Advancing the Goods Movement Agenda:
The development and progress of the "Greater Toronto & Hamilton Area's Urban Freight Study".

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Abstract

Metrolinx, the Greater Toronto & Hamilton Area's (GTHA) regional transportation authority, recently released one of Canada's first strategies on urban goods movement, "GTHA Urban Freight Study" released in February of 2011. The study identifies opportunities to enhance the GTHA's competitiveness by improving freight efficiency and capacity, in the context of the goals and objectives of The Big Move – the Regional Transportation Plan for the GTHA. The study complements the ongoing Continental Gateway and Trade Corridor initiative of the Federal, Ontario and Québec governments, which deals with the GTHA as part of a broader freight system.

1. Introduction

The Regional Transportation Plan (RTP), '*The Big Move'* developed by Metrolinx in 2008 for the Greater Toronto and Hamilton Area (GTHA) presents a 25-year vision to guide all transportation infrastructure investments in the region (1). The plan responds to a context of rapid and significant population growth and a strong provincial policy framework aimed at curbing sprawl, managing population growth, and improving the environmental sustainability of the region all while positively contributing to robust economic development. The plan is also a response to a generation of under-investment in transportation infrastructure and a fragmented regional transportation system.

This paper will focus on one area of the RTP, namely on the development of the region's first urban freight strategy, the "GTHA Urban Freight Study" (2), which lays the foundation for an urban goods movement strategy for GTHA region. The paper will outline how this strategy was developed through the engagement of key stakeholders and describe the progress Metrolinx and its partners are making in better understanding urban freight issues, addressing some of the concerns of the freight industry and by increasing the opportunities stakeholders have to directly engage in meaningful dialogue to enhance the GTHA's economic competitiveness. This will enable Metrolinx and other government partners to better incorporate urban freight planning into policy and plans in their own jurisdictions and organisations.

The first section of the paper will provide an introduction to Metrolinx and the GTHA. The second section will outline the development of the RTP and how planning for and enhancing the efficiency of urban freight movements is a key part of this. The third section describes how the GTHA urban Freight Study was developed, and highlights the strategy within it. Finally, Section 4 highlights Metrolinx progress in delivering this action plan to date. It is the aim of this paper to serve as a useful resource for other agencies who wish to enhance the efficiencies of urban freight in their community.

2. Background

Metrolinx, and agency of the Government of Ontario

Metrolinx is the regional transportation authority for the GTHA. Metrolinx was established in 2006 as an agency of the Ministry of Transportation of Ontario. It is governed by a board of directors of citizens representing a cross section of professional disciplines and knowledge of the region's economic landscape as well experience in the fields of planning, development and transportation.

The GTHA, located in southern Ontario, is Canada's largest urban region. It is also one of Canada's fastest growing urban regions. It has an approximate area of 8,242 km2 and a current population of over six million people. The region comprises two single-tier municipalities (Hamilton and Toronto) and four regional municipalities (Durham, Halton, Peel and York), along with their 24 lower-tier municipalities (see Figure 1).

The GTHA continues to be one of Canada's fastest growing areas. By 2031, the population of the GTHA is estimated to grow from 6 to 8.6 million people and from 2.95 to 4.33 million jobs. Clearly, this growth will require a massive increase in transportation infrastructure; the issue is what form this infrastructure should take. The task assigned to Metrolinx - by the Province is to plan, fund and build transportation infrastructure to support this growth and more specifically, to develop a multi-modal plan that will indicate actions, policies and investments to move people and freight more efficiently and effectively together.

The Regional Context

The cities of Toronto and, to a lesser extent, of Hamilton are urban, built-up areas with high degrees of residential and employment density. The regional municipalities of Durham, Halton, Peel and York are suburban areas surrounding Toronto, which also hold a mix of built up and rural components, towards the edges of their political boundaries.

Outside the City of Toronto proper, the GTHA has become increasingly dependent on private automobiles for mobility. The number of car trips on the GTHA's roads is increasing at a faster rate than that of the population: between 1986 and 2006 the number of trips made by automobile in the GTHA grew 56 per cent compared to a population increase of 45 per cent. One in three residents in the GTHA commute more than 15kms a day, similar to Calgary and more than Montréal (3). Adding to this, peak traffic speeds have decreased 17% while commuting times have increased 15% between 2001 and

2006, while the supply of roads increased 56% versus increase in transit by 18% between 1986 and 2006 (4).

A study commissioned by Metrolinx on the economic costs of congestion in the GTHA in 2006 found that the annual cost of congestion to commuters was $3.3 billion and the annual cost to the economy was $2.7 billion. If nothing is done to improve the transportation system, the cost of congestion experienced by GTHA residents will grow to $7.8 billion per year by 2031. The cost to the economy would experience a similar increase, with a reduction in Gross Domestic Product (GDP) due to excess congestion rising from $2.7 billion in 2006 to $7.2 billion in the same period.

The province's Growth Plan for the Greater Golden Horseshoe was adopted in 2006 and addresses the car dependant transportation system by mandating the development of mixed-use, transit-supportive, cycling- and pedestrian-friendly communities. Improving on a stronger mandate to shape the development of the region's transportation system in a more transit friendly and efficient manner, several guidelines have either recently or will be published.

Metrolinx recently released the Mobility Hub Guidelines in early 2011, extending the principles of transit-oriented development by including and prioritizing an integrated, seamless interface of high quality rapid transit. Following this, the Ministry of Transportation (MTO) recently published Transit Supportive Guidelines in early 2012, which aim to assist planners, engineers and others in better integrating transit and land use planning for an enhanced user experience. Finally, the forthcoming Freight Supportive Guidelines (expected to be released at the end of 2012) by the MTO will provide a set of guiding principles and examples to draw upon for municipalities to better plan for and integrate freight movements into their transportation plans.

Metrolinx's Regional Transportation Plan: The Big Move

As part of its plan to deliver long-term sustainable transportation and better transit, the Ontario Government introduced legislation to create the Greater Toronto Transportation Authority (later renamed as Metrolinx) on April 24, 2006. Through the Greater Toronto Transportation Act, 2006 The Greater Toronto Transportation Authority (GTTA) was created to play a critical role in planning for a seamless, integrated transit network so that people can use public transit to travel easily from Hamilton to Newmarket to Oshawa.

This act also mandated Metrolinx to develop a Regional Transportation Plan (RTP) that:
- takes into account all modes of transportation;
- makes use of intelligent transportation systems;

• promotes the integration of local transit systems with each other and with the GO Transit system;
• works toward easing congestion and commute times, and reducing transportation-related emissions of smog precursors and greenhouse gases; and
• promotes transit-supportive development and the viability and optimization of transit infrastructure.

On November 28, 2008, the Metrolinx Board of Directors adopted the RTP, *The Big Move: Transforming Transportation in the Greater Toronto and Hamilton Area (GTHA), 2008*. The Big Move is a landmark achievement, the collaborative work of the region, a common vision for transportation in the region. The aim of the RTP is to achieve a transportation system for the GTHA that is effective, integrated and multi-modal. It presents a vision for the future in which transportation within the GTHA is seamless, coordinated and efficient, as well as a blueprint for how to get there.

The RTP is the third piece in a three-part approach by the provincial government to prepare the GTHA for growth and sustainability. It builds on 1) the Greenbelt Plan, which protects more than 1.8 million acres of environmentally sensitive and agricultural land in the heart of the region, and 2) the Growth Plan for the Greater Golden Horseshoe (the Growth Plan), which manages population and job growth, and curbs urban sprawl. Together, these three initiatives will lead to the development of more compact and complete communities that make walking, cycling and transit part of everyday life.

The Three Pillars of the Big Move

The Big Move sets out a vision for the GTHA's future that rests on three pillars of sustainability. These three pillars include:

A. A high quality of life
Our communities will support healthy and active lifestyles, with many options for getting around quickly, reliably, conveniently, comfortably and safely.

B. A thriving, sustainable and protected environment
Our transportation system will have a low carbon footprint, conserve resources, and contribute to a legacy of a healthy and clean environment for future generations.

C. A strong, prosperous and competitive economy
Our region will be competitive with the world's strongest regions. Businesses will be supported by a transportation system that moves goods and delivers services quickly and efficiently.

Goods Movement in the RTP

The RTP plan includes nine "Big Moves"—those actions that were identified as the most transformative. The eighth Big Move calls forfor the development of a comprehensive strategy for goods movement in the GTHA, identifying opportunities and actions to improve efficiency, increase capacity, enhance the region's competitiveness and reduce emissions of GHGs and other pollutants. Improving goods movement and minimizing associated impacts will be fundamental to the success of the RTP, which must strive to make improvements toward the above three objectives.

3. Developing an Urban Freight Strategy

The Big Move identifies nine strategic actions of importance. Strategic Action # 8 - **A comprehensive strategy for goods movement**, identifies the need for a comprehensive strategy for goods movement to improve efficiency, increase capacity, enhance the region's competitiveness and reduce emissions of GHG's and other pollutants. In order to provide background and being the consultation process, Metrolinx first produced a green paper, Moving Goods and Delivering Service, Green Paper #5 (February 2008). This paper aimed to clarify some of the key issues around goods movement, demonstrate the importance of the goods movement industry, the roles and responsibilities of various stakeholders and being to start discussing the opportunities available to responds to the challenges.

The Green Paper, after consultation with stakeholders and the public, outlined which components a goods movement strategy for the GTHA should include, namely:

- mapping goods movement flows by mode, and identifying bottlenecks in the system;
- accomplishing goods movement using the most environmentally sustainable modes and technologies, and considering modal shifts to arrive at an optimal balance;
- identifying innovative approaches for urban freight movements such as urban logistics centres, centralized lock boxes for end-consumer deliveries, and shared urban freight and delivery centres (e.g., for construction sites);

- identifying innovative approaches for regional freight movements such as logistics villages (e.g., next to inter-modal hubs), siting, loading and routing optimization, realtime fleet management systems, and off-peak truck delivery;
- identifying infrastructure needs such as new east-west freight rail capacity, new intermodal facilities, priority measures for truck-based goods movement, and strategic bypasses to get goods around rail and highway bottlenecks;
- a freight corridor optimization strategy that optimizes the use of existing rail infrastructure and the allocation of rail between freight and passenger trains;
- an analysis of constraints and opportunities for marine transport of goods;
- opportunities to promote active transportation-based and other low-impact goods movement in urban areas;
- land use policies for areas around transportation facilities such as inter-modal facilities, rail yards, airports, dockyards and major highway interchanges that are compatible with, and supportive of the primary goods movement function of these facilities;
- improving efficiencies of all modes;
- documenting and sharing best practices; and
- identifying opportunities for coordination with the Continental Gateway Strategy.

The GTHA Urban Freight

In 2011, Metrolinx delivered on Strategic Action #8 by releasing the Board approved Greater Toronto and Hamilton Area Urban Freight Study, that identifies opportunities and actions to improve efficiency, increase capacity, enhance the regional competitiveness, and reduce emissions of GHGs and other pollutants. The study was developed in close consultation with representatives from the goods movement industry, including shippers, the Ontario Chamber of Commerce, Ontario Trucking Association, Southern Ontario Gateway Council, Canadian National and Canadian Pacific Railways, logistics companies, freight forwarders, manufacturers and exporters, the agricultural community, environmental groups, municipalities, port authorities and the province.

The core of the study was the development of strategic directions and actions to increase the capacity for and efficiency of freight movement within the GTHA. A comprehensive consultation process contributed to the development of these actions which included two important groups established by Metrolinx for this study. One was the Goods Movement Industry Roundtable (GMIR), which included representatives of leading GTHA private sector industries and carriers, their associations, and marine port and airport authorities. The other was the Technical Working Group (TWG), which included representatives of local and regional governments within the GTHA, as well as the Provincial and Federal governments. These agencies set policy, and have regulatory authority over freight infrastructure and have been active in developing freight before Metrolinx. Two Class One railways also were included in the TWG because they own and operate key parts of the GTHA freight infrastructure. Representatives from the University of Waterloo and the McMaster Institute for Transportation and Logistics were also included in the two groups

for their expertise. In addition, to complement the consultation activities the study also included a scan of current conditions in the GTHA, and by a literature review of worldwide best practices.

The GTHA Urban Freight Study identifies opportunities to enhance the GTHA's competitiveness by improving freight efficiency and capacity, in the context of the goals and objectives of The Big Move. It focuses primarily on road freight, but also considers intermodal connections to rail, air and marine freight. Geographically, it focuses on freight trips that begin and/or end in the GTHA. It complements the ongoing Continental Gateway and Trade Corridor initiative of the Federal, Ontario and Québec governments, which deals with the GTHA as part of a broader inter-urban freight system.

The GTHA Urban Freight Study is divided into two parts. The first part presents the key findings of the GTHA Urban Freight Study and high level analysis. The second part is an in-depth technical backgrounder while provides more details into the various components discussed in the first part. Both parts are intended to guide future work by stakeholders in the GTHA and it enables Metrolinx to engage with urban freight stakeholders to develop new policies and initiatives, to support the formation of productive partnerships between government and industry, and to inform the objectives and actions of those partnerships.

In order to address the challenges raised by stakeholders, a number of possible actions were identified through both the review of international best practices in urban freight and consultation with stakeholders in the GTHA. The actions, grouped into five major strategic directions, were designed to address the study's objectives and overcome the identified challenges. More information on each of these and specific actions, including key stakeholders, expected impacts, implementation considerations, cost range, timing, difficulty, geographic scope and examples can be found in The GTHA Urban Freight Study: Technical Backgrounder. The strategic directions identified in the GTHA Urban Freight Study are:

1. Building Collaboration and Support;
2. Improving Urban Freight Information;
3. Increase Transportation Network Efficiency;
4. Enhance Planning and Development; and
5. Improve Operational Practices.

Each strategic direction is then linked with two or more specific actions to be delivered in partnership by Metrolinx and a wide range of public and private stakeholders. For a complete strategic direction and action list, see Figure 4 below.

STRATEGIC DIRECTION	BUILD COLLABORATION AND SUPPORT
ACTION 1	Strengthen and collaborate with multi-sectoral forums, including the Southern Ontario Gateway Council (SOGC)
ACTION 2	Establish an inter-governmental freight committee
ACTION 3	Improve and coordinate public outreach on urban freight
STRATEGIC DIRECTION	IMPROVE URBAN FREIGHT INFORMATION
ACTION 4	Improve data sharing on freight vehicles, routes and activities
ACTION 5	Establish a GTHA urban freight data collection program
STRATEGIC DIRECTION	INCREASE TRANSPORTATION NETWORK EFFICIENCY
ACTION 6	Develop and protect a strategic GTHA truck network
ACTION 7	Harmonize truck route standards and mapping
ACTION 8	Investigate intelligent lane utilization and truck-only lanes
ACTION 9	Explore opportunities to move freight on transit
STRATEGIC DIRECTION	ENHANCE PLANNING AND DEVELOPMENT
ACTION 10	Develop freight-supportive land use guidelines
ACTION 11	Support development of innovative freight hubs
ACTION 12	Improve access to existing intermodal facilities
ACTION 13	Plan and protect complementary land uses near major freight hubs
STRATEGIC DIRECTION	IMPROVE OPERATIONAL PRACTICES
ACTION 14	Use technology to optimise and manage the movement of goods
ACTION 15	Explore opportunities for flexible freight delivery times
ACTION 16	Enhance incentives to encourage off-peak deliveries
ACTION 17	Implement reserved curbside delivery options

Figure 4: The GTHA Urban Freight list of Strategic Directions and Actions

Metrolinx and key stakeholders worked within the context of The Big Move to develop objectives for urban freight in the GTHA. Together, they recognized that a healthy, efficient urban freight sector contributes directly to not only the three pillars identified in the previous section, but also to better integrate people moving with goods movement. The stakeholders examined the goals and objectives outlined below, which were used to develop the strategic directions and actions. The ten objectives for urban freight in the GHTA:

1. Increase availability of options for freight transport to improve competition and the robustness of the system and remove barriers.
2. Improve service by providing more information to support shippers' and operators' decision making to reduce travel time variability; provide information on easily accessible and well publicized routes.
3. Reduce conflicts between modes
4. Promote active modes where practical.
5. Engage public and private sectors in data collection and the planning process to ensure coordinated efforts in addressing challenges in Urban Freight.
6. Provide better information on energy and emissions options to allow improved efficiency.

7. Better manage demand and capacity to ease peaking, reduce bottlenecks and spread traffic more efficiently.
8. Better integrate land use planning and freight transport so that freight needs are built into development and development is connected to the right networks.
9. Encourage use of best mode at each stage.
10. Integrate freight transport investment with overall transport investment planning, and better reflect the costs of transport to the users so investment decisions can be more effective.

These objectives have been used to frame the development of the study's strategic objectives and identify the list of actions that are proposed below. Going forward they provide guidance for the development of future action plans for freight transportation in the GTHA.

4. Delivering the GTHA Urban Freight Action Plan

Since the release of the GTHA Urban Freight Study, Metrolinx has been actively engaged in progressing the GTHA urban freight action plan. The below presents an overview about how Metrolinx and key stakeholders are advancing upon the strategic directions laid out in the GTHA Urban Freight Study.

A. Building Collaboration and Support:

The GTHA Urban Freight Forum

Metrolinx is currently working to develop important relationship with key stakeholders, such as the regional municipalities, freight transportation organisations and individual firms. Metrolinx recognises that implementing all of the study's actions, including defining projects and funding, will require increased collaboration and communication between all stakeholders. One way in which Metrolinx is aiming to do this, is by creating a permanent GTHA Urban Freight Forum where stakeholder groups can inform, guide and share information and resources to improve efforts in carrying out the work identified in the GTHA Urban Freight Study. The GTHA Urban Freight forum will build upon the success of the GMIR and TWG brought together during the consultation for the actual Study. In addition, new organisations are being added, to bring new insight and energy into the debate. The first meeting of the GTHA Urban Freight Forum will take place on April 11th, 2012. The Forum will meet twice a year and will be complemented by an inter-governmental committee to meet a further two times a year. The Forum is planned to run for at least two years, after which time a review of stakeholder interest will be

sought. It is the goal that both other government organisations and businesses play an active and fully engaged role in planning and implementing future actions.

B. Improving Urban Freight Information

Developing Urban Goods Movement Data in the GTHA

Access to quality freight data is considered an important component in demonstrating understanding of existing conditions and problems for urban goods movement. Good data can aid with analysis and help identify solutions. During consultations with stakeholders, it was mentioned over and over, that more comprehensive, high-quality data is needed to advance the planning and implementation of urban freight actions and solutions.

In order to being to collaborate on data issues, Metrolinx has teamed up with one of leading freight research groups, at the Centre for Urban Freight Analysis, based at the University of Toronto in order to develop a coordinated urban freight data collection and management framework to quantify and qualify urban freight movements across the GTHA. It is the aim that this program will provide Metrolinx and regional stakeholders with a better understanding of the regional issues and challenges, as well as a baseline from which we can start to assess the impact of initiatives going forward. The framework will establish links between the existing data, modelling and planning and policy development while also identifying an organisational structure for data consolidation, management and collection in the future to enhance synergies between all parties and data sources.

C. Increase Transport Network Efficiency

Freight on Transit

Freight and transit integration has had minor success in Europe but has yet to be applied in North America, primarily because it is a novel concept whose impacts are poorly understood. (Cargotram, 2011 (6); DVB, 2011 (7)) Understanding the impacts requires collaboration across a range of fields including public transit, logistics, and planning. In order to explore the application of freight on transit, Metrolinx is funding research which will consult with key stakeholders on the matter.

The goals of the Freight on Transit Delphi are to identify the (i) advantages, (ii) disadvantages and (iii) challenges associated with moving freight on transit as well as (iv) to design an implementation strategy for the GTHA. In order to facilitate this

consultation, the Delphi Method was selected as the most appropriate among different communication techniques to ease discussion, generate ideas, and rank alternatives to allow a group of individuals to tackle a complex policy issue "of which there are no experts, only informed advocates." (Okoli & Pawlowski, 2004 (8); Turroff, 1970 (9))

D. Enhance Planning and Development

Potential for Truck Only lanes in Urban Areas

Metrolinx is one of the main sponsors of the TAC lead project to investigate the potential for truck-only lanes in urban areas. Considering truck are the dominant vehicle for urban goods movement and services in Canada and on average represent about 20% of total vehicles on the road at any time (3), it is the aim of this study to better understand the issues surrounding providing truck only lanes in Canadian urban areas.

While there are some international examples available, there is still little understanding into the implications of and feasibility of implementing truck only lanes on urban roadways. As such, the main objective of this project would be to investigate the application of truck lanes for handling truck traffic. The project will look at both new and planned transportation corridors and will also conduct an extensive environmental scan, to ensure the latest knowledge into truck lanes can be used.

It is the aim of the project to produce a resources document which provides an evaluation of best case examples, including planning design and operation aspects, all while ensuring that the information is appropriate in the context of Canadian urban areas. The result of the project should be useful for planners and other stakeholders with the information needed to consider, as appropriate, truck lanes a tool for efficient sharing of facilities by all users.

E. Improving Operational Practices

Transit Inventory Management Systems (TIMS)

Metrolinx Transit Procurement Initiative (TPI) division has been leading a leading edge joint procurement process of bus transit parts in a program known as Transit Inventory Management System (TIMS), which will save local transit agencies time and money on ordering bus components. The main goals of TPI are to *"act as the central procurement agency for the procurement of local transit system vehicles, equipment, technologies and facilities and related supplies and services on behalf of Ontario municipalities"* (4).

Through the work of TPI, local transit agencies in Ontario has already saved millions of dollar by jointly procuring bus purchases, allowing for reduced costs by the vendor. Moving beyond purchasing entire busses, TPI through TIMS is improving the efficiency of the supply chain for transit vehicle parts. The objectives of TIMS are:

- improving operational practices
- reducing costs of inventory, costs of parts, obsolescence
- reducing carbon footprint
- improve parts availability
- streamline ordering for all partner transit agencies

As Figure 6 demonstrates, the potential benefits of facilitating joint procurement by Metrolinx can lead to greater efficiency, cost and time savings for all parties involved. By coordinating the development of common vehicle specifications and Request for Procurement (RFP) documentation in concert with municipalities and partner agencies, not only can greater economies of scale be had, but also the efficiency of the supply chain can be improved. It is expected, with the current eight transit agencies involved in TIMS that deliveries of goods to agency facilities will be cut by 60%, providing a 10 to 15% on parts, and reducing the distance goods travelled from 500kms to 100km. These savings will lead to other benefits such as fewer trucks on the roads, more efficient delivery times and reliability of parts and reducing the environmental impacts of all of the above. Figure 6 below shows how TIMS works

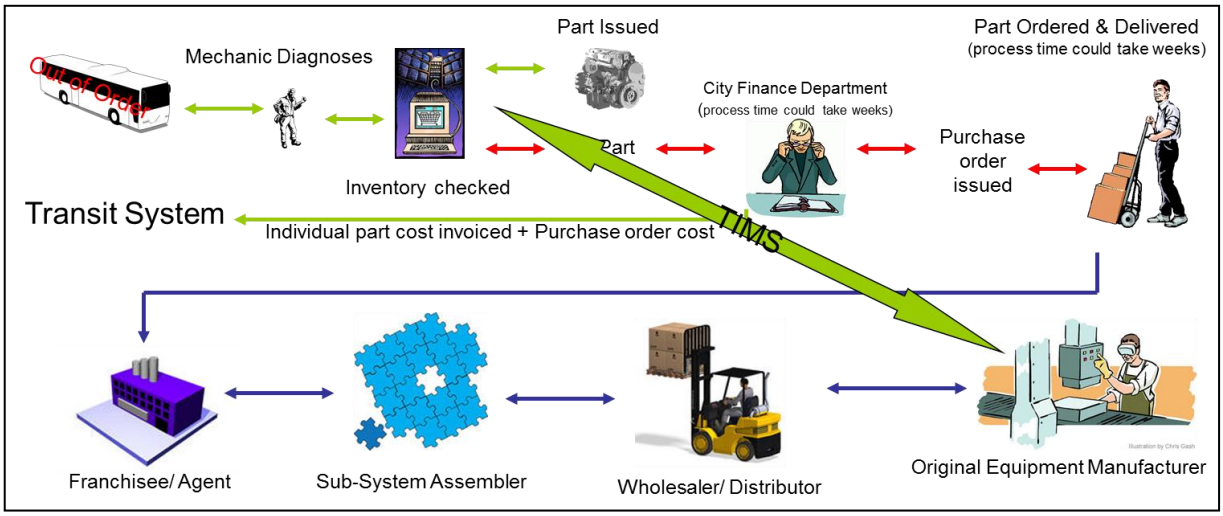

Figure 6: Diagram showing how TIMS works

5. Conclusions

Metrolinx has started to deliver on developing its urban freight agenda and has made freight a critical part of its RTP. By first identifying the need to explore freight issues and incorporate them into planning and infrastructure investment in the region, Metrolinx has

lead a collaborative exercise to develop a strategy that reflects the diversity of the region and complexity of the urban freight issues for which the strategy is to serve. The release of the GTHA Urban Freight Strategy in early 2011, solidified Metrolinx´s commitment to working with all key stakeholders, both government and industry, in developing common solutions to the regions freight challenges.

Within the next year, the *Developing Urban Goods Movement Data in the GTHA* project will provide stakeholders with a critical baseline of urban freight movements. Partnerships on projects, such as with TAC and other Canadian municipalities, will help to improve our understanding of the potential for urban truck lanes. Moving forward, Metrolinx continues to explore innovative approaches, such as examining the potential for freight on transit and use of niche consolidation centres to reduce urban goods movements in congested areas, while improving the overall efficiency of the network and the evidence needed to justify such policies and programs. The start of the GTHA Urban Freight Forum will allow Metrolinx to continue to engage with existing and new stakeholders and provide a platform for which to exchange new ideas, seek new projects and guidance on urban freight issues. The implementation of the GTHA Urban Freight Study actions will only be successful with the continued collaboration and support of members of both the Forum and other key players.

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Figures

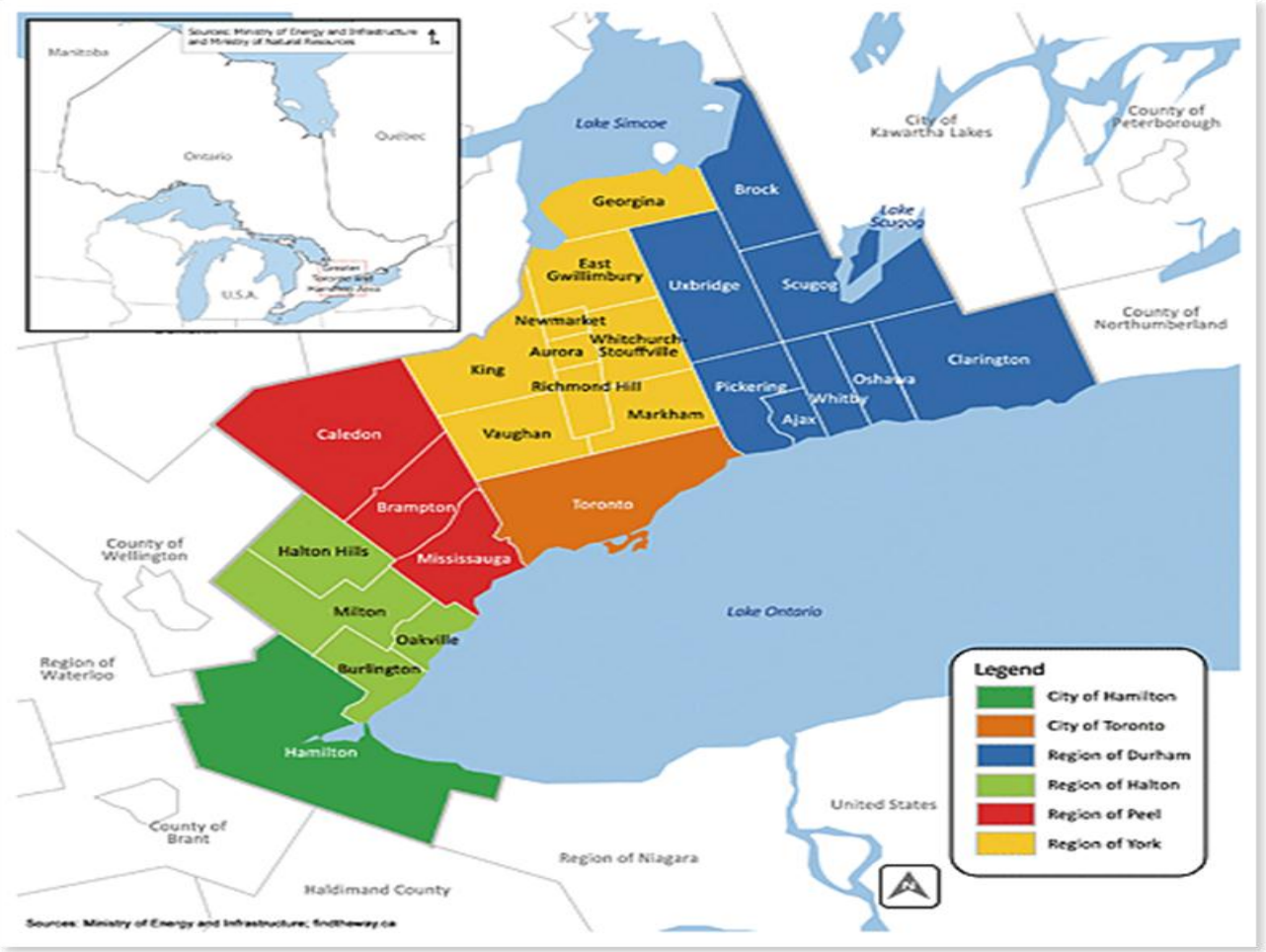


Figure 1: The GTHA local and regional municipalities

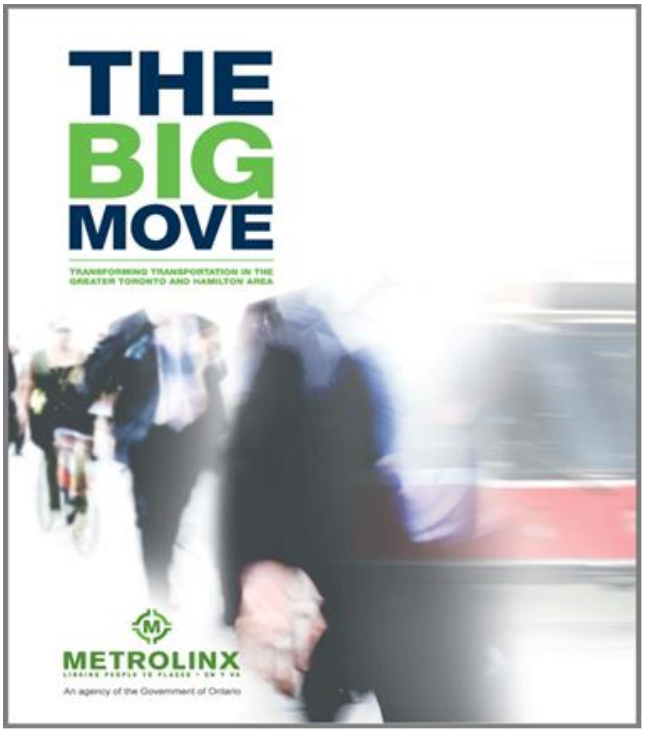
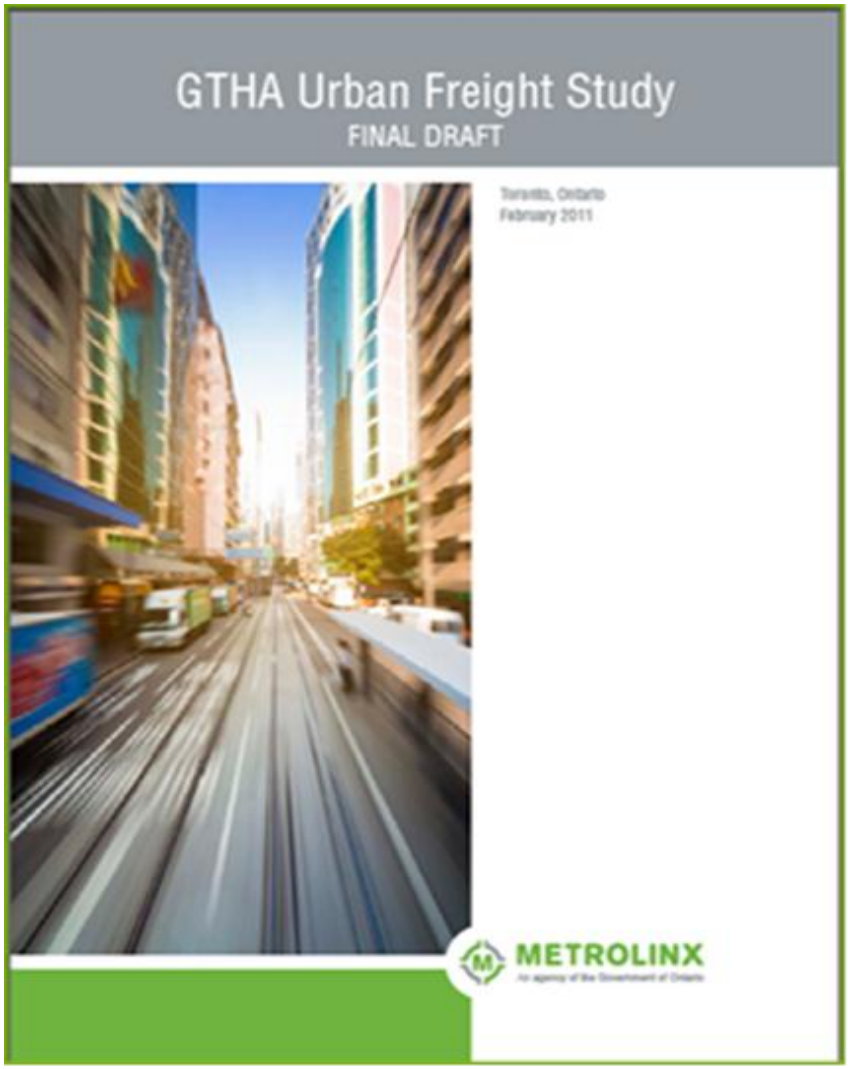


Figure 2: Front Cover of the Big Move

Figure 3: Front Cover of the GTHA Urban Freight Study



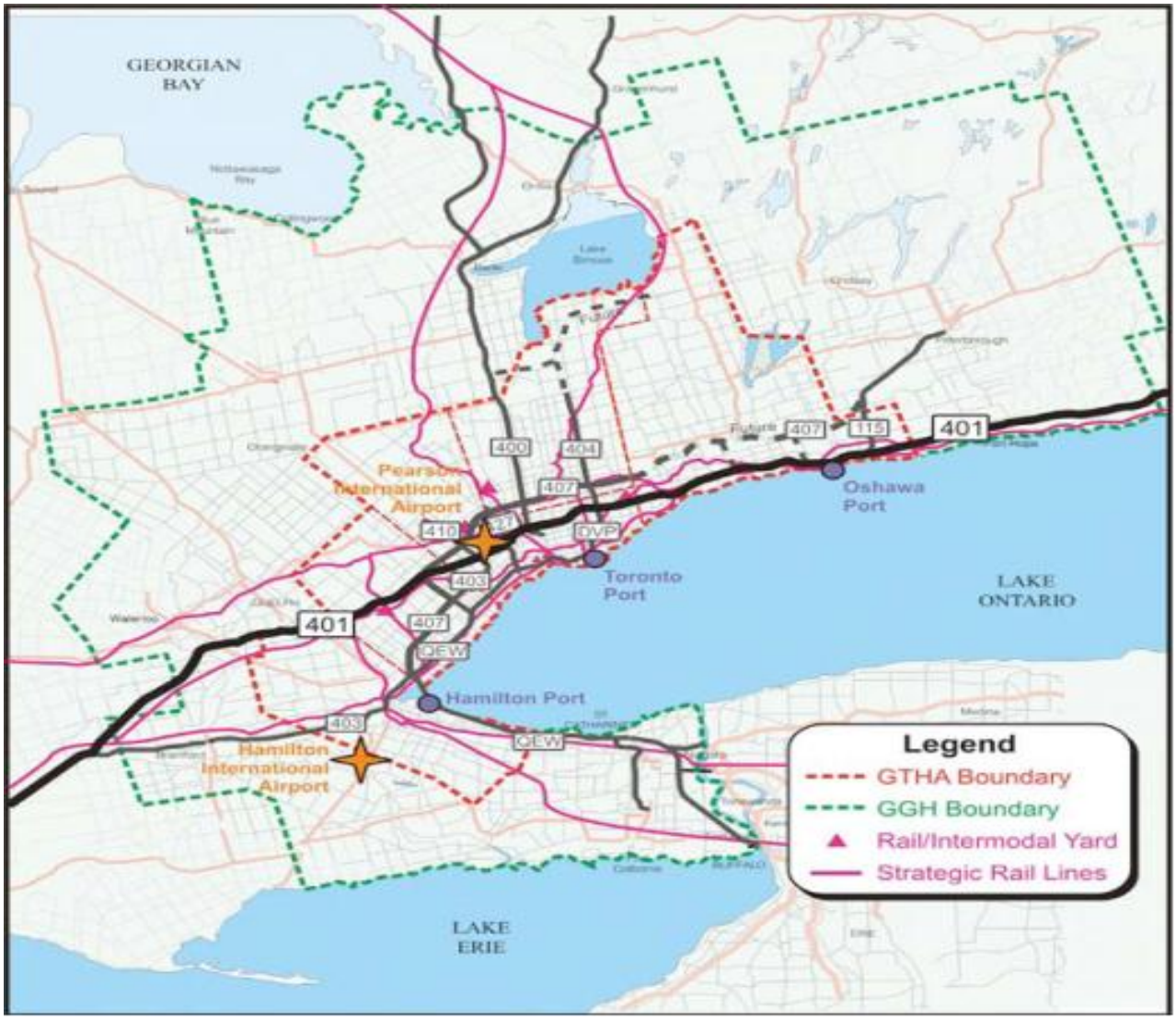


Figure 5: Key Freight Infrastructure and Facilities in the GTHA