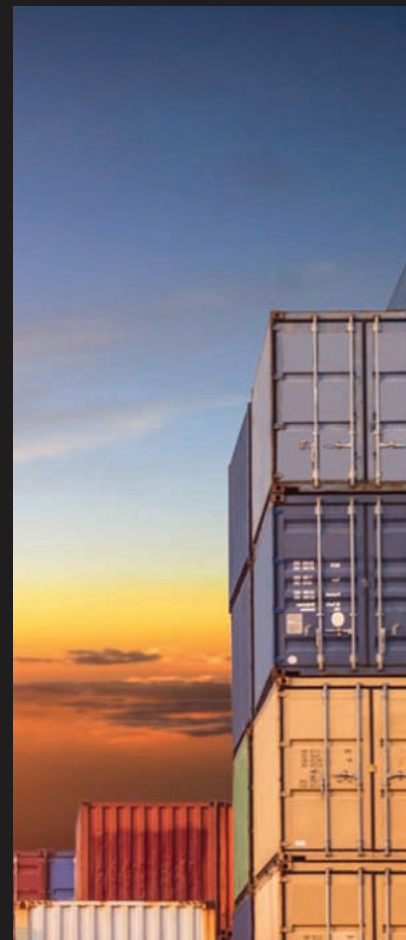


May 2021

Appendix B Tech Memo #1: Regional Freight and Logistics Status



Buffalo-Niagara Regional Freight Plan

Abstract

This report provides an update to the current freight and logistics conditions facing the Buffalo-Niagara region and prepares an assessment to support subsequent opportunities, challenges, and recommendations. The update to the current freight and logistics conditions were derived from a combination of technical resources, publications, and stakeholder input.

- Section 1 provides an overview of recent freight transportation projects that were identified in the 2010 Niagara Frontier Urban Area Transportation Study and are complete or currently underway. This section also describes the projects that were identified in the 2010 plan, but have not been implemented.
 - Section 2 describes regional economic development in the Buffalo-Niagara region and have the potential to influence freight patterns.
 - Section 3 describes improvement or expansion projects planned for nearby intermodal, air, or water port facilities that are likely to impact the freight and logistics industry of the Buffalo-Niagara region.
 - Section 4 provides an overview of the Buffalo-Niagara region freight conditions. This section includes an analysis of recurring and non-recurring freight congestion and an analysis of border crossings.
 - Section 5 discusses the cross-border conditions relating to freight and logistics.
 - Section 6 offers a look at freight flows (historical, current, and projected) for the Buffalo-Niagara region.
 - Section 7 describes the provisions initiated under Moving Ahead for Progress in the 21st Century and the related impacts to funding programs and state and MPO planning.
 - Section 8 describes the national freight and logistics trends as seen from various industry perspectives to provide context for freight decision-making in the Buffalo-Niagara region.
 - Section 9 provides an overview of the regional and statewide studies and plans that influence the freight and logistics industry in the Buffalo-Niagara region.
 - Section 10 provides an overview of freight planning considerations including the issues related to freight and environmental sustainability, including air quality and greenhouse gas emissions, safety-related concerns – crash data and the transport of hazardous materials, and security concerns.
 - Section 11 presents measures that can be used to track the performance of a freight system.
 - Section 12 describes the outreach and engagement activities conducted, including meetings and a survey. The stakeholder outreach has provided valuable insight into the challenges and opportunities for both the existing and an expanding future freight and logistics industry in the Buffalo-Niagara region.
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1 Transportation Improvement Projects

The 2010 Greater Buffalo Niagara Regional Transportation Council (GBNRTC) Niagara Frontier Urban Area Freight Transportation Study (2010 study) included numerous project recommendations, as presented in Table 1-1. This section provides an overview of which projects have been undertaken and how they have addressed freight flow in the region. This section also provides a synopsis of which projects identified in the 2010 study are included in the Transportation Improvement Program (TIP) or other planning documents for near-term consideration.

Table 1-1: Projects Identified in 2010 Niagara Frontier Urban Area Freight Transportation Study

<i>Project</i>	<i>Mode</i>	<i>Status</i>
<i>Peace Bridge Expansion</i>	Highway	Various projects completed
<i>NY Route 63 Bypass</i>	Highway	Not completed
<i>US 219</i>	Highway	Partially completed
<i>Buffalo Logistics Complex</i>	Highway/ Rail	Partially completed and underway
<i>Portageville Bridge Replacement</i>	Rail	Completed
<i>CP Draw Bridge Replacement</i>	Rail	Not completed
<i>G&W Connection from NS to Buffalo Line to BPRR Line</i>	Rail	Not completed
<i>CN Northern Connection</i>	Rail	Not completed
<i>CN Southern Connection</i>	Rail	Not completed
<i>Rehabilitation of Falls Road Bridge over Erie Canal</i>	Rail	Not completed
<i>Lehigh Valley Yard Intermodal Expansion</i>	Rail	Not completed
<i>AES Lake Unloading Project</i>	Water	Not completed
<i>Revitalized Erie Canal</i>	Water	Not completed
<i>Short Sea Shipping</i>	Water	Not completed

1.1 PROJECTS COMPLETED OR UNDERWAY

International Trade Gateway Organization

One of the most imminent recommendations stemming from the 2010 study was the formation of a freight and logistics group that would promote and facilitate the freight and logistics industry in the Buffalo Niagara region. The International Trade Gateway Organization (ITGO) is a collaborative initiative of the public, private, and academic sectors to create a globally-known logistics center in the Buffalo Niagara region.

Peace Bridge Expansion

Since the 2010 study, priorities surrounding Peace Bridge expansion have changed. With traffic volumes generally down in the last decade, the focus has shifted from expanding capacity on the bridge to improving clearance and inspections at the bridge plazas and enhancing connections to the Interstate system. Completed in 2017, the New York Gateway Connections Improvement Project was a \$56.7 million project to improve direct access between I-190 and the Peace Bridge while removing trucks and automobiles from the local street system. Since that project, the Buffalo and Fort Erie Public Bridge Authority has undertaken \$175 million in capital improvements that include expanding the U.S. bridge entry plaza and rehabilitation of the bridge deck. Additional pre-clearance pilot programs and advances in technology, discussed later in this memo, have also taken effect.

U.S. Route 219

In 2003, a Final Environmental Impact Statement (FEIS) was released for the improvement of the U.S. Route 219 Corridor from NY Route 39 in the Village of Springville to I-86. The Federal Highway Administration (FHWA) issued a Record of Decision (ROD) in September of 2003, based on the evaluation presented in the FEIS. A four-lane limited access freeway alternative was selected by the New York State Department of Transportation (NYSDOT) and adopted with stipulations by FHWA as the preferred alternative.

A Partial-Build Assessment determined that NYSDOT could build 6.8 miles of the proposed 27 miles of freeway alternative between NY Route 39 in Springville and Snake Run Road in Ashford, Cattaraugus County (referred to as Sections 5 and 6) without requiring use of Seneca Nation Land and without causing significant impacts to the unimproved portions of the existing U.S. Route 219.

Design commenced for Sections 5 and 6, including the design of two bridges over Cattaraugus Creek, followed by construction of the U.S. Route 219, Section 5 freeway segment (between NY Route 39 and Peters Road) in 2007 and opening for traffic in 2010. The final design of the Section 6 freeway segment (between Peters Road and Snake Run Road) was never constructed because it was determined that there were more wetland and stream impacts than originally anticipated in the 2003 FEIS. Since then, NYSDOT has determined that a Supplemental Environmental Impact Statement (SEIS) should be prepared to provide a proper design transition from the four-lane U.S. 219 to Peters Road, with improvements also considered for the Peters Road and Miller Road intersection.

Buffalo Logistics Complex

The Buffalo Logistics Complex project began as a combined marketing and infrastructure effort to bring heightened attention to WNY as a freight logistics hub and to provide infrastructure to enhance freight logistics transportation. One of the results was the creation of the International Trade Gateway Organization (ITGO) in 2011 to spearhead further development of the logistics industry. ITGO has supported a number of freight infrastructure projects since its inception, such as the New York Gateway Connection Improvement Project and replacement of the Portageville Bridge. Additionally, ITGO has established a strategic relationship with the Port Authority of New York and New Jersey (PANYNJ) to promote the Buffalo-Niagara region as an “inland port” providing congestion relief and distribution capabilities. This led to a Memorandum of Understanding with PANYNJ to designate the region as a “strategic international gateway”, creating a relationship based on joint marketing and sharing of resources and data.

With Buffalo Lakeside Commerce Park’s proximity to the CSX intermodal yard, ITGO and PANYNJ continue to explore the potential to bring an estimated \$20.8 million transloading facility to Lakeside Commerce Park. A preferred site and partnerships have been selected and the project continues to progress.

Portageville Bridge Replacement

The Portageville Bridge project was a public/private partnership between NYSDOT and Norfolk Southern (NS) to replace the bridge over the Genesee River in Letchworth State Park, which was weight limited and experiencing structural and operational deficiencies. A new railroad bridge, since named the Genesee Arch Bridge, was completed in 2017, replacing the old Portageville Bridge. The new \$71 million bridge has increased efficiency along the Southern Tier line by allowing NS to haul industry standard 286,000 pound cars while allowing for increased speeds.

1.2 UNCOMPLETED PROJECTS

For the projects that have not been completed or listed in the TIP, the below provides reasoning as to why projects have not been advanced. These projects could be re-evaluated, including preparing updated cost estimates, to determine whether they should continue as recommendations for the region.

NY Route 63 Bypass

This route is sometimes used as a shortcut for trucks traveling on I-90 and I-390. A new bypass was considered near this route in a corridor study commissioned by NYSDOT in the early 2000's. The alternative was rejected due to cost and the estimated time to complete. However, the bypass study focused primarily on the inconvenience to local residents resulting from trucks using the shorter route (and thus passing through downtown Batavia). The project has not been advanced further than the study at this point, but the issue continues to exist.

CP Draw Bridge

The CP Draw Bridge in Buffalo is a mainline track bridge that carries CSX trains (Chicago Line) over the Buffalo River. The line is controlled by CSX, but is also used by Norfolk Southern (NS) and short line railroads. Due to the heavy volume of CSX trains, there are very few windows for other trains to access the bridge. Currently, other trains must wait for CSX trains to clear before using the bridge, resulting in a bottleneck. There were a series of alternatives outlined in the 2010 study to address this bottleneck, but none have been completed and none have been included in the TIP as of 2020.

- **CP Draw Bridge Replacement** – One alternative discussed in the 2010 study was to replace the inactive northern bridge (currently fixed in the upright position) with a new bridge structure, connecting the CSX lines on either side of the Buffalo River and allowing NS and short lines use of the existing structure. The questions with this alternative revolve around whether this would be a moveable bridge (Buffalo River is a navigable waterway) or if the portion of the river could be de-designated as a navigable waterway to allow for a fixed bridge. This alternative would also require realigning CSX tracks on either side of the river to access a new bridge structure. This alternative, estimated in 2010 at \$40 million, has been under consideration for some time, but has never progressed.
- **G&W Connection from NS to Buffalo Line to BPRR Line** – Involves construction of a second rail connection across the Buffalo River to relieve congestion at CP Draw by providing a secondary rail crossing for Genesee & Wyoming Railroad (GWRR) and NS trains. The 2010 estimated cost for this alternative was \$2 million.
- **CN Northern Connection (Niagara Branch)** – Canadian National Railway (CN) has experienced some delays in the Buffalo-Niagara region because they occasionally need to use the CSX tracks over CP Draw Bridge to access Frontier Yard in order to interchange with other rail carriers. Currently, trains coming from or going to Canada must use the Belt Line because the International Bridge rail connection only allows for movements to/from the north with no access to the Niagara Branch (through downtown). If CN had access to Frontier Yard via CSX trackage rights over the Niagara Branch, then they could avoid the CP Draw Bridge entirely. This would require construction of a “wye” in the area near Niagara Street and Tonawanda Street that would allow trains to move southbound from Canada to the Niagara Branch rather than continuing to the Belt Line and accessing the CP Draw Bridge. The 2010 estimated cost for this alternative was \$3 million.

- **CN Southern Connection (Avenue Running Track)** – This alternative complements the Northern Connection by providing for a new, automated southern connection from the Niagara Branch to the Avenue Running Track, thus allowing CN trains to access South Buffalo via CSX’s Compromise Branch and bypassing both the CP Draw and Frontier Yard. The 2010 estimated cost for this alternative was \$5 million.

Other rail projects that were outlined in the 2010 study, but not advanced, are as follows:

- **Rehabilitate Falls Road Bridge over Erie Canal in Lockport, NY** – This would replace the structurally deficient and weight restricted railroad bridge crossing Erie Canal in Lockport. This would increase capacity of the Falls Road Railroad. In 2018, Governor Cuomo allocated \$900,000 to fund improvements to the Falls Road railroad running between Lockport to Brockport.
- **Lehigh Valley Yard Intermodal Expansion in Niagara Falls, NY** – The NYSDOT owned Lehigh Valley Yard located near the Whirlpool Bridge in Niagara Falls would be used as an intermodal facility in this alternative, and Lehigh Valley Yard would be expanded as an Intermodal and Free Trade Zone center. Amtrak is proposing some upgrades to their maintenance facility at this location.

Several maritime and water port recommendations were outlined in the 2010 study and have not been advanced. These include:

- **AES Somerset Lake Unloading Project** – Prior to the 2010 study, AES Somerset was ready to invest \$25 million to construct a 3,200-foot long pier conveyor that would allow the facility to obtain waterborne deliveries of coal, petroleum coke, and limestone instead of having to rely on rail. AES has since filed for bankruptcy and Riesling Power LLC had taken over control of the site, with its subsidiary Somerset Operating Company taking over operations of the plant. However, the plant filed a deactivation notice to cease operating the coal plant in February 2020. The owner, Riesling Power LLC has proposed repurposing the site into a data center, dubbed the Empire State Data Hub, and the future of the pier is uncertain. The uncertainty with the AES Somerset property has also not advanced interest in a Roll on/Roll off facility serving ports to the east (Great Lakes/St Lawrence Seaway/Montreal/Halifax).
- **Revitalized Erie Canal** – The 2010 study identified several opportunities to enhance the freight carrying capacity of the Erie Canal, which would require dredging. There have been some rehabilitation projects done along the Erie Canal, most of which have been routine maintenance activities, but no large-scale dredging has occurred.
- **Short Sea Container Alternatives** – The 2010 study recommended pursuing a roll-on/roll-off (Ro/Ro) service, which allows trailers used in over-the-road transport to be loaded onto or off of a cargo ship between Buffalo and Detroit and containerized service between Buffalo and either Halifax or Montreal. The Port of Buffalo is a privately-owned port and has not pursued any expansion of services, and likewise the idea has not been pushed by the region, and thus was never advanced.

1.3 OTHER PROJECTS

Other projects not identified in the 2010 study that have been undertaken to improve the freight and logistics industry or are included in the TIP include:

- **Bethlehem Steel Site Improvements** – Erie County Industrial Development Agency (ECIDA) has undertaken a number of improvements at the Bethlehem Steel site to make it more attractive for industrial development. This includes the Rail Relocation Project, which replaced approximately 2 miles of track that previously hindered access to the site while also opening up 300 acres of land for development. The rail improvements now also provide direct rail access from the Bethlehem Steel site to major rail carriers, ~~with~~ ^{via} linking rail access with the Port of Buffalo site. Relocating the rail allowed for construction of ~~Dorset~~ ^{Dorset} Street extension into the site, improving connections to Route 5.
- **Lewiston-Queenston Bridge U.S. Customs Plaza Improvements** – The Niagara Falls Bridge Commission is in the midst of several U.S. bridge plaza improvements that will ultimately help truck traffic entering the U.S. The approximate \$90 million project includes new secondary processing area, reconstruction of ~~primary~~ ^{primary} lanes to provide nine auto, six truck, and one bus lanes, additional parking, and new administrative ~~processing~~ ^{processing} building.
- **New York State Thruway Cashless Tolling** – Beginning in 2019, the New York State Thruway Authority began switching over physical, manned toll collection booths to electronic tolling gantries with sensors. The project was completed late 2020. The Niagara Section of the New York State Thruway (I-190) converted to cashless toll collection at its Grand Island locations in 2018. Cashless tolling will help reduce delays and congestion caused by toll collection booths at the I-90 Williamsville and Lackawanna toll booths.
- **I-90 Improvements** – Since the 2010 study, a \$6.7 million safety enhancement project added one travel lane to I-90 in each direction, supplementing other ramp and safety improvements, to make it easier for traffic to merge while exiting to Cleveland Drive or I-290 eastbound and to Kensington Expressway (SR 33). The Western New York Regional Economic Development Council has annually awarded funding for several projects that support economic development, expansion of the freight and logistics industry and industries that support freight and logistics, continuous workforce training programs, and transportation improvements.

Projects recently funded through the Western New York Regional Economic Development Council that are now included in the Transportation Improvement Plans (TIP) include:

- NY Route 78 (Transit Road) – add a travel lane in each direction between I-90 interchange and Genesee Street to enhance freight access to/from the Buffalo-Niagara International Airport – 10.9 million.
- Elk Street Bridge over Norfolk Southern RR – bridge replacement - \$7.9 million.
- Ohio Street Lift Bridge over Buffalo River – bridge rehabilitation - \$17.7 million.
- I-290 Exit 7 Main Street Interchange Rehabilitation- reconfigure interchange to enhance safety - \$6.7 million.
- I-290 westbound exit ramp to Niagara Falls Boulevard safety improvements - \$1.95 million.

The 2020-2022 Unified Planning Work Program (UPWP) identifies several planning-level access improvement studies that will be undertaken that impact freight movement. These include:

- I-190 at Grand Island Boulevard/ South Parkway interchange
- I-290 ramp to Northbound I-190 (Grand Island Bridge)

- Westbound I-90 ramp to Northbound I-190
- I-90 future interchange with Youngs Road

2 Regional Economic Development

This section discusses some of the commercial/ industrial parks across the Buffalo-Niagara region, as well as regional economic development related projects (private and public) that have been constructed in the last year, are under construction, or are planned that influence or are influenced by the freight and logistics industry.

2.1 SHOVEL-READY SITES

According to Empire State Development, the following are shovel-ready commercial/ industrial sites in and around Western New York:

- Colvin Woods Business Park: 40-acre site near Colvin and I-290 in Tonawanda, NY (Erie County).
- Crosspoint Business Park: a 200-acre site in Amherst, NY near I-990 (Erie County).
- Eastport Commerce Center: a 121-acre site at the intersection of Walden and Pavement in Lancaster, NY (Erie County).
- North America Center: large multi-tenant site with rail access located in West Seneca.
- Riverview Solar Technology Park: a 200-acre park available for various types of commercial and industrial uses. Recently, Amazon announced plans to locate a 117,000-square foot warehouse in the park. The Park also acts as a living solar lab, where the future of solar technology is tested and implemented to improve energy efficiency and energy production for all tenants. Solar technologies that can be currently found in the park include: Thin film solar technology, Roof-mounted photovoltaic panels, ground-mounted solar arrays, and Building Integrated Photovoltaics (Erie County).
- Cambria Technology Park: a 152-acre site in Cambria, NY pre-permitted for data center construction, high-tech manufacturing, a logistics center, back office operations, light manufacturing, or research and development (Niagara County).
- Niagara Airport Commerce Park: a 217-acre park located just north of the Niagara Falls International Airport suitable for high tech and light manufacturing, logistics center, research & development, back office, or multimodal facility (Niagara County).
- The Woodlands Corporate Center: a 120-acre mixed use site for office, industrial, and flex space in Wheatfield (Niagara County).
- Ripley Site: a 140-acre site near the I-90 Ripley exit (Chautauqua County).
- Medina Business Park: a 355-acre site located in NYS Route 31A in Medina (Orleans County).

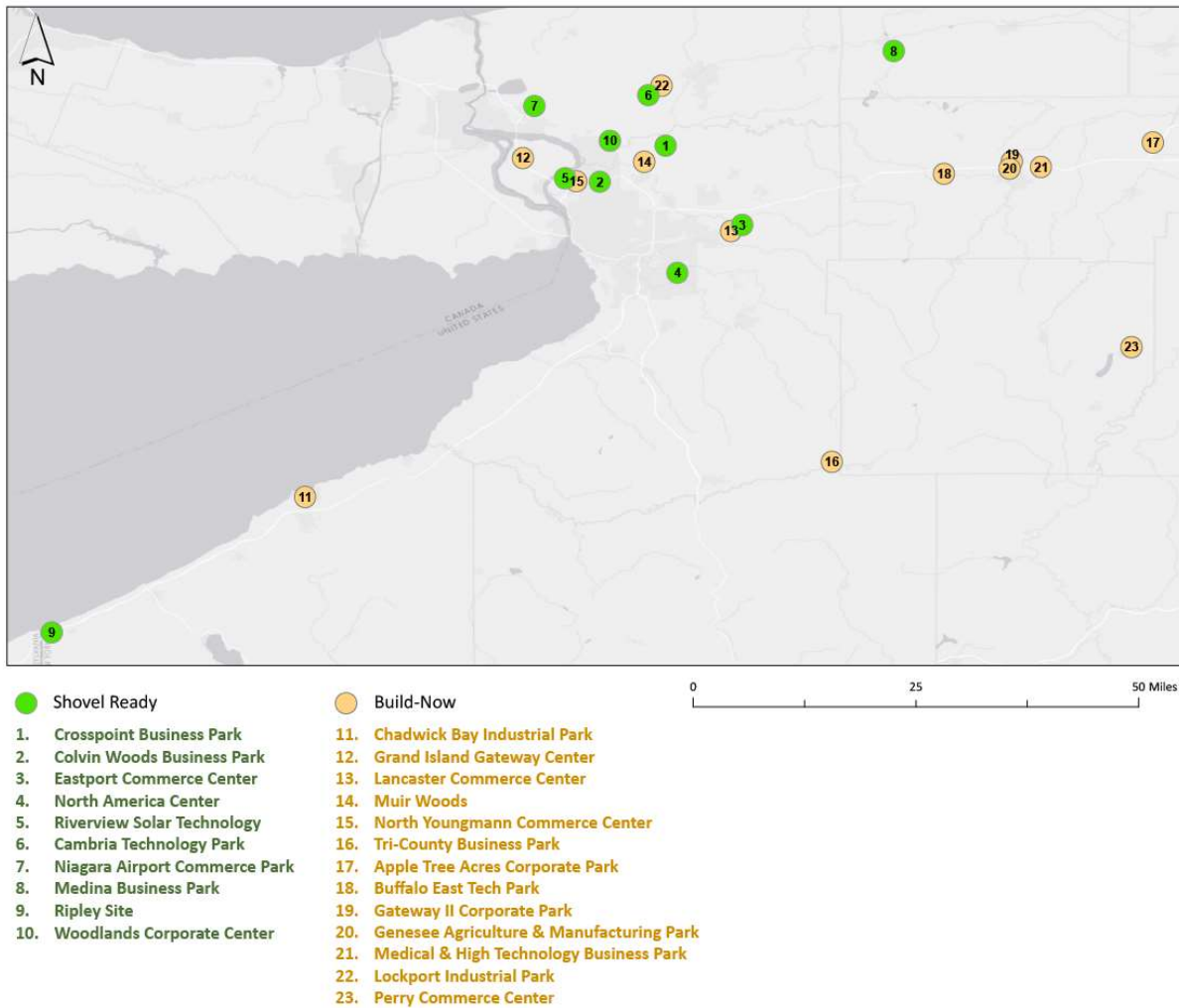
2.2 NEW YORK BUILD-NOW SITES

There are several sites located across Western New York that, while not receiving “shovel-ready” status are named New York Build-Now sites (according to Empire State Development):

- Chadwick Bay Industrial Park: Chautauqua County
- Chadwick Bay Regional Distribution Center: Chautauqua County

- Grand Island Gateway Center: Erie County
- Lancaster Commerce Center: Erie County
- Muir Woods: Erie County
- North Youngmann Commerce Center: Erie County
- Tri-County Business Park: Erie and Wyoming Counties
- Apple Tree Acres Corporate Park: Genesee County
- Buffalo East Tech Park: Genesee County
- Gateway II Corporate Park: Genesee County
- Genesee Agriculture and Manufacturing Park: Genesee County
- Medical & High Technology Business Park: Genesee County
- Lockport Industrial Park: Niagara County
- Perry Commerce Center: Wyoming County

Figure 2-1: Empire State Development Shovel Ready and Build Now Sites



2.3 MEGA SITES

WNY STAMP is a 1,250-acre mega site that is nearing shovel-ready status as a nanotech manufacturing, advanced manufacturing, and large-scale bio-manufacturing site. The site is located on NYS Route 77 north of New York State Thruway exit 48a (Genesee County).

2.4 FOREIGN TRADE ZONES

There are two Foreign Trade Zones (FTZ) in Western New York, No. 23 and No. 34. The FTZ Program was created by the U.S. Government to facilitate international trade and increase the global competitiveness of U.S. based companies. FTZs are secure areas located in or near U.S. Customs ports of entry that are legally considered to be outside the U.S. Customs and Border Patrol territory for the purpose of tariff laws and Customs entry procedures. The ECIDA administers FTZ #23 on behalf of Erie County, while the Niagara County IDA administers FTZ #34 on behalf of Niagara County. There are numerous sites across Erie and Niagara Counties that are located within one of these Foreign Trade Zones.

Sites included in one of these Foreign Trade Zones are:

- Gateway Trade Center (225 acres) in Buffalo and Lackawanna
- Wehrle International Business Park (298 acres) adjacent to Buffalo-Niagara International Airport
- 225 Oak Street (13 acres) in Buffalo
- Grand Island Industrial Park (55 acres) near I-190 and Bedell Road in Grand Island
- Speed Global Services (11 acres) on Kenmore Avenue in Tonawanda
- Aero and Airport Business Parks (189 acres) adjacent to Buffalo Niagara International Airport
- Buffalo-Niagara International Airport Air Cargo Facility and Airport Commerce Center (194 acres) off Cayuga Road in Cheektowaga
- Buffalo Lakeside Commerce Park (14.2 acres) in Buffalo
- Sonwil Distribution Center (5.8 acres) in North America Center, West Seneca
- Vantage International Point (158 acres) off Lockport Road in Wheatfield
- 133-acre site adjacent to Niagara Falls International Airport
- 50-acre site south of Niagara Falls Boulevard across from Niagara Falls International Airport

2.5 MAJOR DEVELOPMENT PROJECTS

One of the larger projects recently on the Town of Grand Island agenda is a proposed 3.8 million square foot facility near the interchange of I-190 and Long Road, anticipated to be a large Amazon fulfillment facility. The project Environmental Impact Statement is currently being reviewed. Amazon also recently opened a sorting center in Lancaster and is currently constructing a fulfillment facility within Riverview Solar Technology Park.

3 Nearby Port Facility Expansions and Plans

This section covers improvement or expansion projects, proposals, and plans of intermodal, air, or water port facilities that are likely to impact the freight and logistics industry. Central New York and Hamilton, Ontario have both announced plans to invest in and expand their port facilities. Erie County has made a substantial investment in the Bethlehem Steel Property in an effort to redevelop the old industrial site, enhancing truck and rail access to the Port of Buffalo. The ITGO has focused attention on developing a transloading facility at Lakeside Commerce Park. These projects and more are discussed in the following sections.

3.1 LAKESIDE COMMERCE PARK TRANSLOADING FACILITY

ITGO and the Port Authority of New York and New Jersey (PANYNJ) continue to explore the potential to bring a transloading facility to Lakeside Commerce Park to 1.) relieve congestion at PANYNJ, 2.) capture freight and transition from rail to truck for transport to locations across WNY and Southern Ontario, and 3.) provide a supply of containers that businesses across WNY and Southern Ontario can access to return freight to PANYNJ rather than trucking freight to the port. A preferred site and partnerships have been selected and the project continues to progress. The initial estimated \$20.8 million project concept consisted of a \$1.4 million track improvement that would include two new at-grade crossings and allow for a shuttle lift to move containers from rail to the facility to be broken down to truck and store empty containers for use in exporting. Negotiations continue with CSX regarding gaining access to the adjacent tracks where up to 40 loading docks that would house rail containers would be located. A Memorandum of Understanding (MOU) between ITGO and PANYNJ exists whereby the PANYNJ designated the Buffalo-Niagara region as a “strategic international gateway”, creating a relationship based on joint marketing and sharing of resources and data.

3.2 DEWITT YARD

In the fall of 2020, construction was completed on Central New York’s first Inland Port. The \$19 million State contribution toward this project was part of an unparalleled \$65 million State commitment to modernizing and enhancing the economic competitiveness of upstate ports. The Central New York Inland Port facilitates the movement of containerized freight between the Port of New York and New Jersey and the existing CSX rail-freight terminal in the Town of Dewitt. This new infrastructure investment in Central New York will facilitate the efficient and cost-effective movement of containerized freight once it reaches the shore by rail as opposed to large trucks. The reduced shipping costs and environmental benefits of transportation by rail will make regional exports such as agricultural products, metals and wood to Asia and other international destinations more competitive. This strategic investment realigned and modernized the existing rail yard to handle stacked non-wheeled international shipping containers, including new crane equipment and lifts; upgraded security and deployment of technology enhancements to allow for International import/export services; and constructed new areas at the rail yard required for the stacking and handling of shipping containers. In addition to leveraging privately-funded complementary improvements made along the rail corridor serving the region, this project is expected to reduce the transportation costs of moving freight between the Port of New York and New Jersey and the greater Central New York region by as much as \$500 per container; facilitate regional economic growth through increased exports by five-day per week reliable rail service; and retain and create freight-related jobs. The new Inland Port is also anticipated to remove large trucks from both the New York Metropolitan area and from I-81. At full capacity, this new intermodal import-export service is capable of handling approximately 30,000 containers annually.

3.3 PORT OF BUFFALO

The Port of Buffalo is privately owned and operated by New Enterprise Stone & Lime. The port is located in Lackawanna and includes a 3,000-foot long pier with 27 feet of draft depth, and access to rail sidings. The port currently handles shipments of salt, limestone, metallurgical coke, coal, grain, stone, and other bulk materials. According to the New York State Freight Plan, the port handled 701,000 tons of goods in 2012, and is projected to handle 848,000 tons by 2040, a 21% increase. Also, according to the NYS Freight Plan, there is unused capacity at the Port of Buffalo and the plan identifies expansion of the port as an Illustrative project.

3.4 PORT OF HAMILTON

Over 11.6 million metric tons of cargo were imported or exported through the Port of Hamilton, Ontario in 2018, representing an 18% increase over 2017. The Port of Hamilton will undergo a \$17.7 million infrastructure upgrade, including additional berthing capacity and storage space to increase export efficiency. The rail infrastructure at the port will also be upgraded, increasing the capacity of rail freight at the facility¹. The Port of Hamilton is the largest port in Ontario and is the primary marine gateway to the Greater Toronto-Hamilton Area (GTHA). While this port is located 64 miles from Buffalo, the expansion of freight activity at this port would impact cross-border freight volumes in the Buffalo-Niagara region. The expansion of this port supports the expansion of freight activity throughout the “Golden Horseshoe” region of Toronto neighboring Buffalo, presenting opportunities for further freight growth in the Buffalo region.

3.5 BUFFALO-NIAGARA INTERNATIONAL AIRPORT

In 2013, the Buffalo-Niagara International Airport (BNIA) updated its Master Plan. The plan forecast a slight increase in air cargo activity, from 2,200 trips annually in 2015, to 2,300 in 2020, to 2,600 in 2030. As such, the existing air cargo facility located on the westerly side of the airport is adequately sized to meet existing and future demand. A NYSDOT project will soon be underway to upgrade Transit Road between I-90 and Genesee Street to enhance airport access from the New York State Thruway.

3.6 NIAGARA FALLS INTERNATIONAL AIRPORT

The Niagara Falls International Airport (NFIA) also has a Master Plan that outlines various economic development opportunities. The plan outlined several air cargo alternatives and landed on a recommendation for Infield Development, whereby land on the field of the airport, north and east of Taxiway K and on a portion of the current Runway 10R-28L, would be converted for use as an air cargo facility with vehicle access provided through the general aviation area.

¹ <https://www.maritime-executive.com/article/canada-s-port-of-hamilton-set-for-expansion>

4 Buffalo-Niagara Region Freight Conditions

The freight needs of the Buffalo-Niagara region are influenced by the current usage of the system. This section presents the existing conditions of the Buffalo-Niagara region, including freight supply and demand, congestion, and border crossings.

4.1 FREIGHT NETWORK

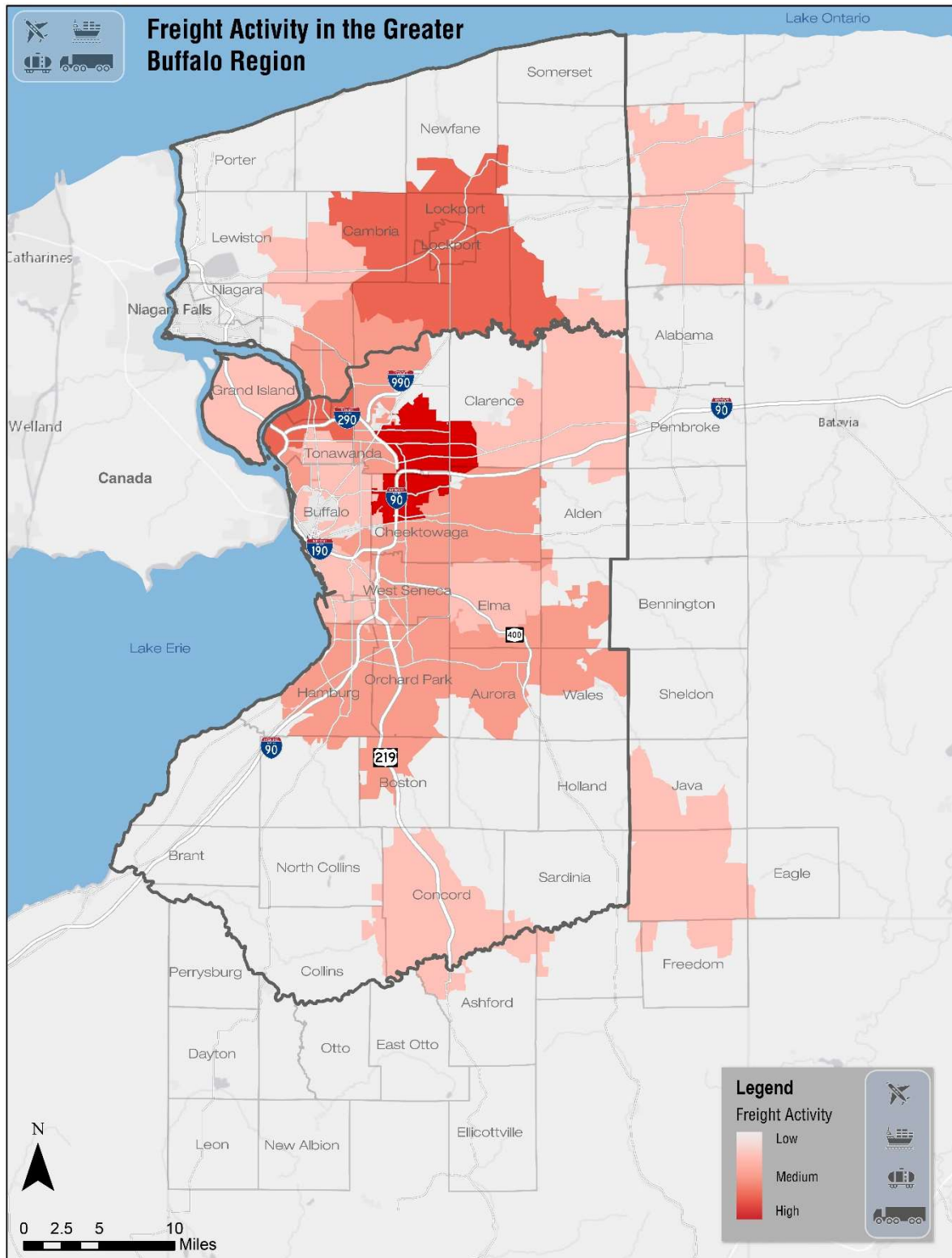
The following corridors in the Buffalo-Niagara region are on the State Freight Core Highway Network:

- Interstate-90/New York State Thruway
- Interstate-190
- Interstate-290
- US Route 219

4.2 REGIONAL FREIGHT ACTIVITY

To help understand clusters of activity that are reflective of freight supply and demand in the region, available employment in key sectors that are generally associated with generating freight supply and demand were analyzed. These employment categories include agriculture, manufacturing, mining, retail, transportation, and warehousing/ wholesale, obtained through data generated by the U.S. Economic Census. The employment figures were used to generate a map that portrays general freight activity resulting from the supply and demand based (Figure 4-1). The map helps identify areas where freight activity is generally highest and clusters of employment sectors that generate freight supply and demand in the region. The maps shows that areas in Amherst and Williamsville experience the greatest freight supply and demand in the region. Areas in and around Lockport and in the industrial sections of the Town of Tonawanda also represent higher freight activity.

Figure 4-1: Freight Activity in the Buffalo-Niagara Region



4.3 BOTTLENECK ANALYSIS

A bottleneck analysis was conducted for the Buffalo-Niagara region to assess the locations of freight delays due to congestion, reduced speeds, delays, and/or rerouting. According to FHWA, non-recurring congestion (caused by non-recurring events such as incidents, weather, work zones, and/or special events) account for more than half of truck-based travel time bottlenecks. Recurring congestion is typically associated with bottlenecks and poor traffic signal timing.

2010 Freight Study

As reported in the 2010 study, Western New York is not highly constrained with transportation bottlenecks. Only one area appears in the nation's top 100 truck bottlenecks – (I-90/I-290 Interchange - #99). Previous bottlenecks identified in the 2010 study have been upgraded since 2010 and include the following:

- Portageville Bridge (rail)
- I-90/ NY 33 interchange

Additional infrastructure upgrades have been made to reduce congestion, and although not outlined in the 2010 study as bottlenecks, should be noted as improving truck transportation. These include upgrades to the Peace Bridge gateway plaza and the Lewiston-Queenston Bridge plaza.

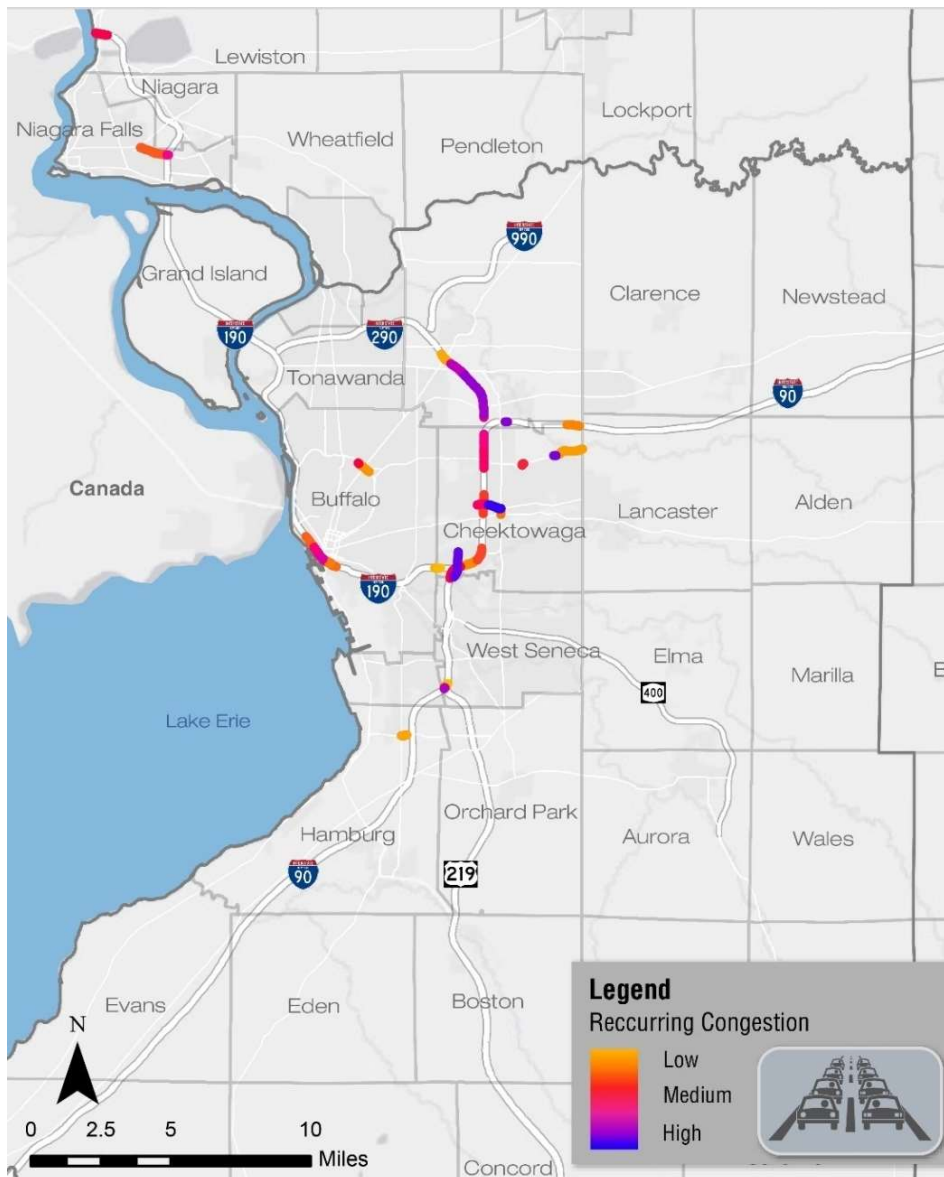
Bottleneck Analysis

A bottleneck analysis for trucking was conducted for the Buffalo-Niagara region using the 2019 FHWA's National Performance Measures Research Data Set (NPMRDS). In using the NPMRDS, all travel time records for trucks in Erie and Niagara Counties was downloaded. This resulted in 55.27 million travel time records for 2,593 roadway segments. The analysis excluded roadways with less than 100 counts over the course of the year. The following metrics were used to identify hourly congestion, helping to identify sections of roadways with recurring congestion (VEHT) and non-recurring congestion (VHU):

- Vehicle Hours of Travel (VHT) = Truck Volume * Avg. Travel Times
- Vehicle Excess Hours of Travel (VEHT) = Truck Volume * (Avg. Travel Times – free flow)
- Vehicle Hours of Unreliability (VHU) = Truck Volume * (95th Percentile Travel Time – Avg. Travel Times)

Congestion metrics were then normalized by the length of the segment. Figure 4-2 portrays the top 50 locations by recurring congestion. Figure 4-3 portrays the top 50 locations by non-recurring congestion.

Figure 4-2: Recurring Congestion in the Buffalo-Niagara Region

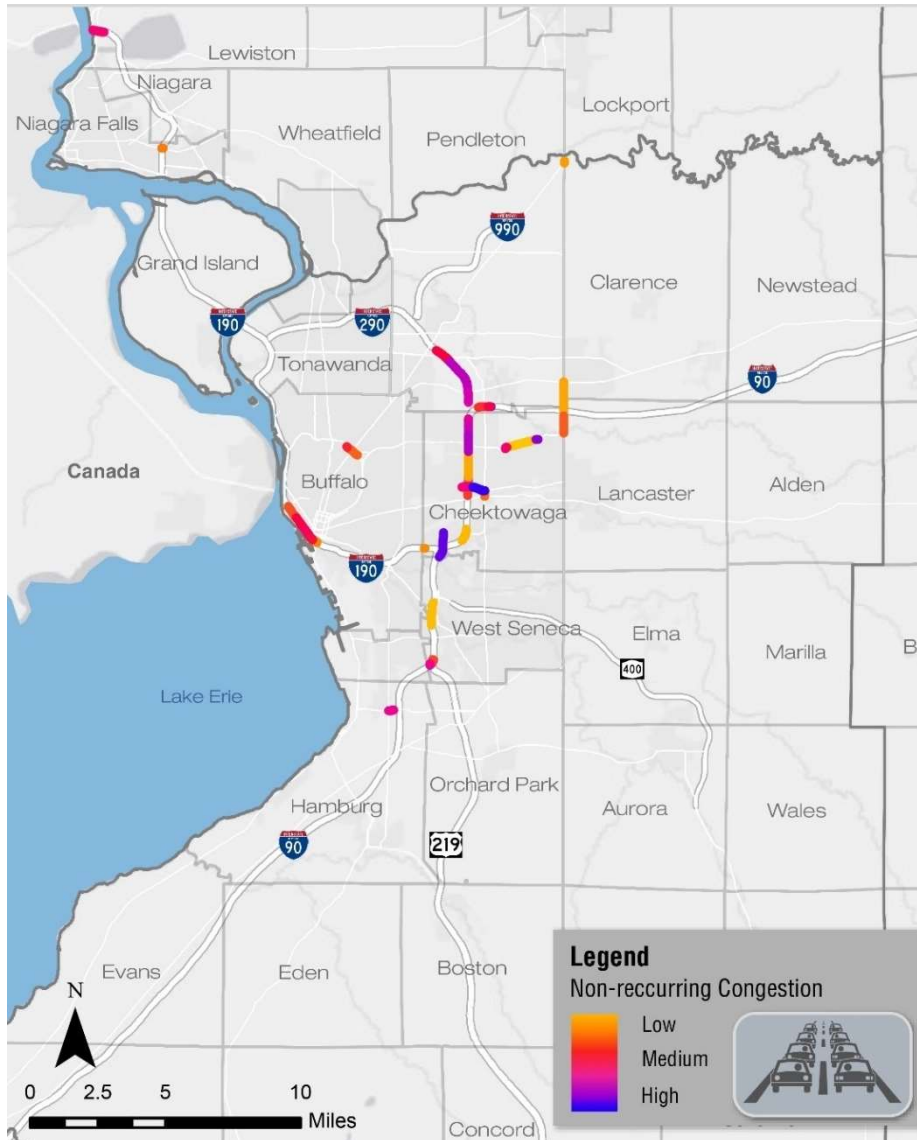


The top recurring congested segments are:

1. Walden Avenue, eastbound and westbound, between I-90 and Union Road (SR 277)
2. Harlem Road (SR 240), northbound and southbound, between William Street and Clinton Street
3. Genesee Street (SR 33), westbound near Holtz Drive
4. I-90, westbound, from I-290 to just south of Kensington Expressway (SR 33)
5. I-290, eastbound, between Millersport Highway and I-90

Two segments in Niagara County appear in the top 50, and they are northbound Niagara Falls Boulevard near I-190 and northbound I-190 approaching the Lewiston-Queenston Bridge.

Figure 4-3: Non-Recurring Congestion in the Buffalo-Niagara Region



The top non-recurring congested segments are:

1. Walden Avenue, eastbound and westbound, between I-90 and Union Road (SR 277)
2. Harlem Road (SR 240), northbound and southbound, between William Street and Clinton Street
3. Genesee Street (SR 33), westbound near Holtz Drive
4. I-290, eastbound, between Millersport Highway and I-90
5. I-190, northbound, near Church Street
6. I-90, westbound, between Kensington Expressway (SR 33) and I-290

Three segments in Niagara County appear in the top 50, and they are northbound and southbound Niagara Falls Boulevard near I-190 and northbound I-190 approaching the Lewiston-Queenston Bridge.

The bottleneck analysis for rail was explored through existing studies such as New York State Freight Plan and 2010 Niagara Frontier Urban Area Freight Transportation Study. Unlike the highway system, which is owned by public agencies, the majority of the rail network is owned by private railroad companies. With the recent construction of the Portageville Bridge (now known as Genesee Arch Bridge), major rail bottlenecks in Western New York have been addressed. There are still minor bottlenecks exist, including the CSX CP Draw Bridge – this bridge over the Buffalo River is used by multiple rail carriers (CSX and Norfolk Southern) and can cause delays in rail transport. There are also several bridge clearances in the region that prohibit double stack container movement on certain rail corridors.

The International Railway Bridge, used for rail freight between U.S. and Canada, has frequently been identified as a bridge in need of structural repair to maintain its useful life. The bridge was opened in 1873 and is currently owned by the Canadian National Railway. The Canadian Pacific Railway also used the bridge. No freight bottlenecks were identified at any of the region’s airports or marine ports.

On May 18, 2020, the engine of a train along with 14 rail cars operated by the Genesee & Wyoming Railroad using the Buffalo & Pittsburgh rail line derailed in East Aurora, NY, forcing the evacuation of nearby neighborhoods. The train was carrying several rail cars of flammable and explosive material, which fortunately did not derail or leak. The derailment sparked concerns over other rail cars in the Buffalo-Niagara region carrying flammable and explosive materials through populated areas that, if derailed, could cause spills or even worse, explosions that would greatly impact surrounding neighborhoods. Typically, railroad companies do not share manifests of rail cargo for security reasons, so the majority of the time, communities are unaware of what is being transported on trains passing through. The derailment is under investigation, but the rail line has since reopened for train use.

5 Cross-Border Freight Assessment

The Buffalo-Niagara region's is host to five Land Ports of Entry (POEs). A Land POE is an officially controlled entry and departure location for the entry of goods and people to the United States and is subject to the enforcement of duties and laws by the U.S. Customs and Border Protections. The Buffalo-Niagara border crossing locations are along the Niagara River and are all bridges. There are four types of flows that POEs on the New York/Canada border may process: pedestrians, passenger vehicles, commercial vehicles, and rail. The type of flow processed by a specific Land POE depends on the infrastructure and staffing characteristics of each entry point. The complete list of Land POEs located on the Buffalo-Niagara border crossing, along with their location and the type of flows processed, is provided in the table below. Out of the five Land POEs, only two allow for commercial truck movements and one allows for commercial rail movements.

Table 5-1: Buffalo-Niagara Region Ports of Entry

<i>Ports of Entry</i>	<i>Border Crossing Location</i>	<i>Type of Flows Processed</i>
<i>Niagara Falls- Lewiston Bridge</i>	Buffalo/Niagara	Commercial Vehicles, Personal Vehicles, Bikes
<i>Niagara Falls – Whirlpool Bridge</i>	Buffalo/Niagara	Personal Vehicles, Passenger Trains
<i>Niagara Falls – Rainbow Bridge</i>	Buffalo/Niagara	Personal Vehicles, Pedestrians, Bikes
<i>Buffalo – The International Railway Bridge</i>	Buffalo/Niagara	Commercial Rail
<i>Buffalo – Peace Bridge</i>	Buffalo/Niagara	Commercial Vehicles, Personal Vehicles, pedestrians, Bikes

5.1 PORTS OF ENTRY FOR FREIGHT

The Lewiston – Queenston Bridge Port of Entry

The Lewiston-Queenston Bridge is an arch bridge that connects Lewiston, New York, to Queenston, Ontario by crossing the Niagara River. Its condition rating is currently “Very Good”. This crossing is the fourth busiest commercial land port on the US-Canada border. The customs facilities are located at each end of the bridge. Into the U.S., there are 6 auto inspection lanes and 4 truck inspection lanes. Improvements at the U.S. Bridge Plaza will soon provide 9 auto inspection lanes, 6 truck inspection lanes, and one bus lane. Into Canada, there are 10 car inspection lanes and 5 truck lanes. Tolls are collected here but only on the Canadian side, after the customs processing. Lewiston-Queenston Bridge connects I-190 to Highway 405 and the Queen Elizabeth Way in the corridor linking Buffalo to Hamilton and Toronto.

The International Railway Bridge Port of Entry

The International Railway Bridge is a railroad bridge that connects Fort Erie, Ontario, and Buffalo, New York by crossing the Niagara River. Its condition rating is currently “Poor”. This Port of Entry is the only point that allows commercial rail movement. Canadian National (CN) trains use this bridge to enter the U.S.

The Peace Bridge Port of Entry

The Peace Bridge is an arch bridge that connects Buffalo, New York with Fort Erie, Ontario by crossing the Niagara River. Its condition rating is currently “Fair”, although recent upgrades to the deck have improved the

useful life of the bridge. The Peace Bridge carries more than 5 million vehicles each year. There are three lanes on this bridge; the center lane is reversible and serves the direction of the traffic which is at peak volume.

5.2 CROSS-BORDER FREIGHT VOLUME

In 2018, 941,574 trucks moved through the Buffalo-Niagara region Land POEs, averaging 2,580 trucks a day. Since 2014, there has been a slight decrease in the volume of trucks crossing Buffalo-Niagara region POEs, with the 2018 volume down 2.1% from the 962,076 trucks in 2014. In total, 21% of those trucks crossing Buffalo-Niagara POEs in 2018 carried empty containers. In 2018, 2,081 trains carrying 58,133 containers moved through the Buffalo-Niagara POEs, averaging 5.7 trains a day. These trains consist of 58% of empty containers. The volume of trains has also decreased slightly since 2014, down 13% from 2,395 trains in 2014. The size of trains has decreased significantly, down 57% from the 135,263 containers in 2014.

Canada is by far the largest international trading partner for the Buffalo-Niagara Land Ports of Entry (POE), accounting for 90% of exports and 89% of imports in 2018. However, both exports and imports to and from Canada have fallen over the past five years, as portrayed in Figures 5.1 and 5.2. For the purposes of this assessment, the Buffalo-Niagara region POE equates to the region covered by the U.S. Customs Port of Buffalo Service Area, which includes Greater Buffalo International Airport, and the Lewiston-Queenston, Rainbow, Peace, and Whirlpool Bridges. The Buffalo-Niagara region is the largest Customs Port Sector to experience an overall decline in trade in 2018, as shown in Figure 5.3.

Figure 5-1: Value of Exports to Canada Handled by Ports of Entry in the Buffalo-Niagara Region

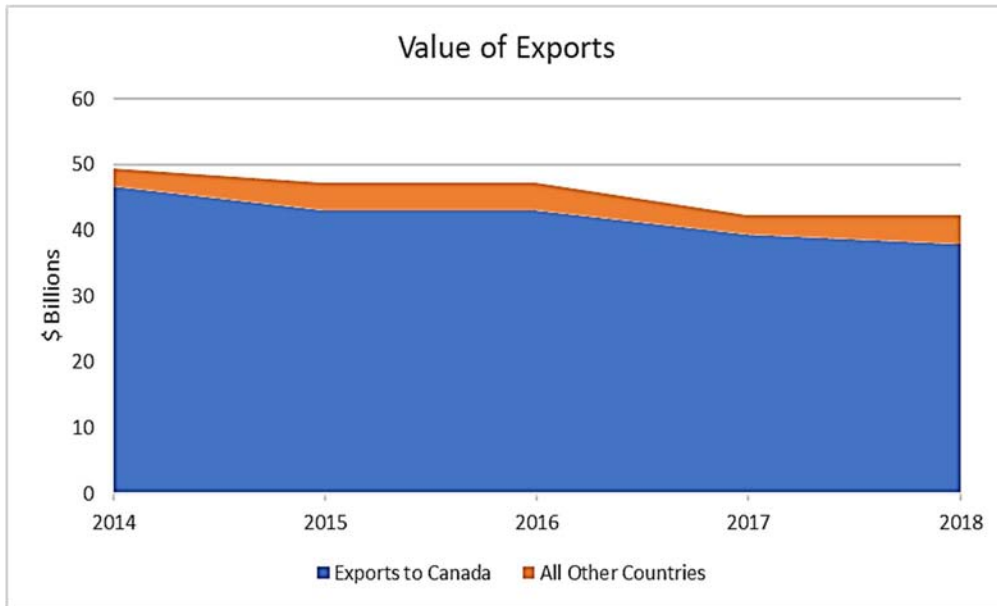


Figure 5-2: Value of Imports from Canada Handled by Ports of Entry in the Buffalo-Niagara Region

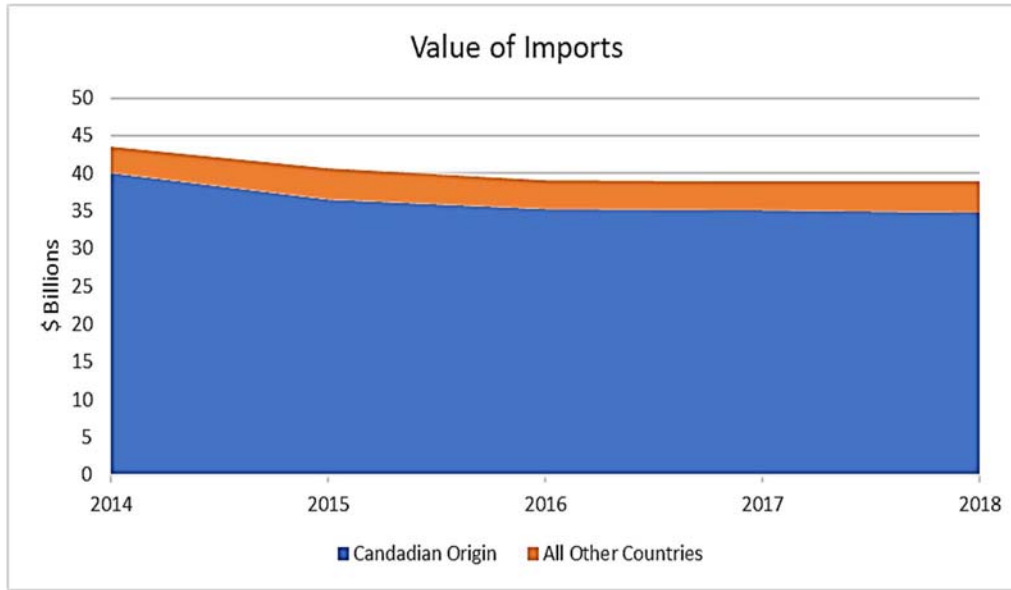
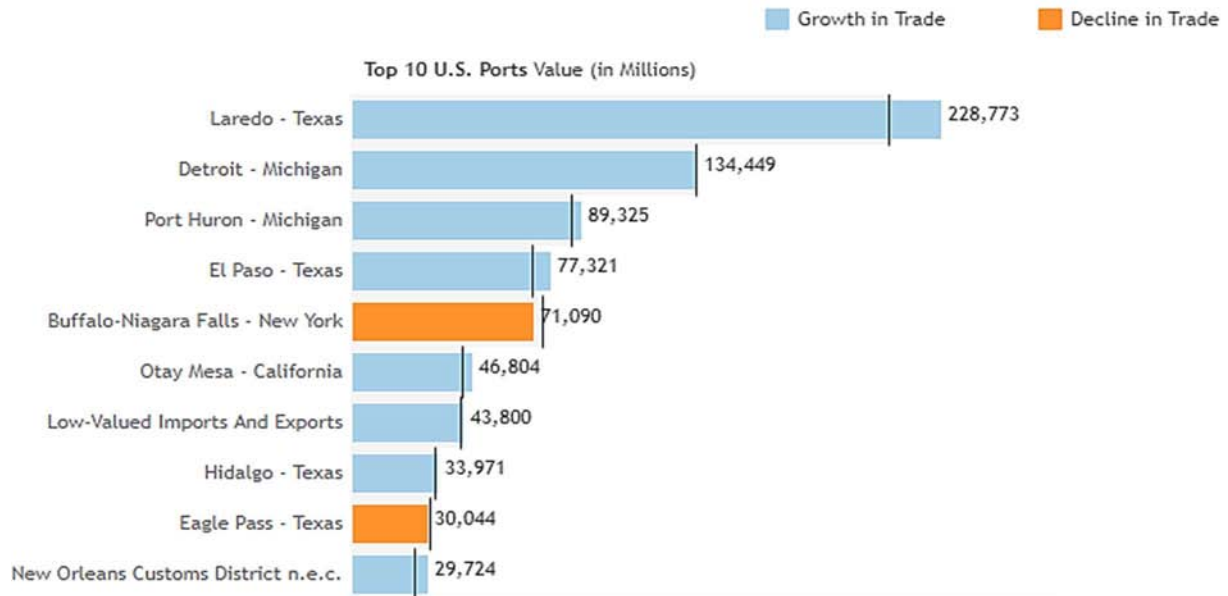


Figure 5-3: 2017-2018 Change in Overall Trade by Customs Port Sector



Source: BTS Transborder Dashboard

Freight planning for the Buffalo-Canada International Border requires special considerations for the busy Land POE and access highways as well as by regional and national rail lines. In 2017, New York State handled 24% percent of loaded containers crossing the U.S.-Canadian border. Ports of Entry in the Buffalo-Niagara region handled 57% percent of those loaded containers. The Buffalo-Niagara POEs provide important links for the eastern section of the Country and represent the gateway to a large variety of commodities including vehicles, computer machinery and parts, fuels and aluminum. Vehicles represented both the top export and import by value that passed through the Buffalo-Niagara region in 2018. Figures 5.4 and 5.5 portray the export and import value of goods passing through the Buffalo-Niagara POEs.

Figure 5-4: Export Value of Goods Passing through Buffalo-Niagara Ports of Entry (2018)

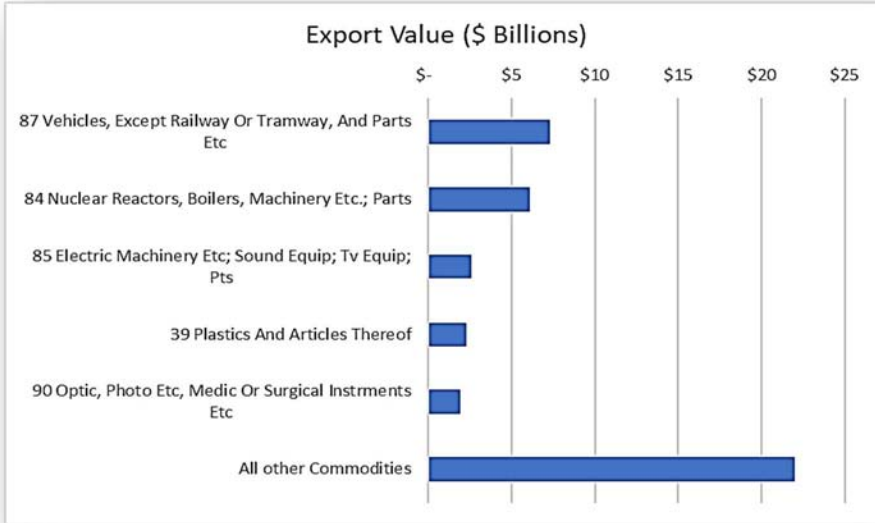
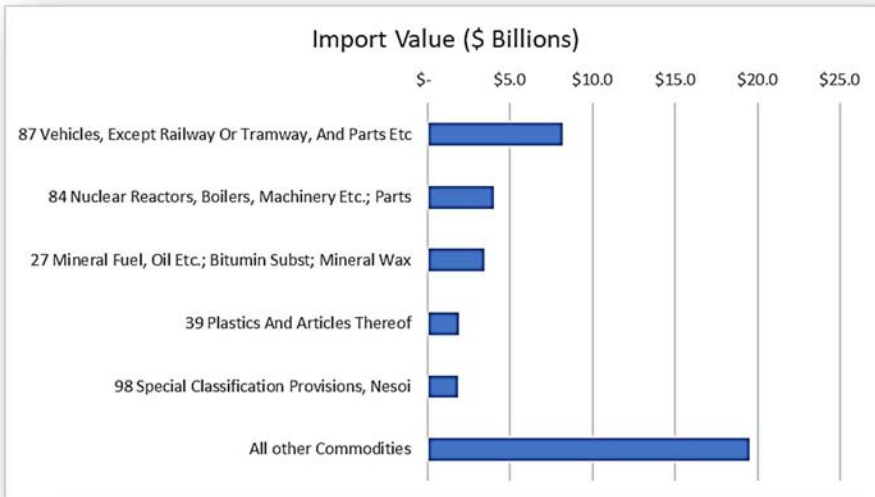


Figure 5-5: Import Value of Goods Passing through Buffalo-Niagara Ports of Entry (2018)



6 Freight Flow Analysis

This section offers a look at existing and projected freight flows for truck, rail, air, and maritime cargo across the Buffalo-Niagara region. Freight flow analysis for trucking and rail will be provided in a separate memo.

6.1 AIR CARGO

Air freight includes goods movement through both the Buffalo-Niagara International Airport and Niagara Falls International Airport. In 2018, Air Freight through the Buffalo-Niagara airports accounted to \$143 million worth of goods imported and \$653 million worth of goods exported. In 2018, both Federal Express (FedEx) and United Parcel Service (UPS) began shipping packages through Buffalo-Niagara International Airport, significantly increasing the region's air freight activity. The Buffalo-Niagara International Airport accounts for 99% of the air freight in the region (93%, excluding the 2018 UPS & FedEx shipments). Figure 6.1 portrays air cargo freight (in tons) handled by the Buffalo-Niagara International Airport and Niagara Falls International Airport from 2014-2018.

Table 6-1: Air Cargo Freight (In Tons) Handled by Buffalo-Niagara Region Airports (2014-2018)

<i>Airport</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>
<i>Buffalo-Niagara</i>	636	516	548	445	20,889
<i>Niagara Falls</i>	8	20	12	95	91

6.2 WATERBORNE FREIGHT

Waterborne freight in the Buffalo-Niagara region includes 11 docks in Buffalo/Lackawanna along the Lake Erie Outer Harbor and along the Buffalo River and three downstream on the Niagara River. Figure 6.1 portray the locations of water ports in the region. In 2018, maritime trade accounted for \$108 million worth of goods imported and \$1.14 billion worth of goods exported.

Figure 6-2: Tonnage of Freight by Commodity Handled by Water Ports in the Buffalo-Niagara Region

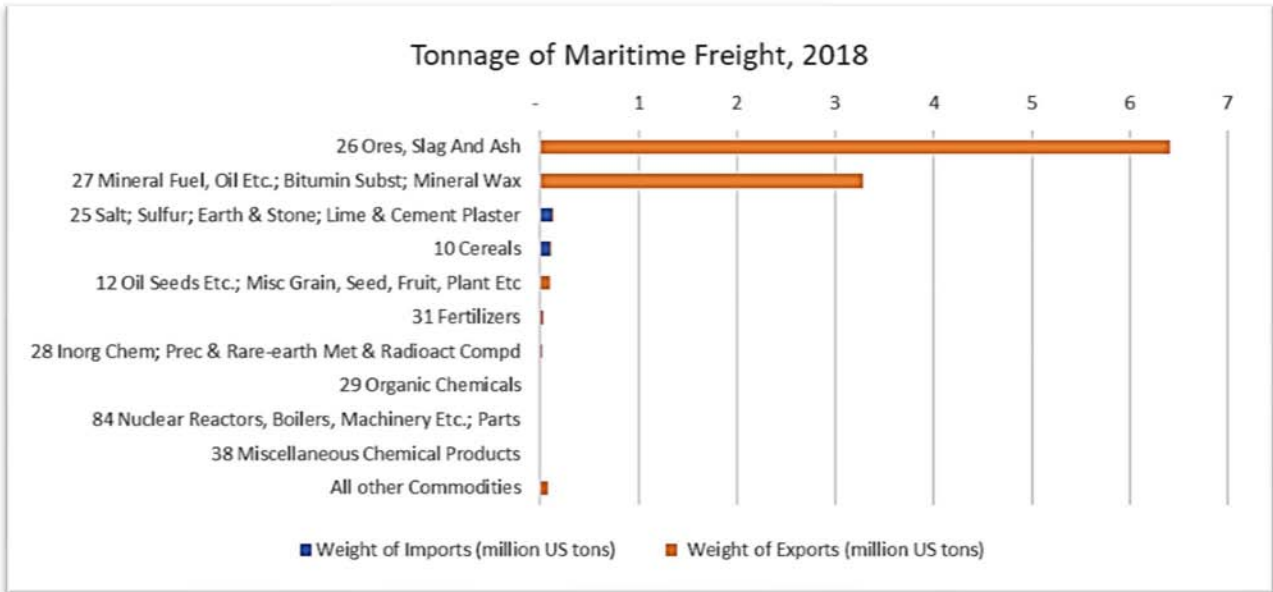
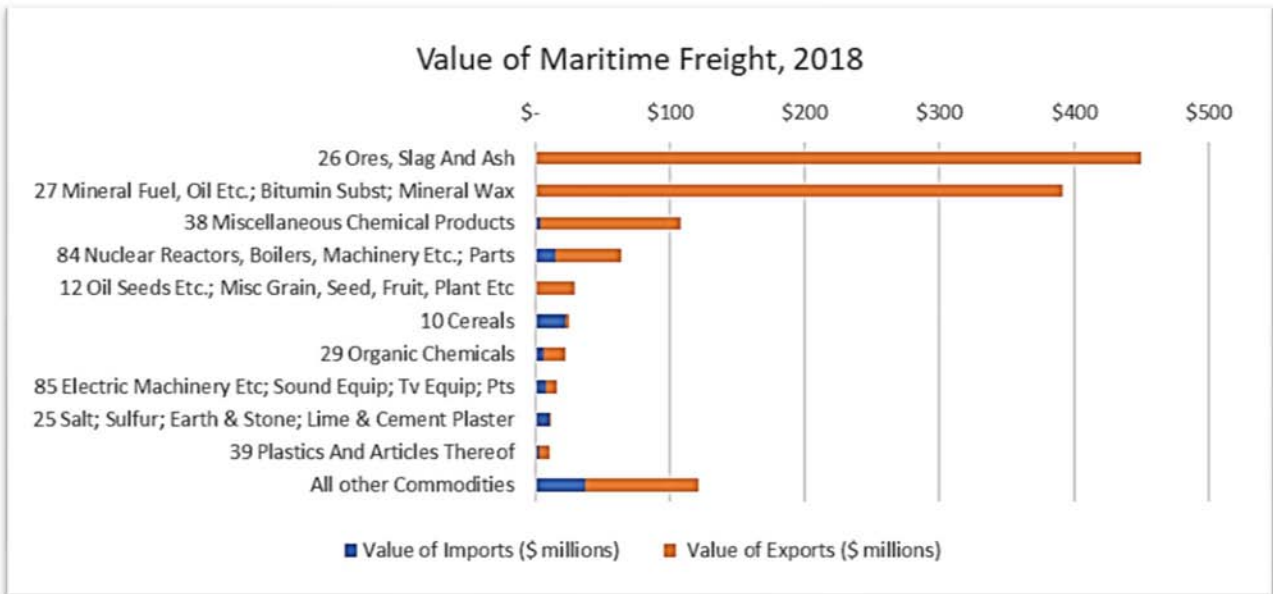


Figure 6-3: Value of Freight by Commodity Handled by Water Ports in the Buffalo-Niagara Region



7 FAST Act and National Freight Provisions

A number of provisions initiated under Moving Ahead for Progress in the 21st Century (MAP-21), the U.S. surface transportation authorization bill that covered federal fiscal years 2013 and 2014, continue to impact MPO freight planning. These provisions were then continued with several modifications under the Fixing America's Surface Transportation Act (FAST Act), which covers federal fiscal years 2016 to 2020. Impacts include 1) implications to funding programs, 2) direct implications to MPO planning, and 3) implications to state planning which indirectly affect MPO planning.

7.1 FUNDING

The FAST Act created a discretionary freight-focused grant program, the Infrastructure for Rebuilding America (INFRA) program, which allows government entities including MPOs to apply for funding for projects that improve safety and hold the greatest promise to eliminate freight bottlenecks and improve critical freight movements. The INFRA program was authorized at \$4.5 billion over five years covered by the FAST Act. INFRA specified that not more than \$500 million in aggregate of the \$4.5 billion could be spent on freight rail, water, or other intermodal projects. The rest was to be spent on improvements to the National Highway Freight Network.

The FAST Act also established a National Highway Freight Program whereby states could invest formula grant monies in freight projects on the National Highway Freight Network with up to 10 percent of these funds used for intermodal projects. The National Highway Freight Program was authorized at \$6.3 billion over the five years.

The National Highway Freight Network consists of:

- The Primary Highway Freight System (PHFS) with 41,518 centerline miles, the initial designation of which was established by the FAST Act. This consists of 37,436 miles of Interstate and 4,082 of non-Interstate roads.
- Interstate highways not on the PHFS, which are 9,511 centerline miles.
- Critical rural freight corridors, which are not in an urbanized area and designated by states but connect to the PHFS. For each state, a maximum of 150 miles of highway or 20 percent of the PHFS in that state, whichever is greater could be designated as critical rural freight corridors.
- Critical urban freight corridors are roads in urbanized areas which provide access and connection between the PHFS and ports, other transportation facilities. For each state, a maximum of 75 miles or 10 percent of the PHFS mileage in that state, whichever is greater, can be designated as a critical urban freight corridors. The MPOs of large urban areas, such as the GBNRTC designate critical urban freight corridors within their metropolitan areas in consultation with the state.

Intermodal facilities are also eligible for infrastructure funding through INFRA and Better Utilizing Investments to Leverage Development (BUILD) discretionary grant programs. Investments in roadway connections to port facilities are also eligible for freight formula funding through the National Highway Freight Program as important "first-and-last-mile" links with ports. These funding programs are authorized under the FAST Act and

align with several of the FAST Act's goals, including the facilitation of greater freight efficiency on the nation's national significant freight network, safety improvements and the generation of greater economic development opportunities.

The Consolidated Appropriations Act, 2019 ("FY 2019 Appropriations Act"), appropriated more than \$290 million Port Infrastructure Development Program under U.S. DOT to make grants to improve port facilities at coastal seaports.

7.2 DIRECT IMPLICATIONS FOR MPO PLANNING

Established under MAP-21 and continued under the FAST Act is a requirement for states and MPOs to use a performance-based approach to planning that addresses National Performance Management Measures and the National Goals. Most of the National Goals are not specific to freight, but one of the National Goals is "To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development."² Similarly, most of the National Performance Measures included within Federal Rules are not specific to freight, with the exception the National Performance Measure to assess national freight movement on the Interstate System. This measures truck travel time reliability.

7.3 INDIRECT IMPLICATIONS FOR MPO PLANNING

The FAST Act requires states to complete a freight plan within two years of the FAST Acts enactment to be eligible for funding under the National Highway Freight Program. These freight plans are coordinated with local/regional agencies, such as MPOs.

The FAST Act requires states to provide performance reports to the U.S. DOT every two years which include a reporting of progress to meeting performance targets. States are to outline actions that it will take to meet freight performance targets in their next performance report to the U.S. DOT. According to 23 U.S. Code 167(j), "If the Administrator determines that a State has not met or made significant progress toward meeting the performance targets related to freight movement of the State established under section 150(d) by the date that is 2 years after the date of the establishment of the performance targets, the State shall include in the next report submitted under section 150(e) a description of the actions the State will undertake to achieve the targets, including:

1. An identification of significant freight system trends, needs, and issues within the State;
2. A description of the freight policies and strategies that will guide the freight-related transportation investments of the State;
3. An inventory of freight bottlenecks within the State and a description of the ways in which the State is allocating national highway freight program funds to improve those bottlenecks; and,
4. A description of the actions the State will undertake to meet the performance targets of the State."

While MPOs are not required to establish freight performance targets, it is important for them to be aware of requirements at the state level.

² 23 USC 150(b)

8 National Freight and Logistics Trends

This section looks at national freight and logistics trends as seen from various industry perspectives to provide context for freight decision-making in the Buffalo-Niagara region. With the recent Covid-19 pandemic, this section has been updated to include how the freight and logistics industry is responding to the economic downturn and what the pandemic might mean for the outlook of the industry.

8.1 GENERAL TRENDS

The biggest takeaway from 2019 that can be anticipated for 2020 is overall transportation costs continue to rise, mainly resulting from increased demands on transportation (largely from ecommerce), technological advancements, and threats of U.S. imposed tariffs on foreign trade.

COVID-19 Response

With the onset of the COVID-19 pandemic worldwide, freight and logistics forecasts for 2020 have been altered and several trends have been diverted as a result. While much of the impact and understanding is still new and unknown, the following section outlines some initial impacts of COVID-19 and resulting stay-at-home orders on the freight/ logistics industry as taken from various industry publications.

- The initial outbreak in China impacted global logistics chains, reducing export of goods and a slowing Chinese economy impacted demand.
- Many ports were locked out of accepting or exporting international goods. Most ports are now back up and functioning.
- Load volumes remain well below typical seasonal levels, both in terms of loads offered and loads moved.
- Oil prices are helping to reduce fuel surcharges but are deflating market for freight related to fuel delivery/ production.
- Some food is simply being discarded and not making it to market, further eroding freight volumes.
- Only essential goods continue to be shipped. The apparel, fashion, electronics, and other non-essential categories are severely impacted with less or no demand during this time.
- There was a 4.8% decline in domestic GDP for Q1 (January – March 2020), and forecasts indicate as much as a 20.5% decline upcoming in Q2 with overall 2020 forecasts indicating an overall GDP decline of 2.8%, with some economic rebound showing in Q3.
- Unemployment for 2020 could settle around 6.2%- reflecting a loss of 16 million jobs. Employment in warehousing and logistics is expected to remain stable mainly due to ecommerce.
- Many believe there will be pent up demand for goods and services when the outbreak is stabilized and stay at home orders eased.

Data from NYSDOT indicates that by the end of March 2020, traffic counts on major state routes and interstates across New York State is down nearly 60% compared to the same period in 2019. Truck counts weren't impacted nearly as bad, down nearly 10% during the same timeframe compared to 2019. This would indicate that the "NY on Pause" orders impacted vehicular and commuter traffic much more than freight traffic.

Niagara University Supply Chain Center of Excellence held a video-conference on April 29, 2020 on the “Impact of the COVID-19 Pandemic on the Food Industry”, with guests from Wegmans, Rosina Foods, Rich Products, Tops, Clorox, and Affinity Group discussing how the manufacturing, retail, brokers, and supply chain sectors are responding. Below are some highlights from that video-conference.

- The COVID-19 pandemic has shown that the entire food industry supply chain is very essential.
- So far during the COVID-19 pandemic, the food sector has experienced sales 30-40% higher than normal (store traffic down 10-15% however). The sector has also experienced a loss of employees (about 5-10%) due to concerns over their personal safety.
- The food supply chain is hiring during this pandemic to help keep up with demand, however the food service industry continues to struggle.
- Many employers have seen that working from home has become a viable option. Moving forward, employment model may shift to more work from home. Manufacturing and warehousing buildings will need to adjust to social distancing regulations.
- Companies are looking to carry more inventory in case a break in supply chain occurs.
- The COVID-19 pandemic has resulted in consumer behavior shifts, many of which are expected to continue after the pandemic and will result in changing business models.
- Industry is innovating to get products to consumers at home (ecommerce, Insta-cart, direct delivery, curbside pick-up, etc.). Based on consumer behavior, industry may emerge from pandemic with focus on continuing to deliver products to consumers at home rather than relying on in-store sales.
- Prior to the pandemic, food retailers were happy with 5% of their sales being ecommerce. Question will be what is new base of ecommerce after pandemic. Do food retailers act as a middle-man to get food directly to consumers from manufacturers or distributors.

INRIX cosponsored a webinar on May 12, 2020, with the North American Council for Freight Efficiency (NACFE) to discuss freight trends during COVID-19. Some key observations from that webinar include:

- The webinar indicated that pre-COVID-19, there was a truck driver shortage of about 63,000 positions, however, with COVID-19, that shortage has mostly been eliminated due to decreasing freight activity.
- Freight movement for groceries, medical, and essential supplies has continued to be strong; freight associated with brick & mortar retail, fuel, and automotive industry has become very weak. There are 88 automobile assembly plants in the U.S. and some 1,000 automobile component manufacturers that have been shut down or seen large reductions in output. This has had a great impact on the freight industry.
- Nationwide, freight vehicle miles traveled is down 13% during the COVID-19 pandemic (passenger vehicle miles traveled is down 46%). The North Central and Southern Gulf states have experienced the greatest decline likely due to the decline in automotive and oil industry.
- Since this time last year, there’s already been a 54% increase in ecommerce orders, and ecommerce sales are expected to account for 15.5% of all retail sales in 2020.

ROAR Logistics presented a Facebook Live webinar in late March 2020 to discuss their industry view of the impacts of COVID-19 on the shipping and logistics industry. The following are some observations from that discussion:

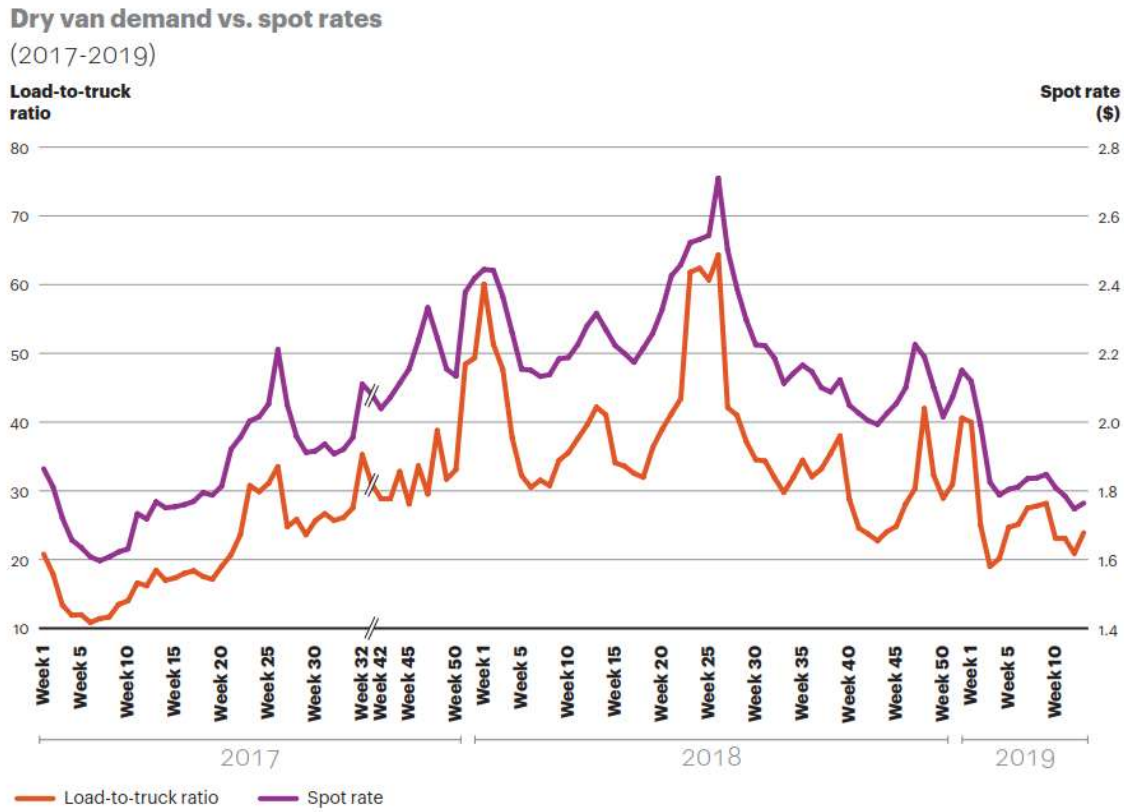
- The hours of service regulations have temporarily been relaxed for shippers shipping medical supplies.
- Supply chains are still rolling, business has been strong, mainly due to continued ecommerce and fulfillment of essential retailers and groceries.
- Truck freight for March 2020 was up 24% over last year, mainly due to surge freight to resolve shortages in markets.
- Many shippers and warehouses are hiring (such as Amazon).
- The driver shortage is anticipated to worsen as drivers choose not to work and new drivers can't be schooled at commercial driving schools due to closures.
- Many of the service guarantees are coming off (overnight, next-day, etc.).
- Airlines are shifting from passenger to cargo to help fill gap in revenue.
- Ocean cargo volume is dropping due to slowing business overseas; there is reluctance of air and ship cargo to access pandemic zones in Asia.

While there is great uncertainty as to what COVID-19's impact on the freight and logistics industry will be once the pandemic eases and work placed being to open back up, there are some economists that feel that in the short term, logistics hubs will re-emerge at a more regional level, depending less on global imports. This has already been seen in the medical industry, where equipment manufacturers and pharmaceutical supply chains are moving towards regionalization to get products more quickly.

8.2 TIGHTENED CAPACITY AND RISING RATES

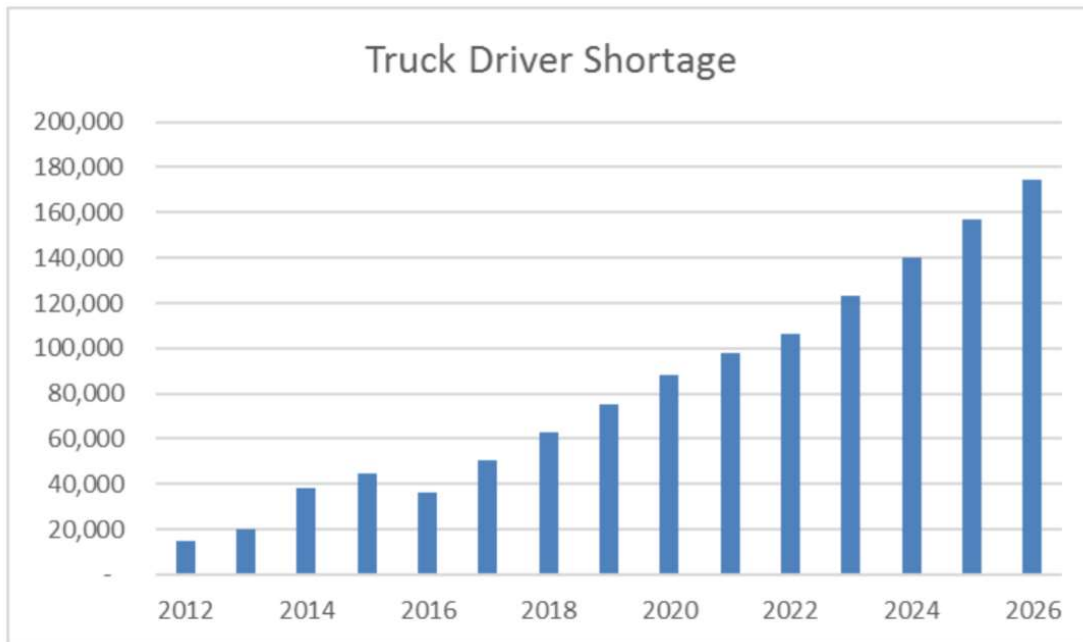
Over the past several years, the nation has experienced low truck supply and high freight demand. Figure 8-1 displays load-to-truck ratios and associated spot rates for dry van type trucks. The load-to-truck ratio measures the number of loads posted to load boards to the number of trucks posted to load boards. As shown in Figure 8-1, the load-to-truck ratio peaked in 2018 when over 70 times as many loads were posted as trucks. Also shown in Figure 8-1, spot rates peaked at the same time as the load-to-truck ratio, so that as more loads were available than trucks to haul them, rates increased. Load-to-truck ratio and spot rates have since decreased, although industry watchers are unsure whether the declines will stabilize or continue into 2020.

Figure 8-1: Dry Van Demand versus Spot Rates



Source: A.T. Kearney 30th State of Logistics Report

One factor that tends to decrease the supply of trucking service and increase costs is an industry shortage of drivers. The American Trucking Associations (ATA) has estimated truck driver shortages focusing specifically of tractor/semi-trailer drivers. The ATA estimate the demand for truck drivers, the labor supply and then forecasts shortages/surpluses using a series of economic variables to project future demand and supply. As shown in Figure 8-2, the ATA estimated that the shortage in 2016 was 36,500 and forecast the shortage to grow to over 170,000 by 2026.

Figure 8-2: American Trucking Associations Forecast Driver Shortage

Source: American Truck Associations, *Truck Driver Shortage Analysis 2017*

The ATA provides the following reasons for a driver shortage:

- **Demographics:** The median age of an over-the-road truck driver is 49, compared to 42 for all U.S. workers. Truck drivers cannot drive across state lines until they are 21, and many have found alternate careers by the time they are old enough to be interstate truck drivers. Only 6% of truck drivers are female, whereas 47% of the U.S. labor market is female.
- **Lifestyle and Alternative Jobs:** When new to the industry, many drivers are assigned routes that keep them away from home for extended periods of time, which can be a difficult lifestyle especially for individuals with families. As the job market has improved, trucking jobs compete with other industries for the same pool of potential workers. Other jobs may offer easier lifestyles with more competitive pay.
- **Regulations:** Hours of service and other regulations reduce industry productivity and increase the number of required drivers. Regulations stipulate that a driver can be on-duty for up to 14 consecutive hours, drive up to 11 of those hours, and must rest at least 10 hours before starting a new shift. The goal is to promote safe driving and minimize driver fatigue. However, the American Transportation Research Institute's annual survey of motor carrier executives and commercial drivers consistently ranks hours-of-service as a top issue, primarily due to the rigidity it imposes. In 2017 an Electronic Logging Device (ELD) mandate took effect. This requires truck drivers to replace paper logbooks with electronic devices to track their hours of service. Some were concerned that the rule would push drivers out of the industry due to privacy concerns and establish hard limits on hours of service. While rates increased and driver shortages persisted after the rule took effect, it is uncertain how much of this was due to the rule.

While many industry participants and industry watchers agree a driver shortage exists, a recent analysis by the U.S. Bureau of Labor Statistics offered a more nuanced assessment of the situation, noting that the problem

appears to be in one segment, the long-haul “over the road” segment of trucking.³ The study authors cautioned against assuming that the demand/supply imbalance would persist in the truck driver labor market over the long-term, so that the market would never “clear.”

These trends are relevant to the Buffalo region since they impact the rates that shippers in the region must pay. The relative cost of trucking could have implications for modal shares, for example, if increases in trucking costs made rail intermodal relatively more competitive. Increased trucking costs also make improvements that help the efficiency of trucking more valuable. Limits to truck hours of service and developments like the ELD boost the need for truck parking.

8.3 TECHNOLOGICAL DISRUPTORS

Automated Trucks

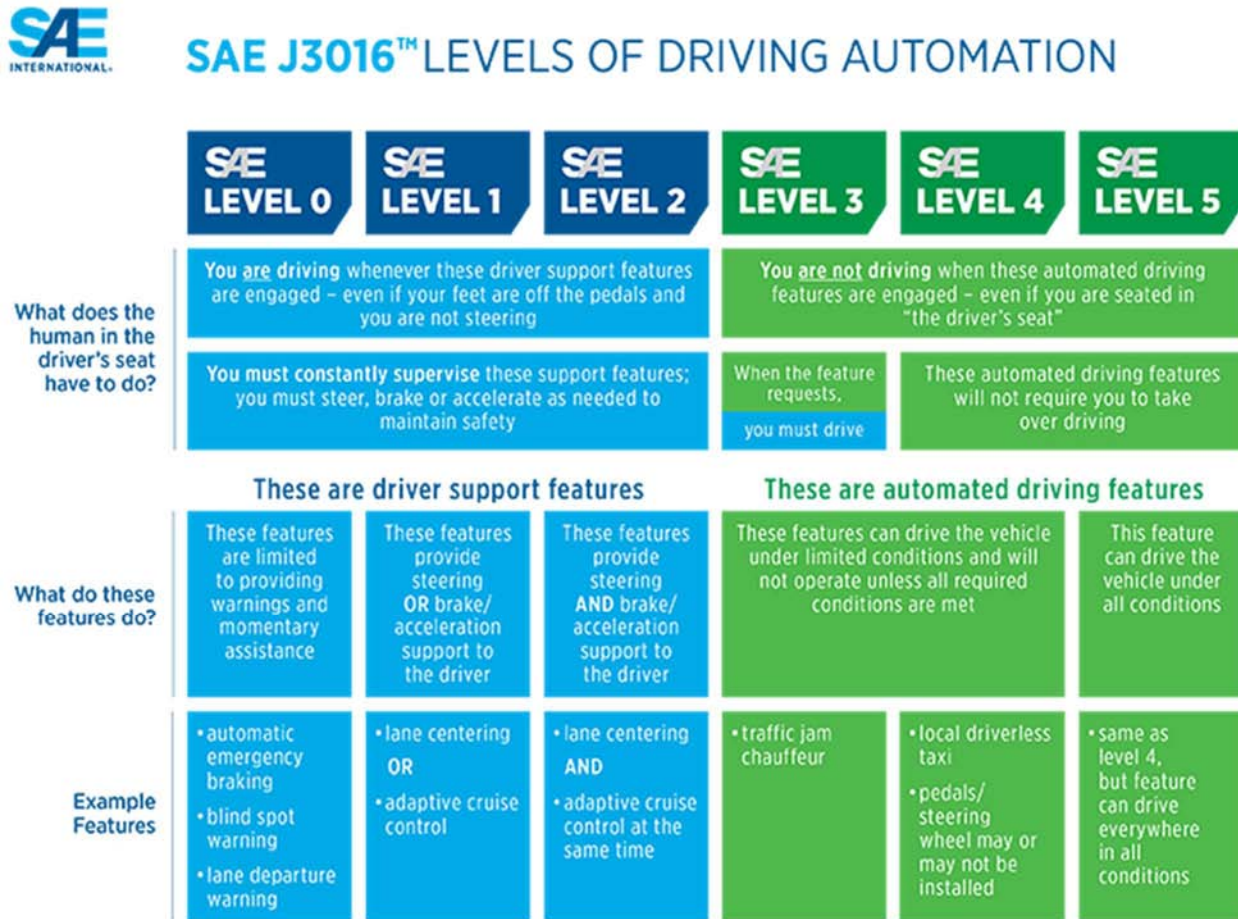
The use of connected and automated vehicle technologies in trucking is evolving quickly. While passenger cars garner much of the media attention, an increasing number of trucks are utilizing sensor, communications, and/or processing software technologies for both steering and braking assistance. The benefits of greater vehicle automation are substantial. As outlined by the National Highway Traffic Safety Administration, they include improved safety and efficiency, lower economic and societal costs, and greater convenience and mobility.⁴ The Society of Automation Engineers’ automation levels classification scheme is the industry standard in terms of measuring the degree of automation in a vehicle, as shown in Figure 8-3. Driver support features are currently available commercially, while automated driving features are slowly emerging into the market through various pilots and tests. Partial and conditional automation are in the pre-commercial stage, and high and full automation are in research and development.⁵

³ U.S. Bureau of Labor Statistics, *Is the U.S. labor market for truck drivers broken?*, March 2019.

⁴ <https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety>

⁵ Source: “Automation in the long haul: Challenges and opportunities of autonomous heavy-duty trucking in the United States”

Figure 8-3: SAE Levels of Driving Automation



Source: Society of Automotive Engineers (https://www.sae.org/standards/content/j3016_201806/)

Multiple vehicle manufacturers are actively engaged in the development of autonomous trucks, which given the relative economic incentives, are expected to outpace autonomous passenger vehicles in terms of widespread commercial adoption. In 2019, the biggest movement to advance truck automation is Daimler Trucks⁶. At the 2019 Consumer Electronics Show (CES) in Las Vegas, Daimler Trucks announced that it will invest more than EUR 500 million (more than 570 million USD) over the next years and create more than 200 new jobs in its global push to bring highly automated trucks (SAE level 4) to the road within a decade. These trucks will improve safety, boost the performance of logistics and offer a great value proposition to the customers – and thus contribute considerably to a sustainable future of transportation.

Daimler Trucks and Torc Robotics are joining forces in a one-of-a-kind combination to commercialize highly automated trucks (SAE Level 4) on U.S. roads. Both companies complement each other perfectly in terms of resources, expertise, and skill sets. With this the ideal combination is formed between Torc’s expertise on agile software development and Daimler Trucks’ experience in delivering reliable and safe truck hardware. Torc will remain a separate entity retaining its name, team, existing customers, and facilities in Blacksburg. As part of

⁶ <https://www.daimler.com/innovation/case/autonomous/automated-driving-daimler-trucks.html>

the overall agreements, the Torc team will work closely with Daimler Trucks' developers, particularly with the Research & Development team of Daimler Trucks North America in Portland, Oregon.

Another notable example is Embark, who is testing a system that automates the freeway portion of a truck's journey and allows the driver to take over to navigate the more complex local roads. The approach is designed to enable truck drivers to complete more journeys per day, while spending less time actually driving. Other companies with promising pilot programs include Peloton, Waymo, Uber, Telsa, Starsky Robotics, and commercial supplier Wabco. These are just some of the more high-profile examples in a list that includes nearly 50 different manufacturers. Moreover, research and development is not confined to the private sector; the U.S. Army has been testing and plans to deploy dozens of autonomous trucks in 2019.

In addition to automation, connected vehicle technologies are being explored and have the potential for benefits to the trucking industry. The U.S. Department of Transportation's Wyoming Connected Vehicle Pilot Deployment (CVPD) project include commercial vehicles and related applications. Of the 400 vehicles participating in the pilot, at least 150 have been designated to be heavy trucks that have been enabled with the functionality to broadcast Basic Safety Messages (BSM) and will include a human machine interface to share alerts and advisories to drivers of these vehicles.

The Wyoming pilot is being deployed to improve the safety, mobility, and productivity of the travelers of I-80 in Wyoming. Through connected vehicle pilot technology, Wyoming Department of Transportation hopes to reduce the number and the severity of weather-related incidents (including secondary incidents) in the corridor. Other anticipated benefits include:

- Automatically collect road weather information from equipped snowplows and trucks to give travelers better, more timely warnings about adverse road conditions
- Provide drivers with information directly in their vehicles about safe travel speed, detours, parking, and the presence of maintenance and emergency vehicles, so drivers can make informed and safe decisions
- Provide fleet management centers with current and forecasted road conditions to help them make better travel decisions to increase efficiency and productivity
- Support the use of V2V and V2I communication to give drivers information about road conditions and posted speeds, especially in variable speed limit zones, to encourage compliance with posted speed limits.

A related approach to automated vehicle operation drawing significant interest is platooning. Truck platoons use vehicle-to-vehicle communications and automated vehicle control technology to create stings of vehicles that are able to operate in coordination. One of the primary benefits of platooning is greater fuel efficiency, which stems from reduced aerodynamic drag on the following vehicle(s). Other potential benefits include improved safety, reduced driver stress, less congestion, and lower carbon emissions. Several private sector companies are in the advanced testing stage for truck platooning, including Peloton, Daimler and Volvo, as well as the US Army.

The federal government has been actively engaged in the development of autonomous vehicles in recent years. In 2016, the US Transportation Secretary announced a 10-year, \$4 billion plan aimed at accelerating the development, adoption and integration of safe autonomous vehicles. Under the plan, the government will fund

large-scale pilot programs, and work with both public and private-sector participants to ensure a shared framework for connected and autonomous vehicles.⁷ For example, the DOT-funded Ann Arbor Connected Vehicle Environment, Connected Vehicle Pilots Program and the Advanced Transportation and Congestion Management Technologies Deployment Program have combined over \$150 million in Federal and State funding for vehicle communications technologies such as vehicle-to-vehicle (V2V).⁸ In an effort to provide a flexible regulatory environment that encourages its core mission of promoting safety without sacrificing innovation, the US Department of Transportation released its Federal Automated Vehicle Policy in 2016, followed by Automated Driving Systems 2.0: Vision for Safety in 2017, and Preparing for the Future of Transportation: Automated Vehicle 3.0 in 2018, which provides more detailed guidance and best practices in terms of testing and deployment of automated technologies. It also focuses on greater transparency and public engagement in the process in order to improve public support and confidence, which is viewed as critical to the adoption of such technologies

Automated Delivery Technologies

Congested areas represent a significant challenge for both autonomous and connected vehicles. The interaction of trucks, cars, cyclists, and pedestrians – all moving in different directions at different times for different purposes – presents automated vehicles with a huge amount of variability and unpredictability. In fact, the vehicle platooning automation currently in development generally functions with at least some degree of human control once the platoon exits the freeway. Similarly, while driver assistance technologies greatly enhance truck efficiency and safety on local roadways, development of higher levels of automation often focus on long-haul, over-the-road operation.

The relatively slower speeds at which vehicles operate in local areas may assist automated vehicles in safely identifying, monitoring, and navigating those areas, assuming the development of the appropriate technology.⁹ This, combined with the costly nature of local deliveries, has inspired numerous potential innovations, including fully autonomous delivery vehicles being developed by both Udelv and Nuro. For the Buffalo-Niagara region specifically, one could envision a scenario in which a driverless vehicle operating in conjunction with a delivery employee, or a delivery “robot.” A company called Starship Technologies has initiated a program to deliver food by robots at George Mason University in Fairfax, Virginia. The company has also partnered with several online food delivery applications for pilot programs to deliver food from restaurants in Washington, D.C. and Redwood, California, as shown in Figure 8-4. Unmanned Aerial Systems (UAS) also hold promise for disrupting delivery as we know it today.

⁷ <https://www.transportation.gov/sites/dot.gov/files/docs/DOT-fy-17factsheet.pdf>

⁸ <https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf>

⁹ “Self-Driving Vehicles in Logistics”

Figure 8-4: Delivery Robot in Washington, D.C.

Source: Washington Post

Automated vehicle technologies, such as platooning, have been shown to save up to 10% in fuel costs¹⁰. Recent research sponsored by FHWA showed fuel economy in two-truck platoons showed a peak combined fuel savings of nearly 7 percent (roughly 5 percent for the leading truck and up to 10 percent for the trailing truck) at separation of 30 ft. The trailing truck showed a maximum fuel saving of more than 10 percent at a following distance of 50 ft (a more realistic following distance, based on surveys that assessed driver comfort)¹¹. Another study led by the North American Council for Freight Efficiency, found the average fuel savings of two-truck platooning is approximately four percent, after accounting for real world conditions.¹² Meanwhile, estimates of the per vehicle cost of implementing such technologies range from a few thousand dollars for individual items such as lane assist, to twenty to thirty thousand dollars for full automation. Nonetheless the return on investment could be substantial for a \$150,000 truck that drives hundreds of miles daily.¹³

Savings generally apply to long-haul trucking, which is a direct competitor to rail freight, as opposed to short-haul trucking, which is considered a complement to rail. The Center for Transportation Studies' "Emerging Freight Truck Technologies: Effects on Relative Freight Costs" attempts to measure the fuel costs savings of emerging technology's impact on rail demand. The authors assumed a gradual implementation of these technologies over three phases. In first phase, the fuel cost savings for trucking and the successive reduction in demand for rail was relatively small. However, by the final phase, the study showed roughly a 40 percent decline in per mile fuel costs for trucks and about a 45 percent decline in rail demand as a result.

Improved road safety is widely quoted to as a potential benefit of automated truck technologies. The trucking industry views increased safety as a primary reason to adopt platooning technology. Truck platooning technology implementation would lead to fewer injuries, fewer deaths, and lower crash rates, resulting in reduced insurance costs¹⁴. An often-cited statistic to back up this statement is the fact that approximately 90 percent of commercial truck accidents are caused or worsened by human error, either by a truck driver, other drivers, other vehicle passengers, cyclists, or pedestrians. Currently there is some evidence that recently implemented technologies such as forward collision warnings and automatic emergency braking systems do enhance safety. However, there is no real-world data available on the safety impacts of vehicles with higher

¹⁰ https://its.dot.gov/presentations/avs2019/McHale_Truck_PlatooningAVS2019.pdf

¹¹ <https://www.fhwa.dot.gov/publications/research/ear/17045/17045.pdf>

¹² <http://nacfe.org/technology/two-truck-platooning/>

¹³ "Automated Trucks The next big disruptor in the automotive industry?"

¹⁴ https://www.itsknowledgeresources.its.dot.gov/its/executivebriefings/2019/pdf/EB14-TRUCK%20PLATOONING_%2005_16_19_FINAL.pdf

levels of automation. In fact, some experts argue that Level 3 automation, which requires human intervention, could even increase traffic collision.¹⁵ Others argue that during the assumed transition period in which conventional and self-driving vehicles are sharing the road, the number of accidents might actually increase, at least for the conventional vehicles.¹⁶ One fact that experts do agree on is the need for additional testing to fully understand the safety potential of technologies and their impact on the overall transportation system.

8.4 CHANGING BEHAVIORS

Delivery Times and the “Amazon Effect”

Amazon is the undisputed leader in terms of U.S. e-commerce sales accounting for an estimated 48 percent of total US digital sales in 2018, according to eMarketer. In 2005, the company started Amazon Prime, providing free two-day shipping on certain products to Prime members for an annual fee. More recently, Prime Now offers free same-day delivery in major metro markets and faster and/or tailored delivery for select high-volume goods for an additional fee. Given Amazon’s significant market presence, other major retailers have had little choice but to follow suit, offering a combination of free and/or faster delivery. For instance, Target acquired online same-day delivery platform Ship late last year with the goal of providing same-day delivery for all major product categories in all major markets by the end of 2019. This is one of many examples of a trend that has become pervasive. According to a 2018 Deloitte survey, 62 percent of respondents defined “fast shipping” as two days or less, up from 54 percent in 2017.¹⁷

While durable goods continue to lead e-commerce sales, many consumable goods, most notably groceries, are experiencing significant growth – a trend that is expected to continue going forward. According to Unata’s 2018 Grocery E-commerce Forecast, 36 percent of people surveyed planned to order groceries online in 2018, up from the 22 percent who reported grocery shopping online in 2017, a growth rate of 64 percent. Amazon’s purchase of Whole Foods in 2017 is undoubtedly contributing to the expansion. Wal-Mart has also been aggressive in the online grocery space, announcing plans in early 2018 to expand its online grocery delivery service to 100 metropolitan areas by year’s end. At the same time, Kroger is in the testing stage for the first fully self-driving grocery deliver service with no human being in the vehicle.

Production/Distribution Networks

The rapid growth in the Direct to Consumer (D2C) market combined with faster delivery standards is having significant repercussions on warehouse location decisions. There is a notable shift away from the practice of using a small number of enormous facilities located at a considerable distance from the urban areas they serve, toward using more numerous, smaller industrial spaces located closer to the end consumer.

Another trend that has emerged as a result of the focus on low-cost, expedited shipping is the use of crowdsourcing for last mile deliveries. Similar to Uber, this involves technology-enabled companies dispatching individual contractors who use their own personal vehicles for deliveries. As of now, this method is often used for meal and grocery delivery, as well as medical supplies, but a handful of successful startups, include Deliv,

¹⁵ “Automation in the long haul: Challenges and opportunities of autonomous heavy- duty trucking in the United States”

¹⁶ Road Safety with Self-Driving Vehicles: General Limitations and Road Sharing with Conventional Vehicles”

¹⁷ <https://www2.deloitte.com/us/en/pages/about-deloitte/articles/press-releases/deloitte-study-holiday-shoppers-hooked-on-fast-and-free-shipping.html>

Instacart and UberRush, have moved into other areas of retail. Additionally, Amazon has its own crowd sourced delivery service called Amazon Flex. While such systems allow for fast, localized delivery with limited overhead to the company, there are costs to the overall transportation system. These include increased congestion, uncounted trips, unregulated vehicles, and reduced coordination and consolidation of delivery services. Moreover, curb space for these deliveries is limited and double-parked trucks are recognized for their impact on local traffic. Buffalo Niagara municipalities should take these increases in local deliveries into consideration in future complete streets and other roadway redesign projects.

While it seems clear that growth in e-commerce will continue to outpace overall retail sales for some time, the future of product delivery, particularly last-mile logistics, is far from certain. One possibility that has received considerable attention is drone delivery. Multiple groups are in various testing stages, including smaller companies like Workhorse and Matternet, as well as larger corporations like Google and Wal-Mart. Additionally, Amazon has patented mobile drone delivery hubs that could travel along railroads, seaways and roads. The federal government has also gotten involved via the UAS Integration Pilot Program, which encourages local governments to partner with private companies. The goal is to promote innovation, while at the same time helping the Department of Transportation and Federal Aviation Administration craft new regulatory guidelines for drone usage. Nonetheless, while drone technology is fairly advanced, the actual feasibility of drone delivery is far from certain. In addition to the numerous safety and security concerns, there are multiple factors related to economics, weather, and urban landscape that limit the practicality of a widespread drone delivery operation in a metropolitan area such as Buffalo/Niagara Falls.

9 Regional and Statewide Studies

There are a number of regional and statewide studies and plans that influence the freight and logistics industry in the Buffalo-Niagara region. This section provides a synopsis of regional and statewide studies.

9.1 NEW YORK STATE FREIGHT TRANSPORTATION PLAN (2019)

As reported in the 2019 New York State Freight Plan, three million jobs in New York State depend on freight, and more than 2 million New York State businesses rely on the shipment of goods to their factories, stores, and customers. New York State highways, rail, pipelines, maritime ports, and airports move freight valued at more than \$2.3 trillion every year. That number is expected to increase to almost \$4 trillion by 2040.

The New York State Freight Transportation Plan provides a foundation for the future, as follows:

- Establishes the first comprehensive New York State Freight Plan, building a foundation for NYS agencies, authorities, and partners to collaborate to address infrastructure, regulatory, policy, and operational needs.
- Reflects stakeholder outreach and collaboration with partner agencies, the private sector, MPOs, and other key stakeholders. Collaboration with partners will continue as action items are implemented.
- Defines New York State Freight Core Highway and Rail Networks.
- Identifies thirty projects across the State for National Highway Freight Program (NHFP) funding as well as other freight improvements.
- Includes illustrative lists of medium- and long-term freight projects to be considered for future funding opportunities.
- Establishes performance measures to monitor freight system performance.
- Incorporates an online New York State Freight Network Atlas, providing interactive access to data on modal networks, terminal facilities like airports and maritime ports, and freight flows.
- Includes data analysis confirming the local, regional, and national economic importance of the New York State freight network, enhancing future freight planning activities.
- Assesses freight-generating industries and assets in 10 economic development regions.
- Introduces an integrated project assessment framework to support balanced freight development across all regions of the State.
- Proposes recommended actions across all transportation modes, charting a clear path forward in future freight planning.

The following summarizes the freight network needs, as outlined in the New York State Freight Transportation Plan:

- **Highway**
 - Enhance bridge and highway infrastructure.

- Ensure resiliency of the highway system against natural and human-caused hazards.
- Reduce network constraints, such as:
 - » Low bridge clearances
 - » Size and weight limits
 - » Route and facilities restrictions
- Mitigate transportation network inefficiencies and bottlenecks by:
 - » Reducing recurring congestion (existing traffic bottlenecks)
 - » Managing nonrecurring congestion (accidents, construction, weather, etc.)
 - » Enhancing safety and reducing incident response times
 - » Managing travel demand during peak commuting hours
- Increase efficiency of traffic flow and international border crossings.
- Enhance commercial vehicle access.
- Enhance truck inspection procedures with electronic screening equipment to reduce wait times while ensuring safety.
- Improve availability of safe and accessible truck parking.
- Improve first/ last mile connections to promote economic development.
- Assess the safety and utility of various emerging transportation technologies and management techniques, including:
 - » Connected vehicles (CVs)
 - » Autonomous vehicles (AVs)
 - » Expand the use of energy efficient freight vehicle technology.
- **Rail**
 - Maintain railway infrastructure in state of good repair.
 - Improve railway infrastructure to accommodate larger and heavier stock.
 - Reduce system bottlenecks and expand railyard capacity.
 - Expand the use of energy efficient train technology.
 - Recognize federal policy changes, such as:
 - » Passenger train priority on railways
 - » Rail transport of hazardous materials
- **Maritime**
 - Maintain and improve maritime infrastructure:
 - » Port and equipment conditions
 - » Port waterside access (navigation channels)
 - » Port landside access (highway and rail)
 - » Inland waterways (canals, locks, and dams)
 - Monitor maritime freight taxation policies between U.S. and Canada.
 - Assess impact of Panama Canal expansion.
- **Air**
 - Maintain and enhance runway and freight handling facilities.
 - Improve ground access to air cargo facilities.

The New York State Freight Transportation Plan identified the following projects that have a strong potential to address freight needs and goals.

Short-Term Highway Projects

- \$7.5 million to construct a new travel lane on State Route 78 (Transit Road) between the I-90 interchange and State Route 33 (Genesee Street) to improve the air cargo freight route.
- \$8.5 million to rehabilitate the Ohio Street Lift Bridge in the City of Buffalo.

Short-Term Rail Projects

- \$19 million to fund improvements to the CSX DeWitt Yard, creating an inland terminal with rail access to the Port of New York and New Jersey.

Illustrative Rail Projects

- CP Draw Bridge Replacement/Expansion.
- Upgrades to the International Railroad Bridge.

Illustrative Maritime Projects

- Port of Buffalo Expansion and Modernization.
- New Lake Ontario Port Buffalo-Niagara, located in Somerset, at the plant owned by Somerset Operating Co. LLC of the Upstate New York Power Producers.

Short-Term Air Cargo Projects

- \$10.6 million for Buffalo-Niagara International Airport Taxiway enhancement.

Illustrative Air Cargo Projects

- Buffalo-Niagara International Airport Air Cargo Expansion.
- Niagara Falls International Airport Air Cargo Building Construction.
- Niagara Falls International Airport Air Cargo Expansion.
- Niagara Falls International Airport Air Cargo Access Road Construction.

9.2 MOVING FORWARD 2050 (2018)

The Moving Forward 2050 Metropolitan Transportation Plan (MTP) is the Buffalo-Niagara region's primary tool for laying out significant, long term improvement in the transportation system. The purpose of the plan is to lay out economic, community and environmental goals for the year 2050 and a roadmap of how to achieve them. The plan identifies the Buffalo-Niagara region as a critical link in the mega region "The Golden Horseshoe" that spans from Toronto to Buffalo which includes a population of 9 million people. The plan lays out several infrastructure improvements that will increase freight industry such as the Portageville Bridge Project and Redesigning Route 5. Several new technological advances such as connected and autonomous trucking fleets with designated lanes, freight vehicle pre-clearance and e-tolls at Canadian borders and multimodal freight hubs can make logistics in the region more economically and environmentally efficient. The plan delivers several metrics to record progress of freight transportation systems in the region.

9.3 INITIATIVE FOR A SMART ECONOMY 2.0 (2017)

The 2017 Initiative for Smart Economic 2.0 is an update from the 2013 plan *Initiatives for a Smart Economy* which identified 64 initiatives that Erie County would undertake to support economic growth in the region. This updated report identifies key opportunity development and restoration projects in the region with a focus on equal opportunity and inclusive growth. The document highlights the opportunity for the Western New York logistics to thrive in today's market based upon other major ports in the United States reaching capacity. Erie County holds a designation as a Foreign Trade Zone, which allows for firms to import goods or components then export the finished product without paying a duty. This designation boosts potential in international trade. Erie County's international port of entry with Canada has potential to draw international investment from around the world, and increase employment opportunities for Erie County residents.

9.4 A STRATEGY FOR PROSPERITY – WNY REDC STRATEGIC PLAN (2017)

The WNY REDC Strategic Plan outlines the ways in which the Buffalo Billion investment impacted the Western New York economy. The investment supports advanced manufacturing, tourism and health sciences, all of which are tradable sectors. The document also highlights ways in which the region is attracting and retaining labor talent and entrepreneurs. The document is an explanation for the phasing of strategic investments made under the Buffalo Billion Umbrella.

9.5 ONE REGION FORWARD (2015)

One Region Forward serves as a tool to measure progress against shared community values in shaping the future of the region. Three years of research collected the expressions of thousands of citizen voices on where the people wanted to see the Buffalo's direction be and sets out a path to getting there. The plan targets infrastructure improvements to better facilitate the movement of goods. The plan suggests that the region put priority on creating a logistics hub in the Buffalo-Niagara region based upon the region's proximity to the Greater Golden Horseshoe Region of Toronto and existing physical infrastructure such as ports, airports, rail lines and roadways. The plan also suggests that the growing number of manufacturers in the region have the ability to bolster import/export activity.

9.6 INTERNATIONAL TRADE GATEWAY ORGANIZATION STRATEGIC PLAN (2014)

The 2014 International Trade Gateway Organization Strategic Plan outlines the activities and structure of the International Trade Gateway Organization. ITGO serves to act as a critical component of Western New York's advanced manufacturing service base, create employment opportunities through attraction of freight to the Western New York region and support the action of new investment to the region through bolstering the region as an inland port for the Port Authority of NY/NJ. ITGO prioritizes infrastructure, workforce, government relations, communications, and Canadian-American international trade.

9.7 WNY REGIONAL SUSTAINABILITY PLAN (2013)

The purpose of 2013 WNY Sustainability Plan is to overcome the challenges of shrinking population and aging infrastructure by creating a region wide planning effort throughout the region's communities to generate ongoing sustainable growth. The plan identifies the extension of U.S. 219 as an integral development in shipping for Cattaraugus County. Improved border crossings can aid US-Canada trade and help develop a logistics hub in Western New York. Road improvements on border crossings and other trucking routes can increase flow of traffic and decrease the carbon footprint of idling trucks.

9.8 NIAGARA FRONTIER URBAN AREA FREIGHT TRANSPORTATION PLAN (2010)

The 2010 Niagara Frontier Urban Area Freight Transportation Plan evaluated existing demands of the region's airports, roadways, railways and waterways. Freight in the Buffalo-Niagara region is predominantly transported by truck, followed by rail, maritime and aviation. Freight tonnage is anticipated to more than double from 2004 to 2035. The plan identified the great opportunity for Buffalo to become a conduit of trade to Canada. Benefits of freight operations in the Buffalo-Niagara region are location near large sources of consumption in the 2.3 million in population of Western New York and the 5.5 million in the Greater Toronto Area, the prevalence of multi modal ports including rail service by four Class 1 railroad carriers, port terminals, and two airports, several high-volume border crossings, ability to locate within the NS and CSX railroad intermodal network and direct connections to the PANYNJ. The disadvantages to freight operations in the Buffalo-Niagara region include an imbalance of inbound and outbound freight which increases costs of container drayage, competing logistics hubs in Ohio-based logistics centers and the cost of toll facilities to motor carriers within the region. Several updates to the existing rail, roadway and port networks that have potential to make the Buffalo-Niagara region a complex logistics hub can serve several markets.

9.9 NIAGARA COUNTY COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY (2020)

The Niagara County Comprehensive Economic Development Strategy (CEDS) evaluates the current regional economic environment and outlines actionable strategies to address challenges, mitigate threats, enhance strengths, and capitalize on opportunities. The vision of the CEDS is to create a proactive model for economic development and growth. This model emphasizes brownfield revitalization, qualitative development, living wage jobs, and the creation of plans through regional cooperation. The strategy identifies several action items and site locations for strategic investment for goals identified in the document. The CEDS identifies infrastructure as a key investment area necessary for growth and development in the region and proposes several action points within Niagara County. Current evaluation of infrastructure needs show need to upgrade current roads as they have seen a decline in quality from 2017. Beyond the specific actionable items, the document also aims to build capacity for economic resilience by identifying vulnerabilities, measure economic performance and resilience. There is active and regular communication between the CEDS committee and stakeholders in the private, public, and nonprofit sectors. A 5-year rewrite of the plan is underway.

10 Freight Planning Considerations

10.1 ENVIRONMENTAL AND SUSTAINABILITY

Freight transportation generates airborne pollutants that are considered harmful to public health and the environment, and are responsible for approximately 9% (nearly 500 million metric tons) of direct U.S. greenhouse gas emissions each year.¹⁸ The GBNRTC 2010 freight transportation study identified air quality concerns as one of the main issues impacting the Greater Buffalo-Niagara region freight system across all transportation modes.¹⁹

In addition, greenhouse gases are “criteria air pollutants” that can harm human health, the environment and cause property damage. The U.S. Environmental Protection Agency (EPA) sets National Ambient Air Quality Standards for six criteria pollutants including a standard for 8-hour ozone concentrations. From 2004-2008, both Erie and Niagara Counties were in non-attainment for 8-hour ozone, as reported in the 2010 GBNRTC Freight Transportation Study, and remained in non-attainment from 2009-2014.²⁰ While Erie and Niagara Counties have met ozone standards since 2014, the counties received ‘F’ and ‘C’ grades, respectively, in the 2019 American Lung Association Air Pollution Report, based on ozone data from 2015-2017.²¹

As the Buffalo-Niagara region considers issues related to freight and environmental sustainability it is useful to consider factors that will influence freight’s environmental impacts. One is modal share. Generally, trucking consumes more fuel and generates more greenhouse gases than alternate modes such as rail and waterways, as shown in Figure 10-1.

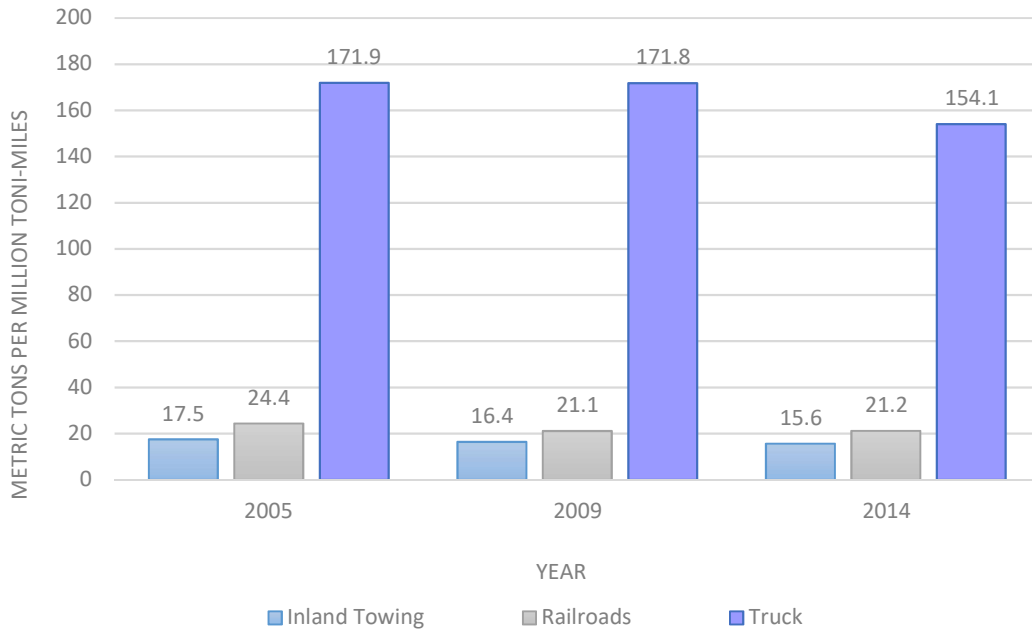
¹⁸ Environmental Defense Fund +Business, “[Green Freight Facts & Figures](#),” 2019.

¹⁹ Greater Buffalo-Niagara Regional Transportation Council, “[Niagara Frontier Urban Area Freight Transportation Study: Final Report](#),” August 2010.

²⁰ U.S. EPA, “[New York Nonattainment/Maintenance Status for Each County by Year](#),” July 2019.

²¹ American Lung Association, “[State of the Air 2019](#),” 2019.

Figure 10-1: Comparison of GHG Emissions by Mode



Source: Adapted from Texas A&M Transportation Institute and Center for Ports and Waterways, 2017.

Despite low fuel efficiency and resulting high greenhouse gas emissions, trucking is expected to remain the dominant mode in the Buffalo-Niagara freight network for the foreseeable future. However, trucking’s environmental impacts have decreased somewhat since the 2010 GBNRTC freight study. Engine and fuel efficiency regulations and technological advancements continue to improve the efficiency of freight trucks, and have increased average miles-per-gallon by 25% over the past ten years, from 5.9 mpg in 2007 to 7.28 mpg in 2018.²² Transportation firms and private fleets respond to federal and state regulations.

The National Highway Traffic Safety Administration (NHTSA) and EPA issued fuel efficiency standards for heavy-duty vehicles for the first time in 2011, prompting trucking companies to reduce fuel consumption accordingly.²³ The regulations apply to vehicles for model years 2014 to 2018 and beyond, with “Phase 2” setting the standards for model years beyond 2018. In 2016, the Phase 2 final rule established new performance standards through model year 2027 to promote a new generation of cleaner, more fuel-efficient trucks.

The current *Corporate Average Fuel Economy* (CAFE) standards for heavy-duty trucks vary across different classes of vehicles, and allow manufacturers to choose their own technology mix for achieving the efficiency and GHG emissions standards. NHTSA and EPA have worked to harmonize standards under this program in coordination with the State of California, which has historically been the only state vested with the authority to develop its own emission regulations. This alignment has created a single, effective set of standards that allows manufacturers to build a single fleet of vehicles and engines for use across the country. Current CAFE standards are summarized in Table 10-1.

²² North American Council for Freight Efficiency, “[2018 Annual Fleet Fuel Study](#),” August 2018.

²³ North American Council for Freight Efficiency, “[2018 Annual Fleet Fuel Study](#),” August 2018.

Table 10-1: NHTSA/EPA Federal CAFE Phase 2 Standards by Vehicle Classification

Vehicle Classification	Federal CAFE Standard
Combination Tractors	Class 7 and 8: reduce fuel consumption by 25% from Phase 1 standards by model year 2027. Fuel consumption by 2021 ranges from 5.15 to 11.15 gallons per 1,000 ton-mile.
Trailers	Reduce fuel consumption by 9% by model year 2027. Fuel consumption by 2021 ranges from 7.75 to 12.52 gallons per 1,000 ton-mile.
Heavy-Duty Pickup	Reduce fuel consumption by 16% by model year 2027.
Vocational Vehicles	Reduce fuel consumption by 24% by model year 2027 (includes delivery trucks, buses, garbage trucks). Fuel consumption by 2021 ranges from 20.14 to 41.65 gallons per 1,000 ton-mile for diesel.
Engine Standards	Tractor engines to reduce carbon dioxide emissions by 5%, and vocational diesel and gasoline engines to reduce by 4% from Phase 1 standard levels

These federal fuel efficiency requirements have been held as the standard since 2014, but have been frozen by the Trump Administration in recent years and are expected to be rolled back this year. While the rollback of efficiency standards has been welcomed by some automakers that have paid millions of dollars in fines in the past, other automakers are increasingly concerned about the split market that may result.

New York State (NYS), like California, adheres to the 2014 standard and resists attempts to roll back the standards. In addition to the application of national CAFE standards at the state level as minimum efficiency requirements, NYS also regulates heavy duty vehicle idling. Under NYS Environmental Conservation Law, 6 NYCRR, Subpart 217-3, heavy duty vehicles are prohibited from idling for more than five minutes at a time, with penalties up to \$18,000 for a first violation.²⁴ Both behavioral strategies and Idling Reduction Technologies (IRTs) are currently being implemented to reduce idling through operator training, financial incentives, auxiliary power units, thermal storage systems, battery air conditioning systems, and truck stop electrification. The impact of this rule on the Buffalo-Niagara region pertains mainly to electrification of off-board equipment such as electrified parking spaces or systems that directly provide heating, cooling, and other power needs.

The New York State Energy Research and Development Authority (NYSERDA) launched the Clean Transportation Program to help innovators produce market-ready clean transportation products, services, and strategies. For example, NYSERDA's Alternative Fuel Vehicle Research and Development Funding program incentivizes the acceleration of emerging technologies focused on improving efficiency and reducing pollution.

In addition, the PANYNJ has laid out a Clean Air Strategy, which has the overarching goal of decreasing port-related maritime emissions, including those of ocean-going vessels, heavy-duty diesel vehicles, and railroad locomotives.²⁵ This may have implications for Buffalo's freight network as approximately 26,000 containers are transported between PANYNJ and Buffalo every year by truck already.²⁶

²⁴ NYS Department of Environmental Conservation, "[Heavy Duty Vehicle Idling Law 6 NYCRR, Subpart 217-3](#)," 2019.

²⁵ The Port Authority of NY & NJ, "[A Clean Air Strategy for The Port of New York & New Jersey-2014 Update](#)," 2014.

²⁶ Jonathan Epstein, *The Buffalo News*, "[New York Looking to Extend Port Authority to Buffalo](#)," April 16, 2019.

Approximately 17% of Buffalo-Niagara’s truck traffic moves across the Canadian border, with international truck traffic forecasted to grow from approximately 33 million in 2010 to over 73 million (tonnage) in 2035.²⁷ Canada and the U.S. have nearly identical fuel efficiency standards and vehicle regulations, corresponding to the highly integrated nature of vehicle manufacturing and markets across the two countries. However, Canada will likely maintain enforcement of current fuel efficiency standards despite the move to freeze fuel efficiency requirements at 2020 levels by the Trump Administration.

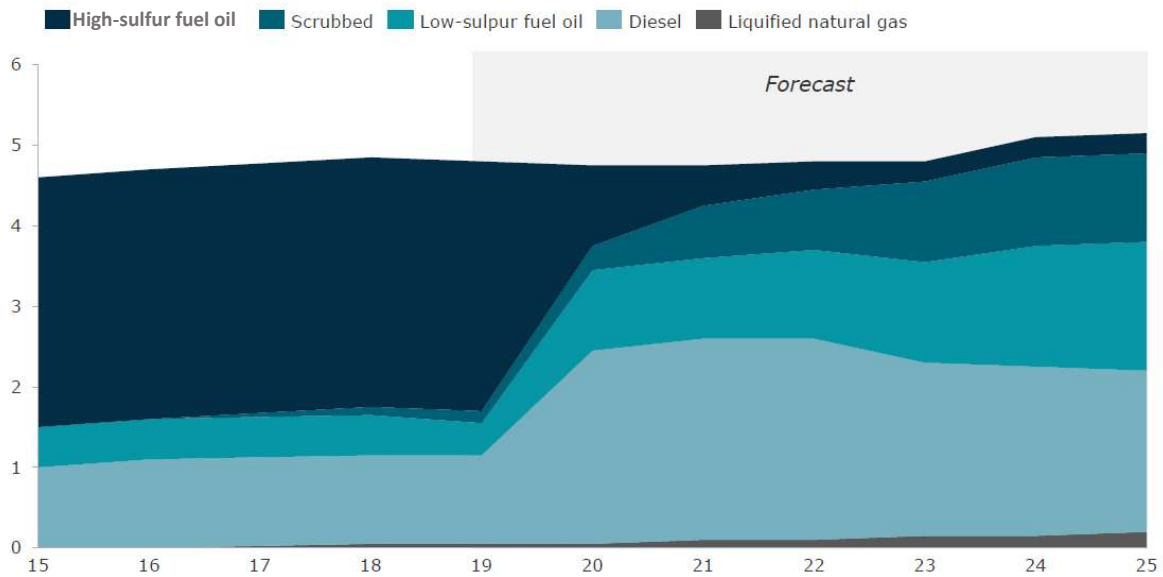
It is also possible that international shipping fuel requirements could have an impact on fuel efficiency of trucks by impacting the demand for diesel fuel. The International Maritime Organization (IMO) 2020 mandate will go into effect on January 1, 2020, requiring the reduction of sulfur content from 3.5% to 0.5% by mass in vessel fuel. HSFO users may continue use only if equipped with exhaust gas cleaning systems, referred to as “scrubbers,” which reduce sulfur emissions to acceptable levels. An estimated total direct cost of approximately \$10 billion globally is projected to begin taking effect as soon as October 2019.²⁸ Some industry watchers predict an increase in diesel prices across all freight modes due to increased demand for diesel for maritime uses. It is expected that products previously used for road fuels will shift to use in shipping, resulting in price increases and availability concerns. Prices for gasoline and diesel have already jumped in Europe due to the shipping industry driving up demand for the products.²⁹ Energy analysts predict demand for LSFO could incite a 20% to 30% increase in the price of all diesel fuels for transport, which may last up to a few years until a new balance between supply and demand is stabilized.³⁰ Figure 10-2 shows the projected ramp up of diesel and LSFO use as HSFO phases out over the coming years.

²⁷ Greater Buffalo-Niagara Regional Transportation Council, [“Niagara Frontier Urban Area Freight Transportation Study: Final Report,”](#) August 2010.

²⁸ Stifel/AlixPartners, *Transportation & Logistics Industry Update*, “IMO 2020 Shaking Up Already-Troubled Global Ocean Container Market; Freight Forwarder Gross Margins Likely Squeezed in 2H19,” July 11, 2019.

²⁹ Jack Wittels, *Bloomberg Markets*, [“New Shipping Fuel Rules Are Starting to Rock the Oil Market,”](#) July 3, 2019.

³⁰ Greg Knowler, *Journal of Commerce*, [“Low-sulfur fuel supply fears wane; price still unclear,”](#) March 21, 2019.

Figure 10-2: High-Sulfur Fuel Production³¹

Sources: *The Economist*, *Wood Mackenzie*, *Goldman Sachs*

The availability of low sulfur fuel oil and the pace of adoption by carriers has spurred renewed interest in natural gas conversion across modes along with increased interest in alternative fuel research. In addition to preparing for potential cost implications resulting from the rollout of IMO 2020, trucking companies are searching for opportunities to reduce fuel consumption to save money, as fuel costs remain one of the highest costs in trucking operations. At the same time, truck traffic continues to grow in the Buffalo-Niagara region – particularly on corridors connecting New York/New Jersey and Canada.

In December 2017 Tesla presented an electric tractor/semi-trailer which CEO Elon Musk promised would upend the trucking industry. The truck would have a range of 500 miles, within the range of what a typical truck driver would drive in a day. Tesla megachargers would be located along busy freight corridors that could charge a truck with enough electricity to travel 400 miles within 30 minutes. The charging stations would be available at all times with a guaranteed cost of electricity. Trucks would have standard enhanced auto pilot to reduce collisions and would have software to avoid the risk of jackknifing. The Tesla presentation estimated that the cost of owning and operating a Tesla electric tractor/semi-trailer would be 16.6 percent cheaper than owning and operating a conventional diesel tractor/semi-trailer per mile. The Tesla truck would have the capability of platooning and would cost 44 percent per mile less to operate than a conventional diesel truck if platooning. The Tesla truck was estimated to go into production and be available by 2019, but is now expected to be pushed back to 2021. Tesla has already secured thousands of orders for the new electric truck. <https://electrek.co/2020/04/29/tesla-semi-production-delay-2021-electric-truck/>

Daimler AG has initiated a pilot program starting late 2018 with Penske Automotive Group for a fully electric tractor/semi-trailer. Daimler also has a pilot program with NFI Industries. Through its Freightliner brand,

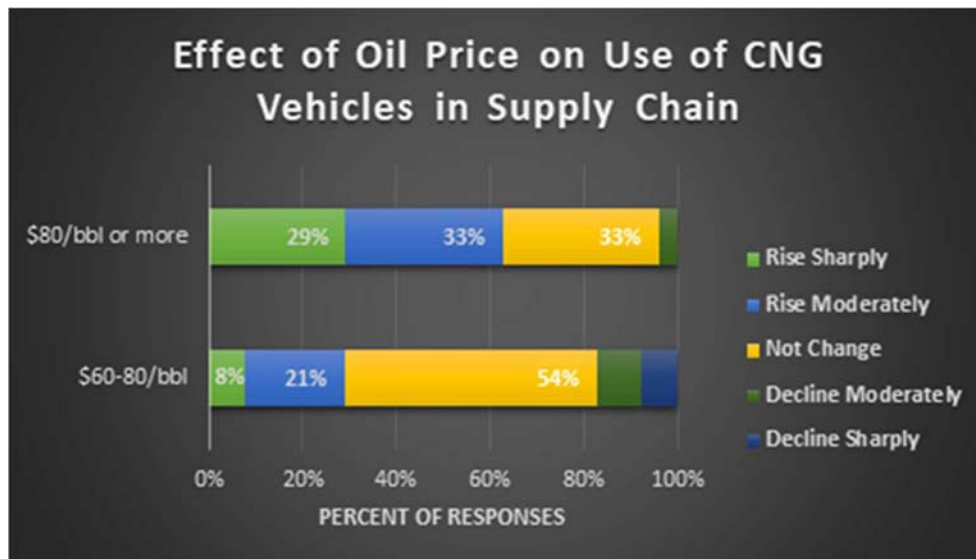
³¹ Stifel/AlixPartners, *Transportation & Logistics Industry Update*, “IMO 2020 Shaking Up Already-Troubled Global Ocean Container Market; Freight Forwarder Gross Margins Likely Squeezed in 2H19,” July 11, 2019.

Daimler had developed two electric trucks. One is a tractor/semi-trailer with a range of 250 miles. The battery can be recharged to 80 percent capacity in less than an hour. The second truck is a smaller pick-up and delivery type vehicle with a range of 230 miles which can also be recharged to 80 percent battery capacity in less than an hour. Daimler plans to deliver 30 trucks for its pilot program with Penske and NFI. Daimler expects to start mass producing electric trucks by 2021 with lessons learned from its pilot program with Penske and NFI. Electric trucks could provide fuel savings, improvements to operational efficiency, and environmental benefits.

Another option under exploration is hydrogen powered trucks. The Phoenix-based Nikola Motor Company is developing a hydrogen-powered tractor/semi-trailer. The company plans to produce hydrogen using electric power. The hydrogen serves as a way to store fuel, which Nikola believes is a better solution than batteries.³² Hydrogen trucks would have a longer range than electric trucks and would be faster to fuel. On the other hand, hydrogen fuel cell equipment is more expensive than battery electric.

While electric and hydrogen trucks are under development or used in pilot programs, natural gas-powered trucks are currently in service. Natural gas prices declined due to shale gas development, which increased interest in natural gas trucks. Natural gas engines are around three percent of the engine market, mostly used by refuse fleets, transit, and school bus operators.³³ The adoption of natural gas has primarily been a function of fluctuations in diesel prices. As diesel prices increase, carriers become interested in natural gas. As diesel prices decline, operators are less inclined toward natural gas. A 2017 survey by Tompkins Associates for the North Carolina Capital Area Planning Organization found that \$80 per barrel was a tipping point for interest in natural gas vehicles as shown in Figure 10-3.

Figure 10-3: Response to Question: "At a given price of oil, use of CNG vehicles in our supply chain is likely to:"



Source: Tompkins Associates

³² Linda Baker, *FreightWaves*, "Nikola's new president talks zero emissions, Tesla and how hydrogen will save the world, March 18, 2019.

³³ Jason Cannon, *Commercial Carrier Journal*, "The politics of natural gas trucks", April 24, 2017.

An advantage of natural gas is a relative consistency of natural gas prices, which tend to be lower than diesel prices. Natural gas engines require fewer environmental controls than diesel, but are require more room and weight for fuel, particularly for compressed natural gas (CNG). The engines are more complex and require longer time to fuel.

10.2 SAFETY

Safety is a top priority of the U.S. Department of Transportation and a major goal in public and private sector transportation programs. The growth in freight movement has heightened public concerns about safety nationwide. Highways and railroads account for nearly all fatalities and injuries involving freight transportation.

Per 2016 Federal Motor Carrier Safety Administration Data (FMCSA), 16% of all highway-related fatalities involve large truck occupants – an increase of 4% from 2015. In addition, 12% of all traffic fatalities were accounted to large trucks and busses. New York State ranked among the top ten states with the highest average of fatal truck and bus crashes from 2014-2016. The FMCSA broke down the 2016 large truck fatal crash data further to find:

- At least 39% of large truck occupants killed in crashed were not wearing a seatbelt.
- Speed was a factor in 17% of truck crashes with at least one large truck occupant fatality.
- 61% of fatal crashed involving a large truck occurred in rural areas.
- 27% of fatal crashed in work zones involved a large truck.
- 6% involved large truck driver distraction as a factor, of which 16% was related to cell phone use.

Erie and Niagara Counties face many of the same challenges *as the National freight network*; increased safety concerns due to increasing demand and thus an increased number of incidents. Figure 10-4 presents accident data for Erie and Niagara Counties, as obtained from GBNRTC. In 2018, Erie County had more than 22,000 accidents, almost one and a half of the total accidents reported in 2016. Although Niagara County did not see the same rate of increase in incidents, it did see an increased number of overall incidents. As presented in Figure 10-5, the number of fatalities and injuries in the Niagara-Buffalo region reduced from 2016 to 2018, while the number of accidents with property damage increased.

Figure 10-4: Number of Accidents in Erie and Niagara Counties

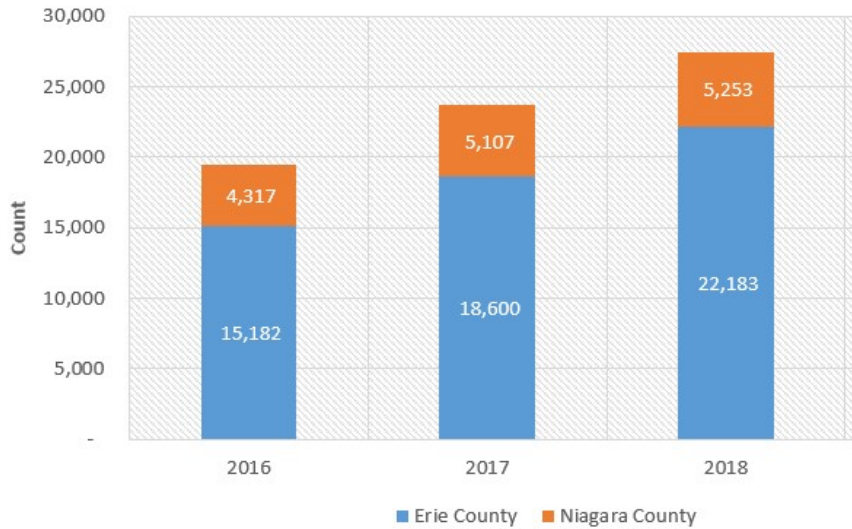
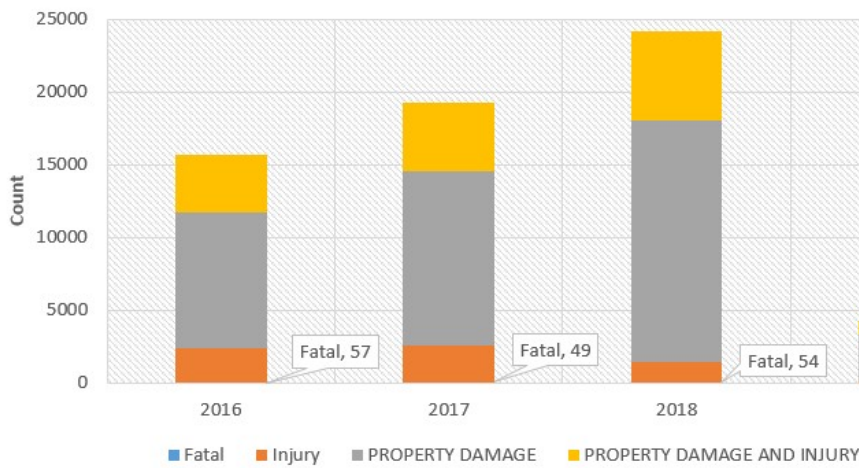


Figure 10-5: Number of Accidents by Severity in Erie and Niagara Counties



Many freight related crashes are due to roadway geometry (design deficiency), mode intersections such as railroad crossings and/or other roadway operational issues. In Erie and Niagara Counties, three types of collisions are counted as freight-related accidents: collisions with Guide Rail, Guide Rail End, and Railroad Train. As shown in Figure 10-6 and Figure 10-7, the number of rail-related accidents within the Niagara County has increased. In 2018 there were four fatalities in the Buffalo-Niagara region related to rail.

Figure 10-6: Number of Freight-Related Accidents in Erie and Niagara Counties

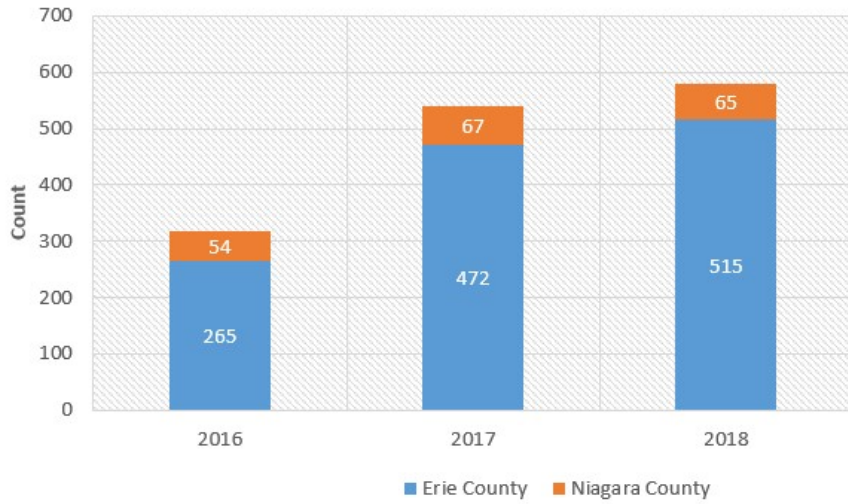
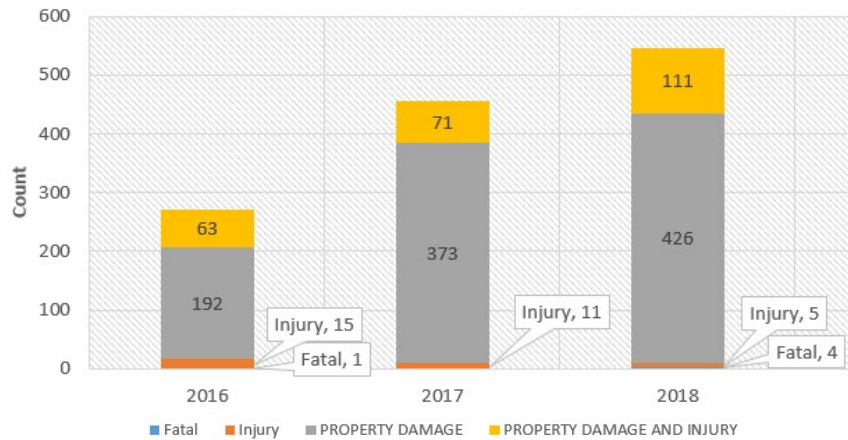


Figure 10-7: Number of Freight-Related Accidents by Severity in Erie and Niagara Counties



Using this crash data obtained through GBNRTC, Table 10-2 shows the top 25 High Frequency Crash Locations in Niagara County. South Transit Road and Robinson Road and Military Road at Niagara Falls Blvd. and Packard Road intersections have the three highest number of crashes in the county and should be studied further to understand the conditions that have led to high crash numbers at these locations.

Table 10-2: Top 25 High Frequency Crash Locations in Niagara County

Intersection	Count
Niagara Falls Boulevard & Military Road	163
S Transit Road & Robinson Road	120
Military Road & Packard Road	106
Niagara Falls Boulevard & I-190 Interchange	94
Niagara Falls Boulevard & Erie Avenue	78
190 Interchange at Robert Moses State Parkway	69
Niagara Falls Boulevard & 66th Street	69
S Transit Street & High Street	62
Porter Road & Packard Road	61
S Transit Road & Lockport Mall	58
Twin City Highway & Robinson Street	57
Niagara Falls Boulevard & 80th Street	56
Hyde Park Boulevard & Pine Avenue	54
S Transit Road & Strauss Road	52
Niagara Falls Boulevard & 73rd Street	50
Niagara Falls Boulevard & Niagara Consumer Square Driveway	49
S Transit Road & Shimer Dr	46
Pine Avenue & 19th Street	43
Niagara Falls Boulevard & Packard Road	42
190 Interchange at Packard Road	41
Niagara Falls Boulevard-Between Military Road & Tuscarora Road	39
Military Road & 3rd Ave	38
Niagara Falls Boulevard & Ward Road	38
Niagara Street & 7th Street	35
Niagara Falls Boulevard & Tuscarora Road	35

Source: Greater Buffalo-Niagara Regional Transportation Council

Table 10-3 shows the top 25 High Frequency Crash Locations in Erie County. Compared to Niagara County, Erie County’s crashes are spreading widely within the county. Many crashes happened in both suburban areas (Southwestern Boulevard & Camp Road, 290 Interchange at Sheridan Drive) and urban areas (198 & Main Street). In addition, a lot of accidents were found around SUNY Buffalo State College (198 & Main Street, 198 Interchange at Elmwood Avenue) which can bring concern surrounding biking and pedestrian related accidents.

Table 10-3: Top 25 High Frequency Crash Locations in Erie County

<i>Intersection</i>	<i>Count</i>
<i>Southwestern Boulevard & Camp Road</i>	140
<i>290 Interchange at Sheridan Drive</i>	130
<i>198 & Main Street</i>	123
<i>Kensington Expressway West by E Delevan Avenue</i>	121
<i>290 Interchange at Main Street</i>	117
<i>Kensington Expressway ramp towards 198</i>	111
<i>90 Interchange at Kensington Expressway</i>	103
<i>198 Interchange at Elmwood Avenue</i>	101
<i>Maple Road & Sweet Home Road</i>	99
<i>McKinley Parkway & Southwestern Boulevard</i>	97
<i>Niagara Falls Boulevard & E Robinson Road</i>	94
<i>Transit Road & Maple Road</i>	93
<i>Kensington Expressway by E Ferry Street</i>	92
<i>Main Street & Transit Road</i>	91
<i>198 Interchange at Delaware Avenue</i>	91
<i>Transit Road & Walden Avenue</i>	91
<i>Bailey Avenue & E Delavan Avenue</i>	89
<i>Sheridan Drive & Hopkins Road</i>	88
<i>290 Interchange at Niagara Falls Boulevard</i>	88
<i>Kensington Expressway interchange at Grider Street</i>	88
<i>198 Interchange at Grant Street</i>	88
<i>Niagara Falls Boulevard & Maple Road</i>	87
<i>Sheridan Drive & Millersport Highway</i>	86
<i>290 Interchange at Millersport Highway</i>	84
<i>190 Interchange at Niagara Street</i>	81

10.3 HAZARDOUS MATERIAL

Along with crash related incidents, the transport of hazardous materials is a safety concern along freight networks. There are regulations regarding the parking requirements and their distance to public roadways or highways for trucks carrying freight. Trucks carrying hazardous materials are mandated to regulation on their proximity to bridges, tunnels, dwelling units, offices or other areas where the public may assemble other than for short periods. So far, the Buffalo-Niagara region is not limiting hazardous materials freight movement on highways per National Hazardous Materials Route Registry of NY.

Crash related incidents and accidents involving hazardous material can cause catastrophic damage throughout the freight network, working to reduce these incidents will result in a safer and more efficient freight network. One way of improving the freight network within the region is to enhance driver safety. This includes better establishing parking facilities and regulation regarding parking facilities to ensure truck drivers can take the mandated rest breaks that ensure driver safety. These improvements can include promoting technology to alert trucks of available truck parking throughout the region. Having a better understanding of roadway operational characteristics can also assist in improving safety throughout the region. These improvements can include mapping truck-related incidents and their causes (e.g. geometrical or construction) to better identify and improve those high crash areas within the region. Safety improvements in the transport of hazardous material would include limiting freight movement of hazardous material to routes as other regions do.

10.4 SECURITY

Security means protecting the transportation assets including facilities, vehicles, and supporting infrastructure, as well as preventing freight lines from being used for terrorist attacks or as a mean to move illegal goods into and throughout the Country. Strengthening freight supply lines' vulnerabilities is critical to the prevention of the loss of goods or a major tragedy. The Buffalo-Niagara region's large presence of international trade and ports of entry creates even more need for heightened freight security than other U.S. regions. Several initial steps are needed to maintain a high level of security including:

- Identifying background to understand the nature of the treats against freight transportation.
- Creating the means to identify the vulnerabilities to those threats.
- Creating an approach to address those vulnerabilities.

Terrorism with relation to infrastructure vulnerabilities is a top priority for the Buffalo-Niagara region freight system. The U.S. Freight Network is extensive and easily accessible to terrorism and most freight generally travels along the same heavily populated corridors as personal vehicles. Identifying the vulnerabilities within the region and creating an approach to address those vulnerabilities is large part in protecting the whole country's network. What is needed is coordination between many representatives at the local, state, regional, and federal levels to exchange information and discuss emergency response, coordination, and recovery requirements to advance preparedness in the region. The freight sector's increasing dependence on the use of containers poses multiple security risks. The priority given to container security is understandable due to the potential for a bomb in said containers. Information about ownership and location of containers as they move from origin to destination is crucial in reducing the vulnerability of the freight transportation network and related infrastructure. Domestically, the major focus is on the transport of hazardous materials, which relates primarily to highway and railroad operations. The bridge vulnerability is an important factor for the Buffalo-Niagara region. Hazardous materials are incredibly dangerous, if there is a spill either by a terrorist attack or an accident the results would be catastrophic. The way to ensure safety and security of hazardous material is constant inspections and monitorization. What needs to be provided is regular training drills for all people responsible with the hazardous material.

Criminal activities such as theft of freight and movement of illegal goods are a constant threat and increased security is needed to make sure it is not occurring along our freight lines. Freight trucks rolling down the highway is an easy target to attack for criminals. A system of tracking containers and identifying holders of the cargo is need and is an effective strategy to help prevent theft. Cargo information connected to an electronic manifest can also be used to establish a chain of custody and prevent employee theft as well. Other technologies that offer the potential to enhance security and supply chain efficiency include supply chain software that can accommodate security applications, electronic cargo seals, and wide-area communications combined with global positioning systems or other global location technologies. These technologies also can be useful in tracking hazardous materials shipments and freight being moved across our international borders. Growing international trade has also changed the potential of illegal goods being moved to and within the United States. Surveillance and monitorization of all cargo movements through the boarder and at all weight stations is necessary to prevent this activity. The application of freight technologies to support freight transport security efforts and strengthen the integrity of global supply chains will require leadership in testing and deploying new technologies and information systems and agreement on international standards and protocols.

As advanced and integrated technology systems are introduced, cybersecurity has increasingly become a critical area of focus for transportation networks. Recovering from a cyberattack may take weeks rather than days, thus generating significant consequences to the economy and public safety. As digital and autonomous technologies continue to advance and present positive outcomes in the freight industry, potential threats and weaknesses associated with such technologies must be continuously examined and mitigated. While more integrated and advanced technology systems present higher risks related to cybersecurity, those same logistical/communicational/informational systems are also essential and effective when activated during a national security emergency. These systems provide continuous communication, coordination, and resource support for emergency response and recovery in the event of disruption.

Contingency plans that specify protocols for managing disruptions along routes and advanced training and education for staff serve the best strategies for protecting the overall systems of freight networks. Many of the efforts above are needed together to enhance the security of the system. Some security needs are urgent while others are more longer-term goals. Thus, the challenge for Buffalo's transportation agencies is to balance security needs with freight productivity. Discussion of the security of freight must include the recommended approach for determining appropriate security measures for addressing identified threats and vulnerabilities that help to eliminate unnecessary security-related costs to the system. Consideration of a method to prioritizing potential security measures is also important. If designed and implemented well, security measures have the potential to not affect efficiency while dramatically reducing losses from theft, illegal activity, and potential of terrorism.

Cross-border security is also a huge priority in the Buffalo-Niagara region. Security and screening for trucks at the Peace Bridge and Lewiston-Queenston Bridge crossings are controlled by U.S. Customs and Border Patrol. U.S. Customs and Border Patrol are piloting several technological security features at the Peace Bridge, including facial recognition, vehicle x-ray, and license plate scanners, to all take place in Canada. Once entering the U.S., a driver will get a green light to proceed or a red light to proceed for further inspection. This will become the Standard Operating Procedure for commercial vehicles at all border crossings.

11 Freight Performance Measures

The National Highway System is a key aspect of the national freight network, with increased demand, freight traffic continues to increase on many highways across the United States, bringing with it challenges for efficient goods movement and wider concerns about safety, infrastructure condition, and reliability of travel. Much like the national system, the Buffalo-Niagara region is facing many of the same challenges as it relates to freight transportation. Finding ways to measure and track the improvements of the system are imperative to creating a system that supports freight demand both nationally and locally.

Since the passing of MAP-21, the FAST Act and later legislation, the tracking of performance measures has become a requirement for State Department of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs). Performance management measures can be used as a means of accountability for public funding and investment in freight infrastructure. Documenting freight performance measures allows the region to better understand current transportation system conditions and track the progress on meeting goals over time. Freight performance-based planning efforts can assist in identifying, prioritizing and funding necessary projects to maintain and grow a safe, and economically developed transportation system that efficiently moves people and goods from origin to destination.

11.1 FEDERAL OVERVIEW

In order to create a more transparent, uniform, connected, safe and efficient transportation network the federal government has set out guidelines for states and regions to assist in the performance tracking of the National Highway System. Included in these guidelines are a set of performance management measures to better understand the current transportation network and critically think about ways to improve it. In the last decade, there has been three acts of legislation increasing the requirements around the reporting of performance measures for State DOTs and MPOs.

MAP-21 and the FAST Act have included performance measures to be addressed at a National level. These Acts set requirements for states and regional planning organizations to assess performance measures to ensure safe and efficient infrastructure that allows for the safe movement of people and goods from place to place. In 2017 the most recent passage of legislation was enacted to create more guidance in tracking performance on the federal highway system. With the 2017 rule, states were required to establish statewide targets for measures within one year. Each state was mandated to report these targets in a Baseline Performance report due in October of 2018. These targets would then be revisited and updated in 2020, with a final report due to the Federal Government in 2022. Although many performance metrics used to understand freight movements on the National Highway System are not freight specific there are a few guidelines that are.

The Transportation Performance Management program is a strategic approach the Federal Highway Administration has taken to achieve national performance goals using system information and data to make more informed transportation investment and policy decisions. It is a systematically applied and ongoing process that provides decision makers important information to better understand the implication of investment across different transportation assets and modes at the national level as well as the local level.

The Transportation Performance Management Implementation Plan was created to assist the Federal Highway Administration, State Department of Transportation Agencies and Metropolitan Planning Organizations in

implementing the transportation Performance Management requirements. On a federal level the goal of the Transportation Performance Management requirements and the tools created to support those requirements are to optimize the investment of public funds, maintain or improve national consistency in the Federal Highway System, increase coordination between decision-makers, better understand and develop best practices, and improve the communication of federal investment returns.

In order to assist State DOTs and MPOs, the Transportation Performance Management Implementation Plan has set out three overarching goals each with their own timeline to better achieve the performance management requirements that began in 2018 and will go through 2022, the end of the first assessment period. The first goal is for all FHWA field staff, State DOTs, and MPOs to have all the information needed to implement the TPM, this was to be completed by the end of 2019. The second overarching goal is for all agencies to build the professional capacity to carry out a performance-based transportation program, this is an ongoing effort, but progress will be assessed in 2022, the end of the first assessment period. The final overarching goal is for all agencies to fully integrate performance management into business practice, this goal will also be an ongoing effort but assessed at the end of the first assessment period.

The federal government currently uses a “State Performance Dashboard” in which 17 national measures and targets can be found. There are 5 Safety measures, 6 Infrastructure Condition measures, 3 Highway Reliability and Truck Travel Time Reliability measures, 1 Emissions Reduction measure and 2 Congestion measures for urbanized areas. These measures are as follows:

- Highway Safety
 - Number of Fatalities
 - Fatality Rate (per 100 million VMT)
 - Number of Serious Injuries
 - Rate of Serious injuries (per 100 million VMT)
 - Number of non-motorized Fatalities and Serious Injuries
- Highway Infrastructure Condition
 - Interstate Pavement in Good Condition
 - Interstate Pavement in Poor Condition
 - Non-Interstate National Highway System in Good Condition
 - Non-Interstate National Highway System in Poor Condition
 - National Highway System Bridges in Good Condition
 - National Highway System Bridges in Poor Condition
- Highway Reliability
 - Interstate Highway Reliable Person-Miles Traveled
 - Non-Interstate National Highway System Reliable Person-Miles Traveled
 - Interstate Highway Truck Travel Time Reliability (TTTR) Index
- Emissions Reduction
 - Emission Reductions for PM_{2.5} through CMAQ Projects
 - Emission Reductions for NO_x through CMAQ Projects
 - Emissions Reductions for CO through CMAQ Projects
 - Emissions Reductions for VOC through CMAQ Projects

FHWA uses the following performance measures related to freight:

- Safety
 - Motor carrier crash rate
 - Number of heavy truck-related fatalities
 - Truck parking area demand and capacity
- Maintenance/ Preservation
 - National highway system (NHS) pavement conditions
 - National highway bridge conditions
 - Intermodal connector condition
- Mobility Reliability
 - Reliability Index (95th percentile/ average travel time)
 - Travel Time Index (peak travel time/ average travel time)
 - Planning Time Index (95th percentile/ free-flow travel time)
 - Buffer Index (travel time – free-flow travel time)
 - Average hours of delay on freight-significant links
 - Percent of NHS mileage that is congested
- Accessibility/ Connectivity
 - Percent of large generators with access to major highways
 - Percent of shippers with access to national network
- Environment
 - Emissions reduced from congestion mitigation projects
 - Increase in energy consumed/ costs
 - Increase in air pollution impacts

Though the federal government only requires the Performance Management of the above national measures they do support and encourage the performance management of further measures.

11.2 STATE OVERVIEW

The purpose of the New York State Strategic Highway Safety Plan (SHSP) is to promote best practices and strategies that, if implemented, could have a substantial impact on reducing fatal and serious injury crashes. The SHSP is a major component of the Highway Safety Improvement Program (23 USC Section 148) and was developed through a collaborative process involving public and private sector safety partners. The SHSP is intended to complement the other strategic planning processes undertaken in the state to meet federal eligibility requirements for funding in specific program areas. The SHSP is intended to include all modes of travel including recreation, to and from work or school, as well as the movement of freight.

In line with achieving Federal requirements as it relates to Performance Management Measures and maintaining a safe and efficient freight network New York State has released a Freight Plan that in August of 2019 to govern the future of freight within the State. This plan outlines the goals of the State transportation infrastructure and highlights Governor Cuomo’s commitment to economic vitality via transportation infrastructure investment throughout the state.

This plan highlights three key performance measures in reaching New York State goals. Much like the federal requirements these measures are broken into Measure area and performance measures related to each area. The key measure areas are as follows:

- Roadway Congestion and Reliability
 - Average Speed
 - Truck Travel Time Reliability
 - Total Truck Hours of Delay
- Economic Efficiency
 - Roadway Travel Cost
- Safety

To assess Truck Travel Time reliability the state of New York has set a threshold of “unreliability.” Truck Travel Time Reliability (TTR) is defined as how much of the 95th percentile slowest speed varied from the average speed (50th percentile) at different locations throughout the state. This means the larger the measure, the more unreliable the segment is. These unreliable segments however do not give overall high delay segments rather they are the most unpredictable segments which could be due to high crash rates, increased roadway construction in the area or other unforeseen incidents along the segment. The Total Truck Hours of Delay predicts more routinely delayed roadways, this in large part is due to roadway congestion at peak travel times. Measuring and improving both measures will improve freight transportation efficiency throughout the state.

New York State is currently using Transportation System Management and Operations (TSMO) to assist in optimizing the ability of transportation networks to accommodate the future travel demand. This is an overall system approach that includes methods such as shifting travel times, routes or modes to manage roadway demand. Non-recurring traffic incidents such as vehicle accidents are another major cause of congestion and delay within the transportation network, but provide more of a challenge to find mitigation strategies. Traffic Incidents Management (TIM) is currently being used to improve the efficiency and safety surrounding roadway incidents.

Outside of the performance measures required by the federal government legislation, NYS is assessing several other measurement areas including Geometric limitations, Border crossing inefficiencies, Commercial vehicle access, Truck inspections, available truck parking, First/Last mile connections, CV/AV technology deployment and the use of Energy-Efficient vehicle technology. Though these performance areas are being assessed NYS has not identified performance measures that will fall under each measure area yet.

11.3 PEER REVIEW

Along with federal guidance and current New York State performance measures peer performance management practices were assessed to learn best practices, applicable measure areas and performance metrics that could be applied to the Western New York region, if they are not currently being tracked.

MTC (Bay Area)

In the 2014 Alameda County and MTC Regional Goods Movement Plan, Alameda outlined several “goal areas” with which they were tracking performance. These goal areas include:

- Environmental Impacts
 - Tons of GHG emissions
 - Tons of PM_{2.5} emissions
 - Tons of NO_x emissions
 - Freight impacts, such as light, noise pollution, safety, air pollution and encroachment on specific, adjacent communities most effected.
- Travel Time
 - Buffer time index on freight (truck) routes
- Freight-Related Crashes
 - Truck-involved crashes and crash rates (including crashes with bikes and pedestrians)
 - Crashes at at-grade rail crossings
- Freight Infrastructure Conditions
 - Bridge conditions rating
 - Freight (truck) highway and arterial routes pavement conditions ratings
- Freight Resiliency
 - Addresses freight system vulnerability to major services disruptions due to major natural or other events
- Use of Innovative Technologies
 - Use of ITS and innovative technologies, such as zero-emission technologies
- Travel Time Delay
 - Travel time delay on freight (truck) routes
 - Travel time delay on railways, terminals, ports and airports
- Multimodal Connectivity and Redundancy
 - Freight routes access from/to locations with significant freight activities
 - Access to rail lines, terminals, ports and airports from/to locations with significant freight activities
- Coordinate with Passenger Systems
 - Freight systems element shared use with passenger system and addresses passenger/freight conflicts
- Compatibility with Land Use Decisions
 - Locations and corridors with significant freight activities in proximity to non-compatible land uses currently and, in the future
- Economic Contribution
 - Jobs and output generated (including co-benefits of public health strategies)

Dallas/Fort-Worth Region Freight System Inventory

In 2013 North Central Texas Council of Governments (NCTCOG), the Dallas-Fort Worth region put out their Freight System Inventory in which they were assessing the following performance measures within the freight network:

- Truck

- Number of Severity of truck-involved incidents
- Volume/tonnage of freight shipped/moved
- Trends of trucking cost
- Commodity flows
- Travel time and reliability
- Pavement conditions
- Level of Service (LOS)
- Estimated congestion levels
- Bridge conditions
- Employment
- Number of trucks by type
- All Modes
 - Hazardous material incidents
 - Cost per ton-mile
 - Fuel consumption per ton-mile

Gainesville-Hall Metropolitan Planning Organization

In November of 2017 Gainesville-Hall Metropolitan Planning Organization published a Regional Freight Study and as a part of this regional effort they compiled current performance measures in which they were assessing their freight network. GHMPO looked at the following performance measures:

- Safety
 - Number of fatalities involving trucks within the region
 - Number of serious injuries involving trucks within the region
- Mobility
 - Percentage of the Interstate System mileage providing for reliable truck travel times (Truck Travel Time Reliability (TTTR) Index)
- Economic Competitiveness
 - Number of Projects that address freight bottlenecks
 - Change in 2040 annual hours of truck delay relative to no-build
 - Number of projects that serve a freight industry cluster
- Community
 - Number of Comprehensive plans that integrate freight planning and land-use decision-making activities

The above performance measures were used as a guide to understand how other locations nationwide are tracking the performance of their freight network and assess the ways in which the Western New York region can improve their performance measures.

11.4 BUFFALO-NIAGARA REGION OVERVIEW

The last completed freight plan for the Buffalo-Niagara region was published in 2010 and focused on two measure areas – Environmental and Economic Development. Like many other regions the environmental

measures were assessed using various emissions metrics. The following pollutants were the key performance metrics:

- Carbon Monoxide
- Lead
- Nitrogen Dioxide
- Ozone
- Particulate Matter (PM₁₀)
- Particulate Matter (PM_{2.5})
- Sulfur Dioxide

The Economic Development measure focused around population and the challenges the area was expected to face with increasing population.

Since 2010, there has been additional Federal legislation surrounding the reporting of performance metrics to create a safer and more efficient National Highway System. Based upon the new performance measurement requirements, current NYS metrics and interest areas, and a peer review of performance metrics it is recommended that the following metrics be monitored in the Western New York region:

- Safety
 - Number of Fatalities
 - Fatalities per 100 million vehicle miles traveled
 - Number of serious injuries
 - Serious injuries per 100 million vehicle miles traveled
 - Number of non-motorized fatalities and non-motorized serious injuries
- Pavement Condition
 - Percentage of pavements of the Interstate System in Good condition
 - Percentage of pavements of the Interstate System in Poor condition
 - Percentage of pavements of the non-interstate NHW in Good condition
 - Percentage of pavements of the non-interstate NHS in Poor condition
- Bridge Condition
 - Percent of NHS bridges classifies as in Good condition
 - Percentage of NHS bridges classifies as in Poor condition
- System Performance
 - Interstate Travel Time Reliability Measure (TTTR Index)
 - Non-Interstate Travel Time Reliability Measure
- Freight Movement
 - Freight Reliability Measure
- Traffic Congestion
 - Peak Hour Excessive Delay (PHED) Measure
 - Non-Single Occupancy Vehicle Travel (SOV) Measure

- Vehicle Operating Cost
 - Trends of Truck Cost
 - Fuel Consumption per ton-mile
- Freight Resiliency
 - Addresses freight system vulnerability to major services disruptions due to major natural or other events

Many of these are already measured at the state level or the data are available through national and state databases. Extracting these data down to the regional level will ensure that the Buffalo-Niagara region is meeting federal reporting requirements and also providing a safe and efficient transportation network for the movement of people and goods throughout the region.

12 Stakeholder Observations and Findings

Over the course of the first six months of this study, outreach and engagement with several freight and logistics stakeholders occurred, providing valuable insight into the challenges and opportunities for both the existing and an expanding future freight and logistics industry in the Buffalo-Niagara region. Outreach and engagement consisted of the following:

1. **Project Steering Committee Meetings** – This project kicked off with a Steering Committee meeting, with the following in attendance:
 - Hal Morse, GBNRTC
 - Rich Guarino, GBNRTC
 - Kelly Dixon, GBNRTC
 - Kimberly Smith, GBNRTC
 - Ron Hayes, NYSDOT
 - Ben Bidell, Niagara County Department of Economic Development
 - Fred Frank, WSP
 - Mark Tytko, WSP
 - Joe Bryan, WSP
 - Peter Plumeau, WSP

2. **ITGO Freight Stakeholder Roundtable** – As part of ITGO’s 2020 Logistics Outlook “Building a First-Class Regional Logistics Center,” a roundtable of participants was convened to gather focused input into this study. Participants included:
 - Hal Morse, GBNRTC
 - Rich Guarino, GBNRTC
 - Ron Hayes, NYSDOT
 - Athena Hutchins, NITTEC
 - Craig Turner, ITGO
 - Bill Vanecek, NFTA Director of Aviation
 - Tim Palisano, WNY Foreign Trade Zone
 - Joe Berti, Speed Global Services
 - Vicki Haas, Erie County Coordinator, Industrial Assistance Program
 - Multiple attendees from PANYNJ
 - Ian Hamilton, Hamilton Port Authority
 - Mary Lamie, St. Louis Regional Freightway
 - Fred Frank, WSP
 - Joe Bryan, WSP
 - Peter Plumeau, EDR Group

3. **Freight Stakeholder Focus Group Meetings** – In December 2019, three focus groups of freight stakeholders were convened, as follows:
 - Real Estate and Economic Development Officials
 - » Valerie Kuhns, Niagara Region Economic Development
 - » Blake Landry, Niagara Region Economic Development
 - » Vicki Haas, Erie County Department of Environment and Planning
 - » Lorrie Abounader, Invest Buffalo Niagara
 - » Chris Suozzi, Genesee County Economic Development Center
 - » Craig Turner, ITGO
 - » Maddilyn Genovese, Buffalo Niagara Partnership
 - » Rich Guarino, GBNRTC
 - » Fred Frank, WSP
 - » Joe Bryan, WSP
 - » Peter Plumeau, EDR Group

- Officials Associated with Cross Border Trade
 - » Athena Hutchins, NITTEC
 - » Sabbir Saiyed, Region of Peel
 - » Jack Thompson, Niagara Region
 - » Shan Sureshan, Ontario Ministry of Transportation
 - » Stephanie Dafoe, Niagara Falls Bridge Commission
 - » Pat Whalen, Can/Am Border Alliance
 - » Ron Hayes, NYSDOT
 - » Rich Guarino, GBNRTC
 - » Fred Frank, WSP
 - » Joe Bryan, WSP
 - » Peter Plumeau, EDR Group
- Logistics Providers and Warehouse Operators
 - » Craig Turner, ITGO
 - » Jim Manno, Sonwil Distribution Center
 - » Brian Gorney, Penske Truck Leasing
 - » Jason Gordon, Remedy Staffing
 - » Bob Dimmig, CBRE
 - » Frank Wolf, Logistics Plus, Inc.
 - » Fred Frank, WSP
 - » Joe Bryan, WSP
 - » Peter Plumeau, EBP Group

4. **Individual Meetings/ Calls with Stakeholders** – Individual meetings or calls were held with the following stakeholders:

- Craig Turner, ITGO
- Ron Rienas, Buffalo & Fort Erie Public Bridge Authority

5. **Niagara University Supply Chain Forum** – On January 14, 2020, WSP staff participated in the annual Niagara University Supply Chain Forum, where Niagara University professors presented a state of the freight and logistics industry to several freight and logistics stakeholders.

12.1 KEY OBSERVATIONS AND FINDINGS

The following observations and findings were heard repeatedly from multiple stakeholders, and are broken down into categories for ease in understanding.

Buffalo-Niagara Region Overall Findings

- ITGO is looking to facilitate the growth of the freight and logistics industry in the Buffalo-Niagara region.
- The overall transportation system is good.
- Workforce availability, development, and access are significant challenges – there is a need for workforce development programs focused on the freight and logistics industry.

Freight and Logistics Economy and Economic Development

- Industrial real estate in Erie and Niagara Counties is lacking inventory. There is currently less than 4% vacancy, and much of the vacancy is in obsolete buildings that are not suitable for today’s industrial needs.
- Buffalo-Niagara region is experiencing a large demand for warehousing, especially cold storage warehousing. Developers are reluctant to build on spec without agreements in place and prospectus industries are looking for shovel-ready and even pad-ready sites to move into. The lack of shovel-ready and pad-ready sites has resulted in the Buffalo-Niagara region losing out on economic development deals.

- Erie County is focused on the Bethlehem Steel site and a potential Agriculture business park in Evans that they would like to make shovel-ready.
- Major retailers are likely to follow suit with Amazon, looking to be able to accommodate 1-day deliveries – could create demand for more distribution and sorting centers.
- New U.S.-Canada-Mexico trade agreement may increase cross border e-commerce industry, allowing U.S. based companies to deliver to Canada.

Freight and Logistics Transportation

- There is little air cargo demand in the Buffalo-Niagara region. The Hamilton International Airport acts as a major air cargo hub for the bi-national region.
- Concern from stakeholders that freight and logistics interests aren't being considered in regional transportation projects. Future of Skyway is a concern to freight and logistics stakeholders.
- Allowable NYSDOT Divisible Loads in some of WNY but not all of New York State.
- Proposed Lakeside Commerce Park Cross Docking Facility is in the works to bring needed containers shipments to WNY and allow a supply of containers to export goods to PANYNJ. Facility would need to make a business case before CSX is willing to make stops at facility.
- Electric is probably the most realistic alternative for trucking. Initially, long-haul trucks would continue to use diesel fuel with local delivery using electric. In the next ten years, investment in new fleets would continue to be diesel. Long-haul delivery more likely to convert to autonomous before local delivery.

Cross-Border

- There is a disconnect between actual and perceived delay and congestion related issues at border crossings:
 - The freight and logistics industry has consistently indicated that border crossing delay and congestion is a challenge to their business operations.
 - Peace Bridge and Lewiston-Queenston Bridge operators have indicated that both truck related volume, congestion, and clearance times are down compared to a few years ago.
- Commercial truck traffic on both the Peace Bridge and Lewiston-Queenston Bridge is down in recent years. Neither bridge is experiencing truck backups beyond the bridge property; any truck related congestion is related to clearance times.
- Technology advancements will improve clearance times: Pilot at Peace Bridge will allow facial recognition, vehicle x-ray, license plate scanner to all take place in Canada. Once entering the U.S., a driver will get a green light to proceed or a red light to proceed for further inspection. This will become the Standard Operating Procedure for commercial vehicles at all border crossings.
- There is a need to better educate and relay information on border wait times and provide information on the best times to cross (lowest wait times) and the typical peak times that would result in longer waits.

Opportunities Identified

- Need for long-term transportation bill to enhance and modernize freight transportation infrastructure.

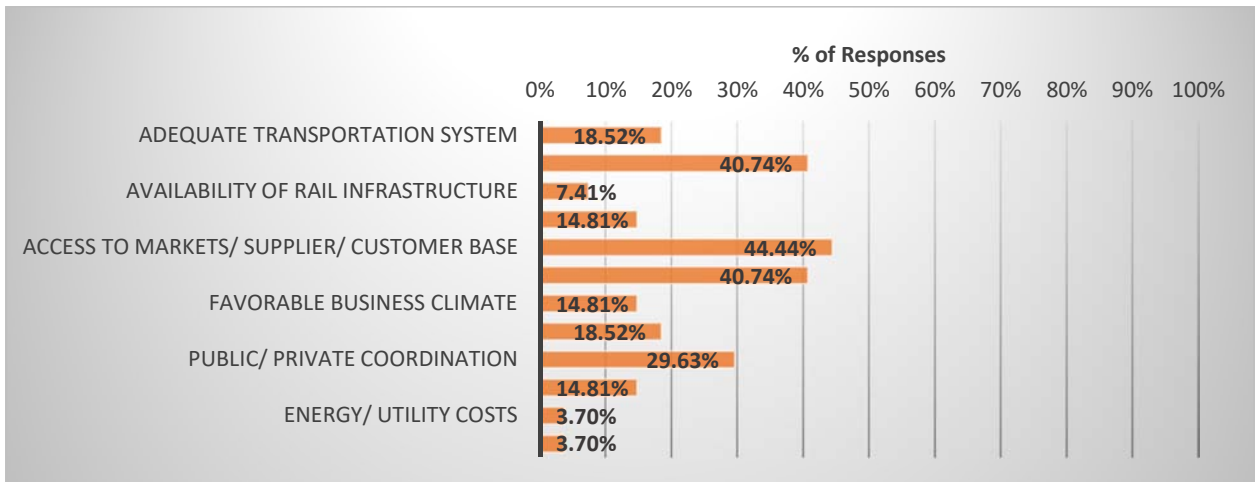
- Involve freight and logistics community in transportation planning and improvement projects.
- Enhanced workforce development and access for freight and logistics jobs.
- Promotion of cross-border economy and the need to break the perception that the border is difficult to maneuver.
- Providing direct access between I-90 and Buffalo-Niagara International Airport seen as an opportunity.
- Providing additional shovel-ready and pad-ready sites for economic development.
- Any transition to alternative fueling options would require deployment of alternative fueling/ electric charging stations.

12.2 ON-LINE FREIGHT SURVEY

An on-line freight survey was administered in January 2020 to gather input on a range of freight and logistics related questions. The following are key observations and findings from the on-line survey as of March 17, 2020. The survey was sent to stakeholders and general public. Twenty-seven responses were received, a 19% response rate.

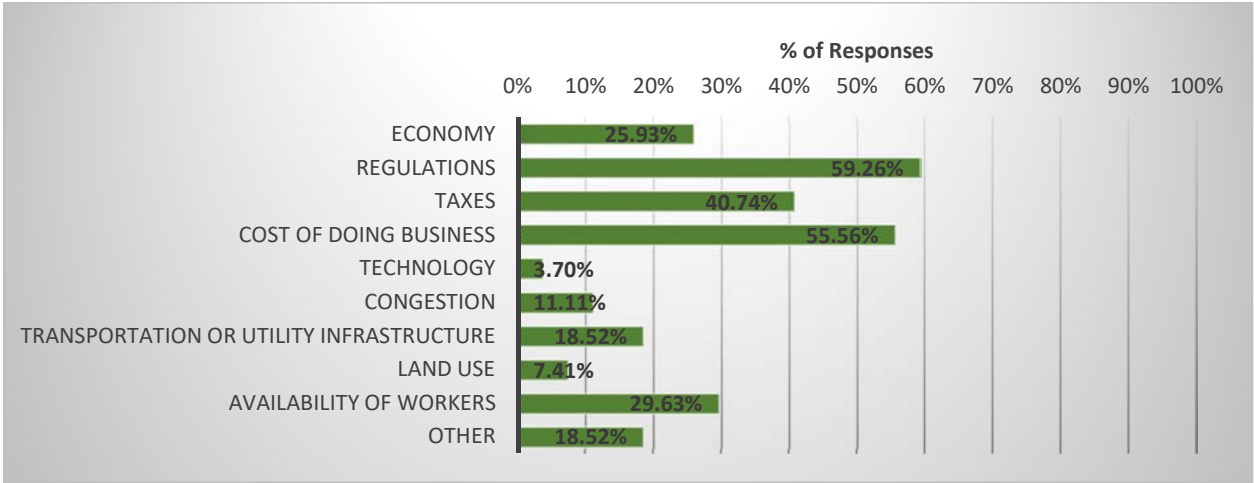
1. Which of the following best describes your affiliation with the freight/ logistics industry?
 - a. Freight carrier, over-the-road: 2
 - b. Shipper/ receiver: 1
 - c. Third party logistics (3PL): 1
 - d. Intermodal: 1
 - e. Public sector/ government: 5
 - f. Industrial development agency: 3
 - g. Manufacturing: 3
 - h. Consultant: 4
 - i. Education/ research: 2
 - j. Other: 5 (including industry association, international railroad bridge operator, service provider, economic development, and multi-purpose)

2. What characteristics of the Buffalo-Niagara region are most beneficial to your business?



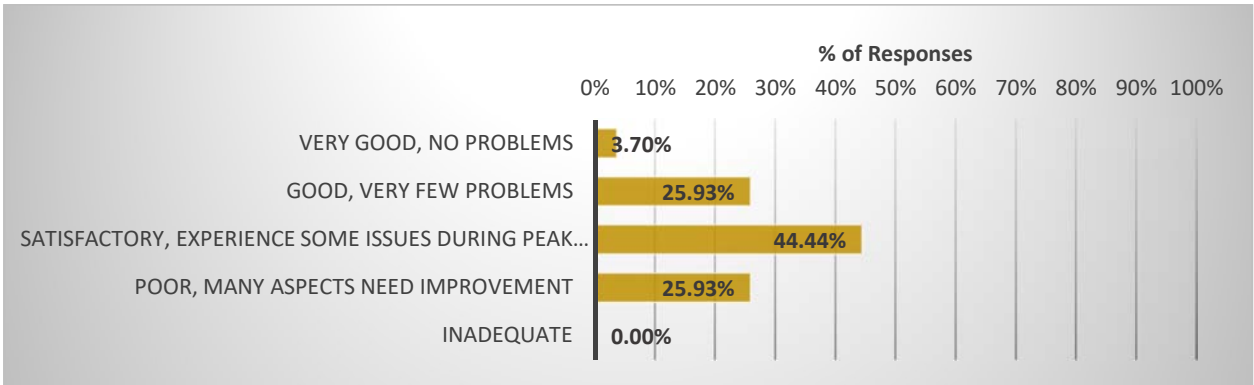
“Other” responses include: Educating the public about Supply Chain Management issues.

3. What challenges/ barriers are impacting your business?

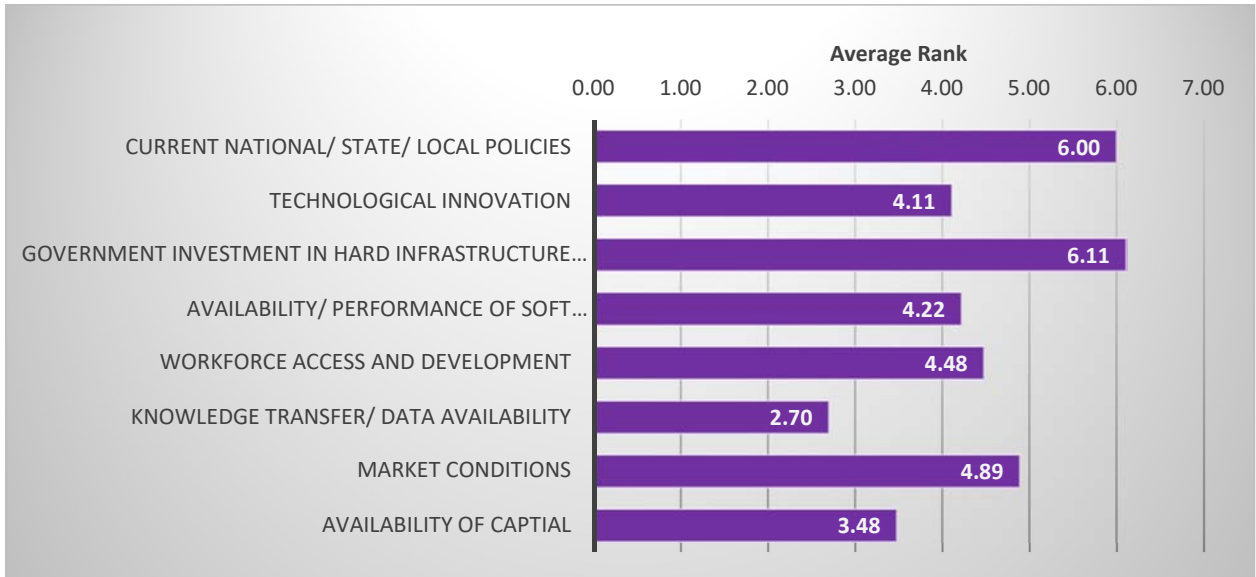


Responses that have been expanded upon include: Ability to expand mass transit and carpooling to improve worker access to jobs and training, more government funding, unfavorable business climate in NYS, economy and regulations impact the amount of goods that travel between the U.S. and Canada (i.e., number of lanes open or processing times), insurance costs for trucking companies and freight brokers are rising fast, companies cutting out education and training to employees, border crossing delays are unpredictable, Worker’s Comp rates going up in NYS, regulations add cost to service.

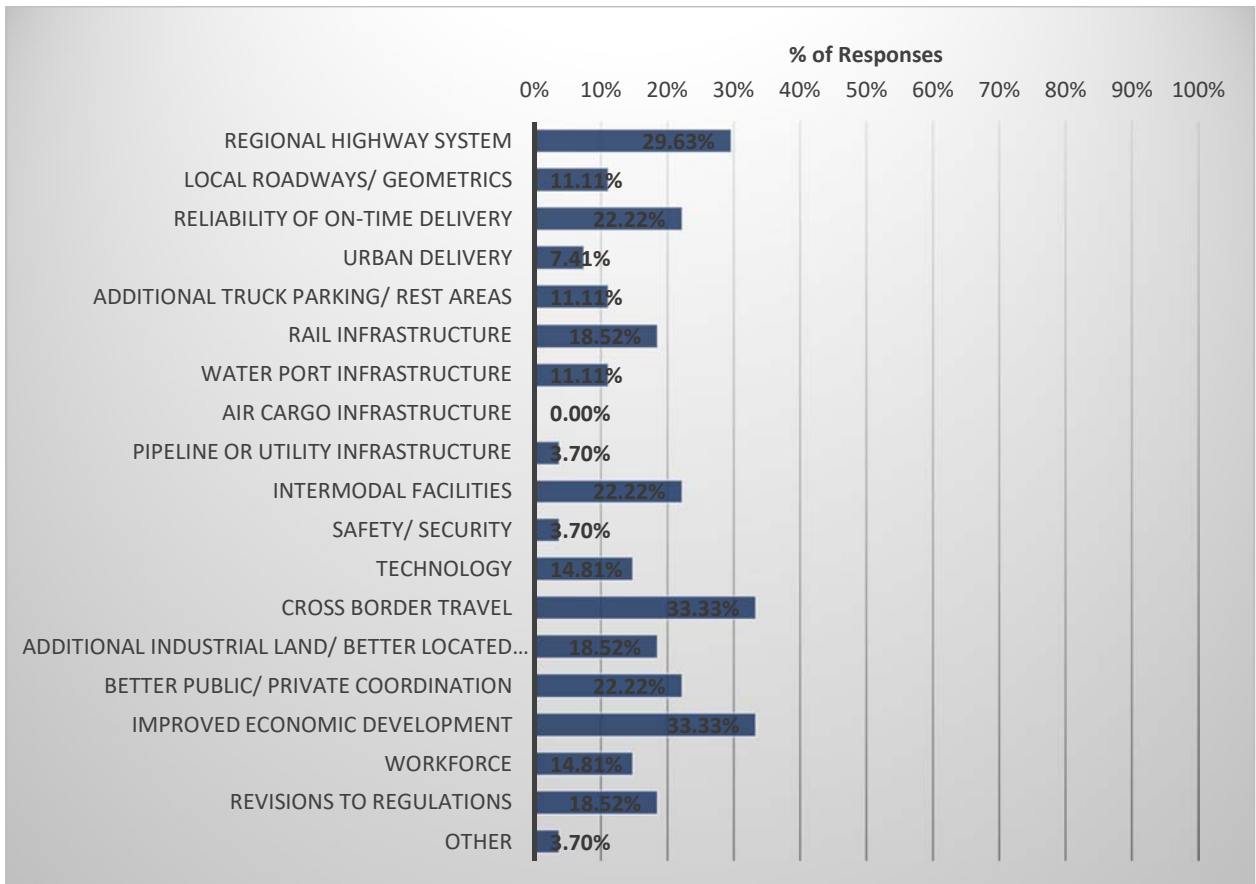
4. How would you rate the freight transportation system in the Buffalo-Niagara region?



5. Please rank the following based on the impact you believe they may have on the near-term success of the freight/ logistics economy in the Buffalo-Niagara Region.

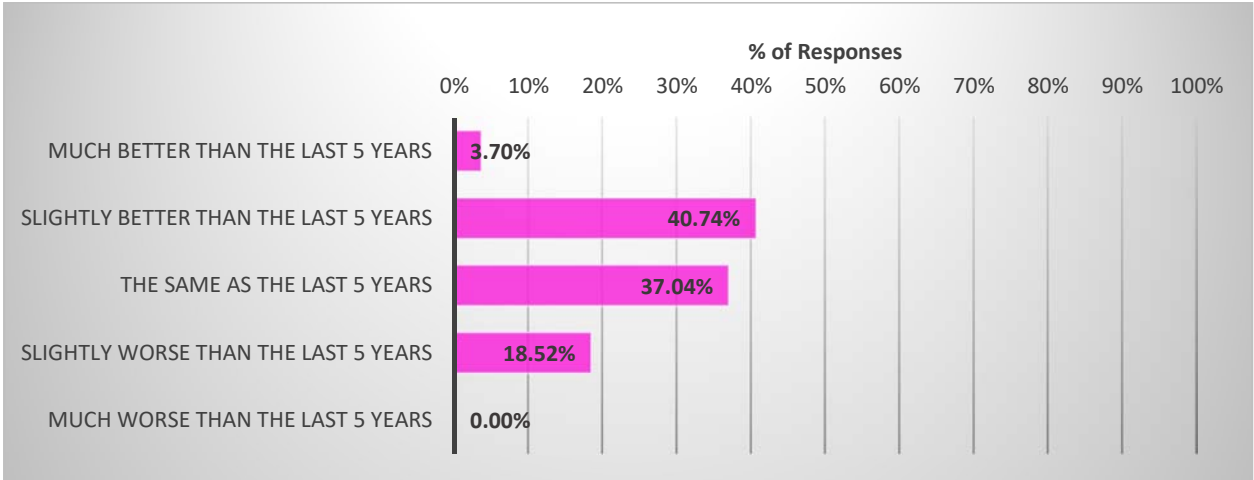


6. If you could improve the freight/ logistics transportation system in the Buffalo-Niagara region, what would you focus on?

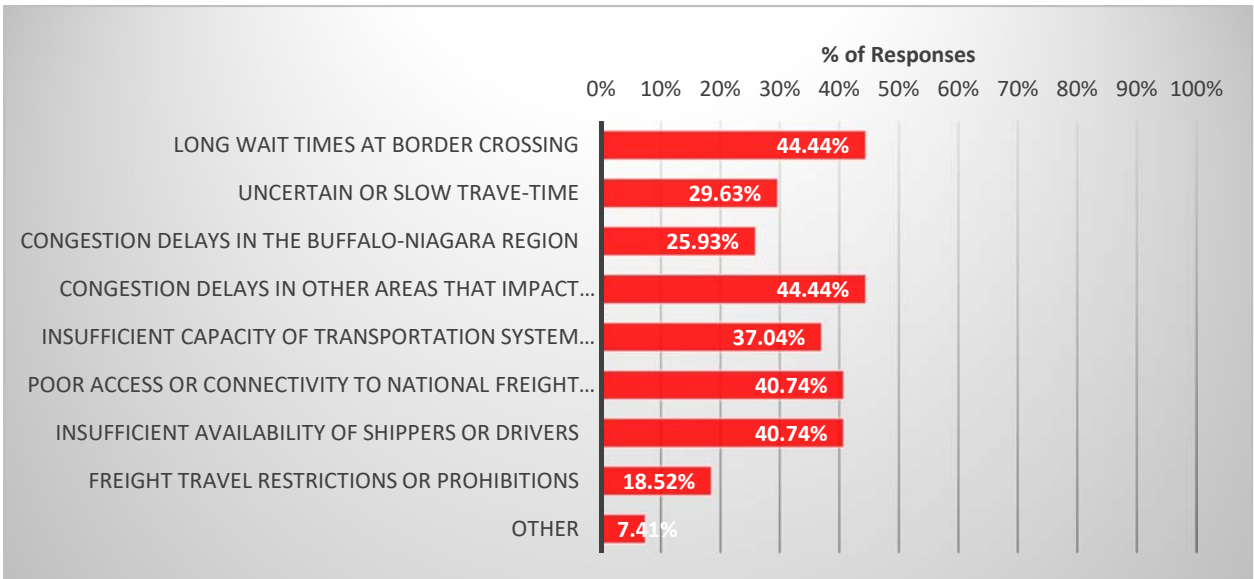


“Other” responses included: More efficient routing of cargo traffic.

7. In the next 5 years, do you estimate that the economy associated with the freight/ logistics industry in the Buffalo-Niagara region will be:

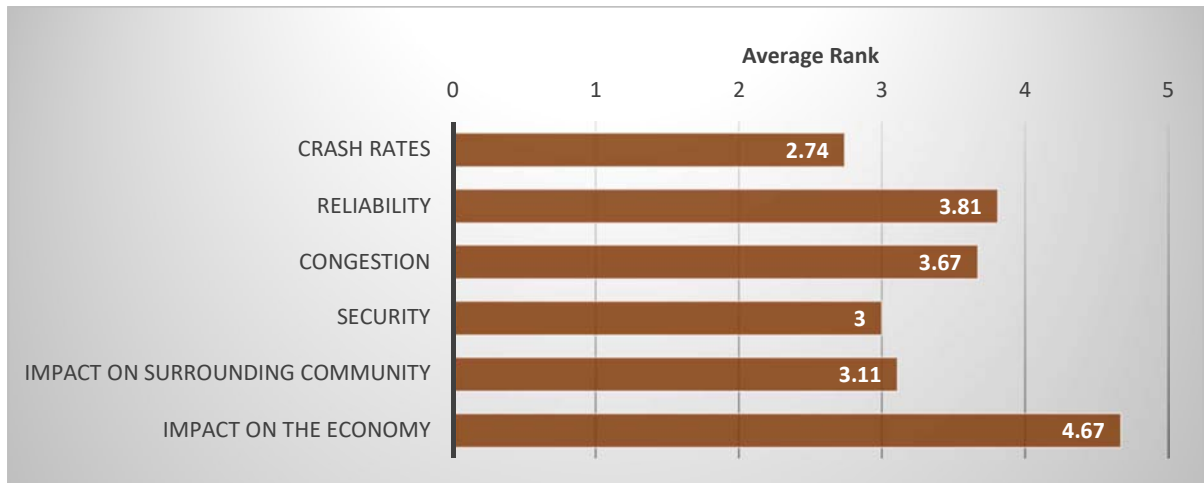


8. How would you define a bottleneck in your industry?



“Other” responses include: Attention to industry needs/ realities/ opportunities by state government.

9. When federal, state, or local governments measure the overall performance of the freight/ logistics network, what factors should they be focusing on?



10. Other issues listed

- The root cause of the issue in WNY is the unfavorable business climate discouraging investment and business from the area.
- New York's leadership does not understand (or seem to care about) logistics, which hurts our regional economic development strategy. Point in question, between spending \$16M on an "inland port" in Syracuse that does almost zero import/ export business, turning the Skyway into a museum, and refusing to start the US 219 SEIS (which has already been funded), the state proves time and time again that they don't get it. Unfortunately, many of our peer regions are making logistics a priority and thriving from doing so. For a region whose history was built on logistics, there should be a stronger acknowledgement of the fact that investment in logistics, infrastructure, and cross-border trade would spur economic activity in the region.
- ELD Regulations have an adverse impact on the transportation industry.
- The current CSX rail service times are slower in/out of the region.
- The Port of Buffalo needs improved marketing and business development.
- Expanded DOT enforcement.
- Border ports are undersized and inefficiently designed. Truck traffic should be routed through Lewiston-Queenston Bridge with a large cargo port built there.
- Consequences of Skyway removal.
- Port of Buffalo is being neglected.
- Rail infrastructure and new opportunities for direct rail access.
- I believe the root cause of the issue in WNY is the NYS unfavorable business climate discouraging investment and business from the area.