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GT-Rail: Attractive and Affordable Rapid Transit Across the GTA: A Submission to the Greater Toronto Transportation Authority

Transport 2000 Ontario – June 1, 2007

Summary

The Greater Toronto Area (GTA) is facing severe traffic congestion, air pollution, and the challenge to reduce greenhouse gas (GHG) emissions. To achieve sustainable mobility in the GTA requires getting people to increasingly use transit. In a region as large as the GTA, attracting people to transit requires a region-wide network of rapid transit linked to local transit services. Transport 2000 Ontario believes that there is an affordable way to bring rapid transit to the GTA.

Transport 2000 Ontario proposes a new type of rail transit service which we call “GT-Rail” for “Greater Toronto-Rail.” GT-Rail would add rapid transit service on existing railway corridors that now support GO Transit commuter rail trains, or are candidates for such service. Diesel multiple-unit (DMU) trains would be used to provide frequent all-day two-way service in a GTA catchment area with substantial local population and employment but not as extensive as the full GO Transit authorized commutershed.

GT-Rail will provide rapid transit on railway tracks. The present GO Transit commuter rail system, based on locomotive-hauled 10-12 car multilevel trains, would remain, but would evolve into an express service in the GTA’s core area. In the GTA’s core area, GT-Rail would provide local rapid transit based on added train stops at or near major arterial road crossings so as to make connections with local transit, whether bus, streetcar, light rail transit LRT, RT, or subway. These two levels of service taken together would help achieve a high level of rapid transit connectivity across a major portion of the GTA which has long been missing, and which is deemed necessary by transit experts to attract a higher share of riders to transit in a region as large as the GTA.

The regional transit solution

Rail-based transit is the obvious solution both as a means to attract people out of their cars, but also to foster environmentally sustainable compact commercial and residential development, focused on transit stations. Yet transit will only work as a solution if service is frequent and high quality, and there is a network so that the public can get to all the different destinations they need.

That is starting to happen in the GTA. The TTC has launched its Transit City plan using LRT, and some 905 cities are implementing rapid bus systems that could be later converted to LRT. GO has

been expanding the capacity of its commuter rail network, with an extension planned to Barrie, for example, and is expanding its express bus system as well.

Of the transit modes, rail is the most effective in attracting people out of their cars because it offers a higher quality ride. Rail systems have been proven to draw compact development at transit stations because they are permanent, unlike bus-based systems that can be easily changed. Commercial developers require 10+ years for their projects to pay back. Rail systems give that assurance.

There are limitations to transit as deployed in the GTA. Local transit -- bus, LRT, subway -- are effective for short trips up to 15 kilometers, but are not as attractive for longer journeys, such as from Etobicoke to Markham, or from Long Branch to Malvern. GO Transit's commuter rail is focused on bringing people from the populated 905 belt (25 km+) to and from downtown Toronto. It does not meet very well the transit needs of the inner suburban areas (15km-25 km), reverse commutes, or cross-regional travel.

One popular option is using conventional heavy rail lines to provide regional rapid transit. This type of train service is found around the world in wealthy urban regions. In its common form it is the result of electrified suburban train services which have evolved into urban and regional transit. Paris has its RER, Berlin its S-Bahn, Madrid and Barcelona their Cercanias, and Brussels its CityRail. (These are separate and distinct from the subway, bus and streetcar systems of these cities.) These systems enhance the economic success and stature of these regions by providing swift, attractive regional rapid transit.

The GTA can be one of those regions. Our communities are blessed by a network of railway lines that are either underutilized, are in the process of being improved, and/or can be readily expanded to link the region's major employment and residential centres, plus major transportation hubs, such as Union Station and Pearson Airport.

The rail network opens the door on a great many opportunities to attract compact development. This is especially the case where former industrial areas on rail corridors are being considered for mixed uses that have the prospect of revitalizing nearby neighborhoods because of significantly improved transit.

Regional rail rapid transit opportunity: building on past planning

The Province of Ontario's *Places to Grow* plan for the Greater Golden Horseshoe, issued in June 2006, promotes balanced transportation to reduce reliance on any single mode, gives first priority to expanded public transit infrastructure and encourages increased modal shift in favour of transit. It also backs transit-supportive land use planning, and encourages transportation corridors which can also support land use intensification. An earlier *Places to Grow* discussion paper recommended that GO Transit rail services move towards all-day two-way service, and that new services be established on additional corridors or extended on existing corridors.

In 2000, the Toronto Board of Trade issued a study calling for the region-wide use of existing rail corridors in the GTA with DMU train services operating at what it called "urban frequencies" (every 15-20 minutes or less). Even earlier, a study done for Metropolitan Toronto in 1991 by the consulting firm IBI, entitled *Commuter Rail Station Location Study*, looked at ways to increase transit connectivity by increasing the number of GO commuter rail stations where GO rail lines crossed major arterial roads and TTC routes. For the rail network, IBI assumed GO commuter rail service on all existing railway corridors in Metro Toronto. The study noted 17 existing GO rail stations in Metro Toronto at that time, identified 98 potential station sites, and then examined in detail 31 sites after

discarding sites for a number of reasons. The study adopted GO Transit's standard of stations at least three kilometers apart. In the *Places to Grow* discussion papers, the Board of Trade report, and the IBI study for the former Metro Toronto, frequent all-day two-way rail service across existing rail corridors was the ultimate goal -- more service on a broad network with more stations.

Taking our lead from these past studies, and considering the pressing need for a transit-oriented GTA, Transport 2000 Ontario proposes GT-Rail which will feature state-of-the-art high-performance, low-emissions and wheelchair-accessible diesel multiple-units as a practical match for the GTA's rail corridors to the electrified systems like Berlin's S-Bahn. GT-Rail would offer superior performance, enable regional travel and provide a higher level of service for journeys of 10 km-25 km in length. It would tightly integrate with other local transit, GO Transit commuter rail and bus, and VIA Rail trains to permit car-competitive seamless and convenient travel. GT-Rail could also help link Pearson Airport with the City of Toronto and with the rest of the GTA, attracting travelers, well-wishers, and employees out of private vehicles.

GT-Rail would be a catalyst to environmentally-sustainable compact commercial and residential development on major corridors. A high-frequency and high-quality regional rapid transit service is appealing to employers, businesses, and residents. GT-Rail could also foster sustainable development at the Woodbine Racetrack, which is adjacent to the Georgetown line and is close to Pearson Airport.

GT-Rail envisages using existing rail corridors with train frequencies of every 15-20 minutes and with stops at about two-kilometer intervals. The diesel multiple-units would be coupled in trains three to six cars in length so that the standard platform would about half the current GO station platform lengths.

GT-Rail would be a new level of service. It would be inappropriate to use current bi-level trains for regional rapid transit. Adding stops to existing GO commuter rail services would be counter-productive as it would add to trip time in a way that would discourage use. Our purpose is the opposite: to increase the connectivity over a significant portion of the GO rail network by making it possible to change between express commuter trains and local trains, and also between local trains and local transit.

Diesel multiple-unit technology: a renewed interest

DMUs are not new to the GTA. GO Transit early on operated a small fleet of single-level diesel multiple-units built by Hawker Siddeley Canada, which were virtually identical in appearance to GO's original equipment constructed in 1967, when GO opened. The DMUs operated in off-peak and, when all were coupled together, in peak service. Canadian National and the Canadian Pacific Railway also operated limited commuter rail, from Stouffville and from Peterborough and Havelock using Budd-built rail diesel cars. Rail diesel cars were also used by the CPR in commuter service in Montreal. DMUs in mixed service with conventional commuter trains (like on GO) fell out of favour for a host of operational reasons. For example, DMUs become less economical to run when in longer trains.

In recent years there has been a resurgence of interest in diesel multiple units. One manufacturer, Colorado Railcar, is building DMUs for transit authorities in Oregon and Florida. A new DMU-operated commuter rail line west of Portland, Oregon, the Washington County Commuter Rail, will open in 2008. Lighter European-designed diesel multiple-units have and/or are entering service under special conditions where there are no other types of trains running (in Ottawa, New Jersey, and north of San Diego, California). GT-Rail will require DMUs that can safely share the same tracks and be intermixed with conventional GO commuter, VIA Rail intercity, and CN and CPR freight trains.

We have mentioned a GT-Rail train configuration of at least three cars. This would permit accessibility by having the middle car in a three-car configuration low-floor, which avoids building short high ramps at stations called mini-blocks. A substantial order of DMU cars would generate competition from manufacturers that would encourage the incorporation of state-of-the-art technologies in a rail car model that would be appropriate in a North America's environment. In instituting GT-Rail, the Greater Toronto Transit Authority (GTTA), the successor to GO Transit, would again be moving the GTA and Canada in an innovative direction. Purchasing a DMU fleet would create a new standard for diesel multiple-units. There is interest in other parts of Canada, such as in Ottawa, on Vancouver Island, and in the Vancouver area in diesel multiple-units, as well as in the USA.

Here is a summary of diesel multiple-units advantages for GT-Rail compared with locomotive-drawn longer trains:

- lower overall operating costs
- energy efficient with lower emission levels
- one operator required per train
- faster acceleration
- possible automatic coupling of groups of cars (helpful for split/merge services)
- accessibility features
- overall high level of comfort for passengers

GT-Rail: heavy rapid transit without the heavy costs

GT-Rail enables reasonably high quality heavy rapid transit without the major costs and the long construction times before benefits are realized. Those benefits are substantial. Here are two examples:

--GT-Rail would enable faster service to Scarborough Town Centre at a fraction of the cost of extending the Bloor-Danforth subway. A GT-Rail service on the GO/CN Stouffville line, including walking from Union Station to King and Bay and transfer/ride on the RT, could take 35 minutes, as compared with 46 minutes on the TTC subway and RT.

--GT-Rail would cut the total travel time to Weston (Lawrence/Weston Road). GT-Rail on the GO/CN Georgetown line would take 27 minutes as compared with 40-46 minutes via TTC subway to Lawrence West, subway to bus transfer, and bus.

GT-Rail would be perceived as having a higher-quality and more attractive ride because it would have limited stops, compared with the subway, plus the transfer, in the case of going to Scarborough Town Centre, at the very busy Bloor/Yonge subway station.

GT-Rail would be less expensive than light rail transit (LRT), subway and bus rapid transit (BRT) in dedicated busways in the same corridors. Commuter rail and rapid transit on existing rail lines typically cost between \$4 million to \$7 million per kilometre. In contrast, high-capacity LRT can cost from \$35 to \$70 million/km. while the price tag for heavy subway or elevated rapid transit is close to \$150 million/km. BRT is more expensive than commuter rail, at up to \$35 million/km.

GT-Rail could be up and running as little as three years from agreement to opening day, the major factor being equipment design, manufacture, and testing, as compared with up to 7 to 10 years for a new LRT, subway, or BRT system.

Candidate GT-Rail routes and network connectivity

GT-Rail would use existing CN Rail and CP Railway tracks, plus an eventual rail link from the CN Rail/GO Georgetown line into Pearson Airport. GT-Rail would operate through Union Station with minimal (1-2 minute) station dwell times compared to 6 minutes for GO Transit commuter trains on the Lakeshore route. Some possible routes are suggested below for illustrative purposes only.

Possible GT-Rail routes for illustrative purposes:

GT-R1 Pickering-Toronto Union Station-Brampton-Mt. Pleasant
GT-R2 Pickering-Markham-Brampton-Mt. Pleasant
GT-R3 Oakville-Toronto Union Station-Mt. Joy
GT-R4 Pearson Airport (or Woodbine hub)-Port Credit-Oakville
GT-R5 Erindale-North Toronto-Unionville

GT-Rail will require some track and signal improvements, depending on the route. GO Transit has a large-scale rail infrastructure improvement program underway that will support GT-Rail services. There would be a need to add sidings on extensive single-track sections of routes. Routes that would use current CN and CPR freight-only track would require major study, planning, agreements, and investment initiatives.

GT-Rail could serve existing and but also new stations (some examples):

GT-R1: Pickering, Rouge Hill, Guildwood, Eglinton, Scarborough, Danforth, Queen East (new), Union, Parkdale (new), Bloor, St.Clair/Keele (new), Mt. Dennis (new), Weston, Etobicoke North, Woodbine/Airport (new), Malton, Bramalea, Brampton, Georgetown, Mt. Pleasant.

GT-R2: Pickering, Unionville South (new), Don Mills North (new), Yonge/Thornhill (new), Vaughan Corporate Centre (new), Islington North (new), Bramalea, Brampton, Georgetown, Mt. Pleasant.

GT-R3: Oakville, Clarkson, Port Credit, Long Branch, Kipling South (new), Humber (new), Sunnyside (new), Exhibition, Union, Queen East (new), Scarborough, Kennedy, Ellesmere (new), Agincourt, Finch East (new), Milliken, Unionville, Old Unionville (new), Centennial, Markham, Mt. Joy.

GT-R4: Pearson Airport (new)-Woodbine/Airport (new), St. Clair/Keele (new), Jane/Dundas (new), Kipling, Long Branch, Port Credit, Clarkson, Oakville.

GT-R5: Erindale, Cooksville, Dixie, Kipling, Jane/Dundas (new), Dupont (new), North Toronto (new), Leaside (new), Don Mills (new), Warden/Ellesmere (new), Agincourt, Finch East (new), Milliken, Unionville.

GT-Rail would interchange with the TTC subway/RT at:

GT-R1: Main Street, Union Station, Dundas West
GT-R2: Vaughan Corporate Centre
GT-R3: Union, Kennedy, Ellesmere
GT-R4: Kipling
GT-R5: Kipling, Dupont, Summerhill

GT-Rail would provide direct connections to GO Train services at:

- GT-R1: Pickering, Union Station, Bloor, Brampton, Georgetown, Mt. Pleasant
- GT-R2: Pickering, Unionville (walkway), York University (subway), Brampton.
- GT-R3: Oakville, Clarkson, Port Credit, Exhibition, Union, Kennedy, Unionville.
- GT-R4: Kipling, Port Credit, Oakville.
- GT-R5: Erindale, Cooksville, Dixie, Kipling, Unionville.

In addition to the connectivity offered by GT-Rail for local transit and for GO, its stations might also generate shuttle buses/van services to nearby employment centers and concentrated shopping venues.

GO Transit commuter rail segments that could become express services:

GT-Rail will permit GO trains that have been making local stops within Toronto and Brampton to operate express, which will reduce travel times and deliver perceptually better service for GO customers.

1. Georgetown Line. Express (with stop at Bloor) to Brampton, local to Georgetown.
2. Lakeshore East. Express (with stop at Danforth) to Pickering, local to Oshawa.
3. Lakeshore West. Express (with stop at Exhibition) to Port Credit, local to Oakville and Hamilton.
4. Stouffville. Express (with stops at Kennedy and Unionville) to Markham, local to Stouffville.

Added connections to the TTC:

GT-Rail would be enhanced by near-term/medium-term improvements to the TTC streetcar/LRT network including:

1. TTC Waterfront West LRT would be extended to Long Branch via Dufferin, King, and the Queensway, connecting to GT-Rail at Exhibition, Sunnyside, and Humber.
2. TTC Waterfront Loop LRT from Dufferin/Queen to Spadina and Exhibition to permit direct connections to the waterfront from Brampton at Parkdale (Queen/Dufferin) and a secondary regional connection at Exhibition.
3. TTC Waterfront East LRT from Spadina or Union to a new Queen East station served by GT-Rail.
4. The St. Clair carline would be extended to Jane/Dundas.

GT-Rail would also connect with the TTC's proposed TransitCity LRT network at:

- GT-R1: Guildwood, Mt. Dennis (Eglinton), St.Clair, Weston (with a short branch from Jane to Weston on Lawrence), and Woodbine/Airport with an extension of Finch West line.
- GT-R2: Don Mills North.
- GT-R3: Long Branch, Kennedy, Agincourt.
- GT-R4: Jane/Dundas.
- GT-R5: Jane/Dundas, Don Mills, Agincourt.

Pearson airport access: In this report, Transport 2000 takes a neutral position regarding the details of how Pearson Airport should be served by heavy rail. The proposal for triple track for segments of the CN/Georgetown route from Union Station to Weston clearly makes possible GT-Rail service in this

corridor. The western portion of GT-R1 has the major benefit of bringing rapid transit to the west side of the old cities of Toronto and York quickly and at low cost. The local level of service would tie into any Pearson Airport express service at both Bloor Street (with subway connection) and at the Woodbine hub.

Fares and fare collection: The GT-Rail proposal assumes a 21st-century integrated fare system across the GTA. One possibility for GT-Rail is to use the same fare as local transit with free transfers with a zonal system for longer trips crossing between two or more local transit systems.

Conclusion

The GTA needs new transportation solutions to cut pollution, the economic costs of people and goods caught in gridlock, the downstream costs such as higher healthcare expenses, and to enable a sustainable, environmentally-sound economy that will permit the region to effectively compete with others on a global stage. The time to act is *now*.

On May 23, 2007, Jeffrey Simpson, in the *Globe and Mail*, wrote: “Rapid transit within Canadian cities is back in favour – about two decades too late. In *all* of Canada’s large cities, public transit, especially of the rail/subway variety, has fallen way behind population growth and environmental necessity.”

With GT-Rail, Transport 2000 has proposed a realistic and affordable way of achieving a rapid transit network for the GTA using existing rail corridors. Electric heavy rail suburban services have been in existence for 100-years. It is not a stretch to recommend a diesel analogue for the relatively corridor-rich Greater Toronto Area.

The continuing ridership growth on GO Transit’s commuter rail and bus system, the public’s demand for more service from GO Transit, along with increasing TTC ridership demonstrate pent up demand for better transit in the GTA.

A transit-oriented GTA will attract many more new riders. In terms of ridership increase per dollar of investment, services like GT-Rail stand out. GT-Rail would result in a quantum leap for mobility in the GTA. It would also bring large dividends in the greening of our city-region. It would bring energy savings and promote compact urban development of all kinds. GT-Rail, the TTC’s Transit City plan, and similar rapid transit plans in 905 cities would be nothing less than a transit revolution for our city region, and would propel the GTA forward as a leader in going green in North America.

Transport 2000 Ontario sincerely hopes that this proposal receives serious consideration.

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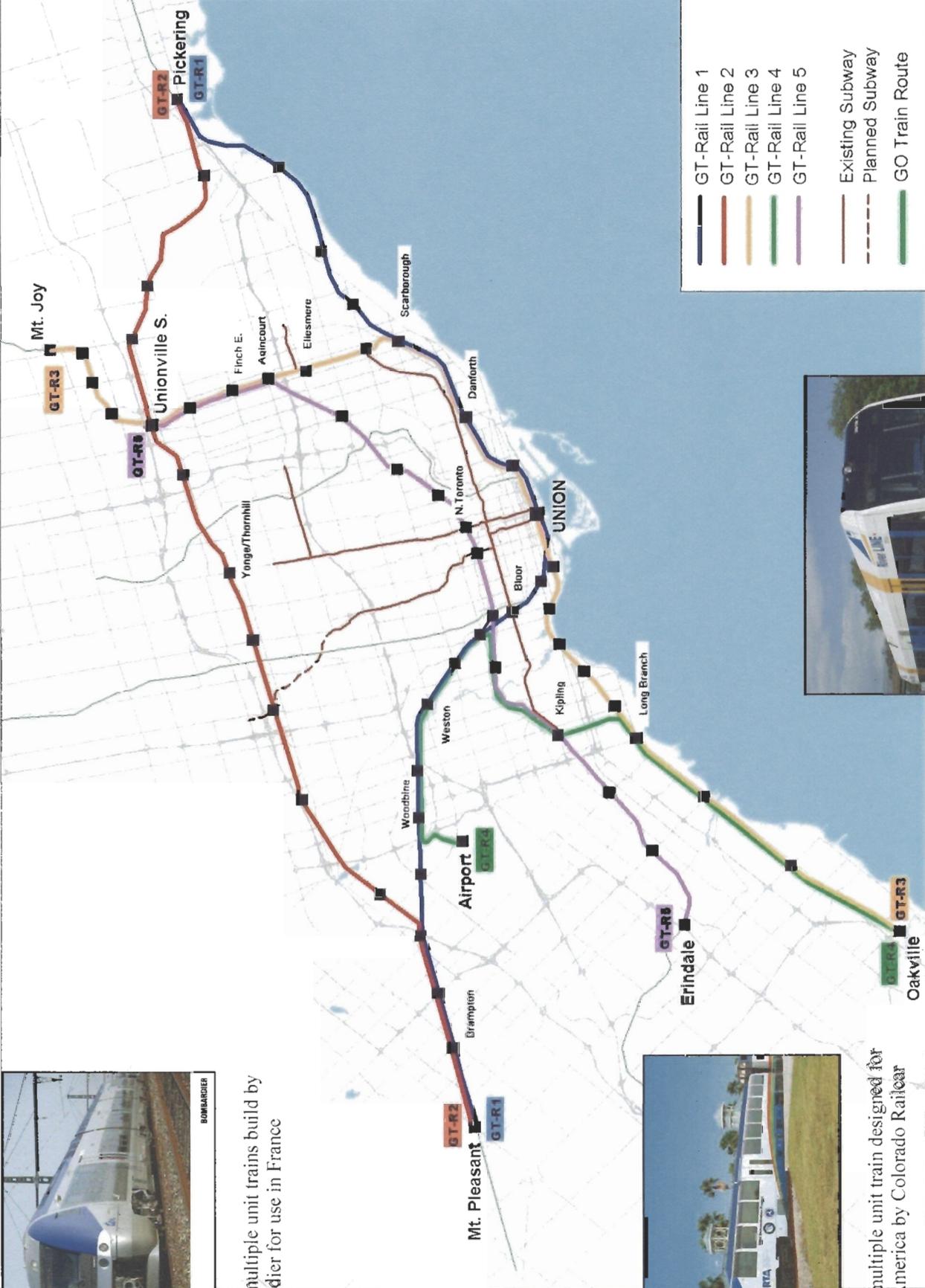
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GT-Rail Concept



Diesel multiple unit trains built by Bombardier for use in France



Diesel multiple unit train designed for North America by Colorado Railcar



New Jersey Transit River Line diesel multiple unit train built by Siemens