Moving Forward

Goods Movement Report
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1. Introduction

Moving Forward is the 2018 Transportation Master Plan (2018 TMP) and policy document for the Region of Waterloo. It outlines plans for providing the road, transit, walking and cycling infrastructure needed to encourage sustainable travel and economic growth and to support the Region as “a community where people matter and ideas grow”\(^1\). Moving Forward also provides guidelines for the Region to identify and prioritize transportation needs and a process to evaluate them over the coming 25 years. One of these needs is goods movement.

The safe and efficient movement of goods, especially by truck, is very important to Waterloo Region’s economy, given its strategic location in southwestern Ontario, access to the Windsor/Detroit and Niagara gateways to the USA and its business, manufacturing and just-in-time warehousing users. The economic base in Waterloo Region includes a growing

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\(^1\) Region of Waterloo Vision.
knowledge and service economy, but also continues to have strong manufacturing, retail trade and agricultural sectors, for which the efficient movement of goods is essential.

The main challenge in planning for the movement of goods is to balance the needs of industry with those of communities, neighbourhoods, and core areas. An effective goods movement road network focuses truck traffic on selected Region streets, improves safety and structural longevity of non-designated streets, and minimizes impacts of heavy truck traffic on sensitive land uses.

Purpose of the Report

This report is a goods movement strategy prepared for the Region of Waterloo as part of the 2018 TMP. The focus of this report is on commercial trucking operations and policies, however connectivity to air and intermodal (rail) facilities is also discussed. The scope of the report focuses on the following topics:

- A review of current goods movement policies in the Region;
- A review of related province-wide polices and directions, and a review of Peel Region’s current plan which provides a peer example in terms of strategic goods movement planning;
- An analysis of current goods movement flows to, from and within the Region, with findings including goods movement by employment sector and commodity type;
- An overview of movement by rail and air in the Region;
- A review of trends affecting goods movement including economic trends and new technology such as autonomous connected trucks;
- A review of strategies for greening goods movement and curbside management within the Region; and
- A truck route planning framework for the Region.

The prior plan, Moving Forward 2031 (2010 RTMP) identified a need for the Region to undertake, outside of the TMP, a separate goods movement study or strategy. This report addresses some of the content requested, but does not include some topics such as a detailed review of the truck network for specific origins and destinations needed to identify gaps or identify Township roads to better serve goods movement. There were also uncertainties as to the scope and scale of the separate Goods Movement Study. Section 6 of this report provides terms of reference for a subsequent study that the Region can tailor further.
Related Goods Movement Policy Directions

Managing goods movement in Waterloo Region is influenced by direction provided by a number of related provincial agency and industry groups, as well as municipal studies. A sample of these are summarized below.

Ontario Ministry of Transportation’s Freight Supportive Guidelines

Ontario’s Freight-Supportive Guidelines help municipalities better understand and plan for the vehicles that transport goods through their communities. They also provide direction on how to best plan the available land, design sites and manage municipal transportation networks, to keep communities financially stable and competitive.

The document includes over 50 guidelines and almost 350 strategies to help urban planners, municipal engineers, developers and others create safe and efficient freight-supportive communities. The guidelines include best practices and implementation strategies that apply to many communities, both urban and rural, drawing on past experiences in Ontario, North America and around the world.

Metrolinx’ GTHA Urban Freight Study

Metrolinx released the GTHA Urban Freight Study, 2011, aimed at improving the efficiency of goods movement and addressing related impacts. The study, developed with partners in the public and private sectors, is a broad review of urban freight within the Greater Toronto and Hamilton Area (GTHA) that helps to:

- Gain an understanding of the current activities in urban freight and the conditions under which freight moves through the last mile of the journey, with a focus on freight originating and/or destined within the GTHA boundaries;
- Define and scope the challenges and opportunities facing the GTHA freight industry; and
- Assemble a review of best practices, which will improve the efficiency and effectiveness of urban freight transportation in the GTHA, and thereby improve the quality of life, environmental sustainability and economic competitiveness of the entire region.

The study highlights five strategic directions with supporting actions aimed at improving the efficiency and minimizing the impact of goods movement in the region:

1. Build collaboration and support;
2. Improve freight information;
3. Increase transportation network efficiency;
4. Enhance planning and development; and
5. Improve operational practices.

Together, these strategic directions and their supporting actions form the GTHA Urban Freight Action Plan, the basis of Metrolinx’ work on urban freight. In 2012, an Action Plan Update highlighted key freight initiatives underway in the GTHA to carry forward the 17 Actions identified in the Freight Study.

**Southern Ontario Gateway Council (SOGC)**

The SOGC was formed in 2007 to encourage integration and non-competitiveness between all modes of transportation, numerous regional transportation groups and government bodies associated with Southern Ontario. It is essentially an industry-united lobby group to effectively and efficiently deal with all modes of transportation in the region, including goods movement.

Although the SOGC operates as a multi-modal organization, it is focused mainly on trucking and the road infrastructure that sustains it. It also works in cooperation with the Ontario Trucking Association.

**Ontario Trucking Association (OTA)**

The OTA recognizes that municipal governments have an important role and opportunity to facilitate safe and efficient trucking in their communities. In response, in 2011 OTA published *Local Truck Routes: A Guide for Municipal Officials*. It suggests how to establish appropriate truck routes based on input from the trucking industry and community to ensure mobility is preserved for all roadway users. This includes the safe and efficient movement of freight and goods to grow the local economy.

**Peel Region Goods Movement Strategy 2017–2021**

This is an example of a recent Goods Movement Strategic Plan, with a five-year blueprint for action for goods movement in Peel Region. It combines initiatives based on current needs and a long-term vision for the goods movement system. The recommendations in this plan are based on data and stakeholder input. This plan serves as an update to the 2012–2016 Goods Movement Strategic Plan and was prepared concurrently with the Goods Movement Long Term Plan (to be released following the 2012–2016 Goods Movement Strategic Plan).
2. Goods Movement in the Region of Waterloo

Defining Goods Movement

As defined by the Metrolinx GTHA Urban Freight Study (February 2011), goods movement includes all shipments and services that move on the transportation network. In the case of Waterloo Region, these shipments are wide ranging and include, for example, auto parts heading to major manufacturing plants like Toyota Motor Manufacturing in Cambridge, supplies destined to the Region’s downtown offices, distribution of food and consumer goods, movement of aggregate resources, and heavy tractor-trailer rigs traversing the Region along provincial highways destined for intra- and international markets.

Goods in Waterloo Region are primarily moved by commercial motor vehicles – trucks. The Ontario Traffic Act defines a commercial motor vehicle (truck) as one that has an actual or registered gross weight of more than 4,500 kg. Similarly, the Region of Waterloo Traffic and
Parking Bylaw 16-023 defines “heavy truck” as a motor vehicle having permanently attached thereto a truck or delivery body having a gross weight or registered gross weight of more than 4,500 kilograms but does not include an ambulance, hearse, casket wagon, fire apparatus, bus, mobile crane, motor home or road service vehicle.

Goods movement in Waterloo Region also involves freight by rail on the CP and CN rail lines, which include the Galt Subdivision (CP), the Guelph and Fergus Subdivisions (CN), and the Waterloo Spur (Region of Waterloo). These rail lines are described further in Section 3. Some specialized goods are moved by air to and from the Waterloo Region International Airport and Toronto’s Pearson International Airport. The Region’s transportation system must provide ground access to these rail and air transport operations.

The type and volume of goods movement in the Region reflects the diverse economy and various employment sectors that contribute goods. Exhibit 2.1 illustrates the employment distribution for the Region of Waterloo by the number of jobs and by the proportion of jobs. Kitchener, Waterloo, and Cambridge have the most jobs, in descending order. The data reveals some less expected statistics such as the degree of diversity in employment across the Region. For example, manufacturing remains a very strong cornerstone of all of the Region, including Waterloo, and education is a strong employment area not just in Waterloo but in Kitchener as well. Agriculture is a small employer in comparison to other sectors but an important goods movement generator in the Townships.

**Current Waterloo Region Truck Route Management**

In Waterloo Region, the movement of goods by truck is managed using a combined permissive and restrictive system. Heavy trucks are permitted on most Regional Roads. There are some exceptions where trucks are restricted by Schedule 19 of the Region’s Traffic and Parking Bylaw 16-023. Schedule 19 lists Regional Road sections signed as “No Heavy Trucks” routes. These restrictions do not apply to a truck making a delivery to or a collection from a location that cannot be reached by any route other than the route where heavy trucks are prohibited. When making such a delivery or collection, the shortest possible route must be used. Exhibit 2.2 shows the current Region of Waterloo truck route network.
EXHIBIT 2.1: DISTRIBUTION OF EMPLOYMENT IN WATERLOO REGION BY MUNICIPALITY AND INDUSTRY, 2016

A. Number of Jobs by Municipality

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Number of Jobs (Thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchener</td>
<td></td>
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<tr>
<td>Cambridge</td>
<td></td>
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<td>Waterloo</td>
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<tr>
<td>Woolwich</td>
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<tr>
<td>Wilmot</td>
<td></td>
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<tr>
<td>Wellesley</td>
<td></td>
</tr>
<tr>
<td>North Dumfries</td>
<td></td>
</tr>
</tbody>
</table>

B. Proportion of Jobs by Municipality, Region and Province

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Proportion of Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchener</td>
<td></td>
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<tr>
<td>Cambridge</td>
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<td>Waterloo</td>
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<td>Wilmot</td>
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<td>Wellesley</td>
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<tr>
<td>North Dumfries</td>
<td></td>
</tr>
<tr>
<td>Total Waterloo Region</td>
<td></td>
</tr>
<tr>
<td>Ontario</td>
<td></td>
</tr>
</tbody>
</table>

Source: Statistics Canada Place-of-Work data.
EXHIBIT 2.2: CURRENT REGION OF WATERLOO TRUCK ROUTE NETWORK (2018)
**Moving Forward 2031 Goods Movement Priorities**

One of the key priorities of the Region’s 2010 RTMP was to provide efficient and convenient access to markets via the provincial highway network and the regional road system. Facilitating commercial vehicles or the potential for mode shifts to rail for goods movement, are important parts of the future transportation plan for the Region. At the same time, the 2010 RTMP recognized that much of the policy framework relating to goods movement by a variety of modes in the Region is managed at the provincial and national levels. This include freight rail, aviation and cross-border goods movement.

The 2010 RTMP included a number of regional policies and programs intended to support and benefit goods movement by all modes. These could influence the competitiveness of the Region’s goods movement network through improvements to regional and local transportation infrastructure, and in particular, road improvements in response to existing and future goods movement demands. The Region’s specific goods movement policies in the 2010 RTMP to further promote efficient movement of goods included the following:

1. **Plan for effective goods movement facilities and systems that minimize impacts and provide direct access** – by preparing a strategic goods movement study and developing a Goods Movement Priority Network based on the role and function of the Region’s road network, the provincial highway network and the rail network, and considering the existing and planned locations of Employment Lands. A proposed Terms of reference for such a study is included in Section 6 of this report.

2. **Improve transportation connections to Highway 401 in southwest Kitchener to support goods movement and future employment growth areas** – with three alternative highway interchange locations recommended for evaluation in a Municipal Class Environmental Assessment at:
   a. Trussler Road;
   b. Fischer-Hallman Road connected to new Trussler Road; and
   c. Fischer-Hallman Road connection to Cedar Creek Road (RR 97) interchange.

3. **Consider Goods Movement as Key Performance Indicator in Assessing Corridor Improvement Requirements** – including investigating opportunities to incorporate existing and future truck demands into the Region’s transportation model.

4. **Work with the Province, municipalities and major industries/businesses to develop a Strategic Goods Movement Network** – including a variety of Intelligent Transportation Systems (ITS) technologies that can benefit goods movement within and through the Region.

5. **Ensure the transportation system supports development and land use, recognizing the need for effective movement and interaction of people and goods** – through integration of the Region’s transportation and land use planning at a broad level. This
could be enhanced with an explicit consideration of how changes to future land use or transportation infrastructure affects goods movement considerations.

**Goods Movement Policies of Local Municipalities**

The new Cambridge Transportation Master Plan (2018) recommends two broad items for consideration as it relates to goods movement:

1. Develop a modified and expanded truck route system to improve routing and management of heavy trucks (including restricting north-south truck movements in downtown Cambridge (Galt)).
2. Implement a permissive truck route system. This requires less signage than a restrictive system, and is easier to administer and enforce. In addition, it can provide better guidance to heavy vehicle operators, potentially improving safety.

The Kitchener Integrated Transportation Master Plan (June 2013) recommends continuation of their combined permissive/restrictive truck management system implemented by:

1. Providing an effective, sustainable goods movement system;
2. Improving access to provincial highways and Regional roads;
3. Carrying-out stakeholder consultation;
4. Providing support for innovative local goods movement practices;
5. Making use of Intelligent Transportation Systems (ITS); and
6. Working with the Province and Region of Waterloo to improve goods movement.

The City of Waterloo Transportation Master Plan (April 2011) recognizes that the movement of goods and freight will continue to require a reliable road network to remain economically competitive.

Traffic bylaws of the four rural municipalities in Waterloo Region include provisions for load restrictions and heavy truck prohibitions within each municipality.
3. **Goods Movement Patterns and Modes**

The Ontario Commercial Vehicle Survey (CVS), conducted by the Ministry of Transportation of Ontario (MTO), is a rich dataset of detailed information about commercial vehicle travel. The information is collected through interviews of commercial vehicle drivers about their current trip, after they are directed from the flow of traffic to roadside data collection sites along provincial and regional roads throughout the province.

This section describes commercial flows to, from and within Waterloo Region based on analysis of the most recent dataset, the 2012 Ontario CVS, which involved data collection from 2010 through 2014. This will be the most recent provincial commercial vehicle dataset available until the next update of the Ontario CVS in 2021. Goods movement is dynamic, subject to change based on industry trends, the opening and closing of major local businesses, changes in international trade (e.g. changes in trade agreements and currency exchange rates), etc. The 2012 CVS dataset includes, for example, trips to and from the Kitchener Schneiders meat processing plant, which closed in February 2015. Anot

Another caveat of this dataset is that while inter-regional commercial vehicle travel is well represented, shorter-distance intra-regional commercial vehicle trips that do not pass a data collection site are not included in the dataset\(^2\).

**Current Commercial Vehicle Flow Patterns within the Region of Waterloo**

**Overview of Commercial Vehicle Flows**

 Nearly 150,000 commercial vehicle trips take place in Waterloo Region weekly, carrying 1.2 million tonnes of freight worth $4.3 billion. The distribution of weekly trips as they relate to Waterloo Region is shown in Exhibit 3.1. As noted earlier, the number and value of trips within Waterloo Region are underrepresented due to limitations of the survey methodology.

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\(^2\) Ontario CVS Data collection sites in Waterloo Region and vicinity include the following:
- Highway 7/Conestoga parkway north of Highway 8 (Kitchener)
- Highway 8 and King Street north of Highway 401 (Kitchener)
- Highway 8 south of Cambridge (Peters Corners)
- Highway 7&8 west of Waterloo Region (east of Shakespeare)
- Highway 6 north of Guelph
- Highway 6 south of Highway 401 (near Carlisle)
- Highway 401 east of Waterloo Region (east of Milton)
- Highway 401 west of Waterloo Region and Oxford County (at Putnam, east of London)
- Highway 24 & Highway 403 (west of Brantford)
EXHIBIT 3.1: WEEKLY COMMERCIAL VEHICLE TRIPS IN WATERLOO REGION

Number of Weekly Trips

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Value (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through Waterloo Region</td>
<td>39,000</td>
<td>$2,300</td>
</tr>
<tr>
<td>From Waterloo Region</td>
<td>38,000</td>
<td>$570</td>
</tr>
<tr>
<td>To Waterloo Region</td>
<td>26,000</td>
<td>$550</td>
</tr>
<tr>
<td>Within Waterloo Region</td>
<td>16,000</td>
<td>$57</td>
</tr>
<tr>
<td>Waterloo Region - Domestic</td>
<td>29,000</td>
<td></td>
</tr>
<tr>
<td>Waterloo Region - International</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: IBI Group analysis of MTO’s 2012 Ontario CVS dataset

Exhibit 3.2 and Exhibit 3.3 are a series of two maps showing weekly commercial vehicle flows within, to, from and through Waterloo Region, starting with a local view and progressing to broader views. The highest volumes of commercial vehicles are on Highway 401, the province’s most significant commercial vehicle corridor, which runs through Cambridge and Kitchener, and connects international gateways and major provincial transportation hubs. Most trips continuing through the Region without an origin or destination in Waterloo use this route. From Highway 401, Highway 8 is the main commercial vehicle connection north to Kitchener and beyond to the City of Waterloo via Highways 7 and 85 (Conestoga Parkway).

Truck trip flows from trip origin to destination are also shown in table form in Exhibit 3.4, where flows are summarized by the zone system shown in Exhibit 3.5. Among trips to or from Waterloo Region, almost 60% are to or from the Greater Toronto and Hamilton Area, especially the transportation hub of Peel Region, almost 20% are to and from Southwestern Ontario, approximately 10% are to and from the United States, and the remaining, close to 10% is to other parts of Ontario and Canada. More than half of commercial vehicle trips to or from Waterloo Region involve travel distances of less than 100 km.
Commercial Vehicle Activity Locations

Exhibit 3.6 shows the location of commercial vehicle activity in Waterloo Region and area, including trip origins and destinations, and cargo pick-up and drop-off locations. The location and activity volumes are shown by type of facility. Exhibit 3.7 is a plot of weekly commercial vehicle volumes by trip origin location and commodity type, while Exhibit 3.8 shows the estimated weekly value of goods at trip origin by commodity type. The goods transported from these locations aligns with the facility types shown in Exhibit 3.6.

Cambridge is very strategically positioned relative to the highway and rail network. It has a large manufacturing and warehousing/logistics area southeast of Highway 401 and Highway 24. These include, among others, manufacturing in support of the auto industry, such as auto parts. Northeast of Highway 401 and Highway 8 is the Maple Grove industrial area that includes the two most significant individual commercial activity generators in the area: the Toyota motor vehicle manufacturing plant and the Loblaw’s regional distribution centre.

On the south side of the developed area of Kitchener is another industrial area with good connectivity to the highway and rail network; it also has a focus on manufacturing (which also includes processing) and warehousing. Pockets of industry near Highway 7 and/or Highway 85/Conestoga Parkway are also reliant on strong road network connectivity. The north end of the City of Waterloo near Highway 85 has an industrial area with a manufacturing focus.

In the more rural areas of Waterloo Region, several truck terminals are located strategically near Highway 401 in the Ayr community of North Dumfries, and also in the Baden and New Hamburg communities along Highway 8 in Wilmot. Primary producers such as agricultural farms and quarries are also located in Waterloo Region’s rural areas.
EXHIBIT 3.2: WEEKLY COMMERCIAL VEHICLE TRAVEL ROAD NETWORK ASSIGNMENT PLOT BY FLOW TYPE – WATERLOO REGION

Source: IBI Group analysis of MTO’s 2012 Ontario CVS dataset
EXHIBIT 3.3: WEEKLY COMMERCIAL VEHICLE TRAVEL ROAD NETWORK ASSIGNMENT PLOT BY FLOW TYPE – SOUTHERN ONTARIO

Source: IBI Group analysis of MTO’s 2012 Ontario CVS dataset.
**EXHIBIT 3.4: WEEKLY COMMERCIAL VEHICLE ORIGIN-DESTINATION FLOW TABLE**

<table>
<thead>
<tr>
<th>Trip Origin Zone</th>
<th>Trip Destination Zone</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Waterloo Total</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>Ontario Total</th>
<th>Total</th>
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<tbody>
<tr>
<td><strong>Trips</strong></td>
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### Exhibit 3.4: Weekly Commercial Vehicle Origin-Destination Flow Table continued

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EXHIBIT 3.5: ZONE SYSTEM FOR ORIGIN-DESTINATION FLOW TABLE
Exhibit 3.6: Commercial Vehicle Activity by Facility Type

Source: IBI Group analysis of MTO’s 2012 Ontario CVS dataset
EXHIBIT 3.7: WEEKLY COMMERCIAL VEHICLE TRIPS BY COMMODITY TYPE

Source: IBI Group analysis of MTO’s 2012 Ontario CVS dataset
EXHIBIT 3.8: WEEKLY COMMERCIAL VEHICLE COMMODITY VALUE AT TRIP ORIGIN BY COMMODITY TYPE

Source: IBI Group analysis of MTO’s 2012 Ontario CVS dataset
Commodities Transported by Commercial Vehicle

Among the almost 16,000 weekly commercial vehicle trips that take place entirely within Waterloo Region and aside from trucks returning empty (which make up about half of these trips), the most common freight includes minerals (e.g. gravel or cement for construction) at about 2,300 weekly trips and waste/scrap at about 1,000 weekly trips.

Among the 29,000 commercial vehicle trips originating in Waterloo Region and destined outside of the Region, and excluding over 11,000 trips by vehicles not loaded with cargo, the most significant commodities in terms of number of commercial vehicle trips include the following:

- Food products at 3,900 weekly trips with commodity value of $109 million (this category includes in general processed foods as opposed to raw agricultural products, which make up approximately 1,000 weekly trips from Waterloo with a total commodity value of $16 million);
- Manufactured goods (e.g. furniture and textiles, but excluding machinery/electrical goods and transportation/auto-industry goods) at 2,000 weekly trips with commodity value of $69 million; and
- Transportation/auto-industry goods at 1,800 weekly trips with a commodity value of $101 million.

In terms of commodity value, the most significant commercial vehicle flows from Waterloo Region include machinery and electrical goods values at $118 million (1,400 weekly trips), as well as food products and transportation/auto-industry goods, as noted above.

Conclusion

A range of goods is moved by commercial vehicle within, to, from and through Waterloo Region. The provincial highway network carries large volumes of commercial vehicles through Waterloo Region, but connections to Highway 401 and other provincial highways are also essential for moving goods to and from the Region, including to international markets. The Region’s strategic location in the provincial transportation network, its local resources, and its skilled labour force has made it attractive to these industries. Industries in Waterloo Region are generally strategically located in close proximity to the provincial highway network, and include a range of manufacturing and processing, warehousing, primary producers and trucking logistics. The 2018 TMP must take into account the importance of these connections in supporting industry and the local economy.

In addition to provincial connections, efficient goods movement within the region is needed for supplying local businesses and residences, allowing delivery of materials to support
construction activities, and supporting municipal maintenance activities such as waste management.

Other Goods Movement Modes in the Region of Waterloo

In addition to trucks, both rail and air play an important role in goods movement. These modes are frequently used to move goods to, from, and through the Region.

Rail

The relationship between railways and truck transportation has changed considerably over the last few decades. Because of the flexibility and effectiveness, most pick-up and delivery of goods is done by truck except for the heaviest movements. Railways may retain the long haul movement of goods through the use of intermodal facilities where loads can be transferred between truck and rail using transload facilities or the transfer of containers or trailers between truck and rail. This has resulted in a major change with many fewer local trains doing pick-up and delivery and major movements of trucks to and from intermodal facilities.

Exhibit 3.9 shows the locations of existing active rail lines in and near the Region of Waterloo. They include:

- **Canadian Pacific Railway (CP)** – The CP main line between Toronto and Chicago runs through the center of the Region with a major hub in Cambridge. A CP spur runs north from the main line through the Preston area of Cambridge to serve the Toyota plant (located north of the Highway 401 and Highway 8 interchange) and the southern section of Kitchener. CP operates its major intermodal facility in Vaughan and a smaller facility adjacent to Highway 401 and Trafalgar Road. It also connects to Windsor and the US gateway, Toronto and points east, and the Niagara gateway.

- **Canadian National Railway (CN)** – In November 2018, CN took back rail lines in the Region of Waterloo that had been leased to Goderich-Exeter Railway (GEXR) for twenty years. CN now operates freight service along the Guelph Subdivision, from Georgetown to London via Kitchener, the Fergus Subdivision, from Guelph to Cambridge, and the Waterloo Spur, from Kitchener to Elmira. The Guelph (from Kitchener to London) and Fergus subdivisions are owned by CN, while the Guelph subdivision (from Georgetown to Kitchener) is owned by Metrolinx/GO Transit and the Waterloo Spur is owned by the Region of Waterloo. CN trains interchange with CP in Guelph and Kitchener. Freight
includes automotive parts, chemicals, fertilizer, grain, gypsum wallboard, heavy machinery, lumber products, paper, propane, salt, soy meal, steel and grains.\(^3\)

Further to the east along this route, the former CN line is now owned from Kitchener to Georgetown by Metrolinx /GO Transit. GO Transit has five commuter trains per weekday between Kitchener and Toronto along these railways. CN’s main line from Toronto to Chicago passes just to the south and east through Georgetown, Milton, Burlington and Brantford. CN is planning to construct a major intermodal facility in Milton, where loads including containers and trailers can be interchanged between road and rail. The existing intermodal facility is located in Brampton. This would then become a very significant freight transportation hub for the vicinity.

**Aviation**

According to the Region of Waterloo’s *International Airport Business Plan 2017-2022*, in 2015 the Region of Waterloo International Airport (YKF) and its tenants generated an estimated $90 million in economic impact to the local economy through local tourism, trade, investment and business productivity within the local economy. The airport plays a small but important role in the movement of goods to, from and within the Region. In 2017, YKF had 25 businesses with approximately 300 employees operating on the airport lands. The location of YKF within the Region of Waterloo is shown in Exhibit 3.9.

However, according to the Airport Master Plan (March 2017), one of the main weakness of YKF is the limited direct access provided for ground transportation since there is no direct airport access from major highways. This in turn leads to another weakness, in that there is very little air cargo processing at the airport. These conditions merit effective, convenient highway and roadway access for YKF to support the processing of more air cargo in the future.

Toronto’s L.B. Pearson International Airport is Canada’s busiest cargo airport. While not located in Waterloo Region, a considerable volume of the Region’s air freight passes through Pearson, leading to higher truck movements on Highway 401.

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\(^3\) GEXR <https://www.gwrr.com/railroads/north_america/goderichexeter_railway#m_tab-one-panel>
EXHIBIT 3.9: WATERLOO REGION AND AREA RAIL LINES AND AIRPORT
4. **Trends Affecting Goods Movement**

This section focuses on identifying major Regional and global trends taking place that are expected to influence the movement of goods to, from and within Waterloo Region over the next 25 years.

**Changes in Consumer Behaviour**

In recent years, consumers have made more and more purchases online through the rise of e-commerce. Dedicated online companies such as Amazon and eBay, as well as brick-and-mortar retailers such as Walmart and Hudson’s Bay, have large online presences and provide an easy way for consumers to shop from the comfort of their home. While this can be very convenient for consumers, the growth in online shopping has placed increasing pressure on Canada Post and other postal, courier, and logistics companies. At seasonal peak times, these companies are often faced with huge volumes of parcels that need to be delivered, increasing the volume of trucks on the road. Additionally, the free return services provided by some online retailers lead to more parcels going from consumers back to retail warehouses.

**The Changing Distribution of Regional Industries**

Waterloo Region is expected to continue experiencing a shift in the nature of employment. As major players in the goods-producing sector have left the region (e.g. Budd Automotive,
Lear, Schneiders and Blackberry), an influx of professional and service sector jobs have kept the employment rate in balance.

A continuing shift towards service sector jobs will affect the movement of goods. However, major goods-dependent operations will likely continue, including auto manufacturing supply chain, retail/wholesale warehousing and distribution, restocking of downtown business needs and the transport of the Region’s agricultural goods to market. These will require the support of a strong goods movement network.

Road and Highway Projects will Benefit Goods Movement in the Region
The Region and the province have undertaken and continue to undertake a significant number of Regional road and highway improvement projects and environmental assessments (EAs), including road widening, new roads, and operational treatments such as roundabouts. These projects will improve travel times for goods movement.

Sustainable transportation planning can include road improvements as long as they are staged and timed to ensure that developments and road projects are in lockstep; coordinated planning and implementation will help ensure new highway and road projects serve existing and future goods movement needs.

Connected and Autonomous Commercial Vehicle Goods Movement
The private and commercial vehicle manufacturing industry, and other technology-focused companies, are developing autonomous (self-driving) vehicle and connected vehicle technologies. These technologies are expected to, in the long term, offer cost savings to operators, improve road safety, reduce congestion and emissions, and increase the capacity of existing roads by enabling closer vehicle following and improve transportation services.

Goods movement has the potential to change significantly with the introduction of driverless and connected trucks. The degree of this potential change can be compared to the change in goods warehousing and distribution brought on by the introduction of “just-in-time” goods movement.

Autonomous goods movement will have social and economic impacts (for example on truck driver employment), in addition to planning and urban design implications. Also, whether or not goods movement is automated in the future, most is still expected to travel on streets and highways, thereby requiring sufficient operational capacity with minimal impacts on surrounding land uses.

An example of improved efficiencies for goods movement is a group of connected trucks operating using Vehicle-to-Vehicle (V2V) technology that can accelerate and brake as a single unit to maximize space, safety, and fuel efficiency. These groups of connected
vehicles are commonly referred to as a platoon. Exhibit 4.1 illustrates the concept of a commercial vehicle platoon with two connected vehicles that leverage V2V capabilities.

Autonomous trucks also have potential for higher adoption rates earlier in the adoption process in comparison to private passenger vehicles, due to the likelihood that fleet operators at scale are more likely to see better cost-benefit than private cars.

EXHIBIT 4.1: VEHICLE PLATOON DIAGRAM

Before the safe and reliable autonomous movement of goods on public roads becomes a reality, there are many technical, infrastructural, social and policy hurdles to be overcome. Autonomous trucks may require some special infrastructure to operate, such as reconfigured gas/service stations, and trip-end infrastructure. Ontario launched a ten-year pilot program for autonomous vehicles in 2016, allowing for testing on Ontario roads. On January 1, 2019 the program was updated to allow for the sale of vehicles equipped by the original equipment manufacturer with Society of Automotive Engineers (SAE) Level 3 automation technology. These vehicles will still require a human driver to be responsible for the safe operation of the vehicle at all times and able to take back control when needed or alerted by the vehicle. Vehicles equipped with aftermarket SAE Level 3 automation technology, and all vehicles equipped with SAE Level 4 and 5 automation technology will continue to only be allowed for testing as part of the pilot program, under strict conditions.4

The SAE define the levels of vehicle automation as follows:

- "Level 0 - No Automation: No automated features.
- Level 1 - Driver Assistance: Intelligent features add layer of safety and comfort. A human driver is required for all critical functions.

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• Level 2 – Partial Automation: At least two automated tasks are managed by the vehicle, but the driver must remain engaged with the driving task.
• Level 3 - Conditional Automation: The vehicle becomes a co-pilot. The vehicle manages most safety-critical driving functions but the driver must be ready to take control of the vehicle at all times.
• Level 4 - High Automation: The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.
• Level 5 - Full Automation: Vehicle is capable of being completely driverless. Full-time automated driving in all conditions without need for a human driver.”

Much work is needed before higher level automation applications can be confirmed and commercialized. Because of uncertainties with respect to timelines and the final form of these technologies, public investment in end-point infrastructure is not recommended at the current time. However, the Region can monitor progress and support trials or technologies through individual evaluation over time.

Aerial Delivery Drones
Unmanned aerial vehicles can be used to transport smaller goods ranging from retail and food purchases to other commercial goods under a certain weight. Drones could deliver product from a warehouse or store to an individual customer within the same area of the city. Delivery to rural or remote areas would be dependent on drone capacity and capability (i.e. weather, battery life).

While drones are increasingly and widely used in some sectors of the economy, private goods delivery will be subject to new regulations and technologies that are not yet available. It is also unclear whether drone delivery will be economical vs traditional delivery methods. The use of aerial delivery drones is not allowed today in the urban areas of Waterloo Region based on federal regulations.

Because of the uncertainties with respect to drone delivery, planning infrastructure or Regional policy is premature at the current time. Furthermore, even in the planning horizon of the 2018 TMP to 2041, the impact on goods movement and the regional transportation system overall is expected to be minor.

Cargo Bicycle Delivery
Some cities are now seeing the introduction of goods movement by cargo bicycle couriers. In Toronto, a number of courier delivery companies offer services by bicycle. For example, UPS Canada operates a cargo bike courier service with tricycles that do not use exclusive bike lanes. This and other cargo bike couriers promote the eco-friendly and time scheduling advantages of cargo delivery by bicycle.
In the City of Paris, Metro Freight assessed the growing usage of bicycles and tricycles for commercial goods movement, and quantify the resulting transport externality savings between 2001 and 2014. They concluded that bicycle courier operators rely heavily on electrically-assisted cargo bicycles. While externality savings are very small relative to total transport externalities in Paris, they are considerable when compared to savings from city-wide passenger mode shifts to bicycle.

To operate in the Region of Waterloo, cargo bike couriers would need enactment and enforcement of new Regional and local traffic bylaw rules for cargo bike operations on public streets. This could include whether they are permitted on exclusive bike lanes and multi-use paths.

**Demand Management**

Some cities, including Toronto, are exploring measures to reduce peak demand that can be implemented by industry and regulated and/or incentivised by the local government to improve efficiency, such as off-peak operation, improved and integrated logistics for combining small loads and avoiding empty return runs.

Deliveries are typically done during the day, when there is already traffic congestion. Moving deliveries to off-peak hours reduces lane blockages, improves traffic flow during peak periods, reduces loading/unloading time for deliveries, and reduces potential for delivery vehicles blocking bike lanes and sidewalks during peak periods. This results in improved travel times and conditions for all road users and reduced emissions.

Disadvantages of off-peak deliveries may include increased noise disturbances for residents that live nearby and the additional expense of staff to receive shipments. Unassisted deliveries, where there is no receiver present, may also be used, although security concerns could be an issue.

Incentives to encourage off-peak delivery could include funding for additional staff hours to receive deliveries during off-peak periods, or the addition of an isolated and secured area that could be left accessible to delivery companies (e.g. a second door, where the delivery company is provided a key).

The Region of Waterloo could consider implementing a program to identify areas where demand management would be most beneficial, consult with local industry, and encourage and facilitate the use of these measures, including the funding of incentives.

Greening Goods Movement
Ontario’s greenhouse gas (GHG) emissions from transportation have increased more than those from any other sector since 1990, and now represent 34% of all emissions in the province\(^5\). Over three-quarters of transportation emissions come from cars, trucks, buses and other on-road motor vehicles. The Province of Ontario has adopted ambitious goals for a 15% reduction in total GHG emissions from 1990 levels by 2020, a 37% reduction by 2030, and an 80 percent reduction by 2050.

*Moving Forward* is aligned with the *Climate Change Action Plan*, as it encourages a shift to sustainable transportation modes that, where possible, includes movement of goods.

In Waterloo Region, most of the day-to-day emissions are created by transportation and industry, through the production of vehicle exhaust and industrial emissions. This includes fine particulate matter, ground-level ozone, nitrogen oxides and carbon monoxide, all created through transportation. The Region of Waterloo’s transportation sector accounted for 40% of all of the Region’s greenhouse gas emissions in 2010, and is projected to increase by 17% by 2020 if mitigation actions are not adopted. Climate Action Waterloo Region has developed a community-wide action plan to curb that trend and achieve a 6% reduction of 2010 emissions levels by 2020\(^6\).

Growing population and employment in most urban centres means more pressure to transport goods quickly and reliably, which increases the number of trucks on municipal roads.

According to The Pembina Institute\(^7\), freight trucks are one of the fastest growing sources of greenhouse gas (GHG) emissions in Ontario. The movement of goods is an area that is vital to Ontario’s economy, but it is also the second largest source of transportation emissions by sector according to the province’s *Climate Change Action Plan 2016-2020*. Opportunities to reduce emissions focus on improved efficiency and switching to lower carbon fuels.

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\(^5\) Ontario’s *Climate Change Action Plan 2016-2020* p13
\(^7\) Region of Waterloo Outdoor Air Quality Info Booklet, citing Pembina Institute, 2014: *Greening the Goods*
Among the Pembina Institute’s recommendations, the following are most applicable to Waterloo Region and are recommended to cut both costs and emissions of urban goods movement and to help reduce congestion on our streets:

- **Increase the use of low carbon trucks** – with incentives for businesses, more natural gas and low or zero carbon fueling services and support for increased local goods movement by short line railways.
- **Off-peak deliveries** - working with local businesses to shift delivery scheduling away from peak congestion times.
- **Local delivery plans** - bringing together neighbouring businesses to discuss local delivery challenges and develop strategies to coordinate deliveries.
- **Delivery truck parking** - combining better parking enforcement with better options for on-street loading.

**A Strategy for Curbside Management**

Curbside management involves policies and practices to allocate the use of space along the edge of public streets. The public curbside (which is the space along the street between travel lanes and sidewalk), is very valuable especially in downtowns. It is most commonly used for motorized vehicle parking, but is also shared with goods delivery and pick-up, pedestrian and cyclist movement, transit stops, for-hire vehicle stopping (i.e. taxis, Uber), emergency services, curbside waste management and sidewalk vendors. The use and management of curbside space affects the vitality of adjacent businesses and the overall hospitality of downtowns and local neighborhoods. In Ontario, the design of curbside space must also comply with the Accessibility for Ontarians with Disabilities Act (AODA).

In most downtowns, the curbside is a very active place, such as along King Street in uptown Waterloo and downtown Kitchener, Water and Ainslie Streets in Cambridge and the “main streets” of the township urban areas. Stopping and parking rules are enforced through municipal traffic and parking bylaws with associated signage and fines. However, the use of curbside space, especially for goods delivery and pick-up, can at times obstruct the flow of traffic.

In Waterloo Region, the design of curbside space is guided by the Region’s Context Sensitive Regional Transportation Corridor Design Guidelines (March 2013). These guidelines provide for safe, convenient and comfortable movement of goods and people including access management. Sections of Regional Roads through the three urban area downtowns are classified as Neighbourhood Connector – Main Street. Examples are King Street North in Uptown Waterloo, Water Street in the Galt core of Cambridge, King Street in St. Jacobs and Snyder’s Road East in Baden.
These streets typically have street-oriented built forms that often constrain the curbside space. Design guidelines for these and other Main Streets also integrate sustainable and active forms of transportation (transit, cycling, walking) within the public right-of-way on Regional Roads. While these guidelines can be applied to the management of curbside space on Regional Roads, they do not provide direction on how this space is used. One of the challenges for curbside management on these types of downtown streets is to balance the need for road mobility with boulevard access, sometimes in a constrained right of way as shown in Exhibit 5.1, while still preserving key characteristics of special character streets, including natural and built heritage features.

**EXHIBIT 5.1: CONSTRAINED NEIGHBOURHOOD CONNECTOR – MAIN STREET (REGION OF WATERLOO)**

Many municipalities have developed curbside management strategies and plans to effectively manage curbside space in a way that supports mobility and access for people and goods. These strategies focus on prioritizing curbside uses that support economic activity while effectively managing related impacts on traffic movement.

For example, the City of Toronto’s Curbside Management Strategy (CMS) is based on three guiding principles:
• **Mobility Matters** – Toronto recognizes that curbside space almost always plays a dual role of functioning as a corridor of travel and of access. The Mobility Matters principle prioritizes travel, especially in peak periods, but there is also a need to appropriately prioritize mobility and the needs of curbside access for people and goods. Tactics and solutions to do this include:
  – Solutions should help manage general congestion;
  – High volume surface transit corridors should have few on-street curbside uses at all times (this could equate to the iXpress corridors in Waterloo Region);
  – Peak periods curbside uses that inhibit movement should be discouraged and/or prohibited; and
  – Curbside uses that can occur off-street should be encouraged.

• **Safe and Reliable Access** - The curbside, especially in downtowns, is in limited supply with many competing demands from various users. These demands can be variable by time-of-day, as new business models emerge, and as the city itself changes. Accordingly, Toronto’s CMS tactics recognize that while road user safety is paramount, the right of way also serves different roles at different times of the day.

• **Communicate Value to All** - Curbside solutions must be communicated effectively, and be seen to be ‘fair’ by stakeholders. As such, Toronto’s CMS tactics recognize that:
  – Simple solutions are required;
  – The curbside is a scarce resource with user fees to be applied where appropriate; and
  – Transparent and accountable decisions are necessary.

A further peer review of other municipal curbside management strategies has identified a number of tactics that could be considered for implementation in Waterloo Region in association with the local municipalities:

• Allow taxi and Uber waiting areas at fire hydrants to reduce stopping demands on the remainder of the street;
• Include Designated Delivery Vehicle Parking Zones in the municipal Traffic and Parking Bylaws;
• Partner with downtown Business Improvement Areas (BIAs) to undertake a pilot permitting system to control unique loading circumstances in high demand locations;
• Support the expanded use of off-peak deliveries in the downtown;
• Provide supportive information to couriers and other service delivery vehicles to guide where and where not to park;
Maximize the use of off-street parking through parking fees, signage, wayfinding and smart phone apps in order to reduce demands for on-street parking; and

Explore curbside needs of the accessibility community by reviewing the availability of pick-up / drop-off and accessible parking locations for the disabled with the Region’s Grand River Accessibility Advisory Committee.

One of the key requirements for the Region in implementing these and other curbside management tactics is the need for a consistent, coordinated approach between the Region and local municipalities. A consistent approach will treat municipalities, businesses and other curbside users equitably and achieve broader and more effective urban design and transportation planning outcomes in a coordinated manner. Therefore, the primary focus of this curbside management strategy is to develop a regionally consistent approach, especially along the key Regional corridors where the Region and community are making substantial investment in transportation and streetscape infrastructure.

**Truck Route Planning in Waterloo Region**

The following provides a set of general principles for how the Region should evaluate and select goods movement (truck) routes in Waterloo Region. These principles provide clarity on the role and function of truck routes, which can help justify the inclusion or exclusion of specific routes or corridors.

**Truck Route Planning Principles**

The Region’s current truck route policy permits all heavy trucks to use Regional roads unless there are valid reasons for imposing prohibitions or time restrictions on a particular road, as per Schedule 19. The policy specifically states that prohibitions for heavy trucks should be considered for roadways not designed for heavy truck traffic or long vehicles. It goes on to further state that time restrictions should be considered when the section of roadway cuts through front-lotted urban residential areas with numerous driveways where no suitable alternative route (with a four-kilometre radius) is available. In addition, each heavy truck route should still exhibit basic truck route principles described as follows. A route that does not meet these principles may be considered for further exemption on a case-by-case basis.

1. **Consider social, environmental and economic impacts** – The basic purpose of this Goods Movement Strategy is to determine the best method of routing trucks through the Region with the minimum visual, safety, noise and traffic impacts, while retaining the most efficient system possible so goods can be delivered expeditiously. In other municipalities, it has been found that removing links from the truck route system will usually not decrease truck travel, but merely relocate it to other nearby routes. This in turn will typically increase overall travel distance and time for trucks, thereby
decreasing overall road safety and contributing to an increase in air pollution, and trucking costs.

2. **Routing consistency** – Routing decisions should be made in a way that attempt to be as fair as possible to residents and businesses throughout the Region. For instance, time-of-day truck restrictions after business hours or part-time truck routes can be used to create a compromise between recognized goods movement corridors and less compatible land uses (e.g., residential areas, hospitals, etc.). However, on a region-wide basis this may cause significant problems for truck deliveries in the overnight period.

3. **Avoid Parallel Route Duplication** – All provincial highways, and Regional roads except where exempted, are considered truck routes by the Region. However, even with this grid of Regional roads / truck routes, route redundancy (i.e. nearby parallel) truck routes should be avoided where possible.

4. **Avoid Active Transportation Streets** – Ideally, the Region’s truck route system would avoid bike routes as part of the Regional and local municipal Active Transportation master plans. When not practical, higher volumes of truck traffic increase the need to consider more separated active transportation facilities.

5. **Minimize the demand for enforcement** – The Waterloo Region Police Services provide limited truck route enforcement because truck route violations are typically not a high priority. The objective of the truck route planning guiding principle is to develop a system that is logical to the trucking industry so that the routes do not require high levels of police enforcement to establish and maintain compliance.

6. **Route connectivity and continuity** – The Region’s truck route system should remain continuous because it follows the Regional road network.

**Recommended Regional Truck Route Network Changes**

The Region’s truck route network is recommended to be reviewed and updated subject to a further detailed study building on and applying the process above. The City of Cambridge through its Transportation Master Plan has identified a preliminary request to the Region to re-configure truck routes upon completion of the South Boundary Road between Highway 24 and Franklin Boulevard. Upon completion of the project (currently under construction, scheduled opening in 2020), the City has requested the Region restrict heavy trucks on Water Street and Ainslie Street in the downtown. This request should be incorporated into a review of the network.
6. Regional Goods Movement Study – Terms of Reference

The 2010 RTMP recommended that a Goods Movement Study be prepared for Waterloo Region. This section provides an updated Terms of Reference for a Regional Goods Movement Study.

Study Purpose
To develop a Goods Movement policy and network based on the role and function of the Region’s road network, the provincial highway network and the rail network, and considering the existing and planned locations of Employment Lands. This network should provide connections to and through the Region’s Urban Areas, existing and planned Employment Lands, as well as to the existing and potential future rail inter-modal facilities.

Study Scope
The study scope will cover all Region of Waterloo Area Municipalities with a focus on the Country Side Line Urban Areas as defined by the Regional Official Plan. This includes provincial highways and all Regional Roads in this area.
The reason for this wide urban area study scope is that the need and impacts of goods movement are equally important to residents and businesses in the smaller rural municipalities as in the larger urban areas. Also, outside of the urban areas, all Regional Roads play an important goods movement role in supporting agricultural businesses and industries in rural communities.

**Best Practices Review**

A best practices review will be conducted on goods movement studies in southern Ontario, and elsewhere where appropriate. This could include a review and update of regulations for loading/unloading local deliveries to improve goods movement efficiency. Examples include the Metrolinx GTHA Urban Freight Study and the Peel Region Goods Movement Strategy 2017-2021. Other suggested peer review sources provincially and nationally will be requested.

This review should also be used as an opportunity to revisit and update the truck route planning principles presented in Section 5.

**Study Timeframe**

The future of goods movement in Waterloo Region in the short, medium and long term timeframes to 2041.

**Goods Movement Industry Stakeholder Consultation**

Involvement of and consultation with goods movement stakeholders in Waterloo Region is critically important in developing a supportable goods movement strategy. A proposed Stakeholder Consultation Plan with a list of recommended contacts and proposed engagement techniques is required.

Stakeholder consultation will identify current issues, future challenges, potential opportunities and solutions for goods movement today and to 2041.

The Stakeholder Consultation Plan will include a mandate and terms of reference for a Goods Movement Roundtable or similar group to facilitate ongoing discussions on goods movement in the Region.

**Goods Movement Management Requirement**

The study will recommend the use and type of truck route pavement surfaces / structures when they are being constructed or programmed for rehabilitation or reconstruction to
enable them to accommodate heavier loads. Heavy load restrictions should also be reviewed as part of the identification of the Regional strategic goods movement network.

The study will also consider measures to optimize the efficiency of on-and off-street loading of goods and other curbside management, including regulatory and enforcement measures that could benefit the Region, in partnership with the local municipalities. Such initiatives should be integrated with Regional and local land use planning, with clear requirements for loading facilities in new developments.

Enforcement of on-street loading zones will be reviewed as a priority of this study. This will include a best-practices review of managing on and off-street loading, including regulation and enforcement.

The study will identify partnership opportunities and techniques with other surrounding area municipalities and agencies for the collection and analysis of goods movement data.

The study will investigate opportunities to incorporate existing and future truck demands into the Region’s transportation model and develop Key Performance Indicators (KPIs) that takes into account Goods Movement while assessing roadway corridor improvement requirements.

**Highway 401 Connection Update**

The Study will include an assessment of improved and expanded transportation connections to Highway 401 in Waterloo Region as required to support goods movement to 2041.
7. Conclusion

Goods movement is important to the regional and local economies, and a well-functioning system of roads and highways will continue to play a significant role in economic growth. Today, and likely over the next 20 years, most businesses in the Region will continue to move goods by truck. With the coming of New Mobility concepts (that have the potential to offer cost saving benefits to businesses), changes in consumer behavior, and growing environmental concerns, the Region will have to position itself to investigate alternative methods to trucking for goods movement. These may involve using existing modes such as rail or air, optimizing trucking through off-peak deliveries or low-emission vehicles, and/or taking advantage of new modes such as delivery drones or autonomous vehicles.

However, considering that trucking still plays an important role in economic growth in the Region in terms of efficient goods movement, Moving Forward (the 2018 TMP) has assessed the Region’s transportation network and recommends strategic road capacity improvements designed to accommodate increased movement of people and goods. The 2018 TMP also recommends the Region carry out a Goods Movement Study to better understand and explore policies and initiatives to improve the efficiency of goods movement.