Niagara Frontier Urban Area Freight Transportation Study

Final Report

GBNRTC

GREATER BUFFALO-NIAGARA
REGIONAL TRANSPORTATION COUNCIL
Buffalo-Niagara Falls Metropolitan Planning Organization (MPO)

Project No. 06Freight

August 2010

Prepared for:
Greater Buffalo-Niagara
Regional Transportation Council

ENGINEERS
PLANNERS
ECONOMISTS
WilburSmith
ASSOCIATES

TABLE OF CONTENTS

TABLE OF FIGURES

Executive Summary

Freight Flows

The purpose of the Niagara Frontier Urban Area Freight Transportation Study is to assess the existing freight transportation network against expected future freight needs and trade opportunities. The logic of this assessment is to understand the current and existing demands on the region's roadways, railroads, waterways, and airports. As in most parts of the country, the majority of freight tonnage carried to, from, across and within the Greater Buffalo-Niagara Region (GBNR) is carried by truck. Rail has the second largest share, followed by maritime and then aviation. This relationship is expected to persist into the future. Furthermore, overall freight tonnage is expected to more than double between 2004 and 2035.

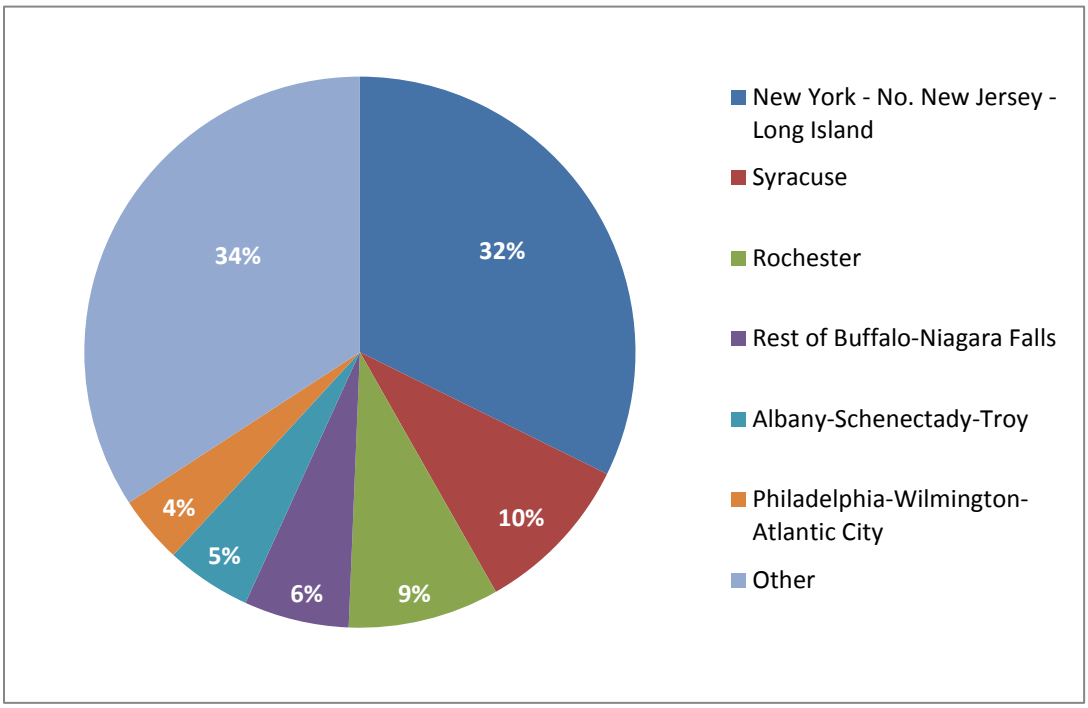
Figure ES- 1: Freight Tonnage by Mode

Source: TRANSEARCH®

The growth shown in **Figure ES- 1** begs the questions: Where will this freight growth come from? And, how will the GBNR infrastructure accommodate this growth? Forecasts by the Greater Buffalo-Niagara Regional Transportation Council and Woods & Poole predict little if any population growth, often an underlying driver of freight growth. The study analysis suggests that freight traffic will tend to increase faster than employment or population due to improvements in employee productivity, which in turn creates additional demand for freight transportation. Changing supply chains will also spur freight growth, as products are increasingly sourced from distant locations.

The area around New York City is by far the GBNR's largest trading partner. Other important partners are other regions of northern New York State, as well as the area around Philadelphia (**Figure ES- 2**).

Figure ES- 2: 2004 Combined Inbound and Outbound Tonnage by BEA[i]



The commodities accounting for the largest shares of truck traffic include: *Secondary Traffic*;[ii] *Food Products*; *Clay, Concrete, Glass and Stone*; and, *Primary Metal Products*. *Secondary Traffic* and *Food Products* are expected to generate the largest increases in truck traffic. *Coal* is the highest volume commodity shipped by rail into the region while *Waste and Scrap* and *Chemicals* have the highest volumes of outbound rail shipments. The largest increases in rail volumes for the region's rail network are expected in intermodal traffic, forecasted to increase by 184 percent between 2004 and 2035, compared to carload traffic which is expected to increase by 68 percent over the same time period. Most of the maritime shipments to and from the region are bulk commodities such as: *Grain*, various *Nonmetallic Mineral Products*; *Petroleum Products*, and *Coal*. *Mail and Contract Traffic* account for the largest share of the region's air cargo, although *Electrical Equipment* and *Farm Products* are important commodities as well.

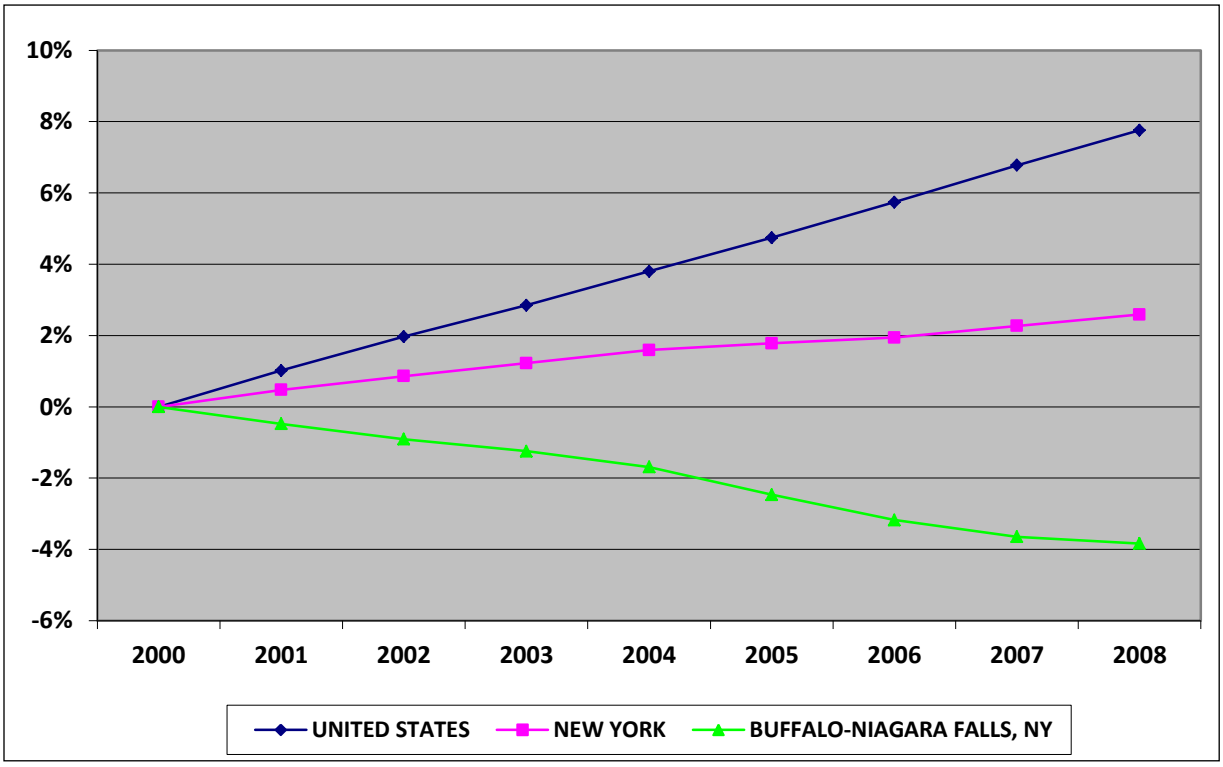
Seventeen percent of the region's truck traffic is moving across the region to or from Canada. Estimates of the region's trade with Canada vary by data source. Estimates from the IHS Global Insight TRANSEARCH® database suggest that truck volumes between the region and Canada were less than 1.25 million tons in 2004, about one percent of truck traffic into and out of the region and less than 4.5 percent of overhead international traffic. By contrast, data from the Ontario Ministry of Transport suggests that truck traffic to/from the Buffalo-Niagara region across the Peace and Lewiston-Queenston Bridges was about 3.7 million tons in 2004, or 18 percent of truck traffic on these bridges. This represents about 3.5 percent of truck traffic to and from the region.

Regional Freight Issues

Assessing the region's freight networks across modes took into consideration several issues that impact the GBNR freight system across all modes. The first of these issues is economic development. Population is

often used as a barometer for economic development. As shown in **Figure ES- 3** the population of the region has declined in recent years along with the area's economy. Freight initiatives to improve transport efficiency and/or add value to supply chains provide an opportunity for supporting economic development.

Figure ES- 3: Percentage Change in Population from 2000



Source: Woods & Poole

A second issue to consider relates to environmental concerns; Erie and Niagara Counties were in non-attainment for 8-hour ozone under the U.S. Environmental Protection Agency's (EPA) National Ambient Air Quality Standards in 2004, 2005, 2006, 2007, and 2008. On July 31, 2009, the New York Department of Environmental Conservation submitted a letter to the EPA asking that the Buffalo-Niagara Falls, NY metropolitan area be delisted as a non-attainment area for 8-hour ozone at the 1997 standard. The letter states that the region did not exceed the standard of 0.08 ppm in 2008. However, even if the region is delisted, air quality issues will still impact the region's freight planning as the region strives to maintain low ozone concentrations.

Greater Buffalo-Niagara Region Modal Assessment

Greater Buffalo-Niagara Region Aviation

The Buffalo-Niagara air cargo market has a proven track record with two airports currently handling air cargo in the GBNR. Buffalo-Niagara International Airport (BNIA) hosts three integrated express carriers that have been successfully operating at the airport for an extended period of time. Kitty Hawk's former air cargo operations at Niagara Falls International Airport (NFIA) proved that niche air cargo operations at the airport can work. This study identified the following strengths of the air cargo market within the Buffalo-Niagara region:

- The region's geography places it at a key international market, with $81 billion in trading passing through the region
- A number of industries which often rely on air cargo are located within the region, including automotive components and medical devices
- NFIA has the lowest landing fees in the region and a 10,800-foot runway. The airport is also located in a Foreign Trade Zone

However, competition within the air cargo industry is fierce: There are over 11,000 economic development agencies in the U.S. and more than 5,000 airports all competing for new business and fostering growth within their jurisdictions. Barriers to further air cargo development within the area include the following:

- Air cargo leakage to competing airports from the Buffalo-Niagara market area is significant with 11 daily truck departures by air freight forwarders. Forwarders operate primarily to international gateway airports in the U.S. and Canada.
- Kitty Hawk Air Cargo ceased operations at NFIA as a result of its bankruptcy and termination of services. No all cargo air carriers have moved in to fill the void, and Kitty Hawk's customers were likely absorbed by local trucking companies and integrated express carriers.
- Sharing air cargo between two regional airports in an urban area the size of Buffalo-Niagara is a challenge; cargo carriers seek to consolidate shipments using both ground and air hub and spoke networks to cover large areas and realize economies of scale benefits.

Most of this study's recommendations for regional air cargo development involve marketing initiatives, including:

- Retail FedEx, UPS and DHL – Continued service by these integrators at BNIA is important to the region's air cargo service, and working with these carriers to insure that they are satisfied with local market conditions is a priority.
- Maintain and Improve Airport Facilities – Continual improvements will help to maintain existing services and make the BNIA, NFIA more attractive to new services.
- Continue Economic Development Initiatives Focusing on Medical Device and Automotive Industries – These two industry clusters within the area are regular users of air cargo. Pharmaceutical cargo could be another growth area.
- Recruit an Anchor Tenant at NFIA – This tenant would generate sufficient cargo volume to justify dedicated cargo service. The nature of the tenant would depend upon targeted trade. Possible tenants could be fresh fruit, pharmaceutical, machinery or a range of other commodities.
- Market NFIA to "overhead" cargo, so that cargo that would otherwise pass over the region instead stops. Overhead traffic would need to be analyzed to determine if there is a logical reason for an aircraft to stop in the Buffalo-Niagara region.
- Develop NFIA as an "industrial airport," attracting manufacturers of aircraft and equipment to support the aviation industry.

Greater Buffalo-Niagara Highway System

The GBNR highway system is less congested than other metropolitan areas of similar size. A report by the Texas Transportation Institute (TTI) found that the region ranked at the bottom of similarly sized urban areas in terms of annual delay per traveler.[iii] The average annual delay per traveler in the region is 11 hours

compared to 35 hours for the average of similarly sized metropolitan areas or 51 hours for the largest metropolitan areas in the nation. The region's roadways are also relatively safe. Data gathered by the American Automobile Association (AAA) suggests the region ranks better than average for highway safety for urban areas of similar size.[iv]

The favorable congestion comparisons only mean that the region is "less bad." Some of the area's roadways are bottlenecks. Certain sections of I-90 and I-290 were found to have level of service (LOS) ratings indicating unstable, forced, or breakdown flow. Certain other segments were found to have poor LOS ratings. Looking forward, WSA's analysis of future truck patterns suggests that large additional volumes of truck traffic will be added to the area's roadways, with the highest increases on I-190 and SR 5.

The study team noted a few additional weaknesses of highway access to the Buffalo-Niagara region. Roadway access to markets to the south is somewhat circuitous. One must travel east or west on the New York State Thruway before traveling south on an interstate highway. Highway access to the region is also relatively expensive. The primary highway access is on a toll road, and the region's two border crossings are relatively expensive compared to other nearby crossings.

Some potential projects or opportunities for the highway system are as follows:

- The New York State Thruway Authority and NYSDOT, in cooperation with the FHWA are looking at potential improvements to congested segments of I-90, I-190, and I-290.
- The Continental 1 Corridor would be a new limited access highway that would generally follow the current alignment of US 219 through New York and much of Pennsylvania. It would eventually connect to I-95 in North Carolina and/or South Carolina. The most relevant portion of this proposed highway to the Buffalo-Niagara region is the planned extension of the Southern Expressway from Springville to Salamanca, NY, where it will interchange with I-86. An analysis of previously submitted benefit/cost calculations for the project suggests that the project may be difficult to justify on user benefits alone. However, subsequent economic impact studies suggest that the project may have sizeable economic development benefits.
- This study recommends establishing a regional truck route system, which can assist carriers in circumventing areas highly traveled by the motoring public, while still providing access to commercial customers in the region.
- The Peace Bridge Expansion Project is intended to improve the security and operations at the bridge and enable the bridge to accommodate future increases in traffic. The toll plaza would be expanded to accommodate additional booths, enlarged inspection areas. This project is expected to yield benefits that significantly outweigh costs, although most of the benefits would accrue to shippers from outside of the region.
- The Mid-Peninsula Corridor, a proposed highway to connect Niagara, Ontario with the Greater Toronto Area (GTA) could impact the U.S. side of the border. This project was proposed as an alternative to the Queen Elizabeth Way (QEW). However, this project appears to be stalled, and planners within Canada are looking at alternatives such as widening existing routes, transit or other potential highway corridors.
- New York Route 63 between Batavia and Genesee, New York is sometimes used as a shortcut for motor carriers traveling on I-90 and I-390. A new bypass was considered near this route in a

recent study commission by NYSDOT. 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. Because a potentially large portion of the Buffalo-Niagara region's commerce could use this route, it may have significant benefits to the region's shippers, a benefit which may warrant further study.

Greater Buffalo-Niagara Region Railroad System

The rail infrastructure within the GBNR has both strengths and weaknesses. One of the strengths of the region is its east-west connections. The region is on the primary CSX mainline that connects the Northeast with Chicago and other Midwestern markets. Also crossing the region is the NS Southern Tier route, another important rail connection between the Northeast and Midwest. Another rail weakness of the area results from its history: In 1997 Consolidated Rail Corporation (Conrail) was jointly acquired by CSX and Norfolk Southern (NS) railroads, and Conrail assets were divided between CSX and NS, leaving some capacity and operating constraints in the area that adversely affect freight service efficiency today. There are concerns over competitive access in the region, and some shippers have complained of high switching rates. The area has a number of bottlenecks and capacity issues. Most of the rail traffic that travels across the region must pass over CSX's CP Draw. This railroad bridge has created congestion issues in the past, and congestion is expected to get worse in the future. The CSX Niagara Branch, which could provide a bypass around the CP Draw, has clearance problems including a tunnel which is only slightly more than 16 feet high. At this height, a number of modern railcar types, including double stack intermodal well cars, multilevel car carriers, and hi cube boxcars cannot use the line. The NS Portage Bridge on the Southern Tier Line cannot accommodate the current industry standard 286,000 lb. rail cars. Several of the region's smaller railroads operate on rail lines that cannot accommodate 286,000 lb. cars as well.

A number of potential improvements for increasing rail efficiency and ensure future capacity include:

- CP Draw Bridge Replacement. A new bridge would be constructed to replace a derelict bridge that is next to the existing CP Draw at a cost of $40 million. This study included a sketch level analysis which suggested that the CP Draw will probably not reach capacity for at least a decade. Due to the timing of the benefits of CP Draw replacement, the project does not appear to have a benefit/cost ratio above one at this time. However, this study recommends further investigation using more rigorous analysis. Rail carriers would need to supply proprietary data for analysts to estimate future delays at the bridge.
- Another project evaluated the possibility of a new route around the CP Draw involving the NS Buffalo Line and a rail line owned by the BPRR. This project was found to have a favorable benefit/cost ratio and could point to alternatives that are less expensive than funding the construction of a new bridge.
- Several additional projects were proposed which would provide CN competitive access to the South Buffalo/Lackawanna area. Under one alternative, a connection would be established between the CN line and the CSX Niagara Branch. Under another, a new connection would be established from the Niagara Branch to the Avenue Running Track. These projects would require an operating agreement with CSX. It was not possible to quantify the benefits of these projects because their primary benefit would lie in providing area shippers with access to another carrier. The projects would also require improvements to the clearance of the CSX Niagara Branch to yield their full

potential. This line has a tunnel of slightly over 16 feet. One possibility could be to offer CSX assistance clearing the Niagara Branch in return for allowing CN access.

- The NS Portage Bridge over the Genesee River is beyond its expected service life. Benefit/cost analysis included within this study suggests that this project easily justifies its $25 million estimated cost. This NS line provides access to many of the region's most important trading partners, such as the New York metropolitan area.
- The Falls Road Railroad Bridge over the Erie Canal is structurally deficient and currently has weight restrictions and could be rehabilitated for $1 million. The rail line that uses the bridge could serve a new ethanol plant, which would generate sizeable traffic volumes. Although the benefits of the project were not evaluated in this study, it is likely the benefits would outweigh the $1 million cost.
- The possibility of establishing an intermodal terminal at the NYSDOT-owned Lehigh Valley Yard is another consideration however a sketch-level evaluation of the project raises some concerns: The project would require an agreement between CN and CSX. CN already operates an intermodal terminal in Brampton, ON, a relatively short distance away. Rail carriers generally do not like to operate intermodal terminals with overlapping market areas. CN has indicated willingness to offer a shuttle intermodal service from Brampton if container volumes are sufficient. However, the volumes that CN has specified are unlikely to materialize in the near future.
- This study provides a brief evaluation for a range of projects listed in the New York State Rail Plan, and prioritizes these projects into high, medium, and low implementation categories. In general, projects were considered to be high priority if improvements are made to rail lines that are in otherwise poor condition, or to rail lines that are likely to have significant traffic potential. Generally, upgrades of signaling systems on short line railroads were given low priority as were projects that have other potential funding sources, e.g. at-grade crossing projects.

Greater Buffalo-Niagara Region Maritime Infrastructure

Buffalo is part of the Great Lakes St. Lawrence Seaway System (GLSLS), which extends 2,342 miles from the Atlantic Ocean through the St. Lawrence Seaway and Great Lakes to Duluth, Minnesota on Lake Superior. Channels are maintained at a depth of 27 feet to support waterborne commerce. The GLSLS system has lost market share over the past several decades. Data from the U.S. Bureau of Transportation Statistics suggests that while total U.S. freight ton-miles increased by about 30 percent between 1980 and 2004, while cargo on the GLSLS declined about 10 percent. The Buffalo-Niagara region has an estimated 22 unused marine terminals. The Port of Buffalo handles a relatively small volume of tonnage, but a diverse range of cargo with a variety of trading partners.

This study reviewed several marine alternatives, including:

- Short sea shipping alternatives – These could be either containerized lift-on/lift-off or roll on/roll off (Ro/Ro) services. This study presents some skepticism regarding the economics of short sea shipping for the region. While Great Lakes bulk vessels enjoy a tremendous capacity advantage over alternate transportation options, the containerized and Ro/Ro vessels that can operate on the GLSLS would not have as significant a size advantage. For example, the largest container vessel would have a capacity of around 500 TEUs, about the equivalent of a large intermodal train. Because U.S. flagged vessels are expensive to operate, about $25,000 to $30,000 per day, and because they are slow, typically around 11.5 miles per hour, it would be difficult to offer shippers

sufficient cost advantages to overcome the disadvantages to maritime service in terms of speed and delay between sailings.

- AES Somerset has proposed to invest $25 million to construct a 3,200-foot long pier-conveyor that will allow the facility to obtain waterborne shipments of coal, petroleum coke, and limestone instead of relying on rail. The AES Somerset Lake Unloading Project could offer economic development benefits if other shippers were to use the 1,800-acre Somerset site and benefit from the pier-conveyor. The project would also generate economic development benefits in construction and by assuring continued operation of the Somerset plant. Because maritime is the safest mode of freight, this report estimates that the project would create $0.69 per ton in safety benefits for Appalachian coal deliveries that switch from all rail to rail/water and $3.85 per ton in safety benefits for Montana coal deliveries that switch from all rail to rail/water.
- This study also considered improvements to the Erie Canal. Although the canal continues to provide a very useful resource for shipping certain cargoes, the volume of traffic is such that the canal is not significant to the region's overall freight system.
- This study notes the following market opportunities in regards to maritime freight:
    - The handling of wind turbines could be a significant short-term opportunity. This is driven by New York State and Ontario goals for renewable power
    - Despite the initiative toward renewable power, coal could also represent a growth cargo. Coal sourcing continues to shift from Appalachian coal to western coal. Due to the distance, western coal is more likely to travel by water
    - Ethanol could drive demand for the region's port facilities. The RiverWright plant, if built, could drive a significant increase in demand for maritime freight
    - Building materials could represent a growth opportunity. The region's port terminals do not handle as much building material as would be expected from a metropolitan area of the Buffalo-Niagara region's size

Intermodal Opportunities

Changing patterns of international trade, as well as evolving logistics technology and practices will create opportunities for the Buffalo-Niagara region to leverage its freight transportation and real estate assets to stimulate regional economic growth. One opportunity that is discussed as a potential for economic development in the GBNR is the establishment of a logistics center. Logistics centers, also referenced as inland ports, perform the important function concentrating regional product distribution or consolidation activity to a single location, reducing inventory, improving carrier efficiency, and increasing reliability, thus, reducing supply chain costs. In addition, many logistics centers provide value-added services to products being delivered to the marketplace.

This study identifies a series of strengths and weaknesses of the Buffalo-Niagara region in terms of its potential to host a logistics complex (**Figure ES- 4**).

Figure ES- 4: Strengths and Weaknesses of the Buffalo-Niagara Region

Strengths	Weaknesses
▪ Location near existing or future sources of consumption or production, including 2.3 million in population of Western New York, 5.5 million in Greater Toronto Area. ▪ Efficient access to multiple modes of transportation, including rail service by four Class I railroad carriers, port terminals, and two airports. ▪ Several high-volume border crossings ▪ Ability to locate within the NS and CSX railroad intermodal networks. ▪ Direct connections to the Port of NY/NJ, serving as the best rail access point between the Port of NY/NJ and the Greater Golden Horseshoe Area of Southern Ontario.	▪ No container pool, imbalance of inbound/ outbound freight, which increases costs of container drayage to/from the region. ▪ Other corridors have larger freight volumes, such as I-80 through Pennsylvania ▪ Competing logistics hubs, such as Ohio-based logistics centers. ▪ Cost of toll facilities to motor carriers within the region.

While the region does have some weaknesses as a logistics center, the study analysis finds that overall the region is a promising location for a logistics complex. To help overcome the weaknesses identified, several implementation steps should be considered:

- Going forward, as existing truck/rail intermodal facilities within the region reach capacity, the former Bethlehem Steel site has been identified as a promising location for the development of a new logistics complex. The Bethlehem Steel site is a promising location for logistics and distribution facilities and could also be a good location for non-containerized truck/rail/maritime intermodal transfer operations.
- A Buffalo Logistics Complex is not necessarily an infrastructure initiative; it could also be a marketing initiative. Kansas City SmartPort is one potential business model of a marketing based initiative. SmartPort actively markets the Kansas City metropolitan area as a logistics hub. An analogous organization within the Buffalo-Niagara region may work closely with the Buffalo-Niagara Enterprise, or it could simply be a specialized branch within an existing economic development organization. The organization would enlist the involvement of logistics stakeholders within the region, so that these stakeholders may be partial investors and board members of the organization.
- A Buffalo Logistics Complex could also include an information technology component. This would be a voluntary supply chain visibility initiative. The public sector may act as a facilitator, but the resulting project would consist of private-sector stakeholders agreeing to share data. The U.S. Department of Transportation recently launched the Electronic Freight Management (EFM) initiative to support this type of supply chain visibility project.

Conclusions

Several themes have become apparent during the course of the Niagara Frontier Urban Area Freight Transportation Study:

- Economic development is a pervasive concern for the region.
- The region's roadway network has plenty of capacity compared to other metropolitan areas, although bottlenecks and areas of congestion persist.
- The region has excess capacity in both air cargo and port facilities.
- Stakeholders have identified a number of weaknesses in the region's rail infrastructure, including rail bridges reaching the end of their life, bottlenecks, such as the CP Draw, competitive access, and rail lines in poor condition.
- The region's identity as a primary conduit for trade with Canada represents an opportunity. Most of the Canada/US trade currently passing through the GBNR does not provide economic development benefits to the region. However, there may be supply chain benefits from handling (consolidating or deconsolidating) some of this traffic. The concept of a Buffalo logistics complex, should be explored further as it could also provide economic benefits the region.
- The New York metropolitan area is the region's most important trading partner. Projects aimed at improving connections between the Buffalo-Niagara region and the New York metropolitan area will tend to have large impacts on Buffalo-Niagara shippers.
- The region has good east/west rail links, but the region's roadway connections to New York and other important trading partners in the Mid-Atlantic are somewhat circuitous.
- Despite some weaknesses, the Buffalo-Niagara region could be a promising location for a logistics center. It has good rail connections, with a direct connection to the Port of New York/New Jersey. It offers the best option for providing intermodal rail access between the Port of New York/New Jersey and the Greater Toronto Area. Including customers in the U.S. and Canada, a Buffalo-Niagara logistics complex could serve a sizeable market area.

[i] Business Economic Areas (BEAs) are collections of counties surrounding a metropolitan area that are regional centers of economic activity. In the case of the New York BEA, this consists of 57 counties in the states of New York, New Jersey, Connecticut, Pennsylvania, Massachusetts, and Vermont. By contrast, the Buffalo-Niagara Falls BEA consists of only seven counties: Erie, Niagara, Cattaraugus, Chautauqua, McKean, Allegany, and Potter.
[ii] Secondary Traffic consists of those freight movements that are carried from warehouses and distribution centers to final consumption points, such as retail outlets.
[iii] Texas Transportation Institute, *2009 Urban Mobility Report*
[iv] Cambridge Systematics, Inc., *Crashes vs. Congestion – What's the Cost to Society?* March 5, 2008

1.0 Introduction and Purpose

1.1 Study Concept

The purpose of the Niagara Frontier Urban Area Freight Transportation Study is to analyze the region's freight transportation network to determine its ability to meet changing freight transportation needs now and in the future. It is also important to link land use and transportation decisions and identify potential economic development opportunities that could be realized because of the Niagara Frontier's strategic national location, the strengths of its local freight system, and its interrelationship with Canada.

The study assesses the existing freight transportation network against expected future freight needs and trade opportunities. The study identifies existing and prospective strengths and weaknesses, as well as future strategies and directions required for both transportation and economic development needs. The study area consists of Erie and Niagara Counties.

This Final Report is the culmination of a research effort that began in early 2007 that resulted in five technical memoranda:

- Technical Memorandum #1 presents an overview of the region's economy.
- Technical Memorandum #2 presents an inventory and profile of the region's freight systems, including the air cargo system, highway system, rail network, waterborne freight sector, and cross border infrastructure. For each mode, a preliminary assessment of strengths and weaknesses of the freight systems was included, as well as a preliminary identification of potential improvement projects.
- Technical Memorandum #3 presents a freight flow analysis, including an assessment of factors that influence freight flows, a profile of truck traffic, marine cargo, rail traffic, air cargo, and cross border traffic. Included were forecasted freight flows at five-year increments through 2035.
- Technical Memorandum #4 provides an analysis of freight needs by mode, discussing performance measures, stakeholder input, and identifying specific issues with the freight system. A series of potential projects is presented for addressing freight system issues, as well as generating economic development opportunities.
- Technical Memorandum #5 evaluates the benefits and costs as well as economic impacts for many of the projects presented in Technical Memorandum #4 and makes implementation recommendations for the most promising projects.

In addition to summarizing the content of the technical memoranda described above, this Final Report provides a list of projects by priority and timing (short, medium, long), as well as a plan for marketing the region's logistics assets.

2.0 Demographic and Economic Profile

The economic performance of the Greater Buffalo-Niagara Region (GBNR) has been uneven across various industry sectors as the economic base of the GBNR has shifted away from heavy manufacturing, moving to light manufacturing and trade-based industries such as transportation and warehousing. While competitive conditions vary across industries, in general the region's strengths include:

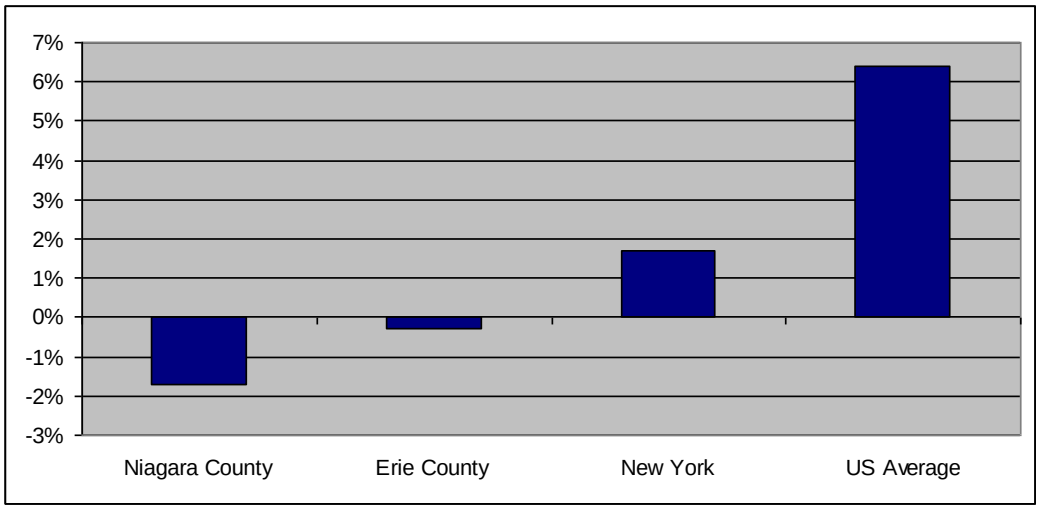
- A strategic geographic location as a gateway to major economic markets in both Canada and the United States (U.S.);
- A skilled workforce;
- A system of multimodal transportation assets including the Port of Buffalo, the Greater Buffalo-Niagara International Airport, the Niagara Falls International Airport, and rail corridors served by two Class I railroads;
- Relatively low cost of living; and,
- A growing tourism base.

These strengths, combined with expanding opportunities arising from increasing global trade and changing trade lanes, present opportunities that can potentially be capitalized on by improved freight transportation efficiencies and a strategic land use development plan.

2.1 Economic Profile

The economic profile captures population employment characteristics and includes population growth rates, median age, income data, employment composition and unemployment rates and educational attainment levels. Population change is a leading indicator of a region's relative economic health. **Figure 2-1** compares the change in population for Erie and Niagara Counties, to the State of New York, and the entire U.S.

Figure 2- 1: Percentage of Change in Population, 2000-2006

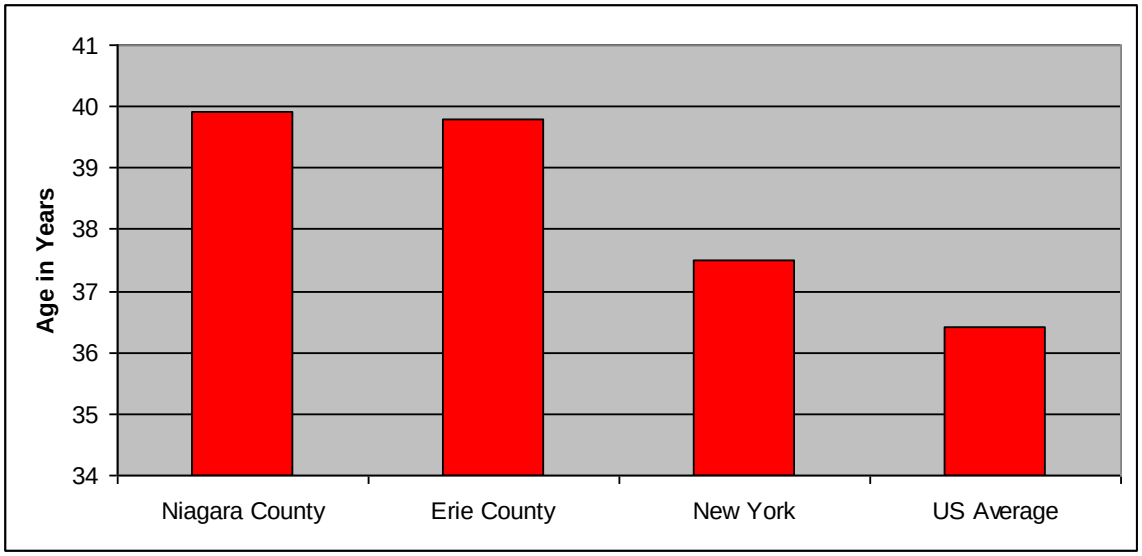


Source: U.S. Census Bureau, American Fact Finder

The GBNR has experienced declining population during a period when New York State and the U.S. have continued to grow. This trend is troublesome as population growth is typically a prerequisite for sustaining economic growth. Population growth represents both an on-going available labor supply and market growth for final goods.

Population declines suggest the region's pool of available workers is shrinking. In addition, the region's workforce has a higher median age than either the State of New York or the U.S. **Figure 2- 2** indicates that the median age of the population in the study region is several years older than statewide and national averages.

Figure 2- 2: Median Age of Population, 2005

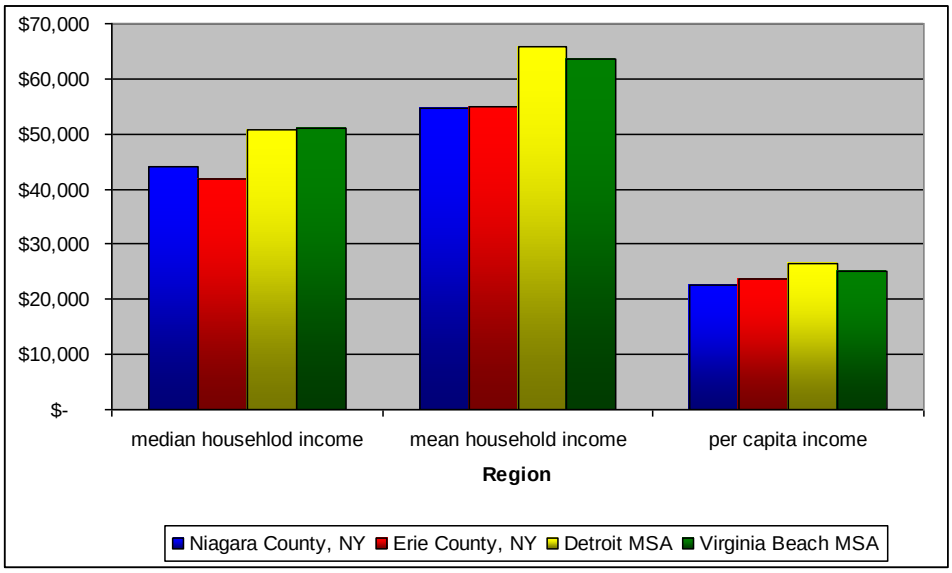


Source: U.S. Census Bureau, American Fact Finder

Given the economic disparities within the State of New York and the concentration of activity in the New York City Metropolitan Statistical Area (MSA), economic statistics in the State of New York are easily skewed. Therefore, the economic profile compares economic conditions in the Greater Buffalo-Niagara region with that of potential competing regions, the Detroit and Virginia Beach-Norfolk MSAs. Detroit has been selected as it is a competing metro area for Canadian and auto manufacturing-based economic activity. The Virginia Beach-Norfolk MSA is a comparable metro area with demonstrated success in leveraging its geographic position and multimodal assets.

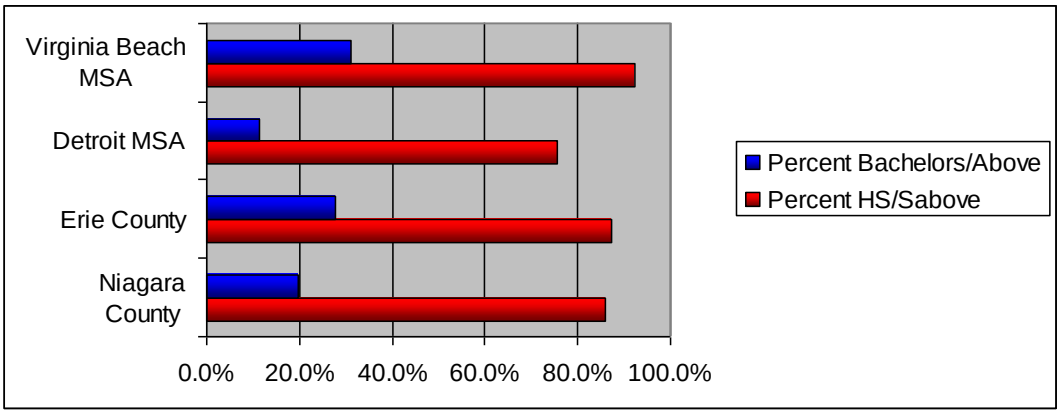
Figure 2- 3 illustrates the relative performance of the study region with regard to income level. As can be seen, both Niagara and Erie Counties lag behind the comparative regions in three income measures: median household income, mean household income and per capita income. While additional analysis would be required to determine the underlying reasons for the region's lower income, one hypothesis is that the lower income maybe related to lower skill levels. For instance, compared to Virginia Beach, both Niagara and Erie Counties have lower percentages of their populations that have obtained college degrees (see **Figure 2- 4**). However, the level of educational attainment in the region is higher than that found in Detroit, suggesting that there may be other factors affecting wage rates and income levels.

Figure 2- 3: Comparative Income Measures, 2005



Source: U.S. Census Bureau, American Fact Finder

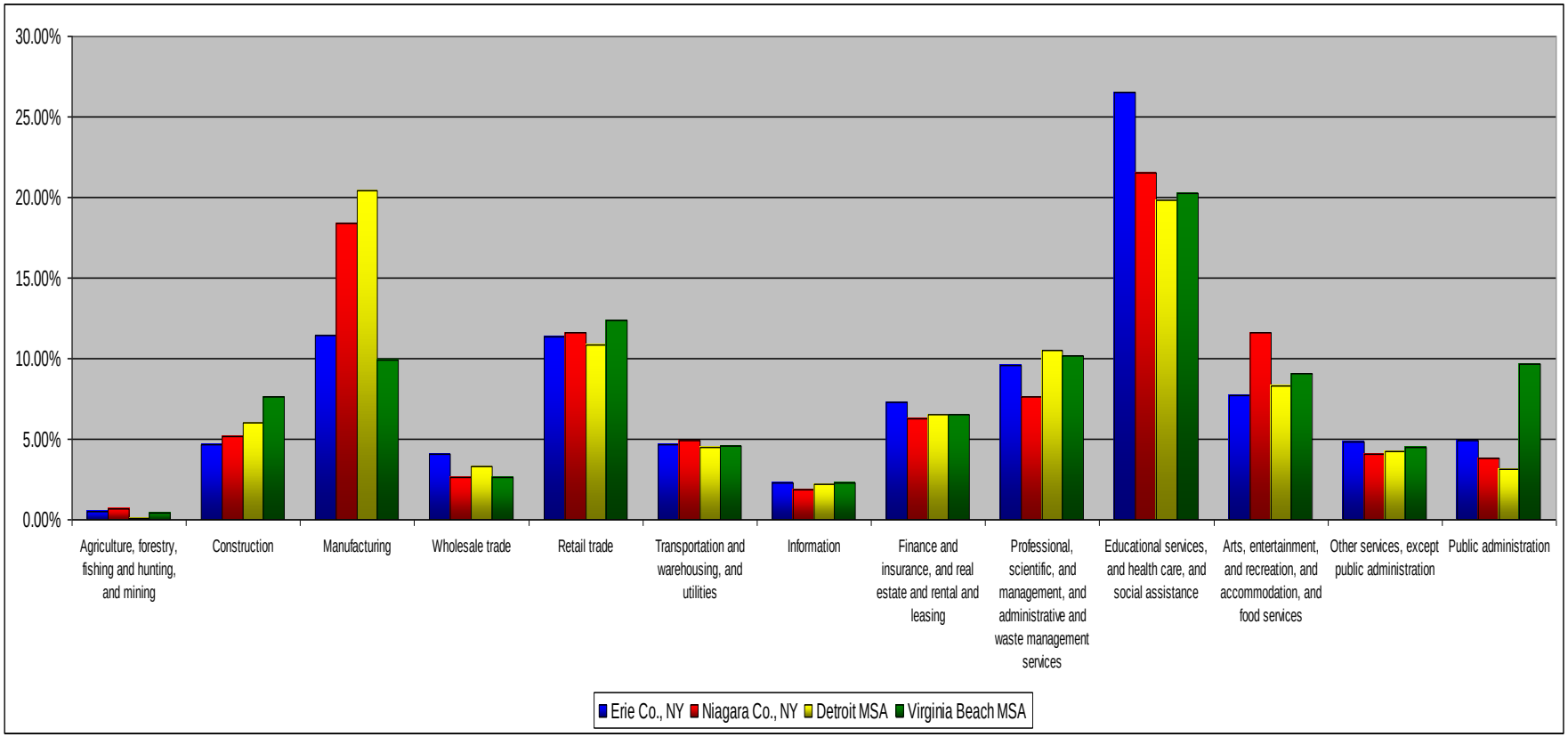
Figure 2- 4: Educational Attainment Levels, 2006



Source: U.S. Census Bureau, American Fact Finder

Another potential explanation for the income differences is the industrial composition of the region relative to the comparison regions. **Figure 2- 5** presents the industrial breakout of employment for the study counties and the comparative MSAs for 2005. The Detroit MSA and Niagara County are both relatively more dependent on manufacturing-based employment, which has contributed to economic slowdowns in each area. In addition, Niagara County experiences a higher percentage of employment in leisure and tourism related industries such as *Arts, Entertainment and Accommodations*. Often these jobs pay less and can be seasonal. Erie County boasts a relatively high percentage of employment in *Education* and *Health Services*, a national growth sector. Construction-related employment in both Erie and Niagara Counties represent smaller shares of total employment than in comparison regions: This is another sign that should be monitored as higher employment levels in the construction industry is a signal of a growing economy and higher capital investment. The regional employment mix will be covered in more detail in the economic base section that follows.

Figure 2- 5: Employment Mix by Major Industry Sector, 2005



Source: U.S. Census Bureau

2.2 Economic Base Analysis

The economic base analysis contrasts current and historic performance of the Erie County and Niagara County employment structure with that of the comparison areas; Virginia Beach-Norfolk, VA and Detroit, MI. Based on employment in the comparison area, the potential for new jobs is assessed at the 2-digit NAICS industry level.

The first step of the analysis is to calculate a ratio of economic concentration for each industry in the Erie and Niagara Counties and compare them to the benchmark regions. This ratio is referred to as the Location Quotient (LQ). A second evaluation uses shift-share analysis to compare the performance of industries within Erie County and Niagara County with national trends in the performance in the same sectors.

Location quotient analysis is useful for identifying industries that may be under-represented in a region. The lower the LQ, (i.e. the regional concentration of a particular industry as compared to that industry nationally), the more likely it is that a region is not meeting the local market demands for that industries' output. Therefore, a low LQ signals the potential for regional job growth in the under-developed sectors. LQ analysis is used to estimate the expected number of jobs in Erie County and Niagara County if performance of local industries was equal to the Virginia Beach-Norfolk MSA or the Detroit MSA. The differential between expected jobs and actual jobs provide an estimate of the employment potential in Erie and Niagara Counties under the right conditions for growth of any given industry.

Shift-share analysis provides a way to identify the sectors that are growing or declining in the study region in comparison to national averages. Local industries lagging in growth are both economic weaknesses as well as potential future growth opportunities. The analysis calculates the shift-share as the ratio of percent change in the number of employees in each sector for Erie County and Niagara County and to the percent change for the U.S. over the past ten years. The ratio indicates whether the local industry is growing/declining faster/slower than the industry nationwide, or if the local sector is moving in an opposite direction (e.g., declining while the national industry is growing).

To simplify understanding of the trend ratios, and to avoid the tendency to over-interpret the data, the analysis categorizes each sector as follows:

- Under-Performing (less than average)
- Average Performing
- High Performing (higher than average)

Industries are considered under-performing if employment growth is less than the national average, declining faster than the national average, or declining regionally while growing nationally. Industries are considered average if regional employment is growing or declining at about the same rate as national employment. Finally, industries are considered high performing if regional employment is growing at a faster rate or declining at a slower rate than the national average, or growing regionally while declining nationally. A threshold of ten percent is used to define faster and slower. If regional growth rates are within ten percent of the national rates, performance is considered average.

Figure 2- 6 provides an assessment of the shifting of the economic base for the two counties in the study region. From 2000 to 2005, the study region lost significant *Manufacturing* jobs as well as *Wholesale and Retail Trade* jobs. The loss in manufacturing jobs is follows the national trend; however, the loss in wholesale and retail jobs is counter to the national trend. The loss of jobs in the *Retail Trade* sector may be a symptom of declining population or economic distress. The loss of jobs in the *Wholesale Trade* sector is especially troublesome for the region given its geographic location, multimodal assets and potential as a logistics hub for Canadian-U.S. trade.

Sectors experiencing increases include *Professional, Scientific and Management, and Administrative and Waste Management Services,* and *Tourism* sectors. This bodes well for the future of the regional economy as it demonstrates ability to transition away from an economy that historically has been very dependent on manufacturing to one that is more service-based.

Figure 2- 7 displays the high and low performing industries based on the analysis. For the purpose of the Niagara region analysis, the interest is in identifying industries for which freight transportation is a key growth driver. Notable is that *Trucking and Warehousing* is under-performing in both Niagara and Erie Counties, while the *Transportation Services* and *Commodities Brokers* category is identified as performing above average in Erie County. It is not uncommon for an industry to be identified as under-performing in one county while performing above average in the other, in effect balancing for region. However, the appearance of regional balance may mask a true measure of economic performance.

Figure 2- 6: Change in Employment by Sector, 2000-2005

	Erie County, NY		% Change, 2000-2005		Niagara County, NY		% Change, 2000-2005
	2005	2000			2005	2000	
Agriculture, Forestry, Fishing and Hunting, and Mining	2,101	1,499	40.2%		656	919	-28.6%
Construction	19,501	19,178	1.7%		5,064	5,058	0.1%
Manufacturing	47,949	62,253	-23.0%		18,018	21,043	-14.4%
Wholesale Trade	17,187	18,677	-8.0%		2,544	3,461	-26.5%
Retail Trade	47,563	50,932	-6.6%		11,414	12,892	-11.5%
Transportation and Warehousing, and Utilities	19,700	22,211	-11.3%		4,830	5,404	-10.6%
Information	9,595	10,234	-6.2%		1,807	2,285	-20.9%
Finance and Insurance, and Real Estate and Rental and Leasing	30,579	28,687	6.6%		6,131	4,598	33.3%
Professional, Scientific and Management, and Administrative and Waste Management Services	40,282	34,656	16.2%		7,462	6,813	9.5%
Educational Services, and Health Care and Social Assistance	111,203	110,315	0.8%		21,115	21,582	-2.2%
Arts, Entertainment and Recreation, and Accommodation and Food Services	32,419	32,343	0.2%		11,376	8,095	40.5%
Other Services, except Public Administration	20,422	19,547	4.5%		3,701	4,813	17.7%
Public Administration	20,679	20,642	0.2%		3,701	3,837	-3.5%
Total	**419,180**	**431,174**	**-2.8%**		**98,080**	**100,810**	**-2.7%**

Figure 2- 7: Classification of Industry Performance

Erie County		Niagara County	
Under-performing	Above Average Performance	Under-performing	Above Average Performance
Agricultural Services	Rubber and Plastics	Stone, Clay and Glass	Lumber and Wood
Oil and Gas Extraction	Stone, Clay and Glass	Fabricated Metal Products	Rubber and Plastics
Forestry	Fabricated Metal Products	Metal Mining	Transportation Equipment
Metal Mining	Transportation Equipment	Oil and Gas Extraction	Wholesale – Durables
Nonmetallic Minerals	Water Transportation	Nonmetallic Minerals	Hotels, Other Lodging
General Contractors	Transportation by Air	Trucking and Warehousing	Personal Services
Heavy Construction	Transportation Services	Water Transportation	Business Services
Special Trade Contractor	Commodity Brokers	Transportation by Air	Amusement and Recreation
Passenger Transit	Holding and Investments	Transportation Services	Misc. Manufacturing
Trucking and Warehousing	Motion Pictures	Non-depository Institutions	
Food Products	Electronic/Electric Equipment	Commodity Brokers	
Furniture and Fixtures	Services, Other	Food Products	
Printing and Publishing		Paper Products	
Petroleum and Coal		Printing and Publishing	
Industry Machinery		Chemical Products	
		Petroleum and Coal	
		Industrial Machinery	
		Electronic/Electric Equipment	
		Instruments	

Combining the LQ and shift-share analyses provides for the interpretation of the overall industry performance and can be used to identify at-risk employment as well as potentially affected industries. For example, if the LQ for an industry is greater than 1.0, coupled with a shift-share ratio indicating national employment is growing and performing at or better than the national average, then the regional industry is strong. The same is true when the LQ is less than 1.0, but the industry is growing both nationally and locally. If the LQ is greater than 1.0 and the regional employment is growing slower than the national average or declining, it indicates that the potential for local growth exists, but local industry needs support, most likely to mitigate a competitive disadvantage.

In terms of transportation intensive, trade-based industries, strong potential for new growth in Erie County was identified in the following industries:

- Trucking and Warehousing
- Water Transportation
- Transportation Equipment

Potential based on recent growth in Erie County was identified in the following industries:

- Wholesale, Non-Durable Goods
- Transportation Services
- Commodity Brokers
- Transportation by Air

For Niagara County, strong potential growth was identified in the following transportation and trade-related industries:

- Trucking and Warehousing
- Water Transportation
- Transportation by Air
- Commodity Brokers
- Transportation Services

Based on projected industry growth trends and the performance of the region's economy, the region could potentially add an additional 27,000 jobs in these industries over the next ten years. This represents about a 6.5 percent increase in the current employment levels.

Limitations of Analysis

The techniques for economic base assessment and competitive benchmarking facilitates by the analysis framework are intended to be used and viewed as "tools" for economic development practitioners, planners, and analysts. They do not replace the need for local understanding and on-the-ground assessments.

All analysis systems have limitations and it is important to recognize those limitations at the onset. The most notable limitations of this analysis are:

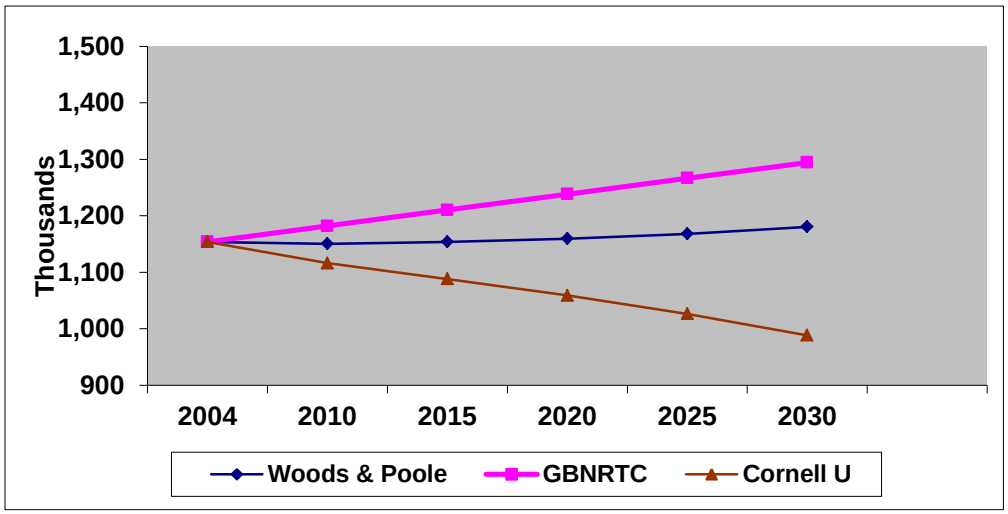
- **Definition of Study Area:** The defined study area directly influences the outcome of the analysis. Ideally, the study area would be determined based on economic interdependence and therefore extend beyond the U.S. border to include the Niagara-Hamilton-Toronto region.
- **Benchmarking Region:** The basis for comparison for the current effort is the Detroit MSA and the Virginia Beach-Norfolk MSA. Comparison to the Detroit MSA is a competing metro area for Canada and auto manufacturing-based economy. The comparison to the Virginia Beach-Norfolk MSA is a comparable metro area with demonstrated success in taking advantage of its geographic position and multimodal assets.
- **Business Classification vs. Occupational Classification:** Analysis of business concentration and trends can be very useful to help identify relative strengths and weaknesses of a region. However, all industry classification systems share the common limitation in that they do not distinguish between a company's administrative office and jobs and its production functions. Industrial classifications are categorized by industry as opposed to occupation. As a result, the analysis may not recognize some specialized local strengths or weaknesses that focus on occupational elements as opposed to industry-based elements.
- **Detail on Area Competitiveness:** The analysis relies on empirical data that is readily available. The level of available detail is stronger for some economic development factors than for others. As a result, the characterization of some regional competitive factors in the Buffalo-Niagara region will be stronger and more defensible than in others.

2.3 Buffalo-Niagara Economic Outlook

In the future, the region's population is not expected to decline as it has in the past, but it is not expected to grow significantly either. Forecasts by both GBNRTC and Woods & Poole suggest relatively stable population in the GBNR through 2030. The Woods & Poole forecast suggests a population increase of about two percent for the region over a 26 year period (2004 to 2030). The GBNRTC forecast shows a slightly higher population increase with the population of Erie and Niagara Counties expected to be about 1.3 million in 2030, an increase of about 12 percent. Both forecasts suggest population increases lower than the national increase of 29 percent from the U.S. Census Bureau.

A third forecast by the Cornell University College on Human Ecology – Program on Applied Demographics, provides a third. It shows a declining trend in population.

Figure 2- 8: Population Forecast for the Buffalo-Niagara Region



Source: Woods & Poole, GBNRTC, Cornell University

2.3.1 The Bi-national View of the Regional Economy

Those areas that have an economic interdependence are often placed into a single region for economic analysis purposes. For example, the U.S. Department of Commerce Bureau of Economic Analysis uses commuting data to help to define economic regions. While the economic interdependence should not be overstated, the Buffalo-Niagara region has significant economic interaction with nearby sections of Canada, including Hamilton, Niagara Falls, and the Greater Toronto Area (GTA).

The economic profile of nearby areas within Canada is quite different from that of the Buffalo-Niagara region. During the decade from 1991 to 2001, the population of the region including GTA and the City of Hamilton (GTAH) grew at about 1.8 percent per year. During this same time period, the population of the Buffalo-Niagara region declined. As shown in **Figure 2- 9**, the population of the Niagara – GTA region is expected to grow by 1.28 percent per year, in contrast to the Buffalo-Niagara region, which is expected to experience lower population growth.

Figure 2- 9: Niagara, ON – GTA Regional Population Growth

Region	Population ('000)				Average Annual Growth (2001 – 2031)
	2001	2011	2021	2031	
Greater Toronto Area (GTA)	5,300	6,320	7,180	7,960	1.36%
City of Hamilton	510	540	590	660	0.86%
Region of Niagara	427	442	474	511	0.60%
Niagara – GTA	6,237	7,302	8,244	9,131	1.28%

Source: Places to Grow, *Proposed Growth Plan for the Greater Golden Horseshoe*, Ontario Ministry of Public Infrastructure Renewal, 2006

Growth is expected to be strong in the Greater Toronto Area, with slower growth in Niagara and Hamilton. If growth forecasts of the Buffalo-Niagara region (Woods & Poole) are combined with forecasts for the Niagara – GTA region, the total forecasted population increase for the combined Buffalo-Niagara – GTA region would be about one percent per year. However, the economic interdependence of the region with nearby parts of Canada should not be overstated. As presented in earlier in this report, Canadian traffic only represents one percent of truck traffic into and out of the region. New York City is a far more significant trading partner with the Buffalo-Niagara region than is all of Canada. Large volumes of freight flow into the region from distribution centers in New York and Albany metropolitan regions, not Toronto. Most international traffic that crosses the border is overhead to the Buffalo-Niagara region; and, U.S. residents have only limited ability to participate in forecasted job growth in the Niagara – GTA region, since work permits are required to work in Canada.

Nonetheless, activities to facilitate the growth of trade and economic interdependence between the Buffalo-Niagara region and high-growth areas of Ontario will benefit the region, including key freight connections between the U.S. and Canada.

3.0 Freight Flows

3.1 Background

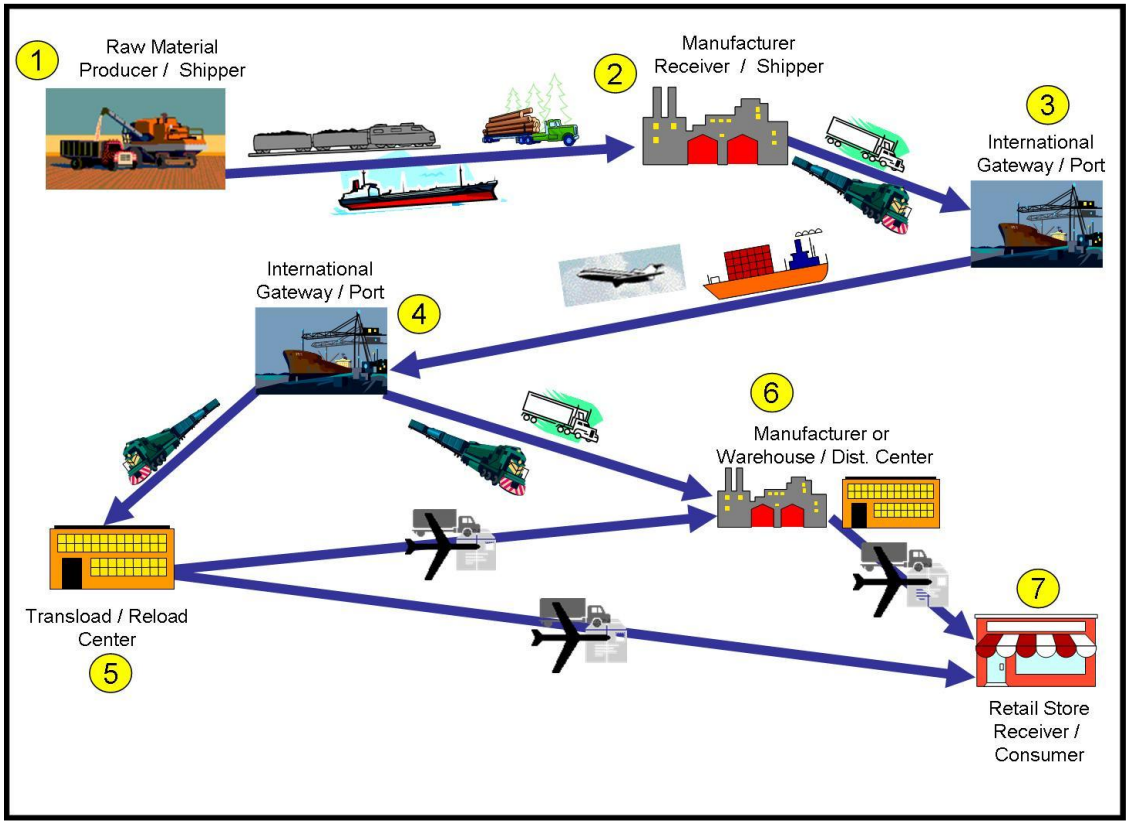
The freight needs of the Buffalo-Niagara region are in part dictated by the current and forecasted usage of that system. A number of factors influence the demand for freight. These include the following:

- Consumption – the purchase of goods by individuals, households, and governments
- Production – creation of goods
- Trade – the exchange of goods

Supply chain management decisions influence the flow of freight. Materials may be moved numerous times and in different forms before a final product is delivered to its ultimate customer.

Figure 3- 1 depicts a generic example of a modern supply chain, with its complex flows and inter-relationships.

Figure 3- 1: Modern Supply Chain



Source: Wilbur Smith Associates

The diagram portrays the supply chain from the extraction of raw materials to the ultimate disposal of the finished product. Raw materials are harvested, mined or extracted and transported for processing into finished or semi-finished materials. Semi-finished goods move to facilities where they are used as inputs to manufacturing of subcomponents or finished goods. Sub-components are then transported to

facilities for assembly or combined with other units into finished products. Finished products are next transported to warehouse or distribution centers. Often batch shipments are de-consolidated and reloaded with a variety of other finished products for the final shipment leg to retail facilities. The modern supply chain is only complete after the product is consumed or of no value, and it is transported for disposal, recycling return, or repair, commonly referred to as reverse logistics.

Between 1980 and 2004, the U.S. population increased by 29 percent and total employment grew more than 40 percent, while total employment grew by 40 percent over the same period. Gross Domestic Product (GDP) increased faster than population or employment; at 108 percent reflecting improved productivity. Foreign trade showed remarkable growth increasing over the period by 349 percent.

Demand for freight transportation grows with increases in population and economic activity. As shown in **Figure 3- 2**, U.S. freight traffic rose during the same time period from 1980 to 2004.

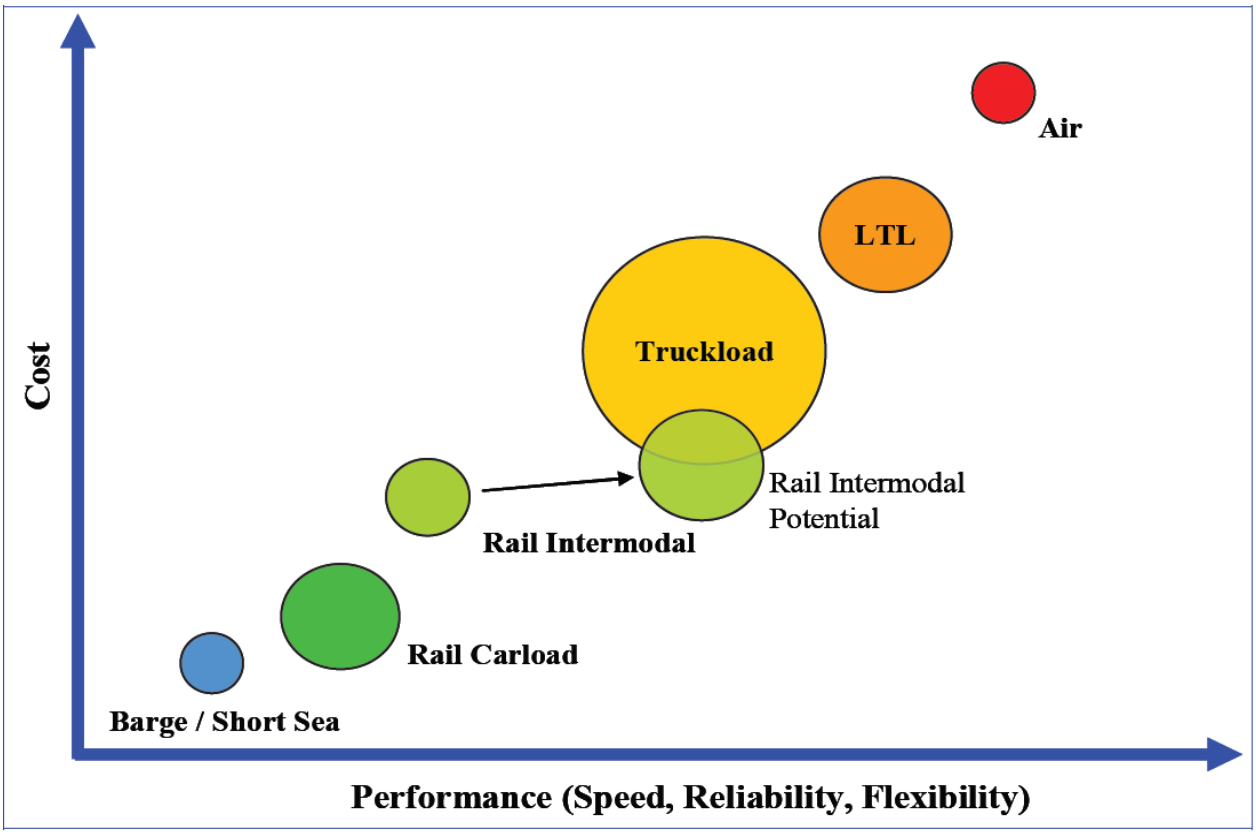
Figure 3- 2: U.S. Freight Demand (millions of ton-miles)

Mode	1980	1990	2000	2004	Percent Change 1980-2004
1. All Modes	3,404,015	3,621,943	4,328,642	4,541,668	33.4%
2. Air	4,840	10,420	15,810	16,451	239.9%
3. Truck	629,675	848,779	1,192,825	1,281,573	103.5%
4. Railroad	932,000	1,064,480	1,546,319	1,684,461	80.7%
5. Domestic Water Transportation	921,835	833,544	645,799	621,170	-32.6%
a. Coastwise	631,149	479,134	283,872	279,857	-55.7%
b. Lakewise	61,747	60,930	57,879	55,733	-9.7%
c. Internal	227,343	292,393	302,558	284,096	25.0%
d. Intraport	1,596	1,087	1,490	1,484	-7.0%
6. Pipeline	915,666	864,792	927,889	938,013	2.4%
7. Oil and Oil Products	588,000	584,100	577,000	599,600	2.0%
8. Natural Gas	327,666	280,692	350,889	338,413	3.3%

Source: U.S. Bureau of Transportation Statistics

During the period 1980 to 2004, only domestic water transportation showed a decrease in activity (-32.6 percent), largely due to the increased competitiveness of rail transportation. Trucking, rail and air freight showed large growth of 103.5 percent, 80.7 percent, and 239.9 percent, respectively. Each mode can be thought of as providing shippers with a unique mixture of service and cost. Higher cost transport is typically associated with faster, more time definite service, and lower costs are associated with slower, less reliable and flexible service. In general, those transportation modes that provide better service have gained market share over the past several decades, despite higher costs, in large part to "just-in-time" inventory practices. As an example, domestic maritime transportation is thought to provide the lowest level of service at the lowest cost. Demand for domestic maritime declined between 1980 and 2004. Air cargo provides the best service but at the highest cost, and air cargo has had the highest increase in freight demand. **Figure 3- 3** expands on the notion of cost and service levels associated with a variety of freight transport modes, with the bubbles representing the relative market share.

Figure 3- 3: Modal Service versus Cost Continuum



Source: Adapted from Jack Lanigan, John Zumerichik, Jean-Paul Rodrigue; *Automated Transfer Management Systems to Improve Intermodal Efficiency of Freight Distribution*, undated.

The trend toward higher cost/more time definite service transportation options results from changes in supply chain planning decisions over the past several decades. Shippers now maintain fewer inventories than previously and rely on just-in-time inventory replenishment. Supply chains are now often built upon a "pull" based modes, where production, transportation, and inventory decisions are based upon the ultimate customer demand. Inventory is "made to order." This contrasts to "push" based supply chains where inventory is "made to stock" in anticipation of eventual demand. These supply chains require fast, reliable transportation options.

3.2 Implications for Buffalo-Niagara Freight Traffic

The analysis of the Greater Buffalo-Niagara region and forecasted economic trends also suggests implications for future freight demand trends. From the data collected, one can form a number of likely expectations regarding the trends of freight traffic for the Buffalo-Niagara region:

- Freight traffic in the region is likely to increase faster than employment or population in the region. Improvements in employee productivity create additional demand for freight transportation. Trade patterns are also changing as industrial and retail goods are increasingly sourced from locations outside the region. Because the population and employment of the

Buffalo-Niagara region is expected to increase more slowly than the national average, one would expect freight flows to increase less rapidly than overall national freight flows.

- Overall freight flows should increase for the Buffalo-Niagara region because employment is expected to increase. Specific changes in employment will have implications for the region's freight demand patterns. For example, manufacturing employment is expected to decline, decreasing outbound freight flows, as the manufacturing firms are major outbound freight generators. This would also tend to decrease the inbound supply of raw materials or intermediate products. On the other hand, increases in expected retail and wholesale employment would tend to increase inbound freight flows, particularly of secondary traffic (i.e., shipments from distribution centers to retail locations).
- Buffalo-Niagara's status as an international gateway and location along a major east-west corridor, both for rail and truck, is likely to increase the amount of overhead traffic that will flow over the area.

3.2.1 Changes in International Trade Patterns

Several factors are influencing changes in international trade patterns that could potentially increase the importance of the Buffalo-Niagara region to trade. These changes are shifting international freight flows from Southern California gateways to the Northeast.

- Intermodal freight rate increases from West Coast ports: intermodal freight rates from the Ports of Los Angeles and Long Beach have increased by more than 40 percent since 2007.
- West Coast port congestion: the Southern California ports have nearly reached capacity with little room for expansion.
- West Coast port labor contracts: the International Longshoremen and Warehouse Union (ILWU) contract expired on July 1, 2008. It is anticipated that the new contract will significantly increase marine terminal handling costs. During contract negotiations the ILWU has staged work slowdowns causing congestion at the ports.
- Western U.S. railroad congestion: the western railroads have been increasing their capacity; however, any significant growth in container traffic will consume the capacity.
- Expansion of Panama Canal: improvements to the Canal will both allow it to accommodate 12,000 TEU ships as well as more ships. Today the Canal is limited to 5,000 TEU ship.
- Overseas sources of production have been moving westward from the Pacific Rim toward the Indian Subcontinent.

With these factors favoring East Coast ports, particularly the Port of New York & New Jersey, the Buffalo-Niagara region stands to play a larger role in international commerce:

- Roadway congestion in the Metropolitan New York area will result in a greater reliance on rail transportation to move containers to inland markets. The opening of the Seneca Yard intermodal facility positions the Buffalo-Niagara region as a logistics hub for this traffic.
- Intermodal train economics are becoming more favorable to short and medium length container movements. Improvements in intermodal technology have reduced the costs of moving containers by train. In addition, increasing fuel costs favor rail transportation over truck. Consequently, the railroads can provide more cost competitive services in shorter corridors.

- Additional container traffic will drive demand for increasing the cargo throughput at the East Coast ports. Containers will have to move quickly through the port terminals. One way to do this is to rely on inland satellite terminals for container sorting and processing. Seneca Yard can serve as a lynchpin for a satellite terminal in the area.

However, in order for the GBNR to benefit, investments will also be needed at international gateways serving northeastern markets. For example, the Bayonne Bridge across the tidal strait Kill Van Kull leading to the Port of New York is currently too low to allow the next generation of containerships to pass into port.

3.3 Greater Buffalo-Niagara Freight Profile

3.3.1 Truck

The analysis of freight flows uses 2004 as the base year. The analysis of truck freight flows relies on the TRANSEARCH® database, developed by Global Insight, Inc. (formerly Reebie Associates), as the source of the traffic data. The specific dataset used was obtained from the New York State Department of Transportation. Data within this study is expressed in tonnage. The data is derived from public sources such as the U.S. Department of Transportation's Commodity Flow Survey, as well as from proprietary sources, such as agreements between Global Insight and trucking firms that share data.

In addition to the base year, the TRANSEARCH® database includes traffic flow forecasts for the year 2030. To develop freight demand forecasts for periods between 2004 and 2030, growth factors for the regional geography were developed from the Federal Highway Administration's Freight Analysis Framework (FAF) and applied to the base year data. In most instances matching origin-destination-commodity data could be found in the FAF database. Where matches were not present, commodity specific regional growth factors were used, such as inbound or outbound from the Buffalo-Niagara region.

The FAF provides forecasts for every five years to between 2002 and 2035. An appropriate level of base data for 2004 was estimated by prorating the forecasted change between 2002 and 2010 to 2004. This base data was then assumed to correspond to the 2004 base TRANSEARCH® data, and would serve as a basis by which to compare 2010, 2015 data, etc. in order to develop rates of change using FAF.

The volume of commodities moving by truck traffic in the Buffalo-Niagara region will increase in the future, despite the region's flat population growth. As discussed earlier, truck volumes will be driven by employment, employee productivity, and international trade, as well as increases in personal consumption. Truck traffic will also increase due to the national growth in international trade. Imports Commerce with Canada will pass through the region resulting in more through travel, particularly between New York/New Jersey and Canada. Forecasted truck traffic is expected to double between 2004 and 2035 (**Figure 3- 4**). The largest percentage gain is in international traffic passing through the region followed by outbound traffic.

Figure 3- 4: Forecasted Truck Traffic for the Buffalo-Niagara Region

Direction	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Local	10,952,277	11,712,849	13,119,037	14,785,709	16,638,782	18,809,375	20,687,721	88.9%
Inbound	62,445,710	69,710,999	77,984,316	87,501,698	98,708,765	110,622,073	125,337,621	100.7%
Outbound	44,543,364	48,536,694	54,548,386	61,644,448	70,354,646	80,228,358	91,195,316	104.7%
International Overhead	27,657,230	33,001,430	37,986,647	43,993,769	51,830,303	63,604,053	73,639,649	166.3%
Domestic Overhead	16,387,603	17,477,624	18,714,549	20,334,733	22,537,160	25,387,389	28,721,129	75.3%
Total	161,986,183	180,439,597	202,352,934	228,260,357	260,069,657	298,651,248	339,581,437	110.6%

Source: TRANSEARCH®, FAF, WSA Analysis

3.3.2 Local Truck Traffic

Local traffic consists of moves within and between Niagara and Erie Counties. Overall, local truck traffic is forecasted to show an increase of approximately 89 percent between 2004 and 2035 as shown in **Figure 3- 5**. *Secondary Traffic*[1] represents the greatest increase in local freight traffic within the region, with a projected increase of 4.0 million tons from 2004 to 2035. *Clay*, *Concrete*, *Glass or Stone* and *Nonmetallic Minerals* represent increases of 2.8 million and 2.7 million tons, respectively. *Primary Metal Products* is expected to have the highest rate of growth.

Figure 3- 5: Forecasted Local Truck Traffic for the Buffalo-Niagara Region (tonnage)

Commodity	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Secondary Traffic	3,627,297	4,176,903	4,703,730	5,303,292	5,986,840	6,767,583	7,661,068	111.2%
Clay, Concrete, Glass or Stone	2,211,853	2,672,907	3,167,096	3,707,929	4,232,720	4,855,340	5,020,402	127.0%
Nonmetallic Minerals	4,348,657	4,200,415	4,547,664	5,014,177	5,566,588	6,223,247	6,994,782	60.8%
Primary Metal Products	52,870	64,233	75,630	89,131	105,134	124,114	146,634	177.3%
Other	711,599	598,391	624,917	671,181	747,500	839,092	864,835	21.5%
Total	10,952,277	11,712,849	13,119,037	14,785,709	16,638,782	18,809,375	20,687,721	88.9%

Source: TRANSEARCH®, FAF, WSA Analysis

3.3.3 Inbound Truck Traffic

Truck volume coming into the Buffalo-Niagara region will double between the base year and 2035. As can be seen from **Figure 3- 6** below, the largest source of increase consists of inbound interstate shipments, accounting for 37 million of the 62 million ton increase in inbound freight between 2004 and 2030.

[1] Secondary traffic consists of those freight movements that are carried from warehouses and distribution centers to final consumption points, such as retail outlets.

Figure 3- 6: Forecasted Inbound Truck Traffic for the Buffalo-Niagara Region (tonnage)

Direction	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Interstate	35,792,267	38,076,184	40,465,785	43,740,341	47,995,130	53,156,537	60,138,589	68.0%
International	449,648	495,771	552,698	621,427	723,746	941,218	1,114,448	147.8%
Intrastate	26,203,795	31,139,043	36,965,833	43,139,930	49,989,889	56,524,318	64,084,585	144.6%
Total	62,445,710	69,710,999	77,984,316	87,501,698	98,708,765	110,622,073	125,337,621	100.7%

Source: TRANSEARCH®, FAF, WSA Analysis

As shown in **Figure 3- 7**, *Secondary Traffic* accounts for the largest source of inbound traffic growth, representing a 33 million ton increase between 2004 and 2035. This reflects expected increases in consumption due to a growing economy and greater retail and wholesale employment as mentioned above. In addition, retail and wholesale productivity has improved significantly in previous years. According to data from the Bureau of Labor Statistics, retail and wholesale productivity has increased by an average annual rate of over 3 percent over the past 12 years. If this trend were to continue into the future, overall retail and wholesale distribution and resulting *Secondary Traffic* volumes would increase at a rate significantly higher than employment in these sectors. *Food and Kindred Products*, *Clay*, *Concrete*, *Glass or Stone* also account for large inbound volume increases, showing about 8 million and 7 million ton increases, respectively, between 2004 and 2035.

Figure 3- 7: Forecasted Inbound Truck Traffic to the Buffalo-Niagara Region by Commodity
(tonnage)

Commodity	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Secondary Traffic	15,250,427	18,876,444	22,621,621	27,190,565	32,780,882	39,641,707	48,088,338	215.3%
Food or Kindred Products	12,898,519	13,783,873	14,713,623	15,886,514	17,330,051	19,027,548	21,256,365	64.8%
Clay, Concrete, Glass or Stone	6,670,263	7,531,383	8,565,985	9,971,814	11,476,332	12,074,901	13,234,153	98.4%
Primary Metal Products	5,067,314	6,067,982	6,430,490	6,734,089	7,104,044	7,514,974	8,362,101	65.0%
Petroleum Or Coal Products	2,961,744	3,344,354	3,373,665	3,466,847	3,610,583	3,860,325	4,085,496	37.9%
Transportation Equipment	1,682,402	1,760,498	1,965,497	2,210,475	2,620,375	3,102,865	3,658,267	117.4%
Electrical Equipment	414,151	553,333	732,422	982,445	1,348,157	1,880,956	2,432,150	487.3%
Fabricated Metal Products	1,236,158	1,577,301	1,750,477	1,879,659	2,003,533	2,109,164	2,286,859	85.0%
Machinery	608,969	723,317	851,365	1,012,658	1,222,350	1,500,855	1,816,293	198.3%
Other	15,655,762	15,492,512	16,979,172	18,166,631	19,212,457	19,908,778	20,117,598	28.5%
Total	62,445,710	69,710,999	77,984,316	87,501,698	98,708,765	110,622,073	125,337,621	100.7%

Source: TRANSEARCH®, FAF, WSA Analysis

3.3.4 Outbound Truck Traffic

As shown in **Figure 3- 8** below, the primary destinations of the Buffalo-Niagara region's outbound truck freight are within the state of New York. Although traffic originating outside the state of New York is expected to grow faster, more than two-thirds of the truck traffic will be intrastate in 2035.

Figure 3- 8: Forecasted Outbound Truck Traffic from the Buffalo-Niagara Region (tons)

Commodity	2004	2010	2015	2020	2025	2030	2035	% Change 2004 - 2035
Interstate	13,347,002	13,848,274	15,330,080	17,112,184	19,460,682	21,939,404	24,670,943	107.0%
Intrastate	30,391,950	33,819,730	38,217,078	43,373,617	49,547,099	56,711,606	64,688,153	39.6%
International	804,413	868,690	1,001,228	1,158,648	1,346,865	1,577,349	1,836,220	64.5%
Total	44,543,364	48,536,694	54,548,386	61,644,448	70,354,646	80,228,358	91,195,316	121.5%

Source: TRANSEARCH®, FAF, WSA Analysis

As shown in **Figure 3- 9**, *Secondary Traffic* represents the commodity with the highest increase in outbound total tonnage from the Buffalo-Niagara region, with an increase in approximately 28 million tons between 2004 and 2035. *Clay, Concrete, Glass or Stone* and *Food and Kindred Products* represent the second and third highest increases with 6.8 million and 3.4 million tons, respectively.

Figure 3- 9: Forecasted Outbound Truck Traffic from Buffalo-Niagara Region by Commodity
(tonnage)

Commodity	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Secondary Traffic	21,113,561	24,762,204	28,321,827	32,439,131	37,210,599	42,751,215	49,198,348	133.0%
Clay, Concrete, Glass or Stone	4,340,149	5,144,445	5,976,991	6,967,527	8,130,437	9,554,070	11,174,086	157.5%
Food or Kindred Products	5,083,447	5,592,519	6,192,719	6,869,306	7,642,070	8,520,693	9,467,383	86.2%
Primary Metal Products	1,651,449	1,695,090	1,852,000	2,054,071	2,329,143	2,656,604	2,996,437	81.4%
Fabricated Metal Products	1,330,540	1,479,287	1,620,403	1,781,900	1,968,204	2,183,336	2,432,048	82.8%
Electrical Equipment	188,387	312,379	439,086	620,736	884,854	1,262,448	1,737,383	822.2%
Transportation Equipment	914,521	1,160,317	1,220,589	1,276,107	1,359,994	1,429,994	1,542,427	68.7%
Lumber or Wood Products	642,004	740,676	825,171	922,988	1,031,137	1,152,893	1,278,171	99.1%
Misc. Manufacturing Products	273,614	350,466	438,572	562,605	738,231	977,149	1,212,742	343.2%
Machinery	365,091	585,227	655,094	731,386	819,319	906,653	1,030,602	182.3%
Other	8,640,601	6,714,085	7,005,934	7,418,691	8,240,659	8,833,303	9,125,689	5.6%
Total	44,543,364	48,536,694	54,548,386	61,644,448	70,354,646	80,228,358	91,195,316	104.7%

Source: TRANSEARCH®, FAF, WSA Analysis

3.3.5 Overhead Truck Traffic

Overhead shipments move through the region, with neither an origin nor destination in the two counties. In 2004, overhead volume moving by truck was 44 million tons, nearly two-thirds of which was international traffic. By 2035, overhead traffic is expected to more than double with most of the growth attributable to the international sector.

Figure 3- 10: Truck Traffic over the Buffalo-Niagara Region (tonnage)

Traffic Type	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Domestic Overhead	16,387,603	17,477,624	18,714,549	20,334,733	22,537,160	25,387,389	28,721,129	75.3%
International Overhead	27,657,230	33,001,430	37,986,647	43,993,769	51,830,303	63,604,053	73,369,649	165.3%
Total	44,044,832	50,479,055	56,701,195	64,328,501	74,367,463	88,991,442	102,360,778	132.4%

Source: TRANSEARCH®, FAF, WSA Analysis

Food or Kindred Products were the most significant commodity to move through the region and is expected to remain so in 2035. The most significant absolute growth, however, is expected to occur in *Secondary Traffic* and *Electrical Equipment*.

Figure 3- 11: Primary Commodities of Domestic Overhead Truck Traffic over Buffalo-Niagara Region (tonnage)

Commodity	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Food or Kindred Products	2,883,338	3,127,710	3,346,068	3,607,902	3,922,933	4,321,615	4,839,164	67.8%
Secondary Traffic	1,131,539	1,411,012	1,700,980	2,056,060	2,492,102	3,029,211	3,696,198	226.7%
Clay, Concrete, Glass or Stone	1,907,551	2,367,859	2,556,530	2,698,408	2,780,980	2,819,223	2,924,802	53.3%
Electrical Equipment	355,682	488,355	658,876	913,491	1,311,900	1,926,811	2,443,151	586.9%
Fabricated Metal Products	1,105,228	1,236,107	1,343,696	1,476,688	1,655,212	1,869,245	2,177,535	97.0%
Primary Metal Products	1,234,855	1,251,846	1,331,960	1,435,284	1,598,410	1,829,473	2,054,054	66.3%
Transportation Equipment	864,637	886,105	921,335	988,671	1,130,687	1,299,196	1,543,098	78.5%
Machinery	414,403	496,351	563,544	655,234	783,450	943,160	1,152,071	178.0%
Rubber or Miscellaneous Plastics	455,289	528,157	585,711	650,058	723,702	810,693	889,384	95.3%
Miscellaneous Manufacturing Products	157,664	210,946	257,460	318,923	402,358	517,095	668,236	323.8%
Other	5,877,417	5,473,177	5,448,388	5,534,013	5,735,427	6,021,668	6,333,437	7.8%
Total	16,387,603	17,477,624	18,714,549	20,334,733	22,537,160	25,387,389	28,721,129	75.3%

Source: TRANSEARCH®, FAF, WSA Analysis

Commodities moving by truck from the Midwest to the East Coast and New England represented more than half the domestic highway traffic passing through the region and will continue to do so in 2035. The back-haul movements between these regions represent the second highest volumes.

Figure 3- 12: Regional Markets of Domestic Truck Traffic over the Buffalo-Niagara Region
(tonnage)

Origin Market	Destination Market	2004	2010	2015	2020	2025	2030	2035
Midwest	East Coast	7,635,417	7,998,958	8,446,123	9,018,936	9,763,184	10,617,189	12,001,635
Midwest	East New England	3,137,640	3,342,464	3,603,964	3,956,945	4,464,897	5,134,781	5,882,303
East Coast	Midwest	1,382,156	1,636,094	1,825,735	2,057,563	2,342,371	2,705,758	3,008,795
East New England	Midwest	1,851,389	1,891,625	1,937,849	2,027,387	2,195,469	2,469,618	2,682,570
East Coast	East Coast	298,194	343,838	390,915	448,234	521,384	615,326	688,903
South	East New England	365,355	377,583	399,654	431,492	477,392	539,909	599,124
Northwest	East Coast	283,210	344,640	373,835	405,458	432,248	471,193	520,849
Northwest	East New England	234,585	289,224	323,710	364,335	409,911	466,935	514,853
South	East Coast	250,834	260,037	288,687	327,090	378,465	446,695	506,010
Southwest	East Coast	261,127	230,643	265,088	307,947	368,954	456,910	564,473
East New England	Southwest	180,958	192,003	210,517	238,064	281,974	348,309	421,620
East Coast	Southwest	97,821	117,021	135,650	162,219	198,910	254,150	308,491
East New England	South	102,801	105,774	123,172	143,008	175,285	221,881	263,112
Southwest	East New England	65,592	77,976	91,034	107,278	130,720	161,508	195,114
East Coast	South	55,430	68,375	77,232	89,015	105,209	127,326	150,969
East Coast	East New England	67,537	73,723	80,681	89,638	101,456	116,783	133,072
East New England	Northwest	55,582	57,131	62,125	71,420	87,559	114,099	144,485
East Coast	Northwest	50,110	57,667	64,853	73,711	84,970	99,743	112,482
East New England	East Coast	11,864	12,849	13,725	14,991	16,803	19,275	22,269
	Grand Total	16,387,603	17,477,624	18,714,549	20,334,733	22,537,160	25,387,389	28,721,129

Source: TRANSEARCH®, FAF, WSA Analysis

In terms of overhead traffic moving from the U.S. to Canada, *Transportation Equipment* and *Pulp, Paper, or Allied Products*, *Chemicals*, and *Machinery* are the most significant commodities (**Figure 3- 13**). These four commodities will represent more than half the truck traffic moving through the region into Canada. *Transportation Equipment* and *Machinery* are also two of the fastest growing commodities.

Figure 3- 13: Commodities of Overhead Truck Traffic to Canada through the Buffalo-Niagara Region
(tonnage)

Commodity	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Transportation Equipment	3,365,592	4,012,146	4,641,342	5,375,655	6,222,703	7,206,690	8,296,154	146%
Pulp, Paper or Allied Products	3,247,222	3,738,634	4,193,652	4,682,729	5,214,967	5,805,127	6,365,884	96%
Chemicals or Allied Products	1,635,120	2,252,298	2,857,259	3,632,916	4,617,568	5,866,002	6,660,242	307%
Machinery	1,508,947	1,920,734	2,348,990	2,884,640	3,545,739	4,370,587	5,178,610	243%
Clay, Concrete, Glass or Stone	1,215,852	1,450,210	1,671,626	1,924,097	2,205,189	2,522,806	2,790,749	130%
Electrical Equipment	439,269	658,756	967,149	1,406,973	2,051,631	3,002,936	3,608,772	722%
Fabricated Metal Products	713,989	864,398	1,064,532	1,312,936	1,608,087	1,961,612	2,252,083	215%
Misc Manufacturing Products	377,274	613,173	860,635	1,185,762	1,626,236	2,237,765	2,354,300	524%
Rubber or Misc Plastics	425,047	564,605	725,528	927,000	1,182,726	1,508,487	1,713,092	303%
Instruments, Photo Equip, Optical Equip	251,391	328,719	415,194	523,494	659,763	831,517	1,034,040	311%
Other	5,330,138	5,939,561	6,249,325	6,615,355	7,020,932	7,483,035	7,938,377	49%
Grand Total	18,509,842	22,343,234	25,995,230	30,471,556	35,955,539	42,796,564	48,192,303	160%

Source: TRANSEARCH®, FAF, WSA Analysis

3.3.6 Marine Cargo

Until the late 1950s, the Port of Buffalo was an important logistics node on the Great Lakes as a transload port for wheat produced in the Midwest, shipped across the Great Lakes to Buffalo where it was transferred to rail cars for export and East Coast markets. In addition to serving as a transshipment point for grain, the port also received grain that was processed into flour for consumption in the east. The Port of Buffalo began to experience traffic declines during the mid-twentieth century following construction of a lock and dam on the Mississippi River and the dredging of a deepwater channel to New Orleans. The construction of grain processing plants closer to the farms allowed an all-water move to the Gulf of Mexico for grain exports. An additional blow to the deterioration of Buffalo cargo volumes resulted from the opening of the St. Lawrence Seaway allowing ocean-going vessels to exit or enter the Great Lakes, bypassing Buffalo.

The U.S. Army Corps of Engineers publishes the *Waterborne Commerce of the United State*s, a compilation of maritime cargo describing tonnages, vessel counts, and vessel drafts for both international and domestic moves to and from U.S. ports and harbors. The domestic traffic statistics are based upon reports that are filed for all vessels calling on U.S. ports. The reports are generally submitted on the basis of completed vessel movements. Foreign data is primarily derived from data purchased

from the Port Import Export Reporting Service (PIERS), a proprietary data source supplemented by data furnished to the Corps of Engineers by the U.S. Bureau of the Census and Border Protection and the U.S. Customs. The Army Corps of Engineers data includes traffic for both the Port of Buffalo and the Niagara River, combined.

Marine cargo represents a small fraction of freight flowing into and out of the Buffalo-Niagara region, totaling about 1.6 million tons in 2004. By comparison, trucks moved 118 million tons of freight into, out of, and within the Buffalo-Niagara region in 2004. The preponderance of waterborne traffic is inbound as shown in **Figure 3- 14**, which represents 1,511,000 tons in 2004, or about 95 percent of the total maritime tonnage moving through the region's port facilities. *Coal* and *Coke* accounts for slightly more than one-third of the total traffic at about 579,000 tons; *Limestone*, *Sand and Gravel*, *Cement and Concrete*, collectively account for about 530,000 additional tons; and *Petroleum Products* and *Wheat* account for the bulk of the remaining traffic.

Figure 3- 14: 2004 Waterborne Tonnage of the Buffalo-Niagara Region (thousands of tons)

Commodity	US			Canada			Other Int'l	
	Inbound	Outbound	Total	Inbound	Outbound	Total	Outbound	Total
Coal & Lignite	243		243					243
Coal Coke	260	9	269		59	59	8	336
Total Coal	503	9	512			59	8	579
Residual Fuel Oil		4	4	8		8		11
Asphalt, Tar & Pitch	148		148					148
Petroleum Coke	46		46					46
Total Petroleum Products	194	4	198	8		8		205
Lumber				3		3		3
Limestone	247		247					247
Sand & Gravel	118		118					118
Non-metallic minerals, nec				115		115		115
Cement & Concrete	19		19	145		145		165
Wheat	107		107	52		52		159
Machinery					1	1		1
Total	1,189	12	1,202	322	60	382	8	1,592

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States

3.3.7 Marine Cargo Traffic Projections

It must be noted that marine cargo volume projections for the 2010 to 2035 period should be interpreted with the understanding that cargoes moving through specific ports are not necessarily consistent. Shippers of discretionary bulk and break bulk cargoes readily switch ports. A port may be selected for a single vessel shipment or for a series of shipments. Much depends upon where the inland location to which the product is destined (or originated) and the landside transportation service and

rate being offered to the shipper at the time of shipment. The service and rate may be for a spot move or incorporated into a long-term contract.

Marine cargo volume projections for the 2010 to 2035 period have been developed using several sources of economic information. Cargo volumes for fuel commodities, such as *Coal*, *Coke*, *Fuel Oils*, and *Petroleum Coke* were forecasted relying on the U.S. Energy Information Administration forecasted consumption rates for the Mid-Atlantic region as found in the 2007 U.S. Annual Energy Outlook. Commodities that relate to the construction, such as *Lumber*, *Limestone*, *Cement and Concrete*, *Asphalt*, *Tar* and *Pitch* were forecasted using projected changes in construction employment in the Buffalo-Niagara region, adjusted by forecasted changes in productivity. *Sand and Gravel* and *Wheat* volumes are forecasted using the U.S. FHWA's Freight Analysis Framework. The results of the forecasts are shown in **Figure 3- 15**. Total waterborne traffic is expected to nearly double by 2035. Increases in coal waterborne freight are particularly large, most of all the increases between 2004 and 2010.

Figure 3- 15: Forecasted Waterborne Tonnage of the Buffalo-Niagara Region (thousands of tons)

Commodity	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Coal & Lignite	243	401	438	467	521	613	721	196.7%
Coal Coke	336	312	306	295	290	285	279	-17.0%
Residual Fuel Oil	11	11	12	12	12	12	13	18.2%
Asphalt, Tar & Pitch	148	171	196	224	257	294	294	98.6%
Petroleum Coke	46	39	33	28	25	23	22	-52.2%
Lumber	3	3	4	5	5	6	6	100.0%
Limestone	247	285	327	374	429	491	491	98.8%
Sand & Gravel	118	126	174	212	250	280	292	147.5%
Non-metallic minerals, nec	115	133	152	174	200	228	228	98.3%
Cement & Concrete	165	191	218	250	286	328	328	98.8%
Wheat	159	148	166	187	213	242	275	73.0%
Machinery	1	1	1	1	1	1	1	0.0%
Total	1,592	1,822	2,026	2,229	2,488	2,803	2,950	85.3%

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States

The largest increase is in the movement of coal, measured in terms of both absolute increase in tonnage or rate of growth. Sand and gravel shipments are also expected to increase measurably.

3.6.8 Rail Traffic

Figure 3- 16 is a summary of volumes for domestic rail traffic into, out of, and through the Buffalo-Niagara region.

Figure 3- 16: Domestic 2004 Rail Traffic in the Buffalo-Niagara Region

Direction	Carload Tons	Intermodal Tons	Total Tons	Carload Units	Intermodal Units
Local	608,258	3,920	612,178	8,224	120
Inbound	7,930,479	468,819	8,399,297	102,257	30,276
Outbound	4,556,527	381,656	4,938,183	74,580	24,400
Overhead	22,436,546	10,834,387	33,270,933	319,546	825,040
Total	35,531,811	11,688,782	47,220,592	504,607	879,836

Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

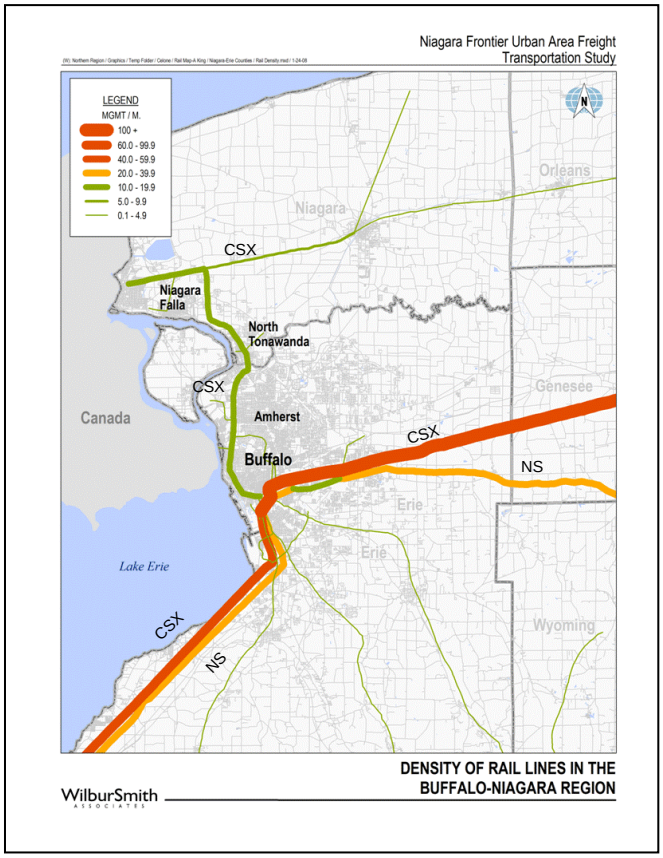
The region is a primary conduit for rail traffic originating and terminating outside the area with overhead traffic constituting 71 percent of the region's total domestic rail tonnage. Buffalo is located on the main line of CSX connecting metropolitan New York, including the Port of New Jersey, with the Midwest and Western U.S. markets. The importance of the route to the port is evident as nearly one-third of the overhead tonnage is intermodal. More striking is that the number of intermodal units moving through the region as overhead traffic is more than 2.5 times the number of carloads.

Examining the inbound and outbound rail traffic, the region terminates more tonnage that moves as carload traffic than in originates. Nearly twice as many carload tons and units are received by the region's shippers rather than are originated. Very little intermodal traffic originates or terminates in the region. The opening of the new Seneca Yard intermodal terminal will make the region a much more prominent origin/destination point of intermodal container traffic.

3.3.9 Rail Traffic Density

Figure 3- 17 shows the rail traffic densities for the principal rail lines in the Buffalo-Niagara region. As outlines in the preceding section and shown on the map, the rail line with by far the most traffic in the region is the CSX Chicago Line, otherwise known as the Water Level Route.

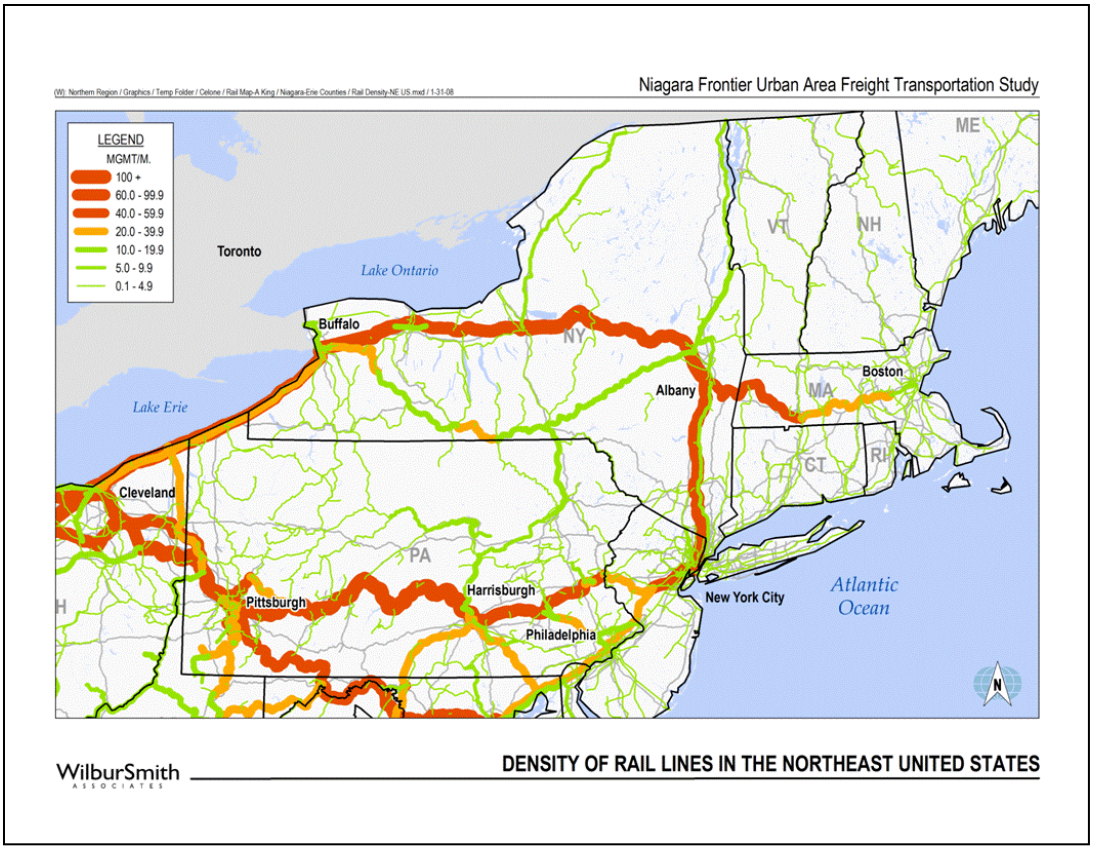
Figure 3- 17: Rail Line Densities in the Buffalo-Niagara Region



The water level line connects Buffalo to the metropolitan New York/New Jersey area via Albany to the east and to Cleveland, OH and Chicago, IL to the west. Portions of this line experience over 100 million gross ton-miles of traffic.

As can be seen in **Figure 3- 18**, the Chicago line is one of two primary rail arteries that connect New England and much of New York State with Chicago and markets to the west. The other primary corridor is the NS line that runs from the New York City metropolitan area through Bethlehem and Pittsburg, PA and into Cleveland, OH.

Figure 3- 18: Northeast Rail Densities



The two rail lines with the next highest densities are the NS Buffalo Conneaut Line, which links Buffalo to Erie, PA and on to Cleveland, OH, and the NS Southern Tier Line, which links the Buffalo-Niagara region to Binghamton, NY and then on to the New York City metropolitan area. Both of these lines carry between 20 and 40 million gross ton-miles per mile per year.

The CSX rail line between Buffalo, Tonawanda, and Niagara carries between 10 and 20 million gross ton-miles per mile per year. The various branch lines in the area carry less than five million gross ton-miles per mile.

3.3.10 Rail Traffic Forecasts

As can be seen in **Figure 3- 19**, the largest increases in traffic for the Buffalo-Niagara region are for intermodal traffic, accounting for nearly 130 percent increase between 2004 and 2030. However, most of that increase, or 15 million out of 16 million in increase is for overhead intermodal moves. In terms of traffic into and out of the Buffalo-Niagara region, the carload traffic is expected to account for a much higher change in volume, simply because the volume of carload tonnage into and out of the Buffalo-Niagara region is much higher than intermodal traffic to begin with. Inbound carload tonnage is expected to increase by slightly below 5 million tons, while outbound carload traffic is expected to increase by over 2.7 million tons.

Figure 3- 19: Summary of Forecasted Rail Volumes

	2004	2010	2015	2020	2025	2030	2035	% Change 2004 - 2035
Carload								
Inbound Interstate	7,858,995	8,657,143	9,432,200	10,296,309	11,342,537	12,550,622	13,814,938	75.8%
Outbound Interstate	4,131,920	4,246,956	5,148,538	5,579,404	6,154,180	6,754,584	7,406,010	79.2%
Inbound Intrastate	71,484	78,159	84,881	92,766	101,938	112,551	124,783	74.6%
Outbound Intrastate	424,608	434,055	447,549	467,076	493,778	529,141	575,080	35.4%
Local	608,258	658,469	707,405	764,007	829,674	906,103	995,354	63.6%
Overhead	22,436,546	22,283,196	24,143,709	26,637,228	29,381,451	32,866,283	36,804,626	64.0%
Total Carload	35,531,811	36,357,978	39,964,282	43,836,790	48,303,558	53,719,283	59,720,790	68.1%
Intermodal								
Inbound Intrastate	5,000	6,559	8,224	10,311	12,928	16,210	20,324	306.5%
Local	3,920	4,399	4,842	5,330	5,868	6,459	7,110	81.4%
Interstate Inbound	463,819	558,957	654,786	768,825	904,718	1,066,904	1,260,802	171.8%
Interstate Outbound	381,656	432,027	479,402	532,347	591,577	657,912	732,291	91.9%
Overhead IMX	10,834,387	13,292,107	15,761,047	18,688,580	22,159,887	26,275,972	31,156,597	187.6%
Total Intermodal	11,688,782	14,294,049	16,908,301	20,005,393	23,674,978	28,023,457	33,177,124	183.8%
Total	47,220,592	50,652,027	56,872,583	63,842,183	71,978,536	81,742,740	92,897,914	96.7%

Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

3.3.11 Air Cargo Traffic Flows

The TRANSEARCH® database was also used as the source of air cargo traffic flow information and air cargo projections. **Figure 3- 20** describes the major destinations for air cargo originating from the Buffalo-Niagara region in 2004.

Figure 3- 20: Erie and Niagara Airports Outbound Air Cargo Destinations

Airport Location	Tons	Percent	Principal Commodity
Ontario, CN	10,886	19.5%	Paper Products
Philadelphia, PA	4,911	8.8%	Mail/Contract
Atlanta, GA	4,683	8.4%	Mail/Contract
Onondaga County, NY	3,822	6.8%	Farm Products
Boston, MA	2,358	4.2%	Farm Products
Quebec, CN	2,060	3.7%	Metal products
Dallas, TX	1,982	3.5%	Mail/Contract
Fort Wayne, IN	1,748	3.1%	Electrical Equipment
Phoenix, AZ	1,605	2.9%	Mail/Contract
Allegheny County, PA	1,470	2.6%	Mail/Contract
Other	20,365	36.4%	
Total	55,890	100.0%	

Source: TRANSEARCH®

In 2004, 56,000 tons of cargo originated at the two Buffalo-Niagara region airports. About two-thirds of the traffic terminated at ten airports. Nearly 20 percent was destined for airports in Ontario. **Figure 3-21** describes the origin airports for air cargo terminating in the Buffalo-Niagara region.

Figure 3- 21: Erie and Niagara Airports Inbound Air Cargo Originations

Airport Location	Tons	Percent	Principal Commodity
Louisville, KY	6,608	15.5%	Mail/Contract
Philadelphia, PA	4,358	10.2%	Mail/Contract
Indianapolis, IN	3,957	9.3%	Mail/Contract
Onondaga County, NY	3,321	7.8%	Electrical Equipment
Memphis, TN	2,900	6.8%	Mail/Contract
Fort Wayne, IN	2,753	6.4%	Misc Mixed
Denver, CO	1,772	4.1%	Mail/Contract
Atlanta, GA	1,724	4.0%	Misc Mixed
Boston, MA	1,674	3.9%	Machinery
San Francisco, CA	1,181	2.8%	Mail/Contract
Other	12,458	29.2%	
Total	42,706	100.0%	

Source: TRANSEARCH®

Louisville and Philadelphia are the leading locations where the region's air cargo is originated accounting for approximately 25 percent of the landed air cargo. **Figure 3- 22** shows the commodity mix of the region's outbound air cargo.

Figure 3- 22: Erie and Niagara Airports Outbound Air Cargo Commodity Mix

Commodity	Tons	Percent
Mail or Contract Traffic	13,654	24.4%
Farm Products	7,625	13.6%
Pulp, Paper or Allied Products	6,872	12.3%
Electrical Equipment	5,539	9.9%
Transportation Equipment	4,661	8.3%
Fabricated Metal Products	2,587	4.6%
Machinery	2,533	4.5%
Chemicals or Allied Products	2,005	3.6%
Misc. Mixed Shipments	1,989	3.6%
Printed Matter	1,889	3.4%
Other	6,536	11.7%
Total	55,890	100.0%

Source: TRANSEARCH®

Mail represents approximately 25 percent of the outbound air cargo. *Mail* plus *Farm Products* and *Pulp, Paper or Allied Products* account for half of the outbound traffic.

Examining inbound air cargo, almost half the traffic is *Mail* traffic. The leading three commodities represent two-thirds of the inbound air cargo traffic.

Figure 3- 23: Erie and Niagara Airports Inbound Air Cargo Commodity Mix

Commodity	Tons	Percent
Mail or Contract Traffic	19,808	46.4%
Misc. Mixed Shipments	4,846	11.3%
Electrical Equipment	4,562	10.7%
Machinery	3,269	7.7%
Transportation Equipment	2,285	5.4%
Chemicals or Allied Products	1,891	4.4%
Apparel or Related Products	1,518	3.6%
Printed Matter	1,283	3.0%
Instruments, Photo and Optical	777	1.8%
Rubber or Misc. Plastics	646	1.5%
Other	1,821	4.3%
Total	42,706	100.0%

Source: TRANSEARCH®

Figure 3- 24 and **Figure 3- 25** describe the projections for outbound and inbound air cargo according to the Global Insight air cargo forecast model.

Figure 3- 24: Erie and Niagara Airports Outbound Cargo Forecast (tons)

Commodity	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Mail or Contract Traffic	13,654	13,493	13,332	13,172	13,011	12,850	12,689	-7.1%
Farm Products	7,625	7,701	7,777	7,854	7,930	8,006	8,082	6.0%
Pulp, Paper or Allied Products	6,872	8,490	10,108	11,727	13,345	14,963	16,581	141.3%
Electrical Equipment	5,539	8,815	12,092	15,368	18,645	21,921	25,197	354.9%
Transportation Equipment	4,661	5,135	5,609	6,082	6,556	7,030	7,504	61.0%
Fabricated Metal Products	2,587	2,881	3,174	3,468	3,761	4,055	4,349	68.1%
Machinery	2,533	4,852	7,171	9,491	11,810	14,129	16,448	549.4%
Chemicals or Allied Products	2,005	2,081	2,157	2,232	2,308	2,384	2,460	22.7%
Misc. Mixed Shipments	1,989	3,031	4,073	5,114	6,156	7,198	8,240	314.3%
Printed Matter	1,889	2,121	2,353	2,585	2,817	3,049	3,281	73.7%
Other	6,536	7,523	8,510	9,498	10,485	11,472	12,459	90.6%
Total	55,890	66,123	76,357	86,590	96,824	107,057	117,290	109.9%

Source: TRANSEARCH®

Outbound air cargo is expected to double by 2035. Most of the growth can be attributed to *Machinery*, *Electrical Equipment* and *Miscellaneous Mixed Shipments*.

Figure 3- 25: Erie and Niagara Airports Inbound Cargo Forecast (tons)

Commodity	2004	2010	2015	2020	2025	2030	2035	% Change 2004-2035
Mail or Contract Traffic	19,808	19,321	18,834	18,346	17,859	17,372	16,885	-14.8%
Misc. Mixed Shipments	4,846	4,922	7,177	9,431	11,685	16,118	18,372	279.1%
Electrical Equipment	4,562	6,180	8,087	9,994	11,901	14,097	16,004	250.8%
Machinery	3,269	6,545	10,355	14,164	17,973	22,315	26,124	699.1%
Transportation Equipment	2,285	2,759	3,124	3,489	3,854	4,111	4,476	95.9%
Chemicals or Allied Products	1,891	2,185	2,228	2,272	2,316	2,110	2,154	13.9%
Apparel or Related Products	1,518	3,837	3,630	3,422	3,214	480	272	-82.1%
Printed Matter	1,283	1,359	1,376	1,393	1,410	1,368	1,385	8.0%
Instruments, Photo and Optical	777	1,819	2,040	2,262	2,483	1,884	2,105	171.0%
Rubber or Misc. Plastics	646	878	1,176	1,475	1,773	2,138	2,436	277.2%
Other	1,821	2,808	2,881	2,954	3,027	2,186	2,259	24.1%
Total	42,706	52,613	60,908	69,202	77,497	84,179	92,474	116.5%

Source: TRANSEARCH®

According to Global Insight's TRANSEARCH® database, inbound air cargo traffic is expected to grow somewhat faster than outbound. Growth is anticipated to stem from the same commodities as the outbound traffic as well as plastics products.

3.4 Cross-Border Flows and Traffic

This section provides summaries of cross-border commodity flows by truck and rail modes. The U.S. and Canada are separated by the Niagara River, which is crossed by four international highway bridges and two railroad bridges. In Buffalo, the Peace Bridge provides access to and from Fort Erie, Ontario. This structure is under the control of the Buffalo and Fort Erie Public Bridge Authority and connects with Queen Elizabeth Way (QEW). Farther north are three additional bridges all under the control of the Niagara Falls Bridge Commission: the Rainbow Bridge (Highway 420), Whirlpool Bridge and Lewiston-Queenston Bridge (Highway 405). All of these bridges are connected to the U.S. Interstate system.

3.4.1 Truck

The *Goods Movement in Central Ontario: Trends and Issues* study found that trucks carry an estimated 80 percent of the value of all goods in Central Ontario. Total international trade amounts to $428 billion (2002$ CDN), most which is with the U.S. (84 percent). Trucks dominate the movement for eight of the top ten commodities exported (the two exceptions being motorized vehicles and pulp and paper), and all of the top ten commodities imported from the U.S. Goods transported by truck and exported or imported from the State of New York account for 20 percent of all the imports and exports to the U.S. Approximately 26 percent of all of the Canada-U.S. exchange travels through one of the three border crossings on the Niagara River.

Although the Rainbow Bridge has some truck traffic, the primary points of entry for trucks in the Niagara Peninsula are the Peace Bridge and the Lewiston-Queenston Bridge. The following sections describe the

magnitude of travel, and provide an overview of the value and key commodities imported and exported through the Niagara River crossings.

Traffic Volumes at each Highway Bridge in 2006

The latest data illustrated in **Figure 3- 26** shows that 14.4 million motor vehicles traveled over the four bridges annually and it also indicates that approximately 40,000 vehicles travel between the U.S. and Canada through the Buffalo-Niagara Gateway each day. Of all the vehicles, approximately 2.2 million trucks per year or 6,000 trucks per day cross the border. Trucks accounted for 19 percent of all traffic across the Peace Bridge, and 22 percent of Lewiston-Queenston traffic.

Figure 3- 26: Traffic Volumes at Four Highway Bridges in the Region in 2006

	Two-way Yearly Volume			Two-way AADT			Vehicle Type Percent		
Bridges	Auto	Truck	Total	Auto	Truck	Total	Auto	Truck	Total
Peace	5,561,083	1,301,643	6,862,726	15,194	3,556	18,751	81.0%	19.0%	100.0%
Queenston	3,171,139	905,379	4,076,518	8,664	2,474	11,138	76.8%	22.2%	100.0%
Rainbow	3,347,224	6,174	3,353,398	9,145	17	9,162	99.8%	0.2%	100.0%
Whirlpool	198,297	0	198,297	542	0	542	100.0%	0.0%	100.0%
Total	12,277,743	2,213,196	14,490,939	33,546	6,047	39,593	84.7%	15.3%	100.0%

Source: Buffalo and Fort Erie Public Bridge Authority, Niagara Falls Bridge Commission

Long Term Traffic Trends at Peace and Queenston Bridges

Both the Peace and Queenston bridges experienced traffic growth the 1990s, but traffic has declined since 2000.

Figure 3- 27: Long-Term Historical Trend of Traffic on the Peace Bridge

Year	Truck AADT	Passenger Vehicle AADT	All Vehicles AADT	AADT Growth from Prior Year	SADT
1990			15100	4.1%	18800
1992			22200	45.1%	27900
1994			20800	-3.3%	26600
1996			20700	-1.9%	26500
1998			20900	-0.9%	26500
2000			22500	2.7%	28400
2001	4055	17920	21975	-2.2%	27700
2002	3720	18380	22100	0.5%	27900
2003	3582	16233	19815	-10.3%	26423
2004	3540	15404	18944	-4.4%	24660
2005	3523	15342	18865	-0.4%	25323
2006	3556	15194	18751	-0.6%	24762

Source: Ontario Ministry of Transportation: Buffalo and Fort Erie Bridge Authority

Note: AADT – Average Annual Daily Traffic; defined as the average twenty-four hour, two-way traffic for the period January 1 to December 31.
Note: SADT – Summer Average Daily Traffic; defined as the average twenty-four hour, two-way traffic for the period July 1 to August 31 including weekends.

Figure 3- 28: Long-Term Historical Trend of Traffic at Lewiston-Queenston Bridge

Year	Truck AADT	Passenger Vehicle AADT	All Vehicles AADT	AADT Growth to Last Year	SADT
1990			14,100	10.2%	17,900
1992			15,500	0.0%	19,000
1994			15,800	1.9%	20,200
1996			17,700	4.7%	22,700
1998			19,400	22.0%	24,600
2000			13,700	-2.8%	17,300
2001	2,754	8,970	11,724	-14.4%	16,874
2002	2,908	8,779	11,686	-0.3%	15,384
2003	2,796	8,179	10,975	-6.1%	14,381
2004	2,653	8,097	10,750	-2.1%	13,160
2005	2,657	8,491	11,147	3.7%	14,156
2006	2,474	8,664	11,138	-0.1%	14,014

Source: Ontario Ministry of Transportation: Buffalo and Fort Erie Bridge Authority
Note: AADT – Average Annual Daily Traffic; defined as the average twenty-four hour, two-way traffic for the period January 1 to December 31.
Note: SADT – Summer Average Daily Traffic; defined as the average twenty-four hour, two-way traffic for the period July 1 to August 31 including weekends.

Cross Border Truck Commodity Flows in 2006

The distribution of cross border commodities carried by trucks is diversified as show in **Figure 3- 29**. For the Peace Bridge, the top five commodities being transported are grain meals, wood, transportation equipment, chemicals and food, which account for 67 percent of all goods. For the Lewiston-Queenston Bridge, the commodity distribution pattern is more even, with ranges of three to 14 percent among 12 commodities.

Figure 3- 29: Commodity Distribution for Each Bridge

	Peace Bridge		Lewiston-Queenston Bridge	
Type of Commodity	Tons/year	Percent	Tons/year	Percent
Agricultural Products	550,769	4%	758,588	9%
Food	1,239,220	9%	1,206,507	14%
Minerals	1,042,185	8%	721,485	8%
Petroleum & Products	473,319	4%	354,614	4%
Chemicals & Products	1,590,324	12%	1,045,113	12%
Wood & Products	2,033,834	15%	718,101	8%
Meals & Products	2,327,646	18%	701,872	8%
Machinery & Electrical	446,624	3%	273,163	3%
Manufactured Products	922,221	7%	913,402	10%
Transportation	1,666,589	13%	1,206,758	14%
Waste & Scrap	612,146	5%	586,238	7%
Shipping Containers Returning Empty	389,442	3%	275,701	3%
Sum	13,294,320	100%	8,761,543	100%

Source: 1999 CCMTA National Roadside Study (NRS). Tabulations provided by the Ministry of Transportation of Ontario

3.4.2 Railroad Traffic

Data was not available by sub-region. According to the U.S. Bureau of Transportation Statistics, Ontario was the largest source of Canadian rail exports, originating 24 percent of Canadian export volume and 56 percent of export value in 2006. Also, Ontario was the dominant province of import clearance in 2006, with 67 percent of import value. **Figure 3- 30** shows, in 2006, the U.S. imported 18.28 million tons or $35.26 billion of goods from Ontario by rail. IN 2006, $7.1 billion or 5.1 million tons of goods were imported from Canada to the U.S. by rail via the Port of Buffalo-Niagara Falls. Eighty-nine percent or $6.3 billion of total Canadian imports through Buffalo-Niagara Falls originated in Ontario, seven percent originated in Quebec, and four percent originated in Western Canada. Almost half (49 percent), or $3.5 billion of total U.S. imports were destined for California, and the remaining imports were destined for Michigan, New York, Pennsylvania, and mid-Atlantic East Coast destinations such as New Jersey, which accounted for another 42 percent altogether. In 2006, $1.8 billion of trade was exported from the U.S. to Canada. Of this, 81 percent is destined for Ontario. Ohio is the largest source of U.S. exports by value to Canada.

Figure 3- 30: Rail Trade in Value from the U.S. to Canada via Buffalo-Niagara Falls in 2006 ($000s)

To / From	Ontario	Quebec	Canada East	Prairies Canada	Alberta	British Columbia	Total
New York	$28,263	$3,985	$242	$1,846	$2,199	$164	$36,699
Pennsylvania	$321,141	$48,828	$2,935	$1,340	$2,588	$4,324	$381,156
Ohio	$571,913	$45,270	$15,647	$450	$1,844	$177	$635,300
Michigan	$1,106	$128	$0	$193	$395	$217	$2,039
New England	$12,845	$4,660	$0	$513	$3,045	$338	$21,401
Mid-Atlantic	$61,118	$4,963	$2,577	$3,698	$2,842	$156	$75,354
North East U.S.	$11,782	$9,015	$662	$8,320	$4,136	$2,068	$35,983
Alabama	$218,929	$14,202	$2,109	$125	$510	$48	$235,923
South East U.S.	$162,041	$53,749	$9,738	$6,559	$9,791	$3,699	$245,577
California	$8,932	$1,950	$202	$117	$416	$6,387	$18,004
Western/Midwest U.S.	$113,438	$21,484	$381	$21,982	$11,422	$4,419	$173,126
Total	$1,511,507	$208,235	$34,492	$45,143	$39,188	$21,997	$1,860,562

Source: Bureau of Transportation Statistics

Figure 3- 31: Rail Trade Value from Canada to U.S. via Port of Buffalo-Niagara Falls in 2006 ($000s)

To / From	New York	Pennsylvania	Ohio	Michigan	New England	Mid-Atlantic	North East U.S.	Alabama	South-eastern U.S.	California	Western /Midwestern	Total
Ontario	560,771	477,641	64,987	1,127,951	95,300	310,774	23,674	292	133,144	3,505,489	54,847	6,354,870
Quebec	121,393	159,426	60,655	268	2,592	24,788	5,513	0	85,728	291	7,297	467,951
Canada East	7,385	16,736	2,369	22	296	4,205	132	19	3,444	0	983	35,592
Prairies Canada	12,487	7,337	117	146	5,475	13,071	1,372	0	700	50	938	41,694
Alberta	30,560	33,149	203	237	28,090	31,447	347	0	1,331	0	8,876	134,241
British Columbia	47,138	22,628	309	319	7,060	9,673	123	0	1,726	32	3,632	92,638
Total	779,734	716,917	128,640	1,128,942	138,814	393,959	31,162	312	226,072	3,505,862	76,573	7,126,986

Source: Bureau of Transportation Statistics

4.0 Stakeholder Outreach

4.1 Summary of Issues

During the project, the study team spoke with numerous stakeholders to better understand the strengths, weaknesses, opportunities and threats of the region's freight system. The cross section of interview candidates included:

- 3 railroads
- 6 manufacturing & distribution companies
- 3 food processing companies
- 2 air cargo carriers
- Economic development agencies within region
- Each port authority within the area
- Each airport authority within the area
- U.S. Army Corps of Engineers
- Port Authority of New York/New Jersey
- Niagara Frontier Transportation Authority
- World Trade Center of Buffalo-Niagara

The study team and the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) hosted two freight forums that were attended by shippers, carriers, railroads, and other area economic development agencies. The team also reviewed previous plans and studies that were relevant to freight issues in the Buffalo-Niagara region. A summary of interviews and other studies reviewed as part of this effort can be found in Appendices to this document.

The data analysis, information from the stakeholder outreach efforts and from reviewing regional transportation plans combined to illustrate the nature of freight issues in the Buffalo-Niagara region. In general, highway-related issues appear to be less concern in the region in contrast to other areas of the country. While bottlenecks do persist, the roadway network in most cases has enough capacity to meet current and near-term demand. Trucking issues mentioned generally related to cross-border issues impacting the connectivity and access between the region and markets in Canada, although developments in the past several years have improved the flow of cross-border truck traffic.

Rail issues were a greater concern to some of the stakeholders interviewed with interviews suggesting that the region's rail system has excess capacity in some areas and inadequate capacity in others. This situation is common throughout the U.S. as rail networks evolve to meet the needs of changing markets and the changing role of rail freight transportation.

Although the area's freight rail network has wide coverage within the region, bottlenecks are a persistent problem. Chief among these is the "CP Draw" rail bridge, a capacity constraint along a major national rail corridor that is likely to become a greater concern in the future as rail traffic volumes increase. Rail shippers also raised the issue of high rail shipping rates and a lack of competition between rail carriers in the area. Projects that could improve access to competing railroads are promising potential recommendations for the area. These projects could expand rail options and potentially reduce rates for area shippers.

Feedback from stakeholders on marine issues primarily relate to either maintenance issues, or roles for the region's port facilities in order to spur economic growth and better connect Buffalo to domestic and international markets. The maintenance issues mostly related to dredging and maintaining channel depth within the Great Lakes/St. Lawrence (GLSL) system. The need for economic development is an issue that permeated the responses from the stakeholder outreach performed in this study. Analysis from Technical Memorandum #3 revealed that the region's population has declined by seven percent between 1980 and 2004.

Figure 4- 1 presents a summary of stakeholder-identified issues. As can be seen, most of the issues relate to rail or marine modes of transportation. The issues have been further categorized by type of issue. As the figure shows, most rail issues relate to the bottleneck elimination, connectivity and access issues, and proposed areas where rail infrastructure can be combined with economic development. Marine issues relate to either maintenance and freight mobility, or to proposed ideas where marine assets can help to better connect Buffalo to foreign/domestic markets and spur economic development.

A number of stakeholders felt that among the most promising areas to boost the Buffalo-Niagara region's trade was to promote trade with nearby areas of Canada. This theme was echoed by several economic development agencies, as well as the Port Authority of New York and New Jersey.

Figure 4- 1: Stakeholder Identified Freight Issues

Freight Issue	Truck	Rail	Water	Air
Freight Mobility		Delays at Selkirk Yard Lack of extra capacity in Buffalo Rail congestion CP Draw Inadequate intermodal facilities for large volumes Increase capacity of Portage Bridge	Black Rock Channel lock cannot handle largest ships The Port of Buffalo will need efficient conveyors to unload ships, more efficient port/rail transfer	New terminal at Hamilton Airport could handle additional cargo, passengers
Infrastructure Preservation & Maintenance		Improve antiquated rail system	Dredging of the Buffalo ship channel As Great Lakes water level declines, depth will be an issue	
Connectivity & Access	Whirlpool Bridge conversion to be used by trucks, dedicated access to Thruway (opportunity) Peace Bridge Need new bridge border crossing	Slow pre-clearance from Canada Ensure access to Whirlpool Bridge		
Economic Development: Cost Saving	High tolls	Lack of independent intermodal facilities Lack of rail competition (rail rates) Virtual container yards could help to make Buffalo a success	Short sea shipping to Halifax Will need to implement improvement to establish cross-Lakes ferry service	
Economic Development: New Business Attraction		Lack of distribution facilities Development of Lehigh Valley Yard and adjacent land Buffalo can be secondary distribution center for Toronto market, using IPDN Buffalo can serve as food distribution hub for both U.S. local and Canadian produce.	Improvement of AES Somerset pier (opportunity) Available marine terminal sites Buffalo port facilities have ample available capacity (opportunity)	

4.2 Assessment of Buffalo-Niagara Freight Needs – Freight Forum

The study team conducted a Stakeholder Forum on April 29, 2010. The purpose of the Stakeholder Forum was three fold:

- Review the study purpose and progress to date
- Review issues and potential projects that had been identified from previous data analysis and stakeholder outreach
- Obtain feedback and a sense of priorities from regional stakeholders regarding the issues and projects identified.

The Stakeholder Forum was attended by 24 individuals who provide a leadership role in the region's logistics and transportation functions from both public and private sector organizations. These individuals were queried about their views regarding the region's freight priorities, as well as whether the preliminary list of issues and opportunities for the region in fact represent the most relevant considerations for the region's freight needs. Some of the feedback gathered consisted of the following:

4.2.1 Aviation Topics

- Niagara Falls International Airport (NFIA) considers its potential cargo catchment area to be a 500-mile radius. Many companies use Toronto Pearson Airport, but the cost of using NFIA is one-tenth that of Toronto Pearson. NFIA is within a 12-hour drive time of 60 percent of the Canadian population and 40 percent of the U.S. population.
- NFIA has a long runway that can accommodate any size aircraft, including those that would likely come to or from locations overseas. There are a number of sites that are available for development nearby, such as the Niagara Industrial Air Park, the U.S. Army Reserve site to the south of the locations, and the Bell Plant site, which is on the market adjacent to the runway.
- Some infrastructure would need to be added to NFIA in order for the airport to reach its full potential. Facilities for warehousing and processing cargo would need to be added. Direct access to runways is needed. Lighting is not up to transcontinental standards. While customs officers are available, NFIA is not an international customs port. These individuals must be called. While customs officials are generally responsive in the Buffalo-Niagara region, it may be difficult to convince carriers that they will not be likely to face customs delays. Another issue is outbound lift. Air carriers usually prefer to have some reassurance that they will have outbound cargo if they bring cargo inbound. The Greater Toronto Area (GTA) is a potential source of backhaul freight. For example, significant volumes of perishable commodities are shipped from Southern Ontario by air freight. Usage of the Buffalo-Niagara Airport by Canadians is growing. If Canadians use the region's passenger services, perhaps they could also use freight service. The Buffalo-Niagara region has a cross-border culture where whether a location is in the U.S. or Canada is less important.
- There are some challenges to expanding air freight at NFIA that were mentioned. Since most cargo is carried in the bellies of passenger aircraft, the large international cargo hubs tend to also be the large international passenger aviation hubs. It was suggested that the NFIA could pursue all-cargo aircraft service. However, this could pose some issues as well, since this is highly competitive. The airport at Huntsville, AL was able to establish itself as a significant hub for all-cargo aircraft service, but few other examples exist of airports outside of major passenger hubs establishing themselves as major cargo hubs.

4.2.2 General Marketing of Aviation and Maritime

- For both aviation and marine cargo, the infrastructure is available in the region to increase freight transportation activities, but there has been some difficulty in successfully marketing the infrastructure. One suggestion was to create an organization that would have the responsibility to help market Buffalo's logistics assets. Presumably, this organization would not only help to

market logistics assets, but also recommend improvement that would make these assets more marketable.

- One possibility could be to create a permanent logistics advisory committee. This could be made up of government, private industry officials, as well as university faculty. It was mentioned that the Buffalo-Niagara Partnership currently has a logistics council. This organization could be a part of a new freight advisory council. The University of Buffalo has a regional institute. The study should propose specific steps needed to establish a logistics advisory committee, as well as carefully describe the need for such an organization.
- One issue brought up was whether one should: 1) build the infrastructure first to provide better marketing leverage; or, 2) whether one should market and then build in response to the marketing success. The approach suggested was to develop a strategy first, and build later.

4.2.3 Roadway Issues

- Tifft Street is located near the Bethlehem Steel site. There is a plan to connect this street to I-190 in two phases.
- A representative from Continental 1 mentioned that the Buffalo-Niagara region has poor north/south connectivity. The largest arterial to the south is US 219, the Southern Expressway. However, this shrinks to a two lane road at Springville, and there are no other good alternatives to travel south from Buffalo toward Pennsylvania. Continental 1 would like to see this corridor included in the freight study.
- Cross-border delays reduced significantly due to improvements in technology. Several shippers at the meeting mentioned that when they do encounter delays, it is usually due to the inexperience of some agents at the border.
- Rail cross-border issues seem to be more significant than truck.

4.2.4 Other

- A truck freight study is currently underway in Canada. This should be incorporated into the report.

4.2.5 Rail Topics

- Stakeholders expressed that there is a need in the area for truck to rail transfer facilities – the two possible locations that were brought up were Lehigh Valley Yard and the former Bethlehem Steel location. Both possible locations have their pros and cons – the big plus for both sites is the possibility of water access and the cross-border availability, which is very unique. Lehigh Valley Yard is also located near the airport, which would add an additional modal opportunity. Though the conversations have been centered on intermodal containers, there is opportunity for carload traffic as well, but will need further study. Carload traffic could be steel, lumber or bulk commodities.
- In conjunction with the need for a transload location, is the need to ensure that the international connections to/from the facility remain open. The International Bridge that is maintained by the Canadian National Railroad is in suspect condition. If this connection is shut down due to catastrophic failure the opportunity for trans-border freight transloaded in the area is lost. This

bridge is the only direct connection between Detroit, Montreal and Buffalo. The other international option is the Whirlpool Bridge, which is owned by the Niagara Falls Bridge Commission, a public entity. This bridge is also suspect and currently is only used for AMTRAK traffic.

- When Conrail separated into CSX and NS, this caused many problems in the area in terms of access. Though the majority of the industries are open to reciprocal switching, service levels to and from the service districts have deteriorated. An additional issue with the breakup of Conrail is with the access between the shortlines and the Class I carriers – lack of direct connections and interchange trackage. This issue is being addressed and is on the State of New York's radar screen for funding. The other impediment in the area in relation to connections is the CP Draw Bridge – this bridge is also in disrepair and is shared by the CSX and the NS – though the CSX is responsible for maintenance. Estimates are needed for the repair/replacement of the CP Draw Bridge.
- A freight forum could promote the region's freight assets. This will also allow stakeholders to form a consensus and stakeholder agreement.
- The Portage Bridge and Falls Road Bridge are also in need of repair.

5.0 Performance Measures

5.1 Environmental Performance Metrics

Freight networks generate airborne pollutants and influence the Buffalo-Niagara region's ability to maintain clean air. The Clean Air Act, which was last amended in 1990, requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (40 CFR part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. These include:

- Carbon Monoxide
- Lead
- Nitrogen Dioxide
- Ozone
- Particulate Matter (PM_{10})
- Particulate Matter ($PM_{2.5}$)
- Sulfur Dioxide

The ozone standards are further subdivided into 8-hour and 1-hour standards. Under the 8-hour standards, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed an established level. Of the pollutants listed above, Erie and Niagara Counties were in non-attainment for 8-hour ozone in 2004, 2005, 2006, 2007, and 2008. On July 31, 2009, the New York Department of Environmental Conservation submitted a letter to the EPA asking that the Buffalo-Niagara Falls, NY metropolitan be delisted as a non-attainment area for 8-hour ozone at the 1997 standard. According to the letter, the region had not exceeded the standard of 0.08 ppm in 2008.

The American Lung Association also tracks ozone levels in counties across the U.S. in producing its annual *State of the Air* report. By its own scoring, the American Lung Association assigned Erie and Niagara Counties an "F" for high ozone days between 2006 and 2008. Niagara County had 19 code orange days, and Erie County had 24 code orange days during that time period. Neither county had any code red or purple days. Under the EPA Air Quality Index, air quality under code orange conditions is considered unhealthy for sensitive groups. Under code red, air quality is considered unhealthy, and under code purple, air quality is considered very unhealthy.

Ozone is caused by a reaction between nitrogen oxides (NOx), volatile organic compounds (VOC), warm temperatures, and sunlight. If the freight system can help to reduce NOx and VOCs, it can help to reduce ozone. Some freight initiatives aimed at reducing ozone emissions include a variety of efforts, such as to reduce truck and rail locomotive idling or low emissions locomotives. For example, some areas have

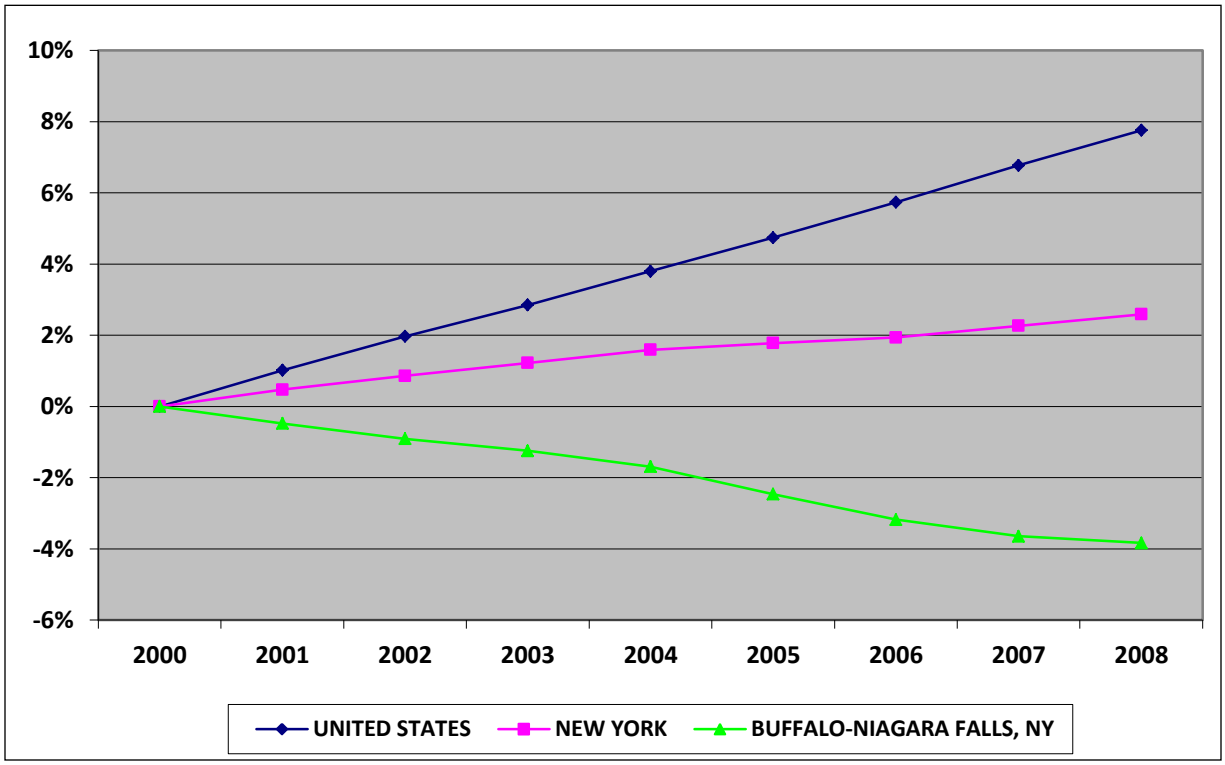
implemented the electrification of truck stops. Often, truckers leave their engines during this rest time at truck stops to provide their sleeper compartments with air conditioning or heating or to run electrical appliances such as refrigerators or televisions. Truck stop electrification allows truckers to "plug in" vehicles to operate necessary systems without idling the engine. In some cases, a stand–alone system can provide heating, ventilation, and air conditioning directly to the sleeper compartment. Under another representative project, government agencies assist railroads in acquiring low emission locomotives. Switcher engines that move trains between tracks in rail yards have a disproportionate health impact, since they affect more people operating in urban areas than line haul locomotives traveling across the countryside. Railroad companies tend to use older and dirtier locomotives for yard duty. By contrast, a low emission GenSet locomotive, for example, produces only 20 percent of the NOx and 10 percent of the particulate matter of a normal switch locomotive. It also consumes 37 percent less fuel. Providing an incentive to railroads to acquire these low emissions, locomotives could potentially help the Buffalo-Niagara region to stay in compliance for ozone pollution.

5.2 Economic Development Performance Metrics

5.2.1 General

As mentioned previously, population is often used as a barometer for economic development. The economic development challenges that face the region are well-documented and are a major reason for this study.

Figure 5- 1: Percentage Change in Population from 2000

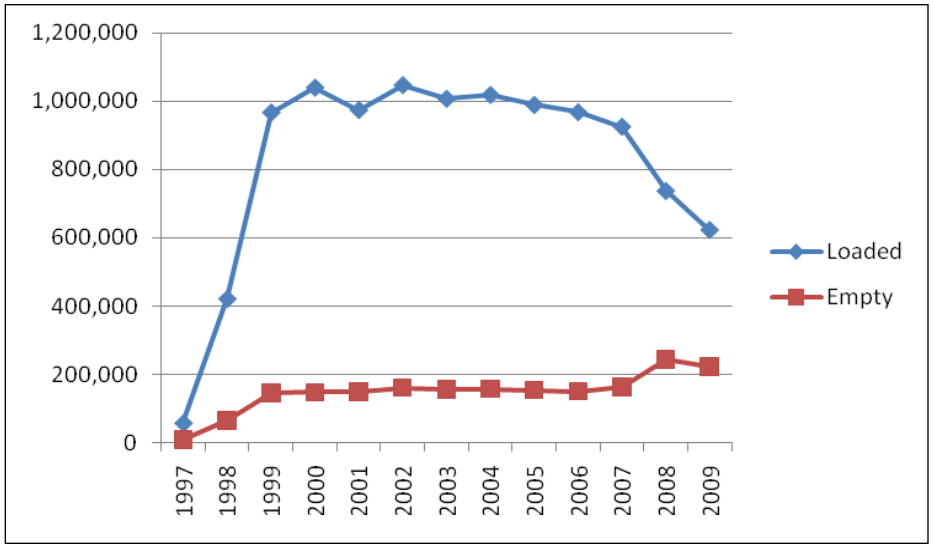


Source: Woods & Poole

5.2.2 Economic Development – Cost Implications of Highway Border Crossings

The cost of crossing the U.S./Canadian border has significant influence on the amount of trade that travels to, from or across the Buffalo-Niagara region. The balance of movements between empty and loaded movements can significantly influence the economics of traffic flowing over the U.S./Canadian border. As can be seen from **Figure 5- 2**, a significant imbalance between loaded and empty containers has persisted across the Buffalo-Niagara border crossings between 1998 and 2007. This has likely added to the costs for shippers.

Figure 5- 2: Empty versus Loaded Truck Containers (Buffalo-Niagara Border Crossings)



Source: RITA/BTS

Another issue associated with border crossings within the Buffalo-Niagara region relates to tolls. Toll rates are relatively high. These are typically developed in accordance with axle counts and not associated with the condition of the truck; loaded or empty. Toll costs are not a typical reimbursable expense by the carrier, though cross border activity is substantially more profitable than domestic based movement as a result of specific tariffs associated with international versus domestic transit. A comparison of Niagara Falls Commission rates, **Figure 5- 3**, to other crossings illustrates a significantly higher charge, which may detract usage of this crossing. As with the influence of "per mile" cost structure on route selection, the adverse relationship between the truck industry and the application of tolling charges on facilities will direct traffic to crossings which incur a longer route, where costs will be mitigated by the reduced or elimination of a tolling fee.

Figure 5- 3: International Border Crossing Toll Rates, effective 02 June 2010

U.S. Rates	Buffalo-Niagara	Port Huron*	Detroit**		
Truck - 2 Axle	$3.25	$6.50	$5.50	$6.50	$9.00
Truck - 3 Axle	$6.50	$9.75	$8.25	$9.75	$13.50
Truck - 4 Axle	$12.50	$13.00	$11.00	$13.00	$18.00
Truck - 5 Axle	$18.50	$16.25	$13.75	$16.25	$22.50
Truck - 6 Axle	$24.50	$19.50	$16.50	$19.50	$27.00
Truck - 7 Axle	$30.50	$22.75	$19.25	$22.75	$31.50
Truck - 8 Axle	$36.50	$26.00	$22.00	$26.00	$36.00
Truck - 9 Axle	$42.50	$29.25	$24.75	$29.25	$40.50
Truck - 10 Axle	$48.50	$32.50	$27.50	$32.50	$45.00
Truck - 11 Axle	$54.50	$35.75	$30.25	$35.75	$49.50
Truck - 12 Axle	$60.50	$39.00	$33.00	$39.00	$54.00

* Blue Water Truck Rates are $3.25 per axle

**Axle rate based on gross vehicle weight(GVW) [$2.75,$3.25,$4.50]

6.0 Modal Assessment

This section provides an evaluation of the Buffalo-Niagara region's freight networks by mode. Included is an assessment of the strengths, weaknesses, opportunities and threats for each mode, as well as recommendations to address and preserve the region's strengths, moderate weaknesses, seize opportunities and address threats. Recommendations are also evaluated by high, medium or low priority.

6.1 Aviation

6.1.1 Air Cargo Trends/Issues

The once fast growing air cargo industry in North America reached a point of maturity just prior to 2000. Domestic air cargo growth between 1995 and 2005 averaged approximately 1.5 percent annually.[2] Recently, the industry has taken a downturn both domestically and internationally and presents one of the most difficult time periods in the last 20 years for the industry. Although the implications of 9/11 caused a considerable slowdown in the industry, soon to follow global economic expansion spurred growth in the double digit range for several years in Asia, and China in particular. Rising fuel costs, however, and a global economic slowdown make it difficult for airports to justify expansion of air cargo facilities and for airlines to increase cargo capacity. New route development for cargo carriers requires secure commitments from shippers that freight demand is in place for the long term.

A mature air cargo market in the U.S. implies that air cargo facilities such as hub-and-spoke air networks are not expanding and that integrated express carriers are not expanding their fleets significantly for domestic operations. For example, when the UPS air cargo network needed to increase capacity in the U.S. in 2005 they chose to expand existing facilities and not build new hubs and facilities. FedEx is currently building the only new cargo hub in Greensboro, North Carolina, which has been on the drawing board for over 10 years.

6.1.2 Strengths, Weaknesses, Opportunities, Threats (SWOT)

The Buffalo Niagara Air Cargo Market has a proven track record with three integrated express carriers successfully operating at Buffalo Niagara International Airport for an extended period of time. Kitty Hawk's former air cargo operations at Niagara Falls International Airport proved that niche air cargo operations at the airport can work.

6.1.3 Strengths of the air cargo market within the Buffalo-Niagara area:

- Buffalo-Niagara's geography places it in the center of a key international market. Unlike any other region in the world, Buffalo-Niagara is home to six international bridges, which facilitate $81 billion in annual trade between Canada and the U.S.; 31 percent of the total trade conducted between these two countries - the world's two largest trading partners.
- Buffalo is also a competitor for U.S. bound cargo originating in southern Ontario, as using Buffalo allows Canadian shippers to clear customs by road while in custody of their owns goods before

[2] *Boeing Air Cargo Forecast*, 2006-2007, page 27

air shipment, as opposed to relying on agents to facilitate customs clearing on their behalf once goods arrive at the destination.

- ACI data indicates Buffalo Niagara International Airport ranked 73rd in air cargo tonnage in 2007 in North America.
- Quest Diagnostics operates Beech Baron-58 aircraft for about 18 cargo flights per week at Niagara Falls International Airport. These flights solely transport company air cargo which includes medical samples and diagnostic equipment between laboratories in the Mid-Atlantic region. Markets served include Pittsburgh, Reading and Washington-Dulles.
- Niagara Falls International Airport has the lowest landing fees in the region and a 10,800 foot runway. The airport is also located in a Foreign Trade Zone.

Figure 6- 1: Annual Landing Fee Comparison

Aircraft*	JFK	EWR	YYZ	IAG (NFIA)
737	$113,490	$132,210	$289,458	$21,060
767	$340,470	$396,630	$868,374	$63,180
320	$122,569	$142,787	$312,615	$22,745
747 -200	$630,248	$734,206	$1,607,457	$116,953
AN124	$675,549	$786,980	$1,722,999	$125,360

*Based on three flights per week at 90 cents MTOW
Source: Niagara Frontier Transportation Authority (NFTA)

6.1.4 Weaknesses/Threats to air cargo development within the Buffalo-Niagara area:

Further air cargo development in the Buffalo-Niagara region faces a number of barriers. These include competition from other airports, trucking air cargo to hubs and regional hubs, and modal shift to trucks by integrated express carriers. These factors are discussed in detail below.

- Air cargo leakage to competing airports from the Buffalo-Niagara market area is significant with 11 daily truck departures by air freight forwarders. Forwarders operate primarily to international gateway airports in the U.S. and Canada. Leakage diverts cargo traffic away from integrated express operators in the market as well as dampens the potential to attract an all cargo carrier, such as Evergreen or Atlas Air, into the market. It is noteworthy to point out that similar size markets and even large markets such as Los Angeles and New York City all experience air cargo leakage to competing gateway airports.
- Kitty Hawk Air Cargo ceased operations at NFIA as a result of its bankruptcy and termination of services. Unlike passenger carriers who move into a market after it is vacated by an exiting carrier there were no all cargo air carriers moving into fill the void left by Kitty Hawk. Their customers were more than likely absorbed by local trucking companies and integrated express carriers.
- Sharing air cargo traffic between the two Niagara Frontier Transportation Authority (NFTA) airports in a market the size of Buffalo-Niagara is a challenge. Several large markets in the U.S. are capable of utilizing two airports for both passenger service and air cargo; these markets include: Dallas-Fort Worth, Los Angeles, Seattle-Tacoma, Columbus, San Francisco and Houston.

6.1.5 Opportunities for the air cargo market within the Buffalo-Niagara area:

- The manufacturing sector is a key part of the Buffalo-Niagara regional economy. As of 2003, the Buffalo-Niagara region had 2,000 firms active in the manufacturing sector (accounting for 5.4 percent of all companies in the region), which employ 94,000 people (accounting for 14.1 percent of all jobs in the region).
- Automotive components and medical devices are often shipped by air cargo and several related manufacturers are in the area. Major corporations such as General Motors, Ford, Motorola and American Axle produce various automotive components. The extended Buffalo-Niagara region (reaching from Toronto to Buffalo to Syracuse) is home to more than 850 medical industry companies, including renowned medical equipment, research and health care institutions. This rapidly expanding cluster includes such established companies as MDS Proteomics, Vaccinex, Mentholatum Company, Kimberly-Clark, Invitrogen, Bausch & Lomb, Proctor & Gamble Pharmaceutical and Welch Allyn.

6.1.6 Recommendations

Airports and air cargo are closely tied to economic development within a market area. The role of economic development agency initiatives is to provide an atmosphere fostering entrepreneurship, to attract business and industry to the market, and retain business and industry in the market. There are over 11,000 economic development agencies in the U.S. and more than 5,000 airports in the U.S. all competing for new business and fostering growth in their jurisdiction. The following recommendations tie airport development and economic development in order to attract and maintain air cargo activity in the Buffalo-Niagara region.

Retain FedEx, UPS and DHL – The three major integrators in the U.S. have operated at BNIA for a number of years and their tenure proves the Buffalo-Niagara market is conducive to air cargo development. Going forward the airport's sponsor, NFTA, and local, state and federal decision makers must continue to make improvements to facilities and work with these carriers to insure they are satisfied with the local market conditions. In spite of their pending deal with UPS, DHL's prospects remain strong in the local market for the specialty, international air cargo traffic. Although UPS will be providing air lift for DHL, DHL's fleet of trucks and ground personnel are anticipated to remain largely unchanged in the local market.

Maintain and Improve Airport Facilities – It goes without saying that airport facilities must be maintained and improved to attract and retain air cargo carriers. Both airports under NFTA jurisdiction should be maintained and improved with air cargo activity in mind. New facilities must have a proven purpose and need prior to implementation and construction. For example, a refrigerated perishables center must have a commitment from a legitimate business, that the facility will be utilized, and that it is used for the purposes it was designed for. Orlando International Airport's perishable center is currently used to store aircraft parts.

The new terminal at NFIA will serve to make the airport more efficient, thus more attractive to air carriers. Funding has also been requested to resurface the main runway at NFIA. The cost of the runway resurfacing project is $9.5 million. Both these initiatives will serve to make NFIA more appealing to

commercial carriers increasing the likelihood that passenger airline belly capacity and other cargo air services could expand. The length of the runway at NFIA makes it a more attractive to cargo service than BNIA. The new $31.5 million passenger terminal began operations on December 18, 2009.

Continue Economic Development Initiatives Focusing on Medical Device and Automotive Industries – As mentioned previously, the medical device and automotive industries utilize air cargo on a regular basis and both are significant industrial clusters in the Buffalo-Niagara region. Economic development agencies should continue to foster growth in these industrial clusters and market. Buffalo-Niagara is a center for automotive and medical device research and development.

Recruit an Anchor Tenant to NFIA – Finding an anchor tenant which will utilize all cargo aircraft on a regular basis is the greatest challenge to NFIA. Nashville International Airport and Rickenbacker International in Columbus, Ohio, have successfully attracted niche industries that rely on freighter aircraft on a near daily basis. A Dell computer distribution and light assembly plant is located adjacent to Nashville International and relies on China Airlines Cargo. Evergreen flies a B747 daily into Rickenbacker to support The Limited's logistics needs. Indianapolis attracted cargo carrier CargoLux to the airport due to the logistics requirements of pharmaceutical giant Eli Lilly. The challenge is to find a reason for NFIA to be an alternative gateway airport. A recent article in Air Cargo World magazine on alternative gateways indicates "The fundamental truth about alternative gateways is it's best to be an alternative when and where one is actually needed."[3]

Market NFIA to "Overhead" Cargo Airlines – Calgary International Airport was able to attract all-cargo carrier CargoLux to their market in two ways. First, they presented data showing that logistics demand in the oil and gas industry warranted a flight to stop at Calgary. Secondly, the airline's schedule includes a flight from Seattle-Tacoma that passed overhead Calgary twice a week on their way to Prestwick, Scotland, the gateway to North Sea oil and gas fields. The diversion to Calgary only added 26 miles to the 5,025 mile flight. Currently, Lufthansa flies a freighter twice a week from Frankfurt to Mexico City. If this flight were to stop in NFIA it would only add 15 miles to the 5,944 mile segment. A business case, however, needs to be made to convince a carrier such as Lufthansa to schedule a stop in Niagara Falls.

Monitor DHS Screening – The Department of Homeland Security and the Transportation Security Administration plan to phase in "100 percent" screening of air cargo carried in passenger planes by 2010, which will place additional burdens on shippers to account for supply chain partners and shipments and encounter possible delays. This may divert cargo flown on passenger airlines to integrated express carriers and all cargo airlines. The implications of this policy should be monitored by NFTA.

Develop NFIA as an Industrial Airport – Many airports have aspirations of being a "cargo airport." However, there are only a few "true" cargo airports in the world since most airports accommodate cargo, general aviation and passenger service traffic. NFIA should market itself as an "industrial" airport or, at a

[3] Air Cargo World, Alternative Gateways, April 2008

minimum, market the airport's industrial merits. Industrial development on an airport often increases air cargo activity on the field. For instance, Vought Aircraft Services, a manufacturer of aircraft wings at Nashville International Airport, utilizes heavy lift aircraft, such as the Antonov 124, to transport aircraft components.

The current air cargo environment in North America is extremely competitive and relatively mature with limited expansion potential. The *Niagara Falls International Airport: A Bi-National Air Cargo Gateway 2006* study indicates "the timing for an expansion into the air cargo market has never been better."[4] Considerable changes in the air cargo market, primarily driven by increasing fuel costs and a global economic slowdown, have eroded the expansion potential of NFIA and other airports pursuing air cargo development. The air cargo landscape is being reshaped by air carrier mergers, carriers exiting the market and higher fuel costs forcing older cargo aircraft into economic obsolescence. The Buffalo-Niagara market is surrounded by competing airports with similar air cargo development aspirations. Both NFTA airports must retain their current level of cargo activity by working with their integrated express carriers and other carriers to insure their facility needs are met. Local economic development initiatives should focus on building the critical mass needed for air cargo growth and by attracting and retaining industries which utilize air cargo services on a regular basis such as the medical device and automotive industries.

6.2 Highway

6.2.1 Regional Highway Trends/Issues

In general, roadway congestion tends to be highly dependent on population: the larger the metropolitan area, the higher the level of congestion. In 2007 the Buffalo-Niagara metropolitan region was ranked 46th by population among U.S. metropolitan areas. Within the *2009 Urban Mobility Report* by the Texas Transportation Institute (TTI), the Buffalo-Niagara region was classified as a "large urban area" in that it has a population of between 1 million and 3 million inhabitants.

The Urban Mobility Report suggests that compared to other similarly sized urban areas, congestion within the Buffalo-Niagara region is relatively moderate. The average annual delay per traveler in the Buffalo-Niagara region is 11 hours. Buffalo was ranked at the bottom of large urban areas in terms of annual delay per traveler. While 11 hours spent waiting in traffic for the average traveler is not ideal, it is better than other "large urban areas" where the average annual delay per traveler is 35 hours. The average annual delay for "very large urban areas," those with over three million inhabitants is 51 hours.

6.2.2 Regional Freight Highway SWOT Analysis

As with the other modes this section examines the regional highway freight network through a SWOT analysis format. The information highlighted here is based on stakeholder input, economic and commodity analyses conducted for the study, and the review of previous studies and plans.

[4] *Niagara Falls International Airport: A Bi-National Air Cargo Gateway,* University of Buffalo SUNY 2006, Page 7

6.2.3 Regional Freight Highway System Strengths

Overall, the Buffalo-Niagara regional highway system provides for fluid truck movements and good accessibility to the area's economic centers.

- The extensive Interstate system provides reliable accessibility to the region and to external markets. Interstates 90, 190, and 290 link the region to other economic centers, specifically cities located in the central and eastern parts of the state. In addition, the secondary highway freight system provides relatively good north-south connections within the region. These roadways provide access to major clusters of manufacturers and commercial areas, and serve as alternatives to the major interstate highways for commercial traffic.
- Data gathered by the American Automobile Association (AAA) suggests that overall, the Buffalo-Niagara region ranked better than average for highway safety for urban areas of comparable size.[5] This report gathered crash statistics for metropolitan areas of a variety of sizes. Accidents were categorized by severity, including injuries and fatalities. The cost of accidents per category was then multiplied by the number of accidents for each category to arrive at a total cost of accidents for that metropolitan area. The total cost of crashes in the Buffalo-Niagara metropolitan area was calculated to be $1.091 billion. Divided by the number of inhabitants within the metropolitan area, the cost per person was calculated to be $951. Among large metropolitan areas, the lowest cost per person was $641, while the average cost per person was $1,063. Therefore, the Buffalo-Niagara metropolitan area was found to be above average.

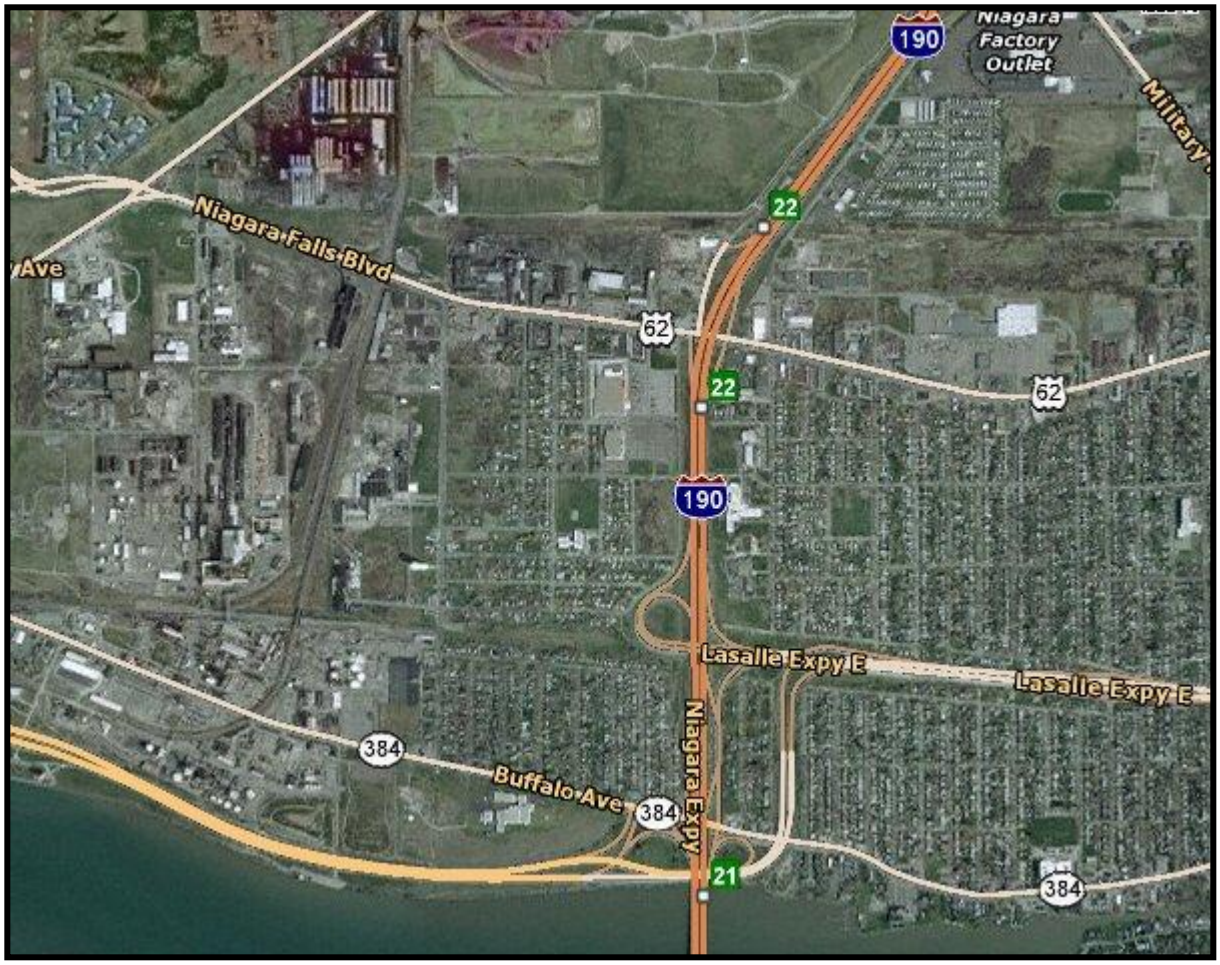
6.2.4 Regional Freight Highway System Weakness/Threats

The Buffalo-Niagara region is not immune from congestion. For example, Technical Memorandum #2 noted that certain sections of I-90 and I-290 had level of service (LOS) ratings of E or F.[6] The GBNRTC in a meeting on July 23, 2004 identified a number of other roadway segments with deficient level of service ratings (E or F), including segments of S.R. 33, E. Robinson Road, S.R. 78, U.S. 20, and S.R. 75.

- Based on discussions with major freight stakeholders, Buffalo Avenue (SR 384) is in need of significant rehabilitation. This route provides access to five major freight generating facilities in Niagara County. The roadway is in poor condition, littered with potholes, poor lane markings and has poor signage. In addition, the low clearance on the railroad bridge prevents trucks traveling westbound into the county from having direct access to Buffalo Avenue from I-190. Currently, trucks are required to travel an additional three miles northbound on I-190 and use SR 62 to connect with Buffalo Avenue. **Figure 6- 2** shows the location of the low clearance bridge and forced truck access points.

[5] Cambridge Systematics, Inc., *Crashes vs. Congestion – What's the Cost to Society?*, March 5, 2008.
[6] The Highway Capacity Manual and AASHTO Geometric Design of Highways and Streets ("Green Book") defines levels of service as follows: A= Free flow, B=Reasonably free flow, C=Stable flow, D=Approaching unstable flow, E=Unstable flow, F=Forced or breakdown flow.

Figure 6- 2: Low Clearance Bridge/Forced Truck Access Point



- With the closing of the Niagara Falls bridge to commercial truck and rail traffic all rail movements serving Niagara Falls businesses must now move through Buffalo (see Technical Memorandum #4 for more details). This loss of direct rail access to/from the west, together with the lack of rail/truck intermodal facilities in the Niagara Falls area, results in more truck movements to dray containers and other shipments from Buffalo intermodal facilities to Niagara Falls. In addition to more truck traffic on routes like SR 62, it also results in additional costs to shippers. Any decision to re-route traffic over the Whirlpool Bridge will be made by CP Rail and will be based on rail economic opportunities in Niagara Falls or congestion on the Buffalo rail system.
- In Erie County, the interchange of I-90 and I-290 has been identified as a major freight chokepoint by both FHWA and NYSDOT. NYSDOT initiated a study of this area which is addressed later in this report.
- Looking ahead, an analysis that Wilbur Smith Associates has performed using WSA's Commodity Information Management System (CIMS) suggests that the future growth in truck traffic for both 2010 to 2020 (**Figure 6-3**) and 2020 to 2030 (**Figure 6-4**) will be highest on I-190 and SR 5.

Figure 6- 3: Forecasted Increase in Trucks per Day (2010 to 2020)

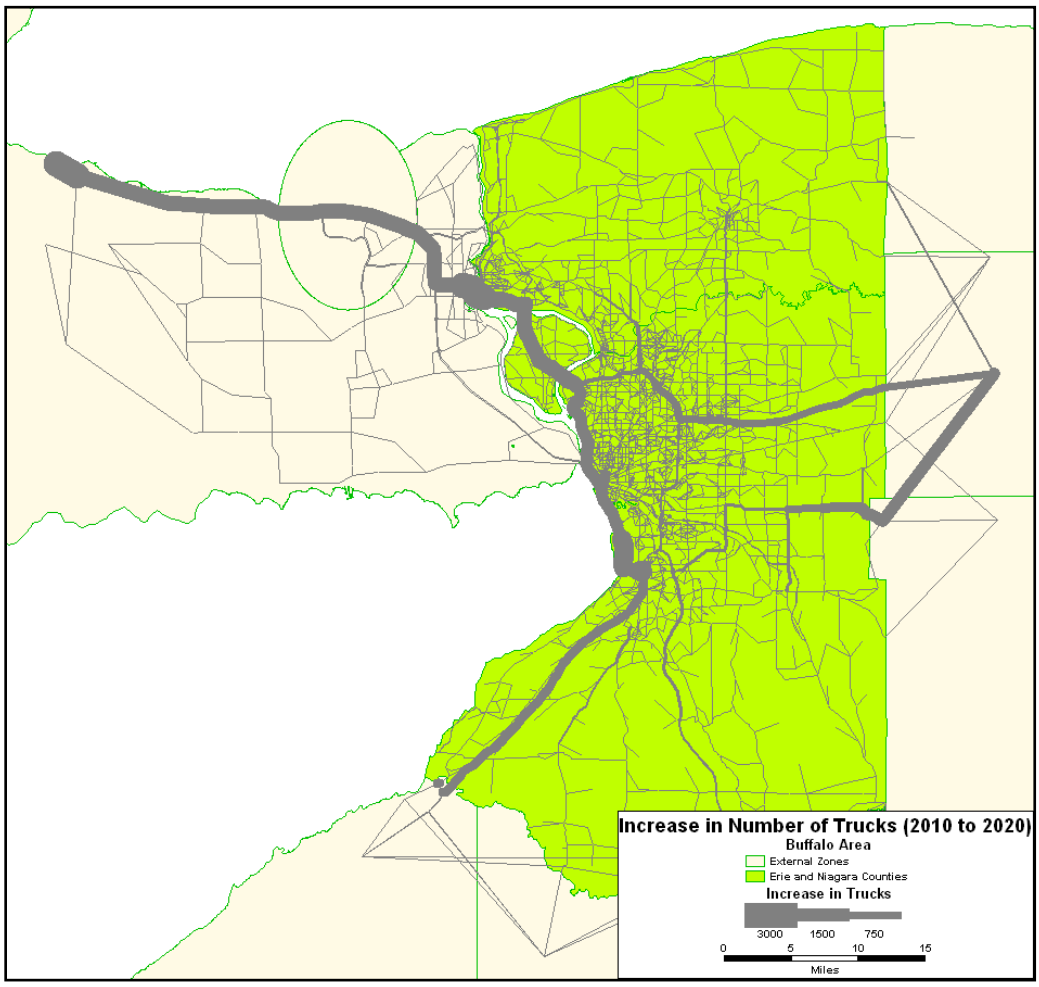
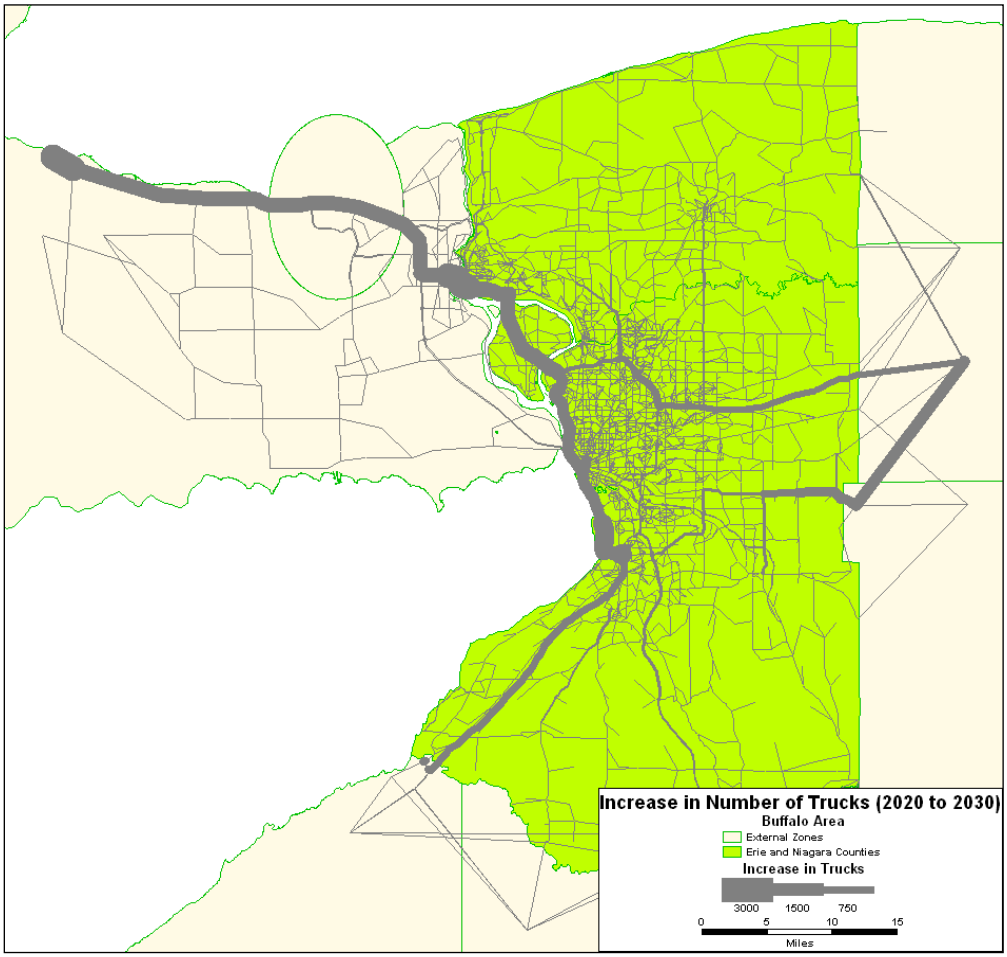


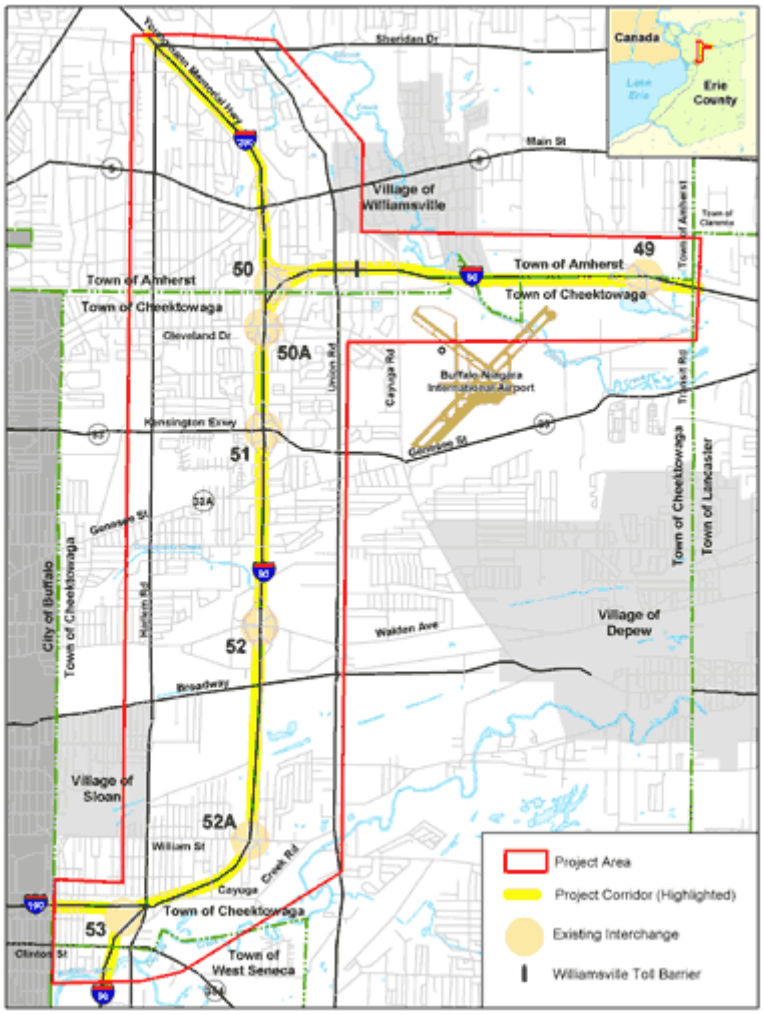
Figure 6- 4: Forecasted Increases in Trucks per Day (2020 to 2030)



6.2.5 Regional Highway Network Opportunities

- The New York State Thruway Authority (Authority) and the New York State Department of Transportation (NYSDOT), in cooperation with the Federal Highway Administration have initiated the *Buffalo Corridor Study* on the New York State Thruway near Buffalo in Erie County. GBNRTC is represented on the study's Project Advisory Committee. The corridor study is being conducted on I-90 between Interchanges 49 (Transit Road) and 53 (I-190) and on the Youngmann Memorial Highway (I-290) between I-90 and Interchange 7 (Main Street). This study will address issues with these segments that will impact the area over the next 30 years. The study will investigate mainline mobility, structural condition, and access at interchanges. The preliminary list of alternatives is expected to be presented to the public during the fall of 2011. **Figure 6- 5** below displays the study area.

Figure 6- 5: Buffalo Corridor Study Area



- **The Continental One Corridor:** One look at a highway map of New York State highlights that region does not have direct highway access to markets to the south. As an example, the most direct route from Buffalo or Toronto to the Washington, D.C. metropolitan area and points south involves traveling on US 219 through New York and much of Pennsylvania. Unfortunately, most of this route is on a two lane roadway south of Springville, NY. The alternative is to travel east or west from the Buffalo-Niagara region to pick up the nearest north-south interstate connection.

This situation would be improved with the completion of the Continental 1 Corridor, a new limited access highway corridor connecting to I-95 in North Carolina and/or South Carolina. The proposed corridor includes a variety of existing and proposed routes originating in the Niagara region of Ontario, Canada and continuing through the states of New York, Pennsylvania, Maryland, West Virginia, North Carolina, South Carolina, and Georgia, to the Miami, Florida area. Including all potential alignments it is approximately 1,855 miles long. Within a 50-mile bandwidth, it encompasses some portions of 114 counties (including several independent cities in Virginia).

Figure 6- 6: Continental 1 Corridor

The Continental 1 Organization is an alliance of business, community and government leaders from Canada and the U.S., is the driving force behind the vision for the proposed corridor. The group is dedicated to promoting the development of an international trade and travel corridor between the Niagara region of Ontario and Miami, Florida. Continental 1's main goal right now is to complete the US 219 from New York through Pennsylvania. That means from Springville, NY down to the Pennsylvania line and then down through Somerset County, PA to Maryland.

The Continental 1/US 219 corridor within New York State consists of 12 sections. Sections one through four, from the I-90 to Springville, NY, were built between 1972 and 1981. Plans for converting the 28-mile section of US 219 between Springville and I-86 to a four lane freeway

culminated in a Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) in September 2003. The ROD selected the conversion of the remaining six segments between Springville and I-86 to freeway as the preferred alternative. Following the ROD, NYSDOT designed and initiated construction of Segment 5, a 3.5 mile section from Springville to Peters Road in Cattaraugus County. Construction is expected to be completed in the fall of 2010. Another 3.3 mile segment to Snake Run Road has been designed, but further work on this section was halted. A reevaluation of the 2003 FEIS was completed in May 2009, which concluded that a Supplemental Environmental Impact Statement (SEIS) would be required due to increased area of observed wetlands and changed traffic patterns on US 219. The remaining sections of US 219 between Snake Run Road and I-86 in Salamanca are not designed and have no funding designated. Completion of the Supplemental Environmental Impact Statement is currently delayed due to New York State budget issues.

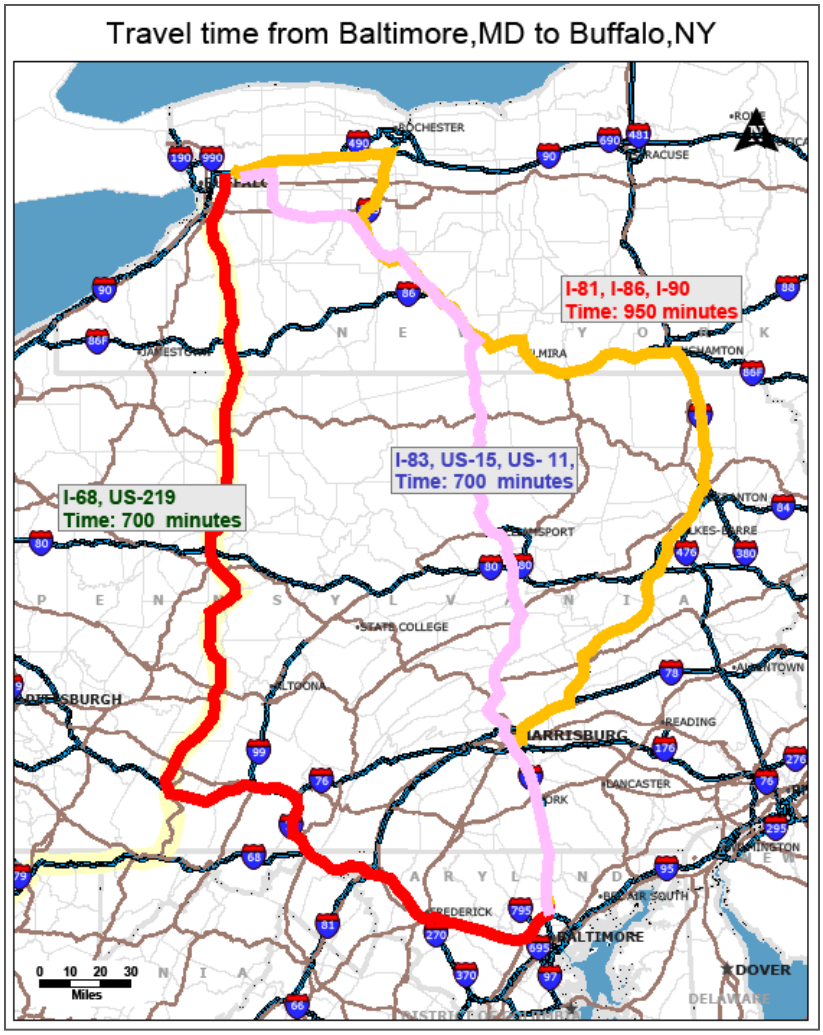
Wilbur Smith Associates completed the *Continental 1 Transportation Corridor Analysis* in 2007. This report found that New York could clearly benefit from the corridor. One important strategic opportunity of the proposed corridor that was identified results from connectivity between Maryland/Virginia port gateways and the Buffalo/Niagara border. Completion of the corridor could provide improved access and mobility between these gateways and could generate additional economic development in New York and Pennsylvania. In addition, the ports in Maryland and Virginia could potentially realize additional growth potential.

An economic analysis performed on behalf of completing the Springville to Salamanca segment estimated that the project would result in 7,000 direct jobs and 2,450 induced jobs from development projects and resulting economic expansion.[7] The study also estimated an expected reduction of more than 50 accidents per year.

The recent improvements to I-83 and US 11/15 in Maryland and Pennsylvania (and PennDOT's commitment to improving these routes plus the proposed I-99/US 15 corridor) provide alternative routes that could also provide the Buffalo and GTA regions with improved connectivity with Mid-Atlantic markets and points south. As shown on **Figure 6- 7**, travel time savings using these routes are the same as what they would be if the proposed Continental 1 Corridor is completed.

[7] Hatch Mott MacDonald for the Southern Tier West Regional Planning & Development Board, U*.S. 219 Planning Study, Springville to Salamanca, NY*, August 2009

Figure 6- 7: Travel Time between Buffalo and Baltimore, MD by Alternate Corridors



- **New York Route 63 Corridor**: In many cases, the best route between the Greater Toronto Area or the Buffalo-Niagara region and markets in the Mid-Atlantic uses I-390 toward Elmira, NY. Unfortunately, the connection between I-390 and I-90 is somewhat circuitous for Buffalo-Niagara shippers, since the two roads intersect a far distance to the east. The most direct route to access I-390 is N.Y. Route 63, a local road.

  In 2001 through 2004 NYSDOT commissioned a study of the Route 63 corridor.[8] The study found that numerous trucks were using N.Y. Route 63 as a shortcut between I-90 and I-390. Most of these were through trips with origins and/or destinations in Western New York or Canada. The study found that N.Y. Route 63 is 30 miles shorter than the I-390/I-90 route, saving drivers time and fuel expenses. The study also determined a proposal to eliminate tolls between

[8]NYSDOT, Route 63 Corridor Study, https://www.nysdot.gov/portal/page/portal/regional-offices/region4/projects/route63-corridor-study/rte63-documentation.

exit 48 and exit 46 on the Thruway to induce trucks to stay on I-90 to I-390 would have minimal effect.

The study considered six alternatives: Alternatives #1 and #2 included new limited access highways; Alternative #2 would lead from I-90 somewhere between the I-490 interchange and Batavia to I-390 south of Gleneseo; Alternative #3 included a range of legislative solutions aimed at discouraging trucks from the corridor; Alternative #4 represented better enforcement of existing policies; Alternative #5 consisted of bypassing the villages of Corfu, Pavillion, and Griegsville; and, Alternative #6 was a series of solutions aimed at addressing specific traffic problems within specific areas. The study ultimately recommended Alternatives #4 and #6. Alternative #1 was estimated to cost at least $400 million, while Alternative #2 was estimated to cost at least $250 million. Alternatives #1 and #2 were estimated to provide the greatest benefits but were eliminated because of its high cost, environmental impacts, and time required for delivering the project.

- **The Mid-Peninsula Corridor:** The Buffalo-Niagara region is also impacted by transportation projects in nearby Canada. As trade between the U.S. and Canada continues to grow improvements to Canadian infrastructure can help to facilitate increases in regional trade as well. One corridor receiving attention recently, connects Niagara, Ontario to the Greater Toronto Area (GTA), alternately known as the NGTA corridor or the Mid-Peninsula corridor (**Figure 6-8**).

Figure 6- 8: NGTA Corridor

Source: NGTA corridor project website

The Ministry of Transport for Ontario (MTO) has been examining the corridor since 2001. A Transportation Needs Assessment identified needed transportation improvements on the NGTA corridor. In particular, the study found that the Central Ontario population was expected to grow by three million people over the next 20 years, and truck traffic is expected to grow at a three percent annual rate. All international trade through the corridor relies on a single limited access highway: the QEW. Both the QEW and Route 403 are expected to reach unacceptable travel conditions within the 30-year planning horizon. After years of planning the MTO submitted the Mid-Peninsula Transportation Corridor Environmental Assessment (EA); the EA process is still ongoing. However, in June, area press reports indicated that the MTO had dropped the idea of building a new mid-peninsula highway.[9] The MTO is apparently looking at additional options involving transit, a widening of existing routes, and other potential highway corridors.

WSA prepared a study for the Niagara Economic Development Corporation, which found significant economic benefits resulting from the potential construction of the Mid-Peninsula Corridor.[10] The study estimated potential economic gains arising from the corridor in three categories including construction, benefits, opening up of new economic opportunities, and the mitigation of lost opportunity costs. The findings are as follows:

- The employment benefit from the opening of new economic opportunities was estimated to range from 76,000 to more than 101,500 full-time equivalent jobs within the first 15 years after construction. The income benefit was projected to be $2.7 billion to nearly $3.2 billion, resulting in tax revenue ranging from $1.3 billion to $1.5 billion.
- The construction activity associated with the corridor would increase employment from between 5,000 to over 9,500 a year over a five-year construction period. This translates to annual income benefits ranging from over $375 million to nearly $710 million and annual tax revenue benefits as much as $345 million.
- The analysis also quantified the likely impacts related to deterring the loss of existing business due to increase congestion. The costs of doing nothing in terms of adding highway or rail capacity is estimated to be the lost income totaling more than $2.4 billion or more than 30,000 fewer jobs in 2030.

Although it is still unclear what the end result of this process will be, the planning activities of the MTO could have significant ramifications to the freight network of the Buffalo-Niagara region.

- **The Peace Bridge Expansion**: The Buffalo and Fort Erie Public Bridge Authority (BFEPBA) and the Federal Highway Administration (FHWA), in cooperation with the New York State Department of Transportation (NYSDOT), have prepared a draft Final Environmental Impact Statement (FEIS) to study the effects of a proposed Federal Inspection Station plaza and bridge expansion at the Peace Bridge. The project is intended to improve security and operations at the bridge and accommodate future increases in traffic volumes of people and goods crossing the

[9] Andrew Baulcomb, *Hamilton Spectator*, "Niagara Highway Route Quashed – Province Focusing on Light Rail, Public Transit", June 26, 2010
[10] Wilbur Smith Associates for the Niagara Economic Development Corporation, *Niagara to GTA Corridor: Opening New Economic Opportunities*, June 2007

border. The FEIS looked at three alternatives: 1) a No Build scenario; 2) Alternative 1: Maximization of the Existing U.S. Plaza, so that the plaza is expanded eastward and northward to accommodate additional auto and truck booths, enlarged vehicle secondary inspection areas, additional employee parking areas, a relocated Duty Free Shop and required circulation roadways; and, 3) Alternative 3: a relocation and consolidation of U.S. inspection facilities and operations to an expanded Canadian plaza.

6.2.6 Regional Highway Opportunities / Recommendations

- **Establish a regional truck route system**: Establishing an integrated Interstate, State, and Local highway freight network operating in conjunction with other fright facilities in the region can assist carriers in circumventing areas highly traveled by the motoring public, while still providing access to commercial customers in the region. The purpose of establishing truck routes is to ensure future roadway maintenance; rehabilitation and construction are designed to efficiently move truck traffic in the region. Ensuring adequate turning radii, pavement strength and bridge capacity are important for protecting key routes from becoming future bottlenecks. Truck routes should be identified for both Niagara and Erie Counties to ensure cross county coordination. Identifying gaps in the region's truck route system in relation to the primary and secondary highway freight systems will assist in prioritizing road projects that are significant for fluid freight movements in the region.
- **Peace Bridge Expansion Project** – The draft FEIS for the project found that the benefit/cost ratio of the project is 8.4 for the Alternative #1 and 8.9 for Alternative #3. These ratios suggest that the project is an efficient use of funds and worth GBNRTC's support. In Technical Memorandum #3, this study found that about 842,703 tons or 15 percent of northbound freight tonnage on the bridge originates within the area and 1,114,742 tons or 17 percent of southbound freight tonnage terminates within the area. The remaining traffic is overhead to the region and therefore does not benefit the region's economic development. While the Buffalo Niagara region freight network will receive a significant benefit from the project, majority of benefits in terms of freight are derived from users outside of the area.
- **Continental 1** – The Continental 1 Corridor would provide a more efficient connection between the Buffalo Niagara region and markets in the Mid-Atlantic and Southeast. The Buffalo Niagara region should support efforts to complete the Continental 1 Corridor. However, much of development of Continental 1 depends upon the activities of other states, and this creates uncertainty for the endeavor. The corridor involving I-390/I-86/US 15/I-83 may have greater likelihood of becoming a continuous freeway, particularly given improvements to US 15.
- **Southern Expressway between Springville and Salamanca**: As discussed in Technical Memorandum #5, this expressway would provide an additional connection to the south. While the user benefits alone may not necessarily justify the project's costs, the project is expected to yield local economic benefits to Cattaraugus County. Total trade between the Buffalo-Niagara region and Cattaraugus County was about 1.7 million tons in 2004, about one million of which were outbound shipments of *Clay, Concrete, Glass or Stone* from Erie County.
- **Route 63 Corridor:** This corridor was recently studied, but the study mostly focused on addressing the inconvenience of truck traffic within Genesee, Wyoming, and Livingston Counties. However, the corridor could have significant implications for Buffalo Niagara shippers,

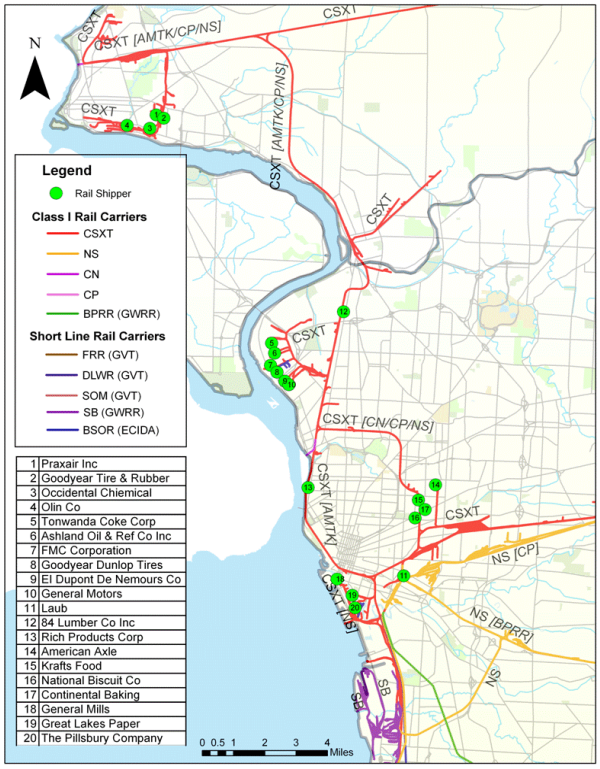
since a large portion of truck traffic to/from the Buffalo-Niagara region could potentially be impacted by this corridor. A highway bypass that improves the routing of this corridor could save hundreds of millions of dollars over time for Buffalo Niagara shippers. Further study should be requested.

- **Mid-Peninsula Corridor**: Efforts at constructing a new highway to run parallel to the QEW appear to be stalled. This project should be monitored.

6.3 Rail

6.3.1 Railroad Issues and Trends

Figure 6- 9: Key Shipper Locations



To better understand the operational performance of the Buffalo-Niagara rail network from the user perspective, interviews were conducted with key shippers in the region as shown in **Figure 6- 9**. A brief summary of the operating issues raised by shippers is outlined below:

- Lack of responsiveness (inconsistent communications with rail carriers)
- Lower standard of service than trucks (rail not as reliable)
- Rail service flexibility – fair to poor
- Rail schedule reliability – fair to poor
- Overall rail shipping cost – poor
- Loss and damage control on rail shipments – good to excellent

The majority of the shippers interviewed in the Buffalo-Niagara region identified the low reliability (as well as high cost) as motivating their preference for truck service. Interchange agreements between rail carriers that cause freight cars to be inefficiently routed in the region and excessive dwell times in the major terminals contribute to delays contribute to additional costs of delivering commodities to shippers. In a global economy where shippers demand just-in-time delivery and better overall integration of logistical services, these factors affect the sustainability and economic growth of industry in the region.

A recent report by the Transportation Research Board (TRB)11 also indicates the growing importance of short line railroads in the eastern U.S. as 40 percent of rail traffic currently originates or terminates on short lines or regional rail carriers. The Chautauqua, Cattaraugus, Erie & Niagara Regional Rail Strategy

[11] Transportation Research Board, 2005

Report[12] confirms the important role of short line railroads in a region's economy as they play an integral part in picking-up and delivering inventory at existing and new sites and intermodal access.

6.3.2 Strengths, Weaknesses, Opportunities, and Threats (SWOT)

Rail facilities in the Buffalo-Niagara region play a major role in connecting the north-south (Canada-USA) and east-west trade corridors. The existence of an extensive rail network, route capacities, and major rail carriers provide the requirements of a major rail gateway and add to the competitiveness of the region. As indicated in the "*Chautauqua, Cattaraugus, Erie & Niagara Regional Rail Strategy*" published by the Erie County Industrial Development Agency in March 2003, short line railroads play as important a role in the region as Class I carriers.

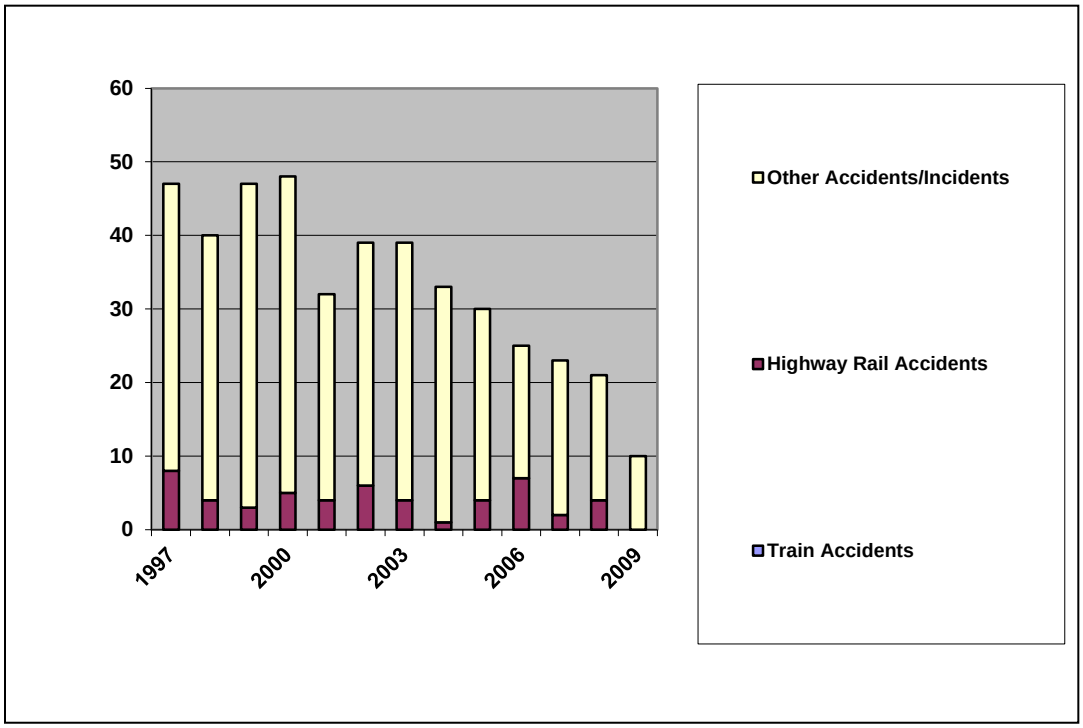
Strengths of the Regional Rail System

In particular, the following connections are the key strengths of the Buffalo-Niagara region:

- **North-South connection –** The CN International Bridge in Buffalo provides the connection for all rail freight traffic between Canada and the Buffalo-Niagara region. The Whirlpool Bridge in Niagara Falls, although not currently utilized for rail freight, currently provides an alternative route for cross-border traffic if emergency or capacity needs so require.
- **East-West connection –** The Chicago line (owned by CSX) and Southern Tier line (owned by NS) provide high capacity connections to the NYC Metropolitan area, New England, and points west and south.
- **Grade Crossing Safety:** As can be seen from the chart in **Figure 6- 10**, the number of rail-related accidents within the Niagara Frontier area has trended downward. There have been no train collisions within the region over the past 13 years. Each year, except for 2009, there have been several accidents involving trains and road users at highway/rail crossings. The number of "other" accidents, which cause harm to either railroad workers or members of the general public, have decreased over the past 13 years.

[12] Erie County Industrial Development Authority, 2003. Chautauqua, Cattaragus, Erie & Niagara Regional Rail Strategy, Western New York Rail Network

Figure 6- 10: Number of Railroad Accidents/Incidents in Erie and Niagara Counties



Source: U.S. Federal Railroad Administration, Office of Safety Analysis

During the same time period, the average number of rail accidents/incidents was about 0.12 per route mile. This compares favorably to the average number of accidents/incidents per route mile for New York State which is about 0.33.

Weaknesses/ Threats of the Regional Rail System

Although the region benefits from the presence of major rail carriers with good route capacity, inadequate terminal capacity, congested bridges, and local service issues pose severe constraints to reliable and cost effective freight rail service in the Buffalo-Niagara terminal area. These limitations are detailed below:

- **Terminal capacity and switching operations**: Past studies and interviews with shippers have pointed to the existence of service problems in the local rail system.[13] Interchange arrangements between various rail carriers (especially Class I carriers), and excessive dwell times in the major terminals add to the delays and costs of delivering commodities to shippers. In a global economy where shippers demand just-in-time delivery and better overall integration of logistical services, these factors affect the sustainability and economic growth potential in the region.
- **Rail Rationalization**: The Buffalo Rationalization Project undertaken by Conrail and NYSDOT in the 1980s introduced significant infrastructure and service improvements in the Buffalo-Niagara terminal. While the rationalization strategy was appropriate with a single carrier scenario, many capacity and connectivity constraints were re-introduced into the rail network when Conrail's assets and operations were split between CSX and NS. For example, NS traffic

[13] Erie County Industrial Development Agency, "*Rail Service Assessment and Opportunities for New Growth in the Buffalo-Niagara Region*," by James Cartin (June 2004).

destined for Buffalo was no longer able to use the Frontier Classification Yard because it was converted to a CSX facility. NS had to immediately rebuild the former Bison Classification Yard in order to provide terminal capacity for NS rail traffic.[14] However, other capacity and operating constraints in the Buffalo-Niagara terminal persist. These constraints, singularly or in combination, have an adverse affect on freight service efficiency and hinder economic growth in the region.

- **Current and Projected Level of Service**: The Association of American Railroad (AAR) commissioned a study in 2007 to investigate the long-term capacity needs of the continental U.S. freight railroads.[15] This study estimated the volume of 2005 freight traffic on the primary freight corridors in the U.S. and forecasted future traffic levels on the same corridors for 2035. These volumes were compared to 2007 capacity, 2035 capacity if no improvements are made, and 2035 capacity if necessary improvements are made. The study analyzed only a single rail line through the Buffalo-Niagara region, the CSX mainline, including the Lakeshore and the Rochester Subdivisions, the Chicago Line. The study found that the CSX line is currently below capacity and that the line would be near capacity by 2035 if no improvements were made.
- **Bottleneck**: Three strategic bridges in the region tend to restrict the performance of the rail system in the Buffalo-Niagara region:

  1) Although there are two bridges over the Buffalo River, only CSX's CP Draw Bridge is operational. Adjacent NS Draw Bridge has been out of service since 1980, after Conrail's Buffalo Rationalization Project. Multiple railroads use CSX's CP Draw Bridge and interchange between carriers is inconsistent. Through and interchange traffic can experience delays at this bottleneck and affect service reliability to local shippers. While the Chicago Line may be listed in the AAR report as currently below capacity overall, the CP Draw carries a larger number of trains per day on the remainder of the CSX line. This is because the NS and CSX mainline traffic both cross the CP Draw. CSX has provided an estimate that about 80 trains cross the CP Draw per day and that the capacity of the CP Draw is about 120 trains. According to CSX, about 10 percent of trains crossing the CP Draw are currently delayed, with an average delay of about 20 minutes. CSX expects the CP Draw to reach capacity in several years. Applying the overall Buffalo-Niagara growth forecast of rail tonnage as provided in Technical Memorandum #3 would suggest the following trains per day as shown in **Figure 6- 11**. The analysis suggests the CP Draw would not actually reach capacity until after 2025. However, it is likely that delays would increase significantly before that time. Furthermore, the forecast should be viewed as an average expected value. Actual numbers of trains per day will fluctuate significantly, which could cause large delays at peak times far before 2025.

[14] NS also experienced a surge of traffic in the Buffalo terminal, which overwhelmed the three small yards (Buffalo Junction, Buffalo Creek, and Abbott Road) it was using.
[15] Cambridge Systematics, Inc. for the Association of American Railroads, *National Rail Freight Infrastructure Capacity and Investment Study,* September 2007.

Figure 6- 11: Forecasted Trains per Day

Year	Trains per Day
2010	80
2015	90
2020	101
2025	114
2030	129
2035	147

2) The other key structure that could have major implications to the regional network is NS' Portage railroad bridge over the Genesee River in Letchworth State Park on the Southern Tier Line. This aging bridge currently has a weight restriction of 273,000 lbs. requiring cars that carry today's industry standard of 286,000 lbs to be diverted to other routes.

3) There are also concerns that freight service over the Whirlpool Bridge may eventually be formally abandoned. This could threaten the movement of U.S.-Canadian traffic if any interruption occurs at the International Bridge. It could also threaten the continuation of Amtrak service to Toronto (and plans for a new Niagara Falls station) as Amtrak may not be able to assume the rail maintenance responsibilities involved with the bridge and service to Toronto through Buffalo is not a viable option. Although a new rail passenger station in Niagara Falls can be justified solely on the basis of Empire Corridor service terminating in Niagara Falls, usage of the new station and the associated economic development benefits are enhanced if the station serves an international crossing.

- **Competitive Access**: Competitive rail service for the Western New York (WNY) corridors has historically been a concern in the region. WNY has suffered from high switching rates[16] and high rail rates in general, a result of the lack of competitive service options between rail carriers. Many local customers in this region do not have competitive rail access and are subject to large interchange or switching charges. If better connections and/or intermodal terminals could be established to facilitate or create competitive access to rail shippers, then both the reliability and cost of freight service would be improved. A long-term plan for the State's Lehigh Valley rail yard site could also be important to future rail operations in the Niagara Falls area. Railroad stakeholders in the region have suggested that a neutral railroad with the ability to move and handle cars anywhere in the Buffalo-Niagara terminal area would solve the competition problem and improve operating efficiency. As part of the STB review proceedings during the Conrail acquisition by CSX and NS, the SBRR, a subsidiary of the Genesee & Wyoming Railroad (GWRR), petitioned the STB to authorize a regional switching and terminal railroad such as the SBRR to serve as a neutral pick-up and delivery carrier operating on behalf of all railroads in the Buffalo-Niagara terminal area. SBRR suggested that operations by a single carrier throughout the terminal would relieve congestion and simplify interchanges. However, the STB rejected the establishment of a neutral terminal operation based on the premise that the region would have both CSX and NS as rail carriers replacing the single railroad operation of Conrail.

[16] Switching rates are charges railroads assess each other for delivering or picking up cars at a shipper.

- **Heavy Axle Loadings**: Increasingly, Class I railroads have been switching to heavier railcars, those that have a gross weight of up to 286,000 pounds (286K).[17] Studies have found that Class I operating costs for 286,000-pound railcars are nearly 9 percent less than that of 263,000-pound railcars.[18] Research has found that lines with 90-pound rail may be able to accommodate 286,000-pound railcars if the line has excellent tie maintenance, good ballast, and trains operate at low speeds.[19] However, if these criteria are not in place, rail sections must be upgraded to 100 tons and above. In many cases, bridge structures need to be upgraded as well to 286,000 lbs. This shift to heavier rail has created challenges to short line and regional rail carriers. In many cases, these carriers operate over rail lines that were built to relatively light standards. Often the lines were acquired from previous Class I carriers, which deferred maintenance before selling the lines to their new owners. Short line and regional railroads often do not generate sufficient financial operating returns to be able to embark upon major capital investments to rehabilitate rail lines on their own. Providing 286,000 lb. capacity for all freight rail infrastructures within the state is a strategy that has been adopted by the New York State Department of Transportation.[20] According to the 2009 New York State Rail Plan, there are two segments on short line/regional railroad lines within the Buffalo-Niagara region that are incapable of accommodating 286,000 lb. cars:
    - The Falls Road Railroad east of Lockport (13 miles)
    - The Buffalo Southern Railroad toward Gowanda (about 17 miles)

  Collectively, these lines comprise slightly under half of the total mileage of Class III rail carriers in the region and about 11 percent of all route rail route miles in the region. Another vital link that is not 286,000 lb. compliant is the Portageville Bridge on the NS Southern Tier line.

- **Clearance Issues**: Most minimum rail clearances over rail lines within the U.S. are based upon standards established by the Association of American Railroads (AAR). However, since these standards were established, new rail technologies have been developed, which create greater efficiencies, but require higher clearances. Double stack container trains and multilevel auto trains require as much as 22' above track for clearance. In addition, high cube boxcars and trains with project cargo can also create clearance issues, with high cube boxcars requiring as much as 18' of clearance. According the 2009 New York State Rail Plan, most of the NS and CSX rail lines within the area have full clearance, allowing for double stack intermodal trains to pass. However, a conspicuous exception is the CSXT Niagara Branch, which includes a tunnel of only 16' 10". The most constrained line within the area in terms of clearance is the Buffalo Southern line which has a clearance of 15' 6". This accounts for about 11 percent of the route miles within the area.

[17] More recently, some Class I railroads have been carrying 315,000 lb cars on mainlines that have been certified for them.
[18] Kenneth Cassavant and Denver Tolliver, *Impacts of Heavy Axle Loads on Light Density Lines in the State of Washington*, 2001.
[19] The weight of rail is measured in pounds per yard of rail: Zeta-Tech, *Estimation of the Investment in Track and Structures Needed to Handle 286,000-Pound Rail Cars.*
[20] 2009 New York State Rail Plan

6.3.5 Recommendations for the Regional Railroad Network

Class I Carriers

Federal and state transportation agencies, in conjunction with the local Metropolitan Planning Organizations (MPOs) and other key stakeholders, are trying to bring the Class I railroads to the table to participate in corridor planning initiatives that better support freight transportation movements as well as economic development.

The consulting team developed several alternatives based on rail carrier, shipper and stakeholder interviews, study team experience, input from NYSDOT and the local metropolitan planning organization (GBNRTC), the Transportation Research Board's (TRB) guidebook on Rail Freight Solutions[21] and previous studies conducted in the Buffalo-Niagara region. The location of the various alternative developed during the study are shown in **Figure 6- 12**. Each of these alternatives is discussed in the following section.

Figure 6- 12: Location of Alternatives Considered

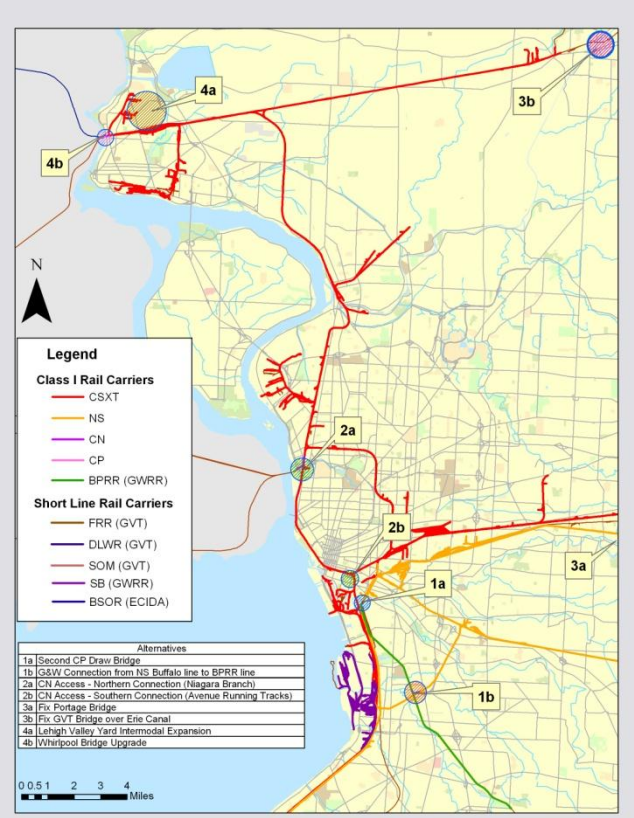


Figure 6- 13 provides a brief summary of the potential alternatives, related issues, advantages and disadvantages associated with each alternative and planning level estimated costs.

[21] Bryan J., G. Weisbrod and C. Martland, Rail Freight Solutions to Roadway Congestion- Final Report and Guidebook, NCHRP Report 586, www.trb.org, 2007.

Figure 6- 13: Rail Alternatives

Issue		Alternatives		Affected Railroad	Advantages	Disadvantages	Estimated Cost	Remarks
1	CP Draw Congestion	1a	CP Draw Bridge Replacement	NS	The new bridge will relieve CP Draw Bridge congestion considerably	High cost of bridge and track construction CSX tracks need to be flipped to other side to allow NS access to interchange yard	$ 40 million	Cost estimate updated based on 2001 STB Report
		1b	G&W Connection from NS Buffalo line to BPRR line	G&W/ NS	The new route will relieve congestion by avoiding CP Draw for G&W Better route for NS to CP Draw as well	Operating agreement required with NS	$ 2 million	Funding application filed with NYSDOT
2	International Crossings / Highway Congestion (Peace Bridge and Lewiston Bridge)	2a	CN Northern Connection (Niagara Branch)	CN	Competitive access to South Buffalo/ Lackawanna area Reduced truck congestion on international bridge crossings	Operating agreement required with CSX	$ 3 million	–
		2b	CN Southern Connection (Avenue Running Track)	CN	Competitive access for CN to South Buffalo / Lackawanna (proposed Freight Village)	Operating agreement required with CSX	$ 5 million	–
3	Railroad Bridge Load Capacity Restrictions	3a	Portage Bridge Replacement	NS	Better access to PANYNJ , Buffalo Terminal and Bethlehem Site (proposed Freight Village) Will also relieve congestion on CP Draw	High Cost of construction	$ 25 million	Funding application filed with NYSDOT
		3b	Falls Road Bridge over Erie Canal Rehabilitation	GVT	Maintains service between Lockport and Niagara Falls		$ 1 million	Funding application filed with NYSDOT
4	Lehigh Valley Yard Development	4	Lehigh Valley Yard Intermodal Expansion	CSX, GVT and short lines	Expanded intermodal capabilities Increased warehousing/ distribution facilities		$ 15 million	Additional market analysis required

Alternative 1a - CP Draw Bridge Replacement

As discussed previously, CP Draw Bridge is still one of the most congested locations in the Buffalo-Niagara rail network. It is a two track mainline bridge that carries the Chicago Line over the Buffalo River. CP Draw is currently controlled by CSX, but is also used by all of the Class I and short line railroads to interchange traffic in the Buffalo terminal area. Because of the heavy volume of CSX mainline traffic through this area, there are very few windows for local and interchange traffic to get through CP Draw each day. As a result, there are significant crew and service delays to the other railroads that cannot be controlled or recovered. This has a direct affect on shipper schedules and costs.

One possible alternative to relieve congestion at CP Draw is to replace the inactive northern bridge with a new structure. The new bridge would connect the CSX lines to the north on either side of the Buffalo River. This would allow the existing bridge to be used by NS and short lines to the south without interference from CSX mainline traffic.

However, there are significant incidental logistics and cost considerations beyond the actual replacement structure associated with this alternative.

First and foremost, is the question of whether the new bridge would be movable or not. The existing structures at CP Draw are both movable, cantilever lift bridges, although the northern span is currently out-of-service and fixed in the upright position. This is necessary because the Buffalo River is a navigable waterway and the railroad grade is too low for boats and barges to pass underneath. In particular, there is a barge-served Mobil Oil facility downstream from CP Draw that requires access.

If the replacement structure was a fixed span (not a movable bridge), then the cost would be significantly less and the existing structure to the south would no longer have to be maintained as a movable span (which would result in future maintenance savings). In order for the new span to be fixed, this segment of the Buffalo River would have to be de-designated as a navigable waterway by the U.S. Coast Guard and the City of Buffalo. Service to the Mobil Oil facility could be accommodated through an upstream pipeline distribution system (would still be less expensive than the movable bridge).

However, restricting the use of this segment of the river by others (including recreational users) would be a difficult decision for both the public and private sectors. Therefore, it is assumed for the purposes of this report that the new bridge would have to be a movable span in order to preserve the Buffalo River as a navigable waterway.

Another significant incidental cost issue beyond the new movable bridge would be the need to shift the existing CSX mainline tracks on either side of the river to the north to align with the new CP Draw Bridge. This would require extensive track, turnout and signal improvements at CP Draw interlocking.

Once the CSX tracks and signals were realigned to the north, then new tracks, turnouts and signals could be installed on either side of the southern bridge alignment for NS and the short lines to connect the interchange yard to Bison Yard and points east.

While there is sufficient railroad right-of-way to physically construct all of these improvements, there would be complex ownership, operational logistics, legal and cost considerations that would have to be negotiated and coordinated in order to complete this project.

This alternative to relieve congestion at CP Draw has been under consideration for some time. In 2001, the total project cost was assumed to be $35 million, but current estimates place it between $40 and $50 million depending on the scope and complexity of the final preferred option. While CSX has not pushed for this project, other carriers and shippers in the region have been lobbying for a second CP Draw Bridge and have requested public funding support.

Alternative 1b - G&W Buffalo Line Connection

Another alternative to relieve congestion at CP Draw is to reroute some interchange and short line traffic onto another line and avoid this choke point completely. Even though the alternate route would be slightly longer, it would not be subject to the extensive delays incurred by waiting for CSX mainline traffic to clear at CP Draw.

The Genesee & Wyoming Railroad (GWRR) currently enters the Buffalo terminal area via their Buffalo Line. GWRR typically incurs delays at CP Draw while attempting to reach the interchange yard on the other side of the Buffalo River. A new connection from the Buffalo Line to the NS line into Buffalo would allow GWRR to bypass CP Draw Bridge. The connection will also benefit NS as they could also bypass CP Draw. The estimated cost for the track and signal improvements associated with this alternative is about $2 million. An operating agreement with NS would also be required. This project is a high priority for GWRR and they are currently applying for NYSDOT funding assistance in order to implement these improvements as soon as possible.

Alternative 2a - CN Northern Connection (Niagara Branch)

Another carrier experiencing competitive access problems and delays in the Buffalo terminal area is the Canadian National Railway (CN). CN currently accesses the Buffalo terminal area via CSX trackage rights over the Niagara Branch, Belt Line and Chicago Line to Frontier Yard.

The Niagara Branch is a single track line that connects the Buffalo and Niagara Falls terminal areas. It connects to the Chicago Line at CP 437 and heads north to Niagara Falls around the west side of Buffalo along the Niagara Thruway (I-190) corridor. The Belt Line is a double track corridor that connects Frontier Yard with the Tonawanda and Niagara Falls industrial complexes as well as traffic to Canada.

In order to interchange with other carriers (e.g., South Buffalo Railroad) via the current trackage rights agreement with CSX, CN has to go to Frontier Yard and then deal with the congestion and delays at CP Draw via the Chicago Line which makes service to this area less attractive and cost effective.

If CN had access to South Buffalo via CSX trackage rights over the Niagara Branch, then they could avoid congestion and delays at Frontier Yard and CP Draw completely. This would require new track and turnouts at CP 5 that currently only allow for northbound movements from Canada to the Niagara Branch.
A new track connection at CP 5 would create a “wye” that would also allow moves in the southbound direction from Canada. A wye connection is always desirable in that it provides operating flexibility and reduced delays for traffic moving through this location.

Alternative 2b - CN Southern Connection (Avenue Running Track)

This alternative compliments Alternative 2a, in that this alternative will provide CN with more direct access to the South Buffalo/Lackawanna area via the Niagara Branch. This alternative includes the construction of an automated southern track connection from the Niagara Branch to the Avenue Running Track, thus allowing CN trains to access South Buffalo via CSX’s Compromise Branch.

The Niagara Branch was formerly a double-track, shared use corridor (passenger and freight) but one of the tracks was removed by Conrail in the 1980s as part of the Buffalo Rationalization Project. The Compromise Branch was also rationalized to carry Amtrak passenger trains (and little or no freight) around the congested CP Draw Bridge on an at-grade rail line through downtown Buffalo that crosses several city streets.

There are typically eight Amtrak trains per day (four in each direction) on the Niagara Branch. CSX only runs occasional local freight service on the Niagara Branch between CP 7 and CP 1 (CP 437 on the Chicago Line) at this time, but can re-route freight traffic onto this line if operating conditions warrant it. Even though the Niagara Branch is a single track at this time, it still has considerable reserve capacity to handle additional passenger and freight traffic before a second main track would be warranted.

A new, automated southern connection to the Niagara Branch and the Compromise Branch for CN would require a new operating agreement with CSX (which might be difficult if viewed as a competitive disadvantage by CSX). However, if this new connection alternative were feasible, it would open up another business option for CN.

CN currently terminates all its intermodal container traffic near Toronto in Brampton, ON. The containers are transloaded onto trucks there and then travel over the road to the U.S. via the Peace Bridge and Lewiston Bridge border crossings. While these truck trips are more costly and typically experience customs delays at the border, there is insufficient traffic volume to make the short trip from Brampton to Buffalo cost effective for rail over the current route through Frontier Yard.

However, if CN could travel directly from Brampton to South Buffalo via the Niagara Branch (and avoid Frontier Yard and CP Draw), then the economics of rail over such a short distance become much more attractive. Based on discussions with CN, about 250 containers per day (the equivalent of a 60-car unit train) would be the minimum volume required to justify this type of "shuttle" service between Canada and the U.S. The new connections at the north and south end of CSX's Niagara Branch will reduce trip times, eliminate delays at CP Draw and make the economics of rail vs. truck shift dramatically.

In addition to providing CN with competitive access to the South Buffalo/Lackawanna area, it should also be noted that this alternative would help reduce truck congestion on international border crossings (i.e., Peace Bridge and Lewiston Bridge). The total estimated cost for this alternative is approximately $3 million to $4 million.

Alternative 3a – Rehabilitate Portage Bridge

As previously discussed, the NS-owned Portage Bridge over the Genesee River is beyond its expected service life and needs to be replaced. It currently has weight restrictions that can affect the type and frequency of traffic that goes over this mainline route to Buffalo.

While there are alternative routes around Portage Bridge to Buffalo, such as via the NS-owned Meadville Line through Hornell and Olean, NY currently operated by the Western New York & Pennsylvania Railroad (WNYP), travel via this route takes much longer and does not support as many industries as the

Southern Tier Line between Binghamton and Buffalo. In addition, the need for an improved connection at Olean (to the Western New York and Pennsylvania Railroad) and added route miles (40 miles longer than Buffalo Hornell route) make this alternative less appealing to other railroads and shippers.

Alternative 3a includes restoration or replacement of the Portage Bridge to preserve the capacity and integrity of this important Buffalo gateway. The alternative will provide NS with better access to New York City (PANYNJ), the Buffalo-Niagara terminal area.

Total cost of this project is estimated to be approximately $25 million. NS has already applied for funding assistance from NYSDOT and is currently in the engineering design and environmental impact stage.

Improvement 3b – Rehabilitate Falls Road Bridge over Erie Canal

The GVT/Falls Road Railroad Bridge over the Erie Canal is structurally deficient and currently has weight restrictions. Alternative 3b would provide for the rehabilitation of this critical bridge to ensure safety of railroad operations and increase capacity of the Falls Road Railroad.

The total estimated cost for this alternative is approximately $1 million. GVT has already applied for funding assistance from NYSDOT and plans to complete this project by 2010.

Alternative 4 - Lehigh Valley Yard Intermodal Expansion

The NYSDOT-owned Lehigh Valley Yard located near the Whirlpool Bridge in Niagara Falls is also an excellent site for an intermodal freight terminal because it has good rail and highway access near an international border crossing. It would also complement the development of the Lehigh Valley Yard as an Intermodal and Free Trade Zone center.

Future requirements for the former Lehigh Valley Rail Yard are dependent more on several factors such as the willingness for CN and CSX to enter into an interchange arrangement for commodities destined specifically for the Niagara Falls area; CN's willingness to contribute toward the rehabilitation of the Whirlpool Bridge, and NYSDOT's approval of the intended use of the facility rather than the market demands of any specific commodities. Unless the facility is used to serve primarily Niagara Falls markets, more attractive areas (larger, with potential for competitive and efficient access) are available elsewhere in the study region.

6.3.5.1 Evaluation of Rail Projects

Alternative 1a CP Draw Bridge Replacement – The benefit/cost analysis that was included within Technical Memorandum #5 estimated that the CP Draw would reach capacity by 2027, based upon the current number of trains per day that pass over the bridge and the forecasted annual increase in traffic. However, the CP Draw could reach capacity at peak periods far before 2027. The analysis relies in part on data provided by CSX and part on assumptions. This study recommends that a more rigorous analysis be performed on the likely delays caused by future congestion at the CP Draw, which would rely upon traffic simulation modeling. This would require extensive cooperation by the carriers. The results of the benefit/cost analysis suggests that the discounted benefits of replacing the CP Draw do not currently

justify the $40 million cost. The benefits are estimated to be $22 million at a three percent discount rate and $13 million at a seven percent discount rate. A sensitivity analysis suggests that in order for the project to yield a positive benefit/cost ratio, the average delay would need to be 60 minutes at the CP Draw. However, the results could change with more rigorous modeling of future traffic and delays. While the CP Draw featured prominently in the merger proceedings of the acquisition of Conrail assets by CSX and NS, the issue did not appear to be as prominent in recent discussions with stakeholders.

Alternative 1b: G&W Connection from NS Buffalo Line to BPRR Line – This project points to measures that could potentially help to relieve congestion at the CP Draw at a lower cost than constructing a new bridge. The benefit-cost analysis included in Technical Memorandum #5 suggested that this project could be a cost effective measure, yielding $16 million in benefits at a three percent discount rate and $10 million in benefits at a seven percent discount rate, compared to the $2 million cost of the project. While additional funds may need to be spent to allow the line to accommodate that traffic that is assumed to divert to the line under the Technical Memorandum #5 analysis, the project has significant potential.

Alternatives 2a and 2b: CN Northern Connection and CN Southern Connection – Not all of the benefits from these projects could be quantified. These two alternatives would help to address a problem that was identified by several stakeholders in the project, lack of competitive access. They would be contingent upon an agreement between CSX and CN, a significant uncertainty. Another issue would be the clearance on the Niagara Branch. Currently, clearance issues such as a tunnel of 16' 10" near the Amtrak station limits the types of railcars that could be accommodated on the line. One potential solution would be to provide CSX with an incentive to provide CN access. CN is provided access in return for a tunnel clearance project.

Alternative 3a: Portage Bridge Replacement – The Portage Bridge Replacement project is potentially the highest priority rail project in the region. The bridge is in critical condition, and the NS Southern Tier line on which the bridge is located is one of the two most important rail connections between the region and its principal trading partners. Technical Memorandum #5 estimated that the project yielded benefits of $184 million, easily outweighing the $25 million cost of the project.

Alternative 3b: Falls Road Bridge over Erie Canal Replacement – This project should also be a high priority. The bridge is in poor condition. The rail line that traverses the bridge could serve a new ethanol plant in Shelby, NY. The potential traffic is sizeable. The project benefits should justify the $1 million cost.

Alternative 4: Lehigh Valley Yard Intermodal Expansion – There may be a number of effective uses for the Lehigh Valley Yard, but an intermodal container terminal at this location may face challenges. The yard is located on a CSX rail line, but the carrier already operates an intermodal terminal within the region. Adding another to the CSX network would be inefficient. Another option could be to attempt to establish a new terminal on CN's network. However, this may be difficult to justify with CN's Brampton, OH terminal a relatively short distance away.

Class II and Class III Carriers

The rail projects that were presented in Technical Memorandum #4 were only a subset of the rail projects put forth for Erie and Niagara Counties within the 2009 New York State Rail Plan. Many if not all were also included in later in a TIGER Discretionary Grant Application by the GBNRTC dated September 15, 2009, entitled "Western New York Short Line Freight Rail Initiative." A discussion of the projects included within the GBNRTC - TIGER application are discussed in the following section. In Technical Memorandum #4 each of these projects was given a qualitative assessment based on the likely outcome of undertaking the project, versus not undertaking the project. For instance, what is the likelihood that if the infrastructure is not upgraded, it would soon be rendered of limited or no use at all? The Falls Road Bridge over the Erie Canal is such a case. Also rated as important were projects that enable rail lines to accommodate 286,000 lb. rail cars. Without these improvements, these lines will become increasingly obsolete, as they will not be able to accommodate industry standard equipment. Projects were also considered to be high priority if they appear to have a high economic development potential or activity. In these cases, the study team was able to identify specific growing rail markets that would depend upon the projects. Generally, projects were assigned lower priority if the line is already in good condition and heavily built. Projects also receive a lower priority if potential funding sources are already available, such as the FRA Highway-Rail Crossing Program. General maintenance projects were considered to be of lower priority.

Falls Road Bridge over Erie Canal

The Falls Road Bridge over the Erie Canal was described in Technical Memorandum #4 and appeared as Alternative #3b. Genesee Valley Transportation currently operates the Falls Road Railroad (FRR) in Lockport which utilizes this bridge. The bridge is used by the FRR to service an ethanol plant; the plant produces 50 million gallons annually. The ethanol plant receives carloads of grain and ships out tank cars of ethanol and hopper cars loaded with dry distiller grain (DDG). The bridge was lightly utilized until the construction of the ethanol plant. A 50 million gallon ethanol plant has the potential of shipping over 1,700 tank cars of ethanol per year plus 1,500 hopper car loads of DDGs. Because of the impact on a large potential volume of traffic, this project could yield sizeable benefits. The project should be able to justify the $1 million estimate to rehabilitate the bridge. Genesee Valley Transportation has applied for funding with the NYSDOT for this project. Due to the direct impact on a customer, this project would be given high priority.

Burrows Lot Yard

The Burrows Lot Yard is an underutilized yard in a distressed area of Buffalo. The track structure needs to be upgraded to current safety standards in order to service the proposed Buffalo Lakeport (grain operation) and RiverWright (ethanol plant) operations. While the RiverWright project is currently on hold, in June 2008 Whitebox commodities purchased the grain elevator on the 23-acre site. Whitebox, an investment group which specializes in grain futures trading, recently moved into "hands on" grain handling and storage through the acquisition of grain silos in the Midwest and in Buffalo. Rehabilitation of the elevator included installation of new electrical and conveyor systems, plus general clean-up of the neglected complex. Whitebox has continued to modernize the silos, including installation of a mechanized hopper which allows it to receive grain shipments from "self-unloading" freighters. The

restoration of the grain silo to service could provide a compelling case for the restoration upgrade of track at the Buffalo Burrows Lot Yard.

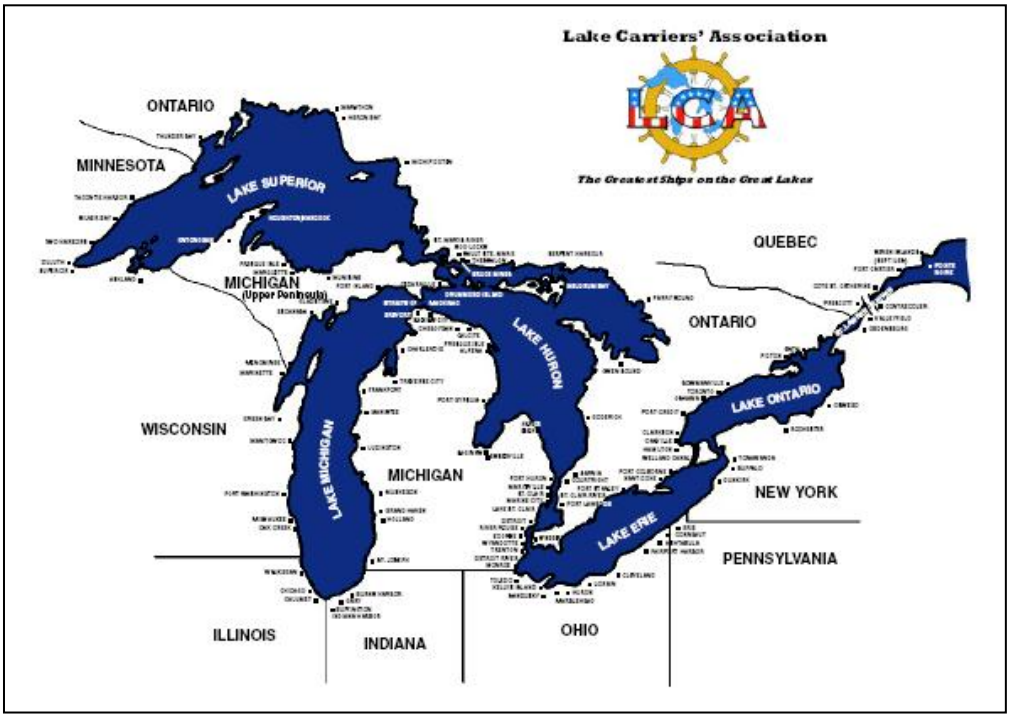
6.4 Maritime

6.4.1 Waterborne Freight Trends and Implications for the Great Lakes/St. Lawrence Seaway

The growth of international trade has spurred the expansion of the U.S. and global economies. In the U.S., international trade accounts for approximately 30 percent of the GDP with maritime transportation representing 90 percent of the international commerce. Concomitantly, maritime freight transport, container shipping as well as bulk, has grown dramatically over the past two decades. High quality freight transportation benefits local economies by making the cost of imported as well as exported goods cheaper, and done well can enhance the quality of life.

Buffalo is part of the Great Lakes St. Lawrence Seaway system. The Great Lakes St. Lawrence Seaway is an improved waterway with canals and locks and dredged channels (**Figure 6- 14**). It extends 2,342 miles from the Atlantic Ocean through the St. Lawrence Seaway and Great Lakes to Duluth, Minnesota on Lake Superior. Channels are maintained at a depth of 27 feet to support waterborne commerce. Between the limitations imposed by the depth of channels and the dimensions of the locks, maximum vessel size is 740 feet in length, 78 feet in width, a draft of 26 feet 6 inches and a 116.5 foot height above water.

Figure 6- 14: Great Lakes/St. Lawrence Seaway System



In total, the GLSLS system has lost market share over the past several decades. **Figure 6- 15** shows total U.S. freight as measured by ton-miles increased about one-third between 1980 and 2004 with increases particularly striking in trucking (doubled) and rail (increased by about 80 percent). In contrast, cargoes

on the GLSLS declined by about 10 percent. Given the overall trends, individual ports in the GLSLS that have managed to maintain volumes, should be considered quite successful.

Figure 6- 15: U.S. Freight Demand (millions of ton-miles)

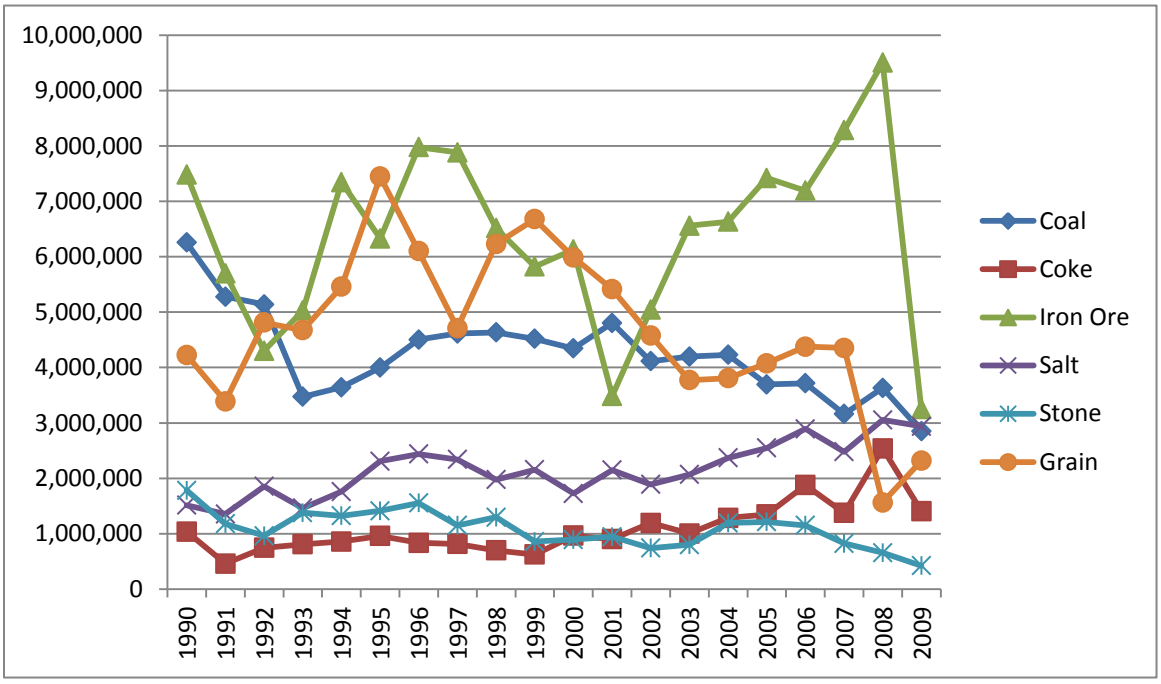
Mode	1980	1990	2000	2004	Percent Change 1980 - 2004
1. All modes	3,404,015	3,621,943	4,328,642	4,541,668	33.4%
2. Air	4,840	10,420	15,810	16,451	239.9%
3. Truck	629,675	848,779	1,192,825	1,281,573	103.5%
4. Railroad	932,000	1,064,408	1,546,319	1,684,461	80.7%
5. Domestic water transportation	921,835	833,544	645,799	621,170	-32.6%
a. Coastwise	631,149	479,134	283,872	279,857	-55.7%
b. Lakewise	61,747	60,930	57,879	55,733	-9.7%
c. Internal	227,343	292,393	302,558	284,096	25.0%
d. Intraport	1,596	1,087	1,490	1,484	-7.0%
6. Pipeline	915,666	864,792	927,889	938,013	2.4%
7. Oil and oil products	588,000	584,100	577,000	599,600	2.0%
8. Natural Gas	327,666	280,692	350,889	338,413	3.3%

Source: U.S. Bureau of Transportation Statistics

Figure 6- 16 displays the tonnage trends for some of the primary commodities that flow through the Welland Canal section of the GLSLS. As shown, coal shipments have declined from about 6.3 million tons in 1990 to about 2.9 million tons in 2009. The commodity group with the largest decline over the same time period has been grain; in 1990 grain movements on the GLSLS peaked at 6.7 million tons, but declined to 2.3 million tons by 2009. Much of the grain volume decline can be attributed to a collapse in grain exports on ocean-going vessels out of the GLSLS. In 1999, about 5.9 million tons of grains were shipped in ocean vessels through the Welland Canal. By 2009, this had decreased to 1.6 million tons.

Shipments of salt steadily increased between 1990 and 2009, consisting primarily of road salt. As metropolitan areas have grown, so has their need for road salt. Except for 2009, shipments of iron ore and coke have generally trended upward.

Figure 6- 16: Tonnage Trends of Marine Traffic in Welland Canal Section



6.4.2 Regional Water Port Strengths, Weaknesses, Opportunities and Threats (SWOT

The Port of Buffalo is not a large port by comparison with other Great Lakes ports (**Figure 6- 17**). However, unlike many Great Lakes ports, which are focused on one commodity, the Port of Buffalo is highly diverse. The Port of Buffalo handles a variety of commodities, with a multiplicity of trading partners. While the volume is relatively small, the Port handles domestic and international freight, both import and export.

Figure 6- 17: Great Lakes Ports Ranked by Tonnage

Port	Tons (Millions)	Waterbody	Population (Thousands)
Duluth-Superior	44.7	Superior	114
Montreal	26.0	Seaway	1,600
Chicago	25.8	Michigan	2,840
Detroit	17.4	Huron	887
Cleveland	13.6	Erie	452
Hamilton	13.6	Ontario	500
Toledo	10.5	Erie	300
Burns Harbor	9.8	Michigan	<1
Ashtabula	9.7	Erie	21
Conneaut	7.4	Erie	12
Milwaukee	3.8	Michigan	600
Toronto	2.8	Ontario	2,480
Green Bay	2.7	Michigan	100
Buffalo	1.6	Erie	300
Monroe	1.6	Erie	22
Erie	1.1	Erie	100
Oswego	0.7	Ontario	17
Oshawa	0.2	Ontario	141
Nanticoke	NA	Erie	<1
Port Colborne	NA	Erie	19
Port Maitland	NA	Erie	NA
Port Stanley	NA	Erie	NA

Source: Port Documents

Strengths of the Regional Port/Waterway System

- Buffalo's diversity provides it with an economic advantage over Great Lakes ports with a more limited commodity base as maritime commerce will be more consistent. Buffalo represents only one percent of total Great Lakes port commerce. The Port, however, accounts for nearly seven percent of the agricultural products (grain) moving on the Great Lakes and participates in four percent of the petroleum traffic.
- To improve their operating economics, vessel operators seek back haul cargoes. Consequently, vessels make multiple port calls to load or discharge cargo. The Port of Buffalo relies on nearby Lake Erie ports to fill the holds of vessels calling on Buffalo, thus improving the economics of the Buffalo trade. Ports such as Erie, Conneaut and Ashtabula, which are 78, 107, and 119 miles from Buffalo, respectively, provide cargo for ships that would return empty. Similarly, the Canadian ports of Nanticoke, Port Colborne and Port Maitland play the same role. Choice of ports depends upon the type and availability of cargo, and the requirements of the vessel operator.
- The Great Lakes/St. Lawrence Seaway (GLSLS) provides a vitally important transportation alternative to Buffalo area shippers. For example, lake vessels can carry the equivalent of three to four unit trains of bulk commodities. Not only do marine transportation options lower shipping costs, but the availability of service also provides a bargaining chip for shippers when

negotiating with railroads. Lake service is particularly valuable for shippers of bulk commodities where the enormous capacity of lake vessels is an advantage. Lake service is also valuable to shippers of oversized "project" cargoes, which can be extremely complex and expensive to move via roadways, and difficult as well to ship by rail.

Weaknesses of the Regional Port/Waterway System

Most Great Lakes Ports are governed by a port authority. Port authorities may engage in terminal operations or more frequently serve as a landlord port in which the authority owns and develops port property and markets the port's services. Although not necessarily detrimental, Buffalo has no port authority and limited membership with port promotion associations (**Figure 6- 18**).

Figure 6- 18: Great Lakes Ports – Institutional Profile

Port	Port Authority	Association
Ashabula	X	
Buffalo		5
Burns Harbor	X	1,2,3,4
Chicago	X	1,2,3,4
Conneaut	X	
Cleveland	X	1,2,3,4
Detroit	X	1,2,3,4
Duluth-Superior	X	1,2,3,4
Erie	X	3
Green Bay	X	4
Hamilton	X	2,3,4
Milwaukee	X	1,2,3
Monroe	X	
Montreal	X	2,3
Nanticoke		
Oshawa		3,4
Oswego	Yes	1,3,4
Port Colborne		
Port Maitland		
Port Stanley		
Toledo	X	1,2,3,4
Toronto	X	2,3
Associations		
1=American Great Lakes Ports Association		
2=American Association of Port Authorities		
3=Chamber of Maritime Commerce		
4=Highway H2O		
5=Council of Upstate Ports		

Source: Port Documents, Association Documents

- Virtually all Great Lakes ports participate in numerous port associations. Ports are nodes in a network and these associations facilitate business arrangements between ports and enable ports operators to keep abreast of new opportunities. Currently the Port of Buffalo participates in the Council of Upstate Ports. Many of its larger competitors participate in several port associations.

Opportunities for the Regional Port/Waterway System

While some Great Lakes cargoes have struggled in recent decades, there are some significant potential opportunities for growth. These will be explored more fully in a marketing plan that will appear in the final report. Some potential growth areas include:

- Wind turbines have been a growth area for Great Lakes shipping. Because wind turbines are often sourced from Europe and because the wind turbine sections would be difficult to transport by other modes such as road, they are often transported directly in small ocean vessels along the GLSLS. Both the governments of Ontario and New York have established aggressive alternative power goals. The government of Ontario's Supply Mix Directive of June 13, 2006 declared that the Ontario Power Authority should increase installed capacity of new renewable energy resources from 2,700 MW 2003 base to 10,402 MW for 2010, and 15,700 for 2025. In 2004, New York established the Renewable Portfolio Standard (RPS) to increase the percentage of electricity delivered to New York consumers that is generated by renewable resources to 35 percent by 2013. Subsequently, Governor Patterson proposed to increase the goal to 45 percent clean energy by 2015. The New York Power Authority (NYPA) has proposed a 120 MW to 500 MW wind project in the New York waters of Lake Erie and/or Lake Ontario.[22]
- Additional ethanol project or biodiesel projects will require corn and soybean inputs that will need to be brought into the region. These cargoes would be well-suited for transportation along the GLSLS.
- Growth in other agricultural activities in the area, such as dairy could spur the need for additional inputs like feed, which could further create demand for GLSLS shipping.
- Pipes and other heavy equipment for oil and gas exploration, as well as utility upgrades/retro-fitting.

6.4.3 Regional Water Port Recommendations

Short-sea Container Alternatives

Technical Memorandum #4 presented the idea of initiating short sea shipping between the Port of Buffalo and strategic markets on the Great Lakes. The determination of the parameters of the service would depend upon the likely value proposition that it could provide to the service's users. Service could be containerized or roll-on/roll-off (Ro/Ro) service. The benefit of roll- on/roll-off service is the flexibility of using typical over the road tractor-semitrailer truck equipment. A variety of truck equipment (e.g., dry van, reefer, flat bed) can be loaded onto or off of Ro/Ro cargo ships, whereas container ships are exclusive to shipping containers.

There are two types of Ro/Ro service, semitrailers and full tractor-semitrailer combination vehicles. The same cargo vessel can handle both types of service. The type of service is typically dependent on the length of the trip and shipper needs. For short trips, (a few hours or less) truck ferries that transport tractor-semitrailer combinations and driver are appropriate in order to keep the load/unload time to a small fraction of the total trip time. For the longest trips, the vessel would carry drop trailers. Medium size trips might keep the trucks but leave the drivers on shore for other drivers to pick up on the other end.

[22] http://www.nypa.gov/NYPAwindpower/GreatLakesWind.htm

The two most logical potential services would be: 1) Ro/Ro service on Lake Erie to Detroit, Toledo, or Cleveland; and, 2) a containerized service to a Canadian port such as Halifax, NS or Montreal, PQ. Of the potential markets for Option 1, the Detroit area may make the most sense. Detroit is farther, at slightly over 250 miles if driven to through Canada. Per **Figure 6- 19** below, Detroit also has the highest level of trade with the Buffalo-Niagara region. Cleveland is another possibility, but the level of traffic to and from Toledo, OH is low.

Figure 6- 19: 2004 Truck Traffic to and from the Greater Buffalo-Niagara Region

Market	2004 Equivalent Trucks
Traffic to Buffalo-Niagara	
Cleveland (Cuyahoga County, OH)	96,008
Toledo (Lucas County, OH)	15,218
Detroit (Wayne, Oakland, Macomb Counties, MI)	77,778
Traffic from Buffalo-Niagara	
Cleveland (Cuyahoga County, OH)	72,547
Toledo (Lucas County, OH)	7,785
Detroit (Wayne, Oakland, Macomb Counties, MI)	102,223
Total Traffic to and From Buffalo-Niagara	
Cleveland (Cuyahoga County, OH)	168,554
Toledo (Lucas County, OH)	23,003
Detroit (Wayne, Oakland, Macomb Counties, MI)	180,001

Source: TRANSEARCH®

Another short sea shipping alternative from the Buffalo-Niagara region would be a containerized service between the region and Montreal or Halifax. This would be a feeder service in which international containers would arrive or depart at a deeper water Canadian seaport and be transferred to smaller vessels to and from the Buffalo-Niagara region.

AES Somerset Lake Platform

As mentioned in Technical Memorandum #4, AES Somerset has proposed to invest $25 million to construct a 3,200-foot long pier-conveyor that will allow the facility to obtain water borne deliveries of coal, petroleum coke and limestone instead of having to rely on rail. The company has expressed willingness to allow other users access to the pier and encourages development at its 1,800 acre site. Given the proposed design of the pier, it will be most appropriate for transferring bulk commodities rather than intermodal or break bulk goods. The company is currently considering the economic environment and the status of energy markets before pursuing the project further.

Figure 6- 20: AES Somerset Lake Unloading Project

Source: AES Somerset website

Revitalized Erie Canal

Consideration is being given to renewing the Erie Canal as a transportation artery. It would provide a fuel efficient low cost alternative to road or rail for intrastate cargoes. According to the Corps of Engineers, a truck moves 82 ton-miles per gallon, while a barge moves 544 ton-miles per gallon, more than six fold productivity and cost differential.

The Erie Canal links Lake Erie and the Niagara River to the Hudson River and is part of the New York State Canal system with connections to Lake Ontario, Lake Champlain and the Finger Lakes. Today, it is used infrequently, as it has been neglected in recent years and not dredged to its authorized depth. Dredging is costly and, while Federal funding is available, it is difficult to obtain.

New York State has funding available for the purchase of shallow draft canal boats that could be used for container-on-barge service. The New York State Transportation Bond Act of 2005 authorized $3 million for a Canal container-on-barge demonstration project, including design and construction of two container barges specifically built for the Canal. The agreement has not been finalized. In addition to proving the viability of the technology, it may also demonstrate that a market exists that would require dredging. If dredging were shown to be warranted, funding from the Corps is available. There is an earmarked funding source available. Section 341 of the Water Resources Development Act of 1999 authorizes the Corps to contribute to 50 percent of canal improvements up to $18 million.

A recent Corps report describes the degree to which the canal has shoaled up from design depths of 14 feet to controlling depths of 11 feet in some sections and 12 feet in others and states the conclusion that

dredging would enhance the freight carrying capacity of the canal. [23] Potential opportunities for Buffalo and the Canal include:

- Ethanol transport, which currently moves by rail from the Midwest to Albany. With substantial ethanol production planned for Buffalo, the product could move through the Canal and down the Hudson River to New York City.
- Transport of building and highway construction/maintenance materials such as salt, rock and riprap that are very dense. Overweight truck limitations in and around metropolitan New York would prevent economic carriage by truck into the city.
- Container-on-barge service, particularly at waterfront facilities in the region eliminating the need for longer distance drayage. There would still be the requirement for shorter distance drayage to transport containers on chassis from the barge terminal to/from the shipper point.

6.4.3.1 Evaluation of Projects

Short Sea Shipping – Technical Memorandum #5 analyzed the costs of the most likely short sea shipping services and compared them to the most likely alternatives, trucking or intermodal rail. The analysis found that a major drawback to most of these services would be speed. Records of Great Lakes vessel transit times suggest that these vessels typically operate at around 11.5 miles per hour, compared to 48 miles per hour for trucking (includes stops, etc.). Furthermore, most potential short sea services would be offered only several times per week. Shippers would need to wait for sailings. By contrast, users of trucking services could schedule trucking service at any time. The service would face a tradeoff. A greater service frequency would boost the attractiveness of the service but would make it more difficult to feasibly attract enough users to fill each vessel. Another drawback to the service would be the closure of the service during the winter months, when shippers would need to find alternatives. Due to these drawbacks, the service would probably need to provide a large magnitude of savings over existing transportation options in order to attract users.

Unfortunately, U.S. flagged vessels are costly to operate, typically somewhere between $20,000 and $30,000 per day. The GLSLS system can only accommodate relatively small container or Ro/Ro vessels. The 2002 U.S. Army Corps of Engineers *Reconnaissance Report* mentioned that the locks and channels of the GLSLS could currently accommodate a 500 twenty-foot equivalent unit (TEU) ship, although some harbor dredging would be necessary for these ships to operate.[24] At this size, the capacity is roughly equivalent to that of a large double stack intermodal train, which can handle as many as 280 forty-foot containers, or 560 TEU's. In addition, most short sea shipping alternatives would require costly short-haul trucking moves at each end of the maritime service for trucks move containers and trailers to and from port facilities. Port handling and the Harbor Maintenance Tax (HMT) would also add cost. Combining these costs, it would be difficult to achieve large cost savings.

However, the estimates that appear in Technical Memorandum #5 reflect current conditions. New technologies, more flexible manning requirements, changes in fuel prices, changes to the HMT could

[23] "New York State Barge Canal: Planning Strategy Memorandum" US Army Corps of Engineers (June 2006).
[24] U.S. Army Corps of Engineers, *Reconnaissance Report: Great Lakes Navigation System Review*, June 2002.

change the economics of short sea shipping. The Buffalo-Niagara region should monitor changes within the industry and in particular monitor the status of the Sea3 service between Hamilton and Montreal.

The best approach to short sea shipping may be to identify a specific shipper that could provide a "seed" volume of freight. The company would ship a large volume of traffic over a specific origin/destination that would lend itself to maritime transport. The shipper may not ship enough freight to justify a dedicated lake vessel, but when combined with other shippers cargo would render the service feasible.

AES Somerset Lake Unloading Project – The benefits to the Buffalo-Niagara region from the AES Somerset project will depend upon a number of factors. First, the pier would need to be built. Little has happened on the project since mid-2008. The project could provide economic development benefits, since AES Somerset has expressed willingness to let other parties use the pier and has encouraged development at the 1,800 acre site. The public benefits of AES shifting coal deliveries from rail to lake vessel delivery would depend upon the nature of the coal moves involved. As an example, Technical Memorandum #5 estimated that shifting deliveries of Appalachian coal to lake vessel would generate $0.69 in safety benefits per ton of coal delivered, while shifting deliveries of Montana coal to lake vessel would generate $3.85 in safety benefits for every ton of coal delivered.

Revitalized Erie Canal – Freight on the Erie Canal and branches primarily consists of "project" cargo. Project cargo consists of over-dimension items that would be difficult or impossible to ship on roadways. The Erie Canal is also used to reposition marine construction equipment and small military vessels. Users of the canal include the following:

- Intracoastal Transportation owns a small tugboat and tows a variety of vessels at customer requests
- D.A. Collins is a construction company that sometimes uses the canal to move equipment
- NYS Marine Highway Transportation, LLC provides services for: 1) project cargo; 2) construction equipment; and, 3) bulk and deck cargoes.

Data from the New York State Canal Corporation suggests that the total commercial tonnage on the Erie Canal and various branches was 13,195 tons in 2007 and 29,496 tons in 2008. The canal provides a very useful resource for carrying project and bulk commodities, as well as repositioning construction equipment and other vessels. It provides access to markets that are not available through the GLSLS. In other cases, shippers would need to ship much farther distances if using the GLSLS.

On the other hand, the 2008 traffic on the 524 mile canal system was 0.02 percent of the 2004 truck traffic to, from, within and over the Buffalo-Niagara region. At this level, the Erie Canal is a very minor component of the Buffalo-Niagara freight system.

7.0 Intermodal Opportunities

7.1 Logistics Complex

Changes in the patterns of international trade, international consumption markets, and logistics technology and practices will create opportunities for the Buffalo-Niagara region to leverage its freight transportation and real estate assets to stimulate regional economic growth.

7.1.1 Background

Traditionally railroads operated in a hub and spoke model. Railroads pulled trains on the mainlines between the hubs that served as the spoke reaching out to shippers and receivers on spur lines. The model primarily consisted of direct service to specific customers. Rail customers had "spurs" or track segments connecting their facility to a terminal or hub. Freight cars picked up from the facilities were brought to a rail terminal and assembled into trains for travel to a subsequent terminal where it would be separated from its original train and placed into a second train. The separation and reconsolidation is a time consuming process sometimes requiring several days because of the number of cars that had to be processed. This hub and spoke model is still operational today for much of the railroads' business.

The trend toward a trade-based economy has helped shape national transportation policy toward intermodal freight transportation (i.e., the ability to smoothly transition freight shipments from one mode to another). Intermodal transportation has become the center piece of U.S. transport policy since Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991. *Containerization* is the common standard that enables intermodal freight transport. For intermodal rail services the operating model is based on containerized freight being delivered or received at a central terminal. The railroad intermodal model is distinguished by point to point trains (double stacked with containers) with trucks providing feeder service to terminals at either end of the move. To reduce transit time and increase reliability of the point to point intermodal trains, railroads now operate with two separate business models; one for dedicated intermodal trains (and similarly bulk unit trains), and a second business model for the carload, hub and spoke segment of the business.

Recently, the large railroads have begun to rethink their carload operations and focus more on wholesaling transportation services as a means to both cut costs and optimize capacity utilization using terminals at which local traffic consisting of one or more commodities can be concentrated for shipping in point to point trains. Customers are also embracing multimodal transportation services recognizing the benefits of using multiple modes of transportation in a single move as the strengths of each mode can be leveraged. Besides optimizing the use of each mode, multimodal transportation has other benefits:

- Shipments from several locations could be consolidated for transport to a common destination location and then deconsolidated for specific site delivery.
- Products can be stored off-site prior to being moved by truck to final destination.
- Value added services such as sorting, packing, tagging, etc. could be provided at the staging locations. For example, many motor vehicle logistics centers complete the final preparation of vehicles, which includes the installation of non-factory installed options.

Logistics centers, also referenced as inland ports, perform the important function of concentrating regional product distribution or consolidation activity to a single location; reducing inventory, improving carrier efficiency, and increasing reliability, thus, reducing supply chain costs. In addition, many logistics facilities provide value-added services to the product being delivered to the market place.

A number of alternative inland port concepts have evolved reflecting the variety of supply chain requirements for products being shipped, and the regional needs where the facility is located. A recent study by the Southern California Association of Governments defines six categories of inland ports:[25]

- Rail intermodal terminals
- Satellite marine terminals
- Multimodal logistics facilities
- Logistics airports
- Trade processing centers
- Multi-site economic development initiatives

These categories are not exclusive as a facility may fall into more than one category and in many instances individual facilities are co-located to leverage synergies for particular markets. However, recent examinations of inland port/logistics center developments suggest several factors essential to success:

- **Location near Existing or Future Sources of Consumption or Production**: High fixed costs associated with intermodal terminals make high traffic volume an important factor for a terminal's profitable operation. High traffic activity enables more frequent trains needed to support shippers' delivery schedules. This factor implies access to a large market or production areas. A Buffalo-Niagara location provides access to a population base of 12.9 million, including the 2.3 million population of Western New York, and populations of 10.6 million in the Golden Horseshoe/Southwestern Ontario regions of Canada. Because of proximity and sailing schedules, many Canadian import and export shipments are routed through the Port of New York and other U.S. East Coast ports. This traffic volume normally passes through Buffalo-Niagara because Lake Erie and Lake Ontario make other routes impractical.
- **Efficient Access to Multiple Modes of Transportation**: Successful logistics centers are served by multiple modes, both to provide alternatives to shippers, located on site as well as the surrounding market area, and to serve the function as a modal transfer point. The Buffalo-Niagara region is served by CSX, NS, CN and CP railroads, both directly or through short line railroads and the interstate highway system linking the region to other major market areas. The region also has several border crossings; existing or prospective port terminals on Lake Erie and Lake Ontario; and two airports that can handle air cargo.
- **Fit with Railroad Intermodal Network**: CSX's primary northeast intermodal route passes through the two-county region. The route connects the New York metropolitan area and the Port of New York with markets in the Midwest and West. Most larger logistics centers in North

[25] Southern California Association of Governments, "Inland Port Feasibility Study," June, 2006

America are anchored by an intermodal container terminal. Such centers are located on a railroad's intermodal service network. Railroads have designed their networks with specific objectives in mind. The networks are designed:

- To produce balanced container flows to minimize the hauling of non-revenue producing empty intermodal cars
- To provide high speed rail operations for expedited service to shippers
- To accommodate double-stack trains to leverage their favorable economics

- **Optimal Location within the Intermodal Network**: In addition to being "on the network" successful inland port facilities must be optimally located within the network. Logistics facilities should not have overlapping market areas unless market size is large enough to support multiple locations. The network should also be optimally structured to permit the operation of "express" trains. Finally, logistics facilities are best located when they can support outbound container requirements with unloaded inbound containers. Railroads typically charge a significant fee to reposition empty containers. Also, ocean carriers are reluctant to have empty containers sit idle not producing equipment lease revenue or to be repositioned to reloading points before being taken to ports for shipment back to Asia. Traffic data developed as part of Technical Memorandum #3 shows that inbound truck freight volumes to the region were nearly 50 percent greater than outbound movements. As a result, the region has excess equipment available for reloading which drives down the equipment rental cost and transportation cost for the trailers or containers.

7.1.2 Strengths and Weaknesses of Buffalo as a Logistics Center

Strengths for Developing a Regional Logistics Center or Inland Port

There are several reasons why the Greater Buffalo-Niagara region could be a promising location to establish a logistics center or inland port, including:

- Four Class I railroads serve the region. The region has good east-west connectivity, particularly to the Port of NY/NJ, Ohio, Indiana, Chicago and markets beyond. The region is served by two Class I railroad mainlines, the CSX Chicago Line and the NS Southern Tier
- The region has good highway corridors for serving end customers both in the U.S. and Canada
- The region, both the U.S. and Canadian sides of the border, has significant trade infrastructure including customs brokers, freight forwarders, logistics firms and government agencies
- Buffalo-Niagara intermodal facilities can serve large metropolitan areas, including the Buffalo-Niagara region with over one million inhabitants, the Rochester metropolitan area with over one million inhabitants, and the Greater Toronto Area with over 5.5 million inhabitants
- The Toronto metropolitan area does not have any direct connections to the Port of NY/NJ

Weaknesses for Developing a Regional Logistics Center or Inland Port

When considering a potential logistics center it is important to examine both location advantages and disadvantages to temper expectations, correctly size the effort, and identify strategies to overcome disadvantages. Among the disadvantages facing the Greater Buffalo-Niagara region:

- No container pool, imbalance of inbound and outbound freight. When containers are not available within a given area, containers must be relocated from areas where they are available, adding cost and time. A related issue is the lack of traffic or lane balance in the Greater Buffalo-

Niagara region. Generally, more intermodal freight flows into the region than flows out. Together, container availability and lane balance tend to raise the cost of truck drayage to and from the region. These hurdles impact the region's ability to serve as a distribution hub for the Toronto market. Because a container pool is located within the Toronto area, shippers effectively pay for a one way trip to truck containers from the Port of NY/NJ. By contrast, shippers delivering containers from the Port of NY/NJ to the Greater Buffalo-Niagara region by truck or shipping containers between Toronto and Buffalo pay for a round trip. Drayage pricing reflects the presumption that the container will return empty.

- Competing corridors. An ideal situation for a logistics hub is to be situated on both a heavy rail corridor and a heavy trucking corridor. This is consistent with the truck mantra "freight moves freight." Carriers are more likely to find backhauls and charge lower rates on well-balanced, dense freight corridors. These truck rates and the density of their facilities and services will in turn influence the desirability of a location from the standpoint of shippers. In terms of truck traffic, the I-90 corridor within New York State competes with the I-80 corridor within Pennsylvania, but carries less than 58 percent of the truck traffic of I-80.
- Competing logistic hubs. A Greater Buffalo-Niagara International Logistics Center (ILC) would compete with Ohio-based logistics centers that have some advantages over the Greater Buffalo-Niagara region. Areas such as Cleveland are at a comparative advantage by being situated on a denser freight corridor. Ohio locations can also effectively serve the Toronto area market. A driver based in Cleveland, OH can drive to Toronto and return to Cleveland before his hours of service are exhausted.

7.1.3 Implementation

Technical Memorandum #4 presented a series of potential functions that could be performed in association with a GBN-ILC, including:

- Truck/rail intermodal container terminal
- Marketing/Business Development/Planning
- Technology
  - Shipment tracking
  - Alerts
  - Trade document processing
  - Empty container management
- Container depot and chassis pool

The 1,100-acre former Bethlehem Steel site was identified as the most promising location for a logistics complex within the area.

Truck/Rail Intermodal Container Terminal

An intermodal ramp must necessarily be associated with at least one intermodal network. Currently, access to the CSX and NS intermodal networks is through the CSX Seneca Yard and the NS terminal adjacent to the Bison Yard. There are no indications that these facilities have capacity issues or will be at capacity in the near future, making the construction of a new intermodal container terminal

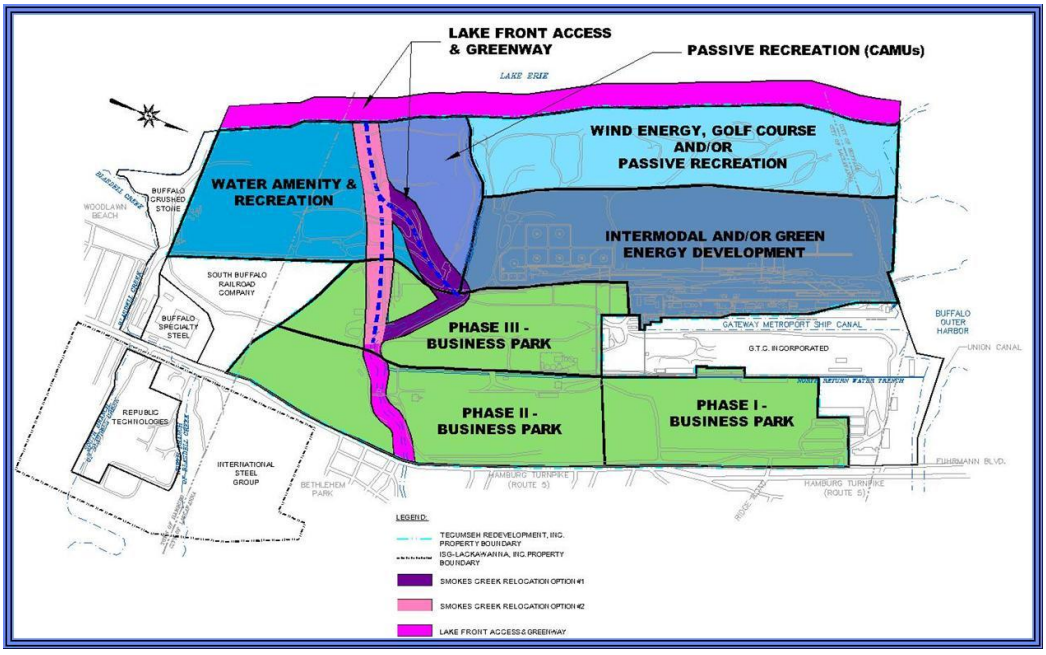
unnecessary. It may prove logical to encourage carriers to operate at a single intermodal terminal associated with a logistics hub in the future however, as existing intermodal ramps reach capacity. For example, CSX estimates provided a forecast at a meeting of the Buffalo-Niagara Logistics Council in August 2007 that the Seneca Yard facility would reach capacity of 60,000 containers around 2015. While forecasts are always subject to uncertainty, and this forecast may not have accounted for the economic downturn since 2007, it is likely that Seneca Yard could reach capacity sometime within the next decade.

The Memphis region provides an example of an area that partially succeeds at concentrating logistics activities in a specific area. Currently, CSX and CN operate at a combined intermodal terminal in Memphis called "Gateway Memphis." Area planners had originally hoped that all rail carriers in the area would concentrate their intermodal operations within this "super terminal," but several carriers declined to participate.

Bethlehem Steel Site

Activities at the Bethlehem Steel site might also support existing intermodal terminals, as economic development activities could focus on bringing warehousing and distribution facilities into the site. These in turn would benefit from the close proximity of the Bethlehem Steel site to the Seneca Yard (less than a mile) and the Bison Yard (about five miles).

Figure 7- 1: Planned Uses of the Bethlehem Steel Site



Source: Tecumseh Redevelopment Website

A subsidiary of Arcelor Mittal called Tecumseh Redevelopment, Inc. has responsibility for redeveloping the site under a memorandum of understanding with Erie County, and the City of Lackawanna. The site is planned to provide mixed-use land parcels. Several wind turbines have been constructed along the shore of Lake Erie. If an intermodal terminal were to be built on the site in the future, a strip of land

would need to be available that is between 3,000 and 7,000 feet in length, with a total required footprint between 100 and 200 acres.

According to the Erie County economic development office, most of the site is relatively clear of contamination, likely requiring just a foot of clean cover or a cap, such as pavement. Environmental considerations would not be expected to add significant, if any cost to the development of an intermodal terminal or distribution/logistics assets on the site.

Work is already underway to improve transportation connections at the site. Under a grant from the New York Department of Transportation Multi-Modal Program, railroad tracks on the site are being upgraded and reconfigured. Currently a rail line runs parallel to Route 5 and the project will move the rail line away from Route 5 toward the center of the property where future industrial or distribution tenants can use the line. The project will also improve rail operations around the port. With about 90 percent of the design work completed, construction is expected to begin by the end of 2010, and be completed in 2011.

Potential Interim Activities at Bethlehem Steel Site

In addition to attracting potential users of existing freight facilities within the Greater Buffalo-Niagara region, the Bethlehem Steel site could also support establishing the region as a logistics center in several other ways. For instance, transload services, which involve transferring bulk or break-bulk commodities between truck and rail, could be provided at the site. **Figure 7- 3** displays facilities from the U.S. Department of Transportation's National Transportation Atlas Database (NTAD) which provide transload capabilities between truck and rail within the Greater Buffalo-Niagara region. However, most transload facilities are designed to handle specific commodities and to serve specific customers. It may be valuable to establish "team tracks" at the Bethlehem Steel site. These are "self help" transload facilities, where customers can load a range of commodities. While team tracks have become rare in some freight markets they provide a valuable solution to shippers who do not have more permanent arrangements elsewhere. They can also establish a location as a permanent transload site, as shippers become accustomed to the service and relocate near the site.

Figure 7- 2: Facilities with Truck/Rail Transload Capabilities

Name	Modes	City	Primary Commodities
CN South Buffalo Distribution Center-Lackawanna-NY	Rail & Truck	Lackawanna	Forest products
Frontier Elevator-Buffalo-NY	Rail & Truck	Buffalo	Cereal grains
ADM Milling Co.-Buffalo-NY	Rail & Truck	Buffalo	Cereal grains
SONWIL Distribution Center Inc.-Buffalo-NY	Rail & Truck	Buffalo	Food products, pharmaceutical products, pulp, paper and paperboard, stone, ceramic or glass, iron or steel
C. S. W. Warehouse	Rail & Truck	Blasdell	Wood products, iron or steel products
Buffalo Distribution Incorporated	Rail & Truck	Depew	Wood products, pulp, paper, or paper-board, stone, ceramic or glass, iron and steel products
Integrated Terminals	Rail & Truck	Lackawanna	Iron and steel products
Laub Warehouse	Rail & Truck	Buffalo	Food products, pulp, paper or paperboard
Bestway Distribution Services	Rail & Truck	Cheektowaga	Forest products, pulp, paper or paper-board, metal, metal products, motor vehicle parts
TRANSFLO-Buffalo-NY	Rail & Truck	Buffalo	Basic chemicals
NS Independent Bulk Transfer Terminal-Buffalo-NY	Rail & Truck	Buffalo	Basic chemicals, plastic or rubber
NS Thoroughbred Bulk Transfer Terminal-Buffalo-NY	Rail & Truck	Buffalo	Food products, plastic and rubber
Port of Buffalo	Truck - Port - Rail	Buffalo	Cereal grains, natural sands, non-metallic minerals, coal, petroleum products, basic chemicals, stone, ceramic or glass, waste or scrap
Yellow-Buffalo-NY Terminal	Truck - Port - Rail	Tonawanda	Various
Team Freight, Inc./Team Distribution, Inc.-Buffalo	Rail & Truck	Buffalo	Various

Source: Prepared by WSA based on NTDA 2009

Another potential activity at the Bethlehem Steel site, which could help to bolster the area's status as a logistics center is container stuffing. Container imbalance is an issue with the region's intermodal network, receiving more containers in to the area than are shipped out. Container stuffing facilities could help to resolve imbalance issues and promote exports from the region. One export that has grown in significance across the country is distillers dried grains with soluble (DDGS). DDGS are byproducts from ethanol production that can then be exported for animal feed. DDGS tend to clump when dried and are generally shipped in containers as opposed to bulk, as DDGS clumps can be difficult to extract from bulk vessels.

An interview with Western New York Energy, in Shelby, NY indicates the company does not currently export DDGS because the cost of trucking containers to the Port of NY/NJ is prohibitively expensive. If DDGS could be loaded in containers in Buffalo and moved by rail to the Port of NY/NJ the economics of

exporting DDGS might be more compelling. The Shelby plant currently ships about 160,000 tons of DDGS per year. If a proposed RiverWright ethanol plant is also built, additional demand for the exporting of DDGS may result. More research beyond the scope of this study is needed to investigate the likely demand for a DDGS container stuffing facility in the region.

Marketing/Business Development/Planning

Another feature of a potential logistics complex is an organization for performing marketing, business development and planning. The KC SmartPort in Kansas City is a good case study for marketing the logistics center concept (see Technical Memorandum #4). In terms of KC SmartPort marketing efforts, the organization works with companies that are considering placing logistics assets within the Kansas City area to identify locations and develop solutions that meet these organizations' needs. The KC SmartPort also promotes logistics in the area by direct mail campaigns, trade shows, and conferences. It is a public-private organization, which is partially funded by private backers.

If the Greater Buffalo-Niagara region were to create an analogous marketing organization, it would probably work closely with Buffalo-Niagara Enterprise or similar organization. A Greater Buffalo-Niagara regional logistics organization could share offices and marketing materials with the Buffalo-Niagara Enterprise or similar organization. It would be a specialist economic development organization, focusing on attracting and promoting one industry sector within the region, transportation and logistics. It would probably have a permanent staff of two, but would extensively involve area stakeholders in its ongoing activities. The cost of the organization's marketing function would roughly correspond to the cost of employing two professionals with their associated overhead. In addition, there would likely be significant travel cost, membership dues, cost of attending conferences, promotional materials and advertising.

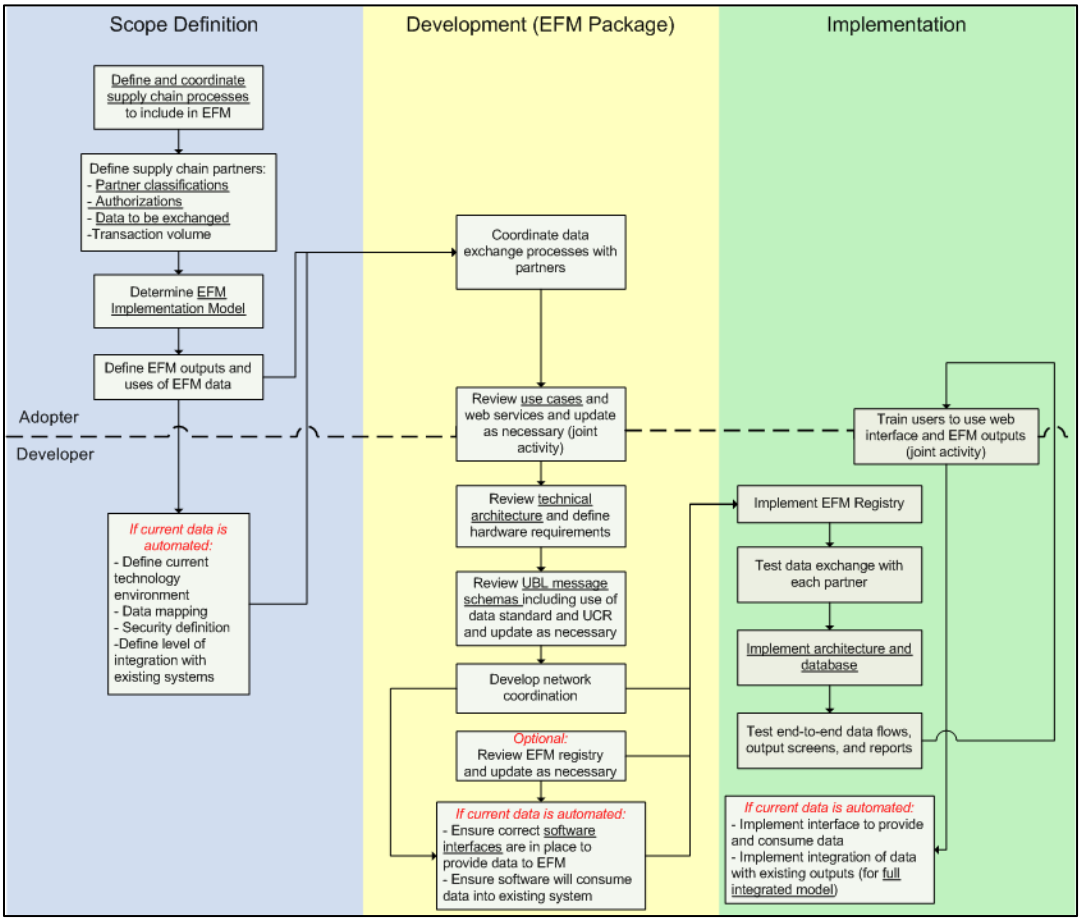
Information Technology

The U.S. Department of Transportation (USDOT) has launched an Electronic Freight Management (EFM) initiative, funding test projects in Kansas City and Columbus, OH. KC SmartPort also has its own supply chain visibility initiative, the Trade Data Exchange (TDE), using EFM technology. An information technology initiative within the Greater Buffalo-Niagara region using EFM technology may also be worth consideration. EFM technologies seek to improve shipment tracking, provide alerts, manage empty containers, and improve the electronic handling of trade documents, with the public sector acting as facilitator. Users of EFM typically represent companies within a region that volunteer to share data in order to benefit from improved supply chain visibility. EFM initiatives seek to promote electronic data exchanges along the supply chain; "end-to-end" in contrast to "point-to-point." Currently, freight movements are supported by paper or electronic communications between specific trading partners. Under EFM, any authorized, authenticated users have access to real-time, electronic information. Currently most supply chain communications take place on proprietary systems. EFM seeks to migrate communications to open systems, but under strict data security requirements. Information can be entered once and used many times. According to the USDOT, 40 percent of supply chain time is spent waiting for information exchanges to take place. The adoption of EFM could automate and speed these information exchanges. Anticipated benefits include:

- Improved efficiency
- Reduced paperwork
- Better cycle times
- Reduced complexity of access to information
- A view across the supply chain

The USDOT recently concluded a test program in Columbus, OH, which involved thirteen partners, including four manufacturers, and two freight forwarders. The test focused primarily on air cargo transport from China to Columbus, OH. The test documented total savings of $5.94 per shipment.[26] The EFM website suggests an implementation process that is presented in **Figure 7- 3**.

Figure 7- 3: EFM Implementation Process



Source: www.efm.us.com

A project to facilitate supply chain visibility in the Greater Buffalo-Niagara region could begin by facilitating a meeting between stakeholders and knowledgeable EFM individuals who could provide an explanation of the program, its benefits, and how it could be best implemented. A critical success factor will be the involvement of private stakeholders and guidance of private stakeholders. According to a

[26] *Electronic Freight Management* by Battelle at IFTWG meeting in Ft. Lauderdale, FL on November 16, 2008.

representative from KC SmartPort, their own Trade Data Exchange initiative has cost a total of about $6 million to $8 million, including studies and software development. A significant portion of this effort has been funded by the private sector.

7.1.4 Benefits/Cost and Economic Impact

A benefit/cost analysis (Technical Memorandum #5) focuses on truck/rail containerized intermodal service, and assumes the service would anchor the Buffalo logistics center. Costs were estimated for several truck/rail intermodal services and compared the cost of trucking containers over the same routes. Three different services analyzed were as follows:

1. Truck/rail service from the Port of New York/New Jersey to the Buffalo-Niagara region
2. Service by rail from Port of New York/New Jersey to Buffalo-Niagara region and then by truck to Toronto area
3. Truck/rail service from Chicago to the Buffalo-Niagara region

The results of the modal comparisons suggest that truck/rail service between the Buffalo-Niagara region and Chicago, the Port of New York New Jersey can provide dramatic savings, costing potentially less than half of the equivalent truck costs. However, potential savings for Toronto area shippers using truck/rail service through Buffalo would be much more modest if at all. The calculated user benefits of a logistics center were based on the following scenarios:

1. No Build. No truck/rail intermodal capacity is added to the region's intermodal terminals. After capacity is reached, containers that would otherwise travel truck/rail instead move by truck.
2. Low Project. Truck/rail intermodal capacity is added, but the logistics complex is not marketed. Transportation cost savings are relatively low, and service between the Port of New York/New Jersey to the Toronto area by way of a Buffalo logistics complex is economically infeasible.
3. High Project. Truck/rail intermodal capacity is added. The logistics complex is marketed successfully. Transportation cost savings are relatively high. Service between the Port of New York/New Jersey to the Toronto area by way of a Buffalo logistics complex is feasible.

The net present value of benefits under the Low Project scenario was estimated to be $145 million at a three percent discount rate and $75 million at a seven percent discount rate. The net present value under the High Project scenario was estimated to be $557 million at a three percent discount rate and $310 million at a seven percent discount rate. Each scenario easily exceeded the estimated cost of the complex at $25 million.

Economic development impacts were conservatively estimated based upon the experience of other logistics centers. Under a low project scenario, each 1,000 containers handled by the facility would generate two jobs and $600 in private investment. Under a high project scenario, each 1,000 containers handled by the facility would generate 4.5 jobs and $1,600 in private investment. The forecasted economic impact of a Buffalo logistics center differed dramatically between the high project scenario and the low project scenario. Under the low project scenario, only 215 job-years would be created over 20 years, $10.3 million in labor income would be generated, and private investment would equal about

$26 million. Under the high project scenario, 1,245 job-years would be generated, $59.7 million in labor income, and $142 million in investment.

The analyses presented in this study suggest that a Buffalo logistics complex would be a worthwhile endeavor. Potentially, the most difficult aspect of the project would be to define what it means. Primarily, it would be a marketing and economic development initiative aimed at attracting distribution and warehousing jobs to the area. However, it would also have an infrastructure component, providing efficient access to transportation/distribution facilities and eventually constructing a new truck/rail intermodal facility. If local shippers would like to establish a data exchange initiative, it could also have an information technology component.

8.0 Marketing Regional Freight Assets

8.1 Developing a Regional Freight Marketing Plan

During a stakeholder forum held in April 2010 for the Niagara Frontier Urban Freight Study, participants expressed a strong desire to have the final report from the effort address marketing and implementation steps. A marketing plan is typically an element of an overall business or strategic plan that provides details about achieving one or more marketing objectives. While public planning efforts typically have a time horizon extending from one to several decades, most business plans span a horizon of one to several years. This difference in the planning horizon raises a relevant issue regarding this marketing plan: Success is likely to be highly dependent on whether the plan becomes a living document, supported by a strong regional champion or champions, with access to funding resources. Unlike infrastructure, transportation markets are highly unpredictable and influenced by a wide variety of factors such as cost of fuel, economic conditions and competition among service providers. Given the fluidity of transport markets, the marketing plan should also remain fluid and responsive.

Resource issues are not addressed in this plan. The purpose of the marketing plan is to provide a "road map" or implementation guide for marketing freight assets in the Buffalo-Niagara region. In some cases, the plan recommends specific actions; however, in most cases the plan provides a framework to help narrow down feasible options. The final decisions regarding the correct course of action will need to come from stakeholders closest to the business segment being addressed. The marketing plan framework will provide guidance to help in answering the following questions:

1) Who should market the region's freight assets?
2) What should be their goals and objectives?
3) What are the region's strengths, weaknesses, opportunities, and threats that should be considered when marketing the region's freight assets?
4) What specific marketing initiatives are recommended?

Based on the feedback from stakeholders attending the April forum the focus of this marketing plan covers three areas:

1) Air cargo
2) Port facilities, including Port of Buffalo, but also other potential locations
3) Marketing the region as an intermodal logistics and distribution hub

The activity of "marketing the region's logistics assets" may involve two types of initiatives:

1) Traditional economic development activities aimed at convincing companies to locate in the region, in part because of the region's logistics assets.
2) Efforts aimed at boosting usage of the region's logistics by companies that may not necessarily locate within the region.

8.1.1 Organizing to Market Regional Transportation Assets

Several organizations within the Greater Buffalo-Niagara region now market the region's freight assets: Economic development agencies attempt to attract companies that can use the region's logistics assets; The Niagara Frontier Transportation Authority markets the region's aviation assets; and, The Port of Buffalo Terminal markets its port facilities, as do other private terminal operators.

This marketing plan may provide additional guidance and information to organizations that already market the region's freight assets, or it may offer the premise for endowing a new organization with responsibilities to help market the region's logistics assets. Two models for such an organization might be considered: A Freight Advisory Committee (FAC) or, an organization similar to KC SmartPort.

Tech Memo #5 provides a more extensive discussion regarding the formation and management of a regional FAC. It is assumed that a regional FAC would be based on volunteers, but the organization could assist in marketing of the region's freight assets in a number of ways:

- A peer-to-peer exchange to provide better information to support marketing initiatives
- Help gather and present market data
- Organize activities where the membership participates in marketing initiatives

The KC SmartPort model for marketing is based on having a small staff of full-time professionals. KC SmartPort receives funding and investment from public and private sector membership and operates similar to an association. Transportation companies that benefit from KC SmartPort's activities help to fund it. Another example using a similar business model is the Southern Arizona Logistics Education Organization (SALEO). SALEO was formed by the Tucson Regional Opportunities, Inc., the economic development agency in the Tucson region. Another possibility is that an existing entity, such as the Buffalo Niagara Enterprise, assumes the responsibility within existing resources to market the region's freight assets. Perhaps, this organization could also coordinate with a FAC.

A logical first step in the process is to hold a meeting with regional stakeholders whose infrastructure assets would be marketed, as well as relevant economic development agencies. These organizations would decide if or what type of marketing entity that they would like to help market the region's freight assets.

8.1.2 Marketing Goals and Objectives

A good marketing plan is based on achieving specific goals and objectives, to ensure the plan is focused on achievable actions and not just a compilation of ideas and facts. Presenting the Greater Buffalo-Niagara marketing plan as a framework allows for changes that meet the marketing needs and timely activities to promote freight related economic development of the region over time. The marketing plan approach consists of the following elements:

- **Goals** – The marketing goals are high level statements that guide the plan. There is one goal for each major area of emphasis in the plan.
- **Objectives** – Objectives are more specific statements of what needs to be achieved for the plan to succeed. Each objective is linked to one of the goals/areas of emphasis.

- **Strategies and Action Items** – Strategies and action items are specific steps to be taken to achieve the plan goals and objectives. Each objective must have at least one strategy/action item to achieve the objective and most objectives will have more than one. Strategies should also include who needs to be involved or take the action, a timetable for implementation, and a discussion of resources (money, staff time, etc.).
- **Measures of Effectiveness (MOEs)** – MOEs describe one or more ways that successful completion of each strategy/action is being achieved. MOEs could be as simple as a check-off box or as complex as a numeric score or measurement.

High Level Marketing Goals - Connected to Key Topics

The marketing plan goals establish the desired outcome of the marketing effort, while the objectives spell out specific actions to be achieved. During the Buffalo-Niagara stakeholder forum, the following goals were discussed by forum participants:

1) Expand the use of existing seaport facilities in the Greater Buffalo-Niagara region
2) Expand the use of regional airport facilities
3) Develop a Buffalo logistics complex

The marketing goals and objectives will need to be consistent with the overall strategies of the organizations responsible for them. For example, the marketing goals for NFIA would need to be consistent with the Niagara Frontier Transportation Authority goals and objectives. As such, these would be established by the stakeholders of the Greater Buffalo-Niagara region rather than the study team. The marketing goals and objectives will most likely be based upon a realistic assessment of the marketing opportunities. This could take several possible forms:

- Trend analysis – If customer trade increased by x% over a given time period in the past, the goal will try to increase by y% this year
- Opportunity appraisal – Opportunities x, y, and z have been identified. The organization believes that x has a _% chance of success, y has _% chance of success, and z has a _% chance of success. When x, y, and z are each multiplied by their likelihood of success and then summed, this provides the basis of a marketing goal.

Based on the expression of high level goals expressed by the forum participants, the table in **Figure 8-1** matches objectives and suggests plausible strategies for each goal.

Figure 8- 1: Marketing Plan Summary of Goals and Objectives

Goal	*Objective*	*Strategy and Actions*	*Who*	*Timetable*	*Required Resources*	*Potential Measure of Effectiveness*
1. Establish region as intermodal and distribution hub	a. Attract distribution and warehouses facilities to region	i. Initiate marketing effort toward industrial developers				
		ii. Identify companies that would benefit from border location				
		iii. Identify specific overhead cargoes that could be distributed from region				
	b. Increase intermodal traffic through region's ramps	i. Market region to shipping lines, 3PLs, etc.				
2. Expand the use of regional sea port facilities.	a. Utilize existing unused capacity in the Port Buffalo	i. Assist RiverWright project to receive financing				
	b. Seek new business opportunities	i. Meet with Ontario Power Authority, NYSERDA to identify wind projects to target				
		ii. Discuss with local farmers potential inbound fertilizer and feed shipments, potential outbound shipments of grain				
		iii. Meet with local coal fired power plants, cogen plants, industrial users of coke, coal to shift to maritime				
		iv. Conduct further competitive analysis regarding				

Goal	*Objective*	*Strategy and Actions*	*Who*	*Timetable*	*Required Resources*	*Potential Measure of Effectiveness*
		construction materials at port				
		v. Meet with owners of terminal, both active and inactive to discuss regional opportunities (Including Marad's marine highway corridor designations[27]				
		vi. Encourage terminal owner's association				
	c. Rejuvenate Somerset coal pier project.	i. Seek application for landside improvements support the private development				
3. Expand the use of regional air port facilities.	a. Attract more air cargo movement through Niagara Falls International Airport	i. Conduct outreach to local automotive, medical device industry				
		ii. Initiate effort at finding anchor tenant at NFIA, including outreach to pharmaceutical companies				
		iii. Identify overhead traffic that may want to stop at NFIA				
		iv. Market NFIA as an industrial airport to aviation equipment suppliers				

[27] See M-90 (marine highway equivalent of I-90) in recently released Marad designations : http://www.marad.dot.gov/documents/Marine_Highway_Corridors_Description.pdf

8.2 Greater Buffalo-Niagara Regional Marketing SWOT Analysis

Research conducted during the course of this study presented Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis based on the region's existing transportation assets. The SWOT helps in developing a marketing strategy. The identified strengths can help to inform marketing communications and focus marketing efforts on areas that provide the best promise. The identification of opportunities provides a preliminary list of marketing targets. Weaknesses and threats distinguish marketing initiatives will be less fruitful unless steps are taken to correct or mitigate them.

8.2.1 Greater Buffalo-Niagara Regional Transportation Strengths

Highway/Truck Mode:

- Plenty of highway capacity, relatively uncongested
- Large urban areas within one-day truck drive, e.g., Rochester MSA 1.1 million, Toronto 2.5 million. Within a 12-hour drive of 60 percent of Canadian population and 40 percent of U.S. population
- Major East/West Corridors

Air Cargo (NFIA):

- NFIA has ample capacity. The airport is underutilized
- NFIA runways are long and can accommodate most aircraft types
- Inexpensive landing fees
- Plenty of available land for cargo operators adjacent to or near airport
- Location near to Toronto area, which includes potential outbound cargoes, such as perishable agricultural commodities
- Automotive and medical device manufacturers are located within the area, two industries that often use air cargo

Port:

- Plenty of unused port facilities
- Diversity of cargoes handled and therefore sufficient expertise for expansion
- Relatively strong established market in grain handling

Rail/Intermodal:

- Four Class I carriers
- Good rail connections to Chicago and New York
- No reasonable rail alternative to serve PANYNJ to Toronto

8.2.2 Greater Buffalo-Niagara Regional Transportation Weaknesses

Highway/Truck Mode:

- Lacking a significant north/south trade corridor

Air Cargo:

- Customs not on-site
- Would still need some infrastructure to handle international cargoes
- Not a major passenger gateway, so at a disadvantage for belly cargo
- Not as centrally located as competing airports in Ohio Valley

- Two airports in a relatively small market sharing air cargo
- Low outbound cargo volumes from the region, although the Canadian markets could potentially provide outbound opportunities

Port:

- Overall, cargo growth has been flat on the Great Lakes/St. Lawrence Seaway System (GLSLS). Mostly serves markets within the system because all but the smallest ocean vessels cannot access beyond Montreal
- Current organization of port means that it does not take part in a number of organizations and marketing groups, such as Highway H_2O that are attended by public port authorities
- Small portion of GLSLS traffic, only one percent

Intermodal/Logistics:

- While a decent market, still not as large as most logistics hubs such as Dallas or Chicago
- Not as centrally located as centers in Ohio, for example
- Imbalance of traffic with little outbound
- No container pool, so poor container availability
- Not located where east meets west, such as Memphis or St. Louis
- I-90 not a large freight corridor and is costly
- Train schedule from PANYNJ still is only several days per week

8.2.3 Greater Buffalo-Niagara Regional Transportation Opportunities

Highway/Truck Mode:

- Proposed Continental 1 Corridor development

Air Cargo:

- Recruit anchor tenant for NFIA
- Market NFIA to "overhead" cargo airlines to "tag" or share freighter with other U.S. airports
- Continue economic development initiatives focused on medical device and automotive industries or other industries which rely on air cargo transport
- Develop NFIA as an industrial airport
    - Reuse of U.S. Army Reserve Base at NFIA – approximately 20 acres adjacent to the airport to be conveyed to the local municipality by 2011; local development plan calls for reuse of hangar and buildings for economic development targeting aviation-related uses.
    - Niagara Industrial Airpark application for New York State Shovel Ready Certification – approximately 217 acres adjacent to the airport undergoing pre-permitting to expedite development

Port:

- Growing markets – Alternative energy, this is driven by Ontario and New York State energy initiatives, as well as federal initiatives and European initiatives
    - Wind turbines
    - Biomass (still untested)

- Ethanol, in particular the export of DDGS
- Marine Highway corridor M-90 is recognized by Maritime Administration, so projects can be proposed for funding

Intermodal/Logistics:

- Serve as auxiliary distribution area for the Toronto area market, particularly for Canadian imports that arrive at the PANYNJ
- Attempt to develop outbound container volumes to balance inbound, such as with agricultural exports
- Expansion of Lehigh Valley Rail Yard

8.2.4 Greater Buffalo-Niagara Regional Transportation Threats

Highway/Truck Mode:

- Increased highway congestions resulting in increased delays, pollution and real/perceived safety issues

Air Cargo:

- The greatest threat is the status quo, where NFIA continues to be underutilized, and no one replaces Kitty Hawk

Port:

- Other ports aggressively market for many of the same cargoes to serve many of the same markets as Buffalo

Rail/Intermodal:

- Aging infrastructure
- Low redundancy in key Class I facilities
- Other rail corridors to the south are growing in importance

8.3 Analysis of Economic Development Opportunities

An analysis of economic development opportunities helps to direct freight marketing efforts toward those industries with the highest potential within the region. The Greater Buffalo-Niagara region is the 50th largest MSA in the U.S.[28] Many of the identified economic strengths for the region are tied to logistics-related industries such as *Transportation Services*, *Warehousing*, and *Distribution* that can take advantage of the region's access to interstate and rail infrastructure and its proximity to Canada and the Toronto market area.

According to a recent Brookings Institute study, "Export Nation", the Buffalo region exported $7.2 billion in total exports in 2008 supporting 47,962 jobs. [29] Although exports growth in the region was below the national average export growth expanded 7.5 percent. Research has shown that businesses that export goods and services generally have higher wages; in the Buffalo-Niagara region average wages in the

[28] "Population of Metropolitan Statistical Areas Ranked by 2000 Population", U.S. Census Bureau
[29] "Export Nation", Brookings Institute,, 2010

largest exports industries were $56,614 above the U.S. average. There are six export industry clusters in the Buffalo-Niagara region that include *Chemical Manufacturing*; *Machinery Manufacturing*; *Transportation Equipment Manufacturing*; *Business, Professional and Technical Services*, and *Tourism*. These six export clusters should be an integral part of a marketing strategy.

There are nine industry sectors in the Greater Buffalo-Niagara region that exhibited employment growth from 2003 to 2008. These include two manufacturing sectors, *Machinery* and *Computer and Electronic Products*, *Professional, Scientific and Technical Services*, *Tourism and Related Services*, and *Educational Services*. From 2003 to 2008 the employment in *Machinery Manufacturing* increased by 12.0 percent while employment in *Computer and Electronic Products* increased by 9.8 percent. Employment in the *Professional Scientific and Technical Services* reached 46,369 an increase of 14.3 percent.[30] Other sectors that rely heavily on freight transportation including *Wholesale Trade*, *Retail Trade*, and *Construction* experienced lower levels of employment growth during this time.

Developing realistic marketing goals and strategies also requires knowledge of those industries in the region that have remained stable in terms of employment and those that exhibited declines in recent years. Stabled industry clusters in the Greater Buffalo-Niagara region that depend upon transportation and freight services include: *Construction* with an employment growth of 4.2 percent; *Retail Trade* with 1.1 percent growth in employment; *Transportation* with essentially no growth in employment; and, *Chemical Manufacturing* and *Tourism* that lost employment over the past 5 years but are expected to remain relatively stable in terms of employment in the future. Industry clusters that show more significant decline in employment in the region from 2003 to 2008 include *Transportation Equipment* with a 48.7 percent loss of employment; *Food Production* with a 24.9 percent decline in employment; and, *Plastics* with an 8.8 percent decline in employment.

Those industrial sectors that are experiencing growth in employment or have remained relatively stable are potential targets for the marketing program. Generally, those companies that are adding employees are also increasing production and will have additional freight and transportation needs. In addition to these industry targets, careful attention should be paid to those industry clusters that have been identified by regional economic development organizations as targeted industries. Assessing the freight and transportation needs of targeted industry clusters and how the Greater Buffalo-Niagara region can be most responsive to the freight and transportation needs of these businesses should be a key component of the region's attraction strategy for recruiting these companies.

Emerging industries in the Greater Buffalo-Niagara region such as bioinformatics and biotechnology firms will have different freight and transportation needs than many existing businesses within the region. The cluster of colleges and universities in the region, the new Center of Excellence in Bioinformatics and Life Sciences has attracted new companies and research firms to the region. Developing an understanding of the evolving freight and transportation needs of these businesses will require ongoing evaluations of niche market growth sectors within this cluster and continuing communication.

[30] IMPLAN data, Bureau of Labor Statistics

8.4 Preliminary List of Proposed Marketing Initiatives

8.4.1 Buffalo Logistics Complex

The marketing of the Buffalo Logistics Complex will likely involve two components: 1) marketing to the developers of distribution facilities and industrial parks; and, 2) marketing the region as an intermodal hub. These two efforts are self-reinforcing. Shippers tend to locate distribution facilities in close proximity to intermodal hubs, while the presence of distribution facilities attracts intermodal traffic. The second marketing initiative may strike some stakeholders as counter-intuitive. Increasing intermodal traffic in the Buffalo-Niagara region will involve more trucks passing over the region's roadways and more trains passing through the region's neighborhoods. Both modes pose a potential nuisance. But these initiatives assist economic development. Employers prefer to be located near transportation hubs.

It is likely that some of the effort aimed at industrial developers will consist of discussions with companies such as CenterPoint Properties or ProLogis. CenterPoint Properties is focused on the development, ownership and intensive management of industrial real estate and related rail, road and port infrastructure. ProLogis is a global provider of distribution facilities.

Other efforts could be oriented toward hosting the distribution facilities of large retailers, such as hardware store, consumer electronics, etc. The region could also market itself as a staging area for shipments to Canada. For example, Technical Memorandum #3 of this study showed that the four largest commodity groups crossing through the region by truck to Canada include *Transportation Equipment*, *Pulp, Paper and Allied Products*, *Machinery*, and *Clay Concrete, Glass and Stone*. Perhaps, the region could serve as a staging area for these products that would otherwise simply pass through. Shippers would hold these products within distribution facilities in the region and then release them just-in-time to consignees in Canada. The largest categories of industrial products moving through the region to domestic markets include *Fabricated Metal Products* and *Primary Metal Products*. These could also be targets for the region to serve as a distribution point.

Efforts to increase the Buffalo-Niagara region's profile as an intermodal hub will focus on those organizations that decide which intermodal services to offer. For international shipments, shippers typically negotiate with ocean carriers in the early spring, so that contracts are in place well before the peak shipping season in the autumn. Shipping contracts typically have a one- or two-year duration. Generally, the ocean carrier will establish the routings of its service offerings. Shippers select the best services for their needs based upon the overall rate offered by the steamship line and historic level of service associated with the service that the steamship line is offering. For example, assume that a steamship line offers a rate for service from Europe through the Port of New York/New Jersey, on CSX to Buffalo and then to the shipper's location. The shipper will consider the overall rate, the rate of on-time deliveries for that service.

Because the region is in a unique position to serve as an inland hub for the Port of New York/New Jersey, this would likely be a focus of the region's marketing efforts. However, the region could also serve as an intermodal hub to serve shipments from West Coast ports into Canada. For example, one intermodal marketing company with whom the study team spoke had previously considered Buffalo as an alternate intermodal hub for West Coast shipments into Canada in order to avoid more congested regions like

Detroit or Mississauga, Ontario. The types of companies that the region would approach in an attempt to boost intermodal traffic would include the following:

- Shipping companies such as Maersk, Hapag-Lloyd, Evergreen, etc.
- Third party logistics providers, such as Menlo Logistics, C. H. Robinson
- Trucking firms such as Schneider National, J.B. Hunt

The best individuals with whom to initiate contact would be the companies' local sales persons.

8.4.2 Airports

A number of opportunities for marketing the region's airports were described in Technical Memorandum #4, including:

- The automotive and medical device industries are frequent users of air cargo. Medical device manufacturing and pharmaceuticals have been growth industries within the region. Discussions with representatives from these industries could be initiated to determine if there are any unique air cargo service offerings that would better help to suit their needs.
- Recruit an anchor tenant to NFIA. A number of examples were provided in Technical Memorandum #4 of airports that had successfully recruited an anchor tenant. These individual companies generate sufficient cargo volume to justify dedicated cargo service. The types of companies that would be targeted would depend upon the trade. The highest volume trades between North America and Asia are manufacturing machinery/instrumentation, commercial machinery, perishables, and intermediate production materials for exports. Fresh fruits (perishables) could be promising outbound cargoes from NFIA. For example, New York ranks third nationally in grape production, and some of the top producing areas are close to the Buffalo-Niagara region. Unfortunately, grapes or other fruits would also be highly seasonable, and other commodities would need to be substituted at other times of the year. Imports in the North America–Asia trade are almost entirely consumer products, such as electronics, appliances, toys and apparel. The anchor tenant would be a retailer, probably one that has a large volume of business in both the U.S. and Canada. Inbound trade between the U.S. and Latin America consists mostly of perishables, particularly cut flowers. This trade is dominated by Miami International Airport, and the region's airports would be unlikely to compete effectively. Trade between North America and Europe consists mostly of machinery, medical instruments, jewelry/valuables, and pharmaceutical products. Pharmaceutical and bioscience exports in the U.S. are growing. Given the growth in the life sciences industries within the Buffalo-Niagara region, this could be a promising commodity for air cargo.
- Market NFIA to "overhead" cargo airlines in order to "tag" or share two markets on one air cargo route. The first step in this initiative would be to research scheduled freighter routes that fly over the region. Data sources such as the U.S. Census Bureau's Commodity Flow Survey, the FHWA Freight Analysis Framework–3 could be combined with route map tools like the Great Circle Mapper to provide preliminary sources of data. The nature of the commodities carried on these routes, as well as commodities generated and consumed in the Buffalo-Niagara region, would need to be analyzed to determine if there is a logical reason for aircraft to stop within the Buffalo-Niagara region.

- Develop NFIA as an "industrial" airport[31]. This initiative would be directed to aircraft manufacturers and manufacturers of equipment to support the aviation industry. The Mid-Atlantic Aerospace Complex at the North Central West Virginia Airport is an example of a successful initiative to develop an industrial airport. Pratt and Whitney Engine Services, Inc. and Bombardier Aerotech, Inc. are two of the largest employers in Harrison County, West Virginia where the North Central West Virginia Airport is located. If successful, this initiative could bring a significant number of jobs to the Buffalo-Niagara region.

8.4.3 Port

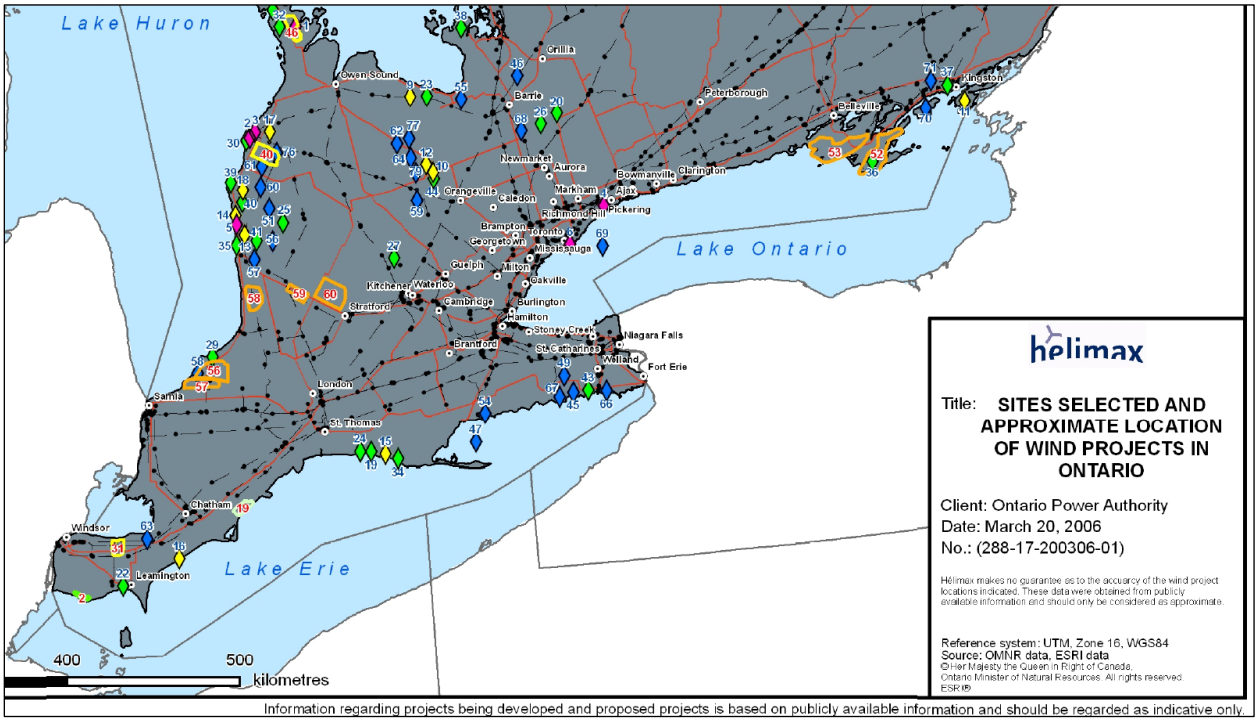
- Ethanol could be a growth industry for area's port facilities, both for inbound shipments of corn and outbound shipments of ethanol. If the RiverWright plant is built, the plant would consume 110,000 bushels of corn per day and could receive as many as 60 ships per year. Any attempts to help ensure the RiverWright's construction would likely boost maritime traffic within the region. (In this rapidly changing marketplace, an updated market analysis of North American projected supply and demand would have to be undertaken).
- The handling of wind turbines has become a growth cargo opportunity. Due to their dimensions, the components of wind turbines are best carried by water as close as possible to wind project locations. The growth in this market is driven by New York State and Province of Ontario initiatives to increase the percentage of power derived from renewable sources. The Ontario Power Authority (OPA) is working to fulfill the government of Ontario's Supply Mix Directive of June 13, 2006, which declares that the OPA should increase installed capacity of new renewable energy resources from 2,700 MW 2003 base to 10,402 MW for 2010, and 15,700 MW for 2025. According to the OPA's Integrated Power System Plan, the company's wind power projects are as follows:[32]

Existing (MW)	501
Committed	2,889
Planned	862
Total Wind	4,251

In March 2006 the Helimax Group prepared a report for OPA which recommended the most suitable sites for wind farms.[33] In the map below (**Figure 8- 2**), the green diamonds are proposed sites, the blue diamonds are being developed, the yellow diamonds are operational sites, and the outlined areas have been identified as suitable locations.

[31] The term "industrial" airport is not recognized by the FAA as an airport classification (i.e. commercial service airport or general aviation airport) but is used in this context to describe an airport supporting the aviation and aerospace industry and other sectors.
[32] http://www.powerauthority.on.ca/IPSP/Storage/82/7763_B-1-1_updated_2008-09-04.pdf
[33] Helimax Energy Inc., *Analysis of Future Wind Farm Development in Ontario,* 2006.

Figure 8- 2: Ontario Wind Farm Locations

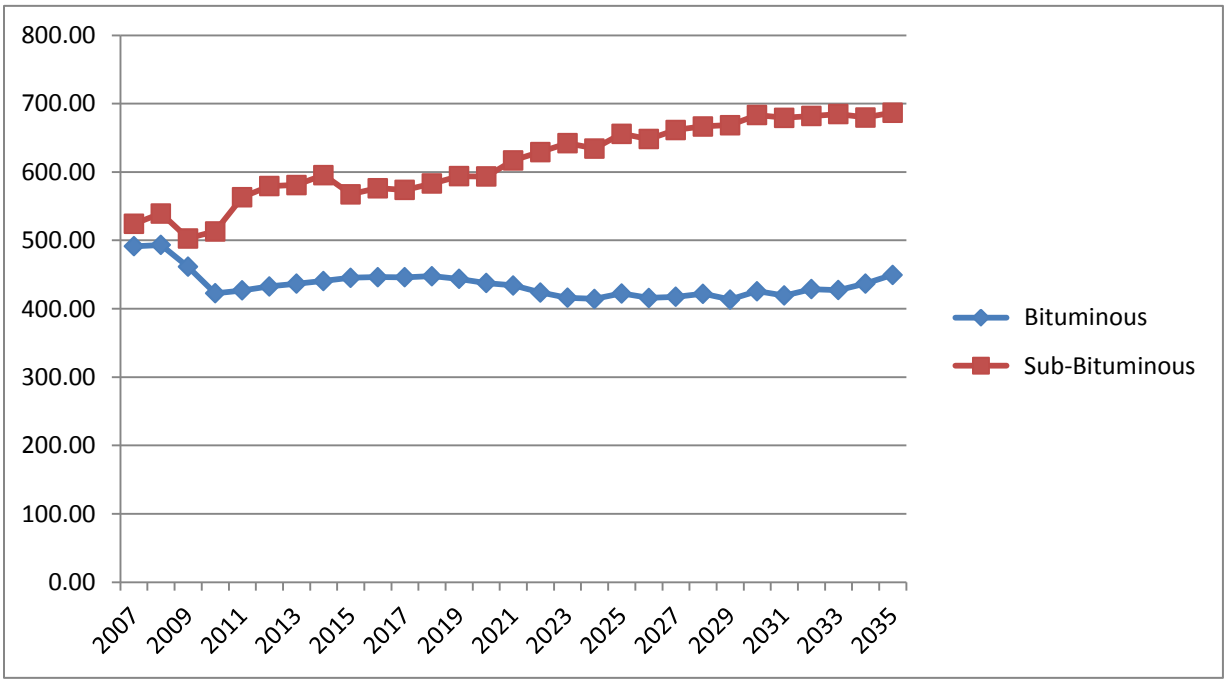


New York State is also working toward a target level of renewables. In 2004 New York established the Renewable Portfolio Standard (RPS) to increase the percentage of electricity delivered to New York consumers that is generated by renewable resources to 35 percent by 2013. Subsequently, Governor Patterson proposed to increase the goal to 45 percent clean energy by 2015. The New York Power Authority (NYPA) has proposed a 120 MW to 500 MW wind project in the New York waters of Lake Erie and/or Lake Ontario.[34] Most of these projects would involve at least 80 turbines. It is expected that most of the activity in wind turbine projects will be over the next several years. This is a short-term opportunity and will not likely persist into the next decade.

- Despite the initiatives toward renewable listed above, coal could also represent a growth cargo area. The U.S. Energy Information Administration predicts a continued shift away from bituminous eastern coal toward sub-bituminous western coal. The blending of Montana coal by AES Somerset is an example of this transition. Previously, the utility had sourced all of its coal from Appalachian mines. Now, it sources some of its coal from mines in Montana. Greater usage of western coal by eastern power plants is an opportunity for the region's ports because western coal is more likely to travel by vessel. The long journey from mines in Wyoming and Montana make maritime transportation a more economical alternative.

[34] http://www.nypa.gov/NYPAwindpower/GreatLakesWind.htm

Figure 8- 3: Forecasted Coal Production by Type – Millions of Short Tons



Source: U.S. Energy Information Administration, 2010 Annual Energy Outlook

- Building materials such as cement could also be a growth opportunity for the Port of Buffalo. Inbound shipments of these materials should vary by the size of the metropolitan region. The larger the metropolitan area, the more construction activity and demand for construction materials. The Cleveland metropolitan area has about twice the population of Buffalo, but the Port of Cleveland handled over four times the volume of cement in 2008 as the Port of Buffalo. The Port of Oswego has a less populous hinterland, but it handled almost three times the volume of cement as the Port of Buffalo in 2008.
- Road salt could possibly be a growth opportunity, but this opportunity will likely be constrained. Salt is often handled through GLSLS port facilities. As an example, the Port of Ogdensburg handled 90,648 tons of road salt in 2008 compared to the Port of Buffalo, which handled 29,372 tons. However, the growth in this trade is limited by the convenience of the American Rock Salt company, which has a mine in Livingston County just south of Rochester. Because the mine is less than 75 miles away, it often makes sense to simply truck the salt directly. Waterborne deliveries are from a mine on Lake Huron in Goderich, Ontario, about 400 miles by water.
- Grain exports could possibly represent a growth opportunity, but this opportunity will likely be constrained as well. As mentioned in Technical Memorandum #5, the Great Lakes grain exports have declined significantly over the past several decades. There are several reasons for this: 1) the European Union (EU) nations do not buy as much grain from the U.S. as previously. The EU is now a net exporter of grains. 2) With the collapse of the Soviet Union the U.S. no longer exports grain to the former Soviet countries in the same volumes as previously. 3) Outbound grain exports by vessel had previously been balanced by inbound steel imports. Since the steel imports have declined, the service is less economical because the traffic is imbalanced. 4) The

average size of the global bulk fleet is now much larger, so that ocean-going ships are less likely to be able to navigate the GLSLS. 5) Competition from alternate routes and modes has increased.

There may be spikes in demand. Because of the failure of the Russian crop, the 2010 harvest season could be an excellent time to pursue grain export cargoes. However, the U.S. Army Corps of Engineers recently produced a long-term forecast of U.S. grain exports, which suggests that increases in U.S. grain exports to Europe will be relatively subdued.[35] Grain exports to Asia will increase dramatically, but the GLSLS will probably not handle this traffic.

Because the Port of Buffalo is a private enterprise, the level of marketing effort is unknown. The U.S. Maritime Administration (Marad) has produced a survey of port finances with 38 ports responding. The ratio of marketing expenditures to port revenues earned varies considerably. The overall average from the survey is seven percent. However, there were a number of outliers that increased this average. The median marketing ratio was only about four percent. The results suggest that smaller ports tend to spend a higher portion of revenue on marketing. For example, those ports with revenues less than $10 million per year on average spent 9.5 percent of revenues on marketing, with a median marketing to revenue ratio of 6.7 percent. Given the effort of other ports, a marketing budget of at least four percent of revenues would likely be warranted. Other ports spend the bulk of their marketing budgets meeting with potential customers and other networking activities.

[35] U.S. Army Corps of Engineers Navigation Economic Technologies Program, *Long-Term Forecasting of World Grain Trade and U.S. Gulf Exports,* July 30, 2004.

9.0 Project Recommendations

This section of the report provides a list of projects that have been proposed by this study. The list includes projects that include operational, infrastructure, or policy initiatives. The project listing does not include marketing initiatives, as these were discussed in the previous section. Also excluded are projects that already appear on the GBNRTC Transportation Improvement Plan (TIP), such as a number of the highway projects that were presented in Technical Memorandum #4. Those projects that are presented are prioritized by high, medium, and low. High priority projects are those which the study team feels will strongly benefit the region and which the study team's analysis suggests will generate a positive benefit/cost ratio. With medium priority projects, the benefit/cost ratio is less certain. Additional information would need to be provided to ensure that the project would be an effective use of public funds. The study team does not believe that low priority projects will yield a positive benefit/cost ratio. These projects should be monitored in case conditions change such that they would yield benefits in excess of project costs.

9.1 Projects by Mode, Priority and Timing

Projects are also listed by timing. Short term projects could be accomplished within a year or so. In many cases, the funding has already been identified. Medium term projects could be accomplished within five years, but will require longer than a year. Long term projects could easily take more than five years to gain public acceptance, secure funding, and proceed through the planning process.

Figure 9- 1: Prioritization of Projects

Project	Mode	Priority	Timing
Buffalo Logistics Complex	Mostly highway/rail	High	Short, Medium, Long
Portage Bridge Replacement	Rail	High	Medium
G&W Connection from NS to Buffalo Line to BPRR Line	Rail	High	Short
Falls Road Bridge over Erie Canal Rehabilitation	Rail	High	Short
Peace Bridge Expansion	Highway	High	Long
New York Route 63 Bypass	Highway	High	Long
CP Draw Replacement	Rail	Medium	Long
Southern Expressway Extension – Springville to Salamanca	Highway	Medium	Medium
AES Lake Unloading Project	Water	Medium	Medium
CN Northern Connection/ CN Southern Connection	Rail	Medium	Medium
Revitalized Erie Canal	Water	Medium	Medium
Short Sea Shipping	Water	Low	Medium
Lehigh Valley Yard Intermodal Expansion	Rail	Low	Medium

The projects presented in the bulleted list below were included in the New York State Rail Plan but not subjected to any in-depth analysis as a part of this study. These projects were assessed and prioritized, but at a very cursory level. For simplicity's sake, only those projects that have been ranked "High" or "Medium" priority are listed. Most of these projects could be accomplished in a relatively short timeframe. For the most part, they would not require any extensive permitting or environmental review processes. The qualitative priority assessment considers the gap between a project, and a non-project scenario (i.e., what is the difference in likely outcome if the project is built compared to if it is not built). This relationship tends to be the most dramatic in cases where continued rail operations depend upon the project. If the infrastructure were not upgraded, it would soon be rendered of limited or no use at all. The Falls Road Bridge over the Erie Canal is such a case. The criteria used to assess projects were as follows:

- Upgrades of rail lines that are in poor condition were considered to be of higher priority than upgrades of rail lines in good condition.
- Projects that enable lines to handle 286,000 lb. rail cars were given high priority. Without these improvements, these lines will become increasingly obsolete, as they will not be able to accommodate industry standard equipment. Furthermore, the 286,000 lb. standard is consistent with NYSDOT goals as outlined in the State Rail Plan.
- Projects are also considered to be high priority if they appear to have a high economic development potential or activity. In these cases, the study team was able to identify specific growing rail markets that would depend upon the projects.
- Projects were given higher priority if alternate funding mechanisms are not available.
- General maintenance projects were considered to be of lower priority, since operating maintenance should be covered through carriers' operating revenues.
- Projects were given lower priority if there is some question over the project's necessity or whether the project is the most cost-effective solution to achieve a given benefit.
- A number of projects for bridge structures over roads were proposed. Further information will be required to assess the priority of these projects, since it is uncertain who has responsibility for the structure. This could either fall to the railroad or to the roadway's owner (federal, state, or local). Responsibility for the structure depends upon who built over whom.

Figure 9- 2: Prioritization of Projects from the New York State Rail Plan

ID	Type	Railroad	Project Location	Description	Est. Cost (millions)	Priority
14	Track Rehab or Upgrade	BSOR	MP7-14 MP18.77-19.73 MP 22.76 - 23.21	Track rehab project - these sections of track desperately needs ties - rail is 112 pound CWR. BSOR has MP 7-14 listed as a top priority.	$0.82	High
28	Bridge Rehab	GVT	Lockport	Rehab Falls River Road Bridge over Erie Canal	$1.00	High
32	Track Rehab or Upgrade	SB	Erie County	Rehab rail yard and main track	$2.80	High
37	Track Rehab or Upgrade	SB	Erie County	Upgrade track and structure to accommodate 286,000 pounds.	$4.00	High
37	Track Rehab or Upgrade	SB	Erie County	Upgrade 25 Miles of Track to carry 286,000 lb. rail cars	$4.00	High
35, 36	Track Rehab or Upgrade	SB	Erie County	Rehab track and bridges	$5.00	High
16	Track Rehab or Upgrade	BSOR	Buffalo Burrows Lot Industrial Yard	Upgrade Track and facility for grain elevator and proposed ethanol plant - Track needs to be upgraded from the current 80 to 100 pound rail to 115 pound rail.	$5.20	High
17	Equipment	DLWR		Standby power supplies for four locomotives	$0.10	Med/High
13	Track Rehab or Upgrade	BSOR	MP 32.9	Bridge rehab and repair - Bridge needs a new deck. The Bridge is jointly maintained by Erie County	$0.70	Med/High
24	Track Rehab or Upgrade	FRR	Lockport	Rail yard to handle ethanol and DDGS	$0.73	Med/High
6	Track Rehab or Upgrade	BPRR	Erie and Catt County	Upgrade 2 miles of track to and structure to accommodate 286,000 pound car capacity.	$1.00	Med/High
3	Track Rehab or Upgrade	BPRR	Erie and Catt County	Upgrade Buffalo Line - Upgrade a 50-mile section of track from 10 mph to 25 mph (replacement to ties and ballast)	$3.50	Med/High
23	Track Expansion	DLWR	Lancaster	Extend track into industrial park - add three switches	$0.33	Med
5	Track Rehab or Upgrade	BPRR	Erie and Catt County	Rail rehab - 75 miles and numerous structures	$2.00	Med
34	Equipment	SB	Erie County	Acquire four low emission locomotives	$4.00	Med
4	Equipment	BPRR	Erie and Catt County	Acquire four low emission locomotives	$6.00	Med

10.0 Conclusions

The purpose of the Niagara Frontier Urban Area Freight Transportation Study is to assess the existing freight transportation network against expected future freight needs and trade opportunities. Several themes became apparent in the process of the study.

- Economic development is a pervasive concern for the region. The region has lost population in recent years and has had difficulty transitioning as employment in heavy manufacturing has declined.
- The region's roadway network has plenty of capacity. The region has the lowest congestion of any comparably sized metropolitan area in the country. That said, bottlenecks and areas of congestion still do exist. Technical Memorandum #2 found poor levels of service on certain segments of I-90, I-190, and I-290. The New York State Thruway Authority and NYSDOT will be addressing issues related to these segments in an upcoming study, the Buffalo Corridor Study. Truck traffic is also expected to more than double between 2004 and 2035, which will place future stresses on the road network.
- The region has excess capacity in both air cargo (NFIA) and in port facilities. Efforts aimed at increasing the usage of these facilities relate less to infrastructure improvements and more to marketing initiatives. Infrastructure initiatives may follow once potential users have been identified.
- Stakeholders have identified a number of weaknesses in the region's rail infrastructure. Several of the area's rail bridges are reaching the end of their useful life, and some rail lines are in poor condition. Bottlenecks persist, such as the CP Draw, and shippers would like access to a competitive rail options.
- The region's identity as one of the primary conduits for trade with Canada represents an opportunity. Currently, over 80 percent of cross-border highway freight passes through the region between Canada and other parts of the U.S.. While the region's infrastructure must accommodate this traffic, this overhead traffic does not benefit the economic development of the region. However, if the region could handle some of this traffic, such as through a Buffalo logistics complex, then the overhead traffic could benefit the region.
- The New York metropolitan area is the region's most important trading partner, accounting for 23 percent of inbound truck shipments and 35 percent of outbound truck shipments in 2004. To put this into perspective, these truck volumes are over seven times the inbound freight between the Buffalo-Niagara region and Canada and over ten times the outbound freight to Canada. This is despite the fact that New York is 384 miles away by highway and Toronto is less than 100. Furthermore, the Port of New York/ New Jersey is North America's second largest port behind Los Angeles/Long Beach, handling over twice the volume of containers as the third largest port, Savannah, GA, providing the Buffalo-Niagara region with an important gateway for international trade. As a result, corridors that connect the region to the New York/New Jersey area are important, and projects aimed at improving these corridors will frequently yield large impacts for Buffalo-Niagara shippers. For highway transport, this includes the I-90, I-390 and I-81. For rail, this includes the CSX Chicago Line and the NS Southern Tier.

- Other important trading partners are in the Mid-Atlantic. As an example the Philadelphia-Wilmington-Atlantic City and Washington-Baltimore Business Economic Areas (BEA) combined are about six percent of the region's inbound truck freight and five percent of the region's outbound truck freight. These markets are accessed through many of the same highways that are used to access the New York metropolitan area. The Chicago area and Northern/Central Illinois are important for inbound freight, so that the Chicago-Gary-Kenosha and the Champaign-Urbana BEAs combined account for six percent of inbound truck freight. Much of the region's rail freight originates, terminates, or travels through Chicago. The CSX and NS rail lines provide vital links to and from Chicago.
- The region has good east/west rail links, but the region's roadway connections to New York and other important trading partners in the Mid-Atlantic are somewhat circuitous. This is a motivation for several studies that are described in this study, including the Corridor1 study and the New York Route 63 study.
- Despite some weaknesses, the Buffalo-Niagara region could be a promising location for a logistics center. The area has good rail connections, with a direct connection to the Port of New York/New Jersey and access to West Coast ports through Chicago. The need for inland distribution hubs will grow, particularly at the Port of New York/New Jersey as congestion in the port area increases. The CSX Chicago Line is one of the primary rail corridors in the Northeast, as is the NS Southern Tier. Buffalo is the best option for providing intermodal rail access between the Port of New York/New Jersey and the Greater Toronto Area. A number of large population centers are in close vicinity. Buffalo and Rochester each have over a million inhabitants, while the Greater Toronto Area has over 5.5 million. The region has good highway corridors for serving end customers both in the U.S. and Canada. The region, both the U.S. and Canadian sides of the border, has significant trade infrastructure including customs brokers, freight forwarders, logistics firms and government agencies

Collectively, the recommendations, insights, and data included within this study should provide the Buffalo-Niagara region with a path forward to use the region's freight network to help achieve community goals in the future.