Aggregate Resources Policy Review

Transportation Technical Paper

Region of Peel and Town of Caledon

May 8, 2023

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1 Introduction

Aggregate resources are an important component of the economy for the Region of Peel and Town of Caledon. Ontario's Aggregate Resources Act defines aggregates as "*gravel, sand, clay, earth, shale, stone, limestone, dolostone, sandstone, marble, granite, rock or other prescribed material. Alternatively, it is described as any combination of sand, gravel, or crushed stone in a natural or processed state. Aggregates are non-renewable resources found in certain fixed locations and are used in the construction of roads, homes, schools and offices as well as other industrial and institutional buildings"*.

The availability of local aggregates is advantageous in reducing transport distances to local construction sites – a savings in costs and vehicle emissions. However, the transport of aggregate resources by truck has significant impact on road infrastructure (pavement and road structure), congestion, safety, air quality, noise, dust, and debris.

This technical memorandum provides a transportation perspective on the implications of aggregate resources in Peel Region as part of the Review of Aggregate Resource Policies in the Regional and Caledon Official Plans.

The aggregate resources policy review and review of aggregate resources goods movement will support future work identified in the Region's Goods Movement Strategic Plan, under Action Items #6, to undertake an in-depth aggregate movement study.

2 Planning Policy Context

The policy framework for managing aggregate resources is governed by policies at the provincial, regional, and local levels. The licencing and management of aggregate mining operations is regulated by the provincial Ministry of Natural Resources and Forestry (MNRF) under the Aggregate Resources Act. The planning for aggregate resources is shared between the Province, the Region, and the local area municipalities. Policies that apply to the land use planning and assessment of impacts related to aggregate sites include the Aggregate Resources Act, Planning Act, Provincial Policy Statement, Growth Plan, Greenbelt Plan, Oak Ridges Moraine Conservation Plan, Niagara Escarpment Plan, Regional and local Official Plans, and local zoning by-laws.

The current policy framework in Peel and Caledon was also informed by the Caledon Community Resources Study (CCRS) that was undertaken between 1996 and 1998 with extensive consultation with stakeholders in the community and the aggregate industry. The CCRS examined many issues related to aggregate resource management and ultimately informed the aggregate policies in the current Official Plans for Caledon and Peel. The policy requirements ensure that the structural adequacy, capacity and safety of site access and haul routes exists or is provided when new sites are proposed and that community impacts are minimized.

2.1 Joint Minerals Aggregates Policy Review

The Joint Mineral Aggregates Policy Review will be undertaken by the Region of Peel and the Town of Caledon in collaboration. It will provide a characterization of aggregate resources in both Peel and Caledon, undertake research to describe the trends in aggregate production, an analysis of the recent changes in Provincial policy, and identify policy gaps in the Peel and Caledon Official Plans where revisions are required to conform with Provincial plans. The broader policy review will also include an evaluation of the methodology for mapping aggregate resources and identifying potential updates to Reginal Official Plan mapping to reflect revised aggregate resource mapping by the MNRF in their Aggregate Resource Inventory Papers (ARIP) mapping database. As part of the policy review, experience from other municipalities shall be examined to understand policy considerations for issues where there may be limited direction from the Province. Policy approaches for other top aggregate municipalities that should be considered for review include: Oxford County, Region of Waterloo, Township of North Dumfries, and Halton Region.

3 Background

3.1 Aggregate Resources in Peel Region

PITS AND QUARRIES

The Caledon Community Resources Study (CCRS) estimated that the sand and gravel resource areas within Peel Region contained an estimated 464 million tonnes of aggregate resource of primary significance and 275 million tonnes of resource of secondary significance. In the 20-year period since the CCRS was published, over 85 million tonnes of aggregate have been produced in Peel Region[1].

Caledon is one of the top aggregate producers in Ontario – there are currently 23[2] licences for aggregate activity in Caledon and one licence in Mississauga. Nineteen of the licences are for pits (sand and gravel) and five licenses for quarries (bedrock).

Many other pits and quarries are located near Peel Region – to the north of Caledon in the Townships of East Garafraxa, Amaranth, and Mono and to the west of Caledon in the Town of Erin. These nearby pits and quarries likely also use roads in Peel Region to access the highway network and construction sites in the broader region.

There have been six aggregate applications in Caledon in the past 20 years. Of the six applications, one is still in process, three were approved, one was approved through the Ontario Municipal Board (OMB), and one was denied by the OMB. For the applications that went to the OMB, key issues included environmental impacts, cultural heritage impacts, concerns regarding the Adaptive Management Plans and proposed haul routes.

[1] The Ontario Aggregate Resources Corporation Production Statistics.
[2] Pits and Quarries Online (https://www.ontario.ca/page/find-pits-and-quarries), Ministry of Natural Resources and Forestry, as of August 2022.

CONCRETE AND ASPHALT PLANTS

Concrete and asphalt plants typically store aggregates on site, receiving aggregate from pits and quarries and distributing to construction sites as concrete and asphalt. Several concrete and asphalt plants are located in the industrial areas of Brampton and Mississauga. This indicates an established travel pattern for a portion of aggregates produced at the pits and quarries in the rural areas of Caledon (and beyond) to urban, industrial areas where aggregates are processed prior to delivery to construction sites that are dispersed across the broader region.

AGGREGATE RECYCLING

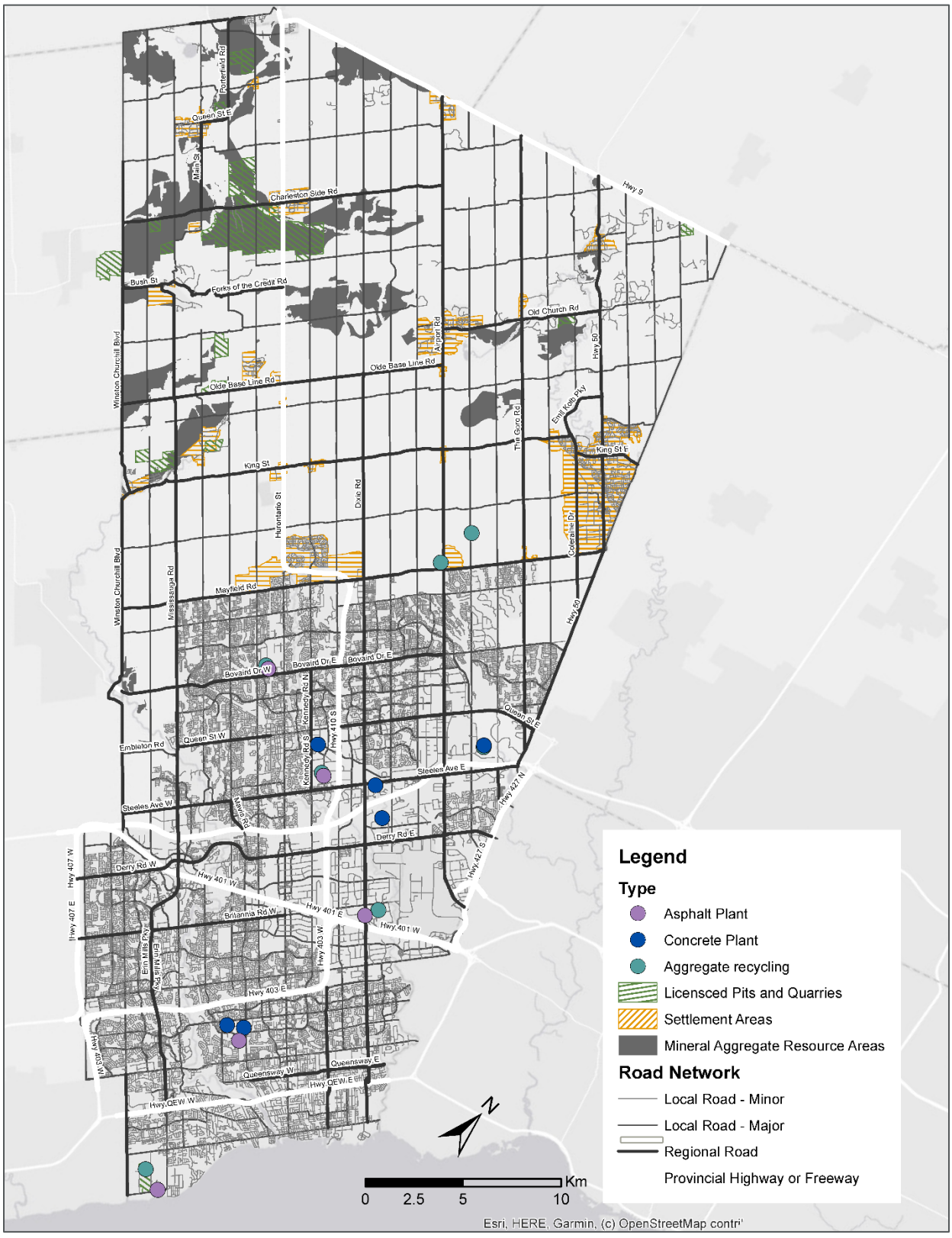
Aggregates can also be recycled for reuse. Waste concrete and asphalt can be collected, crushed, and re-used as aggregate for new building material. Aggregate recycling is often a stand-alone activity located in industrial areas and outside of a licenced pit/quarry site. In Peel Region, several aggregate recycling sites are located in the industrial areas in Caledon, Brampton, and Mississauga.

Currently, recycled aggregate accounts for only a small percentage of aggregate supply in Ontario. One of the leaders in using recycled aggregate in Ontario is the Ministry of Transportation where about 20% of aggregate used for provincial road construction projects are recycled materials[3]. Primary aggregates from pits and quarries are expected to remain the main source of aggregate in Ontario.

Figure 3.1 maps the location of pits, quarries, and resource areas, as well as the location of known aggregate recycling, concrete plants, and asphalt plants[4] in Peel Region. A list of these sites is provided in **Appendix A**.

[3] Aggregate Recycling by Ontario Municipalities, A Research Report on the Leaders and Laggards, 2018. Toronto and Area road Builders Association (TARBA)
[4] Aggregate recycling and concrete plants were identified through online research. Additional sites may exist.

Figure 3.1: Map of Aggregate Pits, Quarries and Resources in Peel Region

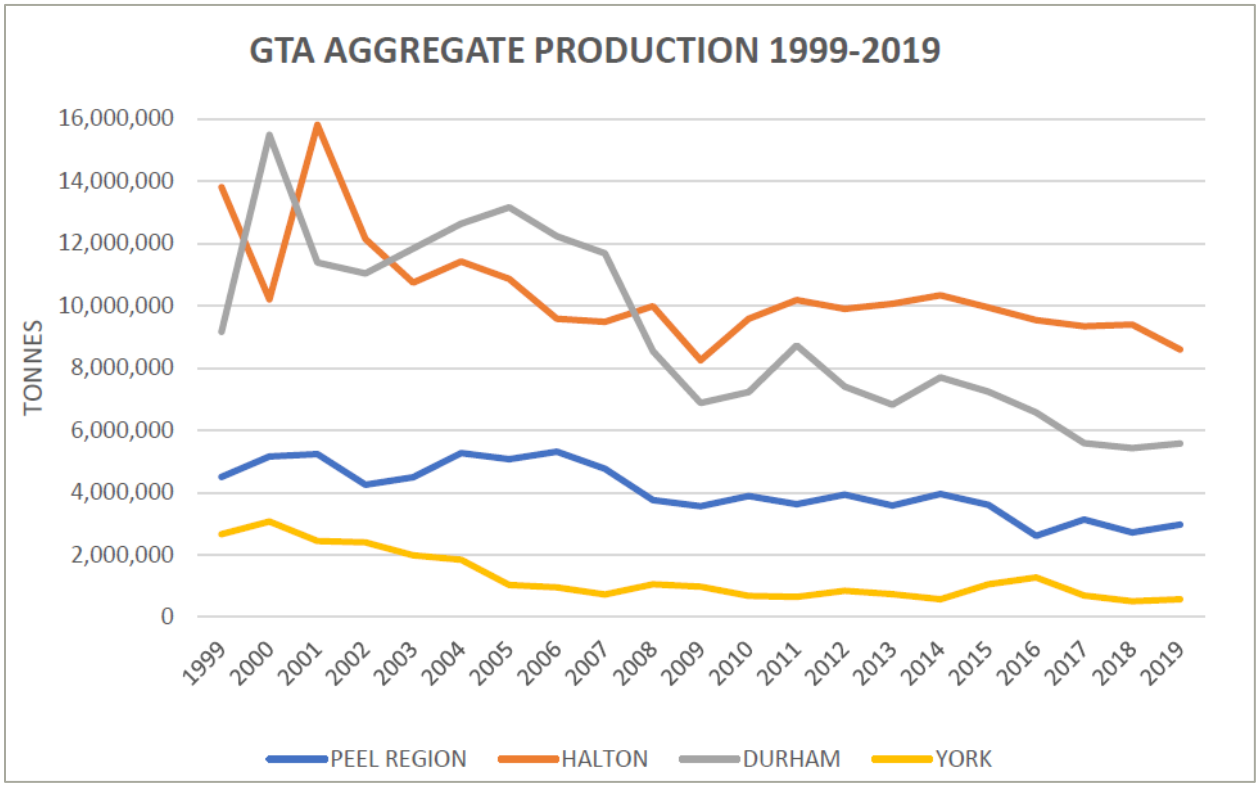


3.2 Aggregate Production Trends

The Ontario Aggregate Resources Corporation (TOARC) collects and publishes annual aggregate production statistics as part of its mandate relating to the collection and disbursement of aggregate resources charges/fees in Ontario. Published information indicates that aggregate production in Peel Region has been steadily declining over the past 15 years with annual production dropping below 3 million tonnes in recent years. This downward trend in aggregate production is also observed in other regions in the Greater Toronto Area (GTA) as shown in **Figure 3.2**.

Historically, aggregates extracted in Caledon have been primarily sand and gravel, but it is recognized that over two-thirds of aggregate resources identified on geological mapping is stone, and some of it is known to be a source of high-quality road building and construction bedrock aggregate. Currently, an increasing amount of crushed stone consumed in the Greater Toronto Area is being imported from neighbouring municipalities such as Halton Region, Simcoe County, and City of Kawartha Lakes. Increasing demand for crushed stone is expected to increase pressure to licence quarries in Caledon.

Figure 3.2: Trend in Aggregate Production in Peel Region and other GTA Municipalities



Source: The Ontario Aggregate Resources Corporation Annual Production Statistics available at https://toarc.com/production-statistics/.

3.3 Transporting Aggregates

The movement of aggregates by trucks through Peel Region is significant. Trucks remain the preferred freight choice to deliver aggregates due to flexible first and last mile needs of construction projects at specific site locations. Aggregates can be transported in many types of trucks that include tanks, hoppers or boxes that can dump or spread aggregate cargo. **Figure 3.3** shows examples of trucks used to transport aggregates.

Figure 3.3: Sample of Trucks Used to Haul Aggregates

Dump truck

Photo: Mack Trucks

Hopper or Bottom Dump Trailer

Photo: TruckPaper

Side Dump Trailer

Photo: SmithCo Side Dump Trailers

Live Bottom Trailer

Photo: Wikipedia

As noted in MTO's *Peel Commercial Vehicle Travel Profile* (2015) (see **Section 4.1**), trucks carrying minerals (primarily gravel) account for 6% of commercial vehicle trips (29,000 weekly trucks) but 20% of cargo weight in Peel Region (642,000 tonnes weekly). The high cargo weight of aggregates has a significant impact on the wear and tear of public infrastructure – requiring a higher standard of pavement design and/or more frequent road rehabilitation.

Heavy trucks also impact traffic operations – due to their weight, heavy trucks accelerate slower from a stop and decelerate on inclines – which may add to overall delay on the network. On corridors where trucks must share space with more vulnerable road users such as pedestrians and cyclists, trucks also present a safety concern. Examples of corridors where there are higher truck traffic and pedestrian activity include Charleston Sideroad (RR 24) and Hurontario Street

(Hwy 10) through Caledon Village and Airport Road (RR 7) and Old Church Road (RR 22) through Caledon East.

3.4 Caledon Haul Routes

The Town of Caledon's Official Plan policy 5.11.2.5.1 permits haul routes for new aggregate operations only on High Capacity Arterials and three other allowable corridors (Charleston Sideroad, Old Church Road, and King Street). The current designated haul routes in Caledon are listed below and shown in **Figure 3.4**.

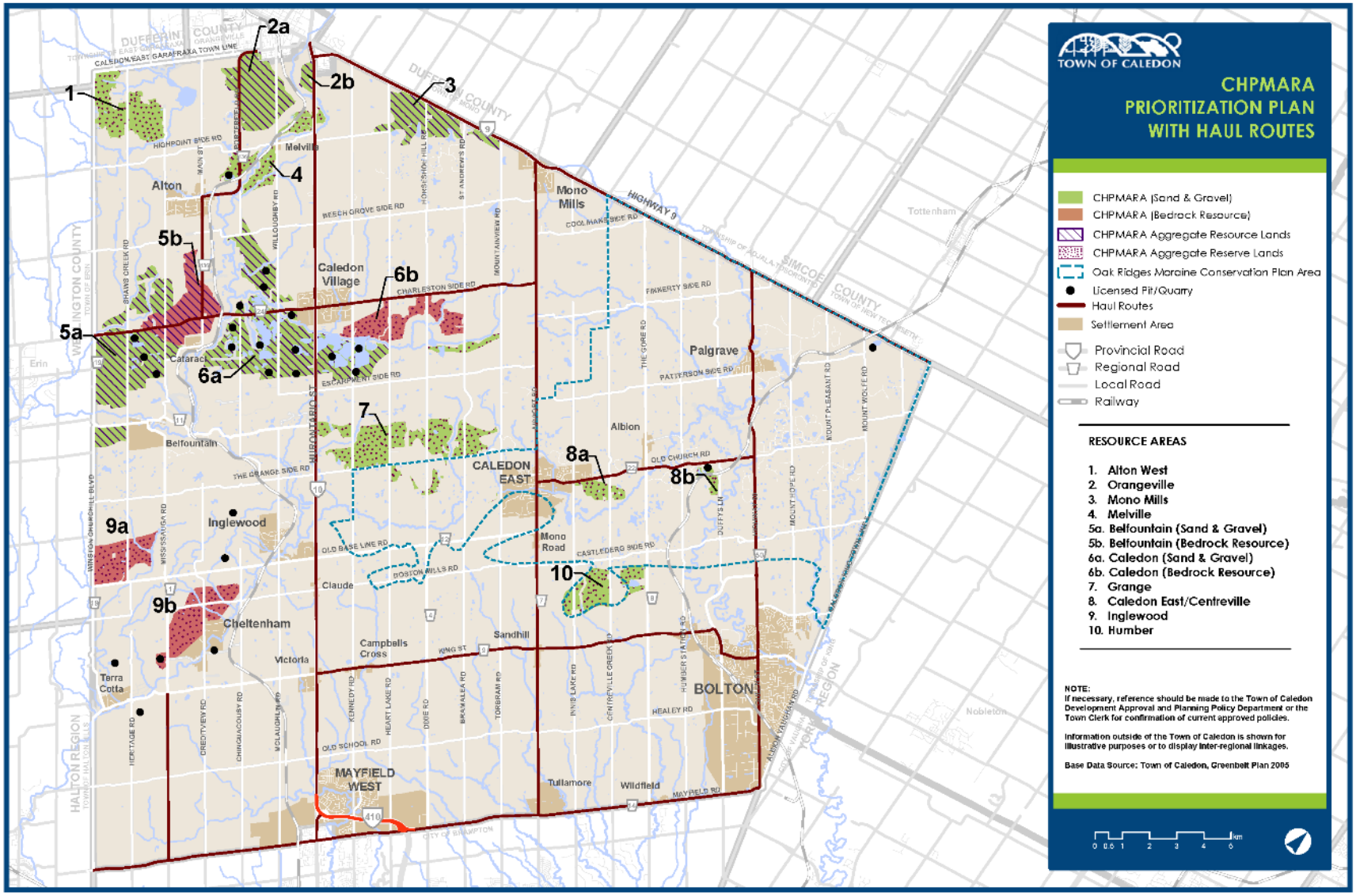
- Provincial Highways
  - Highway 9
  - Highway 10 (Hurontario Street)
- North-South Regional Roads (RR)
  - RR 1 (Mississauga Road) – from RR 9 (King Street) to RR 14 (Mayfield Road)
  - RR 136 (Porterfield Road – Queen Street E – Main Street)
  - RR 7 (Airport Road)
  - RR 50 (Highway 50[5])
- East-West Regional Roads
  - RR 24 (Charleston Sideroad)
  - RR 22 (Old Church Road) – from Airport Road to RR 50 (Highway 50)
  - RR 9 (King Street) – from Highway 10 to RR 50
  - RR 14 (Mayfield Road)

For comparison, the initial haul routes developed through the Caledon Community Resource Study (see **Section 3.6**) are shown in **Figure 3.7**.

Of the three lower tier municipalities in Peel Region, only the Town of Caledon has identified designated haul routes for aggregate transport. Haul routes are not defined in the City of Brampton nor City of Mississauga Official Plans.

[5] "Highway 50" through Peel Region is under the Region's jurisdiction as Regional Road 50.

Figure 3.4: Caledon Haul Routes



Source: Haul routes map provided by Town of Caledon (as of January 2021)

3.5 Peel Region Strategic Goods Movement Network

The movement of goods of all types, not just aggregate, is a significant component of travel demand on the road network in Peel Region. The airport, freight and logistics industries near the airport, major employment areas in Mississauga, Brampton, and Caledon, as well as the natural resource areas and prime agricultural areas in Caledon, each contributes to high truck traffic across Peel Region. The Ministry of Transportation's 2012 Commercial Vehicle Survey data indicate that daily truck trips in Peel Region (origins and destinations) are nearly three times[6] higher than then number of daily truck trips in York Region or City of Toronto, the next busiest regions for truck activity.

In response to the importance of goods movement to the Peel economy, the Region of Peel undertook the Study of Goods Movement in Peel (2004) to assess how the transportation system could better support goods movement while also protecting the interests of other road network users. That study recommended the development of a network of designated goods movement corridors.

The Region's Goods Movement Strategic Plan is a key component of the Long Range Transportation Plan, which is the overarching document that guides transportation planning in Peel. The first Goods Movement Strategic Plan 2012 to 2016 identified a number of actions to improve how goods are transported in and through Peel that also work to reduce congestion and community impacts. The transportation system directly impacts the competitiveness of businesses in Peel Region and its performance is priority issue for industries that depend on moving goods efficiently.

The Strategic Goods Movement Network Study, completed in 2013, identified a strategic goods movement network, as shown in **Figure 3.5**, to protect and preserve goods movement corridors. The goods movement network is comprised of three types of routes: 1) provincial network (400-series, QEW), 2) primary truck routes, and 3) connector truck routes that serve all parts of Peel Region. Identifying a goods movement network allows for the planning of the transportation system to protect for rights-of-ways for future improvements, to integrate transportation with municipal land use planning, and to construct the goods movement corridors to appropriate design standards for high volumes of trucks (i.e., roadway geometry, pavement structure, axle load restrictions, etc.).

With respect to aggregates, the Goods Movement Strategic Plan 2017-2021 recognizes that the transport of aggregates needs to be studied separately to manage its impacts on the community and road infrastructure. As a commodity, aggregates are high volume/low value good with a significant impact on pavement structure.

The current system of Regional strategic goods movement network routes overlayed on Caledon's haul routes are shown in **Figure 3.6**. Strategic goods movement corridors that are not also designated as haul routes in Caledon include:

[6] Commercial Vehicle Activities | MTO iCorridor: https://icorridor-mto-on-ca.hub.arcgis.com/ apps/ a0cc97d7ca8643998033b5ba7183e838/explore

- Winston Churchill Blvd (RR 19) (between 32 Sideroad and Beechgrove Sideroad)
- Olde Base Line Road (RR 12) (east of Hurontario Street to Town limits)
- Horseshoe Hill Road/Dixie Road (RR 4) (between Highway 9 and Lakeshore Road)
- Mountainview Road (connector only; between Charleston Sideroad and Olde Base Line Road)

The goods movement network includes several segments of Regional Roads that have spring axle load restrictions and two segments of Regional Roads that have axle load restrictions year-round as summarized in **Table 3-1**. These load restrictions limit route options for aggregate movements, which are typically heavy loads. Addressing road structure deficiencies would maximize the benefit of the goods movement network.

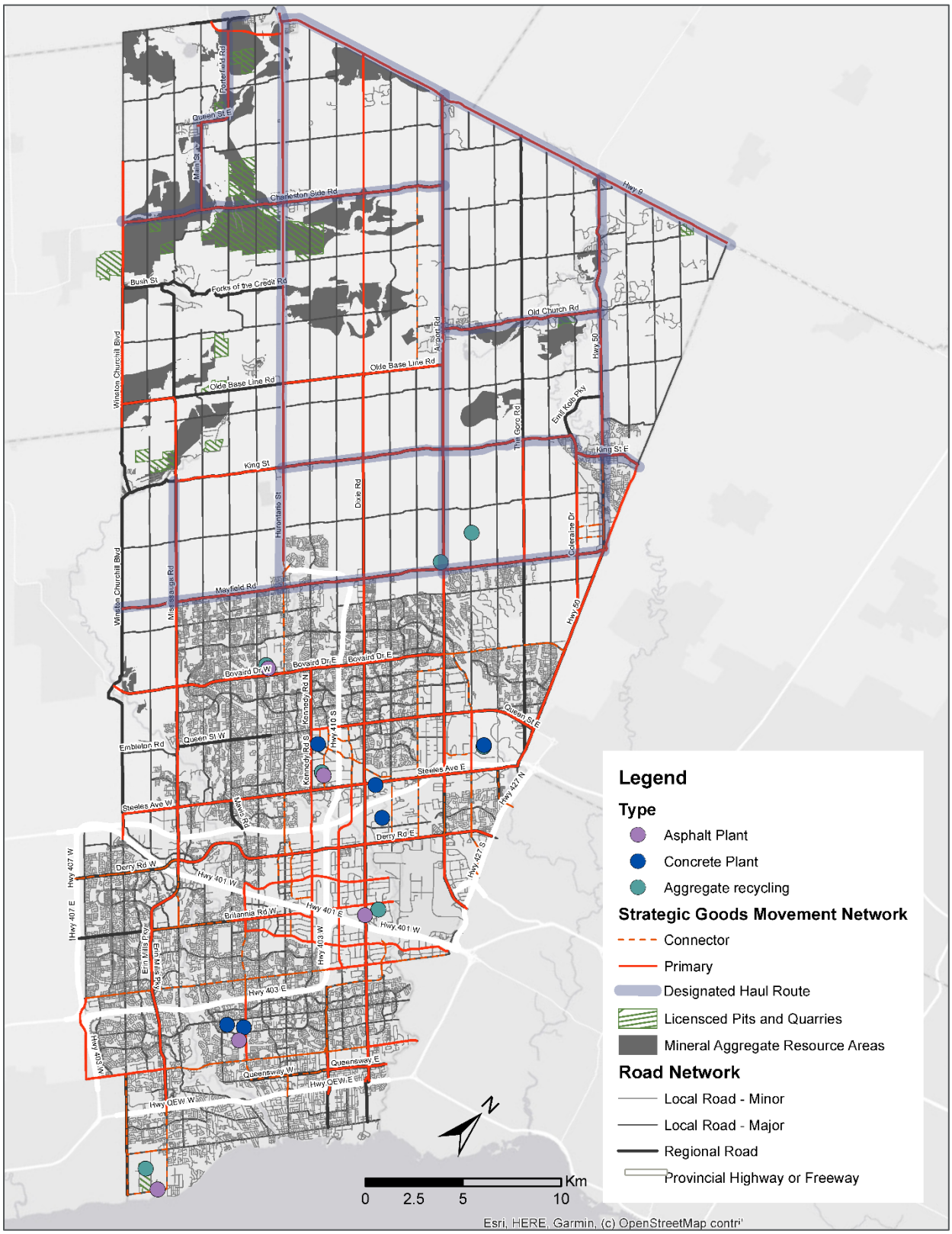
Table 3-1: Axle Load Restrictions (5,000 kg)

Regional Road	From	To	Prohibited Months or Times	Is corridor on Strategic Goods Movement Network?
RR 1 Mississauga Road	RR 14 Mayfield Road	RR 11 Forks of the Credit	March and April	Yes (partial); Caledon Haul Route
RR 4 Dixie Road	RR 9 King Street	RR 12 Olde Base Line Road	March and April	Yes
RR 8 The Gore Road	RR 50 Hwy 50	RR 107 Queen Street	March and April	-
RR 8 The Gore Road	RR 9 King Street	South limit of Hwy 9	March and April	Yes (partial)
RR 9 King Street	Creditview Road	Peel/Halton boundary	March and April	Yes (partial)
RR 11 Forks of the Credit	West limit of Hwy 10	Peel/Wellington boundary	March and April	-
RR 12 Olde Base Line Road	McLaughlin Road	RR 19 Winston Churchill Blvd	March and April	Yes (partial)
RR 19 Winston Churchill Blvd	RR 15 Steeles Avenue	RR 107 Bovaird Drive	March and April	-
RR 19 Winston Churchill Blvd	RR 107 Bovaird Drive	RR 11 Forks of the Credit	Anytime	Yes (partial)
RR 150 Coleraine Drive	RR 50 Hwy 50	RR 14 Mayfield Road	Anytime	Yes

Figure 3.5: Strategic Goods Movement Network, 2013

Source: Goods Movement Strategic Plan 2017-2021, Figure 12: Region of Peel SGMN 2013

Figure 3.6: Current Caledon Haul Routes and Strategic Goods Movement Network



3.6 Caledon Community Resource Study

Completed in 1999, the Caledon Community Resource Study included a comprehensive public consultation program to assess community concerns regarding the management of aggregate resources. General themes that are still applicable today include:

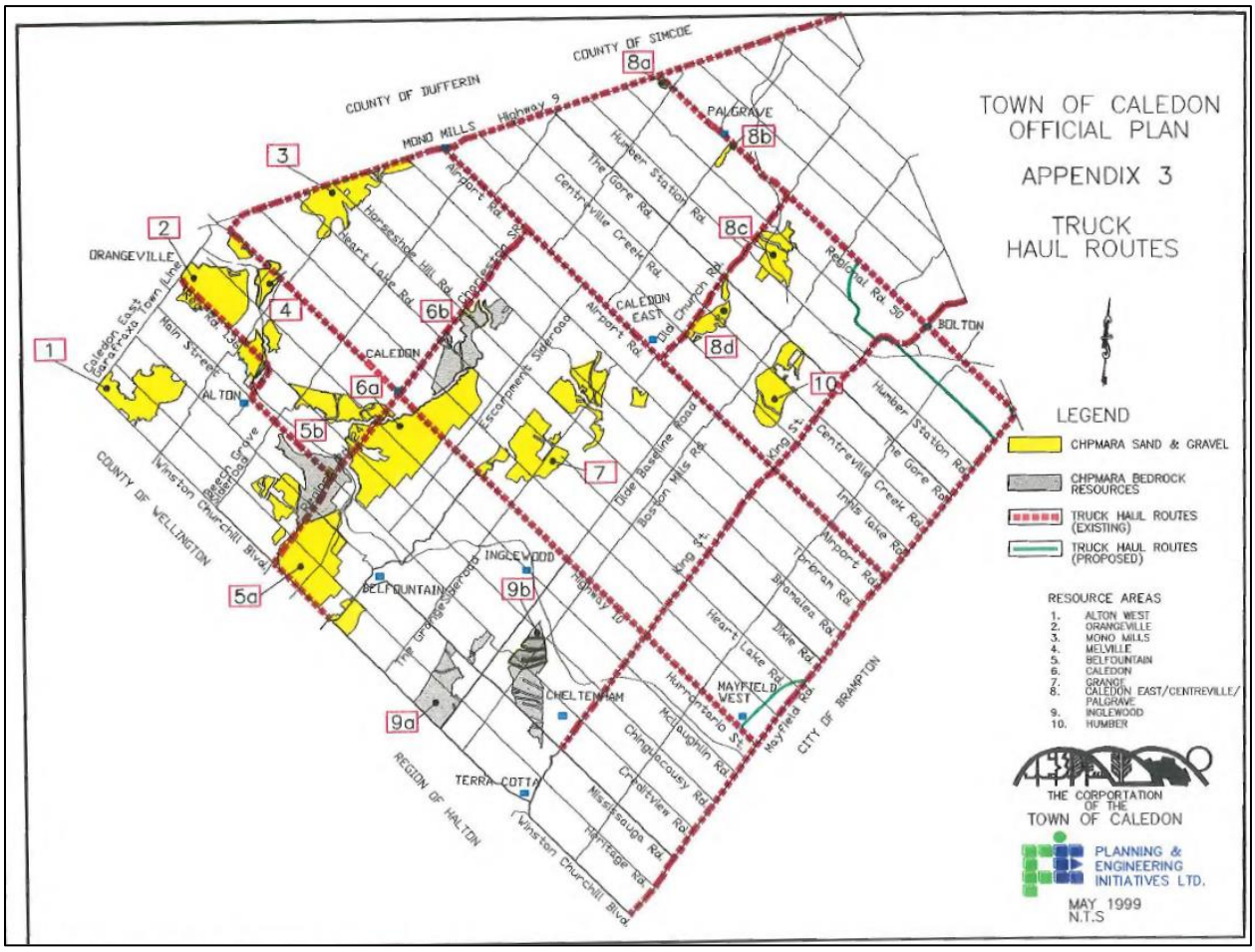
- The concentrated aggregate resource areas can have significant local impact on Caledon Village at the crossroads of Highway 10 and Charleston Sideroad (RR 124). Traffic congestion at Highway 10 and Charleston Sideroad (RR 124) in Caledon Village, and the high truck volumes through the community are a concern for local residents. Based on the proximity of many aggregate producers, Highway 10 provides the most direct route for transporting aggregate to the north or south.
- Load weight restrictions in the southwest area Caledon on RR 11 (Bush Street and Forks of the Credit), RR 1 (Mississauga Road), RR 12 (Old Base Line Road) and RR 9 (King Street) from Winston Churchill Boulevard to Mississauga Road leads to limited routes in Caledon that are available/suitable for heavy trucks. As trucks are “funnelled” to these limited number of routes, the proportion of trucks increases on some road segments.
- RR 19 (Winston Churchill Boulevard) was identified as a potential alternative haul route. RR 19 is a primary goods movement route between Wellington Road 42 and Wellington Road 22, but it is not a designated haul route due to load weight restrictions.
- Studies for alternative bypass haul routes around Caledon Village were also suggested to address impacts to Caledon Village.
- Speeds of large trucks, slow trucks on hills, and spillage of aggregate on the surrounding road network impacts other road users and area residents.
- A desire to maintain Caledon’s “rural character” in tandem with mining activities.
- Working with aggregate operators and trucking operators on appropriate traffic management of aggregate transport.
- Other significant, non-transportation issues for the community included negative impacts on the natural environment and the pace and quality of site rehabilitation once mining activities were completed.

Through the Caledon Community Resource Study, minimum criteria for a road to be considered suitable for a haul route were determined, as follows:

- Roads must not have seasonal axle weight restrictions
- Roads must have acceptable vertical and horizontal alignments
- Roads must be hard surfaced (tar and chip, asphalt)
- Roads must be identified as a Major Road under the Regional Official Plan or as a High Capacity Arterial under the Town of Caledon Official Plan

The recommended haul routes at the time of the study are shown in **Figure 3.7**.

Figure 3.7: Caledon Community Resource Study Recommended Haul Routes



The designated haul routes have largely stayed the same in the intervening years with only the following modifications that have been incorporated into the Town's current haul route network (as shown in **Figure 3.4**):

- Addition of RR 1 (Mississauga Road) from RR 9 (King Street) to RR 14 (Mayfield Road)
- Removal of RR 9 (King Street) from RR 1 (Mississauga Road) to Highway 10
- Removal of RR 9 (King Street East) from RR 50 (Queen Street) to Albion-Vaughan Road

4 Data Review

The available data for truck movements generally does not differentiate between aggregate trucks and trucks carrying other goods. Automated traffic counts classify vehicles by length or axles and collision reports group trucks into a few general categories. These sources of data do not report whether the trucks are carrying a load and, further, do not classify the goods being transported. As discussed in **Section 3.3**, aggregates are transported using a variety of truck types and sizes. Only the provincial Commercial Vehicle Survey (see **Section 4.1**) collects data on the type, value and weight of goods being transported in the trucks travelling in and through Peel Region.

4.1 Commercial Vehicle Survey Data (2012)

The Ministry of Transportation collects goods movement data through the Commercial Vehicle Survey (CVS) program from time to time, typically at 5 to 10-year intervals. Through a partnership between MTO and Peel Region, the 2012 Ontario CVS data (collected between 2010 and 2013) was augmented with additional data collected at 26 sites on key freight routes in Peel Region in 2014.

The findings of the CVS in Peel Region were documented in the *Peel Commercial Vehicle Travel Profile* report dated October 30, 2015. Key findings are described below.

The survey data confirms the high volume and value of goods of all types that travel through Peel Region. A significant proportion of commercial vehicle activity in Ontario is Peel-based. That is, many commercial vehicle trips have an origin and/or destination in Peel Region.

- 36% of commercial vehicle trips (342,000 weekly trips) are Peel-based
- 37% of value of goods shipped by commercial vehicles ($7 billion of weekly commodity value) are Peel-based
- 29% of cargo weight of goods shipped by commercial vehicles (1.9 million tonnes weekly) are Peel-based

4.1.1 Aggregate Volumes and Values

Aggregates, or “minerals” as categorized in the Commercial Vehicle Surveys, is a major commodity transported in and through Peel Region.

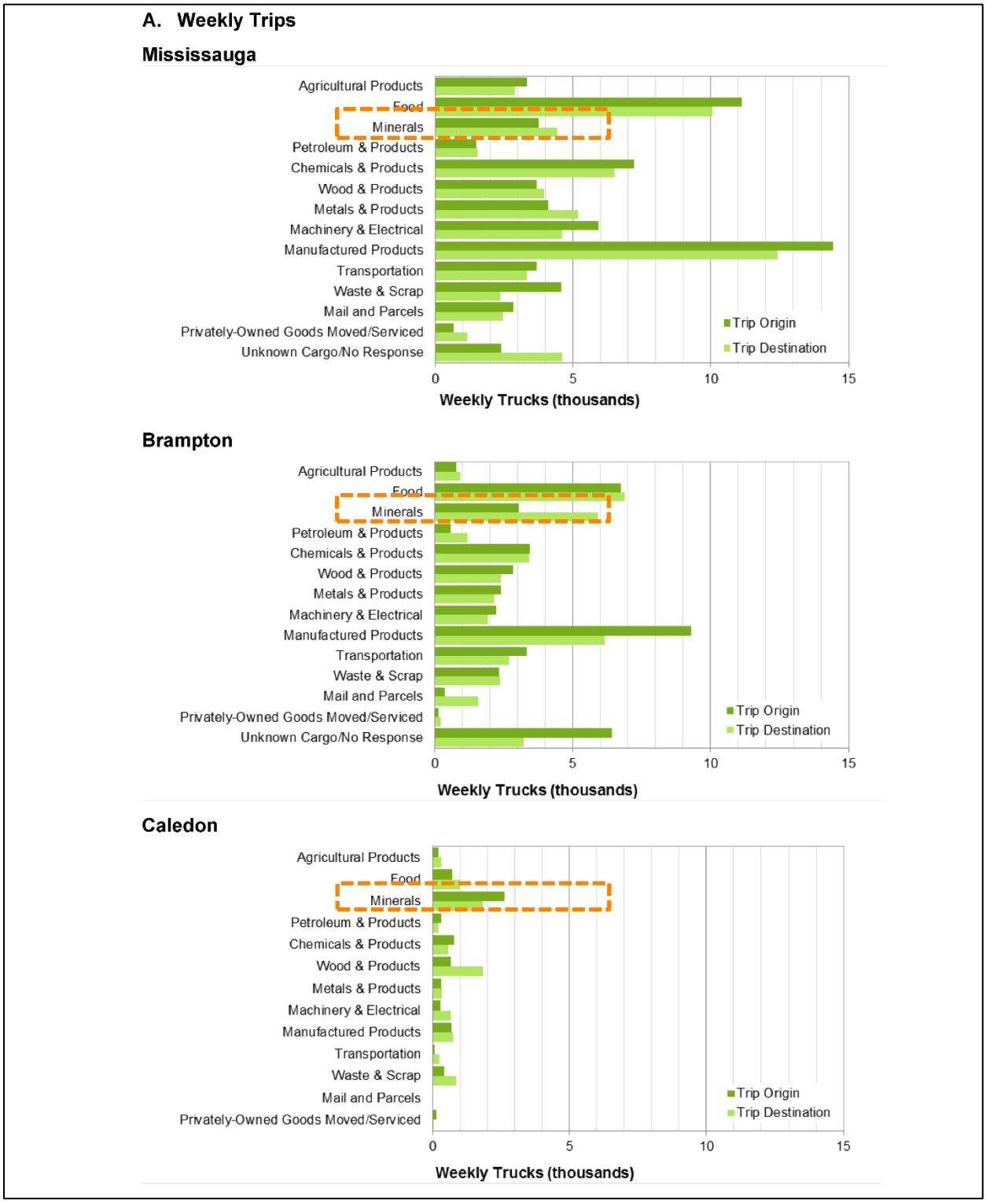
- The share of commercial vehicle activity for “minerals”, which is largely gravel, in Peel Region is:
  - 6% of commercial vehicle activity in Peel by commodity type (29,000 trips weekly)
  - 2% of commercial vehicle activity in Peel by commodity value ($214 million weekly)
  - 20% of commercial vehicle activity in Peel by cargo weight (642,000 tonnes weekly)
- With respect to infrastructure impacts (i.e., pavement), that is measured in terms of equivalent single-axle load (ESAL) by the kilometres travelled, the *Travel Profile* report noted the commodity with the highest ESAL-km is minerals. Therefore, the transport of sand and gravel from pits and quarries has significant impact on road infrastructure due to weight.

- While it is expected that the transport of minerals is a major component of goods movement in Caledon, the number of weekly trips carrying minerals is higher in Brampton and Mississauga as shown in **Figure 4.1**. This reflects the dispersed travel patterns of aggregates to construction sites, aggregate recycling sites, and concrete/asphalt plants located in Brampton and Mississauga. As well, this indicates that the aggregate needs of Brampton and Mississauga are greater than the volume of aggregate that is produced in Caledon, drawing aggregate trips from other areas such as Milton-area quarries.
- Overall, 12% (7,335) of weekly loaded trucks in Caledon carries minerals. In comparison, 6% (13,186) of weekly loaded trucks in Brampton carry minerals and 5% (21,176) of weekly loaded trucks in Mississauga carry minerals. It is assumed a similar number of empty aggregate truck trips are made weekly. (The CVS reports empty trucks but does not specify if they are aggregate-related empty trucks.)
- Looking at specific data collection stations in Peel, the following survey stations included a significant share of commercial vehicles carrying mineral cargo:
  - Caledon Village Highway 10 (NB) (Highway 10, 800 m south of RR 24) – 20% (1,445) of weekly trucks carry minerals
  - Victoria (SB) (Highway 10, 2 km north of King Street) – 24% (1,854) of weekly trucks carry minerals
  - Brampton Steeles/Mississauga (EB) (Steeles, west of Mississauga Road) – 18% (1,084) of weekly trucks carry minerals
  - Caledon East Airport Road (SB) (Airport / Old Church Road) – 29% (823) of weekly trucks carry minerals

Aggregate movements make up only 6% of total truck activity in Peel Region. However, on Highway 10 between Charleston Sideroad (RR 24) and King Street (RR 9) in Caledon aggregate trucks make up 20-24% of weekly truck activity. This level of activity is of concern to residents of Caledon Village and other settlement areas along truck/haul routes. While the number of aggregate truck trips in Brampton and Mississauga are actually higher than in Caledon as shown in **Figure 4.1**, aggregate trucks appear less prominent due to the significantly higher truck volumes carrying other commodities (e.g., manufactured products and food) on the roads in Brampton and Mississauga.

The CVS data are a rich source of goods movement information for both a snapshot of current freight activity and an assessment of historical trends. In 2018, a multi-year program to collect new commercial vehicle data across Ontario was initiated by MTO, however, the survey program was paused due to the pandemic. Peel Region should continue to partner with MTO on collecting survey data at sites in the region and especially along aggregate haul routes when the CVS program resumes.

Figure 4.1: Weekly Commercial Vehicle Trip Origins and Destinations by Commodity Type



Source: Exhibit 3.6: Commercial Vehicle Trip Origins and Destinations by Peel Municipality and Commodity Type, Trips with Cargo Load

4.1.2 Origins and Destinations by Commodity Type

Given the numerous uses for aggregate in construction and manufacturing, it is difficult to pinpoint specific destinations for Caledon's aggregate resources. Many major destinations for aggregate change over time as the demand for aggregate shifts to new locations as current construction projects are completed and new projects commence. However, a portion of aggregate trips will continue to be destined for Brampton and Mississauga's industrial areas where aggregate processing and recycling sites are located.

The following overview of aggregate origins and destinations is a snapshot of demand during the data collection period for the Commercial Vehicle Survey from 2010 to 2014.**Figure 4.2**, **Figure 4.3**, and **Figure 4.4** show the origins and destinations for commercial vehicles for internal Peel trips, trips from Peel and trips to Peel, respectively.

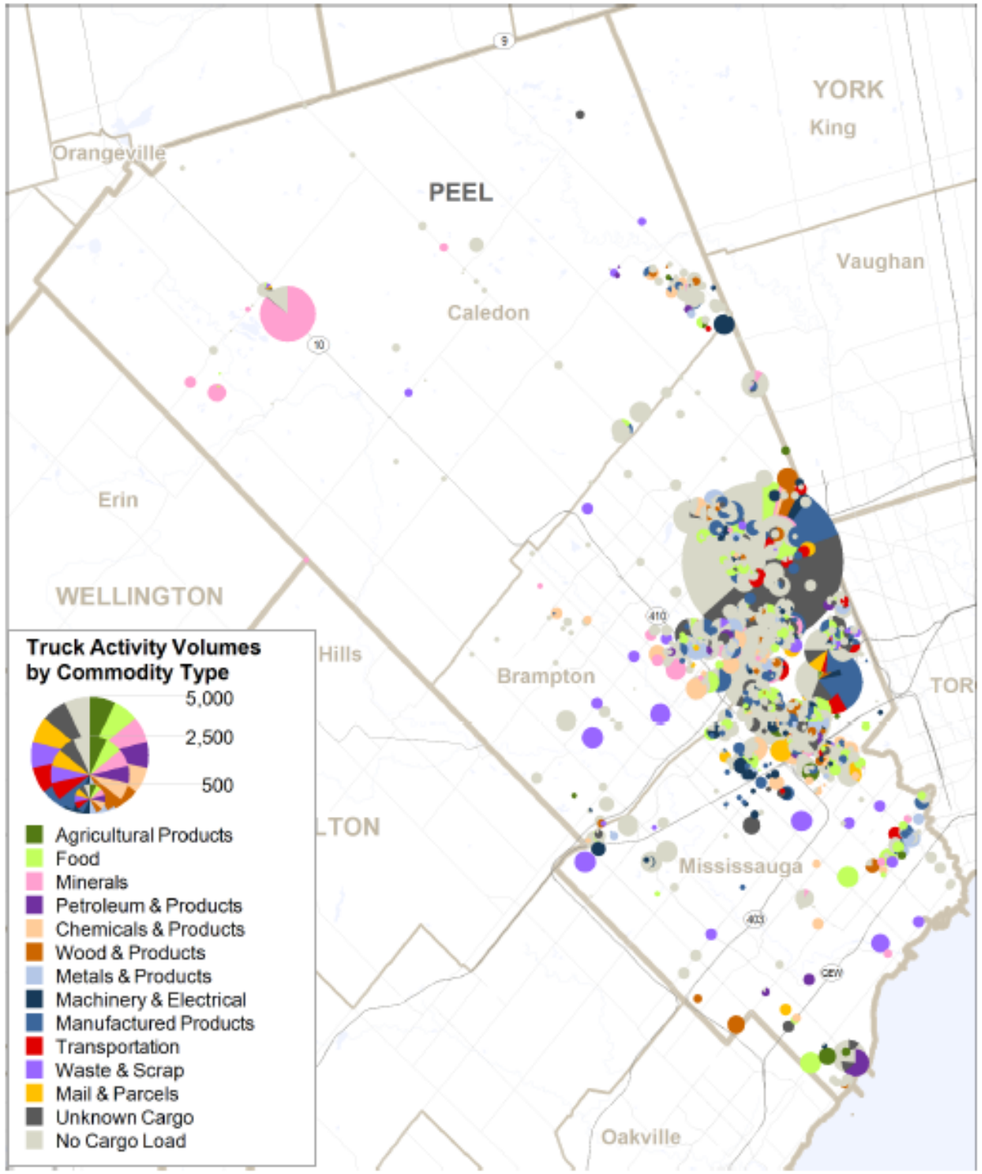
The northwest area of Caledon is a major trip origin for commercial vehicles carrying aggregates, and most of that aggregate is destined to locations within Peel. There are also notable trip origins for aggregate in central Brampton, presumably from aggregate depots or plants.

Figure 4.4 shows that Peel imports aggregate from many areas outside of Peel, most significantly from the Milton area but also the Town of Erin and south part of Dufferin County (Townships of East Garafraxa, Amaranth, and Mono). The demand for imported aggregate is well dispersed across Brampton and Mississauga, with a few sites in Caledon. Many of the smaller sites across Brampton and Mississauga are likely construction sites and these destinations would change over time as construction is completed. With significant planned growth to 2051 in Peel Region, and especially in Caledon, it can be expected that there will be high demands for aggregate in the new growth areas.

Demand for different types of aggregates, including high-quality crushed stone, may be one reason why aggregate is being imported from outside of Peel. An increasing amount of crushed stone consumed in the Greater Toronto Area is being imported from neighbouring municipalities such as Halton Region, Simcoe County and City of Kawartha Lakes

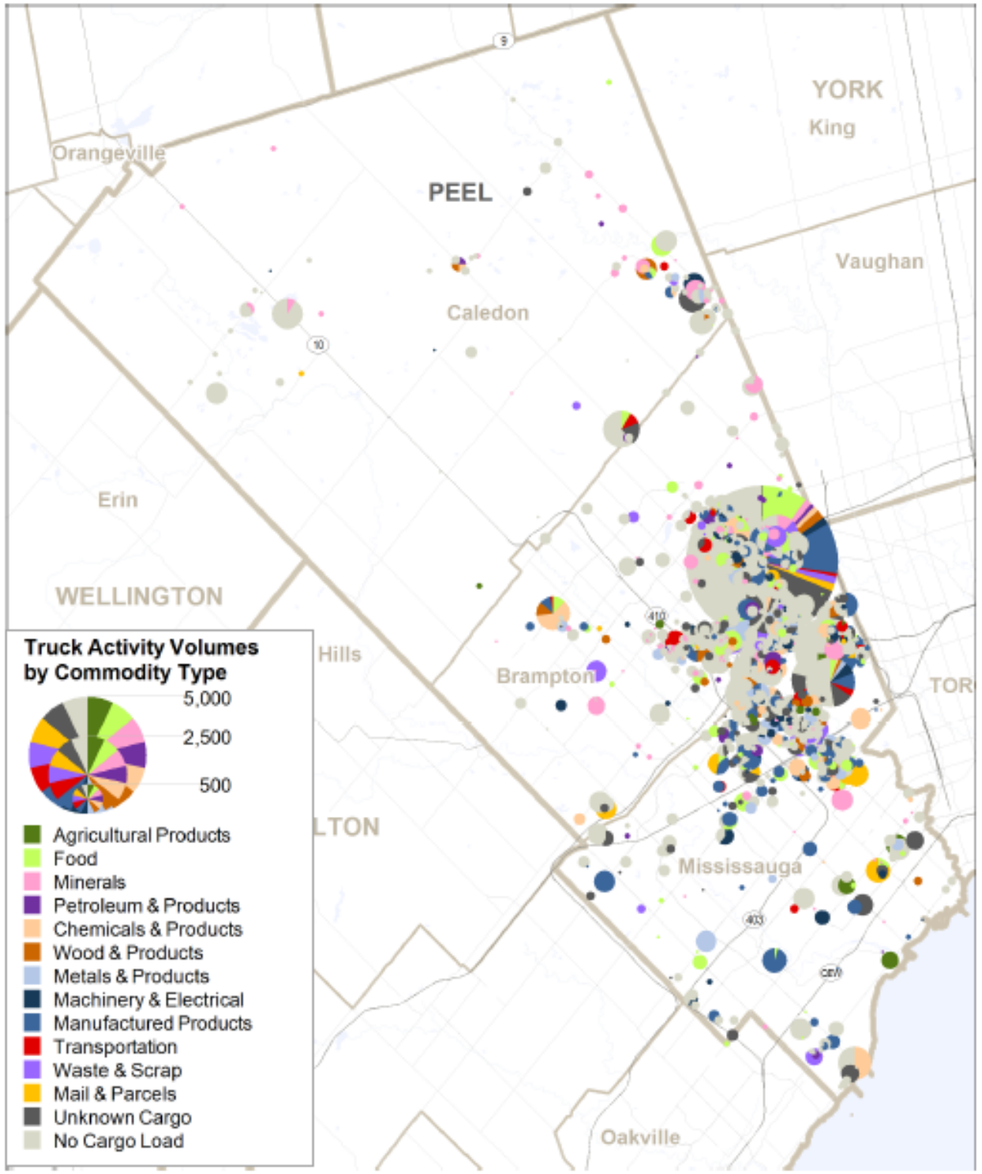
Figure 4.2 Trip Origins and Destinations by Commodity Type for INTERNAL Peel Trips

A. Peel Origins



Source: Exhibit D.1: Detailed Origins and Destinations by Commodity Type: Internal Peel Trips, Peel Commercial Vehicle Travel Profile, October 30, 2015

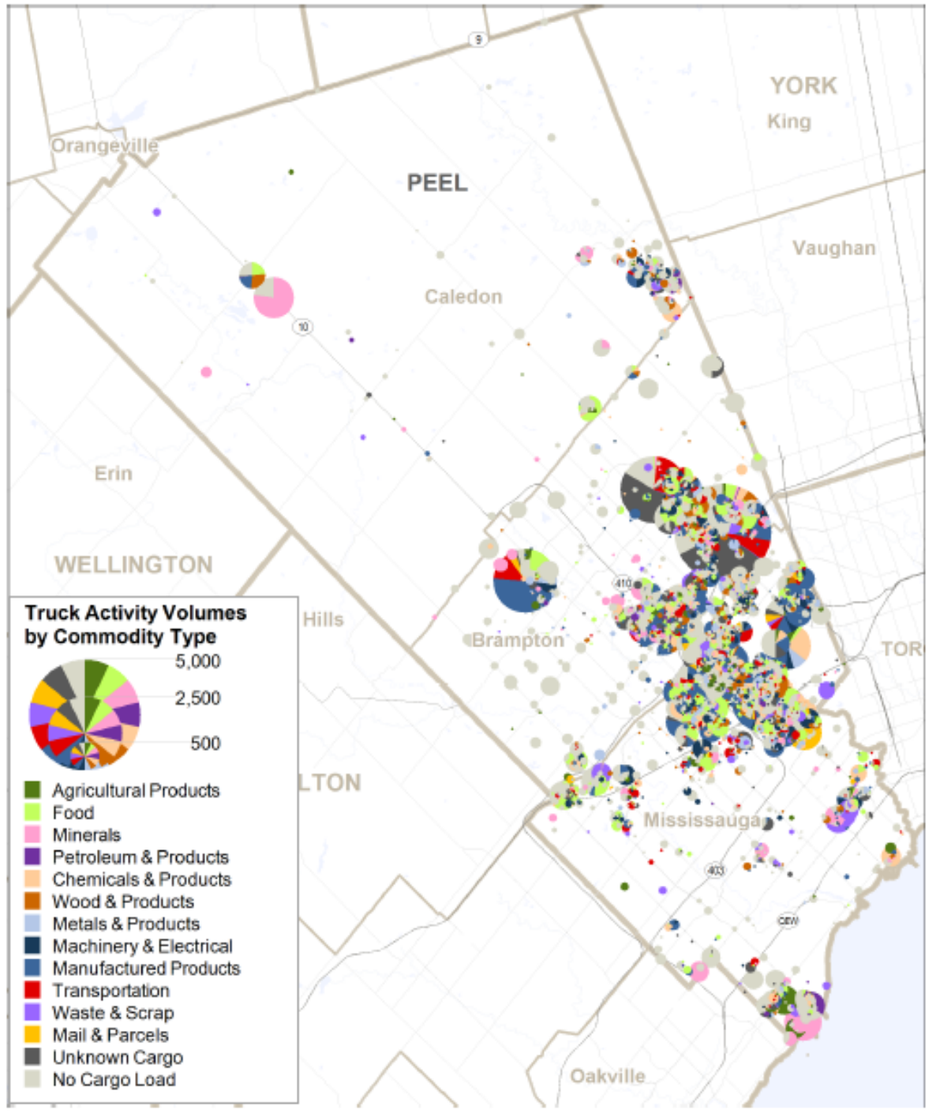
B. Peel Destinations



Source: Exhibit D.1: Detailed Origins and Destinations by Commodity Type: Internal Peel Trips (continued), Peel Commercial Vehicle Travel Profile, October 30, 2015

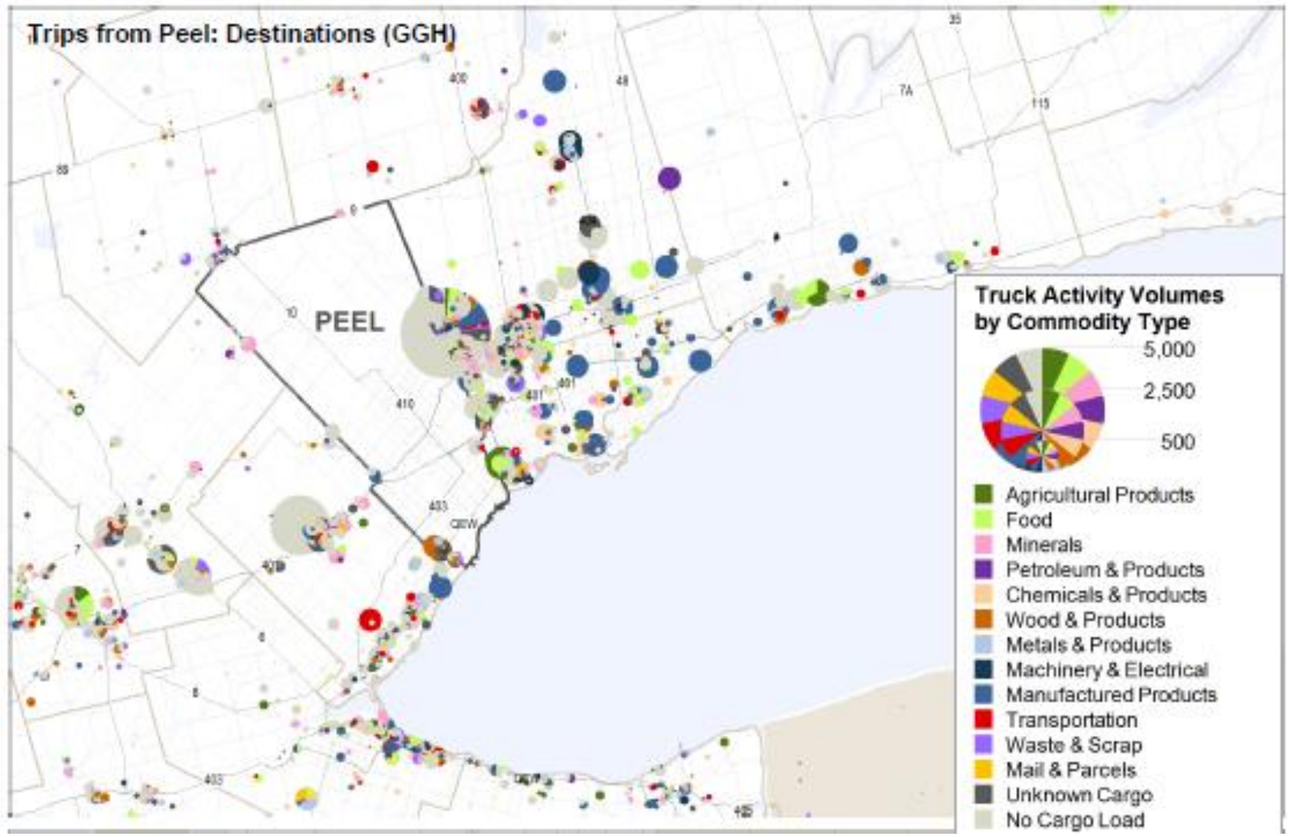
Figure 4.3: Trip Origins and Destinations by Commodity Type for Trips FROM Peel

A. Peel Origins



Source: Exhibit D.2: Detailed Origins and Destinations by Commodity Type: Trips FROM Peel, Peel Commercial Vehicle Travel Profile, October 30, 2015

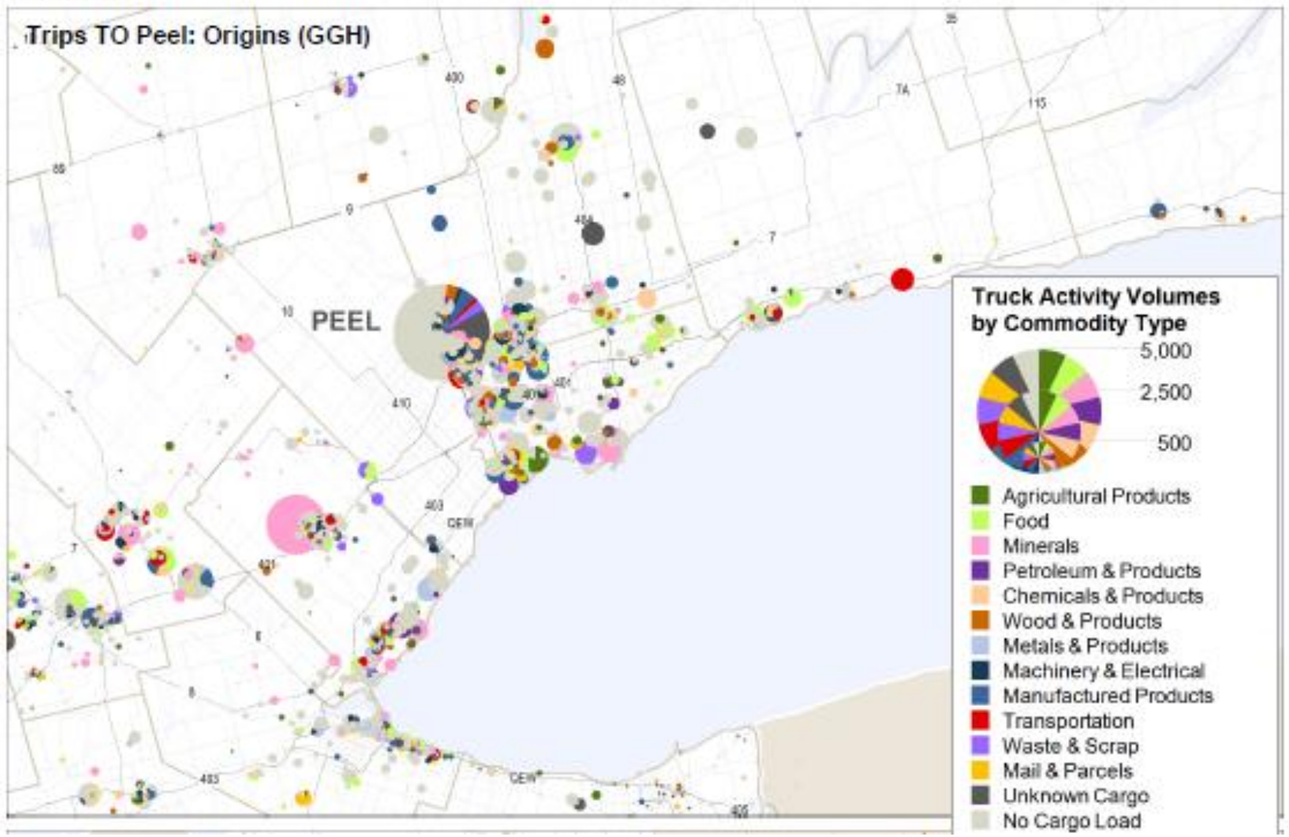
B. Destinations



Source: Exhibit D.2: Detailed Origins and Destinations by Commodity Type: Trips FROM Peel (continued), Peel Commercial Vehicle Travel Profile, October 30, 2015

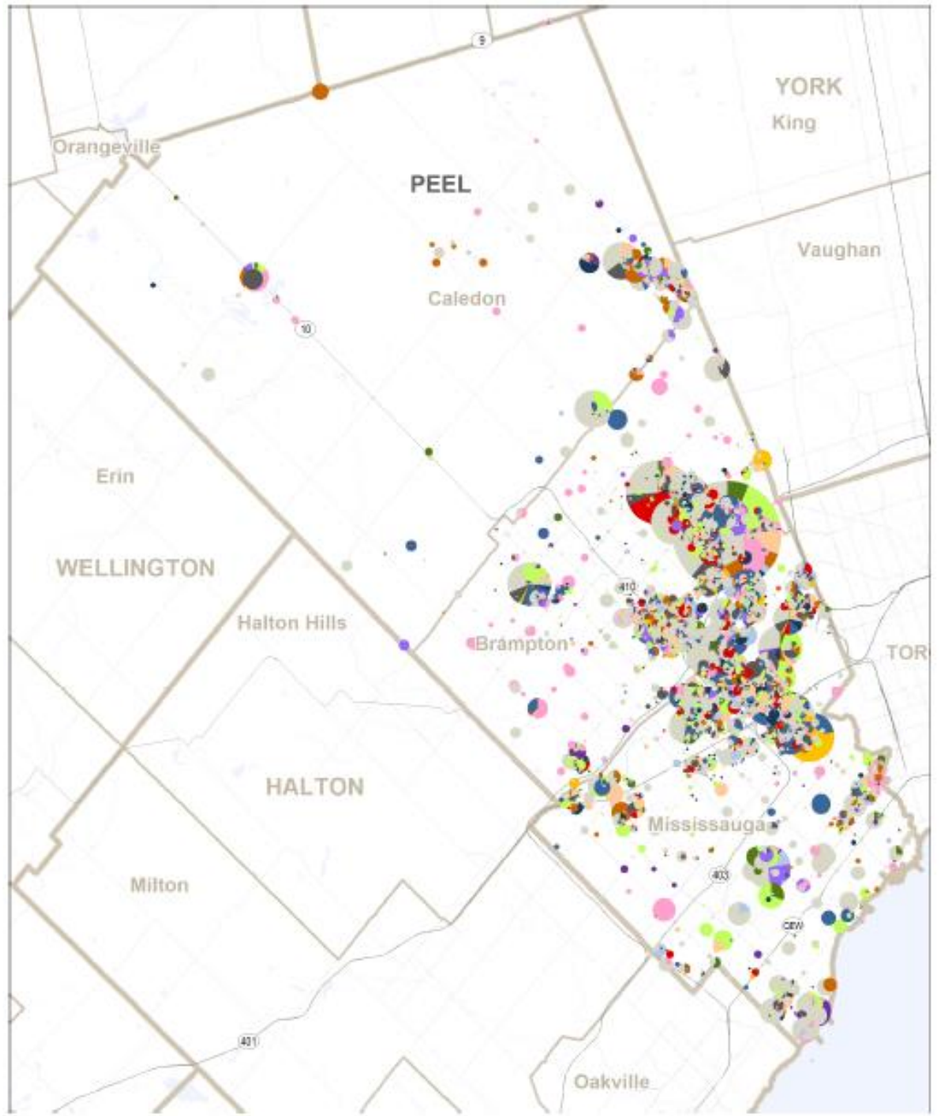
Figure 4.4: Trip Origins and Destinations by Commodity Type for Trips TO Peel

A. Origins



Source: Exhibit D.3: Detailed Origins and Destinations by Commodity Type: Trips TO Peel, Peel Commercial Vehicle Travel Profile, October 30, 2015

B. Peel Destinations



Source: Exhibit D.3: Detailed Origins and Destinations by Commodity Type: Trips TO Peel (continued), Peel Commercial Vehicle Travel Profile, October 30, 2015

4.2 Truck Count Data

4.2.1 Truck Volumes

There are significant truck traffic volumes in Peel Region. The two main sources of truck count data in Peel Region are:

- Automatic Traffic Recorder (ATR) counts from temporary count stations that count traffic volumes at select locations for a select period of time (usually 2-3 days).
- Permanent Count Station (PCS) counts from stations that are intended to count traffic continuously all days of the year.

Traffic count data from 330 stations[7] in the Region of Peel's ATR count database were received and reviewed. Many count stations (301) had recent counts conducted in 2019 or 2020 (some were counted in both years), but 87 stations had only older counts between 2016 and 2018.

Traffic counts from 42 PCS locations were also received and reviewed. On corridors where both ATR and PCS data were collected (but exact locations of count station differed), total daily traffic volumes were observed to be generally similar in magnitude, but differences in the proportion of trucks by class were noted. See **Section 4.2.2** for more information.

Truck volumes from 2019 ATR counts, illustrated in **Figure 4.5**, show that the highest concentration of truck traffic in Peel Region is in the employment area in Mississauga by the airport. In Caledon, truck volumes are mainly on the haul routes of Regional Road 24 (Charleston Sideroad), Regional Road 9 (King Street), Regional Road 7 (Airport Road) and Regional Road 50 (Highway 50). The highest truck volumes in Caledon are in Bolton. The truck volume mapping indicates that trucks are appropriately concentrated on designated truck routes and haul routes.

The percentage of trucks at each location typically range from 0% to 14% across the Region, with one location at Mayfield Road west of Highway 50 having 19% trucks. On Charleston Sideroad, trucks typically make up 8% to 14% of the total traffic. Truck percentages based on ATR counts collected over the 5-year period between 2016 and 2020 are illustrated **in Figure 4.6**. The data shown reflects the heavy truck restrictions that have been applied in the Bolton downtown core area as of November 2015.

A third source of truck data is the Cordon Count Program that collects vehicle classification and occupancy data at select locations across the Greater Toronto Area every few years. The most recent dataset is from 2016. Count stations in Caledon are limited to a handful of stations along the Town's boundaries but the count data has a specific aggregate truck category. The cordon counts support the analysis of the ATR data, in that trucks make up 15-25% of total traffic volumes (a "higher" percentage than the ATR data because cordon counts are collected between 5:30 a.m. and 8:30 p.m. only when trucks percentages are higher than late night and overnight) and that aggregate trucks generally make up 2-5% of total trucks in most areas. At Highway 10 south of Charleston Sideroad, aggregate trucks were 6.5% of total truck volumes.

[7] Note: Peel Region does not have ATR count stations on Highway 10 or Highway 9.

Figure 4.5: Truck Volume Heat Maps (2019 ATR Counts)

Truck volumes in Peel Region

Truck volumes in Caledon

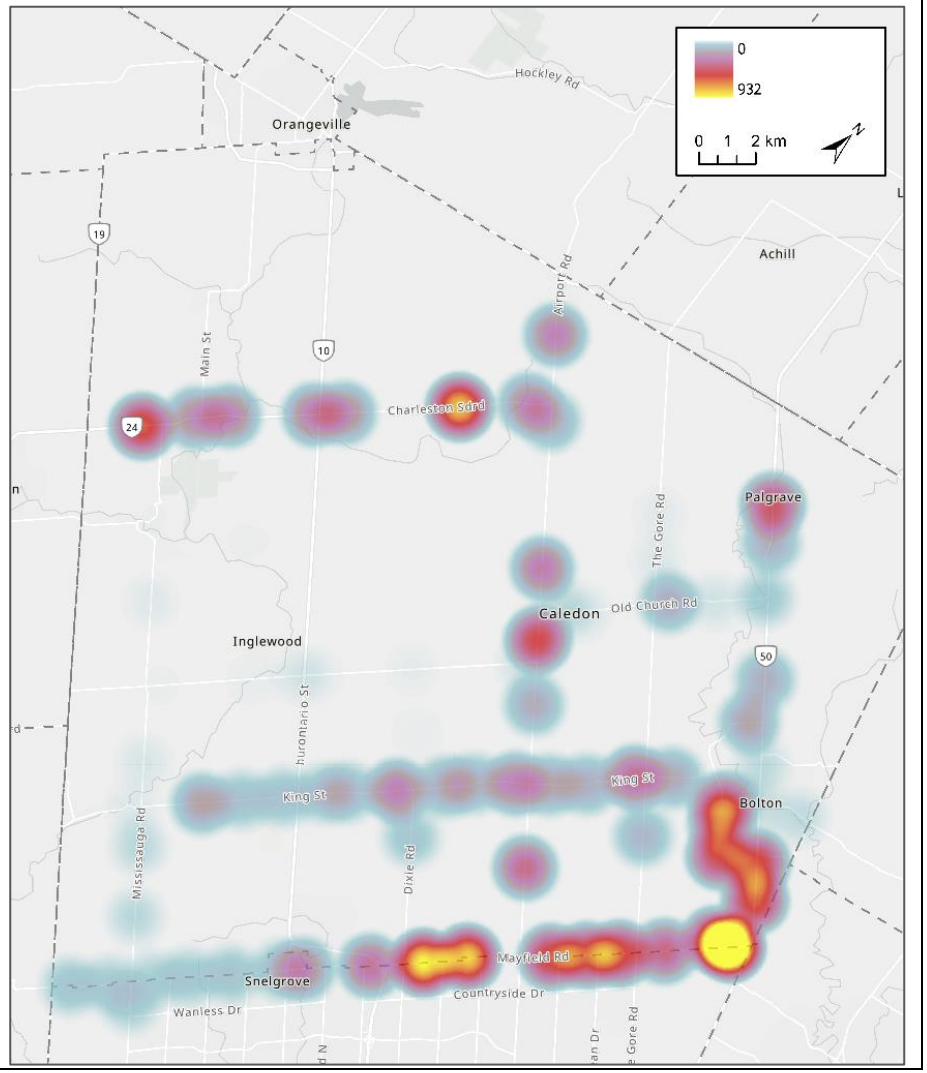


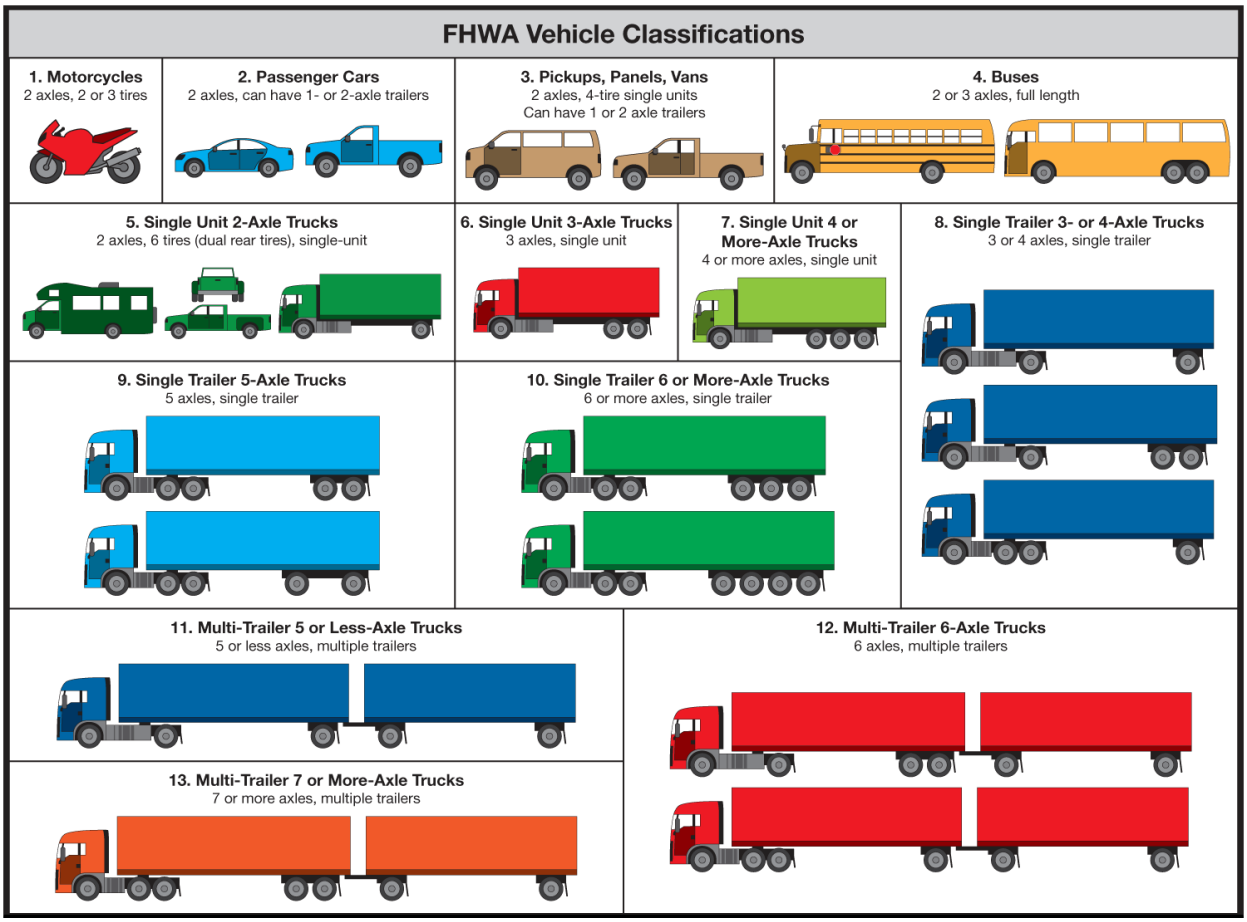
Figure 4.6: Truck Percentage Heat Maps (2015-2020)

Truck percentage in Peel	Truck percentage in Caledon
	
Location with highest truck percentage is 19% at Mayfield Road west of Highway 50.	Truck percentages on Charleston Sideroad range from 8-14%.

4.2.2 Truck Classes

Vehicles are typically classified into 13 classes as shown in **Figure 4.7**. There are nine classes (Classes 5 to 13) of trucks and many types and sizes of trucks could be used to transport aggregates. It is not possible to explicitly determine the commodity being transported from the vehicle class data recorded in the traffic counts.

Figure 4.7: Vehicle Classification



Source: http://onlinemanuals.txdot.gov/txdotmanuals/tri/images/FHWA_Classification_Chart_FINAL.png

The Region's ATR count data records all 13 classes separately. However, the Region's PCS data records 6 groupings of vehicles: Passenger Vehicles, Motorcycles and Vans (Class 1, 2, 3); Single Unit Trucks (Class 5, 6); Buses and Single Unit Trucks (Class 4, 7); Single Trailer Trucks (Class 8, 9, 10); Multi-Trailer Trucks (Class 11, 12); and Long Combination Vehicles (Class 13).

A high-level comparison of the two traffic count sources indicated variations in the truck classification. For example, the PCS data show higher counts for Classes 11 and 12, whereas the ATR data show higher counts for Class 13. Due to limitations in sensitivity in the equipment being used for the counts, it is likely that vehicles being categorized as Class 11 or 12 in the PCS count are categorized as Class 13 in the ATR. While there may be some discrepancies in truck volumes by class, the overall proportion of trucks on the road are comparable in the two

count sources. A comparison of the ATR and PCS data at a location on Charleston Sideroad west of Hurontario Street is provided in **Appendix B**.

For the truck classification review, ATR data was selected/used since the data covered a larger geographical area and focused on weekday traffic.

Mapping of the truck volumes by class (**Figure 4.8** and **Figure 4.9**) show that classes 9, 10, 6 and 13 (in that order) are most common in northwest Caledon near the pits and quarries. This indicates that these four vehicle classes are most likely related to transporting aggregate resources. It is cautioned that that these four vehicle classes are also used to transport many other goods and commodities.

Figure 4.8: Truck Class by Location Heat Maps (2019 Counts)

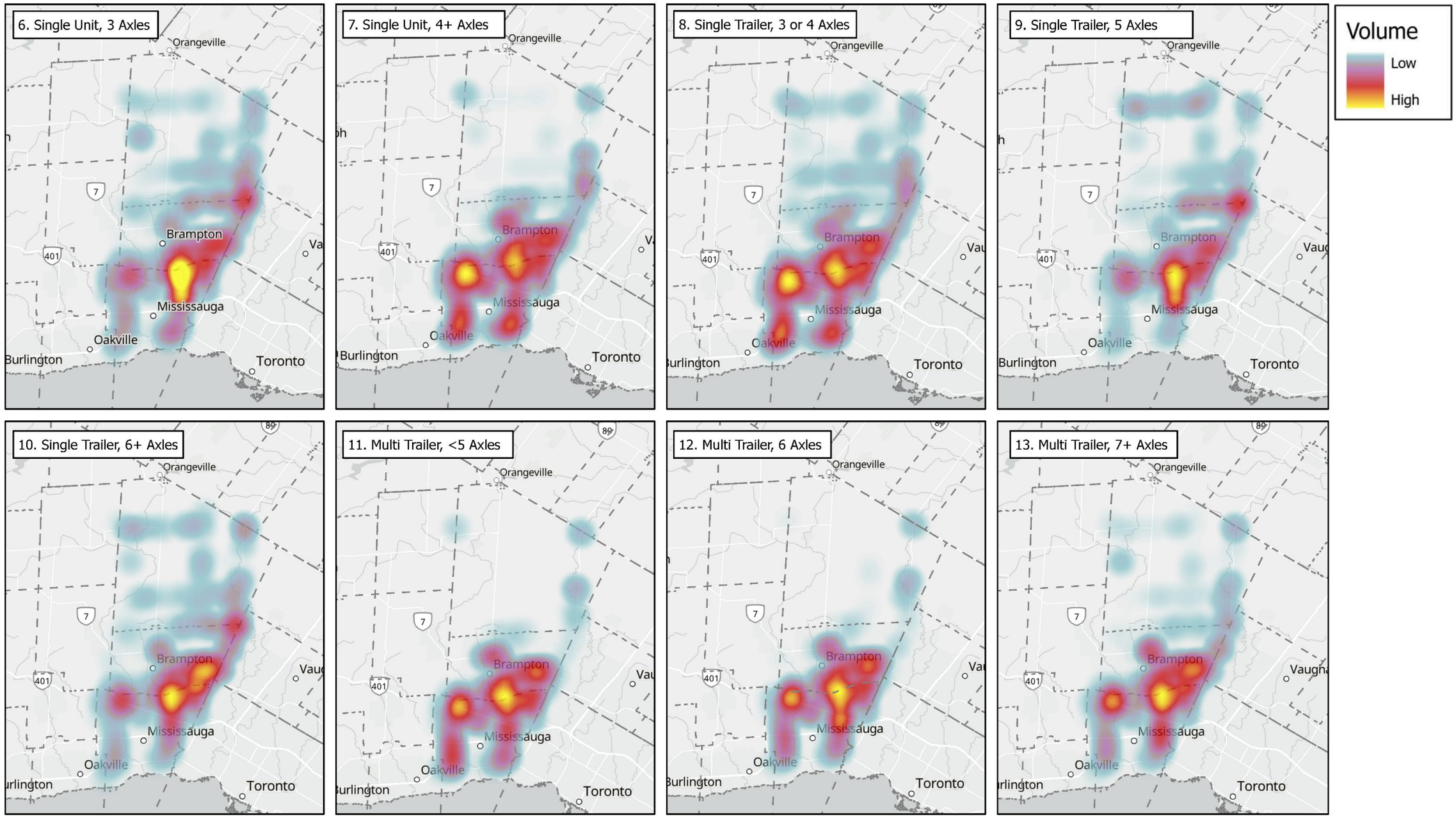
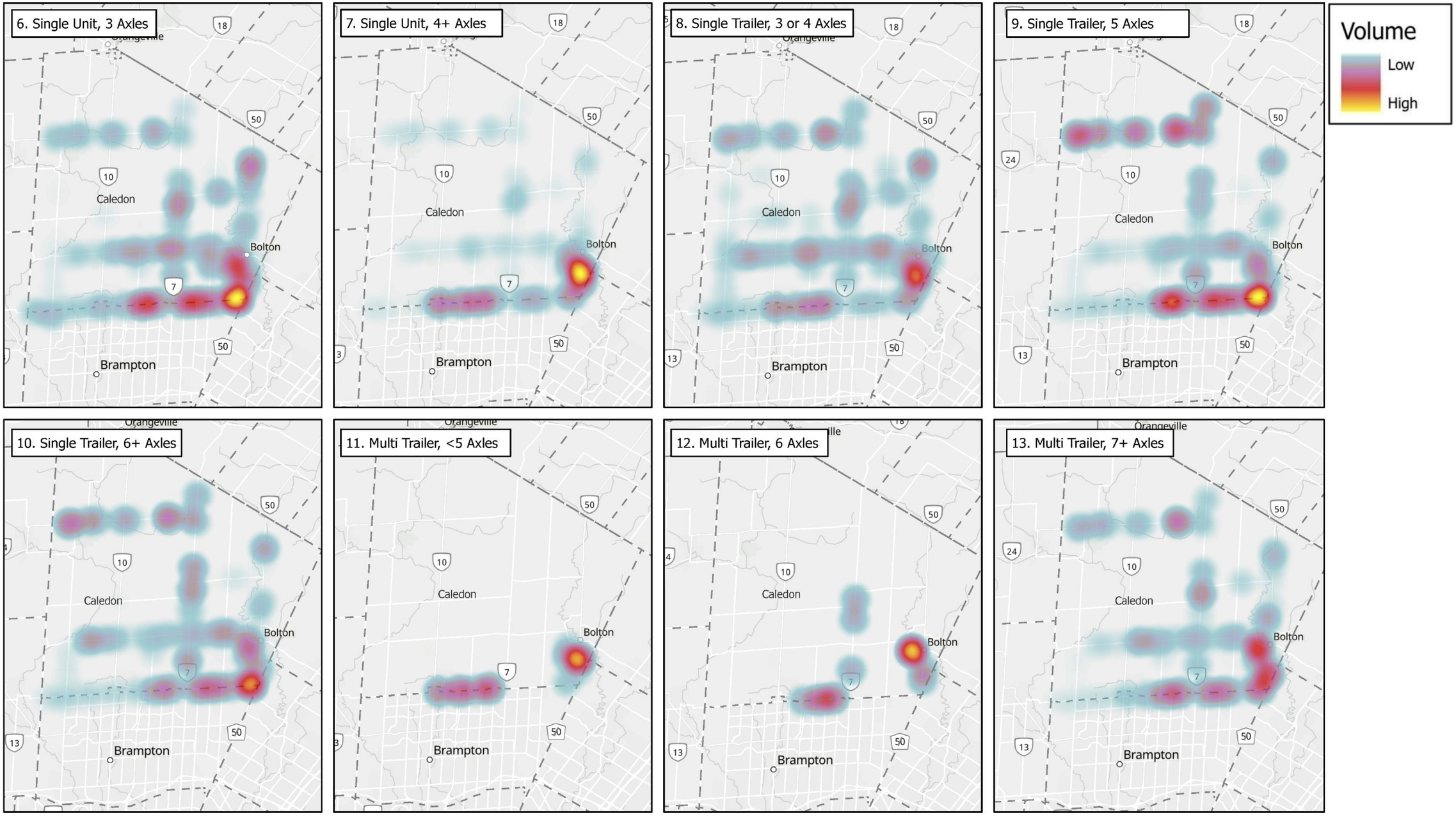


Figure 4.9: Truck Class by Location Heat Maps (2019 Counts) – Caledon

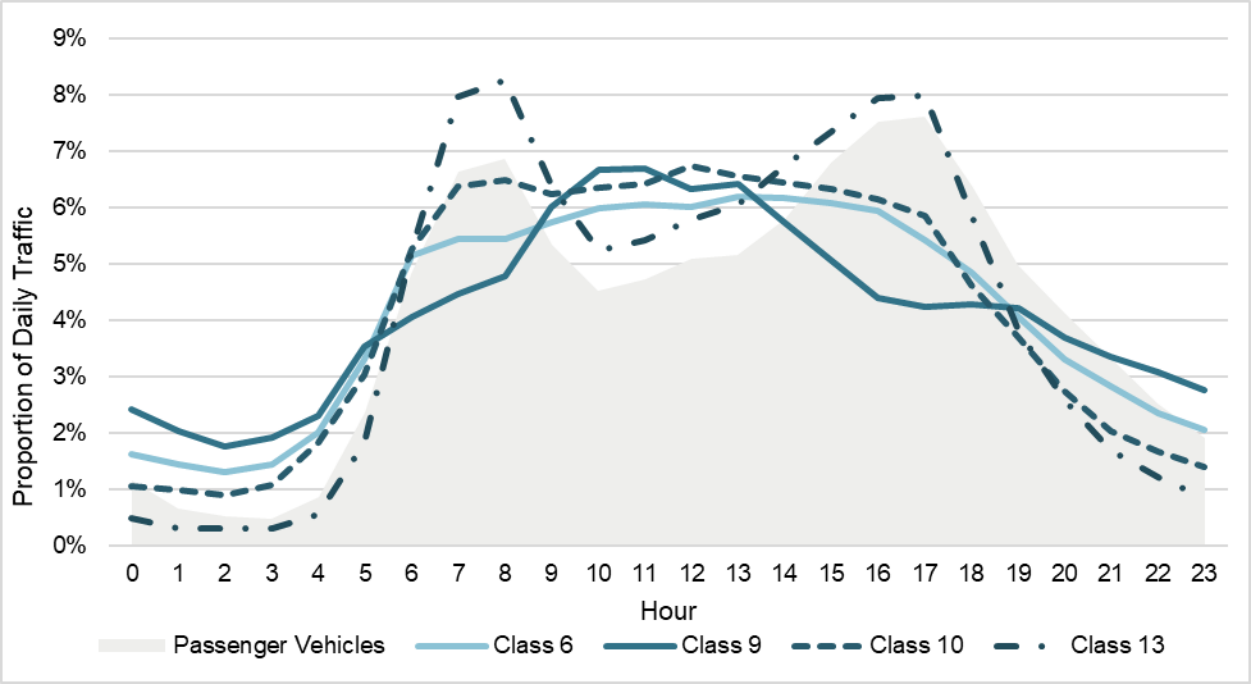


4.2.3 Truck Volumes by Time of Day

Passenger vehicle trips have a very distinct time of day profile – with a strong morning peak and afternoon peak. Truck trips, on the other hand, generally do not show as strong peak demand patterns. Truck traffic tend to have strong midday activity and with steady demand between 7 a.m. and 7 p.m.

In **Figure 4.10**, the time-of-day pattern is shown for classes 9, 10, 6 and 13, the truck types that are most prevalent in the counts collected in and around the pits and quarries. Class 9 (single trailer, 5-axle trucks) have a distinct midday peak. Class 6 (single unit 3-axle trucks) and 10 (single trailer, 6 or more axle trucks) are active throughout the day. Unusually, Class 13 (multi trailer, 7 or more axles) have two peaks that coincide with general passenger traffic. The count data were reviewed with Regional staff and the data collection service provider and no collection issues were identified. As noted in the previous section, it is likely that Class 13 vehicles are actually Class 11 or 12. However, it is unclear why the multi-trailer trucks are showing this daily profile.

Figure 4.10: Distribution of Traffic Volumes by Time of Day



4.3 Truck Collision Data

A desktop safety assessment / collision review was completed on intersection-related and segment-related collisions in Peel Region involving at least one truck for the 5-year period between January 2015 and December 2019. Collision reports identify the general type of truck but not what commodity is being carried. The following truck categories are used in collision reports: open, closed, tank, dump, car carrier, tractor and other. Aggregate trucks are likely categorized as open, dump or tractor. For the analysis below, all categories of trucks were included in the analysis of truck-related collisions.

It is noted that Provincial highways (e.g., Highway 401, 403) and Highway 407 ETR are not included in the collision data for analysis. Additional details of the collision review can be found in **Appendix C**.

The data reported over 2,500 truck collisions in the 5-year period, with approximately 20 of those collisions involving vulnerable road users (pedestrian or cyclist). **Figure 4.11** shows that the annual number of collisions has been increasing since 2015, apart from a decrease observed between 2018 and 2019, and may correspond with increasing traffic volumes. In Caledon, while the total number of truck-related collisions remain low, 39 collisions were reported in 2018 and in 2019, up from 11 collisions in 2015.

By month, the highest number of truck collisions occur during June, September, and October; total traffic volumes are highest in the fall months in Peel Region. Many collisions occur during the afternoon period (1 p.m. to 5 p.m.) when total traffic volumes are higher, especially in the late afternoon. Higher total traffic volumes result in more potential for conflicts between vehicles. The vast majority of collisions, Region-wide and in Caledon, occurred during clear conditions, with dry road surface and during daylight hours.

Figure 4.12 shows a map of the distribution of truck-related collisions in Peel Region. As expected, most collisions occurred in southern Brampton and northern Mississauga, an area where many industrial businesses are located and with high truck volumes on area roads. The locations with the most frequent collisions are Dixie Road at Shawson Drive and Airport Road at Mayfield Road, with 44 collisions over the 5-year period (at least 4 collisions per year and 1 fatal collision).

The most common types of collisions for trucks are sideswipes and rear end collisions. Sideswipe collisions accounted for 36% of all truck-related collisions, with 47% of these collisions being a result of an improper lane change. Rear end collisions accounted for 34% of all truck-related collisions, with 51% of these collisions being a result of vehicles following too closely. Rear end collisions can occur when a leading vehicle makes a sudden or unexpected stop and the following vehicle is not able to stop in time. It is unlikely that environmental considerations are a contributing factor as most collisions occurred during clear and dry conditions.

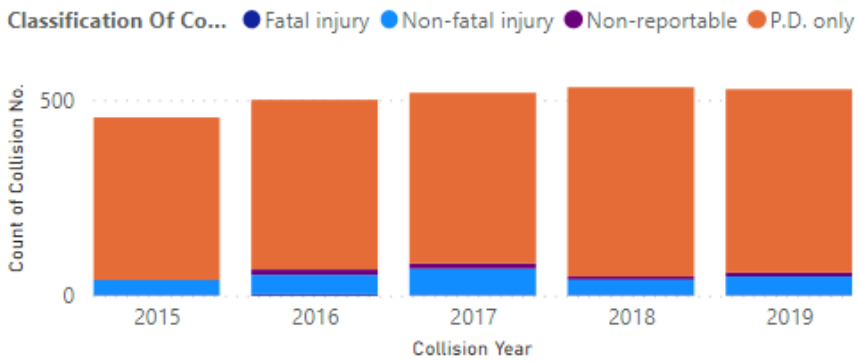
Truck collisions in Caledon generally occurred on haul routes as shown in **Figure 4.12**, which reflects the routes that carried the most trucks. Truck collisions in and around the pits and quarries in northwest Caledon are low, with almost all locations having only one collision in the

5-year period. Although there has been a sharp increase in truck collisions in Caledon over the 5-year period, no obvious trends were observed from the data.

In Brampton and Mississauga, most truck collisions occur on routes that are part of the Region's Strategic Goods Movement Network (SGMN) – again, reflecting the more concentrated truck volumes on these routes. A visual scan of collision locations noted that the section of Britannia Road west of Erin Mills Parkway (to the Mississauga-Milton border) is not part of the SGMN and 4 collisions were observed in the 5-year period. Although this section of Britannia Road is not a designated goods movement route, Britannia Road east of Erin Mills Parkway is part of the SGMN as either a connector or primary goods corridor suggesting trucks may be continuing to travel on the non-SGMN portion of Britannia Road to/from Milton or 407 ETR.

Figure 4.11: Truck Collisions by Year

Collisions in Peel Region



Collisions in Caledon

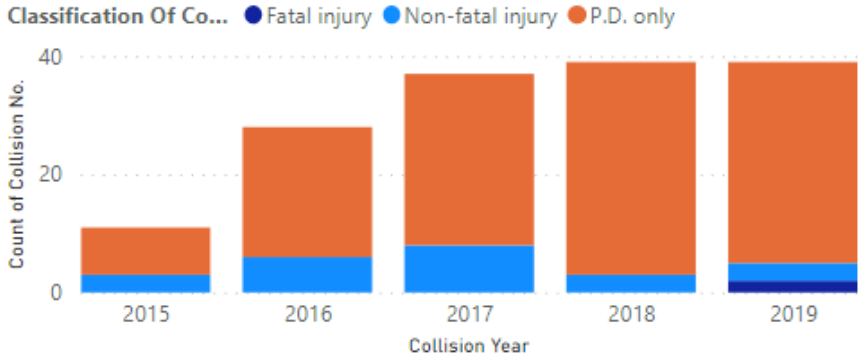
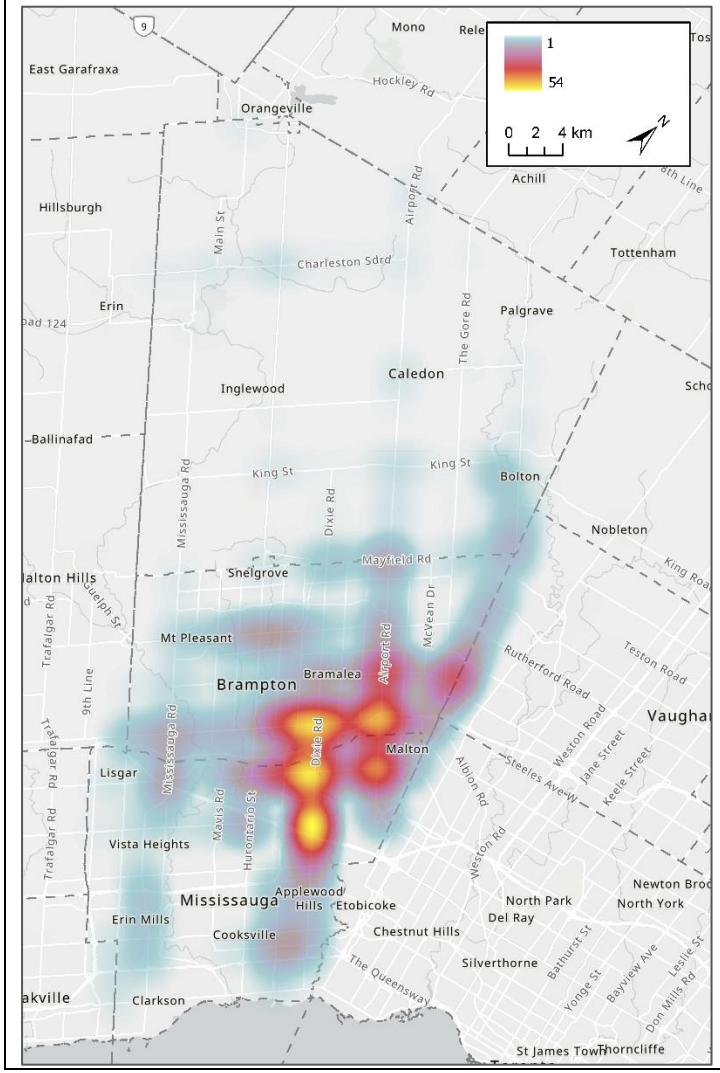


Figure 4.12: Truck Collision Heat Maps (2015-2019 Truck Collisions)

Truck Collisions in Peel Region

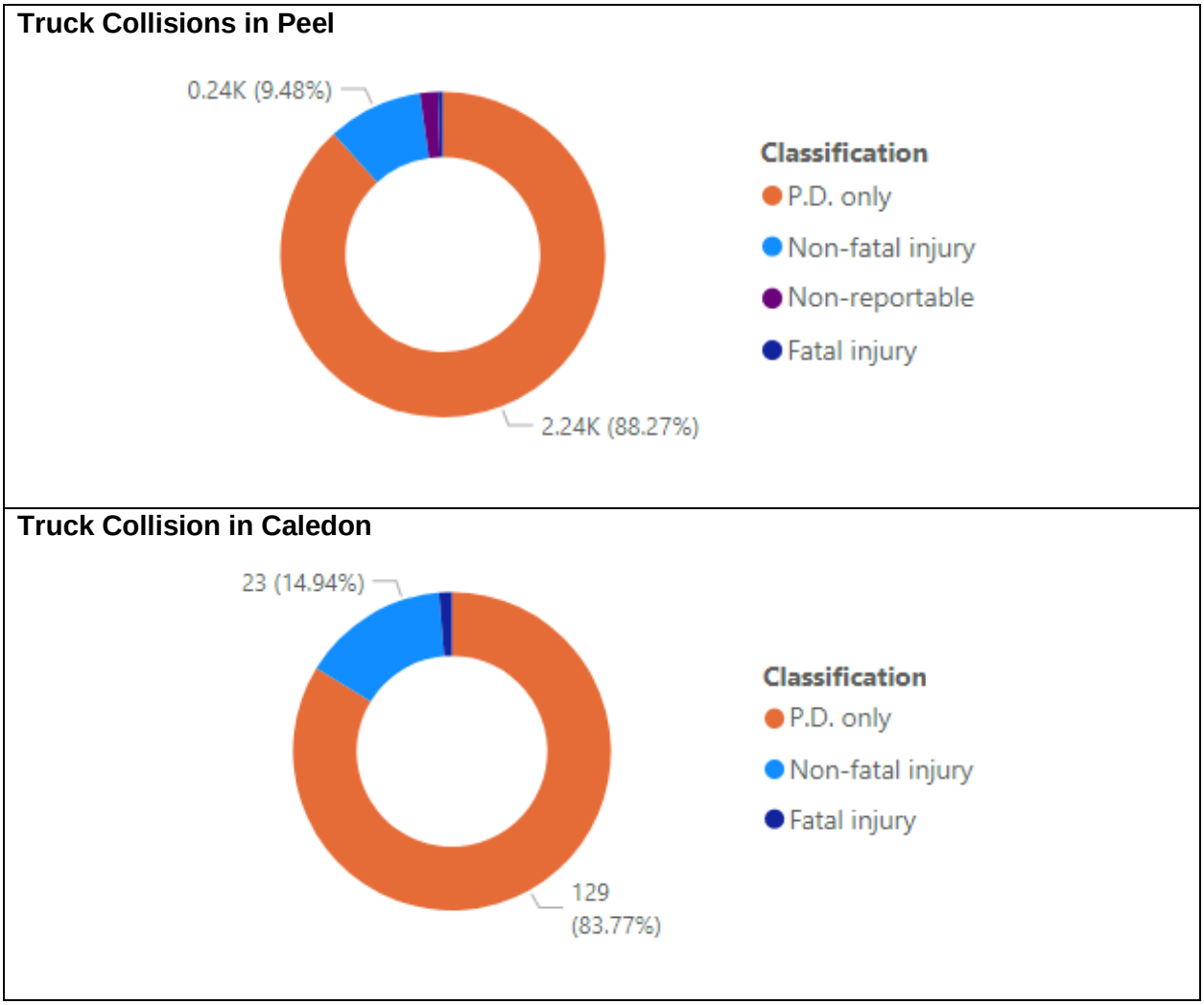


Truck Collisions in Caledon

Region-wide, most collisions from 2015 to 2019 resulted in property damage only (88%), followed by non-fatal injuries (9%), non-reportable collisions (2%), and fatal injuries (<1%) as shown in **Figure 4.13**. Of the 12 collisions with fatal injuries, one involved a pedestrian or cyclist.

In northwest Caledon around the area of the pits and quarries, a total of 29 fatal or non-fatal injury collisions were reported in the 5-yar period. The two fatal collisions were located on Charleston Sideroad between Cataract Road and McLaren Road in 2019, and on King Street between Airport Road and Torbram Road in 2019. The top three roads with the highest number of non-fatal injury collisions were Charleston Sideroad (6 collisions), Highway 50 (5 collisions), and Airport Road (5 collisions). None of these collisions involved pedestrians or cyclists. Although no one specific location on Charleston Sideroad was identified as a truck collision hotspot, a more in-depth assessment of traffic safety along the corridor could be considered.

Figure 4.13. Severity Classification of Truck Collisions



4.3.1 Average Collision Rates

Collision rates at intersections and segments in Caledon with more than four collisions over the 5-year period were calculated. Average collision rates per intersection and average collision rates per 1-km road sections were calculated using the following equations:

- Average collision rate per intersection:

$$\text{Average Collision Rate Per Intersection} = \frac{Number\ of\ Collisions\ within\ X\ years\ \times 1{,}000{,}000\ vehicles}{Existing\ AADT\ \times 365\ Days\ \times X\ years}$$

- Average collision rate per segment:

$$\text{Average Collision Rate Per Segment} = \frac{Number\ of\ Collisions\ within\ X\ years\ \times 1{,}000{,}000\ vehicles}{Existing\ AADT\ \times 365\ Days\ \times X\ years\ \times\ Length\ of\ the\ Segment}$$

It should be noted that the traffic volumes are based on daily counts averaged over 3 days (both directions). Due to availability of traffic data, the intersection volumes are based on traffic volumes on the main road only. The calculated collision rates are summarized in **Table 4-1** and **Table 4-2**.

The locations in Caledon with more than four collisions are generally not located in northwest Caledon. To provide a comparison of collision rates in the aggregate resource areas with the more developed areas in Caledon, the intersection of Highway 10 at Charleston Sideroad and the segments of Charleston Sideroad between Highway 10 and Main Street were also assessed.

INTERSECTIONS

At the intersections with four or more collisions, Highway 50 at Mayfield Road-Albion Vaughan Road has the highest number of collisions and the highest collision rate (0.29) within Caledon; however, as the rate calculation is based on the main street only, and both roads are major roads, incorporating the side street volume may reduce the overall collision rate compared to other intersections (which have minor side streets). Although it has the lowest traffic volume, Coleraine Drive at King Street-Harvest Moon Drive has the second highest collision rate (0.17) with four collisions over the 5-year period.

In comparison, the intersection of Highway 10 at Charleston Sideroad in Caledon Village, with three collisions, has a collision rate of 0.05, well below the other intersections. In general, this high-level analysis at the intersections with the highest observed collisions did not identify any intersections where there are significantly higher collision rates.

SEGMENTS

At the segments with four or more collisions, Airport Road between Mayfield Road and Perdue Court has the highest collision rate (0.49). This is significantly higher (more than double) than collision rates observed at other road segments in Caledon. While only four collisions occurred on this segment, the average collision rate calculation indicates a significantly high collision rate

due to its short road segment length. While this may be a statistical outlier due to the short segment length, a desktop review (using aerial images and Google Streetview images) of this segment shows the area is surrounded by land uses that are high truck generators, the street widens to 24 m at Perdue Court, and Perdue Court is a minor stop-controlled intersection which may all be contributing factors to collisions along this road segment. Additionally, extending the segment to the signalized intersection north of Perdue Court to Mayfield Road (0.89 km) with 7 collisions, the collision rate remains high at 0.43. The traffic count for this section also has a higher truck percentage of 11% (Class 6 to 13) compared to the other segments which each have a truck percentage of 8%.

To compare against road segments in and around the aggregate resource areas, multiple segments of Charleston Road were combined (as there is typically at most two collision on any individual segment) to calculate a collision rate. The segments of Charleston Sideroad have similar collisions rates to that of Mayfield Road (west of Torbram Road) and Airport Road (between King Street and Old School Road). Given that approximately 15% of truck traffic on Charleston Sideroad are aggregate trucks, it is expected that aggregate trucks make up a proportionate share of truck collisions along the corridor.

Although the analysis of collision rates did not identify a collision hotspot near the pits and quarries, a more in-depth assessment of traffic safety along the haul routes could be considered.

Table 4-1: Intersection Average Truck Collision Rate within Caledon (more than 4 collisions)

Intersection	Year of Traffic Count	Daily Traffic (vehicles)	Total Number of Collisions (2015-2019)	Average Collision Rate (collisions per million vehicles per year)
Highway 50 at Mayfield Road-Albion Vaughan Road	2020	22,452	12	0.29
Highway 50 at McEwan Drive	2019	28,955	7	0.13
Highway 50 at Healey Road/Entrance	2019	31,481	4	0.07
Coleraine Drive at King Street/Harvest Moon Drive	2019	12,772	4	0.17
Sample Intersection in Northwest Caledon				
Hwy 10 at Charleston Sideroad	2016	32,000[a]	3	0.05

a. 2016 AADT from Provincial Highways Traffic Volumes database

Table 4-2: Segment Average Truck Collision Rate within Caledon (more than 4 collisions)

Road Segment	Length of Segment (km)	Year of Traffic Count	Daily Traffic (vehicles)	Total Number of Collisions (2015-2019)	Average Collision Rate (collisions per million vehicle-km per year)
Mayfield Road between Mayfield Secondary School Entrance and Torbram Road	1.20	2017	23,117	6	0.12
Airport Road between King Street and Old School Road	3.00	2019	8,224	5	0.11
Airport Road between Mayfield Road and Perdue Court	0.45	2018	9,997	4	0.49
Mayfield Road between Highway 410 North and Ace Drive	0.30	2019	32,872	4	0.22
Sample Segments in Northwest Caledon					
Charleston Sideroad between Hwy 10 and Willoughby Road *(multiple segments combined)*	1.40	2019	10,248	3	0.11
Charleston Sideroad between Willoughby Rd and Main Street *(multiple segments combined)*	2.75	2019	10,248	4	0.08

4.4 Noise and Air Quality

As set out in Caledon's Official Plan, aggregate operators must demonstrate that noise, vibration, air quality and dust impacts from the pit or quarry site will be mitigated to acceptable levels as part of the application process. Policies are focused on aggregate resource extraction rather than the noise and air quality impacts from the transport of aggregates beyond the extraction site.

The Air Quality Discussion Paper for an earlier OP Review (2009) indicated that aggregate operations contribute to air quality concerns but were not considered to be a major source of air pollution in Peel Region[8]. More specific studies on air quality and the transport of aggregates are not available.

Peel Region does not have any noise studies specific to truck traffic and goods movement. Generally, a noise assessment is only completed as part of road expansion projects to determine if projected traffic noise will exceed Ministry of Transportation warrant criteria for constructing noise walls.

5 Opportunities and Gaps

As population continues to grow in Caledon, there will be increasing potential for community conflicts with existing and future aggregate activity. However, population growth and aggregate production are both important to overall economic prosperity in Peel and Caledon.

5.1 Recommended Actions

With respect to transportation and goods movement, potential gaps and opportunities for further assessment include the following:

- The Region's 2019 Long Range Transportation Plan identifies a goal to achieve 50% sustainable mode share. To do so, more consideration is needed for the vulnerable road users (pedestrians and cyclists) that share the road right-of-way with vehicles and trucks. The Long Range Transportation Plan identifies policy direction for Regional road design to support the development of complete streets. Potential design features to improve the safety and comfort of all road users on the goods movement network and designated haul routes include separated and protected space for pedestrians and cyclists within paved shoulders, bicycle lanes, multi-use paths, or sidewalks. The updated Ontario Traffic Manual Book 18 Cycling Facilities (August 2021) also places an emphasis on separation between vehicle travel lanes and cycling facilities to enhance safety for cyclists of all ages and abilities.

  Recommendation: The Region should identify an action plan to mitigate road safety design issues.

- Road design guidelines need to include special consideration for accommodating pedestrian and cyclist activity on designated truck routes or haul routes. These include:

[8] Peel Official Plan Review Air Quality Discussion Paper, 2009

  - Separated and protected space for pedestrians and cyclists, such as buffered paved shoulders, boulevard multi-use paths, cycle tracks and sidewalks, where possible.
  - Safe crossing opportunities that minimize pedestrian crossing distances across truck/haul routes.
  - Guidelines for design considerations, such as selecting the right design vehicle and design speed for corridors which dictate curb radii, lane widths, buffer widths, horizontal and vertical curves, road grades, that will balance the needs of trucks, pedestrians, cyclists, and transit depending on the road context.

  Recommendation: The Region should review its road design standards to adopt a more complete streets approach for the planning, design, and maintenance of goods movement corridors and haul routes.

- The Town of Caledon's Official Plan includes comprehensive policies that help manage the impacts of aggregate activity on municipal infrastructure and community stakeholders. As stipulated in 5.11.2.5.2 of the Official Plan, applicants for aggregate operations must identify haul routes, access routes from the site to the designated haul routes, and any required roadway improvements (including road structure, road geometry and operational capacity) to accommodate aggregate truck movements. Applicants must prepare a Road Improvement Study to minimize the environmental impacts of any proposed road improvements.

  Recommendation: During the aggregate operations application process, Region of Peel staff should work closely with Town of Caledon staff to continue to protect community interests and transportation system performance, including accommodation of vulnerable road users to support the Region's sustainable mode share goals.

- The three continuous north-south haul routes through Caledon—Highway 10 (provincial), RR 7, and RR 50—each travel through multiple settlement areas where conflicts between goods movement and residents/local businesses are most pronounced. Many of the settlement areas have potential for growth within designated boundaries. Settlement areas located on haul routes include:
  - Alton (RR 136)
  - Bolton (RR 50, RR 9)
  - Caledon East (RR 7, RR 22)
  - Caledon Village (RR 24, Highway 10)
  - Campbell's Cross (RR 9)
  - Claude (Highway 10)
  - Mono Mills (RR 7, Highway 9)
  - Mono Road (RR 7)
  - Palgrave (RR 50)
  - Sandhill (RR 9)
  - Tullamore (RR 7, RR 14)
  - Victoria (Highway 10)
  - Wildfield (RR 14)

  Recommendation: The Region should work with the Ministry of Transportation (for Highway 10) and Town of Caledon (for all corridors) to undertake a feasibility study to explore alternative aggregate haul routes and options to manage truck impacts on existing and future settlement areas.

- The Strategic Goods Movement Network includes limited routes in the western portion of Caledon. Some sections of the SGMN truck routes and Regional roads in western Caledon have spring load weight restrictions, including:

- RR 1 (Mississauga Road) from RR 14 (Mayfield Road) to RR 11 (Forks of the Credit),
- RR 9 (King Street) from Creditview Road to Peel/Halton Boundary and
- RR 12 (Olde Baseline Road) from McLaughlin Road to RR 19 (Winston Churchill Boulevard).
- Additionally, RR 19 (Winston Churchill Boulevard) from RR 107 (Bovaird Drive) to RR 11 (Forks of the Credit) has year-round load restrictions.

Limited route options due to load restrictions means that truck traffic is funneled to a few corridors resulting in a higher proportion of trucks on those corridors.

Recommendation: The Region should explore the cost-benefits of upgrading Regional road and truck routes for year-round use to alleviate community impacts.

- The assessment of the impacts of aggregate truck movements is highly dependent on data. However, data specific to trucks transporting aggregate is very limited. In automated counts, trucks that carry aggregates are not differentiated from trucks carrying other commodities. The Commercial Vehicle Surveys (MTO's in-person surveys that record commodity type) indicate that trucks carrying aggregates account for only 6% of total truck activity in Peel Region but could account for up to 20-24% of daily truck traffic on Highway 10 south of Caledon Village.

  Recommendation: To support transportation planning initiative related to aggregate resources, the Region should explore new sources of data or new methods of collecting data that can differentiate and separate aggregate truck traffic from other truck traffic. This will allow for better monitoring and quantification of the impacts of aggregate movements on network performance, the community, and the environment.

- Transportation, in general, is a major contributor to poor air quality and noise. The transport of aggregate is perceived to contribute to noise, vibration, air quality and dust impacts.

  Recommendation: The Region and Town should consider a region-wide or town-wide study to quantify air quality and noise impacts of aggregate goods movement on the community and identify opportunities to support industry transition to zero emission trucks.

- Continued consultation with the public, aggregate operators, and stakeholders will help address concerns and potentially conflicting needs of new development, the aggregate industry and existing community residents. A consultation program could be coordinated with the new enhanced notification and consultation requirements for new pit and quarry applications as per recent changes to the Aggregate Resources Act.

  Recommendation: The Region should develop a stakeholder consultation plan to provides for on-going communications between all parties to address key issues.

5.2 Policy Recommendations

The Joint Mineral Aggregates Policy Review will be identifying policy gaps and opportunities in the Regional and Caledon Official Plan to address conformity with recent changes to Provincial planning policy and consistency in terminology with new regulations. These include references to the Growth Plan, Greenbelt Plan, Niagara Escarpment Plan, Oak Ridge Moraine Conservation Plan, designations of above or below water extraction given recent changes to the Provincial Policy Statement, revisions to application study requirements to reflect terminology in the current Aggregate Resources Act, and updates to Official Plan mapping to consider revised resource mapping by the Ministry of Natural Resources and Forestry. The policy review work will include a jurisdictional scan of other top aggregate producing municipalities to identify other aggregate policy approaches that could be considered. The following phase of the policy review will be to propose draft policies to incorporate into the Region and Town Official Plans.

Transportation-related policy that may require revision in the Peel Region or Caledon Official Plans or other policy documents include:

- Caledon's Official Plan policy 5.11.2.1 requires that haul routes to aggregate operations be located on High Capacity Arterials only. Caledon's network of High Capacity Arterials, as shown in Schedule J of the Caledon Official Plan, should be reviewed for connectivity to updated potential aggregate resource areas. This review could also be an opportunity for the Town to develop a haul route classification system with tiers that are consistent with the Town's road network classification and/or the Region's Strategic Goods Movement Network classification.
- Caledon's current haul route designations includes RR 50 (Queen Street) and RR 9 (King Street) through Bolton's downtown. In 2015, the Region applied heavy truck restrictions on RR 50 between Healey Road and Emil Kolb Parkway and on King Street between Coleraine Drive and Albion-Vaughan Road.
  - The Town of Caledon's haul routes should be revised to use Emil Kolb Parkway as a bypass to the Bolton downtown core, consistent with the Region's heavy truck restrictions that are in place.
  - The Region's Strategic Goods Movement Network map and policies should be revised to use Emil Kolb Parkway as the primary goods movement route and the restricted sections of RR 50 and RR 9 should be downgraded to connector routes.
- The designation of a haul route is a result of aggregate activity from a particular pit/quarry, or multiple pits/quarries, on a haul route. To address some of the issues identified in this report, it is recommended that the Town of Caledon explore the use of a haul route agreement to require those aggregate operators to improve the haul route to meet appropriate design standards, address load restrictions, or implement safety countermeasures in order to commence or continue operations.
- The Region's Strategic Goods Movement Network includes two routes on non-Regional roads in Caledon – Horseshoe Hill Road (primary truck route) and Mountainview Road (connector truck route) – that are classified as collector roads by the Town. A broader review of the SGMM should be undertaken to confirm the truck route designation and/or road classification for consistency of the role and function of these roadways.

APPENDICES

Appendix A – Aggregate Recycling, Concrete and Asphalt Plants

The location of aggregate recycling, concrete and asphalt plans within Peel Region were identified through online research. Additional locations may exist. The sites are listed in the following table and shown geographically on **Figure 3.1** of the main document.

Address	Approx. Location	Type	Company
Aggregate Recycling			
1250 Shawson Drive	Dixie Road / 401	Aggregate recycling	Pave-Al
1830 Shawson Drive, Mississauga	Britannia Road / Dixie Road	Aggregate recycling	North 7 Disposal and Aggregates
45 Van Kirk Drive, Brampton	McLaughlin Road / Bovaird Drive	Aggregate recycling	Strada Van Kirk Aggregate Depot
120 Wentworth Court, Brampton	Goreway Drive / Highway 407	Aggregate recycling	Strada Aggregates
269 Glidden Road, Brampton	Rutherford Drive and Steeles Avenue area, Brampton	Aggregate recycling	unknown
22 Perdue Court, Caledon	Mayfield Road / Airport Road	Aggregate recycling	Strada
Concrete Plants			
2391 Lakeshore Road W, Mississauga	Lakeshore Road / Winston Churchill Blvd	Cement plant	CRH Canada
3520 Mavis Road, Mississauga	Mavis Road / Burnhamthorpe Road	Concrete plant	Innocon
7481 Tranmere Drive, Mississauga	Bramalea / Derry	Concrete plant	Dufferin Concrete Malton Plan
3649 Erindale Station Road, Mississauga	Burnhamthorpe Road / Mavis Road	Concrete plant	Dufferin Concrete Mississauga Plant
55 Advance Boulevard, Brampton	Steeles / Dixie	Concrete plant	Allmix Brampton Plant
75 Orenda Road, Brampton	Kennedy Road / Queen Street	Ready-mix plant	St. Mary's CBM Brampton Plant
98 Wentworth Court, Brampton	Goreway Drive / Highway 407	Ready mix plant	Toronto Redimix
Asphalt Plant			
3355 Wolfedale Road, Mississauga	Mavis Road / Burnhamthorpe Road	Asphalt plant	Lafarge / Coco Paving
5830 Dixie Road, Mississauga	Dixie Road / Highway 401	Asphalt plant	Furmar Asphalt
2201 Lakeshore Road W, Mississauga	Lakeshore Road / Southdown Road	Asphalt plant	Coco Paving, Clarkson Plant
297 Rutherford Road S, Brampton	Steeles Avenue / Rutherford Road	Asphalt plant	Graham Bros Construction
12 Canam Crescent, Brampton	McLaughlin Road / Bovaird Drive	Asphalt and aggregate supplier	Aecon Construction

Appendix B – ATR and PCS Count Data Comparison

Count data at an ATR station and a PCS station on Charleston Sideroad west of Hurontario Street were compared to identify differences in the collected data.

The ATR data was collected on Charleston Sideroad 570 m East of Willoughby Road (just west of Caledon Village). The PCS station is located on Charleston Sideroad west of Hurontario.

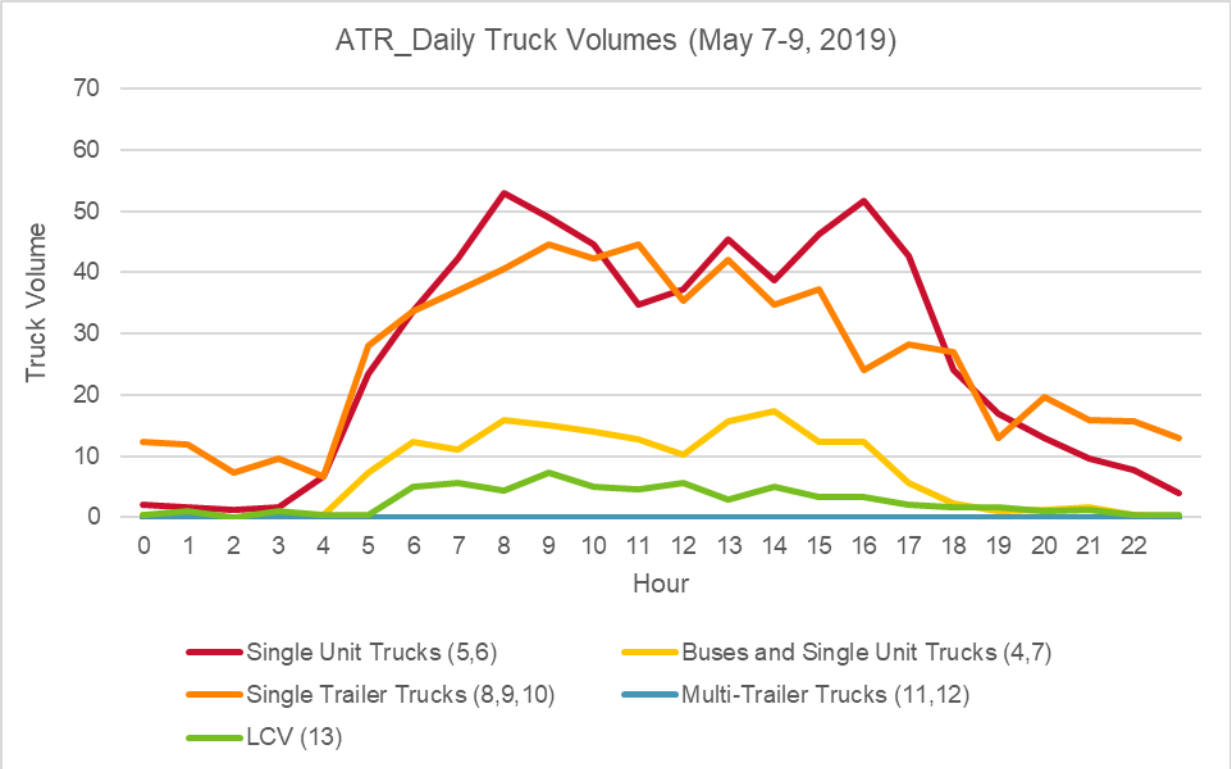
The ATR data was collected over three days in May 2019 (May 7, 8 and 9). PCS data was extracted for the same dates.

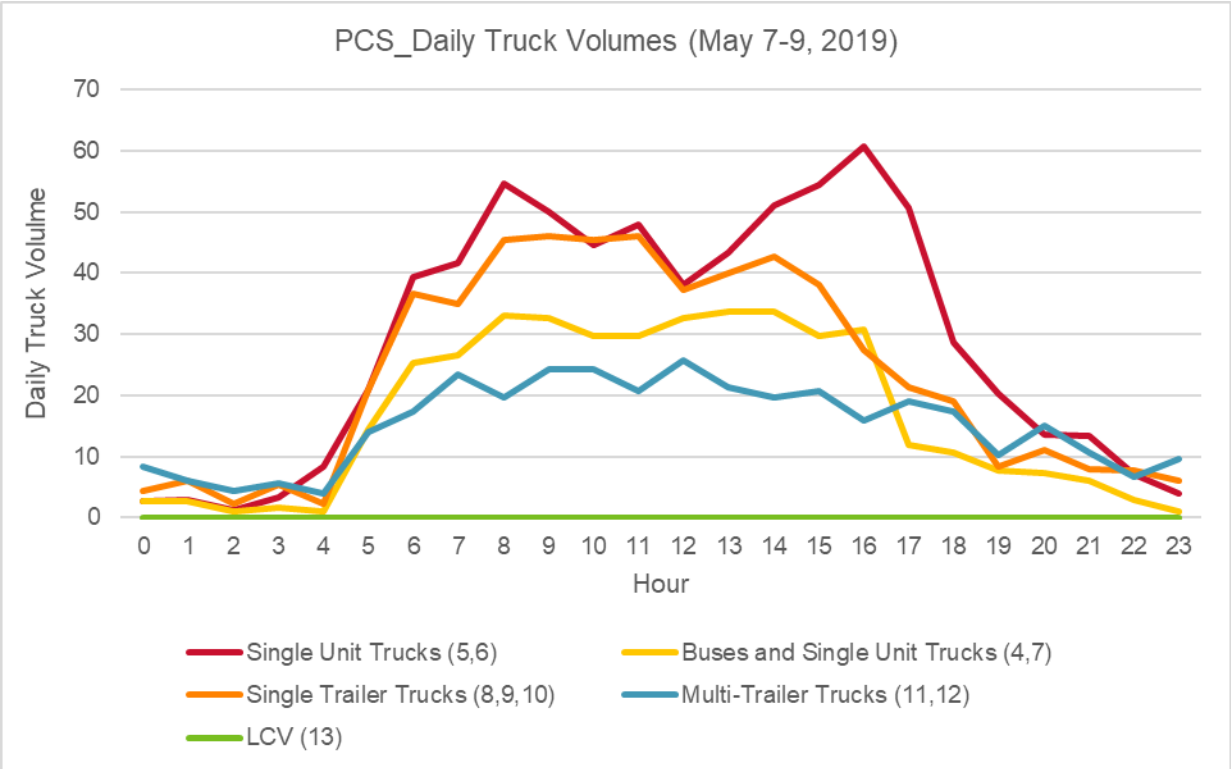
Observations

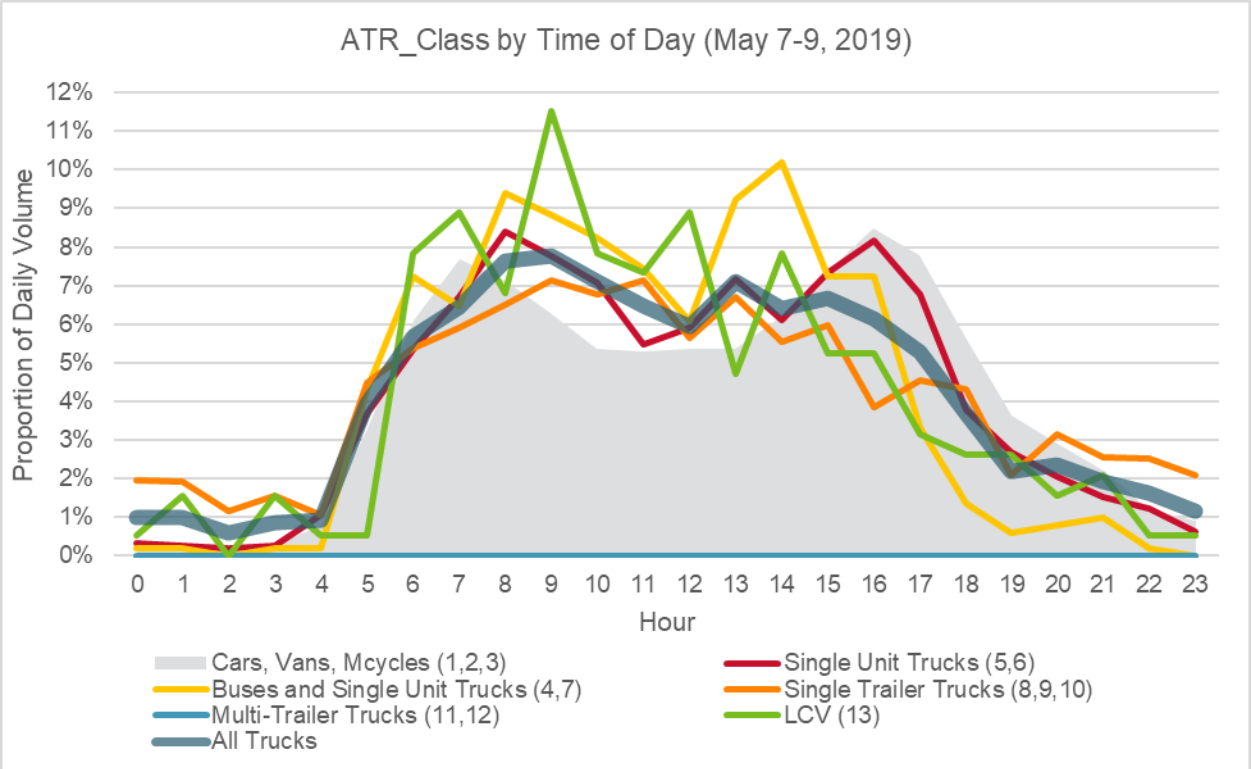
The ATR counts recorded higher total traffic volumes at this location (11,150 vs 9,450), but lower truck traffic volumes (1,500 vs 2,000). But the volume variation differs by location – other count locations showed a much closer match in volumes.

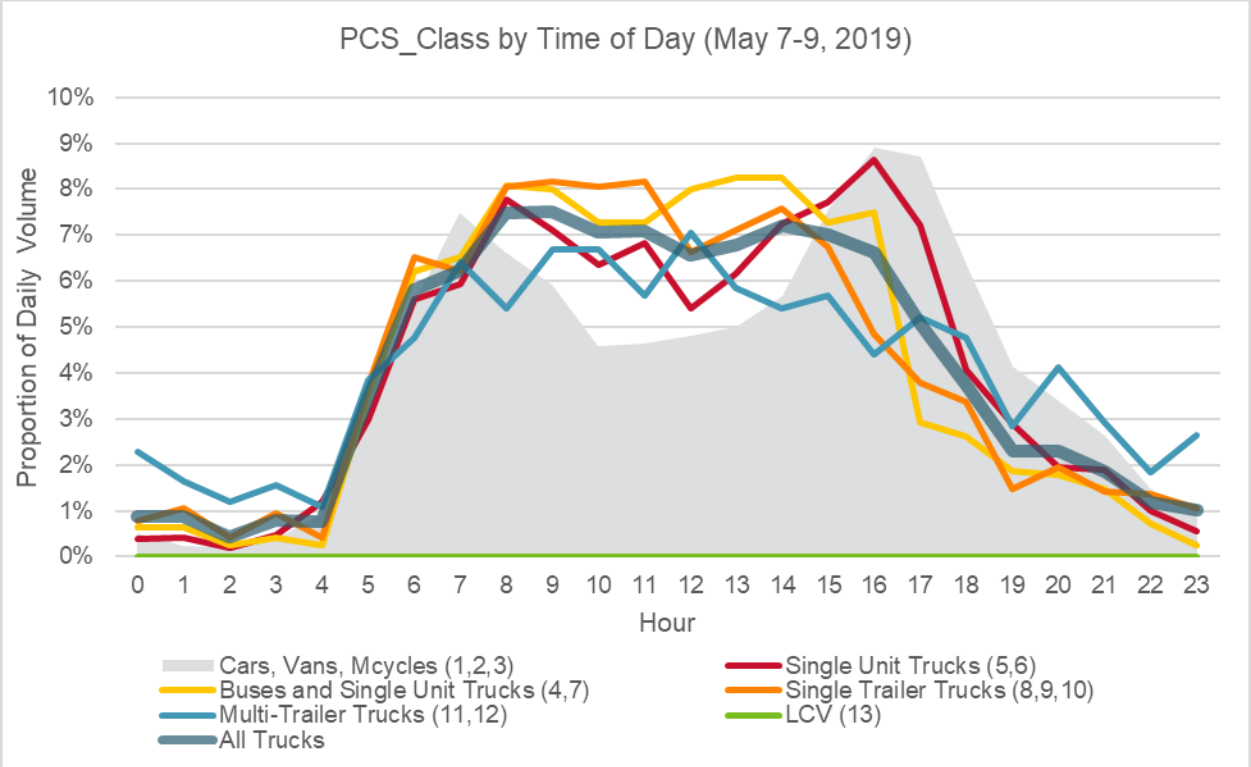
The ATR counts recorded zero multi-trailer trucks (Classes 11 and 12) whereas the PCS counts recorded zero Long Combination Vehicles (Class 13). It is likely that the ATR equipment is recording vehicles that are actually Class 11 or 12 as Class 13, as it is not expected to have LCVs outside of designated routes.

The general pattern of daily truck volumes in both count sources are similar, showing fairly consistent truck demands through the midday.


ATR_Daily Truck Volumes (May 7-9, 2019)
Truck Volume
70
60
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Hour
Single Unit Trucks (5,6)
Buses and Single Unit Trucks (4,7)
Single Trailer Trucks (8,9,10)
Multi-Trailer Trucks (11,12)
LCV (13)


PCS_Daily Truck Volumes (May 7-9, 2019)
Daily Truck Volulme
70
60
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour
Single Unit Trucks (5,6)
Buses and Single Unit Trucks (4,7)
Single Trailer Trucks (8,9,10)
Multi-Trailer Trucks (11,12)
LCV (13)


ATR_Class by Time of Day (May 7-9, 2019)
Proportion of Daily Volume
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour
Cars, Vans, Mcycles (1,2,3)
Buses and Single Unit Trucks (4,7)
Multi-Trailer Trucks (11,12)
All Trucks
Single Unit Trucks (5,6)
Single Trailer Trucks (8,9,10)
LCV (13)


PCS_Class by Time of Day (May 7-9, 2019)
Proportion of Daily Volume
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour
Cars, Vans, Mcycles (1,2,3)
Buses and Single Unit Trucks (4,7)
Multi-Trailer Trucks (11,12)
All Trucks
Single Unit Trucks (5,6)
Single Trailer Trucks (8,9,10)
LCV (13)

Appendix C – Collision Analysis

The following sub-appendices presents summary tables of the analysis of the 2,532 truck collisions that occurred in Peel Region over the 5-year period of 2015 to 2019.

Appendix C1 presents the truck collision analysis for Peel Region and Appendix C presents the truck collision analysis for Caledon only.

Impact Type Definitions are summarized on pages C-4 to C-5.

Appendix C1 – Truck Collisions in Peel Region (2015-2019)

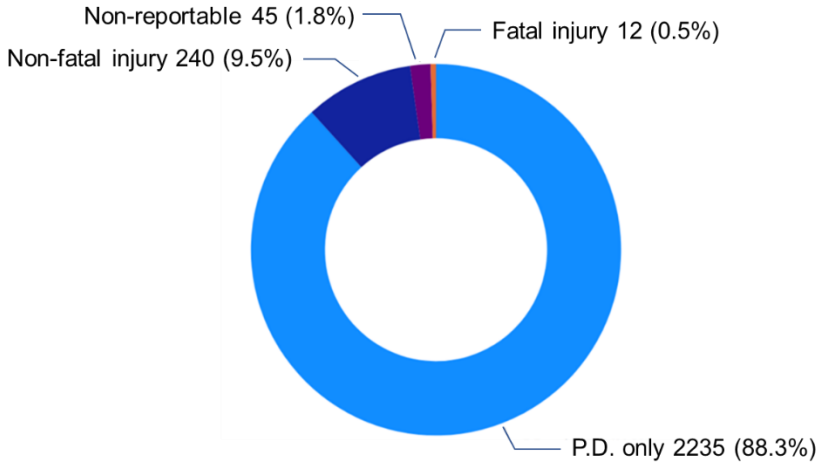
A safety assessment and collision review was completed for Peel Region. The analysis is based on intersection-related and segment-related collision records from the Region for the 5-year period between January 2015 and December 2019. It is noted that collision data within the Highway 400 series was not included in the analysis as the highway is not within the Region's or Municipality's jurisdiction.

Municipality, Classification, and Vehicle Type

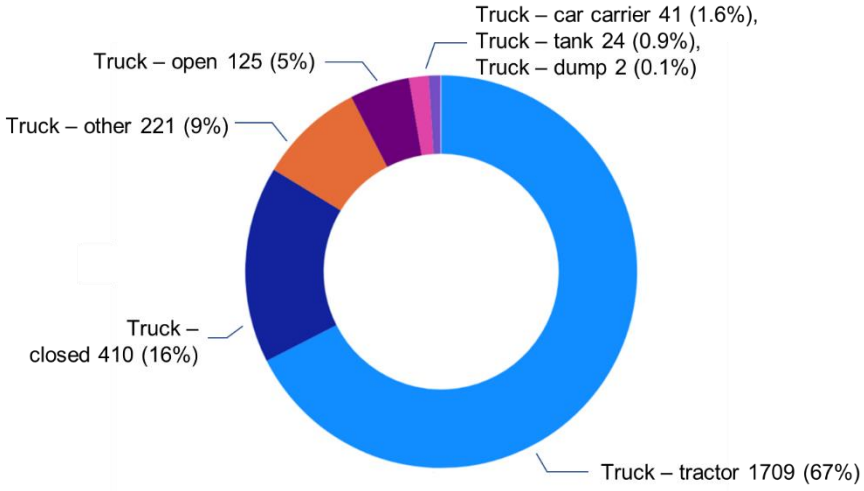
Truck Collisions by Municipality

Municipality	Count
Brampton	1280
Mississauga	1098
Caledon	154

Classification of Truck Collisions

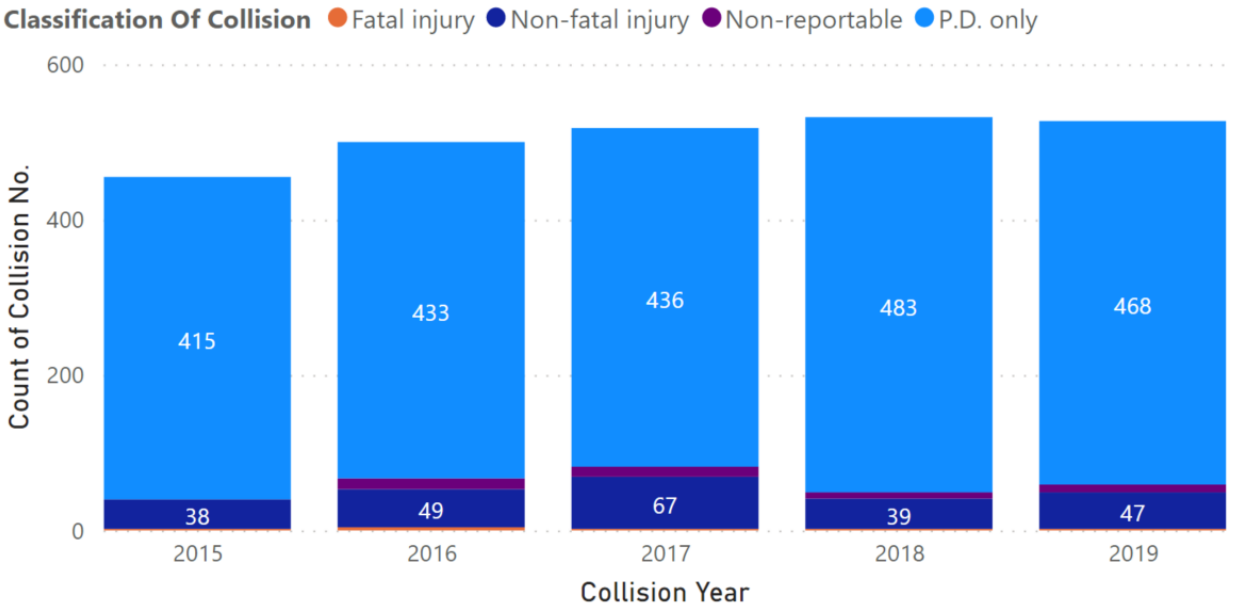


Collisions by Truck Type

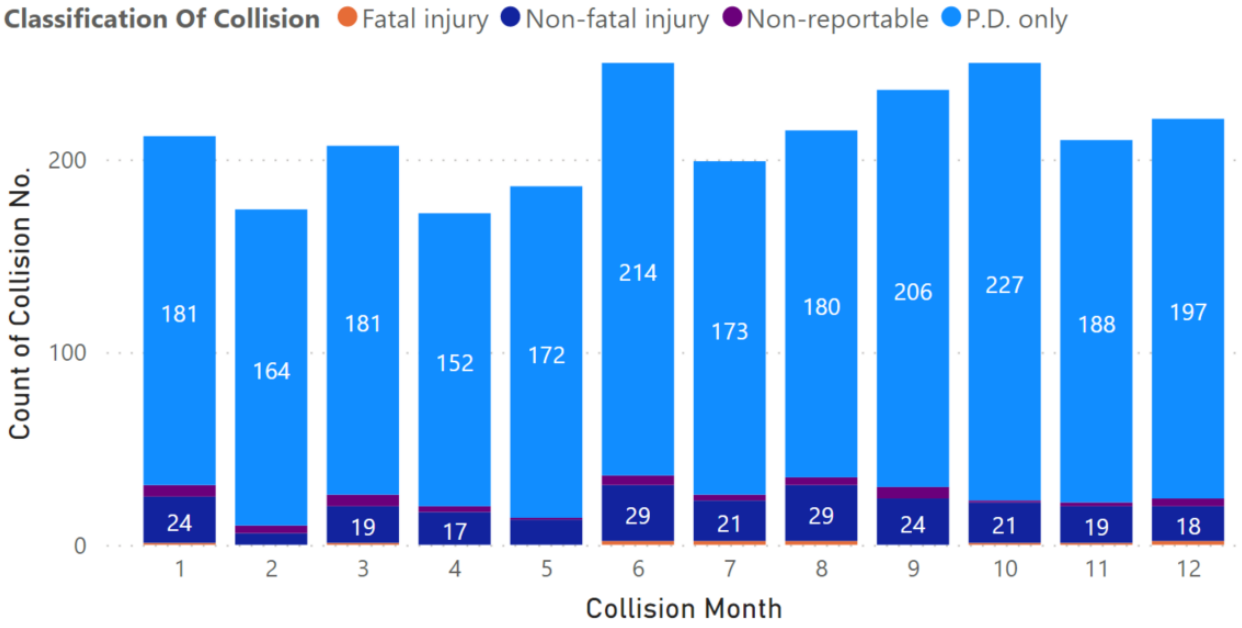


Temporal Conditions

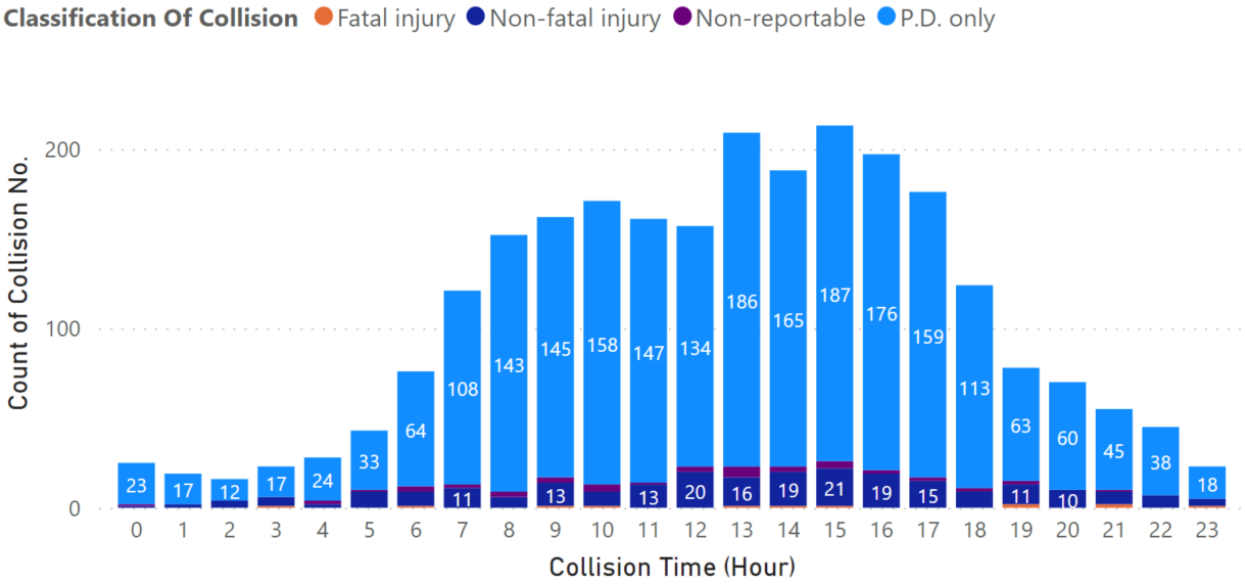
Truck Collisions by Year



Truck Collisions by Month



Truck Collisions by Time of Day (Hour)



Environmental Conditions

Truck Collisions by Environmental, Light, and Road Surface Conditions

Environmental Conditions		Light Conditions		Road Surface Conditions	
Condition	Count	Condition	Count	Condition	Count
Clear	2171	Daylight	1881	Dry	2082
Rain	216	Dark	291	Wet	317
Snow	95	Dark, artificial	161	Loose Snow	54
Other	14	Dusk	85	Slush	26
Drifting Snow	12	Dawn	82	Ice	24
Fog/mist/smoke/dust	11	Daylight, artificial	24	Packed snow	19
Freezing rain	7	Dusk, artificial	4	Unrecorded	9
Strong Wind	5	Other	3	Other	1
Unrecorded	1	Unrecorded	1	-	-

An examination of the impact type at specific locations may lead to potential identification of geometric or other location specific conditions resulting in a higher than expected rate of specific impact types. The following section provides an overview of impact type definitions and a summary of the available data.

Impact Type Definitions

Turning movement collisions occur when two vehicles approaching from opposite directions collide as a result of at least one vehicle attempting to make a left or U-turn in front of the opposing vehicle. Common causes of turning movement collisions may be insufficient vehicle clearance intervals through the intersections or obstruction of sightlines. Potential countermeasures include increasing vehicle clearance times, improving sight-lines and providing traffic signal coordination along a corridor.

Rear-end collisions can occur when a leading vehicle makes a sudden or unexpected stop causing the following vehicle to collide, or when a following vehicle is travelling too closely to the leading vehicle. Possible causes for sudden stops include pedestrian crossings, multiple or closely spaced driveway accesses to adjacent land uses, high number of turning movements, signage/traffic control visibility, non-standard amber times, and slippery road conditions. Safety enhancements may include improved signage and lighting, access management, turn prohibitions etc.

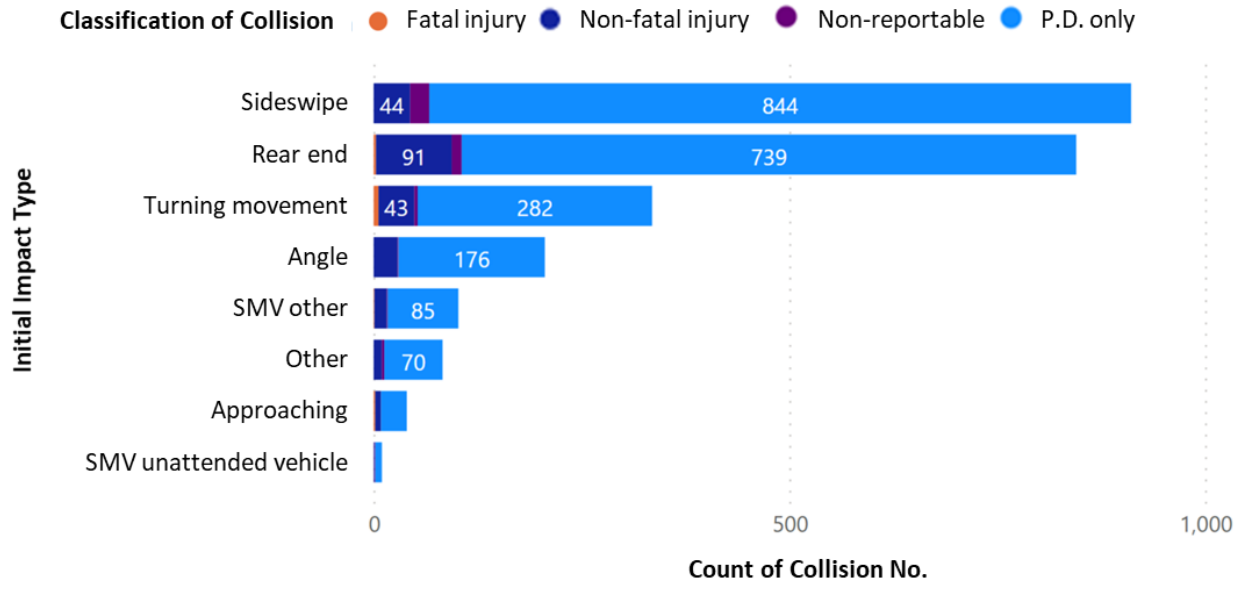
Angle collisions occur when two vehicles approaching at an angle from non-opposing directions (i.e. not a right-angle crash) collide, often due to failing to obey stop/yield signs, running a red light etc.

Single Motor Vehicle (SMV) collisions may include run-off-road and roll-over crashes, as well as collisions with pedestrians, cyclists, animals, roadside objects or debris on the road right of way.

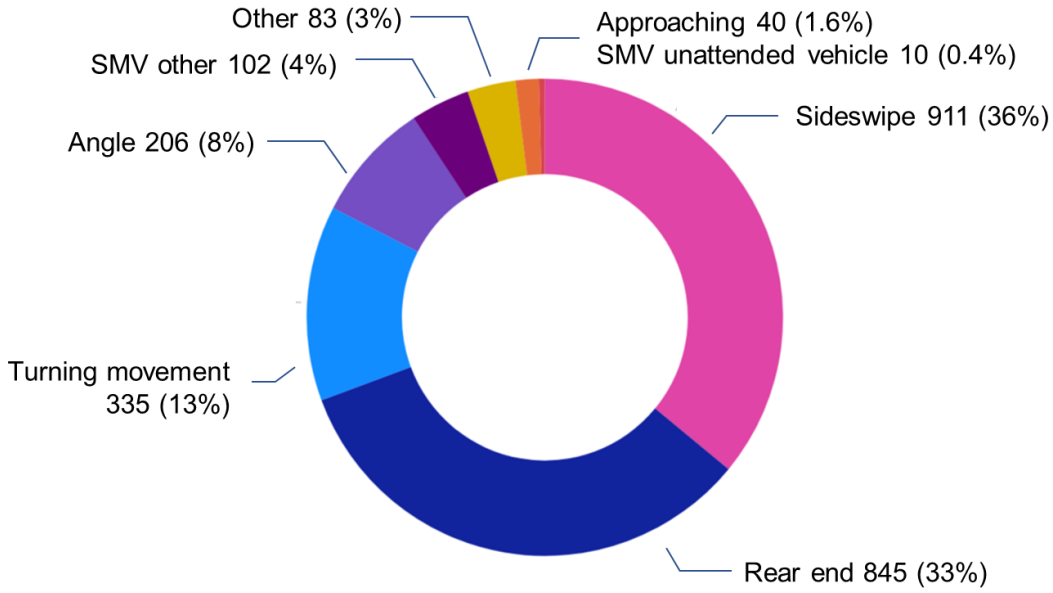
Approaching collisions occur when one vehicle is proceeding through the intersection and collides with another vehicle. Possible causes for this type of collision are improper turns (i.e. an unsafe left turn) or slippery road conditions (i.e. slipping into the intersection).

Sideswipe collisions occur when two vehicles are driving next to one another in the same direction and the sides of two vehicles contact one another. Possible causes for sideswipe collisions include changing lanes, merging, distracted driving, or failure to check blind-spots.

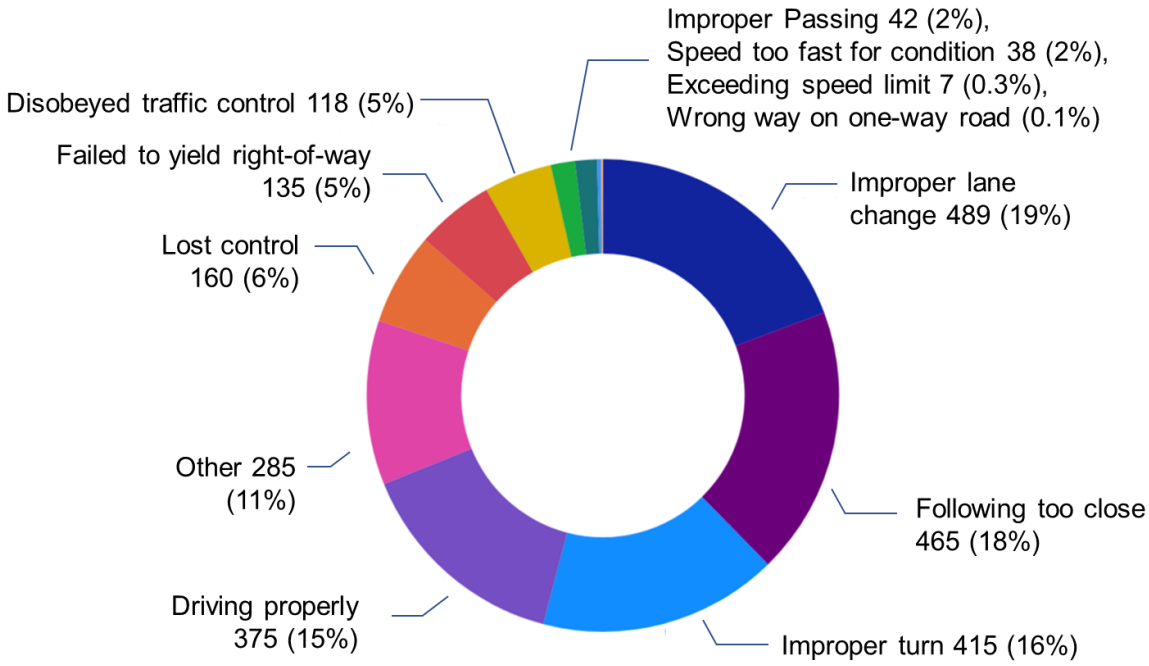
Truck Collisions by Initial Impact Type and Classification



Truck Collisions by Impact Type



Truck Collisions by Apparent Driver Action



Vulnerable Road User Collisions

Collisions Involving Trucks and Cyclists (2015 – 2019)

Location	DIXIE RD @ ENTRANCE-PLAZA (8044 DIXIE RD)/ ORENDA RD E (INT_5528)	ENTRANCE - HOME DEPOT / RESOLUTION DR @ STEELES AV E (INT_15570)	410 RP N @ DERRY RD E (INT_7441)	PRIVATE RD/ADVANCE BV @ STEELES AV E (INT_5586)	AIRPORT RD @ BOVAIRD DR E/CASTLEMORE RD (INT_2217)	KENNEDY RD N @ VODDEN ST E (INT_5392)
Municipality	BRAMPTON	BRAMPTON	MISSISSAUGA	BRAMPTON	BRAMPTON	BRAMPTON
Collision Date	5/7/2015	10/22/2015	3/15/2016	4/7/2016	4/10/2019	7/16/2019
Collision Time (Hour)	14	16	12	3	9	19
Environment Condition	Clear	Clear	Clear	Rain	Clear	Clear
Light	Daylight	Daylight	Daylight	Dark	Daylight	Daylight
Road Surface Condition	Dry	Dry	Dry	Wet	Dry	Dry
Classification of Collision	Non-fatal injury	Non-fatal injury	P.D. only	P.D. only	P.D. only	P.D. only
Initial Impact Type	Angle	Angle	Angle	Sideswipe	Rear end	Turning movement
Vehicle 1 Maneuver	Turning right	Going ahead	Going ahead	Going ahead	Going ahead	Turning left
Vehicle 2 Maneuver	Going ahead	Merging	Turning right	Going ahead	Stopped	Going ahead
Apparent Driver 1 Action	Driving properly	Failed to yield right-of-way	Wrong way on one-way road	Failed to yield right-of-way	Driving properly	Disobeyed traffic control
Apparent Driver 2 Action	-	Driving properly	Driving properly	Driving properly	Driving properly	Driving properly
Pedestrian Collision	No	No	No	No	No	No
Cyclist Collision	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle 1 Type	Truck - tractor	Bicycle	Bicycle	Truck - tractor	Truck - tractor	Bicycle
Vehicle 2 Type	Bicycle	Truck - tractor	Truck - open	Bicycle	Bicycle	Truck - closed

Collisions Involving Trucks and Pedestrians - Brampton (2015 – 2019)

Location	DIXIE RD @ TEMPLEHILL RD/ FATHER TOBIN RD	QUEEN ST E btwn GOREWAY DR/HUMBERWEST PARKWAY & MCVEAN DR/CLAIREVILLE CONSERVATION RD	MCMURCHY AV N @ QUEEN ST W	50 HY btwn EBENEZER RD & LANGSTAFF RD/COTTRELLE BV	BOVAIRD DR W @ ENTRANCE - PENDALE PLAZA	MCLAUGHLIN RD N/S @ QUEEN ST W	BRAMALEA RD @ STEELES AVE E	EMBLETON RD/ 5 SIDE RD @ WINSTON CHURCHILL BV
Collision Date	1/18/2016	3/21/2016	5/8/2017	5/14/2017	6/13/2017	10/12/2017	9/18/2018	5/1/2019
Collision Time (Hour)	12	13	8	20	16	11	21	16
Environment Condition	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Rain
Light	Daylight	Daylight	Daylight	Dusk	Daylight	Daylight	Dark, artificial	Daylight
Road Surface Condition	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Wet
Classification of Collision	Non-fatal injury	Non-fatal injury	Non-fatal injury	Non-fatal injury	Non-fatal injury	Non-fatal injury	Non-fatal injury	Non-fatal injury
Initial Impact Type	Rear end	SMV unattended vehicle	SMV other	SMV other	SMV other	SMV other	SMV other	SMV other
Vehicle 1 Maneuver	Going ahead	Going ahead	Turning right	Going ahead	Turning right	Turning right	Going ahead	Slowing or stopping
Vehicle 2 Maneuver	Stopped	Parked	-	-	-	-	-	-
Apparent Driver 1 Action	Following too close	Exceeding speed limit	Failed to yield right-of-way	Driving properly	Improper turn	Improper turn	Driving properly	Other
Apparent Driver 2 Action	Driving properly	-	-	-	-	-	-	-
Vehicle 1 Type	Truck - tractor	Automobile, station wagon	Truck-other	Truck - tractor	Truck-other	Truck-other	Truck - tractor	Truck - tractor
Vehicle 2 Type	Automobile, station wagon	Truck - tractor	-	-	-	-	-	-

Collisions Involving Trucks and Pedestrians - Mississauga (2015 – 2019)

Location	EGLINTON AV @ ERIN MILLS PY	AIRPORT RD @ BEVERLEY ST/VICTORY CR	AIRPORT RD @ ORLANDO DR/SILVER DART DR	DERRY RD E btwn MAXWELL RD & TOMKEN RD	DERRY RD W @ WEST CREDIT AV/DUPONT ENTR	DIXIE RD btwn COURTNEYPARK DR E & MID-WAY BV	BENEDET DR @ WINSTON CHURCHILL BV
Collision Date	5/6/2015	7/30/2015	1/28/2016	4/25/2017	6/27/2018	7/4/2018	7/2/2019
Collision Time (Hour)	8	21	17	15	16	1	9
Environment Condition	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Light	Daylight, artificial	Dusk	Dusk	Daylight	Daylight	Dark	Daylight
Road Surface Condition	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Classification of Collision	P.D. only	Fatal injury	Non-fatal injury	Non-fatal injury	Non-fatal injury	Non-fatal injury	Non-fatal injury
Initial Impact Type	SMV other	SMV other	SMV other	SMV other	SMV other	SMV other	SMV other
Vehicle 1 Maneuver	Turning right	Going ahead	Turning right	Going ahead	Turning right	Going ahead	Making "U" turn
Vehicle 2 Maneuver	-	-	-	-	-	-	-
Apparent Driver 1 Action	Disobeyed traffic control	Driving properly	Driving properly	Driving properly	Other	Driving properly	Improper turn
Apparent Driver 2 Action	-	-	-	-	-	-	-
Vehicle 1 Type	Truck - open	Truck - tractor	Truck - closed	Truck - tractor	Truck - closed	Truck-other	Truck - tractor
Vehicle 2 Type	Moped	-	-	-	-	-	-

Note: Zero truck collisions involving pedestrians reported in Caledon between 2015 and 2019

Fatal Collisions

Fatal Truck Collisions in Brampton

Location	AIRPORT RD @ WILLIAMS PY E	AIRPORT RD btwn LACOSTE BV & MAYFIELD RD	MCVEAN DR/CLAIREVILLE CONSERVATION RD @ QUEEN ST E/7 HY	50 HY @ LANGSTAFF RD/COTTRELLE BV	QUEEN ST E btwn BEAUMARIS DR & CHERRYCREST DR	MAYFIELD RD btwn COLERAINE DR & HUMBER STATION RD	BOVAIRD DR W @ BRISDALE DR/PERTOSA DR	50 HY @ LANGSTAFF RD/COTTRELLE BV
Collision Date	8/11/2015	10/17/2015	3/28/2016	12/5/2016	6/21/2017	11/29/2017	8/20/2018	12/7/2018
Collision Time (Hour)	14	5	13	6	10	23	19	3
Environment Condition	Clear	Clear	Rain	Clear	Clear	Clear	Clear	Clear
Light	Daylight	Dusk	Daylight	Dark	Daylight	Dark	Daylight	Dark
Road Surface Condition	Dry	Dry	Wet	Wet	Dry	Dry	Dry	Dry
Initial Impact Type	Turning movement	Rear end	Rear end	Turning movement	Rear end	Approaching	Turning movement	Turning movement
Vehicle 1 Maneuver	Turning left	Going ahead	Going ahead	Turning left	Going ahead	Going ahead	Going ahead	Going ahead
Vehicle 2 Maneuver	Going ahead	Going ahead	Slowing or stopping	Going ahead	Stopped	Going ahead	Turning left	Turning left
Apparent Driver 1 Action	Improper turn	Speed too fast for condition	Following too close	Improper turn	Other	Other	Driving properly	Other
Vulnerable Road User?	No	No	No	No	No	No	No	No
Vehicle 1 Type	Automobile, station wagon	Automobile, station wagon	Automobile, station wagon	Automobile, station wagon	Automobile, station wagon	Automobile, station wagon	Truck - tractor	Truck - tractor
Vehicle 2 Type	Truck - tractor	Truck - tractor	Truck - tractor	Truck - tractor	Truck - closed	Truck - tractor	Automobile, station wagon	Truck - tractor

Fatal Truck Collisions in Mississauga

Location	AIRPORT RD @ BEVERLEY ST/VICTORY CR	DIXIE RD @ SHAWSON DR	AEROWOOD DR @ DIXIE RD
Collision Date	7/30/2015	1/21/2016	10/13/2016
Collision Time (Hour)	21	21	19
Environment Condition	Clear	Clear	Clear
Light	Dusk	Dark	Dark
Road Surface Condition	Dry	Dry	Dry
Initial Impact Type	SMV other	Turning movement	Turning movement
Vehicle 1 Maneuver	Going ahead	Going ahead	Going ahead
Vehicle 2 Maneuver	-	Turning left	Turning left
Apparent Driver 1 Action	Driving properly	Disobeyed traffic control	Exceeding speed limit
Vulnerable Road User?	Yes	No	No
Vehicle 1 Type	Truck - tractor	Truck - tractor	Automobile, station wagon
Vehicle 2 Type	-	Automobile, station wagon	Truck - tractor

Fatal Truck Collisions in Caledon

Location	KING ST btwn AIRPORT RD & TORBRAM RD	CHARLESTON SR btwn MAIN ST/CATARACT RD & MCLAREN RD
Collision Date	6/14/2019	7/8/2019
Collision Time (Hour)	9	15
Environment Condition	Clear	Clear
Light	Daylight	Daylight
Road Surface Condition	Dry	Dry
Initial Impact Type	Approaching	Rear end
Vehicle 1 Maneuver	Going ahead	Going ahead
Vehicle 2 Maneuver	Going ahead	Stopped
Apparent Driver 1 Action	Other	Following too close
Vulnerable Road User?	No	No
Vehicle 1 Type	Pick-up truck	Truck - closed
Vehicle 2 Type	Truck - open	Automobile, station wagon

Truck Collision Locations

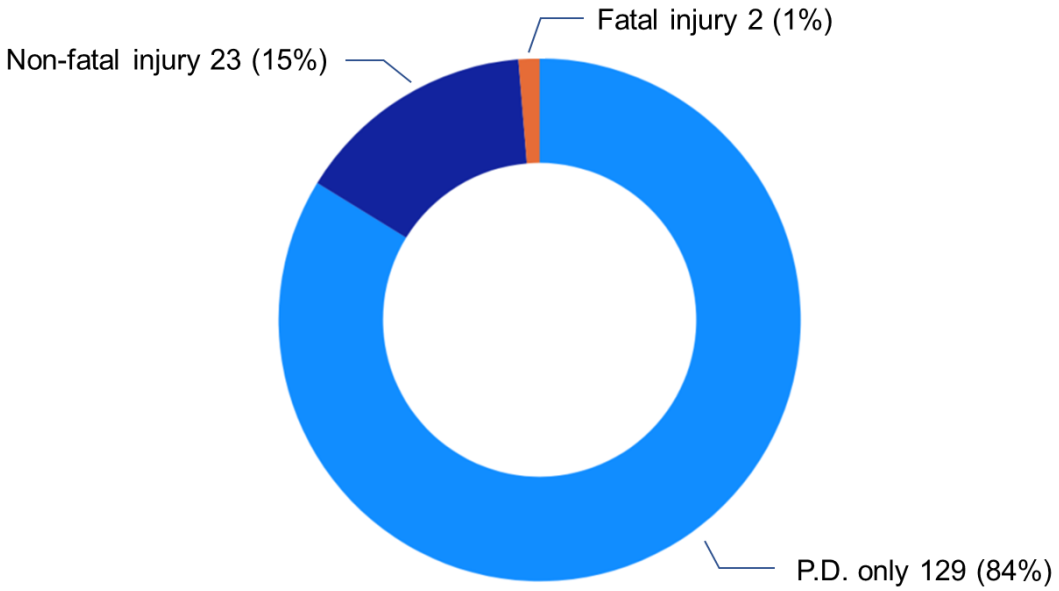
Top 25 Peel Region Locations for Truck Collisions (2015 – 2019)

LOCATIONS	COUNT
DIXIE RD @ SHAWSON DR (INT_7712)	44
AIRPORT RD @ DERRY RD E (INT_5284)	42
AIRPORT RD @ STEELES AV E (INT_3995)	42
DERRY RD E @ DIXIE RD (INT_6880)	41
DERRY RD E @ TOMKEN RD (INT_7346)	40
BRITANNIA RD E @ DIXIE RD (INT_7645)	37
BRAMALEA RD @ STEELES AVE E (INT_5247)	29
RUTHERFORD RD/FIRST GULF BV @ STEELES AV E (INT_6647)	27
COURTNEYPARK DR E @ DIXIE RD (INT_7414)	26
STEELES AV E @ WEST DR/TOMKEN RD (INT_6026)	23
401 RP W @ DIXIE RD (INT_7826)	23
DIXIE RD @ STEELES AV E (INT_5749)	22
10 HY/ HURONTARIO ST @ BRITANNIA RD W (INT_8683)	22
AIRPORT RD @ QUEEN ST E/7 HY (INT_2798)	22
AIRPORT RD @ WOODSLEA RD/INTERMODAL DR (INT_3498)	21
50 HY @ FOGAL RD/ZENWAY BLVD (INT_1788)	20
STEELES AV E @ TORBRAM RD (INT_4673)	19
GOREWAY DR/HUMBERWEST PARKWAY @ QUEEN ST E/7 HY (INT_2472)	19
DIXIE RD @ PRIVATE RD/ DREW RD (INT_6604)	18
50 HY @ QUEEN ST E/7 HY (INT_2060)	18
DERRY RD E @ KENNEDY RD (INT_7647)	18
BRAMALEA RD @ DERRY RD E (INT_6379)	18
10 HY/ HURONTARIO ST @ DERRY RD E (INT_7971)	17
50 HY @ LANGSTAFF RD/COTTRELLE BV (INT_1460)	17
STEELES AV E btwn DIXIE RD & PRIVATE RD/ADVANCE BV (536)	16

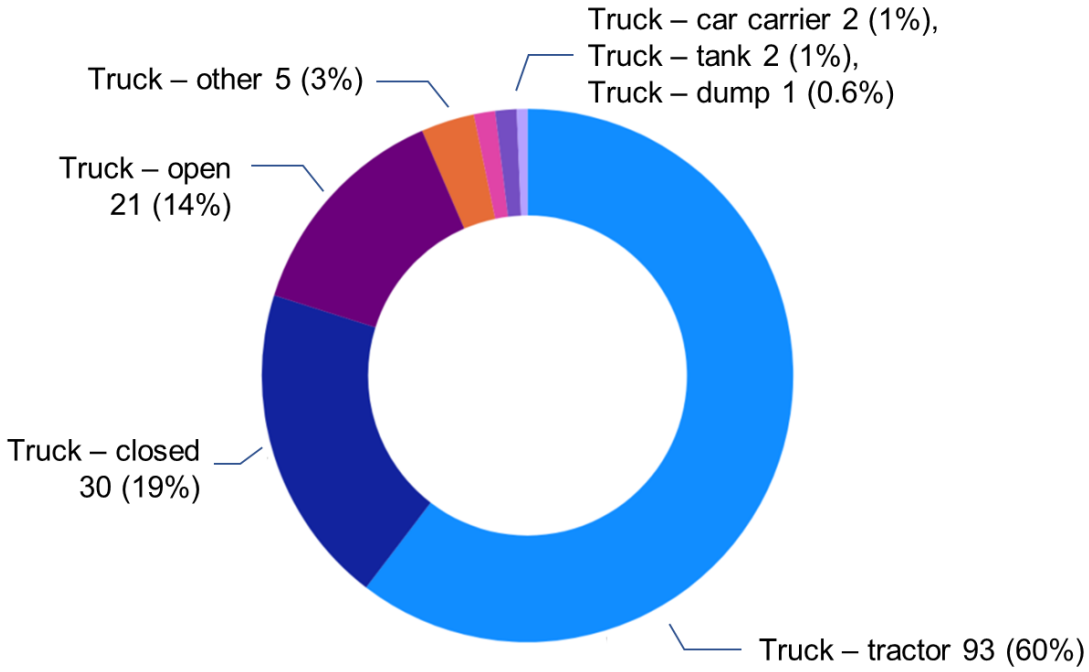
Appendix C2 – Truck Collisions in Caledon (2015-2019)

Classification and Vehicle Type

Truck Collisions by Classification

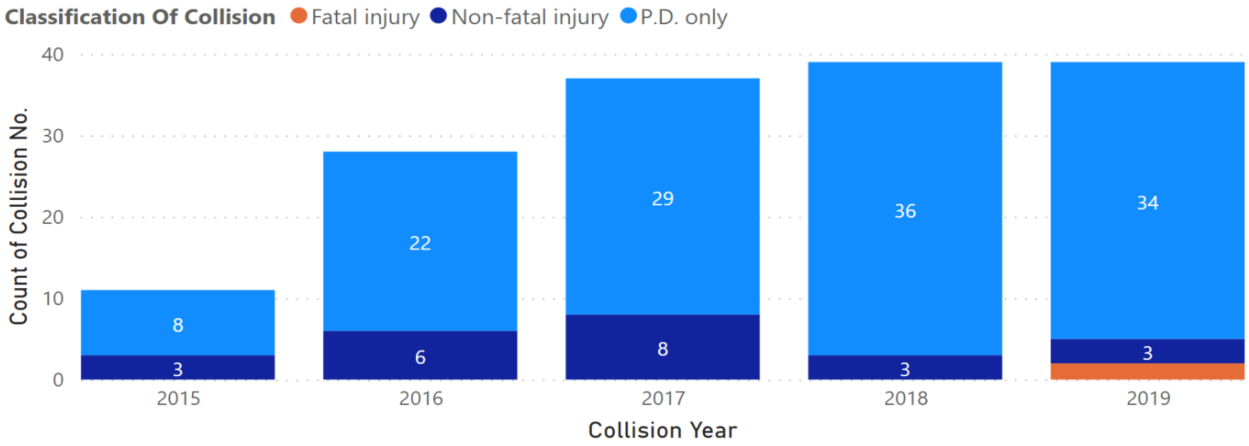


Collisions by Truck Type

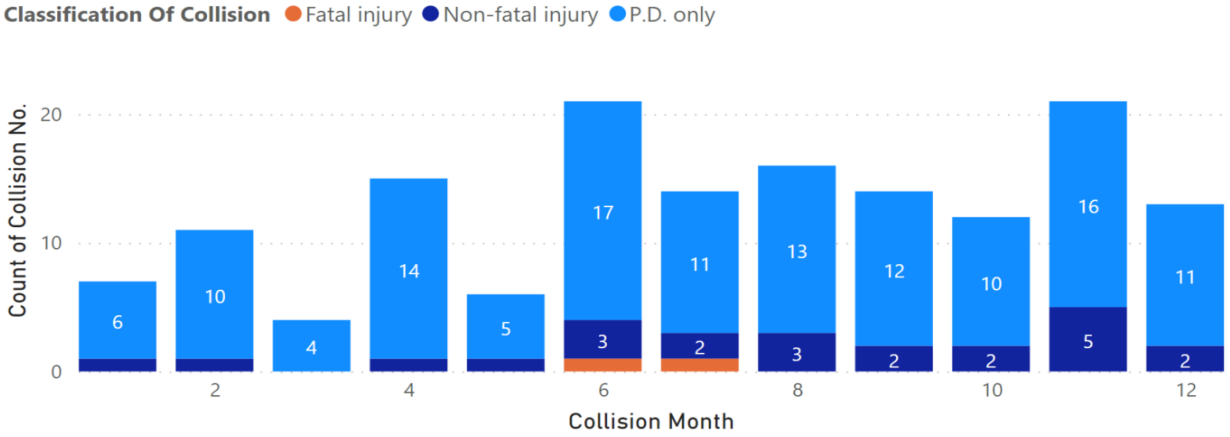


Temporal Conditions

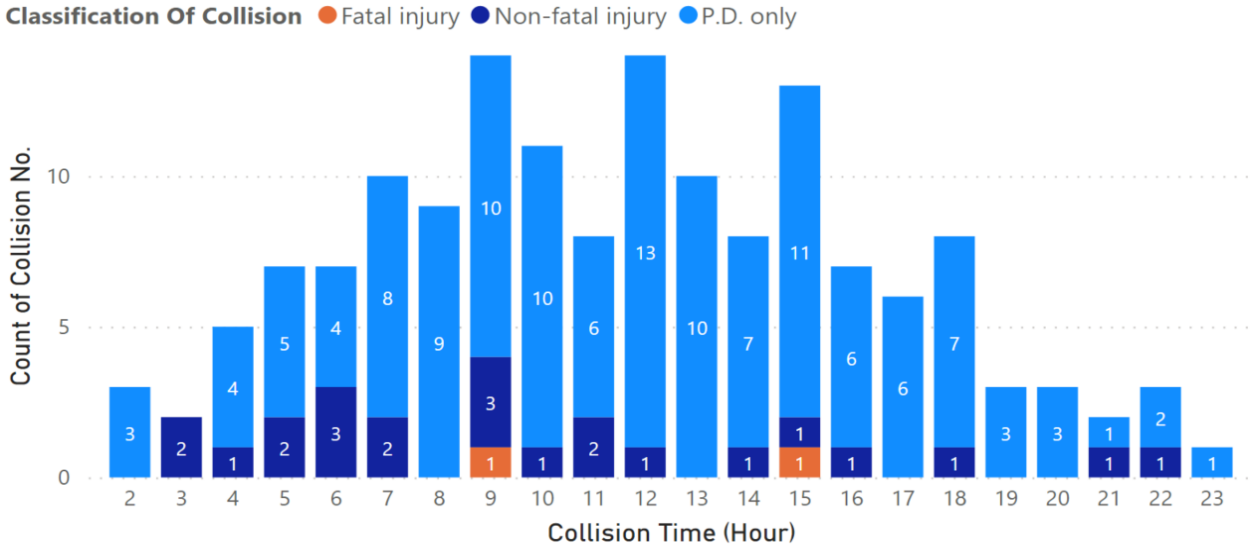
Truck Collisions by Year



Truck Collisions by Month



Truck Collisions by Time of Day (Hour)



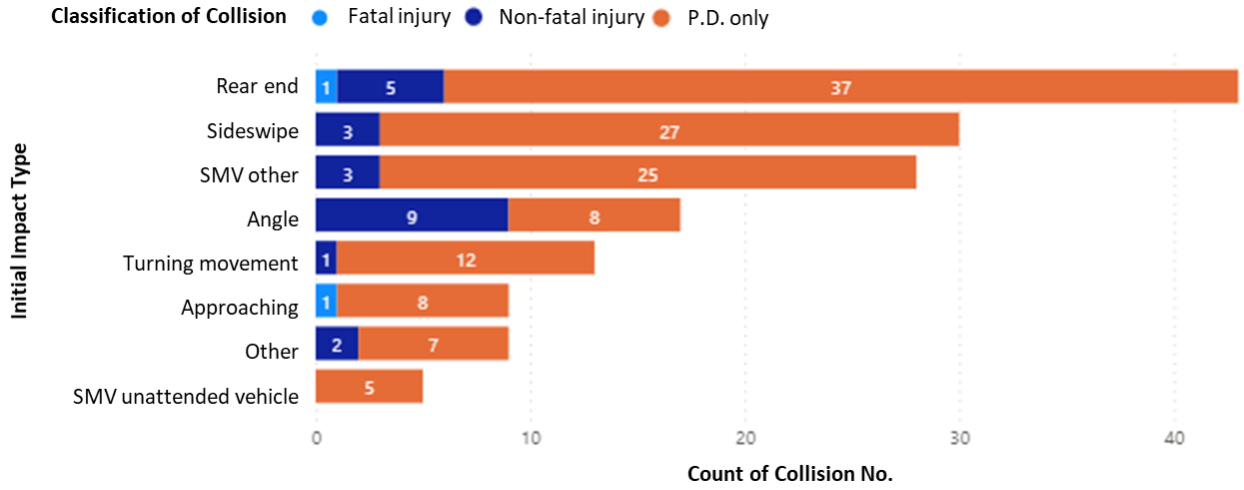
Environmental Conditions

Truck Collisions by Environmental, Light, and Road Surface Conditions

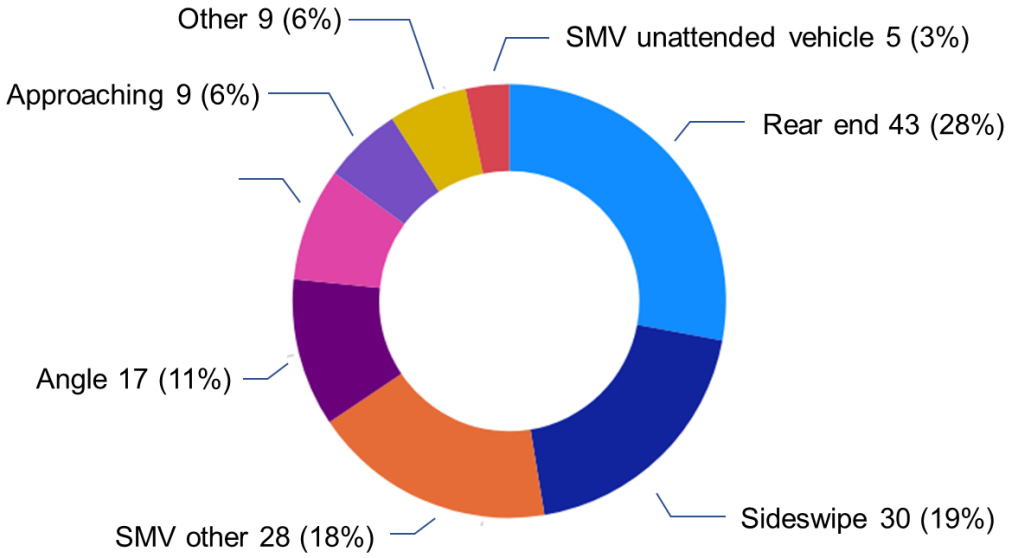
Environmental Conditions		Light Conditions		Road Surface Conditions	
Condition	Count	Condition	Count	Condition	Count
Clear	126	Daylight	117	Dry	116
Rain	13	Dark	17	Wet	24
Snow	10	Dark, artificial	12	Unrecorded	5
Fog/mist/smoke/dust	3	Dawn	5	Loose snow	4
Freezing rain	1	Daylight, artificial	2	Ice	3
Unrecorded	1	Dusk	1	Packed snow	2

Impact Type and Apparent Driver Actions

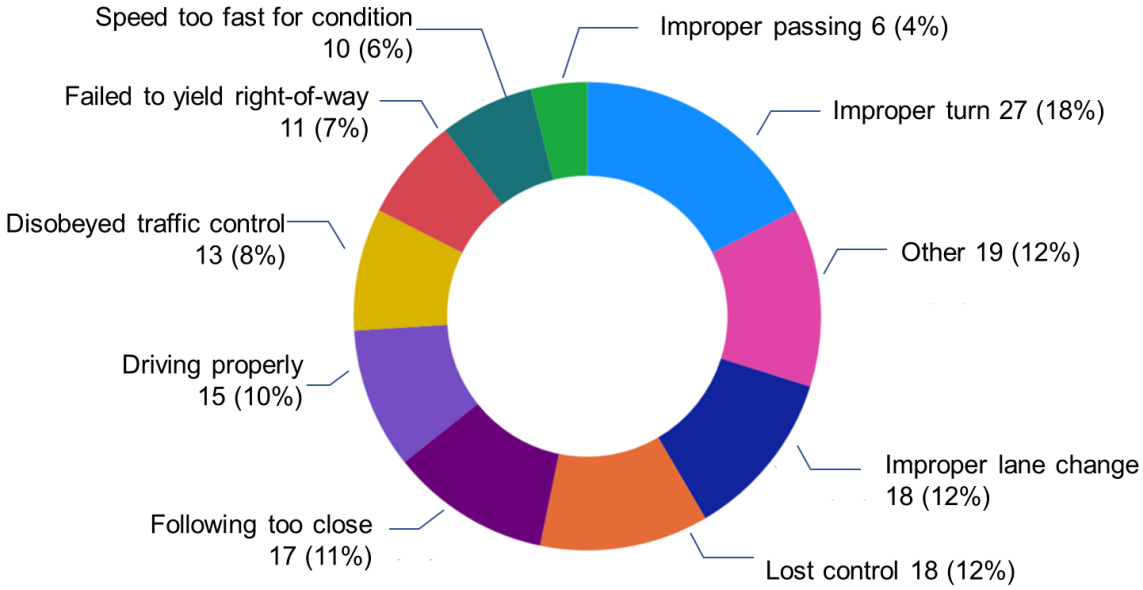
Truck Collisions by Initial Impact Type and Classification



Truck Collisions by Impact Type



Truck Collisions by Apparent Driver Action



Fatal Collisions

Fatal Truck Collisions in Caledon

Location	KING ST btwn AIRPORT RD & TORBRAM RD	CHARLESTON SR btwn MAIN ST/CATARACT RD & MCLAREN RD
Municipality	CALEDON	CALEDON
Collision Date	6/14/2019	7/8/2019
Collision Time (Hour)	9	15
Environment Condition	Clear	Clear
Light	Daylight	Daylight
Road Surface Condition	Dry	Dry
Initial Impact Type	Approaching	Rear end
Vehicle 1 Maneuver	Going ahead	Going ahead
Vehicle 2 Maneuver	Going ahead	Stopped
Apparent Driver 1 Action	Other	Following too close
Vulnerable Road User Collision	No	No
Vehicle 1 Type	Pick-up truck	Truck - closed
Vehicle 2 Type	Truck - open	Automobile, station wagon

Truck Collision Locations

Top 15 Caledon Locations for Truck Collisions (2015 – 2019)

LOCATIONS	COUNT
50 HY @ MAYFIELD RD/ALBION VAUGHAN RD (INT_1126)	12
50 HY @ MCEWAN DR (INT_1004)	7
MAYFIELD RD btwn MAYFIELD SECONDARY SCHOOL ENTRANCE & TORBRAM RD (1097)	6
AIRPORT RD btwn KING ST & OLD SCHOOL RD (358)	5
50 HY @ HEALEY RD/ ENTRANCE- UNITED LUMBER/ HOME HARDWARE (INT_969)	4
COLERAINE DR @ KING ST W/ HARVEST MOON DRIVE (INT_15637)	4
AIRPORT RD btwn MAYFIELD RD & PERDUE CT (270)	4
MAYFIELD RD btwn 410 HY N & ACE DRIVE (1103)	4
50 HY @ EMIL KOLB PY (INT_15675)	3
DE ROSE AV @ EMIL KOLB PY (INT_15671)	3
COLERAINE DR @ GEORGE BOLTON PY (INT_15639)	3
AIRPORT RD @ OLD CHURCH RD (INT_891)	3
KING ST @ QUEEN ST N/ 50 HY (INT_594)	3
10 HY/ HURONTARIO ST @ KING ST (INT_1901)	3
10 HY/ HURONTARIO ST @ CHARLESTON SR (INT_1062)	3