Southern Ontario Gateway Transportation and Logistics Issues

Rod B. Taylor – Associate,
Gordon W. English – Partner,
David C. Hackston – Partner,
Research and Traffic Group

Introduction

In the spring of 2008, Research and Traffic Group was commissioned by the Southern Ontario Gateway Council (SOGC) to identify opportunities to improve the efficiency and effectiveness of the freight transportation system in south central Ontario focussed primarily on movements to, from, and through the Greater Toronto Area and Hamilton (GTAH). The SOGC is a non-profit association, founded in 2005, composed of members from all modes of transportation that operate to, from and within the Southern Ontario Gateway, considered to be the GTAH and the immediately surrounding regions (Durham, Niagara, Kitchener-Waterloo, Cambridge, etc.)

The project sought to identify barriers to productivity in the regional transportation system among all modes and to identify measures that would be most effective in bringing about greater efficiency. This paper presents a synopsis of the report prepared for the client. (http://www.gatewaycouncil.ca/downloads2/RTG-Final-Rpt.pdf)

The Study Area

The study area encompasses the Greater Toronto Area, adjacent and surrounding communities including the cities of Toronto and Hamilton and the Regions of Durham, York, Peel, Halton, and Waterloo, and the Counties of Brant, Haldimand, Wellington, Dufferin, Simcoe, Kawartha Lakes, Peterborough, and Northumberland.

The primary transportation infrastructure and facilities of the study area are as follows:

Highways

The highway system is dominated by Highway 401, a limited access highway possessing a minimum of six and up to 12 lanes throughout the study area. This highway is the primary route for west/east traffic across southern Ontario, linking to the US Interstate System in Michigan in the west and the Quebec Autoroute System in the east. It also links with other primary limited access highways, 400, 404, 410 and 427 to and from the north, 403 to and from the west, the QEW through Niagara Region linking to the US Interstate System in western New York, and 407, a toll highway paralleling highways 403 and 401 across much of the study area.

Railways

While there are a total of 22 railway companies operating in southern Ontario, railway activity is dominated by CN and CP. The remainder are shortline companies providing local movement but primarily feeding and receiving traffic to/from the national carriers. Much of the CN and CP freight tonnage is "through traffic" neither originating in, nor destined to, the study area.

There are several rail intermodal facilities within the study area providing for the transfer of containers and semi-trailers between the highway and rail modes:
- CN's intermodal facility in Brampton handles domestic, trans-border and overseas import-export container shipments.
- CP's terminal in Vaughan handles both domestic and west coast overseas container shipments.
- CP's Obico Terminal in Toronto (Etobicoke) handles trans-border and east coast import-export container shipments.
- CP has Expressway terminals at Milton and Toronto (Agincourt) handling a drive-on, drive-off form of rail piggyback moving semi-trailers between the GTAH and Montreal.

Marine

The study area includes ports situated on Lakes Ontario and Erie as well as the Welland Canal that connects them. Hamilton is the primary port on Lake Ontario serving both local industry and others located throughout the study area. The ports of Toronto and Oshawa handle much smaller volumes of traffic, primarily for local industry. Nanticoke on Lake Erie handles material exclusively for local industry. There are also port facilities supporting specific local industries at Bowmanville, Clarkson, and Port Colborne.

Air

Pearson International Airport is the primary airport for both freight and passenger services. There are also scheduled services for freight and passengers at Hamilton International and at Waterloo.

Methodology

Twenty interviews were conducted with transportation industry executives from all modes, shippers and distributors of freight, and governments active within the study area as well as management of major transportation facilities (e.g. ports and airports). Interview subjects were carefully selected, in consultation with the client, to ensure broad modal representation as well as a cross section of the various industries and freight transportation activities across the study area.

Interviews were conducted in person and generally required one to two hours to complete. Interview guides were prepared in order to ensure consistency and structure but no attempt was made to constrain discussion. To ensure frank and straightforward discussion, those interviewed were offered confidentiality and non – attribution of their remarks. Several chose to accept that offer and consequently the list of interviewees has not been disclosed. Those interviewed received a draft of the interviewer's notes for review and confirmation of accuracy.

The interviews focussed on challenges related to the capacity and management of existing infrastructure and services, the effect of anticipated trends on those challenges in the future and recommendations that might assist in meeting those challenges and/or improving freight transportation productivity

In addition, data was sourced from the Commercial Vehicle Survey (CVS) data from 1999 to 2001 updated to 2002 on the basis of highway counter data, Highway 401 vehicle counter data from the Keele Street permanent counter station and hourly average segment speeds for trucks participating in the GPS tracking project over the period 2006/2008.

Findings

Marine Industry

The marine industry provides primarily bulk transportation services with the main clients being the steel mills at Hamilton and Nanticoke. The Port of Hamilton is the main port serving the study area and 75% of its tonnage relates to the steel industry. Study area ports also handle other bulk commodities such as salt, raw sugar, aggregates, cement, grain, fertilizer, and bulk liquids (e.g. bitumen and liquid food products). General break bulk and project cargo is handled primarily at Hamilton and distributed by rail and truck throughout the study area and beyond.

Navigation throughout the St. Lawrence Seaway System, including the Welland Canal, is conducted from late March until the end of December. Local navigation on Lake Ontario and Lake Erie and to and from the Upper Lakes can continue through most of the winter.

There are essentially no infrastructure capacity constraints respecting study area ports or the Welland Canal (currently operating at 50% capacity). The federal government has allocated $270 million over five years to address St. Lawrence Seaway infrastructure maintenance and renewal needs.

The marine industry's existing bulk vessel fleet is aging and there is an urgent need for renewal. New vessels will have the advantage of possessing modern equipment that will enhance operating efficiency and productivity. However, there no longer appears to be any Canadian shipyard equipped to build the required ships. The 25% duty imposed by the Canadian Government is a disincentive for offshore purchase. The industry has made representations for relief from that duty. Uncertainty about the outcome of those approaches acts as a further disincentive for immediate industry vessel acquisition.

The industry identifies other government-imposed constraints on its ability to compete successfully for traditional traffic as well as to develop new business. For example fees and charges for navigational services, ice breaking, and pilotage that the industry claims are not necessary for many activities add costs that must flow through to customers. Introduction of potential new cross border and container feeder services are inhibited by the US Harbor Maintenance Tax, Canadian Border Service charges, and constraints imposed by the Canadian *Coasting Trade Act* and the US *Jones Act*, limiting the use of foreign vessels between domestic ports.

Railways

Both national railways provide service throughout the study area. In addition, shortline railways serve several study area communities.

Chief commodities moving from the study area by rail carload service are locally produced automobiles and automotive parts. Principal inbound commodities are imported automobiles, from the US and offshore, as well as lumber, steel, plastics, and agricultural products. In addition, substantial carload traffic such as aluminum and forest products move through the study area to the US.

Intermodal traffic consists of offshore import/export traffic in containers moving to/from the study area via Montreal and Halifax in the east and Vancouver and US ports in the west. There is also substantial movement of domestic and trans-border intermodal traffic

moving primarily in containers but also in semi-trailers. Except for a specialized intermodal service moving highway semi-trailers between Toronto and Montreal, domestic and trans-border rail intermodal traffic only becomes competitive with direct trucking for distances exceeding 800km.

There are also multi-modal movements within the study area. Examples include automobiles and light trucks off-loaded at rail terminals for delivery by truck, plastic pellets transferred from railcars at rail terminals for local truck delivery and steel from Sault Ste. Marie that is received in Hamilton by rail for subsequent distribution by truck.

The railways reported that they have adequate capacity to accommodate existing freight traffic demand in the study area. They noted also that there is space within existing rights-of-way to accommodate increased capacity but that any such expansion would have to provide a return on the required investment.

Congestion on roads providing access to rail intermodal terminals is an issue, particularly at peak periods. Future traffic growth may require terminal expansion. CP has available lands at Vaughan to expand its terminal and CN has acquired property in Milton for future expansion.

At the local government level, within the study area, the railways identified an apparent lack of coordination and planning among regional and local governments in the planning and accommodation of rail facilities. Railway yards and facilities serve a much broader area than any one municipality and, while not always viewed as ideal neighbours, they have to be accommodated somewhere within the study area. An immediate need for extension of Highway 427 to improve access to the CP Vaughan Terminal was cited.

Trucking

Trucking is the most pervasive mode within, to and from, the study area. The industry is highly diversified with numerous companies

operating a wide range of vehicle types and is able to provide almost infinite flexibility to meet the needs of specific industries or individual clients. While generally having a price and service advantage over the rail industry for distance under 800 km, for service reasons trucks are employed over much greater distances throughout North America.

Trucking companies identified congestion on 400 series highways as their primary challenge in the study area. The problem is most acute at commuter times but, as highways operate at close to capacity throughout most of the day, even a relatively minor incident brings traffic to a standstill. Perhaps the most critical observation was that, despite the ongoing programs of the Ministry of Transportation, Ontario (MTO) in maintaining existing infrastructure and adding capacity, the situation appears to be deteriorating as the population of the study area grows

It was suggested that existing plans for lane additions were inadequate to keep pace with traffic growth. Highway 407 provides a less congested alternative for some distance through the study area. The 407 is used by some trucks but generally the industry considers its tolls too expensive. Furthermore, it has yet to connect directly with Highway 401 at the eastern extremity of the study area.

Those interviewed recommended that additional capacity be added wherever practical on highways approaching the GTAH and that planning for new highways to accommodate urban growth move more quickly and that Highway 407 be completed at its eastern extremity to connect with Highway 401.

Several recommendations were made to improve the productivity of existing infrastructure. Primarily, that Ontario should allow more productive Long Combination Vehicles (LCV's) – twin semi-trailers, each up to 53 feet in length pulled by a single tractor on 400 series highways. These vehicle combinations are allowed under special permit on select routes in Quebec, New Brunswick, and western Canada and have operated on the New York State Thruway for decades.

The industry also stressed that infrastructure productivity could be improved through driver education and more aggressive enforcement of lane discipline.

Air

Airfreight services are provided to and from the study area primarily through the Greater Toronto Airport Authority (GTAA) that administers Pearson International Airport (PIA) located in Mississauga (Peel Region) adjacent to Highways 401, 403, 407,409, 410, and 427 and Hamilton International Airport (HI) located adjacent to Highway 6, a short distance from Highway 403. PIA handles offshore, trans-border and domestic traffic carried in both dedicated freighter aircraft and in the belly of passenger aircraft. HI traffic is primarily domestic and trans-border but this airport has the capability to handle offshore traffic. Both airports handle air courier services as well as traditional airfreight. In addition to providing service within the study area these airports serve a much broader area, including the north- eastern U.S. In fact the primary competition is from airports located in New York City, Detroit, and Chicago.

The primary challenge for both airports is Canada's air bilateral agreements that do not support access for many international airfreight carriers. Furthermore under Canada's 1994 international air policy, while foreign governments may apply to operate two weekly scheduled flights to Canadian destinations, they are specifically excluded from providing service to Toronto. Rather than operate to other cities that are not located close to the industrial centre of Canada, international carriers choose to serve the study area via New York or Chicago.

Airport rent is another key challenge. Canadian airports are required to pay rent to the federal government. Pearson International while handling one third of national air traffic pays two thirds of the total of national airport rent. By contrast, US airports pay no rent to the federal government and in some cases receive government subsidies.

Shippers

As the consultants had found in other assignments, the primary and usually the only factors determining shipper mode and carrier choice are price and service. The weighting of these two factors varies somewhat among industries but generally follows a formula of determining the service standard required and then seeking the mode and carrier that supply it at the lowest price. However, it must be recognized that industry considers its full supply chain needs and total costs of which the transportation component may be relatively small. Consequently, a company may elect to purchase premium transportation service for items of small size or high value where the cost of transportation has a relatively low impact compared with other factors.

Shippers and receivers register similar concern to those of the trucking industry regarding delays caused by congestion and incidents on the highways in the study area.

A major retailer operating its own vehicles noted that the average speed of vehicles within the study area on 400 series highways is 77 kph and on other roads 32 kph, well below the established speed limits.

Marine services are employed extensively by the steel company interviewed but only for inbound raw material movement. Neither marine, nor rail services, could meet the service and price criteria required for a steady daily movement of steel slab between Hamilton and a location in Quebec and consequently it is shipped by truck.

Rail intermodal service was reportedly used by several of those interviewed but primarily for long haul service, either of containers imported from offshore or for distribution to western Canada. The additional transit time and less predictable scheduling for rail intermodal services vs. trucking was cited as a disincentive for its use for certain traffic.

Governments

Input was obtained from the City of Toronto, Peel Region, City of Hamilton, and Niagara Region as well as the Ministry of Transportation, Ontario. Transport Canada officials declined an interview.

City of Toronto:

Much of Toronto's industry, that in the past generated freight transportation demand in the city core, has moved to the fringes of the city and beyond. The remaining manufacturing activity within the city tends towards advanced products such as pharmaceuticals that do not generate heavy freight volumes.

The Highway 401 corridor through the north end of the city carries considerable freight volume as does the Canadian Pacific Railway mainline that bisects the city. Other rail lines and expressways within the city are dedicated primarily to passenger traffic.

City transportation policy focuses primarily on passenger transportation needs. High Occupancy Vehicle (HOV) lanes and bus only traffic lanes have reduced the available infrastructure for trucks that are also restricted from using certain arterial roads.

Peel Region:

Peel Region is at the core of freight movement within the study area. Many of the principal highways intersect within Peel or in the City of Toronto close to its border. The primary rail intermodal terminals are located in Peel and close to its borders with Toronto and Vaughan. It is also the location of Pearson International Airport.

Consequently, Peel Region contains significant numbers of truck terminals and distribution facilities that serve the entire study area and reports freight demand increasing at 6% annually although that has slowed recently.

Peel Region identified the need for greater planning among all levels of government and across municipal boundaries in order to accommodate existing and growing freight traffic. As well, the role that Peel plays as a regional, provincial, and national transportation hub should be recognized in funding from more senior levels of government.

Existing congestion on highways needs to be relieved by adding capacity to existing highways such as Highway 401 to the west and the extension of Highways 410 and 427 to the north. Congestion is an issue at the access to intermodal terminals in Brampton and Vaughan. It was also noted that much of the truck transportation demand in the study area is for movement under 800 km and accommodating trucks on the highways is the only apparent option since rail movement is not competitive.

City of Hamilton:

The City of Hamilton has a highly diversified industrial base requiring freight transportation services from all modes.

Financing for local road maintenance and improvement is a key issue. Plans to increase port activity through attracting either offshore import/export containers or cross-lake services will put increasing pressure on local roads. These developments coupled with the demands of potential development of lands south of the city will require expansion of existing highways and new highway development.

Niagara Region:

Being situated along the U.S. border and containing key rail and truck links with the U.S. as well as the Welland Canal serves to focus attention on the importance of freight transportation. The QEW, and its links to the Queenston-Lewiston Bridge and the Peace Bridge, forms the main corridor for truck traffic to, from, and through the region.

The current widening of the QEW within the Region is necessary to sustain that role. Highway 406 and its planned extension provide access to areas of Welland and Port Colborne that have capacity for development and for potential transportation corridor linkage direct to the border. Continuing highway investment and development of the Niagara – GTA Transportation Corridor are viewed as essential in maintaining local economic growth.

Better coordinated planning among government levels and among municipalities was identified to be a necessary step in achieving such objectives.

Ministry of Transportation, Ontario (MTO)

MTO staff noted that Ontario's highway needs and plans are driven by a number of factors such as traffic volume, capacity, growth rates, accident history, etc. Broad studies of potential transportation corridor needs are followed by more specific environmental assessments that are required to conform to environmental legislation and typically have taken five years to complete. Finally, plans for specific highway construction, once funding has been budgeted, are published in annual five-year plans.

Specific projects of primary interest to the study area:

Eastern Extension of Highway 407: It is currently proposed to extend to Highway 35/115 with two connections east and west of Oshawa to Highway 401. The environmental assessment of the extension of Highway 407 is anticipated in 2009. A recent press release noted that the province would fund the extension and may also manage it directly as a toll highway. Details have yet to be announced. Completion of the extension is possible by 2013.

Extension of Highway 427: The primary interest in this project for purposes of this study is the need to improve access to the Vaughan Intermodal Terminal. The environmental assessment process is scheduled for completion in 2009, following which it may be entered in the five-year plan.

GTA West Transportation Corridor Study: This a broad-based environmental assessment study of transportation needs and opportunities in the area west of Highway 400 towards Kitchener-Waterloo. Completion of the first stage of this process is scheduled in 2009.

Niagara – GTA Transportation Corridor Study: This is a similar broad based environmental assessment study of transportation needs and opportunities between Niagara and the GTA. Completion of the first stage of this process is also scheduled in 2009.

In addition, there are various projects in the current five-year plan for improvements to existing highways in the study area. Additional lanes are being added to Highway 401 in Durham Region and Peel Region. Additional lanes are under construction on the QEW in Halton Region but it is planned that the extra capacity will be restricted to HOV lanes. The QEW is also being widened to six lanes in the Niagara Region for the use of all vehicles. This latter project is receiving financial assistance from the federal government.

Commercial Vehicle Survey, Counter Station, and GPS Data Analysis

It is not possible within the constraints of this paper to detail all the data sources and analysis conducted. However, the findings were that Highway 401 carries close to 40% of the truck volume among the 400 series highways in the GTAH, almost twice the next highest volume highway (QEW). Segments between Keele Street and Dixie Road exhibit hourly average speeds below 70 km/hr for up to 8 hours per day.

Aggregate annual cost of week-day/daytime delays to trucks on Highway 401 was estimated to be $255 million based on an hourly value time of $47.

Conclusions

Highways

There is a perceived urgent need to complete Highway 407 as an effective west/east bypass of the most congested segments of Highway 401 within the study area. In addition, current and proposed lane additions at the eastern and western extremities of Highway 401 in the study area and on the QEW in Halton and Niagara Regions are urgently required. There is frustration among highways users at the slow pace at which capacity is added.

In the longer term there is need to accelerate studies underway examining potential new highway corridors on the west side of the study area and in the Niagara Peninsula. The need for future highway capacity to accommodate freight moving to and from eastern Ontario and Quebec appears to be overlooked in current work. It appears that a third highway, in addition to Highways 401 and 407, will eventually be required to accommodate population and industrial growth as well as domestic and international trade.

The notion that current highway freight traffic congestion and future freight traffic growth can be addressed through modal shift is neither supported by dialogue with shippers nor by the evidence that in most instances pick-up and eventual delivery from either rail or marine terminals is made by truck. Much of industry's freight transportation demand requires the speed and flexibility of truck transportation in order to be competitive in North American markets.

The existing highway infrastructure could be used more productively by improving the behaviour of those using it and shifting demand to off-peak times. Improving lane discipline and reopening lanes more quickly following incidents could improve traffic flow. Allowing LCV's would improve vehicle productivity and could provide an incentive to avoid periods of congestion. (Recent information from MTO staff indicates that the government is working towards introducing a carefully controlled LCV program.)

Railways:

From the interviews conducted, there is no apparent need to increase mainline or local rail capacity to address freight traffic demand. However, there is a need to improve road access to existing intermodal terminals. There is also a need to plan effectively for new intermodal terminal capacity as demand increases.

Marine:

While the existing marine industry has additional capacity, it suffers from several government-imposed constraints, identified earlier in this paper, in competing for traffic. It is unclear, given its apparent promotion of short sea shipping, why government has as yet failed to address them.

While there are some opportunities to develop new traffic, attracting significant new business requires an ability to handle freight in containers or to move semi-trailers or tractor-trailer vehicle combinations. While there have been numerous studies of proposed services there has yet to emerge any clear commitment to such service on the part of service suppliers and service users.

Air:

Airports in the study area could attract more offshore airfreight if international bi-lateral agreements were modified to permit landing rights for additional all cargo airlines. Existing federal policy that precludes landings at Pearson serves to divert traffic to U.S. airports.

The issue of rent levels at Pearson causes the airport to have higher costs than competing U.S. airports contributing to the diversion of Canadian airfreight.