

SouthwestLynx:

Integrated High-Performance Public Transportation for Southwestern Ontario

By Greg Gormick
On Track Strategies

June 2018



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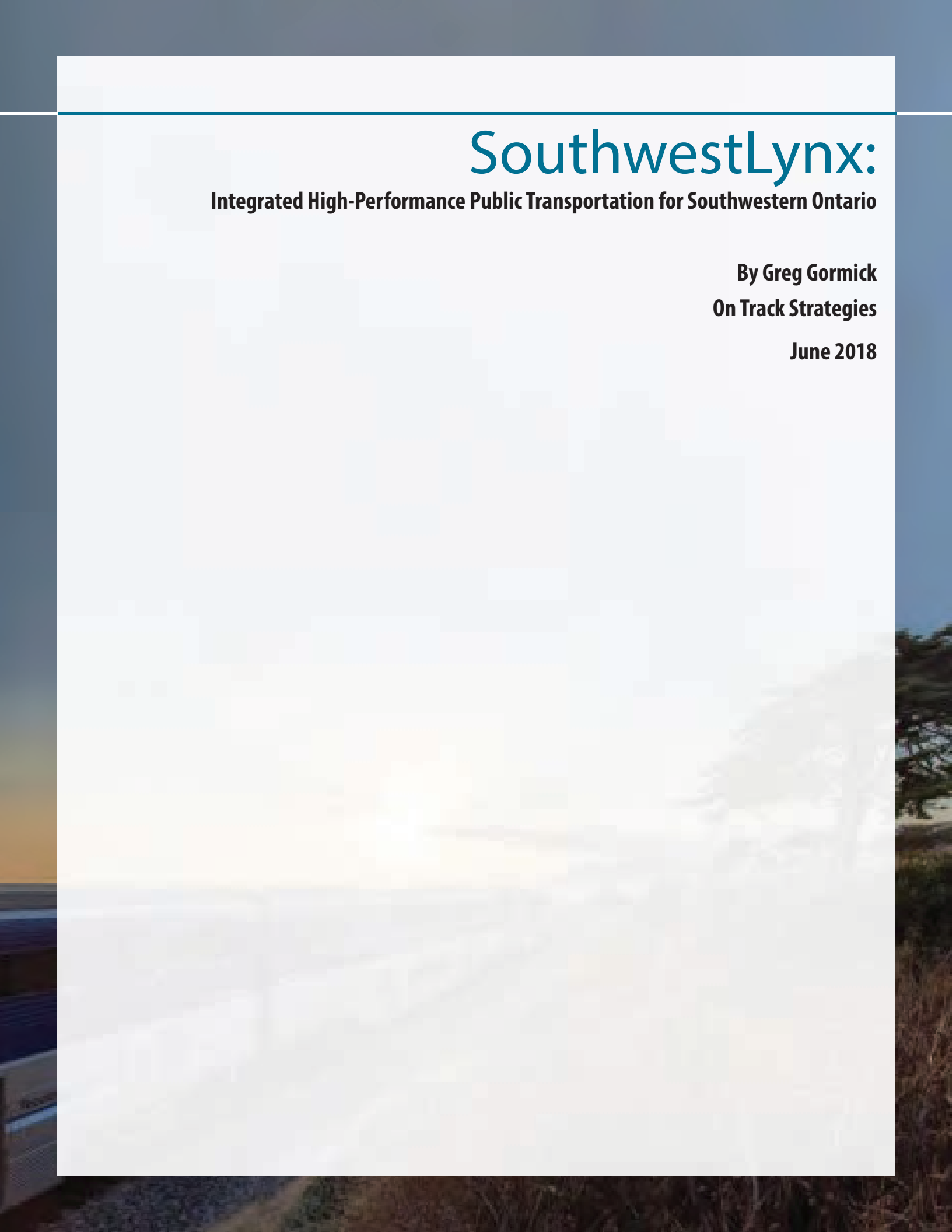


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Special thanks for his encyclopedic knowledge, unique insights and constant encouragement to

DAVID GUNN

President and Chief Executive Officer (retired)

Amtrak

West Bay, Nova Scotia

Dedication

SouthwestLynx is dedicated to the memory of

DANIEL HAMMOND

(1960-2018)

An accomplished telecommunications consultant, public transportation advocate and close friend of the author, Dan provided invaluable assistance in the preliminary stages of this plan. His innovative thinking, his practical and positive outlook, and his unwavering belief in the need for better rail and intercommunity transportation in Southwestern Ontario and across Canada will remain an inspiration to all who continue to work to bring about such a necessary and overdue change in our transportation system.

Executive Summary

SouthwestLynx is a practical, affordable plan that can be rapidly deployed to address the public transportation access and mobility deficiencies that are threatening Southwestern Ontario's economic, social and environmental destiny.

By creating a high-performance rail (HPR) core system to significantly improve the current Southwestern Ontario rail passenger services, establishing a coordinated network of connecting intercommunity transportation services and linking them with intermodal mobility hubs, SouthwestLynx can begin improving the region's public transportation system within one year. It is scalable and incremental, and it can be completed at a lower and more readily verifiable cost than the still-unsubstantiated estimate of \$21 billion and 14 years required for the proposed Toronto-London-Windsor high-speed rail (HSR) project. It requires only minor land acquisition, severs no agricultural properties, includes rail freight benefits and provides a broader range of transportation improvements offering better value, compared with HSR.

SouthwestLynx is based on several successful HPR-based services now being offered or emerging in the U.S., which are in turn based on similar examples

from around the world, some of which have laid the groundwork for the later adoption of HSR service to augment the original HPR services. All of these successful global precedents have included major intercommunity transportation components, which have not only acted as feeders to the HPR core routes, but also to provide stand-alone service between the points they serve.

There are three prerequisites for the implementation of SouthwestLynx:

- Complete replacement of the Southwestern Ontario rail passenger fleet with new, proven high-performance diesel-electric locomotives and rolling stock, and rail infrastructure improvements;
- Coordination and cooperation among the Government of Canada, federally-owned VIA Rail, the Government of Ontario and provincially-owned Metrolinx/GO Transit; and
- A new governance and service delivery strategy based on the successful concepts employed on three integrated California high-performance rail corridors and Southwestern Ontario's SWIFT ultra-high-speed broadband project.

Multiple infrastructure upgrading projects must be undertaken on the two VIA Rail routes linking Southwestern Ontario with the Greater Toronto and Hamilton Area, which may be spaced over a number of years, dependent on available public funding. These include the easing of several speed-restricting curves, grade separating numerous road crossings, station improvements and track additions to minimize or eliminate conflicts between passenger and freight trains.

Each project will incrementally and progressively contribute to reducing current rail journey times, increasing rail frequency, reducing operating costs, reducing government operating subsidies and reducing passenger fares. All would work hand-in-glove with new, high-performance locomotives and rolling stock to offer benefits equal to or greater than those promised under the controversial Ontario HSR proposal.

A two-part demonstration project is recommended to bring early improvements and establish a template for the roll out of the full SouthwestLynx program:

- A joint VIA-GO “pool agreement” to blend their operations on the Toronto-Kitchener-London North Main Line route to provide faster, more frequent service at lower passenger cost; and

- Development of a multi-county network of intercommunity transportation connections between major points on the two VIA Rail routes and numerous off-line Oxford County points, which can act as a template for other county, regional and municipal governments.

At a time when Southwestern Ontario’s public transportation access and mobility are at low ebb, and the provincial government is contemplating the construction of a high-cost HSR that will not be fully operational for at least a decade – and one which does not substantially address intercommunity transportation requirements – the need for an alternative that will deliver more effective, more affordable mobility quicker is urgent. SouthwestLynx is that alternative.

1.0 Introduction: A Question of Destiny

Access + mobility = destiny.

Southwestern Ontario's destiny is being jeopardized today by inadequate public transportation access and mobility. It's a lesson many regions around the world – all of them potential competitors of Southwestern Ontario – have learned as they have positioned themselves for sustainable growth tied to a need for integrated, car-free transportation solutions.

Southwestern Ontario's public modes – rail, intercity bus, intercommunity highway transportation and urban transit – are inadequate for its current needs and it shows. This gap is limiting Southwestern Ontario's economic and social vitality, and its long-term prospects. As both aging Baby Boomers and a new generation of Canadians – the Millennials – eschew car ownership, their travel choices will increasingly factor into this situation. As with several other regions around North America that compete with Southwestern Ontario, its transportation system needs to change – and it needs to be undertaken quickly. "Business as usual" is not acceptable.

Southwestern Ontario once enjoyed a wide variety of public transportation options that served as effective alternatives to the automobile. But as car ownership and driving increased, the public modes saw their market share decline. This started a vicious cycle of cuts to stem rising costs and declining revenues, which only made rail and bus less attractive than driving, leading to further losses. Today, the car is the undeniable king of travel in Southwestern Ontario.

This automotive over-dependence is one of the issues that must be faced as Southwestern Ontario makes its transition. The economic, social and environmental evidence against using the car as a one-size-fits-all mobility solution is well documented.

In its 2016 tool kit, *New Directions*, Oxford County outlined the elements and principles to deliver high quality public transportation that is multi-modal and seamless. Now, a plan for delivering that type of cohesive and comprehensive travel is detailed here in *SouthwestLynx: Integrated High-Performance Passenger Transportation for Southwestern Ontario*.

While this region's destiny will not be determined solely by resolving its transportation challenges, reams of real-world evidence have proved, non-automotive access and mobility are major factors in the success of regional economies around the world.

SouthwestLynx is a practical, incremental and affordable approach to providing that mobility and access. It is a framework based on concepts that have succeeded elsewhere in North America, under conditions similar to those faced by Southwestern Ontario today.

2.0 Southwestern Ontario's Mobility Gap

Southwestern Ontario is dominated by the private automobile. In the corridor stretching from Toronto to Windsor, the Ministry of Transportation of Ontario reports that it accounts for 92 per cent of all travel – and even more between other city pairs in the region. While it has long been promoted and sold as the ultimate in freedom and personal mobility, the car has brought with it high economic, social and environmental costs. While it has a legitimate role in a balanced transportation system, the car is not a one-size-fits-all mobility solution.

The car's lure of independence and private mobility hasn't been the only factor in its rise. Automotive dominance has depended heavily on public policies coupled with massive public investments. It is the combination of the car's undeniable appeal with these public policy and investment decisions that have greased its wheels.

A January 2016 C.D. Howe Institute report on infrastructure investments found that in 2013-2014 only 66 per cent of the \$25 billion in direct costs for Canadian highways was recovered through user fees, with the rest covered by taxpayers. This amounts to a public subsidy of approximately \$10 billion nationwide and does not include the cost of many required support services or the impact on the environment and public health.

Like roads and highways, commercial aviation was also favoured in investment decisions in the period after the Second World War by successive federal governments. However, air travel's impact on Southwestern Ontario's intra-regional mobility has always been negligible.

While there's no question of the requirement for strong air connectivity with distant domestic and foreign destinations, air won't ease Southwestern Ontario's intra-regional mobility deficit. Furthermore, regional air service comes with large public costs and major environmental impacts.

As in any business – publicly or privately owned – investment is the key; the growth of the air and highway sectors is graphic proof of that. Even with the public making up the full loss on passenger trains since 1977, as well as the unquantifiable benefits the private bus industry has derived from the public financing of the highways, rail and bus have never enjoyed the same degree of public largesse as the automotive and airline industries.

It is, therefore, not surprising these two modes have declined. Given the strength of their well-funded competitors, the fact that rail and bus continue to provide the level of service they do is astonishing.

However, both publicly-owned VIA and the remains of the once sprawling, privately-owned Ontario intercity bus system are facing uncertain futures. In the case of VIA, there are problems that hold little prospect of being resolved after 40 years of funding- and policy-induced decline. For bus operators, the outlook is even murkier and some are suggesting that what little remains will likely evaporate and not be replaced unless public action is taken soon.

2.1 VIA Rail Canada

In a 2015 article titled *The Muddling Crown: VIA Rail and the Federal Government*, University of Winnipeg associate professor of political science Malcolm Bird observed:

“Canada’s publicly-owned intercity passenger rail service is in a state of slow and steady decline, best illustrated by its small and falling user rates, and despite receiving significant subsidies, the federal government is indifferent to the needs of this transportation provider. Unlike other Canadian state-owned enterprises, or Crown corporations, VIA Rail has been neither privatized nor modernized and, instead, is languishing as a publicly-owned firm.”

Despite VIA’s long decline and the competitive advantages enjoyed by car and air travel as a result of massive public investment, a large current demand and even larger potential demand for rail service remains in Southwestern Ontario. VIA serves two well-populated Southwestern Ontario corridors with evenly-spaced traffic generators:

- South Main Line from Toronto to London via Woodstock and its extension to Windsor
- North Main Line from Toronto to London via Stratford and its extension to Sarnia

Southwestern Ontario Rail Passenger Service – 2018







VIA Rail Canada's passenger services in Southwestern Ontario operate with antiquated, expensive-to-maintain equipment on lines largely owned by the freight railways. Numerous bottlenecks at major points such as Brantford (above), Aldershot, Woodstock and Ingersoll put passenger and freight trains in conflict with each other frequently.

Photo by Walter E. Pfefferle

The factors in rail's favour on these two main routes include:

- one of the highest population densities in Canada;
- numerous online colleges and universities;
- significant online tourist and cultural attractions;
- Toronto's strong attraction as a destination and a VIA interchange point;
- high travel demand both end-to-end and between intermediate points;
- a lack of alternate and/or reasonably-priced public transportation options;
- increasing driving times for trips on Highway 401 and the Queen Elizabeth Way; and
- difficult winter driving conditions.

Despite these positive factors and the early efforts to improve the Canadian National (CN) and Canadian Pacific (CP) services it took over in 1977, VIA has lurched from crisis to crisis. VIA's inability to succeed decisively has to a large degree been due to:

- government indecision and inadequate funding;
- managerial missteps and a board lacking real-world transportation experience;
- high freight railway trackage fees and a lack of effective access;
- infrastructure lacking the capacity to handle growing passenger and freight demands;
- aging, unreliable and costly equipment urgently in need of replacement; and
- an absence of legislation spelling out VIA's mandate, mission and rights.

A review of VIA's Southwestern Ontario service frequency, running times and on-time performance reveals a slow and disturbing erosion of quality and competitive attractiveness.

Despite the cuts of 2012, total ridership on the three routes was a relatively healthy one million passengers in 2013 (the last year for which complete figures are available). However, in Southwestern Ontario and elsewhere, VIA's operating costs have risen,

ridership and revenues have only grown marginally, and cost recovery has declined. VIA restricts the amount of information it makes public, and full costing and performance data tend to be outdated, so the most complete overview of its Southwestern Ontario operation now dates back five years and it isn't encouraging. Despite a slow uptick in ridership and revenue recently, the negative trends will likely continue without full modernization and major service improvements.

VIA Southwestern Ontario Performance: 2013 Vs. 1988

KEY INDICATOR	1988	2013	% CHANGE
Passengers	1,961,000	997,142	-49.2
Passenger Miles	209,978,000	114,300,000	-45.5
Train Miles	1,689,000	978,000	-42.1
Revenues	\$34,905,000	\$40,897,000	+17.2
Operating Costs*	\$52,265,000	\$98,321,000	+88.1
Operating Shortfall	\$17,360,000	\$57,424,000	+230.8
Cost Recovery	66.8%	41.6%	-25.2
Subsidy Per Passenger	\$8.85	\$57.59	+550.7

* Excludes capital, administration and system overhead costs

The physical modernization of VIA was the objective of the \$923-million capital investment program the previous federal government authorized in two stages beginning in 2007. Although it was the largest capital investment in VIA's history, it was still inadequate to fully renew VIA physically and not only control its rising costs, but also attract more passengers and revenue. Still, it appeared on paper to be a good first step.

But VIA's capital renewal program derailed. One casualty was a project to boost the Toronto-London service on the North Main Line to six daily roundtrips. The modestly-priced plan involved some infrastructure upgrading in conjunction with the extension of two GO weekday-only Georgetown trains to Kitchener, as well as the rebuilding of a small fleet of self-propelled Budd rail diesel cars. A November 2009 announcement in Kitchener was delayed by a legal dispute with one of the North Main Line freight operators and the project was cancelled when the capital renewal program encountered serious delays and cost overruns.

Instead of expanding, VIA cut the frequency of its Southwestern Ontario network in 2012, as well as the eastern and western transcontinental routes. While the cuts were small numerically and didn't eliminate any routes completely, they had a disproportionately high impact because service was already below what many users considered an irreducible minimum. These seemingly small cuts eroded VIA's convenience, utility and attractiveness.

Hopes were raised in 2015 when VIA's Ottawa-appointed president appeared in Southwestern Ontario to announce a series of small service additions. However, he revealed that VIA's plan had not been approved or even discussed with the owners of the bulk of the infrastructure on which this expansion would be dependent. The improvements have never materialized.

VIA's situation contrasts sharply with the improvement in U.S. rail passenger operations, performance and cost-effectiveness. While Amtrak enjoys some advantages in terms of funding and legislation over VIA, it also faces many of the same challenges. Still, it has managed to work on its own and with many state partners to modernize and expand service, which has improved its financial performance and public utility.

Today, VIA's future is not assured and its next steps remain uncertain. The situation is perhaps best summarized by retired Amtrak president and Canadian resident David Gunn, who has commented, "My sense of what's happening to VIA is it's dying, to be blunt. VIA has basically been going out of business since it was set up. . . . VIA has some really tough sledding ahead, but they are not making it any easier on themselves."

2.2 Intercommunity Transportation

Like VIA, for-profit intercity bus operators have long attempted to offer a credible, convenient alternative to the car. While government-mandated rail passenger cuts have always garnered widespread media and public attention, the contraction of Southwestern Ontario's intercity bus service has been even more dramatic, but not as widely recognized.

In 1970, intercity buses carried 46 million passengers – more than the airlines and railways combined. By 2001, that had shrunk to about 14 million. This downward trend continues.

With the geographic contraction of the once far-flung Southwestern Ontario rail passenger network throughout the 1960s, bus service often remained the only public transportation service available in many communities. However, the privately-owned bus companies have struggled for decades to operate profitably on many lighter-density routes, which had always operated with low or non-existent profit margins, but had functioned as feeders for the profitable, higher-density trunk routes.

Most of the lighter-density routes that once connected hundreds of communities have vanished

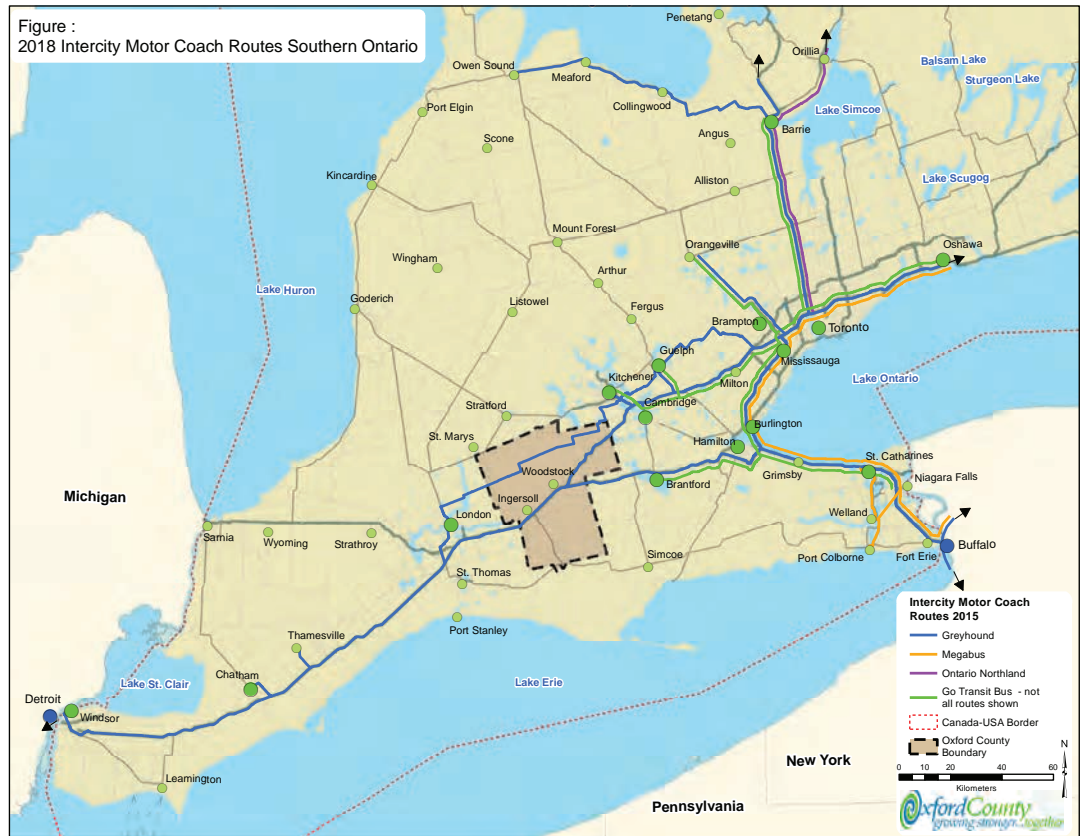
and even trunk line services have declined. The departure of the last bus from many communities has eliminated the last public transportation option.

To survive, the bus industry has tried to reinvent itself as a deep-discount, mass hauler of passengers on a reduced network of high-density trunk routes that often parallel and compete with VIA. Limited-stop, no-frills direct services have proven popular between certain larger city pairs, but this has done nothing for smaller communities.

In 2009, Greyhound Canada announced sweeping service reductions across Canada. Some routes would have their frequencies reduced drastically, while others would disappear.

Consultations with the eight affected provinces and the Yukon were aimed at securing financial support to continue some of these services, but they were only partially successful. Manitoba granted short-term assistance that maintained some services in and to that province, which also saved trunk route service in Northwestern Ontario. Ontario declined to contribute.

Southwestern Ontario Intercity Bus Service – 2009 and 2018



Faced with the drastic Greyhound measures – as well as the previous and contemplated cuts by other operators nationwide – an interprovincial task force on the future of the industry was formed, including operators, their industry associations and Transport Canada.

After analyzing the changing bus market, the task force established that “passengers on all routes tend to be of below-average income, are either seniors or students and use the bus because it is their only mode of transportation available.”

The task force’s report also noted the importance of service to both urban and rural destinations, “but more so to rural and northern communities, where there are limited transportation alternatives.”

The authors of the task force report also admitted that “the current state of the industry is dismal, with declining ridership and profitability.”

The task force identified several factors contributing to the industry’s decline, including:

- a broken regulatory model, with regulations not enforced, innovation stifled and costs increased;
- “tension” as a result of publicly-funded competition from VIA (a longstanding industry complaint) and urban transit agencies, such as GO, which have expanded into areas traditionally served by private operators; and
- the need to connect intercity bus service with other modes of transportation.

Fiscal options were suggested to counter the decline, including:

- partnerships with communities to provide alternative modes of service delivery where none currently exist, or to replace services targeted for elimination;
- capital support for purchases of new buses or refurbishment of existing vehicles;
- support to cover operating losses/operating costs for specific routes or full systems;
- fuel tax and ticket tax exemptions;
- a federal tax credit for bus passengers, such as the federal public transit tax credit; and
- partnerships between local authorities and carriers to maintain and develop services.

To date, little action has resulted. In Ontario, no assistance was provided and Greyhound went ahead with its service cuts in Southwestern Ontario, as well as the Southeastern and Muskoka regions. Some of the abandoned routes were taken over by London-based Aboutown and operated as NorthLink, but these were all terminated by 2013. Other privately-operated routes have either been reduced or eliminated since then and the trend continues.



Alternate energy sources, such as hydrogen (above) and high-efficiency battery storage systems, are being developed and tested as possible candidates to replace fossil fuels in intercity bus applications.

A provincial review has been underway since 2016, but little has emerged from the process. Some private operators have said that deregulation and unfettered competition would bring more service, but it's unclear how that would affect anything other than the existing routes linking major cities. No assurances have been given that smaller communities would regain bus services that have been reduced or eliminated.

Although a point of contention among the private companies operating west of Toronto, GO's commuter-oriented bus expansion has improved mobility for some Southwestern Ontarians. GO buses now serve Orangeville, Kitchener, Cambridge, Brantford and Niagara Falls, and further expansion is expected. The private operators say this subsidized GO expansion into markets they serve under operating authorities granted by Ontario's regulated system has created unfair competition. They maintain that this has damaged profitability and hastened the termination of marginal routes, which were often cross-subsidized from the more lucrative markets GO has entered.

As for the federal/interprovincial/industry task force's recommendation on the need to connect with the other modes of transportation, little has been done by the two levels of government or the industry.

A 2002 Senate Standing Committee on Transport and Communications investigation of the bus industry reported:

"The bus certainly fills a need. Most, but not all, passengers are among the less affluent in society. Given that little has changed in the bus business or its institutional framework for many years, and that all the factors that led to the decline in traffic are still present, there is no reason to expect a turnaround in years to come, unless the institutional framework is changed or other steps are taken to encourage the use of buses."

Without direct government intervention, the last intercity bus routes in Southwestern Ontario – and elsewhere – are likely to vanish.

2.3 Urban Transit

Another factor in Southwestern Ontario's public transportation deficit is the historically low level of public transit provided in larger communities and its absence in smaller ones.

In his May 30, 2014, Globe and Mail special report on Southwestern Ontario's future, reporter Adam Radwanski noted the need to focus economic renewal efforts on revitalizing downtown cores and its transportation prerequisites:

"Pivotal to that vision is one thing much of the southwest lacks: modern public transit. People fresh out of university and starting their careers don't always have a car to get around. The need for all this investment speaks to a fundamental chicken-and-egg problem facing much of the rust belt. The lack of modern urban infrastructure can be a barrier to economic growth, but without that growth, communities simply can't afford it. For that, they need help from the province."

The impact of transit service on the vitality of communities has been well documented innumerable times. There is no doubt that the lack of frequent, effective transit service in many Southwestern Ontario communities contributes to the region's overall mobility gap. Thanks largely to capital and operating assistance from the upper levels of government, other North American regions competing with Southwestern Ontario are widening this gap through transit enhancement and expansion.

Unlike the situation in the U.S., the Canadian federal government has never taken much responsibility for assisting in the maintenance or improvement of urban transit. When funding has come, it has not been sustained, often involving one-off, high-visibility projects that look good as planks in a campaign platform, but are forgotten afterward.

Provincially, the record on transit investment has ranged from excellent to abysmal. In the early 1970s, after decades of highway-only funding policies, the Government of Ontario laudably launched funding programs to assist the municipalities in improving their transit systems. This took the form of both capital and operating assistance.

However, this changed in the face of the provincial budgetary problems of the 1990s, culminating with the cancellation of all funding under the government of Mike Harris. This undermined the progress that had been made over a period of more than 20 years. Service cuts were made by municipalities struggling to deal with the downloading of many other programs previously supported by the two upper levels of government.

Only in the last decade has the province resumed its large and necessary involvement in transit funding. The creation of Metrolinx for the Greater Toronto and Hamilton Area (GTHA) in 2006 is but one example. However, many municipalities are wrestling with tightened budgets that don't allow for the investment that can improve their transit systems on a sustainable basis.

In the context of this report, it must be noted this transit deficiency affects not only urban mobility, but also regional intercity travel patterns. Urban transit supplies the "first and last mile" element that can affect a traveller's decision to drive or to take the train or bus. Without adequate transit as part of a seamless travel package, the effectiveness of each mode of transportation is compromised.

2.4 Intermodal Connectivity

Connectivity between the intercity and urban modes is a vital element of any comprehensive public transportation system. The rail or bus portion of a journey should be part of a coordinated trip that begins at a passenger's point of origin and ends at their destination. The connections between the modes must be simple, comfortable and fast. Stations and directly connected transit service are key components of a seamless passenger trip.

In this regard, neither Southwestern Ontario nor the rest of Canada scores well. In addition to a general lack of cooperation and connection between VIA and intercity bus services, the difficulty in using urban transit as the initial and final links in car-free journeys in many cities is a contributing factor in the automobile's dominance of intercity travel.

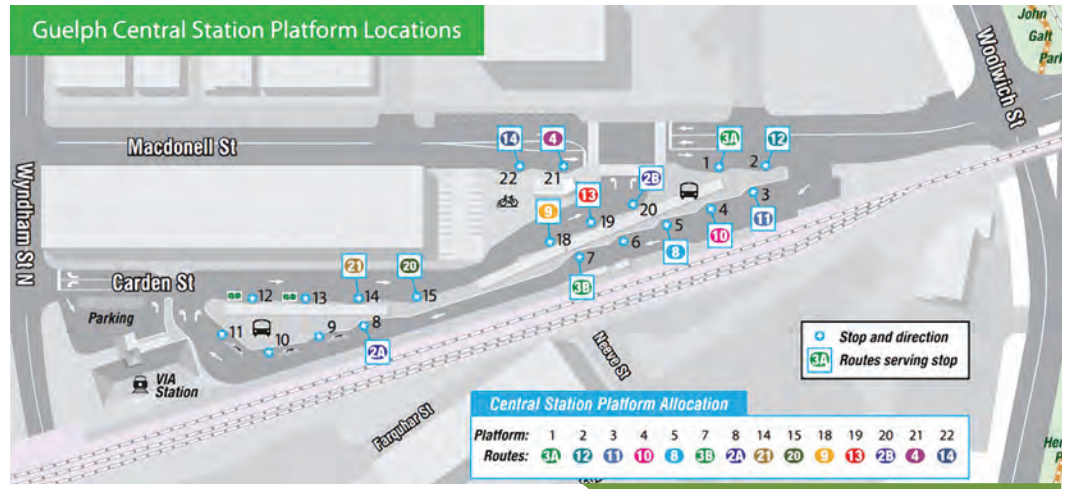
In lockstep with improved U.S. rail passenger service, many states made enhanced connectivity a priority. Using financial incentives to encourage the relocation of both intercity bus and urban transit services to modified, improved rail stations has been part of the U.S. approach. Once called intermodal terminals, and

now known as mobility hubs, these facilities have not only helped improve ridership on many revitalized U.S. rail passenger corridors, they have also led to gains for the other modes of transportation, justifying further investment and expansion.

In Southwestern Ontario, progress has been made on the eastern ends of the two VIA routes. The GO Oakville and Aldershot stations, which are used by VIA, have become effective mobility hubs. There are also two developments led by municipal agencies that can serve as models for future efforts elsewhere in Southwestern Ontario.

The most notable is in Guelph, where the city took over the former VIA station as the basis for its Guelph Central Station, a mobility hub linking Guelph Transit, GO's rail and bus services, Greyhound and the two remaining VIA roundtrips on the North Main Line. First proposed in 2002, the \$8 million project received federal and provincial assistance. It has consolidated the modes at a central location that supports Guelph's downtown revitalization efforts.

GUELPH CENTRAL STATION LAYOUT 2012



The municipal takeover of the former VIA station as the basis for the city's Guelph Central Station is a model to be copied throughout Southwestern Ontario. The efficient and aesthetically pleasing facility links Guelph Transit, GO's rail and bus services, Greyhound and the two remaining VIA roundtrips on the North Main Line.

The municipal takeover of the former VIA station as the basis for the city's Guelph Central Station is a model to be copied throughout Southwestern Ontario. The efficient and aesthetically pleasing facility links Guelph Transit, GO's rail and bus services, Greyhound and the two remaining VIA roundtrips on the North Main Line.

Often forgotten as a factor that encourages travellers to choose the public modes of transportation, Guelph Central Station's signage is excellent. It is a well-planned, safe and convenient facility that includes all the necessary aesthetic and functional elements.

A similar project is planned for the Waterloo Region, where the construction of its ION light rail transit (LRT) system has created an opportunity to finally connect the region's scattered public transportation services. The first phase of ION, slated for inauguration later this year, calls for a downtown mobility hub similar to Guelph Central Station. Located slightly west of the existing VIA station, it will directly link the initial

Kitchener-Waterloo LRT spine line on King Street (which includes a Kitchener-Cambridge bus rapid transit extension) with other Grand River Transit routes, VIA, GO rail and bus services, and intercity buses.

In other locations, similar opportunities exist. In some, such as London, the various modes of transportation are already close to each other, but they don't connect effectively. In a few cases, building mobility hubs to serve all three modes would be more difficult, with some rail lines and stations inconveniently located away from downtown.

However, without a maximum number of mobility hubs to provide seamless access to all the public modes of transportation, individual and disconnected improvements to each of them will produce less than their cumulative potential.

3.0 The Benefits of Integrated Public Transportation Investment

The benefits of public investment in public transportation have been verified by numerous public agencies and private industry organizations in other countries, although less so in Canada. The points in favour of public spending on public passenger transportation include:

- diversion of traffic from other publicly-supported modes, such as highways, making investments in capacity expansion unnecessary;
- job creation throughout the project's supply chain during the construction or equipment manufacturing phases;
- ongoing jobs and economic spin-off from the operation itself and its consumption of purchased supplies and services;
- large present and potential spin-off benefits for tourism sector;
- savings in health care costs due to traffic diversion from less safe modes, such as the automobile, and reductions in emissions affecting public's health;

- savings in national energy costs, given the higher energy efficiency and reduced fuel requirements of rail; and
- residential and/or commercial development and economic activity created in the areas surrounding the stations and other facilities.

Both intercity rail and intercommunity highway transportation have numerous economic, social and environmental advantages that are not being fully realized in Southwestern Ontario or anywhere else in Canada. This has created the mobility gap that, among other things, undermines Canada's competitiveness vis-à-vis other nations and regions that have recognized the benefits of improving and expanding their public modes, including the adoption of plans to integrate them to provide seamless, multi-modal travel alternatives to the automobile.

3.1 Rail Passenger Service

In its April 2009 Vision for High-Speed Passenger Rail in America, the U.S. government outlined the benefits of public investment in rail passenger service. These include:

- ensuring safe and efficient transportation choices;
- promoting the safest possible movement of goods and people, and optimize the use of existing and new transportation infrastructure;
- building a foundation for economic competitiveness;
- laying the groundwork for economic growth by efficiently moving people and goods, while renewing domestic manufacturing and supply industries;
- promoting energy efficiency and environmental quality;
- reinforcing plans for energy independence and the use of renewable energy, and reduce pollutants and greenhouse gas emissions;
- supporting interconnected, livable communities; and
- improving the quality of life in local communities by promoting affordable, convenient and sustainable housing, energy and transportation options.

However, these views are often dismissed at the Canadian federal level, as evidenced by the successive waves of VIA cuts on the basis of so-called fiscal responsibility. This anti-rail bias is even expressed semantically, with public spending on rail passenger service usually described as “a subsidy,” while highway and aviation funding is invariably “an investment.”

One roadblock to a wider recognition of the positive impact of rail passenger investments is that most economic benefits occur off VIA’s balance sheet. This leaves behind a highly-visible accounting loss that seems inviting when government budget reduction is the order of the day.

However, various industry associations and government agencies in other countries have quantified the value of rail passenger investment and produced rule-of-thumb economic impact calculators. U.S. organizations such as the publicly-funded States for Passenger Rail, the American Public Transportation Association and the U.S. Department of Commerce have concluded that:

- \$1 million spent on passenger rail projects creates 30-36 new jobs;
- \$1 million invested in rail passenger service generates \$4 million in economic returns;
- \$1 million invested in capital projects yields \$3 million in increased business sales; and
- \$1 million in operating investment yields \$3.2 million in increased business sales.

As well, refurbished stations with high levels of service and passenger activity are active catalysts for economic growth, with many being developed into mixed-use properties that include offices, retailing and other commercial activities. This is an important consideration in the discussion of the need to redevelop many VIA stations in Southwestern Ontario as mobility hubs to link trains, interurban buses and local transit.

While data on the non-economic advantages of passenger diversion to rail from road and air in Canada is skimpy, considerable research has been done in the U.S. This work has determined that the environmental benefits of a modernized rail passenger system are large.

A double-track railway line with a modern signalling system can handle the passenger and freight equivalent of 16 lanes of highway traffic. The land needed to create this highway capacity would be staggering, ripping a jagged wound through any urban area. The existing rail corridors can usually accommodate additional tracks with little or no extra land.



A four-track railway line can handle the passenger and freight equivalent of 32 lanes of highway traffic. Creating this highway capacity would rip a jagged wound through any urban or rural area, while the existing rail corridors can usually accommodate additional tracks with little or no extra land. Photo by Tim Hudson

As well, capacity can be boosted further with the modern, computer-driven rail traffic control systems now available off the shelf from established manufacturers, including some Canadian firms. Capacity expansion for passenger projects frequently has collateral benefits for the privately-owned freight railways over which they largely operate, aiding them in diverting long-haul truck traffic from road to rail.

Although it is unlikely to occur anywhere in Canada in the foreseeable future except on the GO system, railways offer something no highway can: Convertibility from oil-driven diesel-electric power to all-electric traction, which can be derived from an extensive list of renewable sources, including hydro, geothermal, tidal, wind and solar energy.

Alternative forms of rail traction are also under development today. These include liquefied natural gas, battery storage and hydrogen fuel cell propulsion systems. Metrolinx has just commissioned its own studies of the potential for the substitution of hydrogen fuel cell technology for its planned electrification of large portions of the GO rail system.

Although some lightweight test equipment is now undergoing testing in Europe, the rail industry is far away from producing a hydrogen fuel cell system that can reliably and affordably produce sufficient energy to power trains on the scale of those used for intercity and heavy-duty commuter service. But progress is

being made and it is a technology that should not be discounted as a potential replacement for both diesel-electric and traditional electric rail service in the future.

Even without electrification, Canada already enjoys energy and environmental benefits from our railways' use of modern diesel-electric locomotives, which use a diesel prime mover to generate electricity that then powers the traction motors on the locomotives' axles. Both passenger and freight motive power have become more energy efficient in recent years, delivering advantages over other forms of intercity transportation, especially cars and short-haul commercial aircraft. Measured by the energy required to move one passenger one kilometre, North American passenger trains are three times more efficient than commercial aircraft and six times more efficient than single-occupant automobiles.

In Canada, the transportation sector generates 27 per cent of the nation's greenhouse gas emissions. Railways produce only 3 per cent of the transportation sector's total and less than 1 per cent of the national total, while moving 70 million commuters and intercity passengers, and more than 70 per cent of the surface freight tonnage annually.

Also on the positive side of the passenger train's balance sheet is the fact that rail is the safest mode of intercity transportation, estimated to be 18 times safer than car travel.

3.2 Intercommunity Transportation

Although it may have overstated the case for buses in its December 2002 report on the state of the Canadian intercity bus industry, the Senate Standing Committee on Transport and Communications reported:

“The status of intercity buses as the most environmentally-friendly form of intercity passenger transportation has been known at least since the Royal Commission on National Passenger Transportation reported in 1992, but it still may come as a surprise to many. One method of measuring and comparing the environmental effects of various transportation modes is to calculate how much fuel is consumed by each mode to move a passenger one kilometer (this gives the common measure of passenger-kilometres per litre of fuel). Recent work by Transport Canada shows that, while the train is more efficient than the automobile using the highway in terms of passenger-kilometres per litre of fuel, the bus is approximately five times more efficient than the train. In terms of greenhouse gas emissions per passenger-kilometre, a bus emits less than 25 per cent of a train or an automobile using the highway does.”

Despite these environmental credentials, the intercity bus industry has done a poor job of promoting them as factors in favour of public financing to retain and expand their operations. Instead, the industry has unwisely focused on criticizing its competitors, such as VIA and regional public agencies such as GO Transit.

Also lacking has been any promotion of the fact that environmentally-friendly rail passenger service coupled with intercity bus service boosts the opportunities, and the sustainability of both. Public opinion polling has frequently demonstrated that many travellers have a negative impression of bus travel and will opt for rail service when it is available as an alternative, even when it is priced higher than the competing bus service.

Compared with the rail passenger industry and its advocates, the bus industry has done an extremely poor job in assembling data that might highlight its economic and social impacts, and its ability to contribute to various regional objectives through some form of public support for the service it does or could offer.

Only recently have private bus operators awakened to the fact that a growing amount of public funding is going to the provision of alternate forms of highway transportation, such as taxis and on-demand van services, to accommodate the needs of health care and social service agencies that need to arrange transportation for patients and clients who do not have access to an automobile or any form of public transportation. In finally addressing this situation, some private bus operators have said they would be interested in working with these agencies to explore the possibility of obtaining public funding to simultaneously continue light-density routes and assist in decreasing the transportation costs for health and social service agencies.

While rail passenger service has the advantage over the highway and air modes in being convertible to electric operation, it has not reached a point where other energy sources can be considered commercially proven and adoptable. On the other hand, buses and vans are already in service using a wide range of alternate propulsion systems and fuel sources not yet applicable to intercity and commuter passenger trains.

Rather than pitting trains and the various forms of public highway transportation equipment against each other and engaging in a contest for riders that involves many more factors than just fuel efficiency and environmental impact, the objective should be combining, coordinating and making the best use of both modes based on passenger preferences to offer a seamless journey that is beneficial on all counts.

Trains cannot be all things to all travellers. The same can be said for intercommunity and intercity highway transportation. Rail passenger service depends on high volumes to be efficient and effective. Public modes of highway travel are the answer on lighter density routes that can never be served cost-effectively by rail, provided the rail infrastructure even exists.

Ironically, both Canadian Pacific (CP) and Canadian National (CN) recognized the value of integrated bus service in providing cost-effective and attractive intercity passenger transportation as far back as the 1930s. Both railways substituted connecting bus services on schedules coordinated with their main line passenger trains on numerous chronically unprofitable light-density routes that couldn't be maintained with conventional rail service in the face of car travel on the expanding network of publicly-funded highways.

As demonstrated around the world on travel corridors that have rail at their core, the provision and integration of intercommunity transportation and urban transit have been major factors in their success in luring travellers out of their cars and even away from air travel.

4.0 Recent Federal and Provincial Initiatives

While the current state of VIA, intercity bus service and most urban transit systems in Southwestern Ontario is distressing, there have been indications that the federal and provincial governments at least recognize the need to invest in the expansion of these services to provide non-automotive solutions. However, the key problems remain the slow pace and the disjointed, uncoordinated application of public funding and policy revisions to encourage greater use of these public transportation options.

A scattering of intercity passenger transportation initiatives have been announced recently and some actually undertaken by the federal and provincial governments, but few have yet delivered any of the improvements their political sponsors have promised. Many have been announced just prior to recent elections and, to some industry observers, they appear to be more about carrying ridings rather than riders.

Another major problem, which is endemic to the entire Canadian transportation industry, is the fact that the multitude of players – operators, users, politicians and civil servants at the various levels of government – rarely engage in effective conversation. It partially accounts for the disjointed and sometimes even conflicting planning, funding and service delivery found in too many aspects of publicly-funded passenger transportation.

4.1 GO Transit Expansion

In many respects, the roots of the provincial government's embrace of automotive alternatives can be traced back to the 1967 launch of the first GO rail service on the Lakeshore Line. Tentative though it may have been, it was a North American breakthrough: The first all-new commuter rail service in more than half-a-century. Championed by Premier John Robarts in preference to a plan for massive expansion of the parallel highways, GO's creation and its rapid success sent a strong message about the wisdom of selecting rail-based public transportation alternatives to the car.

Today, GO's Lakeshore Line is what could best be described as a high-performance commuter rail operation thanks to its 30-minute all-day, two-way frequency and its plethora of connecting regional bus and urban transit services at its intermodal stations.

While the response to the calls for growth of the GO system was slow, each service expansion or extension only brought public calls for more. However, it is only in recent years that there has been a political recognition of the power of GO's rail and bus services. Its central and often under-appreciated role in easing the gridlock and improving the mobility of the GTHA and its border regions has now been secured.

The 2006 creation of Metrolinx as the province's GTHA transportation planning authority, its inclusion of GO as its operating division and long-range master plans for substantial GO expansion and intensification initially bode well for those portions of Southwestern Ontario within or bordering the expanding GTHA.

Although plans for sweeping expansion of GO's routes and service levels date back to the early 1970s, it's only within the last decade that the system's growth has been more than sporadic. For residents of the easternmost portion of Southwestern Ontario, these improvements have included the extension of GO rail and/or bus service to numerous points, such as Orangeville, Barrie, Guelph, Kitchener and Brantford.

The doubling of train frequency on the Lakeshore Line to provide a half-hourly service, combined with feeder buses, has opened up non-automotive travel options for those living on or close to what is GO's busiest corridor. Although it has been a controversial project, the aim of the \$456-million UPX project to link Toronto Union Station and Pearson International Airport is to lure travellers out of their cars and on to rail transit.

GO will grow even more as a result of the provincial government's Moving Ontario Forward plan. Announced by Premier Kathleen Wynne prior to the provincial election of 2014, and reaffirmed numerous times afterward, this program will allocate \$29 billion over 10 years to transportation improvements province-wide, including transit, roads and bridges. Southern Ontario will receive \$15 billion of this total spending package.

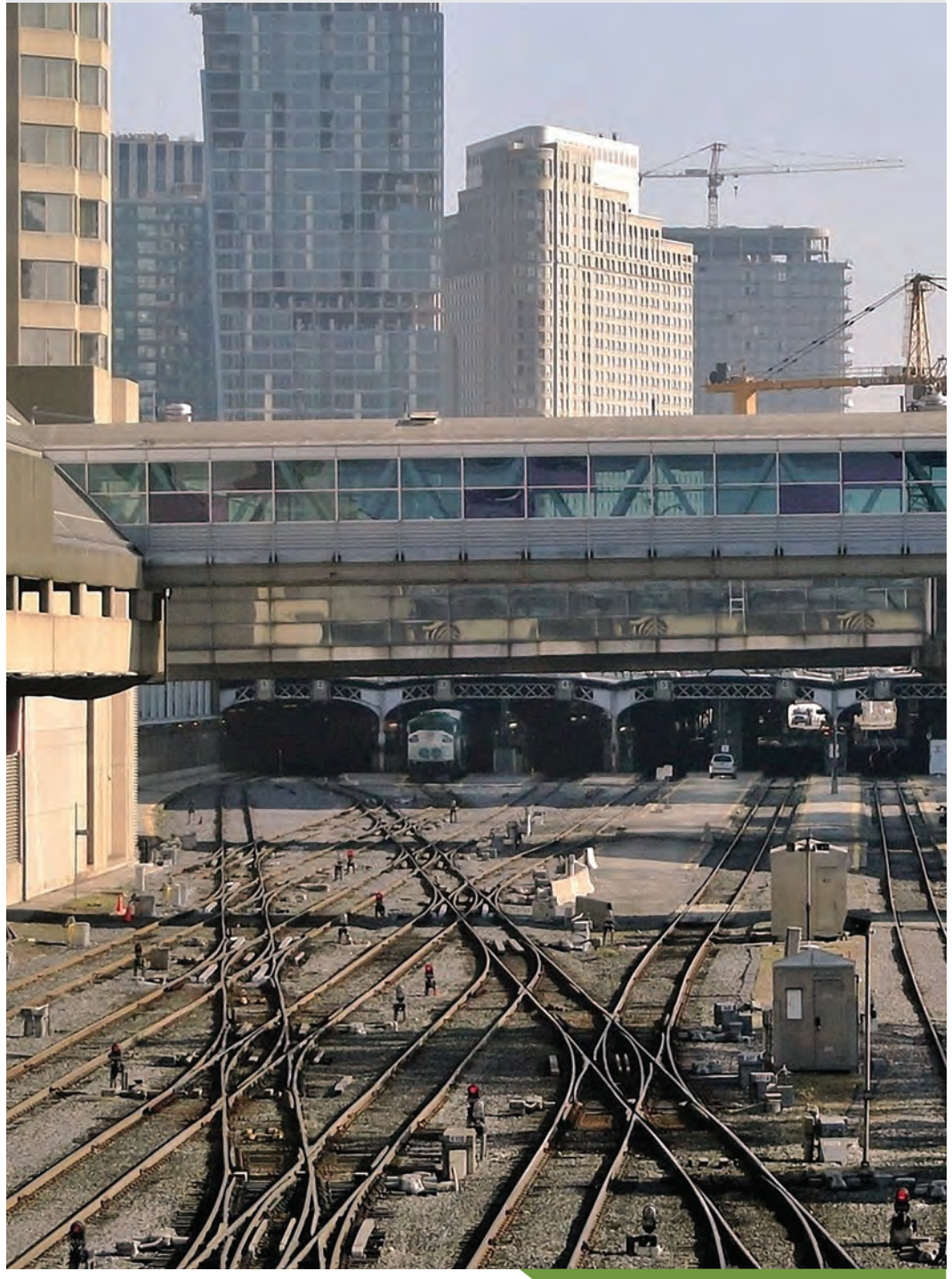
Among its many components, Moving Ontario Forward calls for:

- a 10-year, \$10-billion conversion of the core GO rail system into an electrified, high-frequency service on fully-owned GO lines, to be known as Regional Express Rail (RER);
- substantial investment in the GO-owned infrastructure for RER (which will positively impact the performance of the VIA services operated over those GO lines); and
- negotiations to expand GO service on lines owned wholly or in part by CN and CP.

Previously, Premier Wynne and her predecessor, Premier Dalton McGuinty, committed to various other GO rail improvements. These include an extension of all-day, two-way Lakeshore West Line to Hamilton and Niagara Falls, and future increases in the four-train, weekday-only Kitchener-Toronto GO rail service as part of the high-frequency RER plan. The recent GO purchase of the CN Georgetown-Kitchener line is part of the latter commitment and adds to previous CN and CP line acquisitions, some of which also host VIA's intercity trains.

In total, the GO improvements and expansion are now budgeted at \$23 billion over a decade.

These developments have positive long-term implications for parts of Southwestern Ontario, but there are concerns. The GO expansion plans are expensive, long range and dependent on many fiscal, physical and operational factors. The RER plan on its own is a massive undertaking that will take several years to deliver its first benefits; the complex process of converting the GO routes has not yet been prioritized and the launch dates remain to be set.



*Major capital projects, such as the complete revision of Toronto Union Station and the complex rail infrastructure that serves it, are part of the \$23-billion Metrolinx service expansion program for its GO Transit operating division.
Photo by Walter E. Pfefferle*

There are also issues to be resolved between GO and the freight railways concerning those RER routes that will require the use of their lines. The long-promised all-day, two-way service for Kitchener is still without firm funding and definitive, practical timelines, and there are some large capacity issues to be resolved with CN concerning the GO and VIA North Main Line services that operate on a portion of CN's heavily-used freight corridor.

The chokepoint on the CN freight line occurs between Bramalea and Georgetown, where the GO and VIA trains branch off to reach Guelph and points further west, while the CN freight trains curve south to join the lakeshore line in the Hamilton area at the busy Bayview Junction, near the Royal Botanical Gardens. Here, the line branches again to serve Hamilton and Buffalo via one route, and London, Windsor and Sarnia via the other. The solution now proposed by the Ministry of Transportation of Ontario (MTO) and Metrolinx is an \$8-billion CN freight bypass from Bramalea to Milton. This eight-year project is dealt with in more detail later in this report.

While the promised GO investments will improve mobility in the easternmost portion of Southwestern Ontario, how and when they will be delivered remains to be clarified.

Furthermore, GO expansion is a double-edged sword. On the one hand, it will improve the quality and extent of the provincially-owned rail infrastructure, which VIA uses for portions of its Southwestern Ontario services. But this expansion also cuts into and destabilizes the VIA services. Even with its longer running times and the lower comfort levels of its short-haul commuter rolling stock, GO's lower fares and complementary off-peak bus services have attracted former VIA passengers on portions of the two Southwestern Ontario VIA routes. The loss of these passengers has helped justify VIA's service reductions.

At the same time, GO's ridership to and from certain points has been low and acquired at great cost. The extension of four GO Georgetown weekday rush-hour trains to Acton, Guelph and Kitchener has attracted less than 1,000 daily passengers, although the addition of off-peak bus service between Toronto and Brampton, connecting there with bus service to Kitchener, has been useful to many travellers, especially since the fare is generally half of what VIA charges on the same route. As well, the summer weekend GO service to Niagara Falls has also generated low ridership, but the year-round GO bus service from Burlington to Niagara Falls, which connects with the GO Lakeshore West rail service, has been popular.

The inauguration of the initial GO Kitchener service and its seasonal Niagara rail service had a bearing on VIA's decision to reduce its Toronto-London North Main Line and Toronto-Niagara Falls services when it had to contend with a federally-imposed budget cut in 2012.

Both these moves by the province have unintentionally damaged VIA's utility and cost-effectiveness in Southwestern Ontario. In essence, one publicly-funded service now competes with another publicly-funded service – and not to the advantage of taxpayers, in terms of mobility or finances.

This situation does serve to demonstrate the power of frequency and fares. While the GO services on these two routes have longer journey times than VIA, they offer more frequency and cost users about half of what VIA charges. This needs to be of prime concern in the formulation of a public transportation solution for Southwestern Ontario. Simply increasing VIA frequency without addressing the cost issue will not result in a significant shift of travelers from cars to rail and related "first and last mile" feeder services.

4.2 Ontario Intercity Bus Deregulation

In response to growing public and industry calls for a government attention to the accelerating decline in privately-operated intercity bus service, the Ministry of Transportation of Ontario launched a study and consultation process focused on deregulation as a possible solution. Consultation sessions held in the summer and fall of 2016 brought forth multiple calls for the need for public assistance to maintain and expand bus service, not deregulation.

MTO's August 11, 2016, Toronto session produced the following participant reactions:

- Some participants cautioned that modernization could lead to increased competition on profitable routes ("cherry picking"), service gaps on less profitable routes and a reduction in the quality of services.
- Other options for modernization included appropriately enhanced regulations, e.g. market exit controls, pricing.
- The need to improve connections between communities and between intercommunity bus services and other modes of transportation, including rail and air was identified as the main issue, rather than modernized regulations.
- A hybrid or franchise model for intercommunity busing would create more opportunities for smaller operators to bid on routes owned by larger operators.
- A transit hub, established with the help of local government and the province, would provide a space where all services can be better integrated and rolled out.

Equally revealing were these comments made at the London and Sarnia sessions:

- Health and social service providers are delivering transportation services that they have not previously offered. The Ministry of Transportation should involve other relevant ministries in the decision-making process.
- Ensuring access to education for youth and students, some of whom are travelling in new and different ways, requires better linkages to neighboring communities than was required in previous eras.

While Ontario's interest in addressing the deterioration of the province's once-massive system of intercity bus services is welcome, the continued government focus on deregulation instead of funding as a panacea is disturbing.

This process has so far produced nothing that will address the decline, which has recently included yet more frequency reductions on privately-operated bus routes in Southwestern Ontario and in the North. The only tangible improvement has come from the provincially-owned and –funded Ontario Northland Transportation Commission, which added a new route and increased the frequency of others in January 2018.

4.3 Ontario Community Transportation Grants

On December 1, 2017, the Ministry of Transportation of Ontario announced it was launching a new Community Transportation Grant Program that would provide up to \$30 million over five years to municipalities to expand or launch new intercommunity services. An additional \$10 million will be available to Indigenous communities, Indigenous-led organizations and not-for-profit organizations starting in the summer of 2018. This is on top of a minor two-year pilot program announced in 2015.

In its press release on the program, MTO said it was “seeking initiatives that can meet growing regional and intercommunity travel demand by:

- Developing long-distance intercommunity bus services in priority areas of the province where there is no or insufficient intercommunity service;
- Providing local community transportation services that connect to existing, new or planned intercommunity bus routes and other transportation systems; and
- Creating and supporting local transportation hubs to connect passengers safely and conveniently to transportation services.”

While this appears to be a positive move at first blush, its timing only seven months before the provincial election is suspicious and the amounts involved are paltry on a province-wide basis. The maximum local community transportation project grant is \$500,000 over five years, while the maximum intercommunity bus project grant is \$1.5 million over five years.

Furthermore, the announcement led to numerous communities scrambling to prepare last-minute plans in order to qualify for the funding, which had an application cut-off date of February 28, 2018.

One fear is that this provincial funding is leading to multiple parties preparing applications for services

that will be disjointed and will fail to reach the full potential possible through the development of a coordinated plan for intra-regional services.

A program to award upper-level government funds for the development of intercommunity transportation is undeniably necessary, as the widespread decline of the intercity bus industry has demonstrated. But the question remains whether this is the best way to do it, whether the proposed services will be sustainable once the five-year grant program is over and if these services, implemented willy-nilly, will really deliver the benefits they should and could through comprehensive and coordinated planning by the municipal, regional and county governments.

A number of municipalities in Southwestern Ontario have applied for this funding, including Perth, Norfolk and Middlesex counties, Chatham-Kent, Waterloo Region, the cities of Stratford and Sarnia and the Town of Tillsonburg. While funding has been awarded to a number of applicants, the details of these applications are still unknown, including which proposals include the need to connect and coordinate the intercommunity services with VIA's trains or privately-operated intercity bus lines. It is admittedly difficult to factor this into the other service needs of these proposed intercommunity services given the infrequent and unpredictable service now being provided in Southwestern Ontario by VIA and the private bus operators.

To its credit, Perth County Council hired a consultant to work with municipal and private stakeholders across the county to develop its application, which is said to include consideration of the feasibility of connecting with not just municipal transit services, but also VIA and intercity bus routes.

4.4 Southwestern Ontario High-Speed Rail Proposal

Just prior to the June 2014 provincial election, Premier Kathleen Wynne announced her government would build a 300-km/hour, electrified Toronto-London HSR line, which would also serve Pearson International

Airport and Kitchener-Waterloo. It would be a hybrid route using existing GO Transit and CN rights-of-way, plus an all-new Kitchener-London alignment.

ONTARIO HSR PROPOSED ROUTE



Ministry of Transportation of Ontario

An unsubstantiated cost of at least \$2.5 billion and an estimate of up to 12 years for the service's start-up were given, based on a pre-feasibility study that lacked detailed analysis and was done without any on-the-ground inspection of the route. That study also indicated the proposed HSR line could attract about 6 million passengers annually and operate profitably, repaying most of its capital cost.

There is no doubt that an Ontario HSR project would dazzle some members of the public. Since the world's first true high-speed train pulled out of Tokyo for Osaka on the all-new Tokaido Line in 1964, it has become the gold standard of intercity rail passenger service. In addition to growing into an extensive, multi-line system in its birthplace, it has taken root in nations as diverse as France, Turkey and China.

HSR has become a global phenomenon and a logical transportation solution in those corridors where the population, potential ridership and other conditions are suited to its application. When it's part of a seamless network of integrated services, HSR can offer a highly attractive alternative to car and air travel.

Despite these impressive credentials and the headline-making power of any HSR proposal, the provincial announcement has drawn a mixed public reaction. Some of the skepticism is no doubt due to the fact that HSR has been studied 22 times since the mid-1970s. These studies have all proved HSR is technically feasible and it could divert large numbers of travellers from air, bus and, to a lesser extent, the highways. But the studies have also determined HSR would have to be publicly funded, with at best a small percentage of private investment. That funding has never materialized.

Following her June 2014 re-election, Premier Kathleen Wynne reconfirmed the preliminary HSR proposal and extended it west to include Windsor, announcing

the government would undertake environmental assessments and planning. She also said she hoped the federal government would contribute, in as much as it already funds conventional VIA service in the same market. The private sector would be also expected to shoulder a large portion of the cost through a public-private partnership.

Former federal Minister of Transport David Collenette was appointed as the HSR project's advisor. He led a short round of invitation-only presentations in January 2015, conducted one-on-one consultation with outside parties and commissioned a business case analysis by an outside consultant. Initially, the study team was slated to investigate and compare 300-km/h electrified HSR alongside two 200-km/hour options, one conventional diesel-electric and the other fully electrified. These 200-km/h options are not true HSR, but would be more accurately described as "higher speed" and would come with lower costs and faster delivery timetables.

However, the two 200-km/h options were dropped from the detailed examination because they reportedly didn't generate any "political attraction" at Queen's Park. Instead, the study evaluated both 250-km/h and 300-km/h electrified service using a routing that would include:

- the existing, shared GO/CN alignment from Toronto Union Station to Baden, west of Kitchener;
- a new "greenfield" route from Baden to the east side of London, built on a hydro transmission corridor that would bisect approximately 60 farm properties and require numerous road closures; and
- a new bi-directional, electrified track adjacent to the existing CN and CP corridors and a possible future extension to Detroit through the existing CP tunnel.

The final advisor's report recommended the 250-km/h option, to be delivered on what would be a three-phase basis, although the report defined the staged introduction of the Toronto-Kitchener and Kitchener-London services as comprising a single phase, with an estimated launch date of 2025.

The study could not present a business case for the London-Windsor end of the project, but said "the case for HSR can be recommended on socio-economic and regional development grounds. The preliminary business case results demonstrated that this portion of the service is best built in a second phase, once ridership to London and revenues have been established." The target date for the London-Windsor service is 2031.

In total, the cost estimate for all the phases of the HSR project would be at least \$21 billion. However, assumed in the study was that the constrained, CN Bramalea-Georgetown line segment would be freed up through the construction of an \$8-billion freight bypass from Bramalea to Milton, which would require eight years to construct, although this cost was not included in the HSR budget estimate.

The freight bypass, which is discussed elsewhere in this report, is also required for the implementation of the electrified GO Regional Express Rail (RER) service on the Toronto-Kitchener route. This high-frequency service would be in addition to HSR, which would operate with three trains in both directions during peak hours and two trains off-peak over the full route.

It should be noted that delivery of the oft-promised RER service has proven difficult, causing the government to push back the estimated service date from 2019 to 2025, the same date promised for HSR and many other GO RER services on other routes.

The controversial Union Pearson Express (UPX) service would also continue to operate with a 15-minute frequency in both directions over the portion of the

route shared with the HSR and RER trains between Toronto Union Station and the junction with the line accessing the airport.

The complicated mix of trains operating over various segments of the Toronto-Kitchener route, as well as several speed-limiting curves, would result in the HSR trains operating at considerably less than their maximum permissible design speed of 250-km/h. This speed could only be attained and sustained on the greenfield portion of the route west of Kitchener.

The new HSR alignment would also exclude Stratford and St. Marys, although the original Toronto-London pre-feasibility study did suggest that some lower-speed Kitchener-London service could be maintained on the current line to connect with the HSR trains at either end.

Similar suggestions were made concerning the possible maintenance of the conventional service now provided by VIA on the Toronto-Brantford-London and London-Sarnia routes. This was repeated in the HSR report delivered by Collette's team, although little explanation was given as to how this could be accomplished

Equally disturbing is the revelation that Ontario HSR team had minimal contact with VIA. Consequently, there is no explanation as to how the two competing services can mesh operationally on the line segments they will share. Nor was there any discussion of the impact of the diversion of VIA passengers to HSR at the points served by both.

The expectation is that HSR would siphon off all of VIA's current traffic between the major revenue-generating points and leave it with only the traffic to and from the many intermediate points bypassed by the HSR service. These would include Woodstock, Ingersoll, Brantford, Stratford, St. Marys, Glencoe, Strathroy, Wyoming and Sarnia.

Would these VIA Southwestern Ontario services remain, given that the ridership will drop and the cost of providing them would increase dramatically? No answers have been provided by those involved in the provincial government's HSR project or VIA.

As well, the HSR route would not actually reach Pearson International Airport, but "would be served from an expanded Malton GO Station. The Province would work with the Greater Toronto Airports Authority (GTAA) to provide a people-mover system linking HSR riders to Terminals 1 and 3 and to parking facilities. In the future, the Province could work with the GTAA to provide direct access for HSR to support their plans for the Pearson Airport multimodal hub."

Most distressing is the HSR plan's failure to include and support a system of intercommunity transportation feeder services. It merely suggests that future work on the project "should include identifying opportunities to integrate local transit to ensure first-mile/last-mile connections are made."

In his final report of December 2016, Collette encouraged the Government of Ontario to proceed with HSR and, on May 19, 2017, Premier Wynne announced that his recommendation had been accepted and the project would proceed. Collette was appointed on February 13, 2018, to lead Ontario's High Speed Rail Planning Advisory Board and the government released the official notice of the issuance of the terms of reference for an environmental assessment on February 27, 2018. This is expected to be a two-year process, which will include "the alternatives to be considered and the public consultation activities to be carried out."

Of great concern as this project begins to roll is the experience of the California HSR rail project, which is the only one of this type now under way in North America. Like the Ontario proposal, it has undergone a similar process and a history of presenting low-ball costs, questionable delivery schedules, fierce agricultural community opposition and unfulfilled promises of private-sector funding.

After many years of proposals and preliminary work, the California HSR project officially started in late 2008 with voter approval of a \$9-billion bonding proposition based on a promise to deliver the full San Diego-Los Angeles-San Francisco/Sacramento system in stages by 2029 at a total cost of \$48 billion. All of these critical details have changed as it has encountered massive financial, physical, institutional and political challenges. The cost has grown to \$64 billion and is expected to increase.

Furthermore, some aspects of the original 320-km/h project proposal have had to be scaled back to provide less than HSR service over the full route. California is now taking a "blended" approach that will use upgraded existing track in the two largest urban regions and create a full San Diego-Los Angeles-San Francisco/Sacramento system in stages. Amtrak will use the new line segments in the Central Valley between Merced and Bakersfield to provide 200-km/h diesel-hauled passenger service prior to the launch of the electrified Los Angeles-San Francisco service in 2029. No revised dates or costs have been given for the extensions south to San Diego and north to Sacramento.

4.5 VIA Rail Canada High-Frequency Rail Proposal

In isolation from the Ontario HSR plan for Southwestern Ontario, VIA brought forward a scheme for the Montreal-Ottawa-Toronto segment of the corridor in late 2014. This has since been expanded to include Montreal-Quebec route via Trois-Rivières. It is partially HPR-like, but most of it can be characterized as HSR Lite – without the high speed.

Dubbed high-frequency rail (HFR), it arises from VIA's contention that it can't offer frequent, reliable and cost-effective service so long as it uses infrastructure owned by the freight railways. To overcome this, VIA proposes a combination of the trackage it now owns with new trackage on abandoned and active freight rights-of-way to create a dedicated, passenger-only line providing up to 15 roundtrips daily.

VIA Rail HFR Proposed Route



VIA Rail

VIA first suggested HFR could be implemented by 2021 if it received government approval and funding now, but this has subsequently been pushed back to 2022. At last report, the proposed HFR service would provide the journey times shown below.

ROUTE SEGMENT	JOURNEY TIME
Montreal-Ottawa	1:20
Ottawa-Toronto	2:30
Montreal-Toronto	3:50

VIA's HFR proposal is a hybrid that requires the priority passenger use of some light-density Canadian Pacific (CP) freight trackage, the 225 km of passenger-only trackage VIA currently owns within this triangle and the rebuilding of 145 km of abandoned CP trackage between Glen Tay (west of Smiths Falls) and Havelock. This line was superseded in 1914 by a new CP main line from Agincourt to Glen Tay through major centres such as Oshawa, Cobourg and Belleville. The portion of the old line that VIA proposes to rebuild was abandoned from Glen Tay to Tweed in 1971 and west to Havelock in 1987. Passenger service on this line segment ended on January 23, 1966.

While the rebuilt CP track segment would be passenger only, VIA would still require access to some trackage that is heavily used by Canadian National (CN) and CP, as well as the commuter rail services in the Toronto and Montreal areas. It would not be a pure passenger railway.

The HFR trains could be diesel-electric, straight electric or dual-mode electro-diesel hybrids; all have been mentioned. They would operate at speeds of 160 to 200 km/hour, although this, too, has varied through the course of VIA's public promotion. At this speed, HFR would not be much more time competitive with air service than VIA's current corridor operations on the well-populated routes along the north shores of Lake Ontario and the St. Lawrence River.

VIA says its existing services on those routes would continue on the trackage owned by CN and others, but it would be "reconfigured" to provide the same frequency with greater reliability. How this is possible when the heavy freight traffic on these non-VIA lines would not vanish remains unclear. These routes include major passenger points such as Oshawa, Cobourg, Belleville, Kingston and Brockville, which generate considerable VIA traffic today.

The HFR proposal promises to serve smaller communities on its route, such as Pontypool, Havelock, Tweed, Sharbot Lake and Perth, but the only point on the Smiths Falls-Toronto segment with a significant population is Peterborough. Consequently, many rail professionals – including some retired VIA executives – doubt the claim that HFR would triple VIA's current corridor ridership by 2030 and generate profits sufficient to eliminate its need for public funding of its entire Quebec-Windsor Corridor system.

VIA's proposal has shifted several times in terms of costs, stations, routings into Toronto and Montreal, ridership and revenue projections, equipment types and various other major issues. The Montreal-Quebec City extension appears to have not altered a previous cost projection of \$4 billion for the infrastructure. This would increase to \$6 billion if the line were electrified.

This infrastructure investment would allegedly trigger a public investment of \$1.5 billion in new and urgently needed motive power and rolling stock, an issue that is covered in detail later in this report. As for the infrastructure funding, VIA said right from the start that its proposal would attract private-sector investment. It hasn't materialized. A newspaper report revealed the HFR proposal was declined by the institutional investor Caisse de dépôt et placement du Québec, but the Canada Infrastructure Bank is still an option.

As for the federal government, it has issued a series of cheery but non-committal statements about the HFR project. Hints have been dropped by VIA and Minister of Transport Marc Garneau that the federal government would also be looking for financial contributions from Ontario and Quebec. In Budget 2017, \$3 million was allocated for Transport Canada and outside consultants to study the plan and a further \$8 million, spread out through 2021, was added to this extended investigation, indicating no decision will be made for another three years.

HFR's potential impact on Southwestern Ontario's rail passenger service was covered in an analysis provided to and endorsed by Oxford County Council on September 27, 2017. A major concern should be VIA's suggestion that its HFR proposal will have a positive spillover effect on its current services in this region. VIA implies that the HFR line would be so profitable that it would generate revenue sufficient to cover the cost of all the other Quebec-Windsor Corridor services, including those in Southwestern Ontario, leading to increased service levels and a new fleet of locomotives and rolling stock.

The profitability promise makes HFR immediately suspect. Due to directly and indirectly-subsidized car, bus and air travel, profitable passenger train operations are extremely rare. Claims of passenger train profitability should be viewed cautiously and analyzed carefully.

The one North American intercity rail passenger route said to be profitable is Amtrak's Boston-New York-Washington Northeast Corridor (NEC). This densely-populated, intensely-served passenger route is considered profitable on what is known as an "above the rail" basis. Under this criteria, only the operating costs are included, not the capital investment and renewal.

Former Amtrak president David Gunn, now living in retirement on Cape Breton, was consulted in the preparation of this report and he established that Amtrak's NEC is not profitable when all its costs – above and below the rail – are included. When asked about the profitability of VIA's HFR proposal, he replied, "If you believe that, then I've got a bridge in Brooklyn to sell you."

Also of concern is VIA's track record in delivering on its promises. On June 16, 2015, VIA president Yves Desjardins-Siciliano announced in Stratford and again in Sarnia the following day that VIA would soon introduce several new trains on its Southwestern Ontario routes. To date, not one of these additional trains has materialized. The problem, says VIA, is that the owners of most of the required infrastructure won't allow the new trains on their tracks for a variety of reasons VIA won't specify.

In fact, at the 2015 Stratford luncheon announcement, Desjardins-Siciliano revealed that prior to making his announcement, the corporation hadn't even discussed the new services with the three track owners that would have been required to accommodate them on their tracks.

In short, VIA's HFR proposal appears to be a potentially dangerous pile of shifting sand that is altered frequently and lacks any hard data the corporation is willing to make public. This can only lead to major concerns about VIA's ability to deliver on the HFR proposal, its promised benefits and, given the inordinate amount of managerial attention focused on, the fate of VIA's current corridor, long-haul and remote services.

Until Transport Canada completes its in-depth investigation in 2021, HFR remains an untested and unfunded concept. It appears to have no benefits for Southwestern Ontario and could easily wind up having a detrimental effect on the low level of VIA service being provided today.

5.0 The High-Performance Rail Advantage

In a 2011 article in the trade magazine, *Railway Age*, U.S. consultant Chris Taylor wrote:

“Headlines often blare about the speed of European or Asian high speed trains. But those vaunted speeds are rarely sustained in practice, due to operating costs, logistic constraints, and maintenance requirements. The unspoken story is overall performance – efficient, reliable, and comfortable ways of getting passengers to their destinations, using rail as one well-integrated component of an overall journey. But performance can be hard to define and even harder to quantify. Speed becomes the defining principle by default. . . . To advance passenger rail here, advocates should focus on high-performance rail (HPR).”

The U.S. Department of Transportation (USDOT) defines HPR as:

“Relatively frequent service between major and moderate population centers 100-500 miles (160-800 km) apart, with some intermediate stops. Top speeds of 110-150 mph (175-240 km/h), grade-separated, with some dedicated and some shared track (using positive train control technology).”

HPR is a middle-ground between high-end HSR and lower-speed conventional rail, such as VIA’s Southwestern Ontario service. HPR is, in fact, what Europe and Asia built in advance of their HSR systems and it continues to operate on many main and secondary routes in these countries, complementing and feeding traffic to the HSR lines.

In addition to speed, HPR is defined by its multiple service attributes, including:

- frequency;
- price vis-à-vis other modes;
- comfort and onboard amenities;
- on-time performance;
- station convenience;
- connectivity with other public modes; and
- door-to-door travel time.

As Taylor pointed out in his 2011 *Railway Age* article: “Speed is compelling. But it is not always the best criterion. In truth, most transportation modes actually ‘sell’ performance. Airlines never talk about how fast their planes fly, but they are expert at selling performance—legroom, in-flight movies, airport lounges, and so forth. We must bring that perspective to passenger rail by promoting HPR.”

Today, VIA's Southwestern Ontario services operate at speeds and with frequencies below HPR standards. VIA's Toronto-Ottawa and Ottawa-Montreal route segments are close to HPR, operating at a maximum speed of 160 km/h and offering 10 and seven weekday roundtrips, respectively. These still aren't delivering the full benefits of HPR, however.

In 2002, after 20 years of failed attempts to obtain HSR funding, VIA developed an HPR plan for the Quebec-Windsor Corridor. It would have delivered large benefits sooner than HSR and at a much lower cost. Known as VIAFast, this plan would have been built incrementally over a period of four to five years at a cost of \$2.6 billion. The increased revenue and reduced costs in each phase of the project would have justified each successive set of improvements, as well as cumulatively reducing VIA's system-wide funding requirements by \$125 million annually.

VIAFast would have delivered several benefits to Southwestern Ontario, including an extension of VIA's Toronto-Windsor service to Detroit. The Toronto-Brantford-London service was to be boosted from five to eight daily roundtrips and the running time cut to 1 hour and 45 minutes. This would have increased ridership by 45 per cent.

VIAFast was endorsed by Minister of Transport David Collenette, but when he stepped down as transport minister in 2003, it was shelved. Except for the GO Lakeshore Line, which may be considered commuter HPR because of its high frequencies and numerous GO bus and transit feeders, there is no HPR passenger service in Canada today.

The situation is dramatically different in the U.S., which has six examples of intercity HPR and many more that are incrementally emerging from conventional rail corridors. The most highly developed is Amtrak's electrified Boston-Washington Northeast Corridor (NEC). It offers high frequencies, operates at up to 240 km/hour and makes numerous connections with other Amtrak routes, commuter rail systems, intercity bus feeders and urban transit networks. The NEC also handles a complex mix of slower intercity passenger and commuter trains, plus some freight.

Connected to the NEC is the electrified Philadelphia-Harrisburg Keystone Corridor, which is operated at 176 km/hour and provides 14 daily roundtrips. Amtrak plans to increase the speed to 200 km/hour and the State of Pennsylvania is studying the possibility of extending the corridor west with diesel-hauled service to Pittsburgh.

Four additional Amtrak routes meet the HPR criteria. All are diesel powered and connect with numerous feeder buses, urban transit systems, commuter rail lines and other Amtrak routes.

HPR ROUTE	END POINTS	MAXIMUM SPEED (KM/HOUR)	WEEKDAY ROUNDTrips
Empire Corridor	New York-Albany	176	13
Hiawatha Service	Chicago-Milwaukee	127	7
Capitol Corridor	San Jose-Sacramento	127	14
Pacific Surfliner	Los Angeles-San Diego	144	11

Other Amtrak HPR upgrading projects now under way in partnership with the relevant state governments include:

Downeaster	Boston-Portland-Brunswick, ME
Knowledge Corridor	New Haven, CT-Springfield, MA
Empire Corridor	Albany-Niagara Falls, NY
Piedmont Corridor	Raleigh, NC-Charlotte, NC
Wolverine Corridor	Pontiac, MI-Detroit-Chicago
Lincoln Corridor	Chicago-St. Louis
San Joaquin Corridor	Bakersfield, CA-Oakland/Sacramento
Cascades Corridor	Eugene, OR-Portland-Seattle-Vancouver, BC

The two Midwest projects are components of a planned Chicago hub network of six 176-km/hour HPR routes and six conventional services. Other HPR services throughout the U.S. will follow as multi-route regional systems are built on the foundation of current Amtrak conventional routes. Among those targeted for upgrading to HPR are:

Vermont	Springfield, MA-Montreal
New England Inland Route	Boston-Springfield, MA
DC2RVA Corridor	Washington, DC-Richmond, VA
Keystone West	Harrisburg, PA-Pittsburgh
Southeast Corridor Phase I	Richmond, VA-Raleigh, NC
Southeast Corridor Phase II	Charlotte, NC-Atlanta
Southeast Corridor Spur	Richmond, VA-Hampton Roads, VA
Northern Lights Express	St. Paul-Duluth, MN



*All Aboard Florida's Brightline high-performance rail service is being used to link Miami and Orlando.
Photo by Bob Johnston.*

The unique, privately-funded Brightline HPR service is also being implemented in Florida to link Miami and Orlando. Its principal objective is to unlock the hidden value in the vast swaths of undeveloped real estate owned by the Florida East Coast Railway in Miami, West Palm Beach and Fort Lauderdale by making it easily accessible and attractive for mixed use development, which will profit the parent firm.

Using Siemens HPR diesel-electric trainsets derived from successful European equipment modified to meet North American safety standards, the Brightline service will operate at up to 200 km/h on a frequent, evenly-spaced "clock face" schedule and connect with Amtrak passenger trains and feeder buses, the Miami and Orlando commuter rail systems, and urban transit services along its route.

The first phase of Brightline between West Palm Beach and Fort Lauderdale went into revenue service on January 13, 2018, and the extension to Miami followed on May 19. One of its greatest values in terms of advancing the case for other HPR services is through the selection of its Siemens motive power and rolling

stock. This is the first off-the-shelf HPR equipment ever produced in North America.

Similar 200-km/h Charger diesel locomotives are already being used on several state-supported Amtrak routes in California, the Pacific Northwest and the Midwest. The rolling stock has also been ordered for use on the California and Midwest routes. Its immediate availability has a strong bearing on the SouthwestLynx proposal, as do the other working examples of HPR now in service or soon to be launched across the U.S.

Furthermore, following the example of the U.S. HPR services and others throughout Europe, the U.K. and Asia, SouthwestLynx is highly dependent on non-rail elements such as intercommunity highway transportation, intermodal mobility hubs and improved urban transit to deliver its full value. These are also components of the successful HSR services worldwide, so they are givens for any form of improved intercity transportation system that has modern rail passenger service at its core and might one day be upgraded further to HSR.

5.1 Phasing and Scalability

A key advantage of HPR versus HSR is that it isn't a "big bang" approach that takes years to deliver all in one go. It grows incrementally, with investment pegged to the success of each phase. New line segments are built only when the old ones reach their speed and capacity limits. As well, HPR can be operated with electric or diesel-electric locomotives, whereas HSR absolutely demands full electrification, which comes with high upfront costs that are unavoidable.

This has been demonstrated on the current and emerging U.S. HPR corridors. To take but one example, Amtrak's Northeast Corridor (NEC) between Boston, New York City and Washington has been evolving and growing incrementally for more than a century. It began as a route owned by two separate and disconnected private railroads that was operated with steam motive power. The two lines were connected and electrified, with capacity expansion, maximum operating speeds and running times improvement progressively based on traffic demands, emerging technologies and available investment capital. It is now the most heavily-used railway in the Western Hemisphere.

The ability to phase HPR development has been highly beneficial in what remains a volatile political and funding environment in the U.S. Changes in governments, policies and funding have delayed the full implementation of many HPR programs. However, each investment has brought benefits quickly and, when the funding slows or ceases, those prior investments continue delivering value for money.

HPR phasing also allows for results to be analyzed at each stage of the projects and corrections to the master plans undertaken in order to address changing circumstances, if required.

By comparison, HSR is unable to deliver any public benefits until each project is completed in full, with long construction times often leading to a decade or more passing by before the first trains are in service. Furthermore, once built in full, modifying the infrastructure to accommodate changing market or operating conditions is also expensive, time consuming and physically difficult.

As well, some of the HPR projects in the U.S. have also undergone major upward changes based on their success. This has, for example, allowed the Northern California Capitol Corridor to expand its original vision to now plan for even more improvements than were contemplated when the project first began more than 20 years ago.

This scalability also has positive implications for HPR in terms of future HSR. For example, the Washington-Richmond and North Carolina Piedmont services have been planned and are being developed with a long-range objective that would allow for their inclusion in a proposed Southeast HSR Corridor that would stretch from Washington to Atlanta. No value is lost from the investments made in these HPR routes and the benefits, such as ridership development, help build the case and the foundation for that future HSR project.

HSR is a revolutionary vision for tomorrow, while HPR is a practical reality for today. It is also a logical and cost-effective platform on which to construct HSR in the future.

5.2 Maximizing the Current Rail Assets

In a February 14, 2018, article on the need for integrated transportation planning, Streetsblog NYC transportation columnist Alon Levy described the European principle for rail and transit improvements:

“Organization before electronics before concrete. Organization refers to coordinating schedules, fares, and routes across different parts of the region, and across different agencies. Electronics is shorthand for equipment like trains and signals. Concrete means major infrastructure like new tunnels. Organization is basically free, electronics cost some money, and concrete is the most expensive.”

This is also at the heart of the HPR concept. It focuses on the first aspect of that European approach by maximizing the use of existing rail lines, facilities and equipment. This provides a platform to guide capital investment in “electronics” and “concrete,” to borrow from that European philosophy.

In addition to being a fiscally responsible approach to rail investment, HPR also minimizes urban, rural and agricultural land acquisition. This contrasts with HSR, which is largely dependent on all-new routings to deliver its highest speeds to the maximum extent possible. In urban areas, this can be not just difficult, but often impossible without politically unpopular and expensive residential and commercial land expropriation.



The CN Dundas Subdivision right-of-way between Bay-view Junction in Hamilton, through the heart of Oxford County and on to London is generally broad enough to be expandable to up to four tracks to provide additional passenger and freight capacity without any significant land take. Photo by Walter E. Pfefferle

With HPR, the costs and the impact on the physical corridors are minimized and the existing routes, which often date back a century or more, are optimized. Where capacity additions and route alignments are required, the land acquisition is usually minor and often involved blighted lineside properties that should have been acquired to protect for capacity expansion in the past.

Applying European principles to rail passenger planning leads to the conclusion there is much to be gained by first fine tuning the operation on existing and active rail lines and then investing judiciously in technological and physical improvements. Only when these HPR lines have reached their speed, ridership and capacity limits, and when greater potential can be realized by going beyond HPR, does HSR make sense.

This is the approach that has led to European and Asian nations taking an HPR approach first and then moving up from HPR to HSR, while also retaining the HPR services as necessary feeders to HSR and to continue meeting the needs of communities that are bypassed by the new HSR line segments.

5.3 Traction Power Options

The choice of the HPR solution or HSR has large implications in terms of the type and the cost of traction power systems required. Operation at speeds above 200 km/h is only possible with a completely electrified system. While electric operation is the gold standard of rail traction, it must be viewed as an expensive, precision instrument that needs to be applied very carefully. To justify itself, rail electrification demands high traffic levels and the absolute requirement of operating speeds higher than 200 km/h, which produces high energy demands that cannot be met with diesel-electric traction.

Despite its many benefits, rail electrification is not without its downside, including its high construction cost and the lead times required. For example, the current electrification of the San Francisco Peninsula

Caltrain commuter service will cover 79 multiple-track route kilometres and, including new electric multiple unit equipment and various related facilities, the cost will be an estimated \$2 billion or \$25 million per route kilometer.

As well, the overhead catenary power system and the transmission lines to feed it are visually intrusive, often leading to public opposition when projects are announced. The construction of this infrastructure also brings with it one-time energy costs that somewhat weight against the energy savings that come from the project's long-term operation. Electrification also results in a fleet that becomes captive to the electrified operating zone and can't be used on non-electrified routes.



While electrified high-performance rail service represents a high water mark in efficiency and speed, it comes at a very steep cost, takes many years to plan and construct, and results in a visually obtrusive right-of-way that online residents often find objectionable. Photo courtesy of Amtrak

HPR does not require electrification, although it can be implemented under the right conditions. Amtrak's electrified Northeast Corridor (NEC) is an example of an HPR corridor where it is not just valuable, but a necessity. The route includes two lengthy tunnels in New York City, as well as the underground tracks and platforms at Pennsylvania Station, which cannot be served with diesel power because of the fumes.

As well, the intensity of NEC operation benefits from the rapid acceleration from station stops that electric operation can provide in order to not just deliver faster service, but also to free up track capacity.

While other current and emerging HPR corridors in the U.S. would benefit from electrification, they don't require them. The funding that would be required to electrify these routes is better spent in improving the service through alternate investments in the diesel-powered equipment and the infrastructure, and supporting increasingly higher service frequencies.

Of concern today is the research that is going into alternate forms of rail propulsion and traction. Ontario's sudden interest in the potential for hydrogen fuel cell propulsion is one example. Others include the use of liquefied natural gas and battery storage technology as alternatives to diesel and electric rail traction.

While these research projects are in their early stages, one cannot arbitrarily dismiss them as unfeasible. Similar comments were made about diesel-electric locomotives when they were in their early development stages in the 1920s and '30s. This new and more efficient form of rail traction ultimately replaced steam technology in spite of what early detractors predicted.

Great strides have been made in recent years to reduce the energy consumption of and the greenhouse gas emissions from diesel-electric locomotives. The arguments against diesel are countered by the fact that railways – freight, intercity passenger and commuter – account for only one per cent of all Canadian greenhouse gas emissions (GHG). Any shift of passengers from the automobile and air travel to diesel-powered HPR passenger service would be an environmental dividend.

Starting with proven and increasingly efficient diesel-electric motive power under an HPR improvement program keeps the door open for the future use of alternate traction power technologies, should they become technically, operationally and financially feasible. Adopting electrification now, as is required for HSR implementation, would lead to the stranding of a huge capital investment if these alternate traction technologies become viable.

5.4 Maximum Speed vs. Average Speed

Experienced passenger railroaders have long said, “Speed costs. But does it pay?”

HSR advocates often use the maximum speeds and reduced journey times of these services to present a dazzling argument in their favour. But questions need to be asked about the high cost of delivering this performance and whether it is absolutely necessary in order to lure travellers to the rails.

In the case of the Ontario HSR proposal, there is also the question of just how much of the service would be truly high speed. For numerous physical and operating reasons, the proposed HSR trains would not be able to operate in high-speed mode between Toronto and Kitchener. It would only be west of Kitchener, on the all-new line segments that they could attain their maximum speed of 250 km/h. Elsewhere, they will be confined to approximately 200 km/h or less, which is what a diesel-powered HPR train can deliver.

The impact of journey reduction times is also a subject that requires greater analysis. The Ontario HSR scheme is promising a largely unsubstantiated Toronto-London running time of 73 minutes at a capital cost of \$11.5 billion for this segment of the project, which doesn't include the cost of numerous upgrading projects on the GO lines it requires or the \$8 billion for the new CN bypass required to clear the Bramalea-Georgetown line segment of freight traffic.

VIA's August 1989 Review of Passenger Rail Transportation in Canada determined that a diesel-powered HPR-light type of service could offer a Toronto-London running time of 110 minutes under an investment program for all of Southwestern Ontario, including the Toronto-Niagara Falls route, that would have cost \$375 million, or \$680 million in 2018 dollars, and would have boosted frequency and reduced running times on all the lines, and been delivered in five years.

Not included in the 1989 VIA study was another project that had been studied by the federal government's Rail Passenger Action Force of 1984-1985. This was a Brantford passenger bypass for express trains that would have reused an abandoned CN right-of-way between Lynden and Paris.

Rebuilding this line and a major bridge over the Grand River for the use of new express trains, which would have operated in conjunction with the local trains that would continue to stop at Brantford, would have cost an estimated \$400 million (\$854 million today). It would generate another 10 minutes in running time savings, bringing the Toronto-London HPR journey time down to 100 minutes when combined with the projects in the 1989 VIA analysis. This would have required a total investment of \$775 million (\$1.5 billion today) for what would have been an excellent first step towards the full HPR improvement program suggested here in the SouthwestLynx plan.

The question to be asked is whether it is worth an extra \$10 billion to generate a potential time saving of up to 27 minutes under an HSR scenario. What ridership and revenue gains result from this investment compared with the estimated \$1.5-billion cost of the HPR-style alternatives contemplated in the 1985 and 1989 studies?

In the end, it is not the maximum operating speed that counts the most, but the average end-to-end speed. HSR trains that cannot sustain their maximum speed over the maximum distance are not delivering the full potential that can justify their high capital and ongoing maintenance costs.

HPR brings about journey time reductions by bleeding time out of the full route through rolling programs of phased infrastructure improvements that accumulate into a large time saving. While the journey time reductions will never equal those attainable with HSR, they are significant and they need to be evaluated through cost-benefit analysis. This has not been done on the Ontario HSR proposal so far.

Furthermore, grand statements have been made regarding the potential economic impact of the Ontario HSR scheme, such as this one from special advisor David Collette's December 2016 final report:

"Overall, HSR will yield over \$20 billion in economic benefits over 60 years from passenger travel time savings, automobile operating cost savings, GHG reduction benefits, benefits from reduced congestion on roads, and other wider economic benefits."

Such an analysis for HPR does not appear to have been undertaken because, as the members of the Ontario study team have said, it was not part of "their remit" from Queen's Park. As the environmental assessment and public consultation processes for HSR move forward, such alternatives analysis are an absolute requirement if the full range of options – especially HPR – are to be given full and fair consideration.

5.5 Joint Rail Freight Benefits

The biggest challenge in passenger railroading today is obtaining the capacity required to provide increased levels of service and higher speeds. For the existing services and HPR, this requires capacity expansion largely on existing rail lines. In the case of HSR projects, such as the one proposed by the current Government of Ontario, it means building capacity largely from scratch at a very high cost, but also obtaining a portion of it from existing lines, such as the Toronto-Kitchener infrastructure, which is owned by Metrolinx and CN.

Rail corridor capacity can be loosely defined as the number of trains that can safely use a measured track segment within a prescribed period of time. The capacity is affected by a number of system variables, including the track infrastructure, the signaling system, motive power and rolling stock, grades and curves, the difference in speed between the trains using the track segment, and a railway's operating plan and philosophy.

Under the right circumstances and with targeted investment, passenger trains can easily share rail freight lines if that capacity investment results in the passenger service not impeding the freight trains or even improving their operating efficiency. At the 2014 edition of the annual Railway Age magazine conference, Passenger Trains on Freight Railroads, James Squires, the president of the pro-passenger Norfolk Southern freight railway, pointed out:

"... conventional passenger rail and freight rail can reasonably share the same infrastructure, and have done so as each has evolved over almost two centuries. In fact, sharing infrastructure is critical to the cost-effective provision of both passenger and freight rail over some of these routes, as our experience on the Northeast Corridor shows. And share we do."

However, Squires also noted that whether owned by freight or passenger operators, there are limits to track sharing:

"The challenge comes in when we introduce different technologies. For example, light rail and 'true' high speed rail – in the European sense – are big consumers of right-of-way and land and usually preclude shared infrastructure between passenger and freight. While light rail and high speed rail certainly have their place, planners may want to consider in some cases if conventional passenger rail solutions couldn't address the same transportation challenges while continuing to allow interoperability with freight trains."

By sharing track and investing in its upgrading, an HPR passenger project has the ability to aid freight carriers and even trigger investment by those freight railways in capacity-building projects they might not fund out of their own private funds. This is exactly what has occurred on several U.S. HPR projects, such as the 126-km/h Capitol Corridor in Northern California and the 176-k/h Lincoln Corridor in Illinois.

What is most encouraging is that the track owner, the Union Pacific Railroad (UP), is not usually noted for being particularly welcoming of passenger operators. However, in these two cases, UP becoming a partner in the passenger projects and used them as a means to obtain freight service improvements that have benefitted the railway and its freight shippers.

None of this would have been possible if those two HPR projected had been HSR.



Ending the conflicts between passenger and freight trains through capacity expansion projects not only helps improve passenger speeds and timekeeping, it can also improve the flow of time-sensitive freight traffic, making it a benefit to shippers and the freight railways that serve them. Photo by Ray Farand

This situation is equally applicable in reverse situations, where former freight trackage has been sold to passenger operators and freight railway running and switching rights have been retained. This occurs in Southwestern Ontario on the former CN track segments owned by Metrolinx and VIA, and on which CN is dependent for continued access to major shippers, such as automotive facilities at Oakville and Windsor.

At the 2014 Railway Age conference, Norfolk Southern president James Squires noted:

“Norfolk Southern operates over passenger railroads – Amtrak and commuter operators – to reach more than \$1 billion of revenue. Our customers accessible only via passenger lines include automobile plants, major coal export terminals, chemical complexes, crude oil receivers, power plants, and grain over

Amtrak to reach feed mills on the Delmarva Peninsula. And let me tell you, the revenue from that last market isn’t chicken feed.”

If any of these Amtrak HPR passenger lines were converted to HSR, Norfolk Southern’s shipper access and revenue would be compromised or even eliminated. It is because Amtrak’s Northeast Corridor and other former Norfolk Southern lines it owns are HPR operations that the freight railway, its customers and the regional economies continue to benefit.

This issue of mutual benefits for passenger and freight operators through shared track use and joint improvement projects is also addressed in Oxford County’s upcoming report, *Steel Corridors of Opportunity: Maximizing Southwestern Ontario’s Rail Freight System*, which was prepared by this consultant.

5.6 Non-Rail Essentials

Whether HPR, HSR or conventional, no rail passenger system can succeed fully without simultaneous investments in other modes of public transportation that can feed traffic to the trains by providing first-and-last-mile service, as well as the intermodal terminals that connect them. Intercommunity transportation, urban transit of all forms and improved pedestrian and cyclist access to the services and their facilities are all vital.

The SouthwestLynx HPR concept acknowledges and responds to this reality, just as has been done on the successful HPR projects around the world. These elements of those projects have been major contributors to their success.

The same can be said for the HSR projects in Europe and Asia. As well, the upgraded HPR lines that preceded and laid the foundation for the HSR lines are also part of this multi-modal approach, serving communities bypassed by the new HSR lines and acting like the tributaries of a river to feed it.

Ontario HSR studies have so far failed to account for this need. When a member of the team was asked why this was so, the response was yet again that it was “not part of our remit from Queen’s Park.”

The intercommunity transportation and intermodal mobility hub aspects of SouthwestLynx establish their essential need in this HPR-based proposal. Without them, any HSR plan for Southwestern Ontario is seriously deficient.

6.0 Successful U.S. High-Performance Rail Role Models

In crafting SouthwestLynx, data on numerous HPR operations around the world was examined. While economic, demographic and market conditions in Western Europe, the UK, Japan and China make comparisons with Southwestern Ontario difficult, the car- and air-dependent U.S. offers many applicable and transferrable working models. Some have been successfully implemented in regions that were virtually stripped of rail passenger service decades ago.

These U.S. rail-based regional transportation systems share a number of characteristics related to their successes, including:

- joint funding by the federal and state governments;
- new governance and service delivery models that localize day-to-day management and long-range planning;
- municipal participation through station ownership, enhanced transit service and, in some cases, policy and management decisions;
- HPR or substantially upgraded conventional rail services for the spines;
- important, well-used bus feeders;
- modern, cost-effective rail and bus equipment;
- high connectivity through the conversion of rail

stations into intermodal mobility hubs;

- incremental increases in rail frequencies and speeds; and
- adaptability as components of larger, longer-term HSR plans

Of these factors, it is the joint funding by the upper levels of government and the new governance models that have been the keys to making the best of these HPR operations succeed as fully as they have. This is the cornerstone of the SouthwestLynx approach.

The incorporators of Amtrak wisely included a provision in its enabling legislation that recognized the desirability of working with other levels of government to improve and expand its federally-funded service. Under Section 403(b) of the Rail Passenger Service Act of 1970, which also established a cost-sharing formula, it was provided that:

“Any State, regional, or local agency may request of the Corporation rail passenger service beyond that included within the basic system. The Corporation shall institute such service if the State, regional, or local agency agrees to reimburse the Corporation for a reasonable portion of any losses associated with such services.”



Amtrak Pacific Surfliner. Amtrak.

These 403(b) services extended Amtrak's regional reach during many years of federal funding problems similar to VIA's. Other growth drivers have been the Amtrak Thruway bus feeder routes, which attend to markets not easily be served by rail, programs to assist bus operators, the revamping of existing rail stations and the construction of new intermodal terminals.

With Amtrak's reauthorization under the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), the original 403(b) program was redefined. Under Section 209 of PRIIA, states are responsible for the full operating losses on routes of less than 1,200 km. However, this has come with increased grants from federal programs for capital projects to improve operating efficiency and cost recovery. PRIIA also established a Next Generation Equipment Committee to standardize locomotive and rolling stock for improved service and cost reduction.

In addition, many state-supported corridors will benefit incrementally from upgrading as components of the national HSR initiative. Grants for improved intercity connecting bus services and major local transit projects are coupled with the continuing investment in the state-funded Amtrak corridors.

Today, 18 states support 29 Amtrak corridor services, three of which are detailed here. All offer lessons for improving transportation in Southwestern Ontario quickly, rationally and affordably. Each corridor varies in terms of regional needs, the trains and feeder services employed, and their governance, but they have one common denominator: they have succeeded because the various levels of government and their agencies have worked collaboratively.



Through cooperative federal and state investment, the Pontiac-Detroit-Chicago Wolverine Corridor has been incrementally improved to increase ridership and revenue, as well as boosting frequency and reducing running times through the progressive upgrading of various line segments for 110-mph (160 km/h) service. Photo courtesy Michigan DOT

6.1 Michigan's Wolverine Corridor

When Amtrak took over the deteriorating U.S. network of passenger trains operated by the private freight railways, Michigan's service was reduced overnight to two roundtrips on the Detroit-Chicago route, now known as the Wolverine Corridor. On this meagre foundation, the Michigan Department of Transportation (MDOT) has slowly built a larger rail passenger service and a truly intermodal network using intercity buses, urban transit and intermodal terminals to improve non-automotive mobility throughout the state.

Michigan was an early proponent of intermodality. Faced with a shrinking and disjointed network of rail services, private bus operations and public transit,

it accomplished a great deal on a limited budget. Now, through a major investment in the Wolverine Corridor, the whole Michigan network will undergo positive change. Michigan's example can serve as an example for Southwestern Ontario and its federal and provincial governments.

Michigan's state-supported rail system grew incrementally, adding the Port Huron-Chicago Blue Water in 1974 and the Grand Rapids-Chicago Pere Marquette in 1984. A third Wolverine service train was added in 1975 and extended to Pontiac in 1994. Network ridership has grown by more than 50 per cent since 2000, reaching more than 800,000 passengers annually.

In addition to the trains, state-assisted, privately-operated intercity buses serve as components of the nationwide Amtrak Thruway bus feeder network. Funding for the buses, which serve nearly 150 Michigan communities and connect directly with the three rail routes, has been provided through a variety of low-cost MDOT programs. These include the Bus Loan, Terminal Development, Intercity Services and Intercity Bus Capital Equipment programs. Under the last, the state acquires new buses under a lease agreement that requires private carriers to provide daily service. This program has helped launch new services and has preserved existing routes.

The creation of intermodal mobility hubs throughout Michigan has been a key component of the MDOT intercity transportation program, providing a mixture of new terminals and rehabilitated stations on the three rail passenger lines and the connecting bus routes. The Wolverine Corridor offers direct train-to-transit connections at 11 of its stations.

The most recent intermodal mobility hub on the Wolverine Corridor is Dearborn's municipally-owned John D. Dingell Transit Center. Built with a \$28.2-million federal grant under the American Recovery and Reinvestment Act of 2009, and opened as of December 15, 2014, it is located near Dearborn's retail district, Greenfield Village and the Henry Ford Museum. In addition to the Wolverines, it serves the regional SMART transit system and Amtrak Thruway buses to East Lansing and Toledo, Ohio. It will also be served by the new Ann Arbor-Detroit commuter rail service, which is currently under development.

A less visible but equally important component of the 486-km Wolverine Corridor HPR upgrade as Michigan's public transportation spine is its new rail traffic control system. Amtrak's ownership of the 156-km line segment west of Kalamazoo and the federally-funded MDOT purchase of the 217-km Kalamazoo- Dearborn section in 2011 have expedited the installation of the advanced Positive Train Control (PTC) system mandated by Congress for train operation at 128 km or more.

The Amtrak-owned section of the line now has PTC and is cleared for 180-km/h operation, which has reduced running times. PTC application on the longer Michigan-owned section is under way and, along with numerous

other improvements, it will cut the Detroit-Chicago journey time of 6 hours and 30 minutes by two hours.

A key component of the \$687-million Wolverine Corridor project is new equipment to increase speed, comfort and capacity, while reducing costs. The experience on some state-assisted Amtrak routes, such as the Vancouver-Seattle-Portland-Eugene Cascades Corridor, is that the arrival of new equipment boosts ridership even without service increases. The Wolverines currently operate using conventional, single-level Amtrak trainsets with locomotives on both ends. This makes it unnecessary to physically turn the trains at terminals, which saves time and operating costs, while increasing equipment availability and utilization.

As part of a coalition of three Midwestern states and California, MDOT has received the first of its 200-km/h Siemens Charger diesel-electric locomotive and, beginning in 2020, will take delivery of its portion of a 130-car fleet of Siemens single-level coaches, which are modified versions of the cars Siemens has already delivered for Brightline service in Florida.

The Wolverine Corridor will grow to 10 daily roundtrips between Detroit and Chicago, with six extended to Pontiac. End-to-end running times will progressively drop by 30 to 50 per cent, with running times for the Port Huron-Chicago Blue Water also reduced as a result of its use of a portion of the Wolverine Corridor's 180-km/h infrastructure. The recommended service increases on the Port Huron and Grand Rapids routes would eventually see four roundtrips daily on each, as well as additional feeder buses. Proposed additions to the rail passenger network include Detroit-Grand Rapids, Detroit-Toledo and a service to northern Michigan.

The Michigan rail passenger program is part of the Midwest Regional Rail Initiative, which was formed in 1996 by a coalition of nine states (now 10) to develop a Chicago hub-and-spoke system of 11 rail routes totalling 5,000 km, as well as several Thruway feeder buses. The rail system will consist of 11 lines operated at maximum speeds of up to 176 km/h.

MDOT envisions the Wolverine Corridor eventually being converted to 352-km/h HSR as part of an interconnected, international service from Chicago to Toronto via Detroit and Windsor.



Using a no-frills approach that has included fully refurbished locomotives and rolling stock, North Carolina's Piedmont emerging HPR service has brought passenger trains back to a route that was largely stripped of all its locally-useful service in the 1960s. Photo courtesy of Amtrak

6.2 North Carolina's Piedmont Corridor

While North Carolina wasn't stripped of rail passenger service as dramatically as Michigan was with the creation of Amtrak and its early route rationalization, what was left was regionally ineffective, consisting of long-haul trains passing through the state at inconvenient hours on runs from the Northeast Corridor to Florida and New Orleans. Over the last quarter-century, the North Carolina Department of Transportation (NCDOT) has worked with Amtrak, on- and off-line municipalities, and connecting bus and transit operators to create an essentially all-new system.

North Carolina now has two state-supported rail services. Launched in 1990, the Carolinian links

Charlotte, Raleigh and other North Carolina points to Northeast Corridor destinations. It runs on a 13-hour Charlotte-New York schedule and is operated under a full service contract with Amtrak, similar to that employed by Michigan and many other states.

On the Raleigh-Charlotte Piedmont Corridor portion of the Carolinian's route, the state has progressively added daytime roundtrips. Originally a single daily train in 1995, the Piedmont's success has led to a doubling of the service and a plan that will, in combination with the Carolinian, soon offer six Raleigh-Charlotte roundtrips daily.

A unique feature of the North Carolina passenger program is the state's historic ownership of the Charlotte-Raleigh railway over which it operates. The line is leased to Norfolk Southern (NS), which operates and maintains it for freight service. In addition to the lease revenue, North Carolina benefits from being in a better position than most passenger operators to negotiate the priority of its passenger trains. It also benefits from NS's passenger-friendly management; the freight railway has an excellent track record of jointly crafting solutions for passenger and commuter services on its lines, in addition to its own freight operations.

Unlike many state-assisted services, the Piedmont service uses its own equipment and maintenance services. States have the right under the partnership agreements with Amtrak to provide certain aspects of the service and deduct those costs from the contract. North Carolina uses a remanufactured fleet for the Piedmonts, which includes eight diesel-electric locomotives (six of them former GO units), five cab cars to enable push-pull operation (remanufactured from ex-GO locomotives) and 20 passenger cars. With the North American pool of secondhand equipment almost exhausted, new equipment will have to be purchased for the full expansion of the Piedmont and additional new routes and services proposed by NCDOT.

The Piedmonts are comfortable and stylistically retro. One-class coach service is offered and each train has a lounge/baggage car with several tables and vending machines for locally-sourced food and beverages.

The baggage sections of the cars are well used by the numerous cyclists who ride the trains. A flexible fare plan includes discounted 10-trip passes, a 15 per cent reduction for students and a 30-per-cent-off companion fare. All fares and travel information are posted on Amtrak's website and the state's own site (www.ncbytrain.org).

Thanks to joint federal and state funding, the Piedmont Corridor's infrastructure is undergoing a \$520-million improvement program. The trains are now limited to 126 km/h under federal rules and require in-cab signal displays and automatic train stop protection at higher speeds. Congress has mandated the application of Positive Train Control (PTC) on all passenger and safety-sensitive lines by the end of 2018, although the multi-billion-dollar project is running behind schedule for a variety of reasons.

Track upgrading has already reduced the Charlotte-Raleigh running time by 35 minutes and higher speeds under PTC will cut it further.

The Piedmonts are directly connected to six transit systems at seven stations. These transit systems have benefitted from increased public investment spurred by North Carolina's shift from a rural economy, dominated by agriculture and related processing (especially tobacco) to an urban one driven by its many universities, research centres, high-tech industries, banking and tourism.

As North Carolina's urban population has risen, younger professionals have increasingly shown their preference

for car-free travel. Statewide transit ridership has increased 95 per cent since 2002 and automotive vehicle-km travelled has declined by 4.3 per cent.

In linking this expanding transit system with the trains, some intermodal improvements have been as simple as diverting transit buses from nearby streets to the front doors of the stations at train time. More substantially, several historic rail stations have been refurbished as mobility hubs and new ones have been constructed.

The largest mobility hub project is the new Raleigh Union Station. Replacing a cramped and poorly-located facility, it will maximize connectivity at a downtown location.

Piedmont ridership has almost tripled since 2002 and doubled statewide. Including the Piedmonts, the Carolinian and Amtrak's four north-south long-haul services, North Carolina is now served by 14 daily trains on five routes with stations in 16 communities. More than 70 per cent of North Carolina's population is within a 50-km radius of a rail passenger station, with an additional 11 per cent within a 50-km radius of stops served by the Amtrak Thruway feeder bus connections.

In its 25-Year Vision for North Carolina, the state committed itself to several ambitious transportation goals, including the expansion of both rail passenger options in all regions and more transit. A major component of this vision is the state's participation in the federally-designated Southeast High-Speed Rail Corridor plan.

To be built as a cooperative federal/state project, the principal main line will stretch from Washington to Jacksonville via Richmond, Raleigh, Charlotte, and Atlanta. Later segments will be built from Atlanta to Birmingham and Raleigh to Jacksonville via Savannah, Georgia.

Although it is described as "high-speed," it isn't. It will be a diesel-powered, 176-km/h HPR system. Except for a segment north of Raleigh that will be built on an abandoned right-of-way, the system will share trackage with the freight railways.

While the line is largely single-track south of Richmond, Virginia, the upgrade to HPR has included the construction of 8-km passing sidings every 16 km, the straightening of curves, grade crossing elimination, PTC, station improvements, and the use of higher-speed locomotives and cars.

A side benefit of this HPR approach is the improvement it will bring in line capacity and speed for the freight railways. Additionally, the plan contemplates the possible inclusion of a parallel, multi-purpose trail from Petersburg, Virginia, to Raleigh as part of the Maine-to-Florida East Coast Gateway. This hiking and biking trail would be built on the rights-of-way and safely separated from the adjacent rail passenger and freight operation.

The addition of new conventional rail services to North Carolina's Atlantic coast and the Smoky Mountains is also projected under the 2014 *Comprehensive State Rail Plan*.

6.3 Northern California's Capitol Corridor

Prior to the 1991 launch of the state-assisted San Jose-Sacramento Capitol Corridor service, the only train serving the full 269-km route was Amtrak's Coast Starlight, which operated at hours inconvenient for local travel on its run between Los Angeles and Seattle. The last local service on the line was discontinued in 1962. Nevertheless, California voters approved two 1990 ballot propositions providing \$105 million for the revival of service on the route.

The Capitol Corridor began with three roundtrips and expanded in stages to the current 15 on the Oakland-Sacramento route segment, with seven operating south of Oakland to San Jose and one extending east of Sacramento to Auburn. It is now the third busiest route in the Amtrak network, behind the Northeast Corridor and the San Luis Obispo-Los Angeles-San Diego Pacific Surfliner. During the 2012 fiscal year, Capitol Corridor trains carried 1.7 million passengers and recovered half of their \$58 million operating costs through passenger fares.

Like other state-assisted services provided in California at the time of its launch, the Capitol Corridor was originally operated by Amtrak under a full-service contract with the state's department of transportation – Caltrans – which managed the program. Equipment was provided from Amtrak's own fleet.

This began to change in the mid-1990s, when a fleet

of California-owned locomotives and bi-level California Cars arrived for service under the distinctive Amtrak California brand. In 1998, management of the Capitol Corridor was transferred to a joint powers authority (JPA) composed of representatives from six municipal transit agencies on the line. State funding is provided through Caltrans and the JPA contracts with the San Francisco Bay Area Rapid Transit District for day-to-day management.

Delivery of the California rail passenger services is through Amtrak and an operating contract with the Union Pacific Railroad, which owns the line and continues to operate a heavy freight volume over part of it. This JPA governance and management model has been adopted for the other state-assisted California Amtrak routes, as well as many other non-transportation, not-for-profit services operated in the public interest.

The California JPA governance model has a large bearing on the recommendations for the implementation of the SouthwestLynx concept.

Similar to North Carolina's Piedmont service, the Capitol Corridor offers only one-class coach service and each train includes a café-coach with light food and beverage service. There is also at least one car on each train with ample, secure bicycle storage; passengers are responsible for loading and unloading their own bikes.

To augment the current bi-level fleet, Siemens 200-km/h single-level rolling stock has been ordered under a joint contract with Michigan, Illinois and Missouri. As previously mentioned in the context of the Michigan Wolverine Corridor, these cars will be almost identical to the Brightline rolling stock and they will be hauled by Siemens Charger diesel-electric locomotives, which are already in use on the Capitol Corridor and the other two Amtrak California routes.

This Siemens HPR equipment is discussed in more detail in Chapter 7 of this report.

In addition to one-way and roundtrip tickets, the Capitol Corridor offers a wide range of discounted fare options, including an unlimited monthly pass and 10-ride tickets. There are numerous discounts for seniors, students, children, disabled persons, veterans, active-duty military personnel, groups of 20 or more and members of the American Automobile Association and the National Association of Railroad Passengers. Discounts are also offered in partnership with the Oakland Raiders and California Golden Bears football teams, Levi's Stadium in Santa Clara and regional special events operators.

Intercommunity feeder buses and transit links to the Capitol Corridor trains are numerous. In addition to connecting at five stations with 11 Amtrak Thruway

bus routes, direct transit connections are made with 16 local or regional transit providers at 14 stations. These include the San Jose and Sacramento light rail transit systems, the Bay Area's BART subway, and the Altamont Commuter Express and Caltrain commuter rail services. Connections are also made with two Amtrak long-haul trains, the Oakland-Chicago California Zephyr and the Los Angeles-Seattle Coast Starlight, and the six daily San Joaquin trains on the inland route via Bakersfield to Los Angeles.

Fare integration with the transit systems is extensive. Discounted BART day passes are sold on the Capitol Corridor café cars and up to two free transfers for 11 of the connecting transit systems are issued onboard upon request. Full fare and connecting service information is available on the service's dedicated website (www.capitolcorridor.org).

The Capitol Corridor's trains have proved to be an attractive alternative to the congested, parallel freeways. They're also politically popular, serving many state legislators and political aides who use them to commute from their Bay Area homes to offices in Sacramento. The Capitol Corridor is the fourth busiest intercity rail passenger route in the U.S., exceeded only by the Northeast Corridor, the Keystone Corridor and California's Pacific Surfliner service.

The Capitol Corridor JPA has mapped out an ambitious expansion plan for the service. With the congressionally-mandated implementation of PTC, the maximum speed will be increased in combination with various infrastructure projects from the current 127 km/h to 176 km/h. Increases in frequency are planned on all route segments, and Oakland-Sacramento peak-hour express trains will be introduced, cutting the two-hour running time by almost half.

New stations will be added and intermodal connectivity increased with more Amtrak Thruway and transit feeder services. The long-range plan contemplates service extensions east to Truckee or Reno, Nevada, and south to Salinas and Monterey.

California's \$68.4-billion (and growing) HSR system will bring more riders to the Capitol Corridor. It will connect at San Jose with the Los Angeles-San Francisco HSR main line when it opens in 2029 (or later), serving as a connector and feeder. That role will grow if the HSR eastern branch from Merced to Sacramento is built, although funding and timelines have not been set.

The Capitol Corridor's future is guaranteed as part of a seamless, interconnected network that will blend HSR, HPR, conventional passenger service, and commuter trains to provide California with high-quality rail, bus and transit services.



7.0 SouthwestLynx Prerequisites

The SouthwestLynx concept requires three crucial changes in the funding, operation and management of the disjointed intercity public transportation services now being offered in Southwestern Ontario. Without these, the further elements of the plan are doomed to provide far less than their full potential and they may, in fact, be unjustifiable. These three changes are:

- the acquisition of a sufficient number of new, high-performance diesel-electric locomotives and rolling stock to service the Southwestern Ontario routes out of Toronto;
- the re-alignment and coordination of the disconnected and disjointed transportation planning, funding and delivery policies of the governments of Canada and Ontario; and
- a new governance, management and service delivery structure for Southwestern Ontario to plan and, with federal and provincial funding, provide the core rail service, develop a feeder system of intercommunity transportation services and assume responsibility for several still-undeveloped intermodal mobility hubs.

All three changes must occur in lockstep if Southwestern Ontario is to avoid the misfires that have occurred in the past when political attention and public money have been directed to producing scattered transportation improvements with responsibility badly divided between the two levels of government and multiple operators.

7.1 Southwestern Ontario Rail Fleet Renewal

With rail service at its core, SouthwestLynx cannot move forward without the complete and accelerated replacement of the fleet of locomotives and rolling stock serving Southwestern Ontario today.

Currently, VIA operates the oldest frontline fleet of equipment in the industrialized world and it is consequently incapable of boosting service levels, improving performance and reducing the per-passenger cost of the service it provides in Southwestern Ontario.

VIA's own corporate plan for 2016-2020 said it best:

“There are no tactical or strategic improvements that can overcome the inherent negative dynamic of limited frequencies, poor reliability and on-time performance, longer trip times and outdated equipment. . . . VIA Rail can no longer function within its existing framework.”

Despite numerous warnings of this sort, which have been made since the federal government's Rail Passenger Action Force faced the issue squarely in 1984-1985, there have been only words of support, but little action from Ottawa. VIA has been limping along with Band-Aid solutions ever since and they are rapidly peeling away, especially in terms of its fleet.

In March 2016, the federal budget allocated \$3.3 million over three years for government studies of VIA's high-frequency rail (HFR) proposal and a further funding package for VIA that included studies of its equipment needs, which became intertwined with the HFR proposal and made to appear as a single issue. Two years later, Budget 2018 contained a further \$8 million over three years for more studies of the HFR proposal and a commitment – but no firm funding – for a corridor fleet renewal program, which was originally targeted to begin delivering new equipment by 2019 when it was first investigated by an outside consulting firm in the first quarter of 2015.

VIA has recently issued press statements saying it will launch a request for qualifications, followed by a request for proposals, all of which will take about a year to complete. The date for the arrival of the first new equipment has now been pushed back to 2022, with completion of the order in 2024. One of the criteria for the proposed new fleet of 32 bi-directional, push-pull trainsets valued at up to \$1.5 billion is that it should be dual-mode, capable of switching from conventional diesel traction to electric power, even though VIA operates on no electrified trackage today.

While this process has been grinding on in Canada, the U.S. has been making progress. Using service-proven European technology, Siemens has produced what amounts to the only high-performance corridor rail equipment currently available off the shelf in North America. This consists of its 4,400-hp, 200-km/h Charger diesel-electric locomotive and single-level rolling stock suitable for operation at the same speed. Complete sets

of Chargers and rolling stock have been delivered to the privately-funded Brightline project in Florida and 71 additional locomotives have been ordered for state-supported Amtrak routes and Maryland's commuter rail service, some of which are already in revenue service. Options are pending for a further 197 Chargers for both corridor and long-haul service.



While VIA and the federal government have dithered over the urgently-required renewal of the rail passenger fleet used in Southwestern Ontario and across the entire Quebec-Windsor Corridor, the U.S. has been making progress through successive orders with Siemens in Sacramento for its 200-km/h Charger diesel-electric locomotives and single-level, push-pull rolling stock.

After a serious misfire on the development of bi-level intercity coaches for state-supported Amtrak corridor services in California and the Midwest, the Siemens rolling stock design was substituted for the bi-level design. The initial order will be for 137 cars similar to the 20 already in service on the Brightline operation in Florida, with the first cars arriving in 2020.

Despite the development and delivery of this corridor equipment in the U.S., the Canadian study and pre-procurement process stretches out with an uncertain result. In dealing with a chillingly similar situation in

1985, the members of the federally-appointed Rail Passenger Action Force commented, "Studies cause delay and enable government officials to in turn delay making decisions; in this, they are sometimes welcomed by those government officials. . ."

Until new equipment is on the rails, there will be only a limited opportunity to even tweak the existing VIA service as part of a new vision for integrated public transportation in Southwestern Ontario and elsewhere.

7.2 A Federal-Provincial Partnership

The federal and provincial governments have long attempted to build walls around their transportation policy and funding responsibilities, carving up the modes and the types of service between themselves and, in the case of urban transit, with municipal and regional governments. But the lines of responsibility between the governments have been blurred for decades and the result has been a failure to craft coordinated plans that address a simple question: What is best for users and taxpayers?

No matter which mode or market segment, transportation needs to be handled under policies and plans that recognize each component as ultimately being part of a national system that requires coordination and connectivity. There especially needs to be a recognition that no mode or operator functions in isolation from the others and actions taken by or on behalf of one have repercussions throughout what should be an integrated system.

A perfect example of the consequences of this disjointed approach to transportation is visible in the current rail passenger service in Southwestern Ontario. With VIA's assumption of the remaining CN and CP passenger services across Canada beginning in 1978, it became a wholly federal responsibility. But Ottawa-induced service cuts in 1981, 1990 and 2012 brought it down to its lowest level ever. Meanwhile, the provincial government's Metrolinx began expanding its service territory westward with new GO rail and bus services, competing with and further destabilizing the VIA services, particularly on the North Main Line.

Now, the Government of Ontario is pushing forward with its proposal for high-speed rail over this same market segment to London and eventually Windsor, cutting

further into VIA's market on both of its Toronto-London routes, but bypassing communities such as Woodstock, Ingersoll, Stratford and St. Marys. The province has also said it expects the federal government, which is already funding VIA, to participate in the financing of the high-speed project. The federal government is contributing to some of the GO expansion projects and it is a continuing source of funding through the trackage fees VIA pays for access to GO-owned route segments it requires, such as those connecting Toronto Union Station with Bramalea on the North Main Line and Burlington on the South Main Line, as well as from Georgetown to Kitchener.

No attempt has been made to dovetail the plans, the funding and the services supported by both upper levels of government, which contrasts sharply with the approach now taken in the U.S. on several rail passenger corridors. The one that has had the greatest success has been the California joint powers authority (JPA) model, as outlined in elsewhere in this report.

With the overlapping and often conflicting agendas of the governments of Canada and Ontario, it is difficult to envision any progress being made on the crafting of a new approach to public transportation in Southwestern Ontario to revamp the one that has produced a disjointed and disconnected system of services that have failed to deliver an effective, optimized alternative to the private automobile.

A catalyst is required to bring the two governments and their service providers together if the changes required to increase non-automotive mobility are to be implemented.

7.3 A New Governance and Service Delivery Model

The delivery of the interconnected, multi-modal service envisioned in SouthwestLynx requires more than simply a federal-provincial funding agreement. It needs leadership unencumbered by the practices and politics of the past, which have resulted in inadequate levels of public transportation service and barriers between modes and carriers.

This same issue was addressed in the U.S. in advancing the state-funded rail and feeder bus services within the Amtrak system. Various models have been applied, including the creation of divisions of the state departments of transportation to assume control or arm's-length agencies to administer the projects. The approach that has proven to be the most successful is the one adopted by California for its three rail passenger corridors.

Starting as the Amtrak California division of the state's department of transportation, Caltrans, the program has evolved through the adoption of the joint powers authority (JPA) approach in 1996, with decision making transferred from the state to the new inter-regional and inter-municipal entities. Employed on more than 1,800 programs ranging from transportation to public

utilities such as water and electricity, a JPA brings together two or more agencies with common powers and objectives, but prevents turf wars by establishing at the outset a strong set of rules to quell any conflict that may arise when the members are at odds.

Of the three California JPAs handling the corridor rail passenger projects, the one that appears to have the most relevance in the context of SouthwestLynx is the Capitol Corridor Joint Powers Authority (CCJPA), which manages and contracts for the operation of the state-funded rail service from San Jose to Oakland, Sacramento and Auburn, a distance of 272 kilometres, and outward to adjoining communities through its extensive network of connecting bus services.

The CCJPA is defined as "a partnership among the six local transit agencies in the eight-county service area, which shares the administration and management of the Capitol Corridor. Services are developed with input from our riders, private and public sector stakeholders, along with the partners who help deliver the Capitol Corridor service – Amtrak, the Union Pacific Railroad, Caltrans and the various agencies and communities that make up the Capitol Corridor."



From trailers riding “piggyback” on flat cars in the early 1950s to today’s doublestacked containers moving in trains of 150 The Pacific Surfliner and two other Amtrak California routes are directed by locally-based joint powers authorities, which provide highly workable models for the creation of new approach to planning and delivering rail passenger and intercommunity transportation services under the SouthwestLynx plan. Photo courtesy of Amtrak

The CCJPA contracts with various service providers, public and private, based on its board-approved operating and business plans, which are required under its enabling legislation and the inter-agency transfer agreement with the State of California. Approval of the annual state operating grant and access to capital funding from additional state and federal programs is dependent on the attainment of these performance-based targets.

After two decades of CCJPA management and the input of all its partners and suppliers, the Capitol Corridor has evolved into an integrated public transportation system providing car-free mobility throughout the Northern California Megaregion, as well as providing a connection to other services that link it with the rest of the state and the nation.

While it's difficult to determine what percentage of its success is due to the adoption of the JPA governance and delivery structure, it should be noted that the Capitol Corridor languished in its first four years under what amounted to absentee management by Caltrans in Sacramento and Amtrak in Washington. It became a candidate for discontinuance when Amtrak and the State of California faced budgetary problems in 1995. It was the new JPA that brought about the ambitious service improvement plan that led to increased ridership, revenues and cost recovery, as well as vastly improved connectivity with other public transportation services.

Although not a transportation undertaking, the SouthWestern Integrated Fibre Technology (SWIFT) ultra-high-speed broadband project in Southwestern Ontario and the Niagara Region is a cooperative and regionalized approach that shares many key features of the California JPA model. Initiated by the county governments, it also includes municipalities, First Nations and numerous public and private sector

stakeholders. SWIFT is a not-for-profit response to a need that was not being met for a variety of reasons by the upper levels of government or the private sector. It has successfully attracted a portion of its initial capital funding from both the federal and provincial governments.

Without changes in governance and project delivery similar to those demonstrated by the California JPAs and SWIFT, it is difficult to visualize any meaningful improvement in public transportation occurring in Southwestern Ontario. Federally-funded VIA, headquartered in Montreal and ultimately controlled through its budget by Ottawa, has not addressed Southwestern Ontario's need for improved rail service and has never been authorized to engage in intercommunity feeder bus services, such as those developed by the California JPA rail agencies and Amtrak. VIA's intense focus on its high-frequency rail proposal for the services east of Toronto also rings alarm bells for those advocating Southwestern Ontario rail passenger improvements.

The integrated, multi-modal solutions contemplated in SouthWestLynx are also unlikely to be undertaken by the Government of Ontario on its own. The province has always resisted direct involvement in intercity transportation, even though the provincially-owned highways are the main competitors of any public mode. Complicating the situation further has been the growth of GO rail and bus service and its overlap on VIA's routes and the intercity bus services provided by the private carriers. Ontario's proposal to now build a high-speed rail system in Southwestern Ontario would only exacerbate the situation further.

As demonstrated by the California JPAs and the SWIFT broadband initiative, a fresh approach that empowers new and more regionally-focused leadership will be vital to the implementation of SouthWestLynx.

8.0 SouthwestLynx Strategic Investments

It would be nice to report that the creation of SouthwestLynx can be achieved with a minimum of capital investment and a maximum of political good cheer. It cannot.

SouthwestLynx will require a sustained program of incremental capital investment, particularly on the rail side of the ledger. Southwestern Ontario's public transportation system has been largely hollowed out through a lack of investment over many years. The first job must be repairing the deteriorated operation and then expanding the service offerings and their quality.

In any analysis of the efficacy of this recommended investment, the central questions must be:

- how do these costs and benefits compare with those of the HSR proposal?
- what are the ongoing societal and economic costs of doing nothing?

These are questions that should be addressed in the HSR environmental assessment and which have so far been excluded. Given Canada's lack of working examples, such an analysis should include a comparison with similar multi-modal projects elsewhere, such as Northern California's Capitol Corridor, which approximates the rail ownership, distance and demographic conditions in Southwestern Ontario.

Specifying and quantifying the capital investments involved in SouthwestLynx comes back to an examination of the three elements required to deliver its improved and integrated service:

- upgraded high-performance rail (HPR) service on both existing Southwestern Ontario rail routes, which are currently operated by VIA;
- intercommunity transportation linking the trains with off-line communities; and
- mobility hubs for seamless connectivity between the modes, including local transit.

While each is important on its own, it is only by tackling all three elements in unison as part of a unified, multi-modal plan that the maximum benefits can be derived from each.

Determining the precise capital portion of the intercommunity transportation component of SouthwestLynx is not easy at this stage because it simply doesn't exist today. Questions still need to be answered concerning the routes, service levels, equipment and servicing facilities to be used. With the exception of the vanishing intercity bus services, crafting this network is a matter of starting from scratch. Such an exercise is beyond the bounds of this report, although a suggested approach is covered in Chapter 9.

The multi-modal terminal requirements are somewhat easier to determine, if the assumption is made that all the points currently served by VIA are to be included. The stations on the Metrolinx-owned portions of the two Southwestern Ontario VIA routes are already equipped for relatively easy transfers between the trains and other public transportation services.

On the North Main Line, these points are Malton, Brampton, Georgetown and the municipally-owned Guelph Central Station. The new municipally-owned terminal in Kitchener will eventually provide the same level of intermodal connectivity as Guelph. On the South Main Line, the Metrolinx-owned intermodal terminals are Oakville and Aldershot.

Elsewhere, modifications will be necessary to the VIA-owned facilities at Stratford, Brantford, Woodstock, Ingersoll and London, as well as the six facilities west of there on both the Windsor and Sarnia routes. St. Marys' municipally-owned station will also require modification, although bringing intercommunity transportation vehicles right to the building's door may be problematic; on-street alternatives need to be explored.

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The capital requirements for the HPR component are easier to specify because they are based on the optimization of an existing system; the constraints and needs are well known. Although VIA, Metrolinx, CN and other Canadian railways guard their data closely, order-of-magnitude costing is possible based on readily available data from similar projects elsewhere, particularly in the U.S.

One concern in presenting these costs is the recent Canadian experience with passenger-related projects of this nature, which have become notorious for exceeding their budgets and delivery schedules. A prime example is the capacity expansion plan initiated and funded by VIA for CN's Kingston Subdivision between Toronto and the Montreal area. This plan dragged on for several years and went from being a \$251-million project to build 160 km of third main track, at an estimated cost of \$1.6 million per km, to one that cost \$318.5 million and produced only 70 km of additional track at \$4.5 million per km.

The Office of the Auditor General included this program in its 2016 special investigation of VIA, following up on previous examinations, and reported:

“Despite the measures taken by VIA to offset these deficiencies, a number of the projects we examined incurred cost overruns and significant delays in relation to what had been planned, which prevented the expected benefits from being obtained.... VIA Rail Canada Inc. should continue implementing corrective measures concerning its project management systems and practices in order to ensure that, for its future capital investments, it is able to reliably estimate costs, risks, and expected results, as well as manage projects within established budgets and timelines.”

With this warning in mind, the following projects are considered essential to make rail an attractive, affordable and swifter alternative to car travel. They comprise a comprehensive series of improvements under a two-phase approach. The first phase would cover both main lines from Toronto to London.

A second phase would carry the plan through to both Windsor and Sarnia. The Toronto-London projects are prioritized because improvements west of there will yield smaller benefits than are possible until those to the east are completed.

In terms of running time reductions, the first phase of SouthwestLynx should aim to at least deliver the improvements proposed by VIA in its 1989 Review of Passenger Rail Transportation in Canada. This report analyzed VIA's nationwide services on a segment-by-segment basis and provided funding and service options for each.

None of these options were taken up by the Mulroney government, which proceeded to slash VIA's train-miles by 52 per cent the following year. In Southwestern Ontario, the best performing option was known as the "competitive role," which would have been very close to what is now classified as HPR.

ROUTE	1989 (ACTUAL)	2018 (ACTUAL)	COMPETITIVE ROLE
Toronto-Kitchener-London	2 hr. 45 min.	3 hr. 22 min.	2 hr. 20 min.
Toronto-Woodstock-London	1 hr. 53 min.	2 hr. 08 min.	1 hr. 40 min.
Toronto-Woodstock-London-Windsor	4 hr. 05 min.	4 hr. 15 min.	3 hr. 30 min.
Toronto-Kitchener-London-Sarnia	4 hr. 00 min.	4 hr. 40 min.	3 hr. 25 min.

Under the SouthwestLynx plan, the competitive role's running times could be improved through various infrastructure improvements that weren't considered by VIA in 1989 or simply weren't feasible then.

Incremental frequency increases pegged to the infrastructure work should lead to service levels such as those shown below, which are derived from those contemplated under VIA's competitive role scenario in its 1989 *Review of Passenger Rail Transportation in Canada*.

SouthwestLynx Daily Roundtrip Frequency

ROUTE	2018	2019	2020	2021	2022
Toronto-Kitchener-London	2	6	10	12	15
Toronto-Woodstock-London	5	6	8	12	15
Toronto-Sarnia	1	2	2	4	4
Toronto-Windsor	4	4	6	8	8

Among the infrastructure improvements required are those on the lines owned by Metrolinx for the primary use of its operating division, GO Transit, and also used by VIA's intercity services. The track segments shared with VIA's Southwestern Ontario services are:

- Union Station Rail Corridor;
- Union Station to Burlington West;
- Union Station to Bramalea; and
- Georgetown to Kitchener.

Metrolinx has embarked on a \$21.3-billion expansion program that will culminate with the creation of its high-frequency Regional Express Rail (RER) service on portions or the full length of its current lines. It consists of more than 500 separate projects, not including a potential 25,000-volt AC electrification program. The latter is now in question, as Metrolinx has become involved in studies that may lead to the development of a hydrogen fuel cell alternative.

While the primary aim of these Metrolinx projects is not improved intercity rail service, most have the potential to deliver benefits to VIA – if they are considered at the outset. A concern is that VIA may not receive the necessary degree of consideration because it is somewhat viewed by Metrolinx as a complicating factor in its own operations. The two have already clashed over VIA's continued access to the tracks and platforms it has long used at Toronto Union Station, which Metrolinx wants to consolidate and downsize to only three tracks and two platforms at the station's far south end.

In describing its problem with its third-party train service agreements, VIA stated in its Summary of the 2016-2020 Corporate Plan:

“These are one-sided agreements providing for access to tracks under various terms and conditions that are highly unfavourable to VIA Rail, including on crucial issues such as time slots and train frequencies. Infrastructure owners are mostly operators themselves (primarily freight carriers) that conduct their own business on the same track.

“VIA Rail has little leverage to negotiate the infrastructure access required for reliable, frequent and on-time operations, which hinders its cost recovery, profitability and relevancy to travellers. Passenger trains in Canada do not have priority as in almost all other countries, including the United States, where Amtrak enjoys operational priority, while also paying approximately half for track access.”

VIA pays an undisclosed fee for access to the GO facilities and lines it requires for its Toronto-based services. The amount is reportedly Metrolinx's second largest source of revenue, right after passenger fares. As a well-paying tenant, VIA's needs must be given full and fair consideration and this matter does require some work by both publicly-owned operators to produce a more harmonious relationship.



It is assumed that Metrolinx-funded capacity expansion and facility improvement projects, such as the revisions being made to the GO Burlington Station, will move forward.

Photo by Walter E. Pfefferle

It is assumed that all of the Metrolinx capacity expansion and upgrading projects will move forward, although the timing and the real costs remain question marks. In addition to the provision of adequate facilities and access at Toronto Union Station, SouthwestLynx will be dependent on two major GO projects. These are the capacity expansion projects on the GO Oakville Subdivision from the western end of the Union Station Rail Corridor to Burlington West and the GO Weston Subdivision from Union to Bramalea.

Also required will be the upgrading of the GO Guelph Subdivision from Georgetown to Kitchener, with provision made for the efficient and swifter handling of GO and VIA trains in both directions. This will require

track upgrading, the extension of some sidings and the construction of new ones, all leading to eventual double-tracking.

No allowance has been made in the SouthwestLynx plan for any contribution to the capital cost of this Metrolinx expansion because the agency is more than adequately compensated through the current – some would say excessive – fees it currently receives through its train service agreement with VIA. These access fees take into account a reasonable contribution to the ongoing maintenance and expansion of Metrolinx lines and facilities, although how much that may be is unknown because the agreement is confidential.

8.1 High-Performance Rail Incremental Investments

In addition to the assumed Metrolinx/GO Transit investments, SouthwestLynx will depend upon a progressive program of capital projects designed to increase capacity, remove bottlenecks that are currently hampering VIA's services and complicating CN's own operations, and reduce running times. These projects are outlined in their order of proposed construction.

Map: Rail Improvements



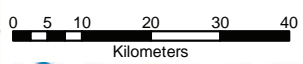


CN - Halton Subdivision

Bayview Junction

CN - Dundas Subdivision

- Improvement Areas
- Stations**
- Freight
- Passenger
- Railways**
- Short Line Railways
- Canadian National
- Canadian Pacific
- GO Transit - Metrolinx
- Goderich-Exeter Railway
- Ontario Southland Railway Inc.
- Southern Ontario Railway
- VIA Rail
- Oxford County Boundary
- Canada-USA Border



8.1.1 Aldershot-Bayview Junction Capacity Expansion

Any improvement to intercity passenger service on the South Main Line, as well as GO service to both the Hunter Street and James Street North stations in Hamilton and beyond to Niagara, is being blocked by the capacity constraints on the CN portion of the Oakville Subdivision between the GO/VIA Aldershot

Station and Bayview Junction, located southeast of the Royal Botanical Gardens and northwest of Burlington Bay. This 2-km section of track is one of the most heavily used in Canada and the conflicts between the passenger and freight trains can be severe.



The priority project in the SouthwestLynx Phase I capital investment program is the construction of a fourth track to boost capacity on the constrained CN line from Aldershot to Bayview Junction. It will enable major frequency increases for the SouthwestLynx intercity and GO commuter services, as well as improve CN's freight operation. Photo by Walter E. Pfefferle

The solution is an extension of the fourth track that ends at a point east of the Snake Trail overpass all the way to Bayview Junction, where the CN Dundas Subdivision diverges from the Oakville Subdivision. A key advantage would be that CN freight trains operating on the Dundas Subdivision would no longer need to cross in front of the passenger trains, as they frequently do now when entering or departing the west end of CN's Aldershot Yard. These conflicts currently place a limitation on the capacity of this line segment and frequently result in passenger delays.

Extending the fourth track all the way to Bayview Junction will require some substantial civil works due to the narrowness of the right-of-way, the steep

embankments on either side at various locations and the route's proximity to the Royal Botanical Gardens, Coote's Paradise and Burlington Bay, making it environmentally sensitive.

It is estimated this project will cost a minimum of \$500 million, which will be more than repaid through the benefits to VIA and GO, the latter being able to use it as a means to increase its Hamilton services in combination with additional infrastructure projects beyond Bayview Junction.

8.1.2 CN Guelph Subdivision Upgrading

The CN-owned portion of the Guelph Subdivision extends 91 km from the western end of the Metrolinx/GO track section at Kitchener to a junction at London East with CN's Bayview-London Dundas Subdivision, which is used for VIA's South Main Line passenger service. It is in only fair condition in terms of passenger service, consisting mainly of aged and jointed rail, deteriorating ties and an inadequate depth of ballast under the tracks to sustain a higher-speed service.

The line has been leased since 1998 to the Goderich-Exeter Railway (GEXR), a freight short line that has gone through a succession of owners and is now the property of Genesee & Wyoming (G&W), a well-respected rail and intermodal service provider with operations throughout North America, Australia, the U.K. and Europe. The 20-year GEXR lease will expire in November 2018 and CN will not renew it, taking back the freight operation and leaving G&W with only its Stratford-Goderich and Clinton-Centralia lines, which were purchased outright from CN.

Why CN has declined to renew the lease of the Kitchener-London East line is the subject of much conjecture within the railway industry. In 2015, when it

announced its intention to increase service on this and other Southwestern routes, VIA approached CN about purchasing the line. That proposal was rebuffed, as were the proposed passenger frequency increases.

There is now some speculation that Metrolinx wishes to acquire the line, although service west of Kitchener would exceed the agency's legislative authority. However, with VIA still possibly interested in purchasing the line, CN may be eyeing a bidding war. Taking full title to the line will remove any complications that might arise from continued GEXR operation.

No matter its ownership, much work needs to be done to bring the Guelph Subdivision back up to a condition that would even equal that of the pre-VIA era, when CN used it as an important component of its extensive Southwestern Ontario passenger system. The largely jointed rail, the rail fasteners, the ties and much of the underlying substructure need to be replaced to provide a smoother and faster ride. This wasn't done under GEXR's lease because the line is more than adequate for its low-speed freight needs and safe passenger operation below 160 km/hour.



The Georgetown-London Guelph Subdivision requires a progressive program of upgrading to decrease running times and allow for SouthwestLynx frequency increases. The extensive sections of jointed rail, the rail fasteners, the ties and much of the underlying substructure need to be replaced to provide a smoother and faster ride. Photo by Walter E. Pfefferle

The CN Guelph Subdivision's short sidings need to be lengthened and new ones eventually added as the train frequency incrementally increases. The line at least has a modern centralized traffic control (CTC) signaling system, which VIA paid to install under a program that ran late and for which the cost wasn't made public. There was little value to be realized from this without all of the capital investments included in the SouthwestLynx plan, although the CTC system can still yield major benefits through such optimization.

Based on the costs incurred in similar projects in the U.S., it is estimated that the upgrading of the CN Guelph Subdivision to provide more frequent service at the maximum 160-km/hour passenger speed CN allows on its track will cost approximately \$500 million.

8.1.3 CN Halton Subdivision (Bramalea-Georgetown) Capacity Expansion

The CN Halton Subdivision forms a central and critical part of the North Main Line used by VIA and GO's Kitchener Line trains. It is a heavily-used main component of CN's Montreal-Toronto-Chicago freight main line, extending from the entrance/exit to its MacMillan Yard near Keele Street and Highway 7 in Vaughan to a connection with the Oakville Subdivision at Burlington West. The Bramalea-Georgetown section is shared with VIA's two daily North Main Line roundtrips and, on weekdays, with 29 GO commuter trains that originate or terminate at Mount Pleasant, Georgetown or Kitchener, as well as three non-revenue GO train movements.

The CN Halton Subdivision is primarily a double-track line with some sections of third main line track and provision in other locations to add a third track. The right-of-way is constrained for a short distance through downtown Brampton. Expansion to provide a third main track all the way from Bramalea to Georgetown for additional passenger services would require the demolition of a low-rise retail and commercial building at 8 Nelson Street West in downtown Brampton, which incorporates a Brampton Transit/GO bus terminal. It would also necessitate removing a portion of the two-lane road to the west along the rail corridor, appropriately named Railroad Street.

The 8 Nelson Street West building is now owned by the City of Brampton and is one of the properties being assembled for the creation of a transit-oriented Ryerson University Brampton Campus. Most of the buildings on the south side of Railroad Street are vacant and slated for removal to allow for residential redevelopment.

The high-frequency GO RER and proposed HSR services demand that this segment of the CN Halton Subdivision be expanded to at least three tracks between Bramalea and Georgetown, and the CN traffic diverted to a new bypass the Ministry of Transportation of Ontario (MTO) would build for CN from Bramalea to Milton using the Highway 407 and a hydro transmission corridor, as well as some private property. MTO estimates this would take eight years and cost \$8 billion.

By substituting Toronto-Kitchener-London HPR service for the proposed HSR service, and using it to provide some of the proposed GO RER frequencies, the capacity demands on this line segment would be reduced to an extent that a fully triple-tracked line from Bramalea to Georgetown could accommodate both the passenger and CN freight services. This would avoid the public cost of acquiring this line segment from CN and building the freight bypass.

To do this, the section through downtown Brampton must be widened through the acquisition and demolition of the 8 Nelson Street West property and the closure of Railroad Avenue's two vehicular lanes, although a pedestrian and cycling thoroughfare could be retained.

To eliminate conflicts between the passenger and freight trains, a fly-under would be required to carry the SouthwestLynx and GO trains under the portion of the line that runs east to CN's MacMillan Yard. This could most easily and effectively be built between the Mount Pleasant and Georgetown stations. It would allow for all the passenger trains to stay on the south side of the triple-track line and keep the north track open for exclusive CN freight use until the fly-under. At that point, the CN traffic would be largely confined to the south track and the passenger trains to the north.

At Georgetown, where all the SouthwestLynx and GO trains would now be on the north side of the line, additional station facilities would need to be built. GO has already expanded its facilities at Georgetown by partially turning its layover yard into a station for its exclusive use. VIA's current trains still call at the south side platform at Georgetown, not the GO facility, which means they have to make three crossover moves between Bramalea and Silver, the junction of the CN Halton Subdivision and the GO-owned Guelph Subdivision to Kitchener.

To the credit of all three rail operators, there has been some recent improvement in the routing of the VIA and GO trains to minimize the conflicts with the heavy CN freight traffic, demonstrating that creative dispatching can also play a role in boosting the capacity of this line segment.

The provincial promise of an \$8-billion freight bypass is not only too expensive, too time consuming and too risky to build, it may not address the capacity problem on the Bramalea-Georgetown section of the Halton Subdivision if the government proceeds with the combined HSR and GO RER services. This would put up to 12 trains per hour, operating at different speeds, on a triple-track line that is unlikely to be capable of handling this intensive traffic.

Triple-tracking this line segment and building the fly-under to minimize freight/passenger conflicts are vital requirements of the SouthwestLynx North Main Line service. Based on similar projects undertaken elsewhere in North America, the estimated cost would be \$1.5 billion and it could be completed within five or less years.

8.1.4 CN Dundas Subdivision Capacity Expansion

A major point of freight and passenger conflicts on the double-track CN Dundas Subdivision portion of the South Main Line is at Paris Junction, at the top of the grade out of Brantford. At various times, a combination of four passenger and freight trains will routinely pass through this point in both directions within a few minutes of each other. Sidings exist on both the north and south sides of the line, but both are approximately 2,200 metres long and are inadequate for use by today's freight trains of 3,000 metres or more.

To eliminate this choke point, the SouthwestLynx plan requires the extension of these short sidings to Princeton to create a 13 km, highly-useful, section of four-track main line. This will not only allow for "meets" between trains operating in opposing directions, but for smooth overtakes of the CN freight trains, which are limited to 96 km/hour, by the passenger trains, which are now allowed a maximum permissible speed of 130 km/hour.



The SouthwestLynx plan requires the westward extension of the two short sidings at the Paris Junction to create a 13 km, highly-useful, section of four-track main line. This will not only allow for "meets" between trains operating in opposing directions, but for smooth overtakes by the passenger trains of the slower-moving CN freight trains.

Photo by Walter E. Pfefferle

The ability to use this four-track section for planned overtakes under CN's "precision scheduled railroad" freight operating concept will become even more important as the passenger speed is increased to the 160-km/hour CN allows on shared-use main line trackage.

Based on similar projects elsewhere, including the VIA-funded CN Kingston Subdivision project, capacity expansion from Paris Junction to Princeton will cost approximately \$100 million. It will be imperative to not allow this project to become a runaway, as did the Kingston Subdivision project undertaken by CN on behalf of VIA.

8.1.5 CN-CP Woodstock-Komoka Line Consolidation

An opportunity to address several intercity and urban transportation challenges is available in what would be the largest capital project in the first phase of SouthwestLynx. It would not only yield major rail passenger and freight benefits, but it would also resolve a problem that has afflicted London for more than a century. In this, it would be fully in line with the City's London Plan, which calls for "the safe and efficient movement of people, goods, and services through the city to keep London competitive."

Just west of Woodstock, near the intersection of Highway 2 (Dundas Street) and 10th Line, the double-

track CN Dundas Subdivision is immediately adjacent to the single-track CP Galt Subdivision, which is a component of its heavily-used main line from Montreal and Toronto to Windsor and Detroit. Connecting the two lines and double-tracking the single-track CP line for joint freight operation by the two railways as far west as Melrose, where the CN line crosses the CP line at grade immediately west of Komoka, would make possible the conversion of the CN Dundas Subdivision and a portion of the CN Strathroy Subdivision into a 60-km dedicated passenger line upgradable for 200-km/hour service.



Shifting all of the main line freight trains through London to the CP line requires the construction of grade separations at busy intersecting thoroughfares, such as Waterloo Street. The project would deliver mutual passenger and freight benefits, and end the road and safety problems the numerous grade crossings have inflicted on London for more than a century.

Photo by Walter E. Pfefferle

CN and CP main line freight trains would henceforth move over the expanded and upgraded CP line from the track connection on the west side of Woodstock to Melrose, on the west side of Komoka, where the CP trains would continue on that company's Windsor Subdivision to Chatham, Windsor and Detroit, and onward to Chicago using CP's current trackage rights on Norfolk Southern.

CN's freight trains would continue west on the Strathroy Subdivision to Sarnia and onward to Michigan points and Chicago. As is the case now, VIA's Windsor trains would diverge from the Strathroy Subdivision to the Chatham Subdivision at Komoka, east of the Melrose crossing of the CN and CP lines. This route would continue to be used by the limited number of CN road switchers that serve agricultural and industrial shippers on that line.

Through London, both the all-passenger CN line and the all-freight CP line would be grade separated from all the streets that now cross them, resulting in improved automotive and pedestrian flow on those streets. Some low-traffic grade crossings might be closed entirely or replaced with pedestrian-only underpasses or overpasses, which would be a matter for the City of London to determine in consultation with the public. A minimum of five grade crossings on the CP line and seven on the CN line would need to be grade separated.

The limited amount of CN freight traffic that is "yarded" at London would be consolidated at CP's

London Yard, which stretches from Highbury Avenue North to Adelaide Street. All current freight customers throughout the London area would still have access to CN or CP service as the various track connections between the lines in the city would remain and the trains that switch this traffic would not create any major conflicts with either the passenger trains or the main line freight trains.

A large side benefit of the yard consolidation would be the release of the land now occupied by CN's London Yard on the east side of downtown. The revenue generated by this land sale could be applied against the cost of the project, which would largely be borne by the public; there is no commercial need for CN and CP to undertake it, although it would have benefits for both.

The cost of such a massive project is difficult to determine, as there is nothing comparable to it that has been undertaken in North America in recent years. As well, its final cost would be contingent on the number of grade separations undertaken. An order-of-magnitude cost would be roughly \$2 billion. Against this cost must be weighed the considerable benefits it would generate not just for rail passengers, but also to CN, CP and the citizens of London, who have endured the time-consuming disruption caused by freight trains blocking grade crossings daily, and which has resulted in negative economic, social and safety impacts since the 19th century.

8.1.6 Continuous Corridor Enhancements

There are other infrastructure projects that can be undertaken to increase the speed and the reliability of the SouthwestLynx rail passenger services, although none would produce the dramatic benefits that can be derived from the projects described above. However, in concert with these larger projects, they can assist in incrementally shaving time off the schedules and boosting reliability further by minimizing conflicts between the passenger and freight trains.

A major problem on the South Main Line is created by the poor track and platform layouts at Brantford, Woodstock and Ingersoll. All three stations are located on the south side of the double-track CN Dundas Subdivision and only narrow platforms exist between the two tracks. Generally, the passenger trains in both directions are crossed over from the north track to the south to make use of the larger platforms adjacent to the south track and the station buildings.

This disrupts the flow of CN freight traffic and has a ripple effect all down the line. Even if the passenger trains stay on the north track and use the narrow platform between the two tracks, trains approaching the station on the south track must be halted to allow passengers to cross over it when boarding and disembarking from the passenger trains.



*The stations at Woodstock (shown above), Ingersoll and Brantford, are bottlenecks for both passenger and freight trains, and the only way to eliminate them is through a continuous program of station track and platform revisions.
Photo by Walter E. Pefferle*



In addition to adding a third main track at the stations listed above, a far-side platform and a fully-accessible passenger overpass will be required, as VIA constructed at certain points along its Toronto-Montreal route.

The solution is the one applied by HPR operators across the U.S. and which VIA has employed at high cost as part of the CN Kingston Subdivision capacity expansion project. It requires the construction of a third main track through these locations, new far-side platforms on the north side of the north track and fully-accessible overhead structures to allow passengers to safely and easily reach the far-side platforms. The third track allows for CN freight traffic to continue moving in either direction while the passenger trains pause to serve the stations.

The modification of the stations, platforms and track layouts at Brantford, Woodstock and Ingersoll would come with a range of costs, as they each present a unique set of challenges. If the VIA Kingston Subdivision project is used as a yardstick, these projects could come in at anywhere from \$10 million to \$20 million each, with the likely total for the three being in the area of \$100 million given VIA's past experience.

Another progressive program that can and should be applied across both Southwestern Ontario passenger routes, where applicable, is the conversion of track crossovers on route segments of two or more tracks and the switches leading in and out of sidings on

single-track segments to allow for higher speeds. The fastest speed now allowed on these crossovers and siding turnouts is approximately 70 km/hour. This not only affects the running times, it also consumes fuel as the trains have to decelerate and then accelerate after negotiating the track switches.

The solution is the replacement of the current crossovers and turnouts with those that allow for higher speeds, especially for the passenger trains. The minimum speed on these pieces of special track work should be 100 km/hour; higher speeds may be possible in some locations. Similar projects in the U.S. recently have cost anywhere from \$1 million to \$2 million per crossover.

Costing this aspect of the first phase of the SouthwestLynx project will be difficult until the situation is analyzed by both the freight and passenger operators, and the number of replacements determined. Nonetheless, it should be a component of the project on the basis that every minute of time that can be incrementally bled from the running times translates into greater passenger attraction and revenue.

9.0 Advancing the SouthwestLynx Plan

SouthwestLynx and its interlocked modal elements cannot be created overnight or without a large and justifiable public investment on a phased basis. What's most concerning now is just how long it will take to get all the various affected parties to even sit down at the same table to discuss it, let alone build it.

Southwestern Ontario doesn't have years to fritter away in yet more discussions that lead to no plans, no investment and no action. The region is going to lose the race with other jurisdictions, such as Northern California, that are well on the way to providing the type of multi-modal public transportation every forward-looking region requires today to be globally competitive, socially vibrant and environmentally robust.

Within the SouthwestLynx concept, there are two projects that can be moved forward faster than all the others and at a thoroughly reasonable cost within existing federal and provincial budgets. These must be the priorities.

9.1 Rail Demonstration Project: North Main Line (Pool Agreement and Operation)

The Toronto-London South Main Line currently hosts five VIA trains in each direction on weekdays, although one eastbound train in the prime afternoon travel slot mysteriously skips making a Woodstock station stop. However, a five-train schedule is at least a reasonable foundation on which to build a high-performance service. Such is not the case on the North Main Line.

The North Main Line suffers from a lack of VIA service for various reasons, all of them specious and easily countered. The most persistent excuse on service expansion provided by VIA and GO is that there is no track capacity available for additional passenger service, particularly on the Bramalea-Georgetown segment of CN's Halton Subdivision.

VIA currently uses four track slots daily for its Toronto-London and Toronto-Sarnia trains, while GO uses 29 track slots on weekdays between Toronto Union Station and Mount Pleasant, Georgetown or Kitchener, all of which use this supposedly capacity-constrained section of CN's Halton Subdivision. There are also an unknown number of non-revenue "deadhead" movements by

GO, although the agency declined to respond to emails asking for details about the route.

With 33 revenue passenger track slots, there is sufficient track capacity to provide the type of service required along the GO route to Kitchener and all the way to Stratford, St. Marys and London. The problem, as previously stated, is that the two publicly-owned operators won't work cooperatively to make it happen.

There is a simple solution to this problem that harks back to a somewhat similar competitive situation that existed in the days when CN and CP ran passenger trains in competition with each other on parallel routes serving the same end points. This is a pool agreement, similar to the one the federal government compelled the two railways to adopt for most of the Quebec-Windsor Corridor routes east of Toronto in the face of falling traffic early in the depression of the 1930s. This approach was also employed on a handful of competitive U.S. rail passenger corridors to improve service and reduce costs.

On the Toronto-Kitchener-London route, the adoption of a pool agreement would blend the VIA and GO services, making possible the coordinated operation of the intercity and commuter trains. With a minimum of 33 revenue passenger slots available on the CN Halton Subdivision, it would not be difficult to initially operate six roundtrips from Toronto to Kitchener and on to London within one year. This level of service wouldn't require any significant infrastructure investment west of Kitchener until the time came to address the lengthened running times that have helped to slowly erode the VIA service in recent years.

Currently, and despite the promises made by VIA in 2015 to expand its service throughout Southwestern Ontario, the railway doesn't have the equipment available to do so. This situation is not going to improve until an order for a new corridor fleet is placed and the equipment is received. In fact, it is likely to get worse as VIA puts more elderly rolling stock through yet another refurbishment program that will take the cars out of service for long periods.

GO, on the other hand, has a growing fleet of its bi-level push-pull trains. But the agency is short of crews due to the incremental expansion of its rail services. This is

being addressed by GO's third-party service provider, Bombardier, but the training process for "new hires" is lengthy and the creation of a large pool of fully-qualified crews is going to take time.

The solution under a VIA-GO North Main Line pool operation is the use of GO equipment and, where necessary, the deployment of qualified VIA crews. While the Bombardier-built bi-level commuter rolling stock does not provide the levels of comfort found on the VIA intercity equipment, it is far from being unsuitable for journeys of the length and time experienced on the North Main Line. It is already employed on a seasonal basis on GO's Toronto-Niagara Falls weekend summer service, which involves journeys of up to 133km, compared with the 195 km length of VIA's North Main Line route.

Furthermore, GO's latest bi-level cars provide enhanced levels of comfort thanks to improved seating. The cars are also flexible and can be altered to provide the types of on-board services found on several high-performance passenger routes in the U.S., including self-service bicycle facilities and small café sections for the sale of beverages and light meals.



Similar to the long-haul commuter operations in the U.S. that are now making use of Bombardier's Thunder Bay-built bi-level rolling stock, such as the New Mexico Rail Runner Express, the SouthwestLynx rail demonstration project would make use of similar equipment, modified for intercity service.

The Thunder Bay-built bi-levels also offer much better passenger accessibility than VIA's current hodge-podge of old equipment. All the stations to be served on the North Main Line, with the exception of Stratford, St. Marys and London, are already equipped with the raised platform sections that enable easy access to these low-floor cars for those using mobility devices.

Under this demonstration project, which would be a lead-in to a more frequent and faster service in the future when VIA receives its promised new intercity motive power and rolling stock, the use of more efficient GO equipment in lieu of the high-cost VIA equipment of today would make possible a fare reduction. VIA's high fares remain a major impediment to passenger attraction and ridership growth.

Neither VIA or GO will release data on the cost per train-mile or car-mile for their various types of equipment. However, it is well known that GO's train operating

costs are at least 50 per cent lower than VIA's. Passing these savings on to passengers, in addition to the tripled frequency, would dramatically boost ridership and revenue on the North Main Line.

Another benefit would be the diversion of VIA's current Toronto-Kitchener-London-Sarnia roundtrip, consisting of VIA #87 westbound and VIA #84 eastbound, to the South Main Line through Woodstock. This would increase the frequency on this faster line to six trains daily in each direction and reduce the Toronto-Sarnia running time by an hour or more. Such a re-routing was part of the aborted 2015 VIA proposal to expand its Southwestern Ontario service.

Under this re-routing, passengers to and from points west of London would be able to make a direct cross-platform transfer to and from the North Main Line trains at London, provided the timetable is recast to ensure this connection.

A preliminary six-train schedule under this pool agreement, based on the current and overly-long VIA running times, and partially based on the multi-train CN and VIA service designs of the past, could start on this basis:

22:00	17:30	14:00	11:30	09:00	06:30	TORONTO	09:20	11:20	14:20	17:20	20:20	01:20
23:35	19:05	15:35	13:05	10:35	08:05	KITCHENER	07:45	09:45	12:45	15:45	18:45	23:45
00:10	19:40	16:10	13:40	11:10	08:40	STRATFORD	07:10	09:10	12:10	15:10	18:10	23:10
00:35	20:05	16:35	14:05	11:35	09:05	ST. MARYS	06:45	08:45	11:45	14:45	17:45	22:45
01:20	20:50	17:20	14:50	12:20	09:50	LONDON	06:00	08:00	11:00	14:00	17:00	22:00

These running times would be reduced progressively under the infrastructure upgrading outlined in Chapter 8.1.2 of this report to eventually provide an accelerated service such as the one proposed in 1989 under the “competitive role” VIA researched and outlined in its Review of Passenger Rail Transportation in Canada. The Toronto-Kitchener-London running time under that scenario would be two hours and 20 minutes and additional infrastructure work not included in it would reduce the travel time further.

The only thing standing in the way of this redesign of the North Main Line service and the modification of the current and inadequate Toronto-Sarnia service is an absence of federal and provincial initiative and cooperation. The urgent need to address these purely political and institutional roadblocks is covered in Chapter 10 of this report.

9.2 Intercommunity Transportation Service Demonstration Project

Through its commissioning and endorsement of the New Directions integrated public transportation tool kit, Oxford County has clearly indicated it recognizes the value of developing an intercommunity transportation service to meet a range of county-wide needs.

Equally important has been the county's recognition of the importance of such a service to act not just as a coordinated feeder to improved rail passenger service, but to also provide a wide range of options for residents to conveniently reach health care, jobs, education, shopping, leisure venues and other activities.



An integrated rail passenger and intercommunity transportation network for Oxford County and throughout Southwestern Ontario would in many ways be a modernized and improved revival of a similar concept that was once applied by CN and CP in the pre-VIA Rail days in various locations across Canada. Photo by Michael Taylor

Attempting to design a multi-faceted system of this nature for Oxford County raises questions that can only be answered through extensive research and consultation with the affected users and those agencies, institutions and businesses that are likely to be the traffic generators.

Where applicable, the existing urban transit operators need to be brought into the planning process, too. This task is outside the terms of reference of this report and needs to be addressed separately, as recommended in Chapter 10 of this report.

However, there is no reason why the preliminary work necessary to move to this more detailed phase of any intercommunity transportation project cannot be undertaken quickly. As part of this project, an examination of the potential intra-county routes and the geographic coverage area were undertaken.

As the largest centre in Oxford, coupled with an established urban transit system and the most significant inter-regional rail passenger service, Woodstock should likely serve as the focal point of any future intercommunity transportation service in Oxford.

The two principal points to be served should be the downtown Woodstock Transit Terminal and, to a lesser extent until the rail service is improved, the city's VIA Rail station. Coordination and integration with Tillsonburg's TGo service will also be essential.

In addition to Woodstock and Tillsonburg, the numerous Oxford County communities that need to be linked to these two urban centres and the intermodal rail and transit connections they will provide are:

Ingersoll	Mount Elgin	Tavistock
Innerkip	Thamesford	Drumbo
Beachville	Sweaburg	Embro
Otterville	Burgessville	Plattsville
Norwich		

Communities just beyond the Oxford-Norfolk boundary that should also be considered for inclusion are Courtland and Delhi.

In addition to these communities, consideration needs to be given to providing service to other nodes

of economic and social activity, and intermodal connectivity, beyond the county's boundaries. These are Stratford, St. Marys, Kitchener-Waterloo and London. All should allow for easy transfers to the expanded rail service in the North Main Line demonstration project, while an intercommunity transportation link to downtown Kitchener would produce a direct connection to the current GO bus service to Bramalea, Mississauga and Toronto, the peak-only weekday GO rail service to Toronto and the Greyhound bus service east and west of Kitchener.

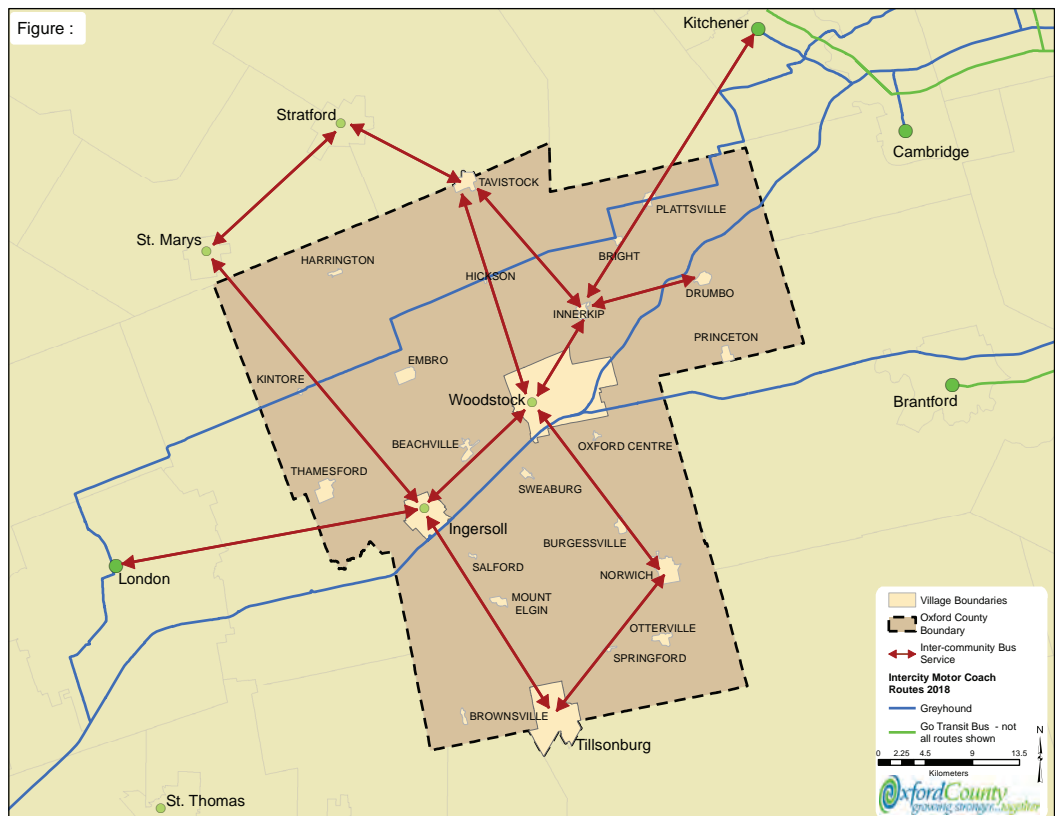
For Oxford County, a key question becomes how best to provide these services: Shall the routes be linear or circular, operating in loops to reach the maximum number of communities? This and more needs to be explored as part of the recommended development process.

What will add immensely to the proposed demonstration project now is the interest shown by adjacent counties and communities in establishing an intercommunity transportation system on an inter-county basis. Perth, Norfolk and Middlesex have all shown interest in developing their own systems, thanks partially to the late-in-the-game announcement by the Government of Ontario of an intercommunity transportation grant program.

The logical approach now is for Oxford County to link with its neighbours to design, develop and launch an inter-county, intercommunity transportation service. Beyond the value it will bring to the communities throughout this multi-county territory is the potential to use it as a template for all of Southwestern Ontario as a key component of the SouthwestLynx plan.

When combined with the expanded and improved services on both Toronto-London rail corridors that are at the heart of the SouthwestLynx Demonstration Project A, the increase in non-automotive mobility that will be delivered by this one will be dramatic. Given the uncertainty of the rail demonstration project even being considered by the federal and provincial governments and agencies whose buy-in is a requirement, the intercommunity transportation demonstration project should be made the priority.

MAP: Intercommunity Bus



10.0 Recommendations

There is nothing technologically or legislatively untested in the SouthwestLynx plan. The three successful U.S. examples cited in this report demonstrate its various elements are all service proven.

What is required to make SouthwestLynx is the most difficult commodity to prescribe and obtain: political will. Whether it exists at the federal and provincial levels and can be leveraged to implement this plan remains the overriding question.

Resolving Southwestern Ontario's mobility challenges is a growing concern to many in the region and time is of the essence. There are already documented cases

of major firms rejecting the region in favour of those that are, among other things, much better served by public transportation. Long-range and risky projects requiring billions of scarce public dollars and a decade or more to deliver any appreciable improvement, such as the provincial high-speed rail (HSR) proposal, are inadequate and not likely to fully address the multiple challenges.

Should Oxford County endorse the SouthwestLynx alternative to HSR or the unsustainable status quo and provide the leadership to advance its creation, the following recommendations are offered.

10.1 Local and Regional Endorsements

As was done on the New Directions and Empowering Ontario's Short Line Railways projects, Oxford County should consider taking the SouthwestLynx plan to the Western Ontario Wardens Caucus and the Mayors of Southwest Ontario for their consideration and endorsement. Wide distribution to local councils, the business community and the media should also be part of any communications plan.

While there is political and public interest in an alternative to the HSR proposal and the continuing hollowing out of Southwestern Ontario's remaining intercity public transportation services, there is no plan that has emerged as a rallying point. SouthwestLynx should be made that point of reference and advocacy. In such a campaign, there is always strength in numbers.

10.2 Oxford County SouthwestLynx Vision Workshop

The SouthwestLynx plan can and should be used to knock down the many silos that separate governments, operators and users. The best way to start that process is for Oxford County to play a leadership role by bringing some of these parties together for a closed-door discussion of SouthwestLynx. Only in this way can the plan be refined and a mutually-agreeable course for its advancement be reached.

The first step in such a process should be a vision workshop involving the counties within the Western Ontario Wardens Caucus. This should not be a public session because that would lead to the participants not speaking their minds and resolving any differences of opinion. Public sessions may be contemplated as part of this first session, but it should be structured so that all the participants may speak freely at a high level.

10.3 Multi-County Intercommunity Transportation Development

A natural outgrowth of a preliminary vision workshop should be the formation of a smaller working or steering group to craft a plan for the advancement of the multi-county intercommunity transportation system outlined in Chapter 9.2. This is the one element of SouthwestLynx that can be developed without interference or obstruction by the federal and provincial governments, which have so far demonstrated no inclination to address the regional transportation crisis that is becoming endemic to Canada.

Even without the rail passenger component of the proposed demonstration project, the intercommunity transportation system can be developed as a stand-alone service. It can also serve as a spur to get the upper levels of government moving on that rail demonstration project. A concrete plan placed before the elected officials and civil servants at Queen's Park and on Parliament Hill will be a tough argue to counter.

10.4 Federal and Provincial Government Engagement

Oxford County has played a leadership role in challenging the Ministry of Transportation of Ontario (MTO) and the marching orders it has received from unknown sources to reject any examination of true high-performance rail and intercommunity transportation alternative to the HSR proposal.

To date, MTO and various senior politicians have refused to include the options favoured by Oxford County in what is supposed to be a comprehensive and thorough environmental assessment of the HSR proposal.

Continuing to factually challenge the stance taken by the province on its HSR proposal is recommended. Furthermore, a similar position should be taken by Oxford County on the federal government's failure to deliver on the rail service promises made in 2015 by its Crown agency, VIA Rail Canada.

It should be noted that there has been no response from Ottawa or VIA to official communications on the latter subject that have been sent by Oxford County. This includes a formal request to the Senate Standing Committee on Transport and Communications for a critical review of VIA, especially its convoluted and uncertain corridor fleet renewal and Toronto-Ottawa-Montreal high-frequency rail proposals.

The squeaky wheel gets greased. Therefore, Oxford County should continue to lead the calls for comprehensive reviews of the HSR proposal and VIA.

10.4 Hamilton and Niagara Municipal and Regional Outreach

Previous experience by this consultant for another client indicates the regional and municipal governments from Hamilton to the Niagara River are equally frustrated by the slow pace of federally- and provincially-promised projects to improve public transportation in that region. There is also a growing realization that the proposed HSR system would not only deliver no benefits to the Greater Hamilton Area, but it could destroy the current VIA Toronto-London South Main Line service that now includes station stops at Aldershot and Oakville, where it connects with GO's 30-minute, all-day rail service and connecting bus services.

There are many benefits to be gained by Southwestern Ontario and the Hamilton and Niagara Region through a joint approach to this situation. There are also natural travel patterns that could, under a plan such as SouthwestLynx, lead to the provision of direct and connecting services linking the two regions.

Outreach by Oxford County to the various governments throughout the Niagara Region to discuss and potentially include them in the SouthwestLynx plan is, therefore, recommended.



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