Toronto. For example, travel time on the 401RTX from its Derry Road terminus to Pearson International Airport is approximately 25 minutes.
27. Rapid, affordable, and direct rapid transit access to Pearson International Airport from downtown and from suburban locations across the region is created (Approximately 85% of trips to the airport do not originate from downtown Toronto).
28. Travel costs are reduced for thousands of households as fewer cars need to be owned, or are used less. Money saved can be redirected towards other household priorities. After-tax household savings vary widely, but can range between $11,000 and $20,000 per year per vehicle (or more), less the cost of using public transit (approx. $1,900/year in 2024). **This is a significant household affordability benefit**.
29. For many commuters, the 401RTX becomes the first alternative to what is now an expensive forced daily drive on congested highways to and from Toronto.
30. The Greater Toronto Airports Authority's plans for a transit hub are transformed to be much more effective, and perhaps simplified; parking infrastructure would be reduced.
31. Rapid direct access to Pearson International Airport via the 401RTX from locations across Toronto makes the Government of Ontario's planned $1.4 billion extension of the Eglinton Crosstown LRT from Renforth to Pearson International Airport unnecessary. A 401RTX northward from the juncture station at Eglinton Avenue east of Renforth Drive would provide the rapid transit link to/from Pearson. The LRT

extension would be an impediment to a continuous 401RTX service to and from Pearson; **it should not be built**.

32. Access to the employment areas surrounding Pearson airport is greatly improved; these employment areas in Mississauga and Toronto revitalize as accessibility to them improves, and helps them to become more attractive to business and to workers.
33. Current and forecasted road overcapacity situations in the large employment areas around Pearson International Airport are reduced.
34. Employment opportunities and labour market conditions are enhanced. Fewer people will decline employment opportunities near the airport or elsewhere due to road congestion and travel times. This resolves an important concern of employers regarding workforce access, especially at and near Pearson International Airport.
35. The 401RTX's intersect with the Line 2 subway's extension at Scarborough City Centre significantly increases ridership on that extension.
36. Enhanced access from across all of Toronto to the University of Toronto Scarborough Campus, Centennial College (Scarborough), York University, and the U of T downtown campus is created. Many students will no longer need to decide on courses of study based on travel time and distances to campuses, nor will need to acquire an automobile for their commutes.
37. Improved and rapid access to the University of Toronto's Scarborough campus using the 401RTX will reduce ridership volumes on the proposed Eglinton Crosstown East LRT extension, **rendering it unnecessary**. Savings from eliminating the LRT extension approaches $5.5 billion. However, it may be worthwhile to extend the LRT from Kennedy station to Kingston Road only, a cost of approximately $2 billion.
38. Overall, the 401RTX serves Scarborough residents much better than the Sheppard Subway, **rendering the entire Sheppard Subway obsolete**.
39. The perceived need for a Jane Street LRT proposed by Toronto would become less necessary, as east-west connections provided by the 401RTX, the Finch West LRT, and the Eglinton Crosstown LRT at Jane attract Jane bus users and reduce passenger volumes and trip-length crowding on Jane Street buses to Bloor Street. Savings may be $2.6 billion.
40. Access to employment opportunities and services for residents of disadvantaged communities and for people who do not drive automobiles is significantly improved.
41. Direct rapid transit access to Mississauga's Airport Corporate Centre (at MACC station) from across northern Toronto and from central Mississauga is created.
42. Canada and Ontario government capital cost contributions could result in an influx of more than $50 billion into the Toronto area economy during the 401RTX's construction. Almost all of the 401RTX's costs would be provincially and federally funded.
43. Overall, federal cost-sharing would make the 401RTX a much more financially advantageous option for the Government of Ontario, compared to the proposed Highway 401 tunnel (illustration at right). Shareability would be based on improving economic productivity, environmental benefits, and social factors.

Cost-Sharing Options	Gross Cost ($millions)	Federal Cost-Sharing	Net Ontario Cost ($millions)
Highway 401 Tunnel	90,000	0%	90,000
401RT Express	68,400	40%	41,000
Cost Savings	21,600		49,000

The 401RT Express may be cost-shareable as a Build Canada project, or as a fundable public Transit project.

44. The 401RTX creates a large economic stimulus as approximately **40,000** new jobs are created for up to 12 years during the 401RTX's construction – more than any other transportation job creation project in the GTA has achieved.
45. Hundreds of ongoing transit operating jobs are created, including maintenance, customer service, security, administration, and more.
46. Economic losses from traffic congestion are reduced; business efficiency is improved.
47. Economic losses from imports of motor vehicle fuels and automobiles are reduced. Most cars and trucks sold in Ontario are imported, as is almost all fuel.

48. The number of deaths and injuries from motor vehicle collisions and the traumas and costs borne by the families and friends of crash victims are reduced, as are the associated daily congestion effects of collisions.
49. The 401RTX helps enable the transformation of Yonge Street north of Highway 401 as the Yonge Street subway is extended to Highway 7. The 401RTX will attract new transit users from driving on Yonge Street, by making it easier for them to access employment east and west of Yonge Street.
50. Greenhouse gas emissions are reduced by more than 800,000 metric tons per year until electricity-powered vehicles become more prominent. Toxic vehicle emissions and their negative effects on health are also reduced.
51. The operational effectiveness of the Toronto area's pre-existing transit system is improved; for example, more people will use existing buses and new buses for local trips not related to the 401RTX (approximately 52 million per year by 2051) as service frequencies improve with the addition of more than 600 north-south buses as part of the 401RTX concept. Frequency of service for some of these routes may be reduced to five minutes.
52. Suburban sprawl is eased, as development in the central area of the GTA is attracted by the 401RTX, including construction of buildings near and at 401RTX stations, and along intersecting arterial roadways served by enhanced bus services.
53. Property tax revenues are increased from new urban development at/near 401RTX stations, and from increased property values in parts of Toronto, Mississauga, and Pickering, and in some '905' areas served by GO Transit.
54. For owners of real estate near 401RTX stations, property values will increase. (Unfortunately, this also means buyers must spend more money to purchase property.)
55. Improved transit access via the 401RTX supports an increased distribution of work across Toronto outside the downtown core and in Mississauga.
56. Rapid access to/from the 401RTX improves automobile-free connectivity for businesses, and access for workers who live both downtown and in suburban areas.
57. Rapid transit access to places of work or to home outside the downtown core may enable the number of parking spaces downtown and across Toronto to be reduced, even as overall travel demand increases with population growth. Opportunities increase to transform public downtown parking spaces into affordable housing, open greenspaces and other public uses.
58. Overall operating revenues for the 401RTX may cover 100% of costs or more by 2051, much better than that of Toronto's overall public transit system. (The estimate assumes that 401RTX users will pay a small premium fare than the standard fare for TTC buses.)
59. Based on estimated new transit ridership generated by 2051, the overall capital cost-effectiveness of the 401RTX would be more than twice that of Ontario's announced 2019 Rapid Transit Plan for Toronto, based on the cost per new transit trips generated (Costs of the ORTP are not final).
60. Based on total new transit ridership generated by 2051, the capital cost effectiveness of the 401RTX compared to the proposed High-Speed Rail (HSR) service from Toronto to Windsor would be approximately 14 times that of the relatively lightly-used HSR.
61. Based on total new transit ridership generated, the 401RTX would be extraordinarily more cost-effective than a high-Speed rail service between Quebec City and Toronto, serving ten times the

Ontario Rapid Transit Plan vs. 401RT Express	New Trips (Million/yr) 2051	Infra. Cost ($Mil)	Cost per New User
Ontario Rapid Transit Plan*	118	39,500	$335
401RT Express	436	68,400	$157
Comparative Ratio	3.70	1.73	2.14
401RT Cost Effectiveness Advantage			**2.14**

* Costs of the announced $28.5 billion have increased to approximate current values, and include the Hazel McCallion LRT, the Ontario Line, the Yonge North Suubw ay extension, the Scarborough Subw ay, and the Eglinton West LRT extension to Renforth.

High Speed Rail to Windsor vs. 401RTX	**Millions of New Trips/ year 2051**	**Gross Infra. Cost ($Mil)**	**Cost per New User**
HSR to Windsor	10	21,000	$2,100
401RT Express	436	62,300	$143
Comparative Ratio	44	2.97	**14.7**

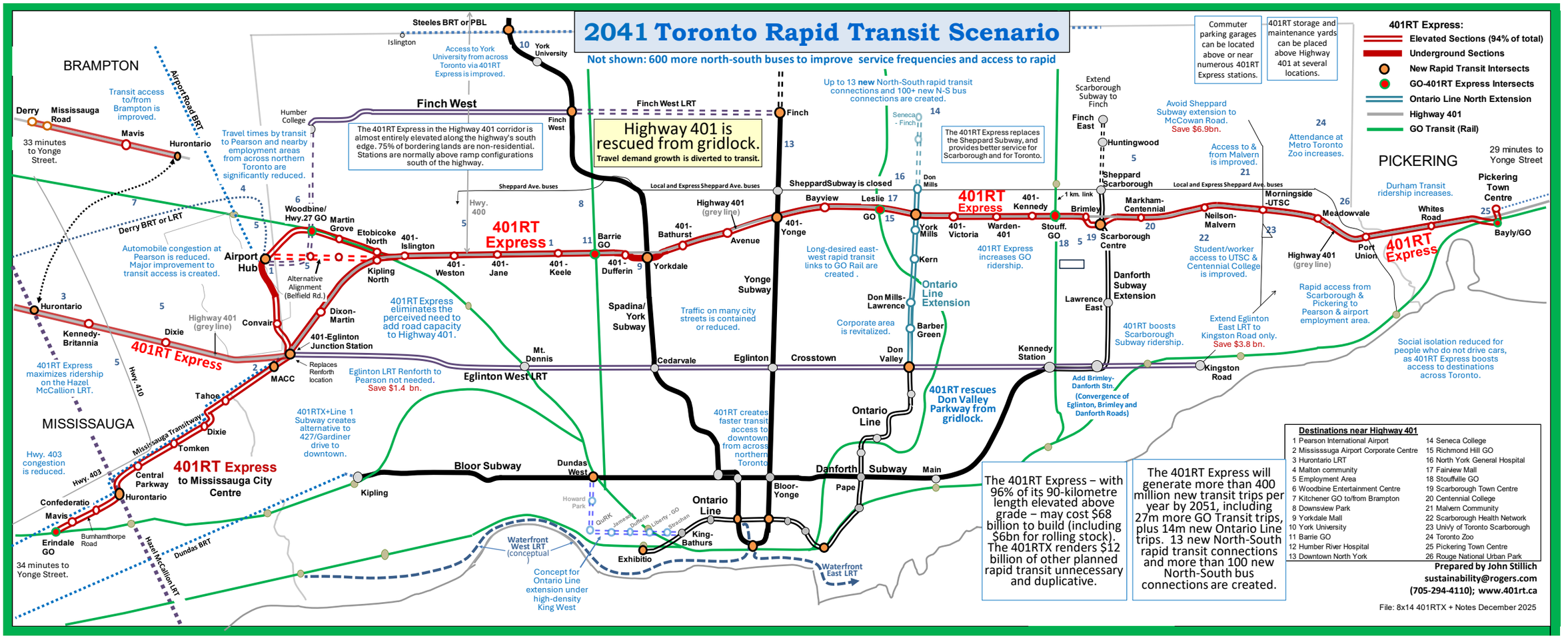
401RT Express is multiple times as cost effective as the HSR Toronto to Windsor, based on new transit trips generated.

number of trips at much less cost. The comparative cost effectiveness of the 401RTX enhances arguments for federal cost sharing.

Comparing Rapid Rail Concepts	Millions of Trips/year 2051	Gross Infra. Cost ($Mil)	Cost per User
Alto HSR Toronto to Quebec City			
- Recent Estimate	40	$90,000	$2,250
401RT Express*	438	$62,300	$142
Cost effectiveness advantage of 401RT Express:			**15.8**

* Excluding rolling stock

62. For Mississauga's residents, the 401RTX through downtown Mississauga would enable affordable access to destinations to and from the airport area and across Toronto, and generate modal shifts to public transit that would reduce growing congestion on Highway 403 to/from Toronto.
63. The operational revenue-to-cost ratio of the Hazel McCallion LRT in Mississauga is improved as intersects with the 401RTX at two points attracts additional new ridership; additional high-density urban development at and near Hurontario Street is supported.
64. The 401RTX at its Port Union, Whites Road, and Liverpool stations enables transfers between the Durham-Scarborough BRT and 401RTX to speed travel for many cross-boundary commuters. The Scarborough portion of the BRT would become unnecessary.
65. In York Region, the 401RTX would ease road congestion to and from Toronto as north-south York Region bus services connecting to the 401RTX improve.



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A 2051 Scenario of Modal Shifts from Highway 401 to 401RT Express

Transit ridership are largely based on the diversion from projected Highway 401 traffic volumes

	AM & PM Peaks		Off-Peak Periods - Note 1		Totals
	Non-Commercial	Commercial	Non-Commercial	Commercial	(Daily)
Based on Derry to Liverpool segment (on-ramp AADT):					
(Sum of all Highway 401 segments 2019 - Liverpool to Winston Churchill)					
Period % split of 24hrs (input)	50%	50%	50%	50%	
Hwy 401 total vehicles/day - 2019	526,500	123,500	526,500	123,500	**1,300,000**
Based on MTO's AADT 2019 data. Assumes the average trip length on Highway 401 is 8.2 segments btwn interchanges out of 32 total.					
(Commercial Veh. @ 19% per MTO)					
Incr. in vehicles, 2019-2024 5.4% growth	554,931	130,169	554,931	130,169	1,370,200
Relative Space Utilization	1.0	1.5	1.0	1.5	1.095
(Assumes that the average truck on Highway 401 consumes 1.5 times the amount of road space as an automobile or pickup truck)					
2024 spatial equivalency	554,931	195,254	554,931	195,254	1,500,369
Freight efficiency increases, if any (input)		10%		10%	
Net spatial efficiency before modal shifts	554,931	175,728	554,931	175,728	1,461,318
Hwy 401 spatial equiv. 2051 @ 35.0% growth	749,157	237,233	749,157	237,233	1,972,780
Modal shift rate applied to net Equiv. (input)	50.0%		25.0%		
The % represents a scenario of modal shifts achieved by 2051. Assumes that during off-peak periods, a higher portion of Highway 401 users will continue to use the highway. The modal shift also reflects that using local roads as an alternative to the 401RTX may be slower than using the 401RTX for E-W segment of trips, i.e., a high % of travelers will have no practical choice other than to use the 401RTX. The shift rate may also incorporate changes in remote office work, and potential effects of highway congestion tolls, which would be appropriate after the 401RT Express becomes a practical alternative to driving.					
Total shift achieved	**374,578**	**-**	**187,289**	**-**	**561,868**
2051 space equivalency before shifts	749,157	237,233	749,157	237,233	1,972,780
Less shifts to 401RTX achieved (above)	374,578	-	187,289	-	561,868
Net 2051 net spatial equivalents	374,578	237,233	561,868	237,233	1,410,912
2024 net spatial equivalency (per above)	554,931	175,728	554,931	175,728	1,461,318
Increase or (decrease) in hwy congestion	(180,353)	61,505	6,937	61,505	(50,406)
Islington/401 to Pearson to Erindale GO Segment:					
Period % split of 24hrs	50%	50%	50%	50%	
Total vehicles/day - 2019	172,125	40,375	172,125	40,375	**425,000**
(This is an uncertain representation of what the volumes may be - no specific info was found re non-401 trips in Pearson area or downtown Miss'ga. Used AADT volume for Hwys 403 & 409 + figures for trips to/from other arteries. Highly speculative; A SCENARIO ONLY.					
(Commercial Veh. @ 19% per MTO)					
Incr. in vehicles, 2019-2024 5.4% growth	181,420	42,555	181,420	42,555	447,950
Relative Space Reqmt	1.0	1.5	1.0	1.5	1.095
(This assumes that the average truck on Highway 401 consumes 1.5 times the amount of road space as an automobile or pickup truck)					
2024 spatial equivalency	181,420	63,833	181,420	63,833	490,505
Freight efficiency increases, if any (input)		10%		10%	2.6%
Net spatial efficiency before modal shifts	181,420	57,450	181,420	57,450	477,739
Hwy 401 spatial equiv. 2051 @ 35.0% growth	244,917	77,557	244,917	77,557	644,947
Modal shift rate applied	50%	0%	25.0%	0%	28.5%
The % represents a scenario of modal shifts achieved by 2051. Assumes that during off-peak periods, a higher portion of Highway 401 users will continue to use the highway. The modal shift also reflects that using local roads as an alternative to the 401RTX may be slower than using the 401RTX for E-W segment of trips, i.e., a high % of travelers will have no practical choice other than to use the 401RTX. The assigned shift rate can also incorporate changes in remote office work, and potential effects of highway congestion tolls, which would be appropriate after the 401RT Express becomes a practical alternative to driving.					
Modal shift achieved	**122,458**	**-**	**61,229**	**-**	**183,687**
2051 space equivalency before shifts	244,917	86,174	244,917	86,174	662,182
Less shifts to 401RTX achieved (above)	122,458	-	61,229	-	183,687
Net 2051 net spatial equivalents	122,458	86,174	183,687	86,174	478,495
2024 spatial equivalency (per above)	181,420	57,450	181,420	57,450	477,739
Increase or (decrease) in hwy congestion	(58,961)	28,725	2,268	28,725	756
SUMMARY:					
2051 spatial equivalents before shifts	994,074	323,407	994,074	323,407	2,634,962
Less total shift achieved (per above)	497,037	-	248,518	-	745,555
Net 2051 spatial equivalents	497,037	323,407	745,555	323,407	1,889,407
2024 spatial equivalency	736,351	233,178	736,351	233,178	1,939,057
Increase or (reduction) 2024 to 2051	**(239,314)**	**90,230**	**9,204**	**90,230**	**(49,650)**
(The target should be to achieve a volume of motor vehicle trips that is lower than 2024 volumes.)					
Other 401RT Express ridership factors:					
Modal shifts to 401RT Express (per above)	497,037	-	248,518	-	745,555
Other modal shifts resulting from the 401RT Express:	Urban development at/near 401RT Express stations (higher transit modal share due to close proximity to 401RTX)				26,384
	401RTX ridership increase from new GO Transit intersects				65,753
	Higher transit share of trips to Pearson (**air travelers only**)				23,000
	Trips transfered from Sheppard Subway				41,000
	Other trips – transfers from parallel roads, worker trips to/from Pearson area, other discretionary trips (unresearched).				75,000
					976,692
	Other factors @ 0% (input)				-
	Total daily 401RT Express trips - 2051				976,692
	2051 401RT Express trips - Annual Equivalent				**356,490,000**
New non-401RT Express trips:	New GO Transit trips (excluding Lakeshore E & W)				27,390,000
Assumes a 25% increase in GO Transit ridership by 2055 for Kitchener, Barrie, Stouffville and Richmond Hill routes intersecting with the 401RTX, and a 15% increase in Lakeshore East GO route at the Pickering 401RT Express intersect.					
	Non-401RT Express transit trips generated by more N-S buses				52,000,000
The bus routes intersecting with the 401RTX assume a 20% increase in fare-paying boardings applied to overall travel demand projected for 2051, plus a 10% congestion and car cost increases.					
	Total annual effect of 401RT Express: 2051 Scenario				**435,880,000**

Estimations exclude effects of AI and trade wars (assumed to be temporary). More people may have retired from employment, but more people may have to rely on transit for household financial reasons or not wanting to drive, or being unable to drive.

Ridership will rise as segments are completed; those will be difficult to forecast. Ridership will be synergystically low for individual segments - the longer the contiguous operating 401RTX is, the higher the boardings per station.