Niagara Frontier Urban Area Freight Transportation Study

Technical Memorandum No. 4

Freight Transportation Needs

GBNRTC

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

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Introduction

1.1 Overview

The Niagara Frontier Urban Area Freight Transportation Study involves five analysis tasks, and the production of a final study report. Each of the first five tasks culminates in the completion of a technical memorandum. Task 1 and the resulting technical memorandum provide an overview of the Buffalo-Niagara Regional Economy. Task 2 produced a multimodal inventory of freight transportation assets in the Buffalo-Niagara Region. Technical Memorandum #3 provided a demand perspective based on existing freight markets and freight demand in the future.

Task 4 and this resulting technical memorandum synthesizes the findings of the earlier reports to arrive at a determination of the region's freight transportation and logistics needs. This report also provides recommendations for potential actions to improve freight transportation efficiency in the region and support economic development through transportation based actions and investments.

Technical Memorandum #4 proposes a series of initiatives that are intended to be transportation based catalysts for future economic development. Because of the increasing demand for multimodal freight transportation the emphasis of these recommendations is placed on improving the integration between freight transportation modes in the region. The analyses from previous tasks suggest that Buffalo is significantly impacted by a high level of overhead traffic, i.e., shipments that simply pass through the two-county region on their way from and to other destinations. At the same time, Buffalo is favored by its being a nexus of several major railroads, smaller rail carriers, and major highway arterials. It also is served by two airports and has maritime access. In addition, the Erie-Niagara region is a principal NAFTA gateway. The overall strategic approach is based on leveraging Buffalo's geographic location to capture a larger share of increasing demand for multimodal transportation by delivering required services.

This memorandum focuses on expanding the role of Erie and Niagara counties in multimodal freight transportation. As part of this approach, it identifies and analyzes gaps in the region's transportation network that could hinder future operational efficiencies.

1.2 Summary of Issues

Earlier tasks in this study have examined the status of freight transportation markets, the condition of freight infrastructure, and the economic situation in the Buffalo-Niagara region. As part of this effort, the study team spoke with numerous stakeholders within the region, including the following:

- 3 railroads
- 6 manufacturing & distribution companies
- 3 food processing companies
- 2 air cargo carriers
- Each economic development agency within the two counties
- 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 a freight forum that was attended by three shippers, two railroads, and representatives from the Ontario Trucking Association, the World Trade Center of Buffalo-Niagara, Gateway Trade Center, and other area economic development agencies. Appendix D provides a summary of these stakeholder outreach efforts. 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.

Information from the stakeholder outreach efforts and from a review of regional transportation and economic data combined to illustrate the nature of freight issues in the Buffalo-Niagara region. In general, trucking issues were of less concern in the region as they are in other areas of the country. The roadway network has sufficient 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 more of a concern to a number of the stakeholders interviewed. Stakeholder interviews and the current study's rail freight system profile (described in detail in Technical Memorandum #2) suggest that the region's rail system has excess capacity in some areas and inadequate capacity in others. This situation is common throughout the United States 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. Over the same time period, overall U.S. population increased by 29 percent. GBNRTC and other sources forecast flat population growth for the region into the future, while the overall U.S. population is forecasted to grow considerably.

Figure 1-1 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 the "Golden Horseshoe" a densely populated, industrialized region in the Greater Toronto region of Canada. This theme was echoed by several economic development agencies, as well as the Port Authority of New York and New Jersey.

Figure 1-1: Stakeholder Identified Freight Issues

Freight Issue	Truck	Rail	Water	Air
Land Use / Zoning				
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	
Safety				
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		
Energy & Environment				
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)	

1.3 Summary of Potential Solutions

As an appendix to this report, the study team has prepared a Freight Improvement Resource Guide (***Appendix C***). This guide is intended to help local areas develop solutions that can be applied to address a number of different freight issues. The guide is intended to provide planners and decision makers with an understanding of the tools available to address freight opportunities and issues.

When one considers these solutions in relation to the issues of the Buffalo-Niagara region, a number of potential solutions are apparent. For example, rail access issues are often remedied by either negotiating with rail carriers to provide greater access to competitors, or building rail connections that allow competitors to access certain areas. Economic development initiatives for rail tend to focus on developing rail facilities such as rail spurs to induce employers into an area or using intermodal services to facilitate trade. Local governments can support intermodal services, not only through intermodal development, but also by providing marketing and information technology support. Intermodal sites also require highway access and nearby locations for logistics/distribution development. Economic development initiatives for marine projects either focus on establishing new service to facilitate trade or fostering port-oriented economic development.

The projects proposed within this Technical Memorandum are consistent with the issues identified by stakeholders. ***Figure 1-2*** provides a categorization of potential projects proposed within this memorandum. Strategies presented in this Technical Memorandum can be summarized as:

- Promote trade with Canada and support the region's potential as a logistics center by
    a. Improving connections between the region and Canada through the improvement of border crossings
    b. Promoting the concept of Buffalo as a logistics hub by creating more areas for distribution center development and by supporting information technology for broadband connectivity for in-transit visibility, advanced customs clearance, equipment management, etc.
    c. Establishing cross-lake ferry service
    d. Establishing a local container and chassis pool
- Promote Buffalo's role as an inland distribution hub by supporting the concept of short-sea shipping between Buffalo and Canadian ports
- Resolve bottlenecks that hinder rail service
- Support competitive access by the CN railroad to create more options and potentially lower rates for shippers
- Promote port-related development
- Resolve lingering highway issues that hinder motor carrier freight

Figure 1-2: Categorization of Proposed Freight Projects

Freight Issue	Truck	Rail	Water	Air
Land Use / Zoning				
Freight Mobility	Niagara Falls Boulevard reconstruction Better communication of delays at border crossings	CP Draw bridge replacement G&W Buffalo Line Connection Portage Bridge replacement	Improvements to AES pier, conveyor system	Improvements at NFIA
Infrastructure Preservation & Maintenance		Falls River Bridge over Erie Canal Rehabilitation		
Safety	Lakeshore Road Improvements			
Connectivity & Access	Buffalo Avenue rehabilitation I-190 bridge replacement Whirlpool Bridge upper deck conversion	CN Northern Connection CN Southern Connection		Genesee Street rehabilitation
Energy & Environment				
Economic Development – Cost Saving			Waterborne container service Potential for other shippers to use AES facilities Erie Canal dredging, revitalization	
Economic Development – New Business Attraction		Lehigh Valley Yard Intermodal Expansion Promote Buffalo logistics hub	Build transport hub for NYS agriculture sector	Efforts to retain UPS, FedEx, DHL Airport marketing efforts Auto and medical equipment order to develop market

Motor Carrier Freight

As described in Technical Memorandum #2, the motor freight network comprises the local freight highway and street system directly linked to the principal manufacturers and commercial centers of Erie and Niagara counties and the interstate network, I-90, I-190 and I-290 that connects the region to external markets and production regions.

The Buffalo metropolitan area benefits from being one of the less congested major metropolitan areas in the U.S. According to a 2007 study, the Buffalo region was the least congested of 39 major metropolitan areas.1 That finding was corroborated in discussions with the region's motor carrier stakeholders. This section evaluates the capacity of the highway network to support future demand for freight transportation in the region.

Although road congestion was not found to be a major problem in the Buffalo-Niagara area, a number of barriers to fluid freight mobility were identified. These can be characterized as follows:

- Barriers that result from border crossing inefficiencies
- Barriers to the use of high capacity vehicles
- Insufficient multimodal freight facilities
- Specific regional roadway bottlenecks

Individual stakeholder interviews and observations made by stakeholders at a freight forum held as part of the study effort supported the earlier findings that highway system congestion is currently not a significant issue. Instead highway freight stakeholders indicated that the most significant problems pertained to U.S.-Canadian cross-border transportation.

2.1 Border Crossing Inefficiencies

Many stakeholders reported capacity and congestion problems throughout Southern Ontario and the Greater Toronto area with bottlenecks at the bridges. Specific problem locations vary by time of day, but the border crossings were consistently cited as being the principal problem.

2.1.1 Physical Capacity

Of the four highway border crossings in the two-county region, only the Peace Bridge and the Lewiston-Queenston Bridge are open to commercial traffic. The Peace Bridge is a three-lane international bridge with a bidirectional center lane that handles both commercial and passenger traffic. U.S. Customs for the bridge is located in Buffalo with Canadian Customs located in Fort Erie, Ontario. Over 6 million cars and 1.3 million trucks cross the bridge each year.

Peace Bridge

The capacity of the Peace Bridge has recently been increased, with the toll and administration functions being relocated to the Canadian side. Canadian Customs was moved farther away from the bridge, reducing the number of backups on the bridge itself by allowing commercial vehicles to move off the bridge. In

[1] Texas Transportation Institute, "The 2007 Urban Mobility Report"

addition, a FAST bypass lane was added on the Canadian side. Three more commercial inspection booths were added for U.S. Customs as a result of this move.

The Peace Bridge Expansion project should alleviate existing capacity constraints. According to the expansion project Draft Environmental Impact Statement (DEIS), the Peace Bridge crossing has the following deficiencies that contribute to delays at the bridge plaza:[2]

- Inadequate lane widths
- Insufficient number of inspection booths for commercial traffic (as well as non-commercial vehicles)
- Inadequate commercial lane width at inspection booths
- No designated secondary commercial apron

Since the release of the DEIS, potential impacts not previously addressed have left some uncertainty as to the direction and time frame of the expansion project. Also since the release of the DEIS, the traffic on the Peace Bridge has decreased due to the economic recession. Long-term projections suggest that traffic will increase in the future and that the increase in truck traffic will outpace passenger vehicle traffic growth.

Lewiston-Queenston Bridge

As the other commercial crossing, the Lewiston-Queenston Bridge carries between 900,000 and 950,000 trucks crossing each year, along with around three million passenger cars. There are currently six passenger lanes and three truck lanes on the bridge for travel from Canada to the U.S. The Lewiston Bridge, for travel from the U.S. to Canada, also has six passenger lanes and three truck lanes. Recent improvements to the bridge and surrounding facilities include a 2004-2005 expansion of Highway 405 from Canada to the U.S. and the replacement of the deck of the Lewiston Bridge into the U.S. The improvements, including the new deck, which flexes, allowed the bridge authority to give priority to FAST vehicles.[3]

Motor carriers interviewed for this study generally supported an increase in capacity on the Lewiston-Queenston Bridge, and expressed a preference for multi-purpose lanes that can handle either trucks or passenger cars as demand fluctuates.

Redevelopment of the bridge crossing began in 2007. Phase 1 improvements included construction of new tolling, parking and commercial inspection facilities. In June of 2008 the Government of Canada and the Niagara Falls Bridge Commission announced funding for a second phase of the redevelopment. Phase 2 includes construction of a commercial vehicle secondary inspection warehouse, additional primary inspection lanes for passenger vehicles, a new central building for the Canadian Border Services Agency, a new animal inspection facility, and the installation of a wall to separate Canada-bound traffic from U.S.-bound traffic. Funding for Phase 2 includes $62 million from the Government of Canada and $12.9 million from the NFBC.

The re-decking of the bridge is expected to slow truck traffic considerably. To the extent that of the construction schedule can be expedited, impacts to truck operation would be considerably reduced.

[2] Peace Bridge Expansion Project, Draft Environmental Impact Statement, September, 2007, p. 35
[3] Free and Secure Trade (FAST) is a joint program of the U.S. and Canada governments to tighten border security while keeping the border open to the free flow of known, low-risk legitimate trade.

2.1.2 Transborder Capacity

Enhanced communications and integration among jurisdictions on both sides of the border is required. Increased dialogue and coordination among organizations in the United States and Canada with comparable purposes are needed. An example of an entity that promotes coordination is the Great Lakes Manufacturing Council. It provides a forum for and promotes cooperation among representatives from different organizations throughout the region.

Security requirements resulting from 9/11 have significantly impeded motor carrier transportation. As security regulations tighten and border inspections become more extensive, border crossing and waiting times can be expected to increase. Ultimately security measures need to be consistent with fluid flow of goods.

Border crossing programs, such as the Automated Commercial Environment (ACE), will alleviate many border bottlenecks. Once the programs are fully operational, many of the delays at the border will be reduced.

ACE modernizes commercial trade processing systems with features designed to consolidate and automate border processing while providing a centralized online access point to connect U.S. Customs and Border Protection and the trade community. Its single-window filing will allow the trade community to submit data required by all federal agencies for the clearance of cargo in one place. Customs introduced ACE improvements at the Port of Buffalo, NY in April 2009. Over the next four years, ACE will expand to provide cargo processing capabilities across rail, sea and air and will replace the existing legacy manifest system in use today.

Currently, truck drivers crossing the border receive little advance information on processing times warranting improved communications. More extensive overhead signage is required. For example, overhead signs should have commercial wait times for both bridges posted. Truckers could then select their crossings based on more current information.

2.2 Barriers to the Use of High Capacity Vehicles

Weight and size limits for trucks vary considerably between different states and provinces, making it difficult for carriers to efficiently manage shipments that travel between multiple jurisdictions. For the Buffalo-Niagara region, significant differences exist in weight and size limits between New York, Quebec and Ontario.

New York generally does not allow trucks to exceed 48 feet in length, while Canada and some U.S. jurisdictions allow vehicle lengths up to 53 feet. This disparity in the weight and dimension regulations precludes opportunities for efficiency through triangulation. New York does allow the operation of 53-foot double trailers, dubbed “Turnpike Doubles” on the tolled portion of the New York Thruway system. These types of trailers are not allowed in Ontario. The allowance of Turnpike Doubles on certain key routes in Ontario would also increase efficiency. In order to change the restrictions, the legislation would have to be changed.

Differences in weight limits were also found between New York and other states. For example, Ohio and Pennsylvania allow roughly half as much weight per vehicle as Ontario and New York. Depending on the cargo, lower load limits can increase the number of trucks on the road, adding to congestion problems, while road damage and safety concerns can be mitigated by advanced vehicle designs with more axles.

2.3 Insufficient Multimodal Freight Facilities

Shipper stakeholders indicated that increasing transload capacity could help alleviate highway border congestion. Currently, products move across the border by truck because there are no facilities to unload rail cars. Improvements to intermodal facilities in the Buffalo region might induce some shippers to ship by rail over the border, unloading rail cars in Buffalo. In order to make this feasible the intermodal infrastructure would require improvement.

There is considerable potential in transload facilities, as a great deal more traffic could be handled if investment was made in these types of facilities. Short-sea shipping also presents opportunities, as some materials could be moved more efficiently by marine than by truck, such as cement. Both St. Lawrence Cement and St. Mary's Cement have terminals in Buffalo, yet both companies truck all their production. Recently, the St. Lawrence Seaway Authority modified tolls for small ships and tugs, which should encourage small ships serving Buffalo and the rest of New York State.

2.4 Regional Roadway Recommendations

According to stakeholders, Buffalo Avenue (SR 384) is in need of significant rehabilitation. The roadway is in less than acceptable condition with low overhead bridge clearances preventing westbound trucks from having direct access to Buffalo Ave from I-190.

As indicated in Technical Memorandum #2, several roads have been prioritized for rehabilitation or for implementation of ITS applications including variable message signs and traffic cameras. The following projects have been identified: [4]

State Route 33

Rehabilitation of Genesee Street from Dick Road to the Buffalo-Niagara International Airport East Entrance in the Town of Cheektowaga with minor improvements to NY 33 (Kensington Expressway segment) between NY 198 and Elm/Oak streets.

US Route 62

Reconstruction of US Route 62 (Niagara Falls Boulevard) between Krueger Road and Walmore Road in the Town of Wheatfield.

Interstate 190

Removal of the existing four-span simply supported bridges and the construction of two double span continuous steel bridges at the intersection of US Route I-190 (Niagara Expressway) and the LaSalle Expressway in the city of Niagara Falls.

[4] Greater Buffalo-Niagara Transportation Council Transportation Improvement Plan

US 198/Scajaquada Corridor

Change in functional classification, operating speed reductions and safety improvements between I-190 and SR 33 (Kensington Expressway).

State Route 5

Access, safety and mobility improvements on SR 5, Lakeshore Road, from Old Lakeshore Road to Old Big Tree Road in the Town of Hamburg, Erie County.

Interstate 90

Notwithstanding the observations of the region's stakeholders that bottlenecks are not significant, there are measureable motor carrier traffic delays. The I-90/I-290 connection ranked seventh nationally in intercity large truck delays in a study published by the FHWA in 2005 based on year 2002 data. A corridor study on eight miles of I-90 near Buffalo between Interchange 49 (Transit Road) and Interchange 53 (I-190) and on I-290 between I-90 and Interchange 7 (Main Street) conducted by the NYS Thruway Authority and NYSDOT has been postponed due to changes to the Thruway toll structure in the Buffalo area that have begun to alter regional traffic patterns. The study is planned to resume once traffic patterns stabilize.

Whirlpool Bridge Upper Deck Conversion

This project would change the upper deck of the Whirlpool Bridge from a railroad bridge to a secured highway bridge for the purpose of providing truck access across the border between Canada and the proposed Lehigh Valley Yard intermodal terminal. This alternative requires complex engineering design and logistics considerations including customs and security issues that must be addressed as part of the Whirlpool Bridge upgrade, to maintain an effective and secure international border crossing.

Figure 2-1: Whirlpool Bridge Conversion

Additional market analysis is required to estimate structural and operational requirements for this project. A consideration of any market analysis should include the potential for re-establishing rail freight activity. Concerns have been raised by some stakeholders that converting the bridge to a truck only crossing could leave the region vulnerable as only a single rail crossing over the Niagara River would remain. One possibility would be a joint rail/truck usage option for the upper deck.

A 2000 Niagara Falls Bridge Commission Study recommended retaining the rail line across the Whirlpool Bridge, while adding two lanes for trucks on the top deck adjacent to the existing rail line. A second option suggested by the International Truck Bridge (Canada and USA) in 2001 would convert the existing unused Michigan Central Railroad Bridge, located just to the south of the Whirlpool Bridge, from a rail crossing to a truck crossing. Both of the proposed options suggest retaining the rail link across the Niagara River at the Whirlpool Rapids Crossing.

2.4.1 Better Communication/Intelligent Transportation Systems on Border Delays

Feedback from a Buffalo Regional Freight Forum, held in 2008, suggested that communications to the trucking industry about border crossing delays could be improved. Currently, the Niagara Falls Bridge Commission communicates with motorists regarding border delays by its website, a 1-800 number, or Twitter software. One improvement could be to add a low range AM radio station, which would broadcast information about delays. Signs could also be provided along key border approaches to inform motorists of the frequency of the highway advisory radio frequency. These locations would be far enough from the border that motorists could then tune into the radio station and make decisions accordingly. This is a relatively inexpensive option and has been implemented in other locations for as little as several hundred thousand dollars. A more expensive option is to deploy variable message signs (VMS) at key motorist decision locations that would display information about border delays.

Rail Freight

Previous technical memoranda describe the structure of the existing rail freight network including the principal railroads, routes and operations in the Buffalo-Niagara region, as well as projected demand for rail freight and new market opportunities. Technical Memorandum #4 describes current railroad and shipper issues and constraints related to freight railroad infrastructure and operations, future rail capacity needs relative to market trends, railroad investment and potential capital investment alternatives.

3.1 Evolution of the Existing Rail Network

3.1.1 Regional Rail Rationalization

In the 1970s, the Consolidated Rail Corporation (Conrail) was formed by merging several bankrupt railroads in the northeast: Penn Central, Reading, Lehigh Valley and Erie Lackawanna Railroads. Because Buffalo was once a major freight rail center, many of these predecessor railroads had their own yard and terminal facilities to support their local operations. However, under Conrail, some of these rail facilities became redundant. Many of the branch lines and yards were not connected in the most effective as manner under a single railroad operator.

In the 1980s, Conrail and NYSDOT worked together to complete the Buffalo Rationalization Project, which included major track and signal upgrades, connectivity improvements and the removal of redundant or underutilized infrastructure that was no longer critical to support terminal operations. This project was a major step in Conrail's plan to improve rail service and realize operating efficiencies in the Buffalo-Niagara region.

The primary classification yard in the Buffalo Terminal area for the Penn Central Railroad was Frontier Yard, while the primary yard for the Erie Lackawanna Railroad was Bison Yard. Under the Conrail Rationalization Plan, Bison Yard was considered redundant and removed from service. It was subsequently dismantled so the site could be cleared for future development. [5]

In addition, there were numerous other abandonments, redundancy rationalizations and connectivity improvements made during this major capital program that were based on future operations in the Buffalo-Niagara Terminal area being performed predominantly by a single freight railroad.

3.1.2 Conrail Acquisition

In the late 1990s, Conrail was approached by CSX Transportation and Norfolk Southern about the potential acquisition of its assets and operations. Initially, CSX and NS competed for complete ownership of Conrail. In the end, they agreed to divide Conrail's assets primarily along the lines of Penn Central's predecessor railroads (i.e., New York Central and Pennsylvania Railroads).

In New York, CSX acquired the mainline westward from New York City to Chicago through Buffalo (i.e., Water Level Route), while NS obtained the Conrail primary line going west from New York City that went through central Pennsylvania via Harrisburg and Pittsburgh. NS also obtained the use of secondary routes

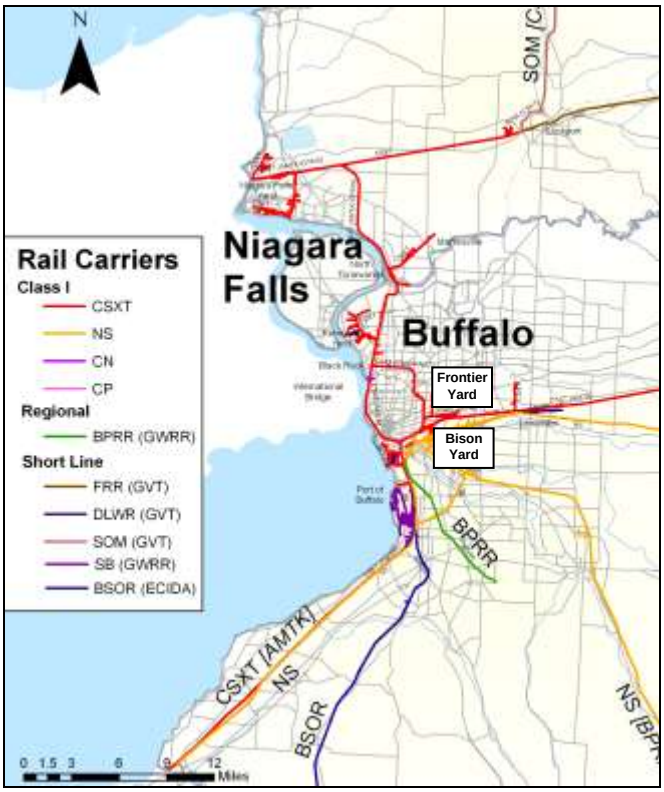
[5] Norfolk Southern subsequently rebuilt the Bison Yard after the Conrail acquisition. The company had owned a portion of the Bison Yard during the Conrail era.

westward from New York City via the Southern Tier Line to Buffalo and the former Nickel Plate Line to Cleveland that then connects with NS mainline west to Chicago.

There were several areas of significant operating congestion and complexity (Metropolitan Detroit, New Jersey Terminal (New York Metropolitan Region) and Philadelphia) where no agreement to split operations could be reached between the parties. CSX and NS agreed to designate these complex terminals as Shared Asset Areas (SAAs). SAAs are operated by the remnant of Conrail, which is owned equally by CSX and NS. Because Conrail's operation is limited to only terminal areas, freight is turned over to either CSX or NS at the direction of the shipper.

Due to the competitive benefits of the SAAs, several key shippers and other stakeholders in the Buffalo-Niagara region petitioned the Surface Transportation Board (STB) to grant SAA status to the Buffalo-Niagara Terminal. This was intended to keep shipper transportation costs lower and promote better service. Although their petition was denied, their efforts did generate positive actions by the STB in preserving competitive rail service in the region. Prior to the acquisition, a number of Buffalo shippers were subject to reciprocal switching. The STB gave those shippers access to both CSX and NS.[6]

Figure 3-1: Post Conrail Acquisition Rail Network



NS acquired 57 percent of Conrail's total system route miles and CSX obtained the remaining 43 percent. CSX was also ordered to establish a committee to promote the growth of rail traffic in the Buffalo area. CSX

[6] A reciprocal switch involves the pick-up or delivery of a rail car at a shipper by a rail carrier that does not participate in the line haul move, although that rail carrier also provides a line haul service in the route.

ended up with access to more customers in Buffalo than NS and although both carriers provide through services in the area, CSX's service route is much higher capacity than that of NS.

Following the acquisition of Conrail, CSX and NS have both made significant investments to improve rail service in the Buffalo-Niagara terminal and surrounding rail network. Both carriers have worked closely with local groups and business interests to identify and implement needed improvements.

3.2 Current Issues and Constraints

The Buffalo Rationalization Project 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 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.[7] 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:

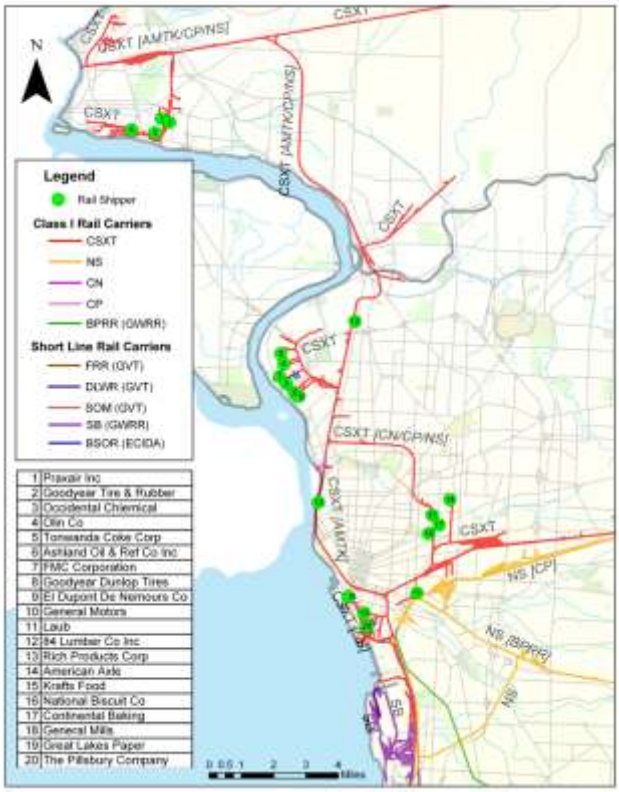
- Operational bottlenecks
- Physical constraints
- Competitive access

3.2.1 Operational Bottlenecks

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 3-2***.

- A brief summary of the operating issues raised by shippers is outlined below: Lack of responsiveness (inconsistent communications with rail carrier)
- 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

Figure 3-2: Key Shipper Locations



[7] 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.

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)8 also indicates the growing importance of short line railroads in the eastern United States 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 Report[9] 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.

3.2.2 Physical Constraints

Several capacity constraints and choke points currently exist within the Buffalo-Niagara rail network that reduces the efficiency and reliability of service to rail shippers. The region is also facing aging rail infrastructure along with the need for new or realigned facilities required for the growing rail and intermodal traffic.

Rail capacity and condition issues, many beyond the funding capacities of rail carriers in the region, need to be addressed to achieve efficient, sustainable rail operations. The most significant infrastructure needs follow.

CP Draw Bridge

"CP Draw" is the railroad designation for one of the most congested locations in the Buffalo-Niagara freight rail network. "CP" is short for "Control Point" where train movements can be controlled remotely by a train dispatcher and "Draw" is short for "drawbridge" as this is one of four active railroad bridges spanning the Buffalo River.

The northern bridge at CP Draw (on right in upright position in the photo of (***Figure 3-3***) is the former Nickel Plate Railroad Bridge. The Nickel Plate Bridge was determined to be redundant and abandoned 25 years ago by NS due to its deteriorated condition and high maintenance costs. NS entered into an agreement with Conrail for use of the parallel bridge to the south (on left in photo) to preserve rail access across the Buffalo River. Today, CP Draw is a heavily used, double-track mainline drawbridge controlled by CSX train dispatchers that handles approximately 70 CSX and 30 NS trains each day, as well as inter-yard and interchange movements with regional and short line railroads.

[8] Transportation Research Board, 2005
[9] Erie County Industrial Development Authority, 2003. Chautauqua, Cattaragus, Erie & Niagara Regional Rail Strategy, Western New York Rail Network

Figure 3-3: CP Draw Bridge

CP Draw is another instance where a bottleneck was created when infrastructure was abandoned that would later prove to be a vital part of the restructured railroad network when Conrail was acquired by CSX and NS. A major capacity improvement plan was to be developed to relieve congestion at CP Draw by constructing a new, fixed span bridge north of the existing draw bridge. The new bridge to the north was to be owned and operated by CSX and the bridge to the south was to be owned and operated by NS, who offered to participate in funding the construction.

However, in order to make the plan operational, significant track and signal system modifications would be required to realign the CSX mainline tracks (to the north bridge) and NS mainline tracks (to the south bridge) to line up with the new bridge configurations (see ***Figure 3-4***).

Figure 3-4: CP Draw Bridge Aerial Showing Current Track Configuration and Navigable Waterway

In addition, for the new bridge at CP Draw to be a fixed-span (and avoid the additional cost of restoring a movable draw bridge at this location), the Coast Guard would have to de-designate this portion of the Buffalo River as a navigable waterway (and prohibit barges from servicing oil companies south of this location). A pipe line to the oil companies would solve that issue, but other users of the Buffalo River would

be adversely affected. Without significant federal and state funding assistance or public support, the CP Draw bridge restoration project was been deemed to be too costly and has not moved forward.

International Bridge

The primary international border crossing between the United States and Canada for freight rail traffic is the International Bridge that connects Buffalo (NY) to Fort Erie (ON). This bridge is owned and operated by the Canadian National (CN) Railway. About ten to twelve CN trains use the International Bridge each day.

Although it is in relatively good condition, the International Bridge is over 100 years old. This bridge would be considered a key physical constraint should anything happen to restrict rail service or pose a significant threat to the flow of U.S.-Canadian rail traffic across the border. Given the heightened sense of security after 9/11, there is a desire to establish additional capacity (and redundancy) so that freight rail traffic can continue to flow uninterrupted across the Niagara River.

Figure 3-5: International Bridge

Whirlpool Bridge

The other international border crossing between the United States and Canada in the region is the Whirlpool Bridge connecting Niagara Falls (NY) and Niagara Falls (ON). The Whirlpool Bridge consists of an upper deck which is used for rail, and a lower deck which is used for vehicular traffic. Neither deck carries freight; the upper deck is leased by the Canadian National Railway, but is currently used only for passenger rail operations, and the lower deck allows passenger vehicles only, trucks are prohibited. The bridge is owned by the Niagara Falls Bridge Commission. CN has diverted Niagara Falls, NY-bound traffic over the International Bridge and through Buffalo, at least partly due to maintenance costs related to use of the Whirlpool Bridge. Re-establishment of CN service over the bridge in the Niagara Falls area for expedited freight service would require a major joint initiative between CN and CSX.

The planned Niagara Falls International Rail Station/Intermodal Transportation Center, which is to be located adjacent to the Whirlpool Bridge, will include a dedicated siding for passenger rail operations. This will reduce the potential for impeding overhead traffic should traffic levels increase.

Figure 3-6: Whirlpool Bridge

There have been plans to expand the use of this international border crossing between the United States and Canada including opening the Whirlpool Bridge to truck traffic. However, those plans are currently idle due to no funding support.

Portage Bridge

The Portage Bridge over the Genesee River is an NS owned bridge on the Southern Tier Line (formerly Conrail) in Letchworth State Park that supports NS, CP and CN freight operations. Portage Bridge is a 105 year old structure that currently has a 273,000-lb. per railcar weight limitation and a 10 MPH speed restriction. The railroad industry standard today is 286,000-lbs.; consequently, many trains have to be diverted to other routes.

Figure 3-7: NS Portage Bridge

As the bridge nears the end of its useful life, the potential for its closure for safety reasons becomes more imminent. Any long term closing of the Portage Bridge would threaten the viability of the route between Buffalo and Binghamton dramatically affecting competitive access by NS, CP and CN to Buffalo from the east.

NS identified Portage Bridge improvements as an immediate priority when it absorbed part of Conrail. The railroad programmed the bridge for replacement and requested funding assistance from NYSDOT in order to preserve the capacity and integrity of this important Buffalo gateway. NS is currently in the engineering design phase pending the receipt of capital funding for the construction phase.

Falls Road Bridge over Erie Canal (Lockport)

Genesee Valley Transportation (GVT) currently operates the Falls Road Railroad in Lockport, NY. The Falls Road Bridge over the historic Erie Canal in Lockport is currently used for rail cars carrying various commodities including coal and corn. The bridge is nearly 100 years old and has numerous structural deficiencies including section loss and cracks in critical members and connections. These structural deficiencies could lead to sudden failures or even collapse.

The Falls Road Railroad is now hauling significant and increasing numbers of grain cars each week to support the new Ethanol plant in Shelby, NY. The bridge, which has not experienced such extensive use in the past 25 years, is now even more susceptible to fatigue and cracking.

Figure 3-8: GVT Falls Road Bridge over Erie Canal

As a result the bridge has load capacity and speed restrictions requiring frequent inspections to monitor the rate of deterioration and to assess whether operations can be safely performed. In the meantime, GVT has applied for funding assistance from NYSDOT in order to rehabilitate this bridge.

3.2.3 Competitive Access

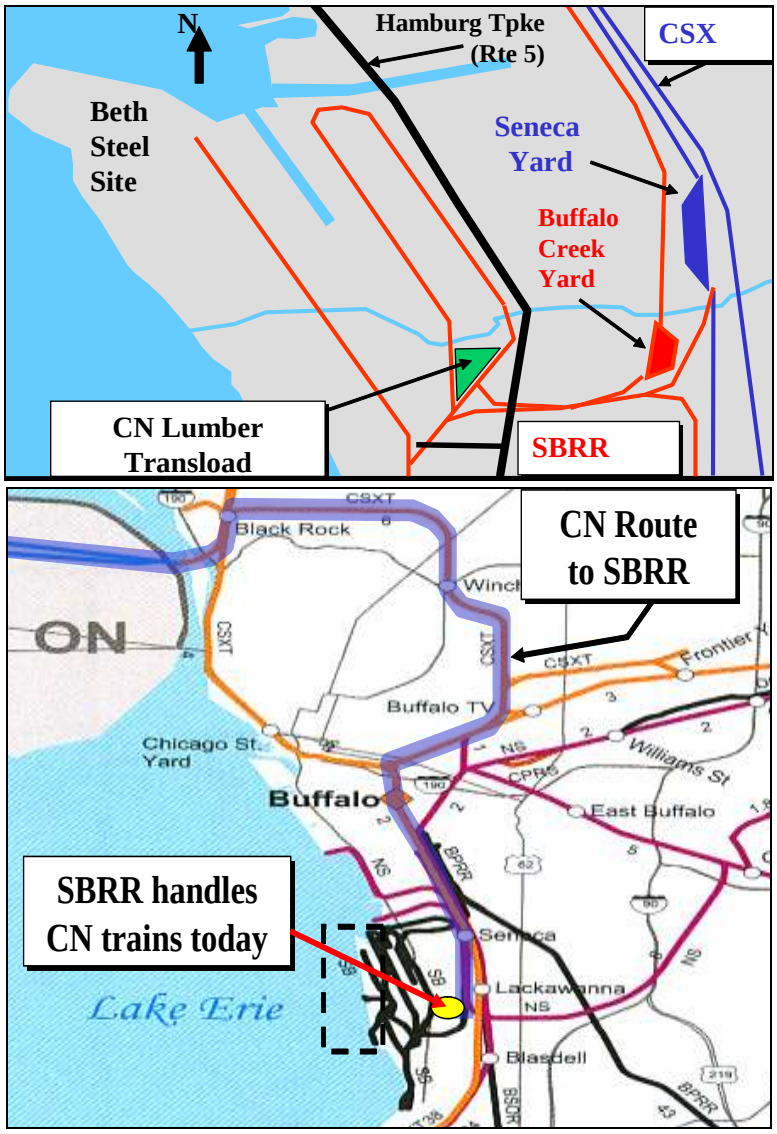
Competitive rail service for the Western New York (WNY) corridors has historically been a concern in the region. WNY has suffered from high switching rates[10] and high rail rates in general, a result of the lack of competitive service options between rail carriers. Many of the railroads do not have direct access to local customers in this region and must interchange with another Class I or Class II railroad to participate in a shipper's business. If connectivity can be improved or the number of intermodal terminals and transload

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

facilities expanded, rail competition in the region could be increased. Competitive pressures would, in turn, reduce the cost of freight service.

As previously discussed, the Canadian railroads (CP and CN) do not have direct access to their terminals in the Buffalo-Niagara region. CN's track rights are limited to bridge or interchange traffic only.[11] CN has operating rights over CSX in Buffalo and interchanges with CSX at Frontier Yard and NS at Fort Erie. CN also has track rights through Buffalo on CSX to perform direct interchange with the South Buffalo Railroad (SBRR) and Buffalo and Pittsburgh Railroad (BPRR). CN can reach its lumber reload facility in Lackawanna (adjacent to Bethlehem Steel) through the SBRR (see ***Figure 3-9***). CP's track rights over the NS between Binghamton and Buffalo (Southern Tier) have been suspended since an agreement in 2003 to consolidate operations. CP has closed its "SK" Yard in Buffalo and transferred operations to the NS Bison Yard. CP traffic on the Southern Tier is now hauled by NS.

Figure 3-9: CN Access over the SBRR



[11] North American railroads own and operate their own private networks. In some instances, however, agreements are made to share track. Bridge rights allow one railroad to operate over another, but not serve any customers on the line.

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. The STB also mandated selective trackage rights.

3.3 Future Rail Needs

3.3.1 Market Growth

The largest percentage increase in freight traffic for the Buffalo-Niagara region is projected for the intermodal segment. Most of that increase represents traffic that passes through the region without stopping. Carload traffic originating or terminating in the Buffalo-Niagara region is expected to have a much higher increase in volume on an absolute basis. Inbound carload tonnage is expected to increase by five million tons, while outbound carload traffic is expected to increase by three million tons. Shipments of coal and base material generate the largest freight volumes shipped into the Buffalo-Niagara region and chemical and waste/scrap shipments represent the largest freight volumes shipped out of the region, with continuing growth expected in the next five to ten years.

3.3.2 Future Volume and Capacity

According to a recent study funded by the Association of American Railroads (AAR), current train volumes on the CSX Chicago line vary between 50 to 100 trains per day, representing a moderate to heavy train flow. The line currently has adequate capacity to accommodate maintenance and recover from incidents outside the Buffalo-Niagara terminal area.[12] (***Figure 3-10***).

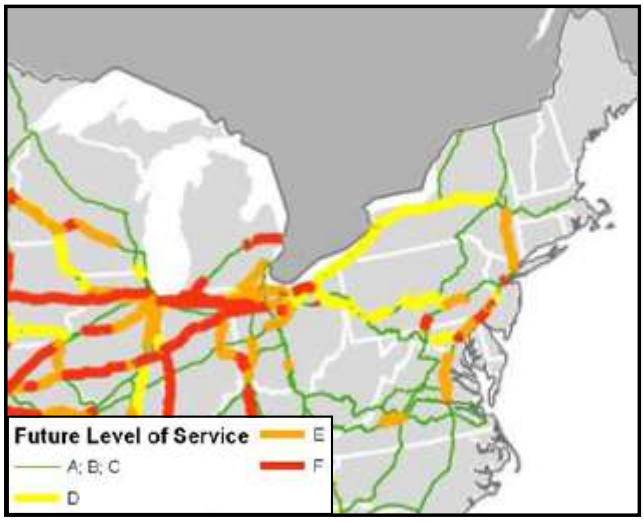
The AAR report anticipates that corridor traffic will grow by 30 to 80 trains daily by 2035. The increase would result in the line operating near capacity. Capacity expansion would be required to maintain current levels of service for freight and passengers (***Figure 3-11***).

Figure 3-10: Chicago Line

[12] Association of American Railroads, the National Rail Freight Infrastructure Capacity and Investment Study (2007),

Figure 3-11: CSX Chicago Line

2035 Level of Service



3.3.3 Infrastructure and Operational Requirements

To summarize, the region's rail network will need infrastructure upgrades to support faster, more reliable service in order to attract more freight to rail and stimulate local investment. Improvements to rail operations will be influenced by the amount of investment in rail infrastructure.

3.4 Rail Investment

Predicted fuel cost increases and truck driver shortages are expected to increase the appeal of intermodal container transportation to shippers. Both CSX and NS are implementing major investment in public-private partnership programs aimed at improving intermodal service between Atlantic ports and Midwest markets.

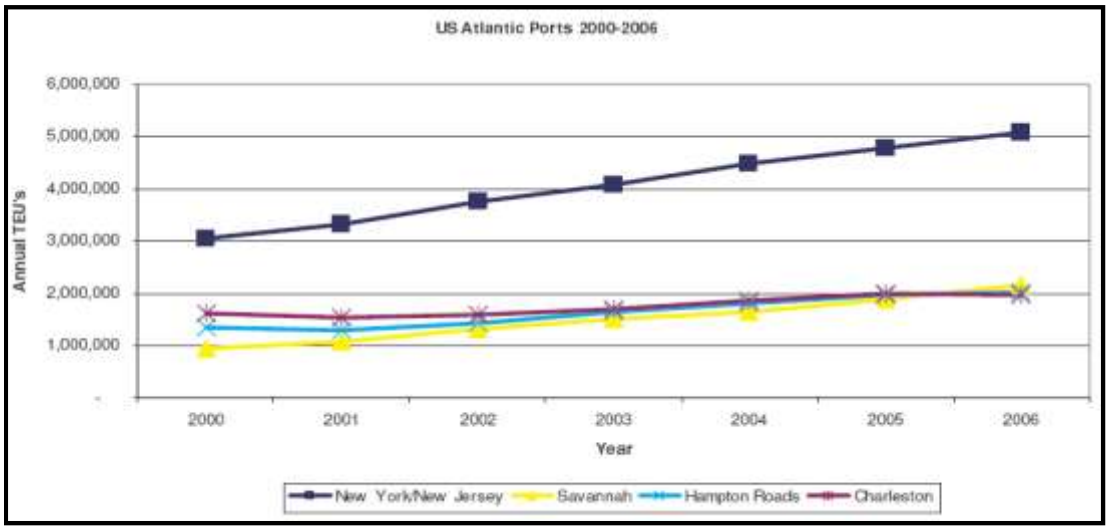
- The CSX "National Gateway" program will improve intermodal service between the Midwest and the ports of Baltimore (MD), Portsmouth (VA), and Wilmington (NC).
- The NS "Heartland Corridor" project includes infrastructure improvements between Norfolk and Chicago such as clearance enhancements that will permit double stack intermodal train operations and construction of new intermodal terminals.

Neither of these projects directly benefits the Port of New York. The Port, itself, has for some time been promoting its Port Inland Distribution Network (PIDN).

3.4.1 Port Inland Distribution Network (PIDN)

The Port Authority of New York and New Jersey (PANYNJ) experienced significant growth at its container facilities since the early 1990s. As a result, the PANYNJ undertook an extensive capital program for facility redevelopment (moving from a wheeled to a grounded operation), rail expansion at each of its marine terminals and channel deepening allowing larger container vessels to call at the port.

Figure 3-12: PANYNJ Container Growth



The concept of a Port Inland Distribution Network (PIDN) was developed to address the issues around container transfer and storage, and roadway congestion.

Figure 3-13: PANYNJ PIDN to the Midwest

The concept of the PIDN is to quickly move the containers by rail or barge to/from an inland trade cluster to improve throughput, and reduce truck trips, costs and congestion. At the inland location, there will be opportunities to develop support facilities, possibly at abandoned or unused industrial sites. This will foster increased economic benefits around the area. The Buffalo-Niagara region was identified as one of the dense trade clusters where there is a critical mass of containers that originate or terminate as a result of moving through the PANYNJ.

PANYNJ has also invested in port rail facilities that support expedited rail service to Buffalo. Expansion of the Corbin Street Intermodal Support Yard; the addition of a second lead track into the ExpressRail facility at Elizabeth, New Jersey; and the completion of the Port Newark Container Terminal's near-dock intermodal terminal in 2010 are expected to support growth in traffic and service to Buffalo. It is estimated that by 2011 when all projects at the three ExpressRail terminals are completed, they will have a combined total capacity of 600,000 containers per year.

3.4.2 CSX Improvement Strategies

CSX is continuously investing in the Northeast and has identified Buffalo as a critical growth market. CSX is the largest operator of through freight movements in the Buffalo-Niagara region. CSX's interline traffic with Canadian carriers is exchanged in the Buffalo area and CSX is required to privately maintain over 200 bridges and structures in the area.

CSX invested $2.3 million in the Buffalo area in 1999 and spent almost $16 million to improve the capacity

and speed of its mainline routes linking Buffalo, New York City and Philadelphia with other metropolitan centers on the East Coast. CSX also made operating changes to increase fluidity on its main east-west route through Buffalo. ***Figure 3-14*** illustrates strategic projects undertaken by CSX. The Buffalo Intermodal Container Transfer Facility at the former Seneca Yard was opened in November 2007 and serves as an integral part of the PANYNJ Port Inland Distribution Network.

Figure 3-14: CSX Major Investment Projects 2007

Source: CSXI, 2007

CSX is targeting Buffalo as a leading intermodal center as it provides access to a population of over 4 million people. Seneca Yard was chosen for the intermodal terminal because of the decline in automobile manufacturing traffic formerly handled at that facility. The Bailey Avenue TransFlo and William Street Yard are also difficult to serve and are near capacity. Along with excellent Chicago Line and interstate highway access, the new intermodal facility was anticipated to provide real-time customs status messages, steamship line release and C-TPAT and CSI (Container Security Initiative) certified services. The Seneca Yard facility opened in the fall of 2007. Figure 3-15 and Figure 3-16 describe the anticipated container volumes through Seneca.

Figure 3-15: Seneca Yard Container Outlook

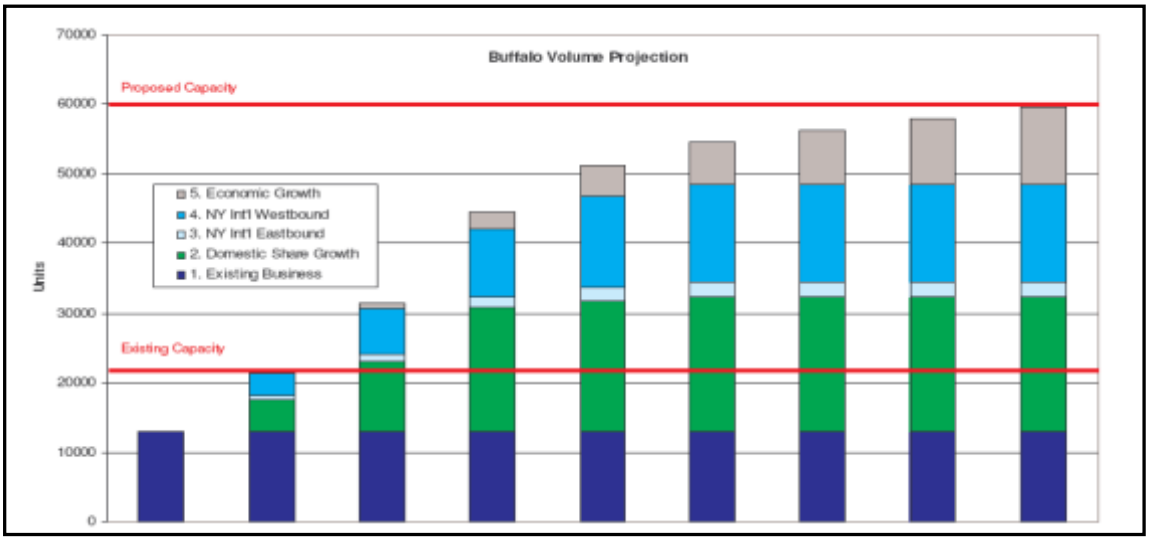
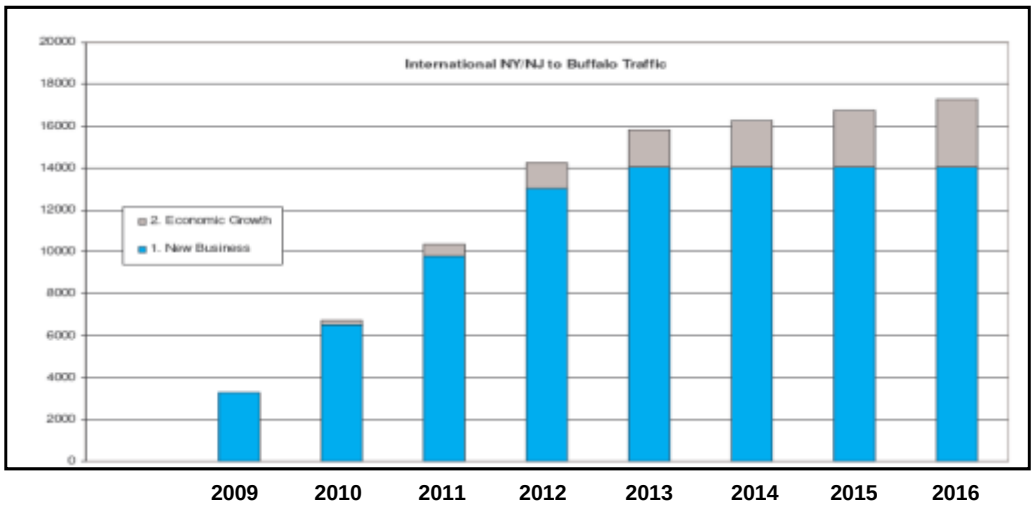


Figure 3-16: Seneca Yard International Traffic Projected Distribution



Source: CSXI

CSX Intermodal (CSXI) provides transit service five days a week to and from Chicago. However, traffic to and from PANYNJ has been slow to develop to date as only about 100-120 containers per week move through the yard in each direction. CSXI feels that more promotion with the ocean shipping lines and others who influence the routing of this traffic needs to be undertaken.

There are currently no plans for additional capital investment by CSX now that Seneca Yard is operational. CSX's focus is on growing the use of Seneca Yard as it is currently below projections. It is actively involved with discussions with companies like Sonwil Warehouse and Distribution for the development of a distribution center adjacent to Seneca Yard.

3.4.3 Norfolk Southern

Figure 3-17: NS System Map

Since the partition of Conrail, NS has invested over $15 million in infrastructure improvements in Buffalo including the expansion of Bison Yard, rehabilitation of the yard subleased from the Buffalo & Pittsburgh Railroad (BPRR) and replacing the bridge over Clinton Street, a project performed with the support of CP whose access to SK Yard was affected. NS has also invested over $40 million in a number of projects outside the greater Buffalo-Niagara region that improve operations on its east-west routes through Buffalo.

Unlike the case of CSX, Buffalo is not situated on NS' primary east-west line to and from greater New York and that NS' share of the local Buffalo market is considerably smaller than CSX's share. NS traffic represents

about 33 percent of the units in the Buffalo market area, while CSX traffic represents about 46 percent of such units.

NS also does not currently have the ability or capacity to move international boxes between PANYNJ and Buffalo. However, they do operate intermodal service in and out of their Bison Yard facility. NS can improve its intermodal traffic volumes with PANYNJ as soon as the Southern Tier obstacles, such as Portage Bridge are solved.

Recently NS has undertaken two initiatives which will enhance its presence in the northeast:

The Empire Link Program[13]

Norfolk Southern and ten New York-based short line railroads have created a program called "Empire Link" in an effort to convert short-haul truck movements (under 500 miles) to rail. The ten short lines participating in the Empire Link Program are the Bath & Hammondsport Railroad, Central New York Railroad Corp, Finger Lakes Railway, Livonia, Avon & Lakeville Railroad, the New York, Susquehanna & Western Railway Corp, Ontario Central Railroad, Owego & Harford Railway, Rochester & Southern Railroad, Wellsboro & Corning Railroad and Western New York & Pennsylvania Railroad.

The program allows the short line railroads to market the excess rail freight capacity on NS's Southern Tier main line between Binghamton and Silver Springs, NY, as well as on branch lines between Corning and Geneva and between Ludlowville and Waverly (see ***Figure 3-18***).

Figure 3-18: Norfolk Southern Empire Link Program

The program is expected to attract more freight to railroads since the price of diesel fuel has gone up and rail has become more cost effective. NS has also implemented a simplified rate system that will make it easier for shippers to work with multiple short line railroads.

[13] NS website and progressiverailroading.com

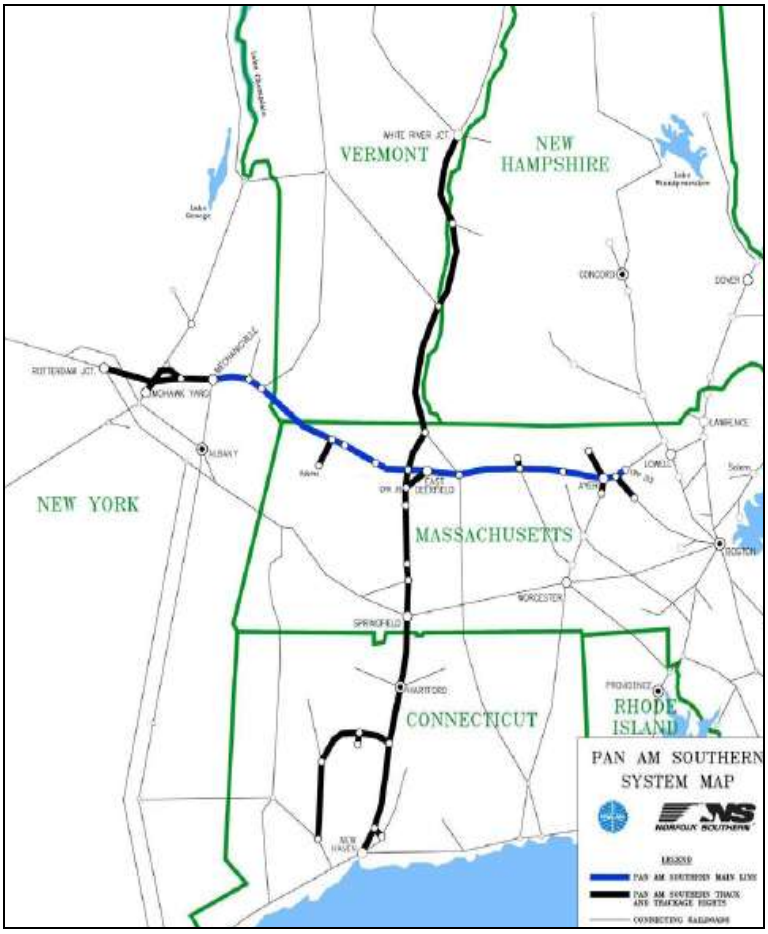
The Patriot Corridor[14]

In another major initiative in the Northeast, NS is partnering with Pan Am Railways (PAR) to form "Pan Am Southern," a joint venture involving more than 400 miles of Pan Am rail lines in New York and New England.

The Patriot Corridor will create a faster, higher capacity railroad for NS to serve the markets from Albany to Boston. NS will also gain an extension of current intermodal haulage service between Albany and Ayer, MA and will gain Boston metro area automotive haulage as well. PAR will transfer its 155-mile mainline between Mechanicville, NY and Ayer, MA to the joint venture along with 281 miles of secondary and branch lines. NS will invest a total of $140 million of which $87.5 million will go toward capital improvements over the next three years. Construction work began after the Surface Transportation Board (STB) issued its approval on March 10, 2009.

The Patriot Corridor is expected to create a new level of rail competition in upstate New York and New England. An intermodal/automotive terminal will also be constructed in the Patriot Corridor's western end (Halfmoon/Mechanicville, NY) to serve as the corridor's primary distribution hub for consumer products and finished vehicles.[15]

Figure 3-19: Norfolk Southern Patriot Corridor



[14] NS website and progressiverailroading.com
[15] NS has trackage rights over the CP between Sunbury, PA and Schenectady, NY, which provides the Patriot Corridor with a critical link to the south and west.

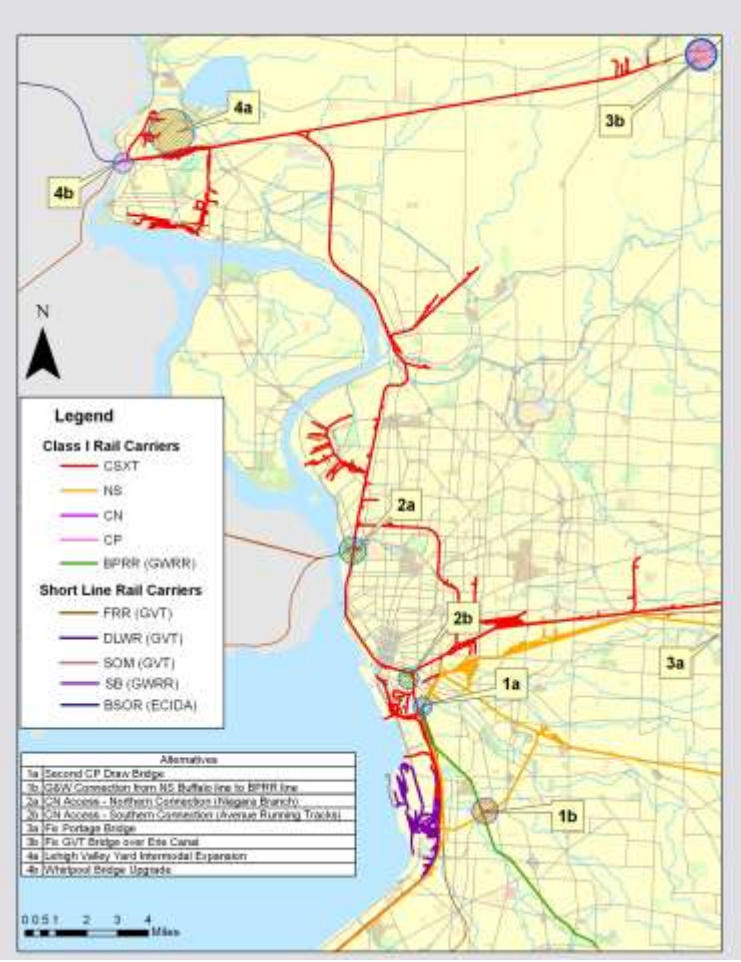
3.5 Rail Improvements

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 following alternatives were developed based on rail carrier, shipper and stakeholder interviews, study team experience, input from NYSDOT and the local metropolitan planning organization (GBNRTC), Transportation Research Board's (TRB) guidebook on Rail Freight Solutions[16] and previous studies conducted in the Buffalo-Niagara region.

Figure 3-21 provides a brief summary of the potential alternatives, related issues, advantages and disadvantages associated with each alternative and planning level estimated costs.

Figure 3-20: Location of Alternatives Considered



[16] 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 3-21: 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 (see ***Figure 3-20***) 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 (see ***Figure 3-22***). 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.

Figure 3-22: Location of CP Draw Bridge Replacement Alternative

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.

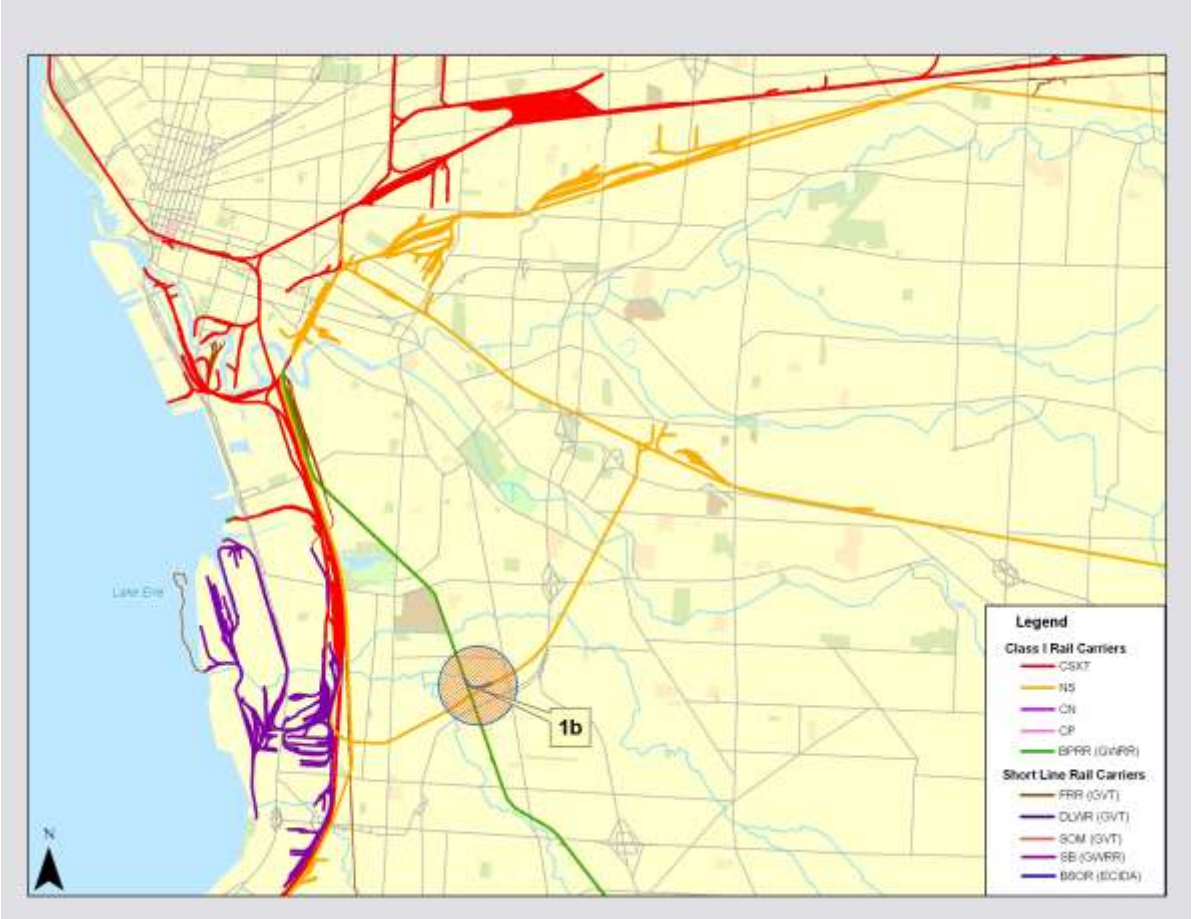
This alternative to relieve congestion at CP Draw has been under consideration for some time. In 2001, the total project cost was assumed to be $35 million, but current estimates place it between $40 and $50 million depending on the scope and complexity of the final preferred option. While CSX has not 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 (see ***Figure 3-23***). 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.

Figure 3-23: G&W Connection



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 (see ***Figure 3-24***).

Figure 3-24: CN Northern Connection

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.

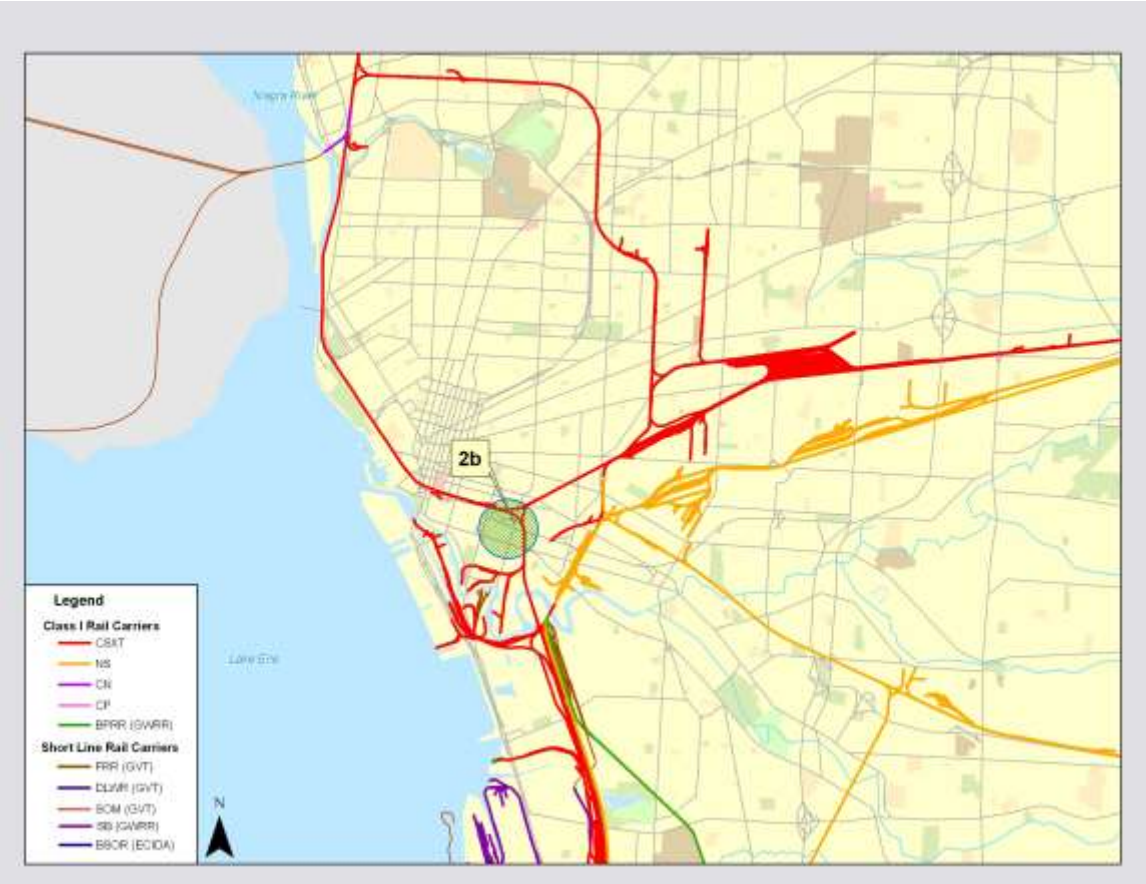
If CN had access to South Buffalo via CSX trackage rights over the Niagara Branch, then they could avoid congestion and delays at Frontier Yard and CP Draw completely. This would require new track and turnouts at CP 5 that currently only allow for northbound movements from Canada to the Niagara Branch.

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 (see ***Figure 3-25***).

Figure 3-25: CN Southern Connection



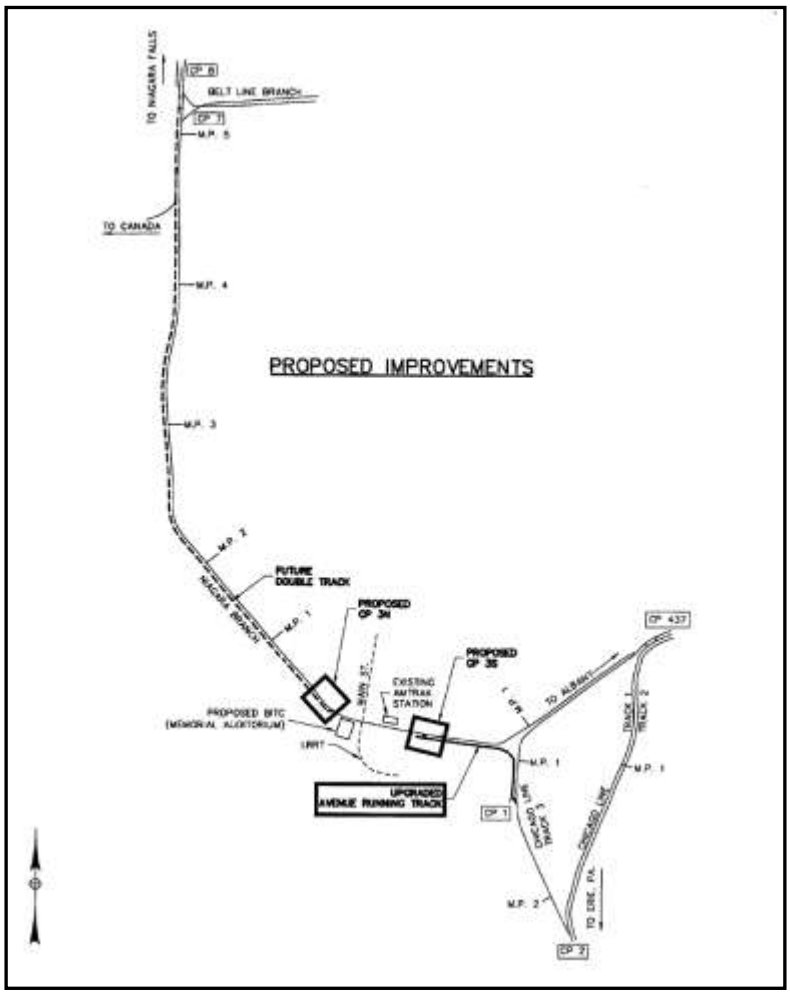
The Niagara Branch was formerly a double-track, shared use corridor (passenger and freight) but one of the tracks was removed by Conrail in the 1980s as part of the Buffalo Rationalization Project. The Compromise Branch was also rationalized to carry Amtrak passenger trains (and little or no freight) 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.

Figure 3-26: CN Southern Connection Alternative



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 (See ***Figure 3-27***).

Figure 3-27: NS Portage Bridge

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 (See ***Figure 3-28***).

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.

Figure 3-28: Falls Road Bridge

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 (***Figure 3-29*)**. 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.

Figure 3-29: Lehigh Valley Intermodal Expansion

Air Cargo

4.1 Air Cargo Trends

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.[17] 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.

4.2 Global Impacts

In 2008, high oil prices affected both the freight and passenger side of the air transport business. Jet fuel prices rose 90 percent and global airlines spent an additional $67 billion on fuel in 2008, according to the International Air Transport Association.

The major reduction in Asia Pacific traffic suggests a fall in demand caused either by customers switching to less costly transport modes, primarily maritime shipping, or simply moving lower volumes. In fact, the International Air Transport Association (IATA) projects trade grew by over seven percent in 2007, while international air cargo grew four percent during the same time period. Seaborne freight, however, grew more than twice as much.

As an example, the general slowdown in consumer spending is showing up in slower microchip sales. Although Chinese technology exports remained strong in June 2008 shippers chose to utilize sea cargo to avoid more expensive air cargo to get product to North America. Computer stock in stores arrived later than usual for 2008 “back to school” consumers.

The downward economic trend and fuel costs are reshaping the air cargo industry landscape. This new landscape is one where carriers most at risk are those flying older, higher fuel consumption aircraft. Currently, the oldest cargo carrier fleets are operated in the U.S. and the newest fleets are in Asia and the Middle East, with Europe having a blend of both. This new landscape is advantageous to cargo carriers operating a hub-and-spoke system. Carriers such as Emirates, Korean Air, FedEx and UPS will most likely fair better due to their significant hub-and-spoke system. These hubs provide resilience if demand

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

decreases since it is more difficult to achieve good load factors if a carrier operates point-to-point or gateway-to-gateway routes rather than hubs. It is also beneficial for carriers to cater to a wide range of air cargo commodities with a proper product portfolio as compared to those focused on just one sector of the business. For example, a carrier specializing strictly in the transport of cut flowers will be more at risk in the new air cargo landscape than one that transports a variety of products.

As a result of the new air cargo landscape one can expect to see capacity reductions by carriers through the grounding of aircraft, delayed receipt of new aircraft deliveries, consolidation and merger of airlines, consolidation of air express operators and the exit of some carriers. Airports will likely forego elective air cargo expansions until growth returns to the industry.

4.3 Domestic Impacts

The U.S. domestic market experienced several recent shifts within the air cargo industry that some analysts describe as being tectonic in scale. At the end of October 2007, Kitty Hawk Air Cargo ceased operating scheduled air cargo services and closed its hub in Fort Wayne, Indiana. Kitty Hawk specialized in heavy weight air cargo and served the Buffalo market via Niagara Falls International Airport (IAG).

In June 2008, Deutsch Postal-owned DHL announced that in the U.S. it will contract all air lift requirements for their cargo to UPS thereby eliminating contracts with AStar Airways and ABX Air. ABX Air was formerly Airborne Express prior to the DHL merger while AStar was formerly DHL Airways. Since U.S. law prevents a foreign company from owning a U.S. flagged air carrier, AStar was formed at the time of the merger. The DHL UPS agreement will divert all air cargo from DHL (AStar and ABX and other contracted aircraft) to UPS aircraft. Many DHL local market stations will change and the DHL hub in Wilmington, Ohio, will close resulting in a loss of 8,000 jobs. These impacts are anticipated for 2009. DHL markets will be served by UPS aircraft with DHL trucks meeting UPS aircraft at airports UPS serves. As a result, many airports benefiting from DHL landing fees will lose that source of revenue. The impact to the UPS' fleet remains to be seen, but may increase the aircraft gauge at airports UPS currently serves.

UPS and FedEx are now the two largest trucking companies in the U.S., and have been the most responsible for air cargo diversion from aircraft to trucks since 2000. For example, air shipments through Portland International Airport (PDX) have fallen off over the past three years as more and more customers decide that, for the price, their shipments do not necessarily require next day delivery. According to the FAA, market share of belly carriers for domestic shipments fell from 41 percent to 29 percent between 2000 and 2006. Cargo ton-miles for passenger carriers dropped 27 percent for belly carriers, while rising for all cargo carriers by 22 percent. During this same time period the USPS has shifted from utilizing passenger aircraft to ship U.S. Mail to cargo carriers. FedEx has been the primary beneficiary of contracted mail lift in the U.S. The U.S. Postal Service switch to cargo carriers is the result of reduced belly capacity on passenger aircraft, eliminating aircraft frequencies and transitioning to regional jets.

4.4 Competing Airports

Airports are fixed assets with tenants and aircraft owners that may chose to relocate to a competing facility. Successful airports attract passengers and cargo from their own market area as well as neighboring market areas. Hub airports have the added benefit of not only origin and destination cargo traffic but also

"transiting" cargo from other parts of the region, country and world through the airport. Some airports are more successful than others due to a host of factors which impact demand for aviation services. The factors include the airport's location in proximity to demand, proximity to other nearby airports offering similar services and facilities, airport facilities and their ability to meet current and future aviation demand, access to the airport, environmental issues, and community support of the airport and its aviation activity.

This section identifies airports that compete with Niagara Falls International Airport and Buffalo Niagara International Airport. While competing airports may take several hours to reach by surface transportation, a jet aircraft may travel the distance within an hour or less. It is also worthwhile to point out that an aircraft traveling across the Atlantic to any of the competing airports can do so in nearly the same amount of time by flying the great circle. For example, an aircraft traveling from London Heathrow at an average of 550 miles per hour can transit to JFK International in 6 hours and 17 minutes compared to transit times to Toronto Pearson International and Niagara Falls International of 6 hours and 27 minutes and 6 hours and 28 minutes, respectively.

Toronto Pearson International Airport (YYZ) leads Canada in air cargo activity and in 2007 approximately 44 percent of total air cargo in Canada was processed at the airport. With more than 50 scheduled and charter airlines providing nonstop service to 37 domestic and 83 U.S. destinations and same plane service to 100 international cities, Toronto Pearson International offers route connections at local, regional and global levels. The airport's master plan indicates that "From both geographic and operational standpoint, the airport is strongly positioned to facilitate market activity and contribute to the economic growth of surrounding business and industries."

Toronto Pearson International Airport is 60 air miles northwest of the Buffalo-Niagara airports and approximately 80 miles away by road. In addition to the cargo lift provided by passenger carriers operating wide-body aircraft to international destinations, a number of all cargo carriers operate at the airport. They include: FedEx, UPS, DHL, Air Canada Cargo, Volga Dnepr, Korean Air Cargo, Cathay Pacific Cargo and Cubana Cargo. ACI data indicates Toronto Pearson International Airport ranked 15th in air cargo tonnage (504,600 metric tons) in North America.

Toronto is the anchor city to the Golden Horseshoe region, the densely populated and industrialized region or urban agglomeration centered around the west end of Lake Ontario in Southern Ontario with outer boundaries stretching to Lake Erie to the south and Georgian Bay on the north. The developed region extends from Niagara Falls at the eastern end of the Niagara Peninsula, wraps around Lake Ontario west to Hamilton, anchored by Toronto on the northwest shore of Lake Ontario, continuing to the east of Oshawa. With a population of 8.1 million people, it makes up slightly over a quarter (25.6 percent) of the population of Canada and contains approximately 75 percent of Ontario's population.

Hamilton International Airport (YHM) is a regional airport located approximately 55 air miles west of Buffalo-Niagara airports and 65 miles away by road. The airport is in the Golden Horseshoe Region and serves a population of 2.5 million within a 50 minute drive of the airport. The airport markets itself as an alternative to Toronto Pearson International which is 38 miles to the north and as the number one multimodal cargo airport in Canada. UPS, Purolator and Cargojet operate at the airport and accommodated over 100,000 tons in 2007. The airport has a 10,000-foot runway capable of accommodating most cargo

aircraft. Hamilton International was not ranked among the 153 largest cargo airports in North America in 2007.

A 2002 study conducted by PriceWaterhouseCoopers indicated the airport's long-term vision is for an extensive airport city or "aerotropolis" extending well beyond the local area comprising a wide range of commercial activities, industry clusters, tourism and hospitality services and other uses with a central focus around the airport as a transportation hub. The "aerotropolis" comprises just less than 6,000 acres surrounding the airport and its development has been identified by the City as "the number one strategic priority for economic development in Hamilton".[18]

Detroit International Airport (DTW) is on the west side of Lake Erie and is approximately 235 air miles west of Buffalo-Niagara airports and 280 miles away by road. UPS, DHL and FedEx operate at the airport. Northwest Airlines operates a passenger hub at the airport and handles a considerable amount of belly air cargo in both wide-body and narrow-body aircraft. In 2007, the airport accommodated 233,075 tons of air cargo. ACI data indicates the airport ranked 27th in air cargo tonnage in 2007 in North America.

Development is already underway at DTW for the construction of a proposed international Air Cargo Center. The new cargo facility would include a 50,000 sq. ft. cargo building, complete with office and warehouse space, as well as an additional 150,000 sq. ft. of aircraft and vehicle parking space.

Willow Run Airport is approximately 245 air miles west of Buffalo-Niagara airports and 285 miles away by road. Located seven miles west of DTW along the I-94 corridor, Willow Run Airport is a significant component of Southeast Michigan's transportation infrastructure. Although Willow Run Airport no longer serves commercial passengers, Michigan's third busiest airport remains a major air cargo, corporate, charter and general aviation hub. Kalitta Air Cargo bases its operations at the airport. This airport handles approximately 200 tons of cargo annually.

Wayne County Airport Authority (WCAA) plans for Detroit Metro and Willow Run Airports take advantage of the two airports close proximity. Since the airports are located just seven miles apart, and since both airports provide complimentary capacity, WCAA's two airports are uniquely positioned to become anchors of an emerging type of commercial development. This development includes the airport authority marketing the area between the airports as an "Aerotropolis."

Port Authority of New York and New Jersey (PANYNJ) Airports include four commercial airports: JKF International Airport, LaGuardia, Liberty Newark International Airport (EWR) and Stewart International Airport in Newburg, New York. JFK is approximately 310 air miles southeast of Buffalo-Niagara airports and 420 miles away by road. JFK continues as one of the world's leading international air cargo centers with more than four million square feet of office and warehouse space dedicated to cargo operations for airlines and other cargo industry stakeholders who do business within the NY/NJ region. Nearly 20 percent of all air cargo imported to the U.S. travels through JFK and EWR.

[18] *Hamilton Airport Gateway Opportunities Study*, Final Report, October 25, 2002, page 30

Facts about JFK's air cargo operations:

- The air cargo area: 1,700 acres.
- The entire air cargo area is designated as a Foreign Trade Zone.
- It is a world leader in modern automated and computer-controlled cargo terminals.
- It is the northeast region's U.S. Customs headquarters and the first air cargo center in the U.S. to use the AMS computerized Customs clearance system.
- It serves in excess of 100 scheduled and non-scheduled carriers with over 1,000 plane movements daily to hundreds of cities worldwide.
- It accommodates all aircraft loading: both narrow and wide-body upper deck and narrow-body belly.
- It contains four million square feet of warehouse and storage facilities, including climate controlled areas and areas for inspection, assembly, etc.
- It houses over 1,000 cargo companies.
- It is served by hundreds of long-haul and short-haul trucking companies.
- The cargo area is convenient to nine passenger terminals accommodating more than 45 million passengers annually.
- ACI data indicates JFK International Airport ranked 6th in air cargo tonnage (1,607,000 tons) in 2007 in North America.

Facts about Newark airport's cargo operation:

- The air cargo area: 290 acres.
- It is adjacent to Port Newark/Elizabeth Foreign Trade Zone No. 49.
- It houses more than 1.3 million square feet of cargo space in modern buildings.
- It serves more than 70 air carriers making more than 1,200 daily plane movements to domestic and international destinations.
- It is served by a heavy concentration of express package carriers.
- It offers modern passenger terminals and accommodates 30 million passengers annually.
- It is home to a FedEx regional hub.
- ACI data indicates Newark ranked 8th in air cargo tonnage (964,000 tons) in 2007 in North America.

Greater Hazleton Air Cargo Airport (proposed) Development of the Hazleton Cargo Airport in Hazleton, Pennsylvania has been proposed by Gladstone Partners, LP. The project involves the construction of an all-cargo airport on approximately 1,000 acres of private land in Hazleton, PA (Schuylkill, Carbon and Luzerne Counties) and is located 100 miles west of New York City. The project features a 13,000 foot long by 150 foot wide concrete runway designed to accommodate the largest air cargo aircraft currently in service as well as other facilities and equipment comparable to a major international gateway airport. The proposed airport is approximately 210 air miles southeast of the Buffalo-Niagara airports.

A recent report commissioned by the Pennsylvania State Legislature found the success of such an airport is unlikely and that attracting the UPS regional hub away from Philadelphia had a two percent chance of likelihood. Furthermore the study indicated that:

> Following the development trajectory of every successful all-cargo airport in North America, the Consultant believes Hazleton likely must attract a regional hub - not merely a limited local operation - for an integrated carrier to establish the economies of scale required to sustain an all-cargo airport. Absent such a tenant, the proposed Hazleton all-cargo airport could be on track to repeat the unsuccessful performance of North Carolina's Global TransPark or St. Louis' MidAmerica Airport.[19]

4.4.1 Competing Airports Summary

Analysis of surrounding airports competing with Buffalo-Niagara airports identifies nine airports that offer a wide range of air cargo services and in some instances are planning for future growth. Many of these airports have working relationships within the air cargo industry and have historic ties to the market to support the industry in the future. Three airports, Toronto Pearson, Detroit and JFK function as international gateways and serve a host of major all cargo carriers and FedEx, UPS and DHL. Two airports have identified the "aerotropolis" development concept as their main cargo marketing strategy. While this concept has proven unsuccessful at several U.S. airports, such as the Global TransPark in North Carolina, it is noteworthy to point out their strategy. A recent feasibility study indicates the likelihood of success for a proposed new all cargo airport in Hazleton, PA is remote.

4.5 Buffalo-Niagara Air Cargo Market Strengths

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. This section identifies the 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 United States. That'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 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

[19] *Economic Impact of the Proposed Greater Hazleton Air Cargo Airport*, Conducted Pursuant to SR 2007-144, Page 1-27

samples and diagnostic equipment between laboratories in the Mid-Atlantic region. Markets served include Pittsburgh, Reading and Washington-Dulles.

- The manufacturing sector is a key part of 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.
- 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 4-1**)

Figure 4-1: 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: NFTA

4.6 Buffalo-Niagara Air Cargo Market Weaknesses

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 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.

4.7 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 area.

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 was operational 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 while 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."[20]

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 the 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 minimum market the airport's industrial side. While there is no guarantee, 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. Air Tahoma, a charter cargo business at Rickenbacker International uses the airport for an aircraft maintenance base but seldom flies cargo in and out of the airport.

4.7.1 Conclusion

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."[21] 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

[20] Air Cargo World, Alternative Gateways, April 2008
[21] *Niagara Falls International Airport: A Bi-National Air Cargo Gateway,* University of Buffalo SUNY 2006, Page 7

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.

Maritime Transport

This section is an assessment of the capability of the region's marine infrastructure and operations to meet projected cargo growth of the alignment of existing marine facility types with future cargo demands. Included in the evaluation is an identification of significant issues and problems affecting the regional marine cargo network.

5.1 Status of Maritime Capabilities

The Buffalo-Niagara region has been a hub of maritime transportation for over 175 years, beginning with the completion of the Erie Canal in 1825. Building on its premier location, it has a legacy of freight transportation assets that would spur economic development, as the region adapts to the realities of 21st century transportation and logistics needs. Opportunities for growth include expansion of bulk goods operations at the Port of Buffalo, as well as exploring the possibility of initiating marine highway container services over the Great Lakes and/or the Saint Lawrence Seaway.

As Technical Memorandum #2 describes, the Buffalo-Niagara region is rich in maritime infrastructure with over 20 terminals, many with the added potential value of direct rail links. Some of the terminals are no longer active in maritime transport so they present an opportunity for new operations. In addition to the port terminals, the region has a large labor pool with a diversity of skill sets in the maritime sector. The operators and labor represent a diversity of cargo handling operations, including bulk, container, and project cargo, import and export.

Despite the assets and resources, the Port of Buffalo handles a small volume of cargo, an amount that has been static for the past decade. The reasons given by shippers are the lack of an export market as well as the absence of a strong consumption market for products typically shipped on the Great Lakes. Through its rail and highway connections, the Port could participate in shipments of discretionary cargo (cargo destined/originated to inland markets that could avail itself of any one of a number of ports). To be a contender, a port must promote itself to shippers and receivers. As yet, the Port of Buffalo has no marketing entity. Nearly every other port on the Great Lakes has a marketing organization.

5.1.1 Maritime Freight Opportunities

The Maritime Administration is designating marine highway corridors and based on those designations invite applications for marine highway proposals.[22] The St. Lawrence Seaway-Great Lakes is a likely candidate for designation. Although the Port of Buffalo currently plays a relatively small role in the Great Lakes maritime commerce, opportunities do exist for future expansion, and on that basis proposals to the Maritime Administration could be submitted.

5.1.2 Containerized Shipments

There are multiple possibilities for initiating marine highway transport of containers or trailers into and out of Buffalo, although all options are mostly speculative at this stage. Potential services fall into three categories:

[22] Michael Gordon, Maritime Administration presentation before Marine Highway Subcommittee – Ferry Committee TRB Annual Meeting (Jan 13, 2010

- Service to and from the east, connecting with points such as Montreal and Halifax, via Lake Ontario and the St. Lawrence River
- Great Lakes service connecting with points to the west
- Service across Lake Erie between Buffalo and points in Canada

Each potential route has unique benefits and challenges.

Figure 5-1: Eastbound Feeder Service

Service to and from the East - There have been several recent developments of eastbound transportation services that could impact future transportation developments in the Buffalo-Niagara region. The multi-agency Great Lakes St. Lawrence Seaway (GLSLS) 2007 Study, identified an immediate demand for roll-on, roll-off (Ro-Ro) trailer services between Hamilton, Ontario and the Port of Montreal, predicting that such service could be initiated with smaller ships, eventually progressing to Seaway Max vessels as demand necessitates. Weekly service along this route commenced in July 2009[23] with a capacity of 250 TEU per trip. The eastbound service is operated by Sea3, a wholly owned subsidiary of the Hamilton (Ontario) Port Authority. The Sea3 service is a weekly fixed day container feeder service running between Hamilton, Ontario and Montreal, Quebec that is intended to serve international container export markets (***Figure 5-1***). The Sea3 service has identified its target market as heavy containerized traffic that would otherwise travel to the Port of Montreal via train. Due to recent weight restrictions and rail transport surcharges, transportation costs have risen and presented an opportunity for an increase in local maritime containerized traffic. In addition to the container services, the port is in the process of creating an inland container depot for empties, so shippers can pick up their containers in Hamilton and minimize the local drayage charges.[24]

Another firm, MarineLink, has also been exploring the establishment of St. Lawrence Seaway feeder service between Hamilton and a new deep water port that is under development north of Halifax. The GLSLS study specifically identified a need for connecting service on the U.S. side, suggesting that a similar operation between Montreal and Buffalo may be a viable complement to existing transportation services in the region. If the new Sea3 Hamilton-Montreal service is successful, the potential to add service between Buffalo and Montreal would appear strong, especially since container traffic at the Port of Montreal is expected to increase substantially in the future. Furthermore, Buffalo is well-positioned to take advantage of an existing business model that has shown success in recent months.

Implementing a similar feeder services in Buffalo would require infrastructure improvements to accommodate RORO services. For example, the service at a minimum would require a mobile crane and

[23] http://www.sea3.ca/news/
[24] http://www.fmtcargo.com/anglais/sea3_container_feeder_service_.html

container stacking/carrying equipment. A used mobile crane would cost at least $1.5 million, and container moving equipment would cost at least $0.5 million. The exact requirements would depend upon the extent of the service and the nature of the site. However, $2 million would represent a floor for the required investment.

Service to and from the West - Establishing regular container and Ro-Ro trailer service between Buffalo and points to the west is another possibility. The four western Great Lakes (Erie, Huron, Michigan, and Superior) have a slightly longer shipping season (approximately 10 months compared to the Seaway's 9 months) and can accommodate larger vessels (up to 1,000 feet in length) than the St. Lawrence Seaway, meaning that better service reliability and scale economies can be achieved.

MarineLink has developed a long-term goal is to expand maritime services further west into the Great Lakes; specifically along the St. Lawrence Seaway and the Detroit/St. Clair Rivers. In addition to traditional Ro-Ro services, they have proposed developing a tug and barge system to cater to growing short sea shipping. MarineLink's aim is to provide new transportation alternatives for shippers using existing rail and highway infrastructure to ship goods west in the region. In addition, they see an opportunity for shipping heavy project cargoes such as wind generation and oil sands drilling equipment, and have acquired a versatile vessel, the MarineLink Explorer, to serve this developing "heavy lift" niche market.

Service across Lake Erie - A third opportunity for developing maritime services in the Buffalo-Niagara region would be the establishment of a marine highway trailer transport service across Lake Erie between Buffalo and a point on the Canadian side, offering shippers an alternative to congested roadway border crossings between the U.S. and Canada. Such a service has been proposed between Nanticoke, Ontario and Erie, Pennsylvania, by MarineLink. Buffalo is a viable U.S. destination for such a service, as it offers reliable road and rail connections and has available port space. As at least one firm is working toward the establishment of regularly scheduled cross-border marine transportation of trailers, the Port of Buffalo should continue to market itself as an excellent destination for a similar service. A good way to market the potential success of such a service in the Buffalo area is the current need for back haul cargo that originates from Buffalo.

5.1.3 Short-sea Container Alternatives

Marine highway/short-sea container shipping is likely to present the greatest cost advantage over rail. It will be successful if it results in shorter drayage distances or if it can bypass congestion at related to rail bottlenecks. The appeal of short-sea shipping of containerized cargo between Buffalo and points west is the ability to bypass the Chicago rail hub, which represents one of the largest rail bottlenecks in North America. Continued growth of international trade with Asia via west coast ports, coupled with the recent opening and continued expansion of a new container terminal at Prince Rupert, British Columbia, will continue to influence demand for inland services. One example of a possible east/west connection is through Duluth, Minnesota, and Thunder Bay, Ontario. Both connected to Prince Rupert by a CN's mainline. Either would be a logical western termini for a Great Lakes container service bypassing Chicago. Shipping to points east of Buffalo would primarily act as feeder service to transatlantic shipping services out of Montreal or Halifax. On the other hand, cross-lake service would compete primarily with the trucking industry, and could relieve cross-border congestion.

Short-sea shipping will compete with rail and truck intermodal service. A typical lake vessel costs about $30,000 per day to operate. Barges are slightly cheaper to operate. The economics of marine container or Ro-Ro service will depend upon the capacity of the vessel, the required terminal costs, applicable harbor taxes, and vessel utilization. The relative cost between truck and marine service will also depend upon the competitive response of rail carriers. The closing of the GLSLS system during the winter months could pose a disadvantage to the service, as could the relative speed of marine to truck or rail service.

On the other hand, freight trains passing through the Chicago rail hub may take two or more days just to traverse the city including the interchange between eastern and western railroads. Although freight coming from Canadian ports such as Vancouver and Prince Rupert may travel to the eastern United States via Ontario, this route is much longer, thus driving up costs and again leading to an advantage for integrated multi-modal transport via Buffalo and the Great Lakes.

Maritime shipping is more fuel efficient than either truck or rail, and thus less sensitive to future increases in fuel prices. According to a 2009 study by the Texas Transportation Institute, short sea shipping is over 25 percent more fuel efficient than rail, and over 3.5 times more fuel efficient than trucking, as measured in ton-miles per gallon of diesel.[25] This also results in fewer emissions, growing issue in government policies on generating air pollution.

In terms of capacity, the Great Lakes system is significantly underutilized. According to the GLSLS, the system operates at less than 50 percent of its potential capacity. This takes on added significance when one considers the constraints of the North American railway network, the primary competitor with potential Great Lakes shipping. According to the National Rail Infrastructure Capacity and Investment Study, released by the American Association of Railroads in 2007, an investment of over $148 billion is needed to meet rail demand over the next 30 years, much of this from the public sector. Short sea shipping has the potential to relieve growing congestion across some of the busiest rail corridors in North America.

The typical business model for establishing a new intermodal terminal, especially in a smaller market such as Buffalo, has involved some degree of public investment. Ideally, a facility is created in partnership with the local port authority, a shipping company, and a rail carrier (regional or Class I), to ensure that the facility is served once it is completed. The Port of Hamilton has been heavily involved with the establishment of container services at that location, and would be a good model for Buffalo to follow.

Container and Ro-Ro trailer service between Montreal and Buffalo has traditionally been minimal to nonexistent, due to relatively inexpensive and abundant truck and rail services along this corridor, limitations in the size of ships that can traverse the Welland Canal and the St. Lawrence Seaway, land imitations on the shipping season which typically lasts for only 9 months of the year. Due to the physical limitations of the St. Lawrence Seaway and the 9-month shipping season, there is a ceiling on the scale economies that can be achieved. Though there have been recent developments and operating models outlined previously, the long-term financial viability of such a service has yet to be established.

There are also investments needed for establishing Ro-Ro or load-on/load-off (Lo-Lo) container service between Buffalo and western points in the Great Lakes, including the installation of Ro-Ro ramps (for

[25] http://www.americanwaterways.com/press_room/news_releases/NWFSTudy.pdf

trailers) or cranes (for containers) at both the originating and terminating locations. Ro-Ro ramps are less costly to install than cranes. Challenges include attracting maritime carriers and in the case of container service, a railroad partner to provide regular connecting services to major northeast distribution centers. While container on vessel services can supplement rail, it is not clear that they would be able to compete favorably with rail in terms of cost unless considerable scale economies are achieved. Further study of the issue is necessary because the increased transit duration for the water service could hinder adoption by time sensitive shippers.

5.1.4 Expanding Agriculture and Bulk Goods Exports

In early 2008, the grain elevator located on the Riverwright property that received a 400,000 bushel shipment of wheat by water in the American Fortitude (shown in ***Figure 5-2*** below), a 690-foot vessel. The elevator is owned by Whitebox Commodities, a grain trading company that is also involved in the distribution of wheat. Whitebox purchased the elevator after refurbishment by Riverwright.

Figure 5-2: American Fortitude Loading at Owen Sound

5.1.5 AES Somerset Lake Platform

AES Somerset is proposing the building a Lake Unloading Project, 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 proposed facility will cost $25 million and is currently undergoing environmental review. Construction is expected to begin in 2009 and will take 12 to 18 months to complete. The AES facility consists of 1,800 acres and could house other industries that would benefit from waterborne transport.[26] Synergistic businesses might include Praxair for example, a major publicly traded company with a strong presence in Tonawanda. Praxair provides industrial gases to the health care, food and beverage, semiconductor, chemical, refining, primary metals and metal fabrication industries. The facilities will be able to dock two Seaway Max vessels and will include piers, an inhaul conveyer system, and a 1-ton jib crane for performing ship maintenance. According to the firm's website, the facility will initially be

[26] In addition AES bid on a State sponsored Clean Coal project and came in second to NRG whose subsequent plans would cost higher than the State believes fundable. If the Clean Coal project goes forward there is an excellent chance that AES would be awarded it, adding to the business possibilities.

designed to unload coal, coke, and limestone. Due to economic conditions AES has delayed development of the LUP. Should market conditions improve, they will reevaluate the project at the appropriate time.[27]

5.1.6 Expansion of the Regional Export Agriculture and Food Sector

Buffalo Niagara Enterprise, among other New York State based organizations, has recognized the opportunities related to the export of food. Demand for regional agricultural products is being driven by several factors. Consumers in North America and Europe are increasingly insistent on fresh, certifiably safe, if not organic, identity preserved agricultural produce. The rising middle class of second and third world countries are demanding fresh produce at the same time they are losing farmland.

The Buffalo-Niagara region can capitalize on this market and its location to evolve as the transport hub for the western NY agricultural sector. This will require development of adequate and appropriate cold storage in combination with working with the agricultural sector to develop the logistics chain. Maritime transportation of refrigerated trailers would provide a low cost alternative to truck to serve short haul markets such as GTA.

5.1.7 Buffalo as an Emergent Logistics Hub

Buffalo is uniquely geographically situated at the confluence of two Great Lakes, a working ship canal, a major interstate highway, two Class I railroads with direct connections to both coasts, and available industrial land. Although not currently a major logistics hub, the potential exists for Buffalo to serve as an interchange point for a variety of inland intermodal shipping routes, particularly if container shipping on the Great Lakes becomes a reality.

A number of private sector stakeholders and government officials recognize the potential of Buffalo-Niagara region as a logistics hub. Buffalo is a key border crossing on a principal rail line serving international trade; its position on the St. Lawrence Seaway and the availability of port, rail freight, air cargo and highway transportation infrastructure and available industrial land, position the region as a multimodal logistics center. There are several inland logistics hubs around the country that may offer successful development concepts and strategies that can be implemented to grow trade opportunities in Buffalo. They are evaluated in "Types of Inland Ports/Logistics Centers" located in Section 6.

5.1.8 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.

[27] Personal communication Jon Reimann AES January 16, 2010

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. [28] 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.

5.2 Ability to Meet Future Cargo Needs

Currently the Port of Buffalo processes approximately 1.5 million tons per year. The Port handled 2.2 million tons as recently as 2000. Although eight of the twenty terminals have ceased operation in the past two years, the Port still has adequate capacity to absorb additional tonnage. Depending upon the future cargo mix, some reconfiguration may be required.

[28] "New York State Barge Canal: Planning Strategy Memorandum" US Army Corps of Engineers (June 2006).

Logistics Centers

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.

6.1 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. Each rail customer had a "spur track(s)" connecting its facility to the hub and then to the rail mainline. Customers with small shipment volumes used "team tracks." These were a track located on railroad property, typically near a freight station, to which shippers brought their freight for loading in rail cars. Freight cars picked up from the facilities were then 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 advent of intermodal transportation introduced an operating model that can be viewed as an expansion of the team track concept with containerized freight delivered or received at a central terminal. The intermodal model was marked by point to point trains with trucks providing feeder service to terminals at either end of the move. Railroads have operated with two separate business models, one for the intermodal (and similarly bulk unit trains) business segment and a second for the carload 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. In parallel transportation customers have embraced 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 demonstrated other benefits. Shipments from several locations could be consolidated for transport to a common destination location and then deconsolidated for specific site delivery. Second, product could be stored off-site prior to being moved by truck to final destination. Third, 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, commonly known as inland ports, perform the important function of concentrating product distribution or consolidation activity at a central location, reducing required inventory, improving transportation carrier efficiency and increasing reliability, thus, reducing supply chain costs. In addition, many logistics facilities provide aforementioned value-added services to the product being delivered to the market place.

6.2 Types of Inland Ports and Logistics Centers

A number of alternative inland port concepts have evolved reflecting the variety of logistics requirements of the products being shipped and of the region in which the facility is located. There are multiple categorizations of inland ports. For purposes of this report, we define six categories based on a recent report by the Southern California Association of Governments:[29]

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

A facility may fall into one or more categories. Following is a description of each category with relevant examples. Although discussed individually, in many instances facilities are co-located to leverage synergies for particular markets.

6.2.1 Railroad Intermodal Terminals

Intermodal terminals serve as container or trailer transfer points between highway freight transportation and rail transportation. They are typically owned by Class I railroads and are located at strategic locations on the railroad where container traffic concentrates, such as marine facilities or near metropolitan areas. Currently, there are nearly 200 intermodal terminals in the U.S. and Canada. Some exceed a half million containers per year. New York State has four relatively small terminals, two in Buffalo (CSX and NS), one in Syracuse (CSX) and one in Albany (CP). With the recently announced alliance between NS and Pan Am Railway, a new intermodal terminal in Albany is planned for development. Intermodal traffic for the New York metropolitan area is processed in intermodal terminals located in New Jersey, avoiding the necessity for trains to cross the Hudson River.

While most intermodal terminals process both international and domestic containers, to increase equipment handling efficiency, a number of terminals are dedicated to processing only international or domestic containers. Specifically dedicated terminals are usually found in major metropolitan areas where the presence of multiple terminals permits such specialization. In addition, terminals specifically dedicated to international containers are located in the proximity of ports.

6.2.2 Satellite Marine Terminals

Satellite marine terminals are one type of inland port and subset of the intermodal terminal category. These are typically located adjacent to or nearby marine ports. The purpose of inland marine terminals is to provide many of the container processing activities typically performed at an ocean marine terminal at a location with more available and less expensive land. One feature of a satellite marine terminal is the practice of moving containers in bond by rail between a marine terminal and the inland facility, with customs clearance performed at the satellite marine terminal. The connecting service between the two facilities is typically scheduled trains with a frequency commensurate with the volume of traffic. The

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

advantages of satellite marine terminals are many:

- Unsorted containers (inbound) can be immediately removed from the port terminal, reducing congestion at the terminal.
- By using the railroad to reposition containers, street and highway congestion near the port is reduced.
- With typically more available space at the remote terminal, sorting containers at the satellite marine terminal is more efficient and containers can be expedited.
- For all the reasons above, containers move faster through the network at a lower cost.

One representative example of a satellite marine terminal is the Virginia Inland Port (VIP) in Front Royal, Virginia. VIP, which is located 220 miles from the Port of Hampton Roads is served by the Norfolk Southern Railroad and is located near the intersection of Interstate 66 and Interstate 81.

Figure 6-1: Virginia Inland Port

Source: Virginia Port Authority

The primary geographic market for the VIP is the Northern Shenandoah Valley, West Virginia, and the Southern Ohio Valley. VIP, however, has also been successful in capturing other markets' container traffic moving on I-81. Since the construction of VIP, there has been an increase in manufacturing and distribution facilities within the region of this satellite marine terminal.

VIP began as simply a container processing location in rural Virginia with daily shuttle train service to Norfolk. Its purpose was to divert containers moving by truck on I-81 eventually destined (or originated) at the Port of Virginia, thus, avoiding street congestion in the Hampton Roads area. Today a network of distribution centers has evolved in the area taking advantage of the transportation efficiencies offered by the terminal.

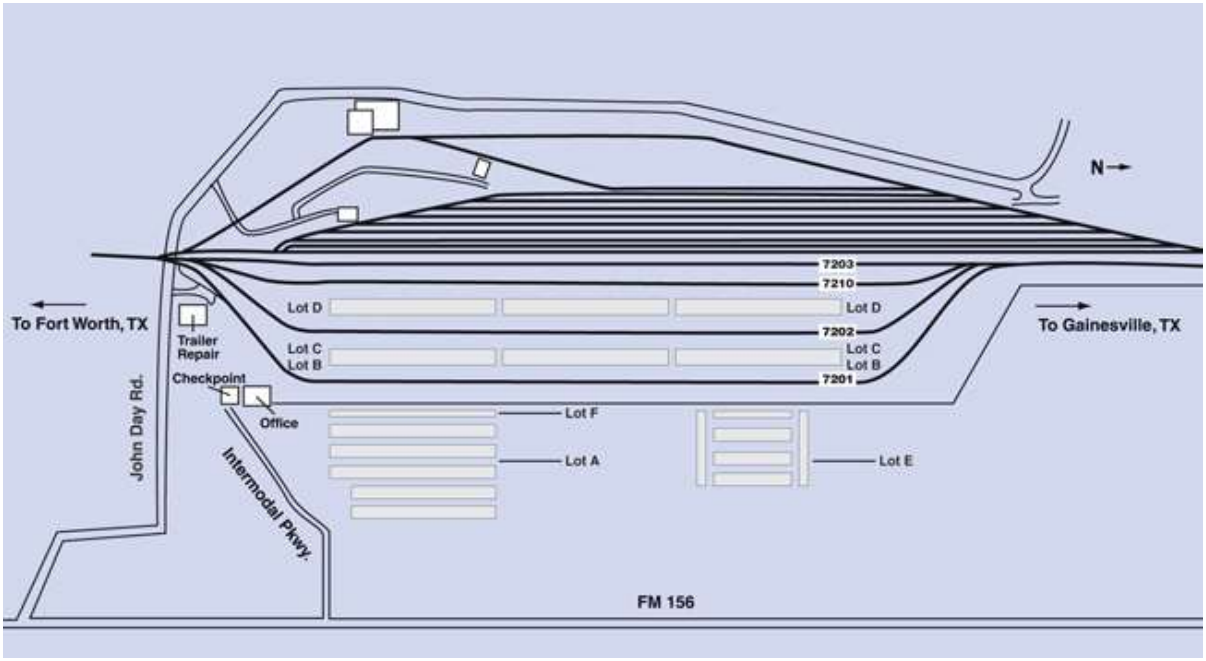
6.2.3 Multimodal Logistics Parks

Multimodal logistics parks have been built around the connectivity among several modes of transportation, rail, highway, air and water, rather than only the rail-highway connectivity of a basic intermodal terminal. They also incorporate logistics service providers and industrial companies that rely on the services

provided into the location. With transportation and logistics contributing considerably to the delivered cost of a product, the synergies associated with co-location introduce significant benefits to the supply chain as do the economies of scale.

One of the earliest and more publicized multimodal logistics parks is Alliance, Texas, situated at the northwest fringe of the Dallas-Ft. Worth metropolitan area on Interstate 35W. Originally constructed as an automobile distribution facility by the former Santa Fe Railway (predecessor to the BNSF Railway) in 1990, it was expanded in 1994 to include an intermodal facility. Since that time, the BNSF Intermodal Facility has grown from handling 150,000 lifts per year to 500,000 container lifts per year as BNSF moved its Dallas intermodal operation to Alliance.

Figure 6-2: BNSF Intermodal Facility – Alliance, Texas



In 2004, BNSF expanded its operation at Alliance beyond intermodal transportation by adding direct carload rail access for customers that want to load rail cars. This has introduced a new transportation dimension to the facility, as its development base is no longer limited to intermodal users.

Alliance includes several complexes:

- Alliance Advanced Technology Center: a technology complex (1,400 acres)
- Alliance Air Trade Center: air cargo development with direct access to the Alliance Airport runway system, Interstate 35W, and over 250,000 square feet of space for cargo companies (52 acres)
- Alliance Center: surrounds the airport and includes primarily aviation-related enterprises (2,600 acres)
- Alliance Commerce Center: business park for manufacturing and high-tech firms (300 acres)
- Alliance Crossing: retail complex (170 acres)
- Alliance Gateway: complex large distribution and industrial firms (2,400 acres)

- BNSF's main line and intermodal terminal
- Heritage Reserve: research and development facilities
- Westport at Alliance: industrial and distribution complex (1,500 acres)

The success of the facility has been due to its ability to exploit synergies among the tenants and its proximity to a major metropolitan center. In addition the intermodal terminal represented a relocation of an existing BNSF facility in Dallas.

CSX has adopted this concept for its system with facilities targeted for major market areas. In January 2008, the railroad announced the development of an Integrated Logistics Center (ILC), or "Freight Village," for Winter Haven, FL. The intent of CSX is to create a single location to serve the Central Florida market. It will combine smaller and site-constrained intermodal terminals in Orlando and Tampa into one major terminal on the new site, and do the same for motor vehicle and bulk transfer terminals currently located in either city. Containers will be drayed between the facility and local customers, in addition to direct service being provided to businesses that locate on the site, doubtlessly largely distributors.

6.2.4 Logistics Airport Park

Logistics airports are inland ports that have been developed around a cargo airport as its core business segment. In many cases the airports were former military installations. While some of these developments have attracted full service logistics providers, many attracted only firms that required access to runway capacity. In 2001 the Kelly Air Force Base near San Antonio, Texas was closed and its assets transferred to private development control. The facility included 1,900 acres and 12 million square feet of buildings

KellyUSA is focused on developing into an into international cargo port. This is part of a city-wide strategy named Inland Port San Antonio (PASA). This strategy promotes the growth of all of the transportation, distribution and logistics facilities that serve San Antonio's capacity to serve international trade. The primary focus of this initiative is on the trade corridor with Mexico.

PASA has recently located a railcar transload operator that is building a 360,000 square foot rail-served warehouse and transload facility. PASA will only be providing carload rail services. No intermodal facility is planned, instead its tenants requiring intermodal service will rely on two existing intermodal terminals operated by UP or a new terminal consolidating the operations of both terminals. PASA does not have adequate land to accommodate a large intermodal terminal and distribution facilities.

6.2.5 Trade Processing Centers

To reduce congestion at international borders by shifting some of the trade-related activity away, such as administrative and in-bond processing functions from congested ports and border crossings, U.S. Customs and Border Protection (CBP) has developed the concept of International Trade Processing Centers. ITPCs are currently in the planning stages at the following locations:

- Port of Battle Creek
- Kingman, AZ ITPC
- Greater Yuma Port Authority

6.2.6 Multi-site Economic Development Initiatives

The preceding five alternatives represent concentrations of logistics activity at a single specific site. There are, however, logistics development initiatives that involve several sites in a given location. Although the facilities are independent of each other, their proximity to each other lends itself to synergies developing. One example of this type of inland port is the Rickenbacker complex in Columbus, Ohio. The Rickenbacker Airport is co-located with over 125 logistics facilities and service providers (***Figure 6-3***). Norfolk Southern railroad is developing an intermodal container terminal near the airport and the logistics facilities.

Figure 6-3: Aerial View: Rickenbacker Complex

Rickenbacker Airport was an Air Force base. After the Vietnam War the base had less activity and lands began to be transferred to civilian use. In 1980, the Rickenbacker Port Authority was established to receive and develop the surplus properties and to operate the facility under a joint use agreement with the Air force. The property was turned over to the Port Authority in 1990. The Franklin County Commissioners and RPA created the Franklin Community Improvement Corporation (FCIC) in 1994 as a private, non-profit corporation to assist with development at Rickenbacker. Throughout the 1990s Rickenbacker developed into the high-speed logistics hub that it is today. In 1992, Development of the Rickenbacker Industrial Park started with the location of Spiegel, Eddie Bauer and Siemens operations to the site. U.S. Customs relocated their offices to Rickenbacker in 1996. In late 2002, the City of Columbus, Franklin County and the Columbus Municipal Airport Authority approved the merger of Rickenbacker Port Authority and the Columbus Municipal Airport Authority, forming the new Columbus Regional Airport Authority effective January 1, 2003.

6.3 Transportation Trends

Recent freight transportation trends have contributed to the increased interest in logistics load centers throughout the U.S. and in the East. The trends described below include both changes in trade patterns and transportation companies operating practices.

6.3.1 Competitiveness of Asian Production

Over the last ten years, Asia has been an important source of goods consumed in North America. A number of factors have contributed to the continuing prominence of Asia. First, containerization significantly reduced the cost of international shipping by reducing the handling required at the ports and by inland transportation operators. Prior to popularization of container transportation, products were typically shipped in bulk, on pallets or in loose lots or bags. Each method required labor intensive handling manual during transfer from ship to truck or railroad. Containerization, by unitizing the goods in the container reduced the amount and cost of handling freight.

Second, transportation costs were further reduced with the introduction of increasingly larger container ships. These new larger ships move significantly more containers with basically the same size crew as smaller vessels, which help to reduce the shipping cost per container. The new ships are also less costly to operate due to better haul designs and more fuel efficiently engines.

The third contributing factor to the increasing prominence of production in Asia is the low cost of labor. Low labor costs more than offset the costs of shipping products the significant distance from Asia. Coupling the low labor costs to the decreasing transportation costs made Asia a highly competitive region of production for products consumed in North America.

6.3.2 China Infrastructure Investment

Lower labor costs have not been the sole factor contributing to increasing role of China in foreign trade. The Chinese government has also made significant investments in the country's logistics infrastructure. The infrastructure is necessary to support production in the country's interior.

- By 2010, China will have constructed 32,000 miles of interstate highway; construction began in 2001 with more than 3,000 miles of new highway built each year.
- By 2020, China will rehabilitate or construct 62,000 miles of rail lines to accommodate high speed intermodal train service.
- China is developing 18 intermodal hubs with capacities ranging between 500,000 and 1 million TEUs per year. An additional 100 smaller satellite terminals are also being constructed.
- China currently has three of the world's four largest container ports: Hong Kong, Shanghai, and Shenzhen. These ports process nearly 65 million TEUs per year. The Chinese government is adding 20 million TEUs of additional capacity to Shanghai

6.3.3 Supply Chain Reconfiguration

Expansion of trade with China and other Asian nations has contributed to the reconfiguration of supply chains. Sourcing of products in Asia has geographically extended logistics chains, which has introduced increased levels of unreliability, as greater opportunities for en route delays exist. To ensure that products are delivered in a timely manner, buffer stocks are being increased at forward locations in the U.S.

Supply chains are also becoming more customer specific. Products for a given geographic region or store are being drawn from many producers. Consequently, distribution centers have increased in importance as a location to deconsolidate shipments from manufacturers and to reconsolidate freight for delivery to consignees. Distribution practices have become more complex requiring intermediate staging points.

6.3.4 Increasing Focus on Operating Cost Reductions

The logistics industry is highly competitive. Consequently, logistics providers are continually seeking to reduce costs and improve service. Logistics centers, especially those that are rail-served, help accomplish both objectives. Railroads are least efficient in the local gathering or distribution of freight cars as the pick-up or delivery of less-than-trainload lots is expensive due to high fixed costs of railroad operations. Railroads perform best hauling train size loads between two points.

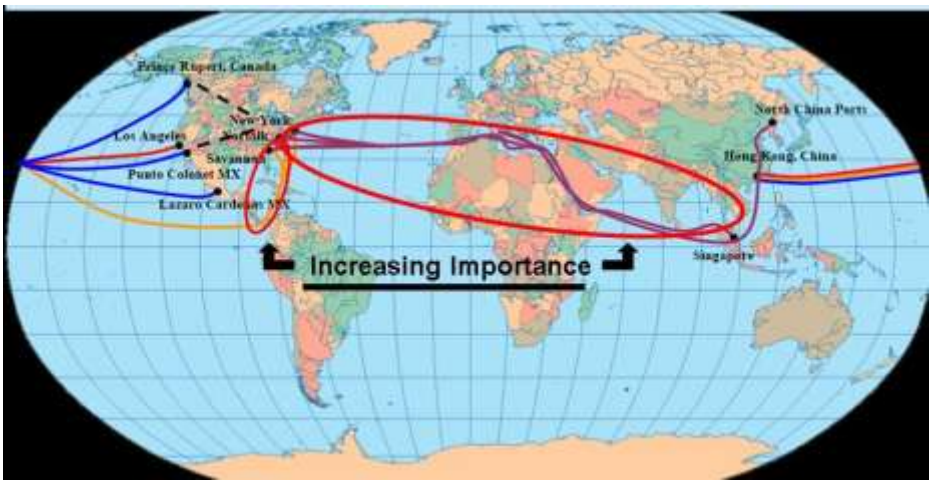
Similarly, load centers help improve service. The aforementioned local gathering and distribution by rail transportation also adversely affects service. It could require up to three days for a freight car to be picked up at a shipper, classified at a local yard and placed into an intercity train. On the other hand truck delivery to a load center requires a few hours with a day to transfer the product into a rail car and cars assembled into trains.

6.3.5 Changes in Shipping Patterns

The preceding trends favor the continuing expansion of logistics centers throughout North America that would utilize the west coast ports as gateways for containerized freight. There are, however, additional adjustments in world trade and international transportation that favor Northeast cities as ports of entry, and in turn the development of logistics centers in the region.

Figure 6-4 shows the shift in ocean cargo routes. Until recently the principal trade routes between Asia and the U.S. have been across the Pacific Ocean principally involving the Ports of Long Beach and Los Angeles. Deliveries to inland locations were by railroad or truck.

Figure 6-4: Shift in Trade Routes



Source: WSA Analysis

Currently alternative routings are gaining in importance. Routing of Asian cargo through the Suez Canal to Northeast ports is increasing in popularity. Similarly, other gateways are being explored. A number of factors are driving the reconfiguration of trade lanes.

6.3.6 Increasing Intermodal Freight Rates from West Coast Ports

Rail intermodal rates increased 25 percent between July 2007 and July 2008 with increases up to 40 percent in some cases. The significant growth in intermodal prices has caused ocean carriers to divert Asia-originated traffic destined for the U.S. East Coast and Midwest from an intermodal landbridge from West Coast ports to the Suez Canal all-water route. In addition to the freight charges paid to the railroads by the ocean carriers to transport loaded containers, railroads also charge the ocean carriers to return empty containers. As the price of fuel increases, the cost of shipping the loaded head-haul goes up as well as the cost of shipping the empty backhaul. These increased costs must be incorporated into the combined round-trip rate for containerized shipments.

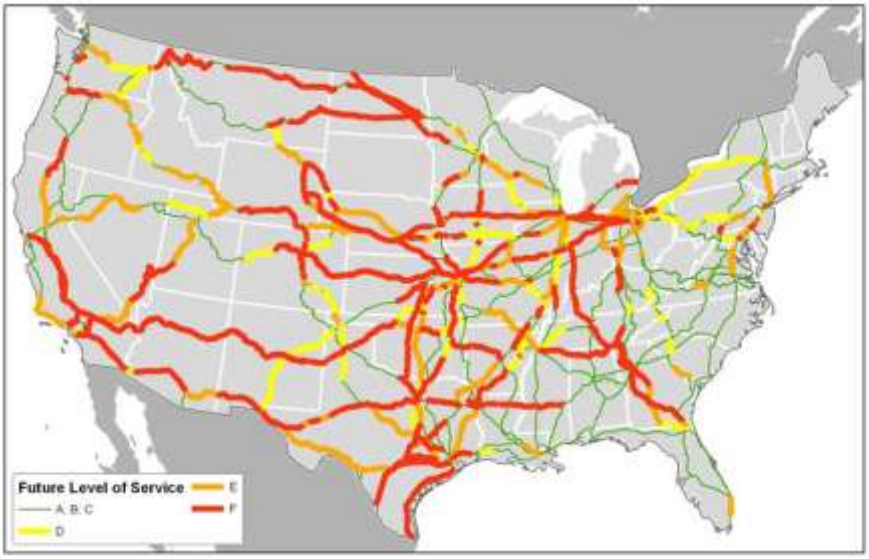
6.3.7 West Coast Port Congestion

Although less evident in 2008 because of the decrease in container traffic through the Southern California ports, the Ports of Long Beach and Los Angeles face capacity constraints. During the last decade, both ports have made significant investments in terminal capacity expansion including on-dock rail facilities. In addition, improvements were made to road and rail infrastructure at the ports. Notwithstanding the investment in new or expanded facilities, both ports have recently suffered from significant congestion.

6.3.8 Western U.S. Rail Congestion

Along with the ports, the railroads serving southern California also have experienced capacity problems. Although both BNSF and Union Pacific railroads have invested heavily in expanding capacity in its congested corridors connecting the Ports of Long Beach and Los Angeles to markets in the east, bottlenecks are still expected to occur in the future. ***Figure 6-5*** is a map extracted from a recent study by the Association of American Railroads evaluating the need for future additional rail capacity.

Figure 6-5: Rail Service Levels 2035



Source: Association of American Railroads, "National Rail Freight Infrastructure Capacity and Investment Study," 2007

6.3.9 Future Expansion of the Panama Canal

Historically the Panama Canal provided an all-water route for transpacific traffic to reach the North American East Coast. However, as ships increased in size and could not traverse the Canal, the route lost its

viability. To accommodate the larger ships and return the Canal route to its former competitive status, the Canal is undergoing reconstruction. Upon completion in 2014, the Canal will be able to accommodate the large 12,000 TEU container ships. In addition, the capacity of the Canal will be expanded permitting significantly more daily transits.

6.4 East Coast Intermodal Terminals

Change in shipping patterns is only one of several factors that will contribute to the growth of rail oriented logistics centers in the Eastern U.S.:

6.4.1 East Coast Port Terminal Congestion

Like the West Coast, the East Coast ports also face congestion problems. One solution to this problem is the development of intermodal terminals that would serve as satellite marine terminals. As described above, these facilities allow containers to be expeditiously moved off the docks and shuttled by dedicated trains to inland rail terminals.

6.4.2 Roadway Congestion Surrounding the East Coast Ports

The Port of New York and New Jersey is located in one of the more congested areas in North America making rail transportation away from the dense urban area an important way of distributing containers to inland markets. Consequently, there is a need for a network of inland intermodal facilities.

6.4.3 More Favorable Short-haul Intermodal Economics

The railroads have introduced operating improvements and improved technologies that have reduced the cost of medium and short haul intermodal service. In addition recent higher fuel prices have made intermodal transportation more competitive with motor carrier transportation in shorter haul markets.

Rail intermodal terminals attract other logistics activity. If the economic environment is favorable, the stand-alone intermodal terminals evolve into larger logistics centers.

6.5 Critical Success Factors

There are several factors essential to the success of a logistics center, including:

6.5.1 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. Further, high traffic activity permits the operation of frequent trains needed to support shippers' delivery schedules. This implies access to a large market or production areas. A Buffalo-Niagara location provides access to a population base of 12.9 million. This includes the 2.3 million population of Western New York and the 10.6 million population of the Golden Horseshoe and 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.

6.5.2 Efficient Access to Multiple Modes of Transportation

Successful logistics centers are served by multiple modes, both to provide alternatives to shippers, both

located on site as well as the surrounding market area, and to serve the function as a modal transfer point.

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.

6.5.3 Fit with Railroad Intermodal Network

Most larger logistics centers in North 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

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.

6.5.4 Optimal Location within the Intermodal Network

More than just locating on the network, the logistics facility needs to be optimally placed 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.

In 2004, the traffic data developed as part of Technical Memorandum #3 show that inbound motor carrier freight volume was nearly 50 percent greater than outbound freight. 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.

6.6 Buffalo-Niagara Logistics Complex

By virtue of its location and regional freight transportation system, the Buffalo-Niagara region is well positioned to expand its role in international and domestic logistics. The availability of industrial land such as the former Bethlehem Steel plant site and other real estate assets with access to rail, highway and water transportation provides significant logistics development opportunity.

A logistics complex in the region would include multiple facilities in multiple locations with a container terminal(s) as the transportation service center anchoring the complex. In addition, the Port of Buffalo and one or both airports would also serve as freight centers, providing multimodal transfer capabilities.

6.6.1 Intermodal Container / Terminal

Currently, both CSX and NS operate container terminals in the region. CSX, however, has recently taken a leadership position in the local intermodal market having invested in the Seneca Yard facility.

6.6.2 Intermodal Terminal Demand

As part of this study and included as Appendix B, World Trade Center Buffalo Niagara (WTCBN) conducted an analysis of international container traffic flows to determine the size and structure of the international market. The Buffalo Niagara Intermodal Freight Terminal Volume Feasibility Study of Western New York evaluated the addressable international intermodal container market that could use and justify the construction of a new major intermodal container freight terminal in or near Buffalo, New York. The study's premise: there is an intermodal container market that could support an additional intermodal terminal served by all railroads in the region other than CSX.

It was hypothesized that the Western New York area would have significant import and export container volume moving through Canadian ports. The subject traffic currently moves in or out of Toronto area intermodal terminals, and is trucked across the border. With an independent intermodal terminal in the region, the traffic currently moving across the border by truck could be move more cost effectively by rail, facing less congestion.

When considering all North American ports, the overall volume of loaded maritime containers originating in or destined to Buffalo and Western New York totals about 50,000 TEUs per year. Significant additional volume exists because of an imbalance of import and export volumes and because of imperfect matching of inbound and outbound loads: many containers are empty when moving to or from the area. The volume of empty containers is close to the volume of loaded containers bringing the volume available to drayage companies and railroads close to 100,000 TEUs.

Because this traffic is routed through several ports in the U.S. and Canada, the Buffalo area volume alone is not sufficient over any single traffic lane to justify a freight terminal in addition to the current CSX and NS terminals. Additional volume is available from a larger catchment area including Syracuse, Erie and Pittsburgh PA, and Cleveland, but a new Buffalo terminal would have to compete with established services at these cities.

A promising segment of the market supplementing the containers now originating in or destined to the Buffalo and Western New York area is through-traffic from nearby Ontario, Canada. Through traffic refers to shipments which originates and terminates outside the local area and merely passes through without stopping, except for fuel, crew changes, lodging or maintenance. The study found that well over 100,000 loaded TEUs move between consignees/shippers in Ontario and U.S. ports. Generally, these containers do not move by rail, rather the containers move through Buffalo by truck to their end destination. Given Buffalo's strategic geographic position, the opportunity exists for an intermodal freight terminal to serve outbound and inbound Canadian freight traffic. The study concluded:

- Buffalo has a minimum volume of 250,000 TEUs per year. This volume includes: (1) Western New York origins/destinations; (2) traffic through Buffalo to/from Ontario, Canada; and, (3) empty containers returning to ports.

- Existing regional infrastructure (rail, highway, warehousing and both government and private international trade services in the U.S. and Canada) are adequate for initial marketing of Niagara Intermodal services. The area has the volume, the physical infrastructure and excellent trade services on both sides of the border, but they have not been packaged and marketed to users of international intermodal cargo services.

The area is recognized as a major gateway for international trade between the U.S. and Canada, but the 250,000 TEUs of potential intercontinental traffic between North America and Europe has received little attention.

- After marketing the concept, additional infrastructure will be needed to make the project successful. Certain brownfield sites should be evaluated and secured for related development.
- Development of intercontinental intermodal services in Buffalo-Niagara will benefit local industry in the following ways:
  - Reduced transportation costs (fuel, driver time)
  - Better frequency and transit times
  - Added opportunity for providing logistics services
- A number of service providers, both public and private, will have to be coordinated and brought together under a common development plan. An existing organization should be designated and funded to perform these functions. (Creation of a new organization is not recommended.)

There are several alternatives in the region for one or more new container terminal (s) to anchor a logistics complex. The opening of the Seneca yard facility offers access to the CSX intermodal network while the existing Bison Yard provides connectivity with NS. In addition rail served land is available at the Bethlehem Steel site.

6.6.3 Seneca Yard Intermodal Terminal

The introduction of expanded intermodal service by CSX through the development of the Seneca Yard container transfer terminal could provide the region with a catalyst for logistics growth. The Seneca facility will have an annual capacity of 60,000 containers with a primary purpose, initially, of supporting inbound international container traffic through the Port of New York and New Jersey currently moving to inland locations by truck. A corollary effect over time will be the expansion of domestic container traffic originating or terminating in the Buffalo-Niagara region. The domestic traffic supported by the terminal would be to and from the New York City and Chicago (and west) markets. Over time the domestic segment could exceed the international traffic.

Recently, intermodal rail service between the Seneca Yard and the Port of New York/New Jersey has become more cost effective. Due to the ExpressRail project by the PANYNJ, containers must no longer be drayed from the marine terminal to the CSX South Kearney Yard. Intermodal cars are loaded on-dock with unit intermodal trains then assembled at a near dock rail yard, the Corbin Street Support Yard. Prior to the ExpressRail project, the cost of draying a container from the PANYNJ Elisabeth terminal to the South Kearney Yard would have been $275.

6.6.4 Bethlehem Steel Site

To realize all the potential benefits and economies of scale, the proposed site should be sufficiently large, have good highway access for trucks, and be in the right location to support local shippers and regional economic development as well as offer competitive access by rail.

Figure 6-6: Bethlehem Steel Site

Although both Seneca and Bison facilities are currently operational and are included in existing intermodal networks, each has the limitation that the parcel may not be large enough to accommodate on-site logistics facilities. Sites in Niagara County do not offer competitive access.

A site in the Buffalo-Niagara region that meets all of these criteria is the former Bethlehem Steel site in Lackawanna, NY.

The former Bethlehem Steel site consists of 1,100 acres, currently owned by the International Steel Group (ISG). The site offers effective rail and highway access and also has access to the Port of Buffalo. Another benefit of this location is that portions of the site fall within an Empire Development Zone.

Figure 6-7: Access to Bethlehem Steel Site

ISG is currently preparing a concept redevelopment plan for potential transportation and industrial related businesses. It is also working with the NYSDEC and USACOE to explore the possibility of rerouting portions of Smokes Creek that currently bisects the southern portion of the site. Between $15 million and $20 million in infrastructure improvements would be required.

The Bethlehem Steel site is served by the South Buffalo Railroad. As a short line railroad, even with a limited network, it would provide a connection to the facility for each of the major railroads of the region. It served a similar role in the past when the steel mill was operational.

The site would enable rail intermodal access to and from Canada. To fully capture the Canadian market potential, access to the ISG Bethlehem Steel site will have to be established with operating rights and improved rail connections for CN and CP to CSX's Niagara Branch.

This improved, cross-border rail access would make the relatively short (under 100-mile) container trip between Brampton, ON and Buffalo, NY more attractive for rail than truck by reducing costs and trip times. For example, there would be significant labor and fuel savings on a 75-car unit train that could move 150 containers (300 TEUs) between CN's Brampton intermodal terminal and an intermodal freight village in Lackawanna with a 2-person train crew and avoid bridge congestion and custom delays.

6.6.5 Site Comparisons

The new CSX intermodal terminal at Seneca Yard provides the region with a connection to the Port of New York and the railroad's international intermodal network as well as domestic operations. The size of the site, however, limits its benefits as a logistics asset as there is no room for other logistics facilities such as warehouses or distribution centers. In addition, rail service is not competitive with only a single carrier.

NS offers intermodal and transloading service at its Bison Yard facility, it too is hindered by lack of space and being served by a single carrier. The ISG Bethlehem Steel site, on the other hand, has none of the barriers. The site, however, would require funding for a terminal.

Figure 6-8: Intermodal Terminal Locations

Figure 6-9: Terminal Location Evaluation Matrix

Site			
	Seneca Yard	**NS Yard**	**Bethlehem Site**
Land Use	Intermodal	Intermodal Other Freight	Intermodal Other Freight
Land Availability	○	○	●
Terminal Investment	●	◒	○
Competitive Rail Access	○	○	◒
Truck Access	◒	◒	●
Port Access	○	○	●
Storage/Warehousing Access (Potential)	◒	○	●
Market/ Economic Incentive	○	○	●

● **Favorable** ⟷ ○ **Unfavorable**

Figure 6-9 compares the sites across seven criteria. The Bethlehem Steel site has significant advantages over Seneca Yard and Bison Yard for anchoring the developments of a multiple location logistics complex. In addition to competitive rail access, it has waterside frontage, and land for development of logistics facilities. Multimodal rail-truck-water transfer facilities could also be developed on the available property. At the outset, the site could be used in tandem with the nearby Seneca Yard and the Bison Yard. Currently, the CSX Seneca Yard provides the key connection to Chicago and the Port of New York/New Jersey and is

located adjacent to the Bethlehem Steel site. Distribution, warehouse, and industrial facilities would be located at the Bethlehem Steel site, as well as bulk/breakbulk transload facilities. A connection would need to be established, so that containers could be transferred seamlessly between Seneca Yard, the Bison Yard and the Bethlehem Steel site. Eventually as traffic grows, an intermodal terminal could be established at the Bethlehem Steel site as a neutral intermodal terminal, serving all carriers in the area.

6.6.6 Airports

The region's airports and air cargo services would be included in the logistics complex. Although significant volumes of air cargo do not move by rail, the logistics facilities would benefit from the availability of air service.

6.6.7 Commercial Centers

The Buffalo-Niagara region includes several industrial and logistics development initiatives that benefit by their proximity to an intermodal container facility or multimodal transfer centers.

Buffalo Lakeside Commerce Park

BLCP is a "Smart Growth" urban commerce park of over 200 acres located along Lake Erie and the Union Ship Canal. Formerly the Hanna Furnace Pig Iron facility, this brownfield reclamation project is one of the largest in New York State. It is a prototypical example of a successful public-private partnership. The Buffalo Urban Development Corporation assembled the parcels of land, obtained funding, principally from the State, and applied the funding to brownfield cleanups as well as to develop required roadway and utilities infrastructure.

Figure 6-10: Buffalo Lakeside Commerce Park Tenants

Company	Acreage	Investment	Space (000s Sq. ft)	Business
Cobey	12	$10 million	90	Petro construction
CertainTeed	25	$12 million	270	Roofing-siding-solar
Savarino	6	Unknown	Unknown	Construction
Sonwil (1)	51	$13 million	308	3PL, DC
General Mills (2) Dyson (2)			225 45	Cereal DC Vacuum DC

(1) Sonwil is building a second 300,000 square foot facility
(2) Subleasing space from Sonwil

Steelfields

Steelfields is a 185-acre industrial site north of BLCP recently purchased by BUDC. HydroAir Components, a company which makes hydronic heating and cooling equipment, operates a 160,000 square foot factory.

South Buffalo Brownfield Opportunity Area

The new South Buffalo Brownfield Opportunity comprises 1,900 acres. In advance of the brownfield clean-up, a scoping document for the Generic Environmental Impact Statement has been prepared.

Buffalo Avenue Industrial Corridor

Niagara County has several commercial center locations and brownfield sites that could be benefit from improved logistics and transportation management in the two-county region. One promising opportunity is

found in the properties of the Buffalo Avenue Industrial Corridor. This area comprises 1,100 acres of land that is planned for commercial development, light industrial and residential use.

6.7 Buffalo-Niagara Intelligent Logistics Complex

Intelligent or smart port is concept that introduces technology into the operation of logistics complexes. A smart port is structured more on the application of intelligent logistics as an integrator than the synergies related to a common location. The features of a smart port include:

- A coalition comprising the key logistics service providers and logistics users
- Provides a vehicle for cooperation among logistics service providers and for the cooperative marketing of their services
- Serves an entire region's logistics stakeholders with the purpose of facilitating growth of international and domestic trade
- State of the art technology is leveraged to efficiently provide customer-focused logistics operations that streamline cargo processing:
    - Linkages among logistics service providers and regional nodes: transportation service providers, distribution centers and warehouses, container terminals, multimodal transload facilities and equipment providers
    - Customs processing
    - Security management
    - Empty container management

6.7.1 Kansas City SmartPort

Kansas City SmartPort is the most prominent example of an operational intelligent logistics complex. Initiated early this decade, SmartPort is primarily an economic development entity with two principle missions:

1. To grow the Kansas City area's transportation industry by attracting businesses with significant transportation and logistics elements
2. To make it cheaper, faster, more efficient, and secure for companies to move goods into, from, and through the Kansas City area

The original concept of the Kansas City SmartPort was to establish an international trade processing center in Kansas City. Informational technology and institutional arrangements are provided, which allow containers to move in bond to Kansas City. Many of the functions that normally are performed at seaports or border crossings are instead performed in Kansas City. SmartPort has three broad functions articulated in its promotional literature:[30]

6.7.2 Economic Development

Focus on attracting investments from companies with significant transportation and logistics elements such as distribution centers, warehouses, third-party logistics providers, manufacturers and big box retailers.

[30] Kansas City SmartPort website, http://www.kcsmartport.com/sec_about/about.htm

6.7.3 Trade Data Exchange (TDE)

Relying on both public and private funds, improve supply chain visibility in the Kansas City area as well as on a global level. The TDE will provide real time visibility and cargo security as it increases efficiency in the supply chain.

6.7.4 Business Services

Bring additional services, such as foreign customs offices, to the Kansas City area to aid businesses in moving their goods both domestically and internationally.

6.7.5 Similarities and Differences with the Buffalo/Niagara Region

There are obvious differences exist between the Kansas City region and the Buffalo/Niagara region, for instance the Buffalo/Niagara region does not act as a "virtual port" for Canadian trade, as it is both a border point and a port. The area already contains infrastructure to facilitate international trade. However, initiatives similar to the Kansas City SmartPort could help the Buffalo/Niagara region establish itself as a logistics center. The competitiveness of the region could be enhanced if containers were able to enter the region in-bond either from West Coast ports or the Port of New York/New Jersey. Information technology and institutional arrangements could also help to make the Buffalo/Niagara region the preferred location to serve as a distribution hub for the Golden Horseshoe of Canada, with containers arriving at the Port of New York/New Jersey and then crossing into Canada.

6.8 Buffalo-Niagara Intelligent Logistics Complex Functions

It is proposed that the region develop a smart port concept patterned after Kansas City. A Buffalo-Niagara intelligent logistics complex would exhibit features of several inland port concepts described in Section 6.2.

- Rail intermodal terminal – a container transfer point between the Class I railroads in Buffalo and the highway carriers serving Western New York and Ontario, Canada.
- Satellite Marine Terminal – containers could move in bond between the Port of New York and Buffalo-Niagara where they would be processed by the U.S. or Canadian Customs authorities, as appropriate for the final destination.
- Multimodal Logistics Park – in addition to rail and highway, the facility could serve marine and air cargo and offer distribution from a single inventory to customers in both the U.S. and Canada.

The two-county region has a number of organizations promoting business and economic growth in the area. These are both private sector and public sector initiatives. As a facilitating organization, The Logistics Complex would be led by a Board of Directors that would include representation of the various business development organizations. The Board would also include direct representation of logistics service providers serving the region and shippers. A permanent staff would execute its functions outlined above. They would directly participate or arrange for contracted services.

A Buffalo-Niagara intelligent logistics complex would have a number of functions that add value to the region's logistics customers as well as service providers. Each of the functions would involve coordination with businesses and both governmental and private agencies throughout the bi-national region. The functions could include, but not be limited to:

6.8.1 Marketing

Promote the use of existing logistics facilities and services, the development of additional facilities and the expansion of logistics and related governmental services. The marketing effort would find synergies between the many logistics facilities and services in the region and market them together as a package providing the complete bundle of services required by importers and exporters in the bi-national region.

6.8.2 Business Development

Work with development agencies to identify and secure new businesses and services for the logistics complex. Buffalo-Niagara has a unique value proposition for overseas businesses planning to enter or expand in the North American market: it is an ideal single staging point for distribution to both the Canadian and Northeastern U.S. markets.

6.8.3 Planning

Continually identify the business needs of the complex and work with logistics service providers, property owners and other stakeholders in the bi-national region to identify, define, prioritize and secure funding of initiatives that would meet those needs

6.8.4 Logistics Technology Center

Provide advanced electronic commerce technology that would facilitate the physical distribution process. Services could include:

- Shipment tracking and supply chain management information
- Providing alerts to shippers advising of changing shipping conditions (e.g., weather information, equipment availability, etc.)
- Centralized source of information on service providers and shippers
- Processing of customs documentation

6.8.5 Foreign Trade Zone

Currently, Erie and Niagara Counties each have a foreign trade zone. These could be incorporated into the intelligent port concept as well as new foreign trade zone capacity increased as trade increases.

6.8.6 Empty Container Management

Provide information to drayage operators and shippers throughout the bi-national region on the availability of containers.

6.8.7 Container Depot/ Chassis Pool

Promote and support the development of a container depot for storage, maintenance and supply of empty containers. Promote and support the establishment of a chassis pool.

The presence or absence of a container depot and chassis pool with has important implications to the future of a logistics complex in the Buffalo-Niagara Falls region. For example, the study by the World Trade Center of Buffalo-Niagara discussed above identified overhead traffic travelling between U.S. ports and Ontario as the biggest opportunity for a logistics complex in Buffalo. The most promising new traffic for an intermodal complex in Buffalo would include those moves which originate or terminate at the Port of New

York/New Jersey, travel to Buffalo by rail, and then are shipped over the border by truck or rail to the Toronto area.

Unfortunately, container and chassis pools are located within the Toronto metropolitan area, but none are located in the Buffalo/Niagara Falls region. As a result a shipper draying containers between New York/New Jersey and Toronto only pays a one way haul. By contrast, shippers draying containers between Buffalo and Toronto pay for a two-way haul, both the loaded and empty direction. This difference in the relative costs of truck drayage would significantly deteriorate potential savings available to shippers from using truck/rail via Buffalo instead of draying containers directly between the Port of New York/New Jersey and the Toronto area.

Assessment of Buffalo-Niagara Freight Needs – Freight Forum

The assessment of infrastructure, policy, and operation needs to support a region's freight transportation typically from two sources: feedback from stakeholders and a quantitative analysis of freight performance measures within a region. 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:

7.1 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.

7.2 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.

7.3 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 I 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 I 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.

7.4 Other

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

7.5 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.

Assessment of Buffalo-Niagara Freight Needs – Freight Performance Metrics

The study team is also sought to further understand the region's freight needs through a series of freight performance metrics. These metrics help to identify those areas where the freight transportation is or is not helping to achieve the region's goals. Areas where the region's goals and objectives are not met can be viewed as opportunities. These performance metrics are not intended to be used as targets themselves within the context of this study. They are simply intended to help understand stakeholder feedback and to quantitatively understand, confirm or question the feedback that has been received over the course of the project regarding the priorities for the region, as well as suggest areas that may have been overlooked through stakeholder feedback.

The performance metrics are roughly organized by mode and by the regional goals that were established as part of the Greater Buffalo Niagara Regional Transportation Council (GBNRTC) 2030 Long Range Transportation Plan (LRTP). The LRTP listed the following goals for the region's transportation system:

1. Preserves and enhances existing transportation facilities
2. Improves user mobility and access
3. Improves the region's economic competitiveness
4. Enhances, protects natural environmental quality, cultural resources and communities
5. Coordinates transportation with land use planning.

The performance metrics presented below fall into the following general categories:

1. Capacity
2. Environmental
3. Safety
4. Economic Development

It must be noted that the performance metrics discussed in this section must be considered within context that data for all the factors influencing the performance of freight systems in the region are available, and some may never be. The available freight performance measures are incomplete and should be assumed to represent a portion of the freight needs assessment for a region, not the entire basis for a needs assessment.

8.1 Capacity Performance Metrics

Capacity considerations include a number of subordinate issues, including congestion, state of good repair, and access/connectivity.

8.1.1 Highway Capacity

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.

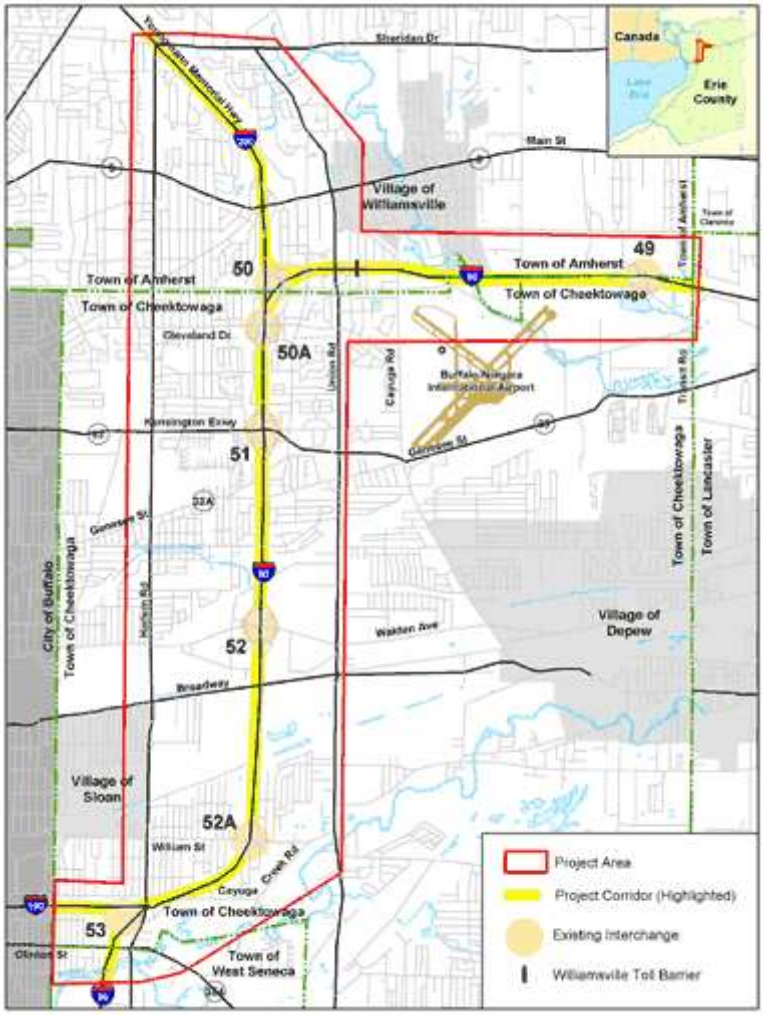
The findings of the TTI study suggest that compared to other similarly sized urban areas, congestion within the Buffalo-Niagara region is relatively moderate. The average annual delay per traveler in the Buffalo-Niagara region is 11 hours. Buffalo was ranked at the bottom of large urban areas in terms 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.

Nonetheless, 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.[31] 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.

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 8-1*** below displays the study area.

[31] 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 8-1: Buffalo Corridor Study Area



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 – 2020 (***Figure 8-2***) and 2020 – 2030 (***Figure 8-3***) will be highest on I-190 and S.R. 5.

Figure 8-2: Forecasted Increases in Trucks per Day (2010 to 2020)

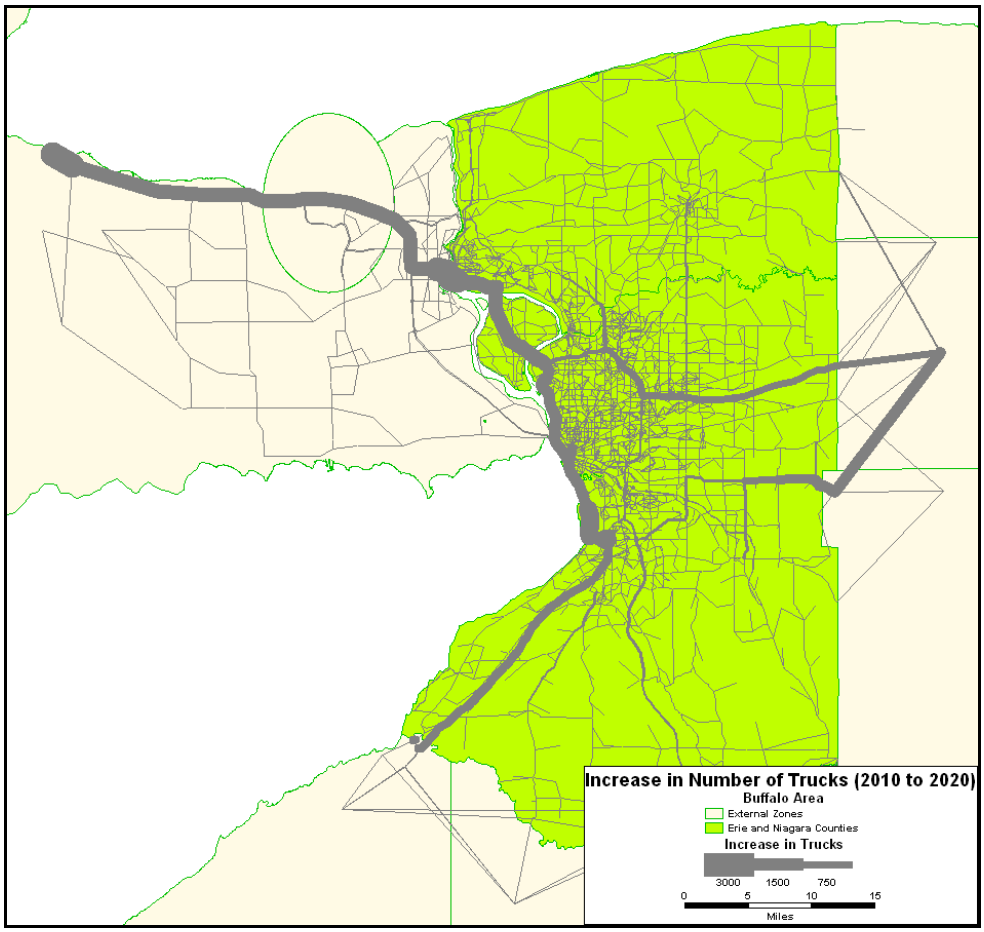
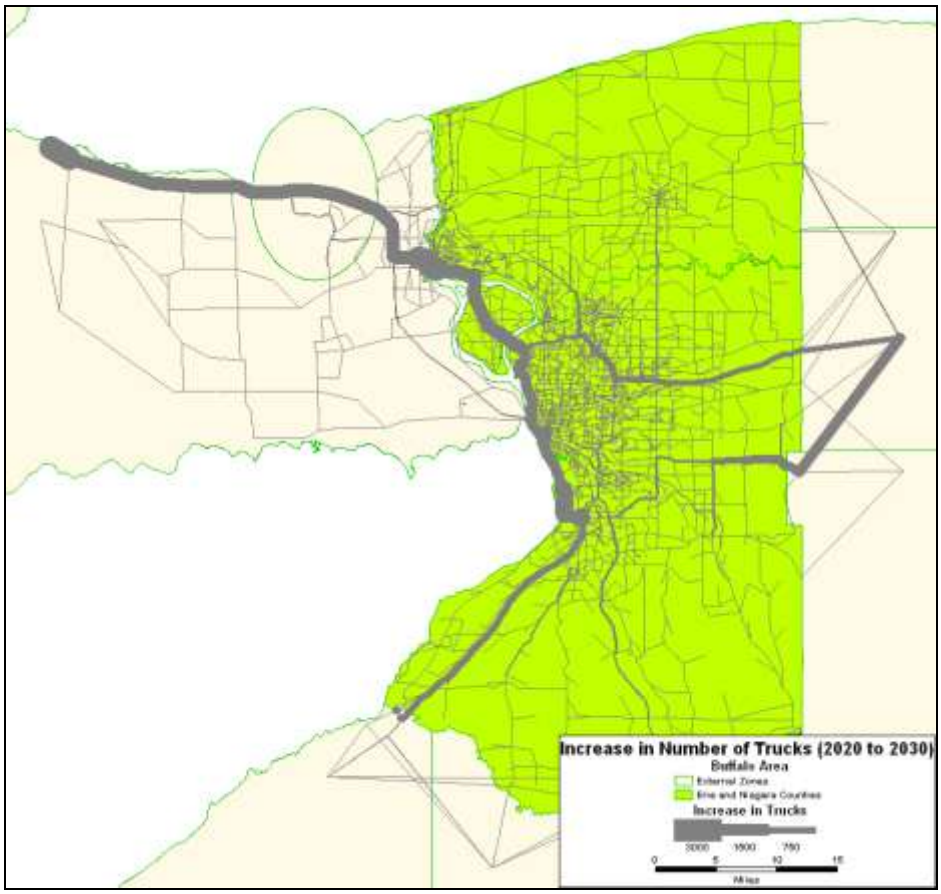


Figure 8-3: Forecasted Increases in Trucks per Day (2020 to 2030)

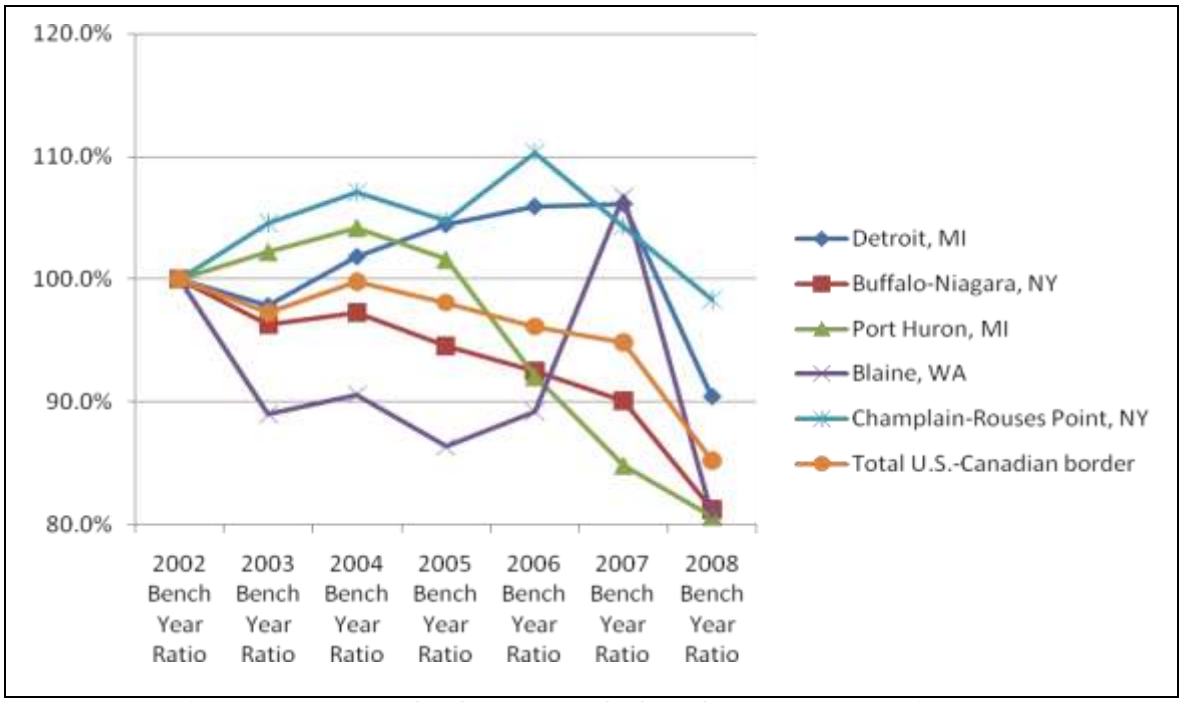


8.1.2 International Border Highway Crossing Capacity

In this study, as well as a 2001 study sponsored by the GBNRTC entitled, *Transportation Needs for an Economically Prosperous Buffalo-Niagara Region – Phase II*, stakeholder feedback has raised the issue of border crossings. Stakeholders within the Buffalo-Niagara region have in the past considered border crossings to be a major hindrance to the economic development of the area. At the most recent Stakeholder Forum held on April 29, 2010 by GBNRTC for this study, cross border trucking issues were emphasized somewhat less. Technological improvements and a reduction in traffic have changed the dynamics of the dialogue regarding cross-border traffic.

Commercial traffic at crossings in the Buffalo-Niagara region has been steadily decreasing since 2002. While traffic at crossings in other areas declined in 2008 due to the recession, Buffalo-Niagara crossings had also declined in 2005 through 2007.

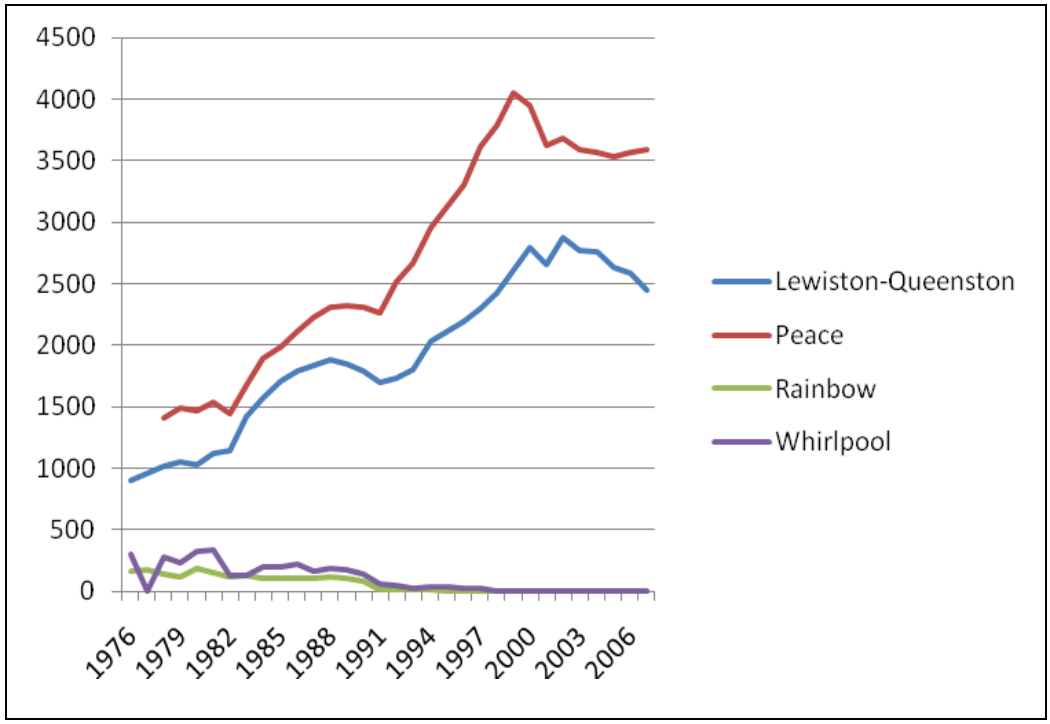
Figure 8-4: Top 5 Border Crossing Volumes, Benchmark 2002



Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Border Crossing/Entry Data, available at http://www.transtats.bts.gov/BorderCrossing.aspx as of Dec.18, 2009

Looking at the individual bridge crossings, recent declines in traffic on the Peace Bridge have been more moderate than declines in traffic on the Lewiston-Queenston Bridge.

Figure 8-5: Buffalo-Niagara Crossing, AADT by crossing 1976-2009



Source: RITA/BTS

The Lewiston-Queenston Bridge is more frequently used by local traffic, in contrast to the Peace Bridge which more often serves traffic passing through the Buffalo-Niagara region to Canada.

Of the crossings within the area, Technical Memorandum #2 noted a lower average level of service for the Peace Bridge, with a level of service for Summer Average Weekday peak hour volume of C for both eastbound and westbound traffic. For Summer Average Weekend traffic, the level of service was found to be C for eastbound, but D for westbound traffic.

The *Peace Bridge Expansion Project Bi-National Integrated Environmental Process* (March 2010) traffic analysis assumes a 2.7 percent growth rate for commercial traffic on the Peace Bridge between the 2007 base year and 2025. A 1.2 percent growth rate is assumed for 2025 to 2050. The analysis forecasts traffic delays under the no build scenario for the peak period. The analyses are grouped by eastbound and westbound conditions. These refer to the direction of the center lane, so that the lane is eastbound in a "Peak Eastbound Condition," and the center lane is westbound in a "Peak Westbound Condition."

Figure 8-6: Future No Build Traffic Travel and Delay Times

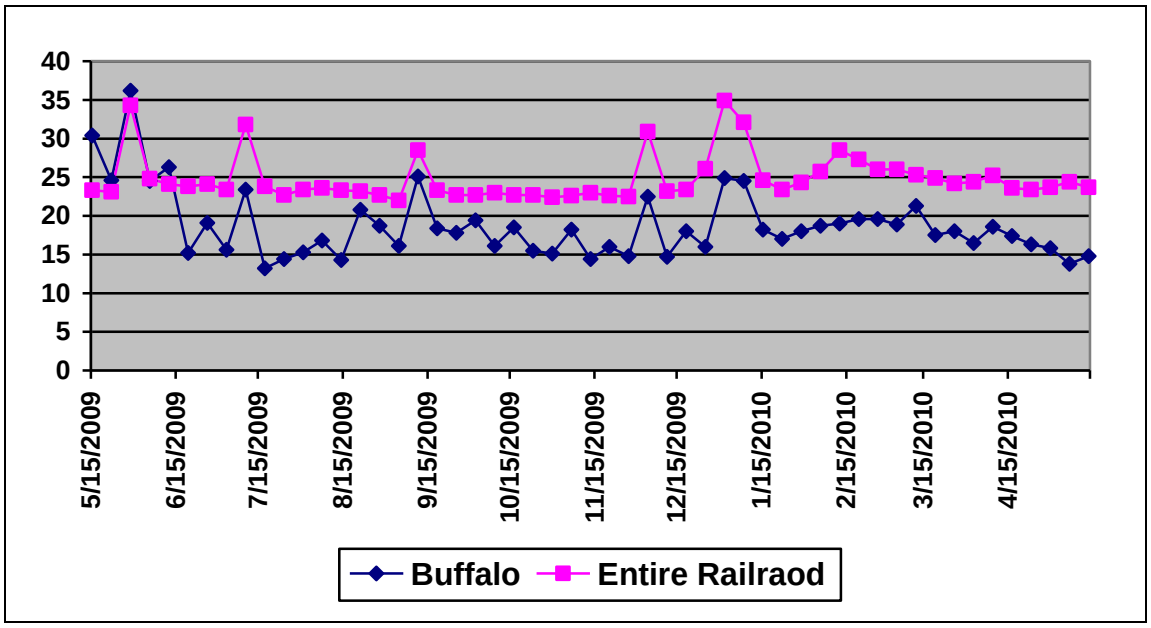
	Travel Time	Delay Time
Westbound Travel (Commercial Vehicles)		
2020 Peak Westbound Condition	59.8	52.2
2050 Peak Westbound Condition	81.5	68.4
Eastbound Travel (Commercial Vehicles)		
2020 Peak Eastbound Condition (Monday)	43.8	41.2
2020 Peak Westbound Condition (Friday)	22.5	20.1
2050 Peak Eastbound Condition (Monday)	43.4	40.9
2050 Peak Westbound Condition (Friday)	43.6	41.0

8.1.3 Railroad Capacity

Terminal Dwell Times

Since 1999 the six major freight railroads in North America have submitted weekly performance reports, which are aimed at capturing the fluidity of their systems. Among the performance metrics presented are Terminal Dwell times. Among the terminals for which CSX reports is the Buffalo terminal area. CSX is the only rail carrier to report dwell times for its Buffalo operations. Terminal Dwell is the average time a car resides at the specified terminal location expressed in hours. The measurement begins with a customer release, received interchange, or train arrival event and ends with a customer placement (actual or constructive), delivered or offered in interchange, or train departure event. Cars that move through a terminal on a run-through train are excluded, as are stored, bad ordered, and maintenance of way cars. Dwell times are influenced by numerous factors, including the composition of the train types within a given area, etc. ***Figure 8-7*** compares average dwell times of CSX at its Buffalo terminal area to overall system average dwell times. The findings below suggest that on average traffic through Buffalo terminals was more fluid between May 2009 and May 2010 compared to other terminals within the CSX system.

Figure 8-7: Comparison of Terminal Dwell Time (Hours) in Buffalo and Entire CSX System



Heavy Axle Loading

Increasingly, Class I railroads have been switching to heavier railcars, those that have a gross weight of up to 286,000 pounds (286K).[32] 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.[33] 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.[34] 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.[35]

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. These are as follows:

- 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

[32] More recently, some Class I railroads have been carrying 315,000 lb cars on mainlines that have been certified for them.
[33] Kenneth Cassavant and Denver Tolliver, *Impacts of Heavy Axle Loads on Light Density Lines in the State of Washington*, 2001.
[34] 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.*
[35] 2009 New York State Rail Plan

region and about 11 percent of all route rail route miles in the region.

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), referred to as "Plate C" or "Plate B." Under Plate C, no obstructions should be located within 15' 6" of the top of the rail tracks. This includes all tunnels, overhead wires, signals, bridges, etc. However, since these standards were established, new rail technologies have been developed, which create greater efficiencies. 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 hicube 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. The most constrained line within the area in terms of clearance is the Buffalo Southern line which has a "Plate C" clearance of 15' 6". This accounts for about 11 percent of the route miles within the area.

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.[36] 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 – CP Draw

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:

[36] Cambridge Systematics, Inc. for the Association of American Railroads, *National Rail Freight Infrastructure Capacity and Investment Study,* September 2007.

Figure 8-8: Forecasted Trains per Day

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

Under the above analysis, 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.

8.1.4 Maritime Capacity

Administration of the Great Lakes/St. Lawrence Seaway (GLSLS) is shared by two entities, the Saint Lawrence Seaway Development Corp. (SLSDC) in the U.S., a federal agency within the U.S. Department of Transportation, and The St. Lawrence Seaway Management Corporation (SLSMC) in Canada, a not-for-profit corporation (ownership of the Canadian portion of the Seaway remains with the Canadian federal government.) Neither the SLSDC nor the SLMC maintain performance statistics specific to the Buffalo-Niagara region. However, they do maintain statistics for the system as a whole. The SLSDC has calculated the availability of the system on a five year rolling basis. This captures the downtime of the system compared to time the system is available (***Figure 8-9***). The statistics are as follows:

Figure 8-9: Marine Capacity Availability

Calendar Year	Availability
2000 - 2004	98.8%
2001 - 2004	99.0
2002 - 2005	99.1
2003 - 2007	99.1
2004 - 2008	99.1

The SLSDC also maintains statistics on delays due to lock equipment failures per 1,000 commercial transits (***Figure 8-10***).

Figure 8-10: Marine Delays per 1,000 Transits

Calendar Year	Delays per 1,000 Transits
2004	2.33
2005	1.00
2006	0.85
2007	1.74
2008	2.41

Port Capacity

As presented in Technical Memorandum #2, eight of 22 marine terminals located within the Buffalo-Niagara region are currently inactive. This suggests a significant quantity of available port capacity that is

available for development.

Nine of the twenty terminals in the Port of Buffalo have rail access. This includes two of the inactive terminals and seven of the active terminals. Three of the inactive terminals have relatively shallow draft, 15 feet or below. Unless they were dredged, this would tend to limit the types of craft that could use these terminals.

8.1.5 Aviation Capacity

According to the *New York State Airport System Plan Update*, the Buffalo Niagara International (BUF) Airport has an airfield capacity of 194,000 operations per year. According to Federal Aviation Administration (FAA) data, BUF was operating at 136,579 in 2008, or 70 percent of capacity. According to a document by the Niagara Frontier Transportation Authority, the Niagara Falls International Airport (NFIA) has an annual service volume (ASV) of 215,000 per year.[37] According to data from the FAA, NFIA was operating at 38,503 in 2008 or 18 percent capacity, suggesting NFIA is operating far below capacity.

Figure 8-11 compares BUF and NFIA airports to those in other regional markets.

Figure 8-11: Airport Comparison

	Niagara Falls International	Buffalo-Niagara International	Albany International	Cleveland Hopkins International	Toronto Pearson International	Milwaukee General Mitchell International
Primary Runway	10L/28R	23-5	19-1	6R/24L	23-5	01L/19R
Primary Runway Length (feet)	9,829	8,827	8,500	9,955	11,120	9,690
Runway Width (feet)	150	150	150	150	200	200
Number of Terminal Gates	2	26	16	82	58	60
ACI Ranking (North American Passenger 2009)	N/A	61	84	39	128	49
ACI Ranking (North American Cargo 2009)	N/A	81	99	50	13	55
2009 Cargo Tonnage (metric)	350 (est.)	31,743	16,555	72,971	439,130	68,375
ACI Ranking (North American Movement 2009)	N/A	77	119	164	106	58

Source: Wilbur Smith Associates, ACI, AirNav, FAA 5010, Air Cargo World, NFTA

8.2 Safety Performance Metrics

8.2.1 Highway Safety

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.[38] 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

[37] Niagara Frontier Transportation Authority, Request for Proposal for Air Cargo Development.
[38] Cambridge Systematics, Inc., *Crashes vs. Congestion – What's the Cost to Society?*, March 5, 2008.

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.

Highway safety is a highly visible arena, where efforts to reduce or eliminate future incidents have a positive and immediate impact on the citizenry, at large. A prominent category that resonates with the driving public involves those incidents related to commercial vehicles and the resulting effects of those events. Though recording practices were modified beginning in 2007, across the state, trucks comprised between 4.0 and 4.7 percent of all police reported accidents from 2005 to 2007. Erie and Niagara Counties represent two significantly different environments. Erie County comprises between 86 percent and 90 percent of all reported commercial vehicle accidents, as shown in ***Figure 8-12***, as reported to the Federal Motor Carrier Safety Administration (FMCSA). Erie County accident counts are significantly influenced by traffic associated with the international border crossing at the Peace Bridge and Interstate 90.

Figure 8-12: Accidents Involving Trucks, 2005-2007

		COUNTY	
YEAR	TOTAL	ERIE	NIAGARA
2005	282	252	30
2006	226	194	32
2007	290	261	29

Accident occurrence and severity relate to roadway design. Median barriers and restraints can reduce accidents. ***Figure 8-13*** below categorizes accidents in Erie and Niagara Counties by roadway type.

Figure 8-13: Roadway Median Design comparison to Accident History, 2005-2007

	2005	2006	2007	TOTALS	RATIO TO ACCIDENTS
One-way, not divided					
Total Accidents	27	12	11	50	
Total Injuries	13	4	8	25	50.0%
Total Fatalities	0	1	0	1	2.0%
Two-way, divided, positive median barrier					
Total Accidents	95	87	109	291	
Total Injuries	64	54	55	173	59.5%
Total Fatalities	0	2	0	2	0.7%
Two-way, divided, unprotected median					
Total Accidents	36	34	48	118	
Total Injuries	25	32	41	98	83.1%
Total Fatalities	0	2	7	9	7.6%
Two-way, not divided					
Total Accidents	120	86	98	304	
Total Injuries	105	69	70	244	80.3%
Total Fatalities	6	6	1	13	4.3%
Unknown					
Total Accidents	12	7	16	35	
Total Injuries	17	5	8	30	85.7%
Total Fatalities	0	0	0	0	0.0%

Median design is not a determination for route selection by commercial vehicles. Thus, the frequency illustrated is not an indication of more or less hazardous travel conditions for motor vehicles. To rate the relative hazards of multiple designs would need to consider traffic volumes.

Additional factors that influence the risk of accidents and the severity experienced are presented in ***Figure 8-14***.

Figure 8-14: Factors Influencing the Risk of Accidents on Roadways

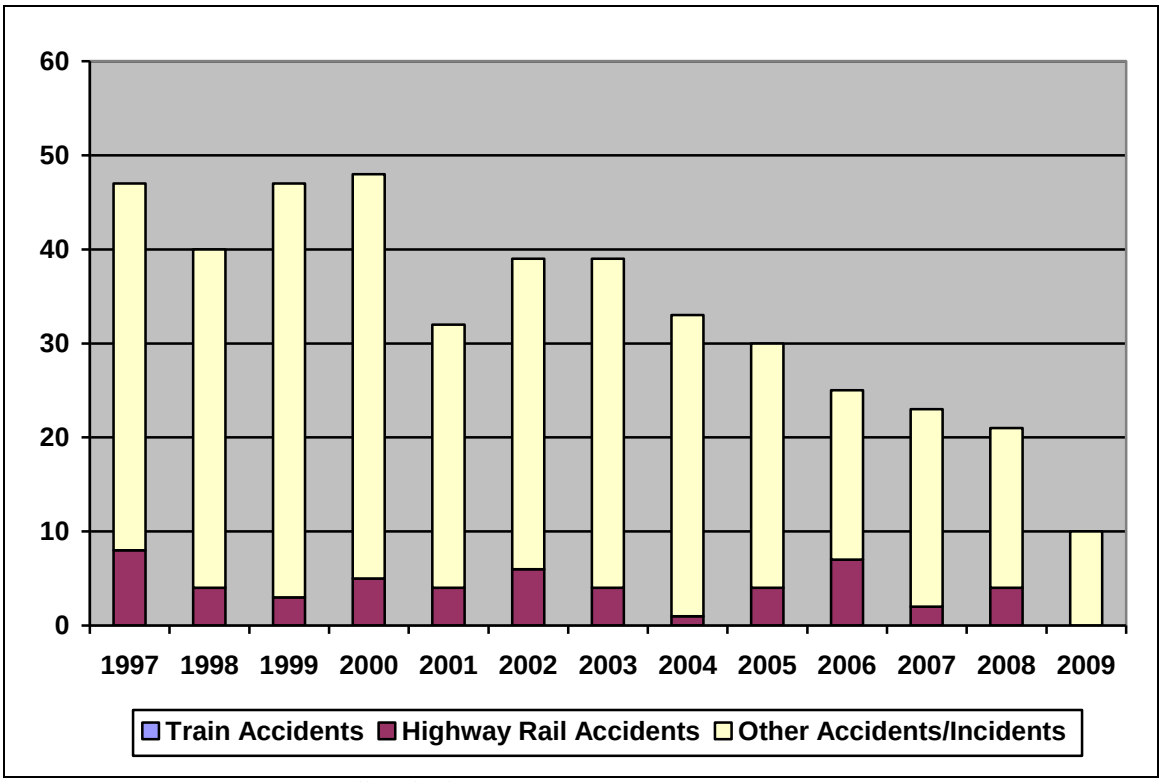
Decrease Risk	Increase Risk
Road separation or barrier	No road separation or barrier
Wide lanes	Narrow lanes
Controlled access	
Modern roadway design	
Wide solid shoulders	Narrow shoulders
Clear pavement markings	Poor/faded striping
Solid pavement	Crumbling shoulders
Good lighting	Inadequate lighting
Gradual curves	Sharp curves
No severe pavement drop-offs	Sharp pavement drop-offs
No vegetation blocking visibility along roadsides	Limited clear zones along roadsides
Clear, large signage	Poor signage
Grade reduction on slopes	

Source: http://www.dot.state.ga.us/statistics/CrashData/Documents/CASI2008.pdf

8.2.2 Railroad Safety

As can be seen from the chart in ***Figure 8-15***, 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.

Figure 8-15: 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.

8.2.3 Maritime Safety

The Saint Lawrence Management Corporation maintains safety performance statistics as expressed in incidents per 1,000 transits (***Figure 8-16***).

Figure 8-16: Maritime Incident per 1,000 Transits

Cargo Year	Incidents per 1,000 Transits
2003/2004	1.0
2004/2005	3.5
2005/2006	2.5
2006/2007	2.8
2007/2008	3.0

8.3 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 United States 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

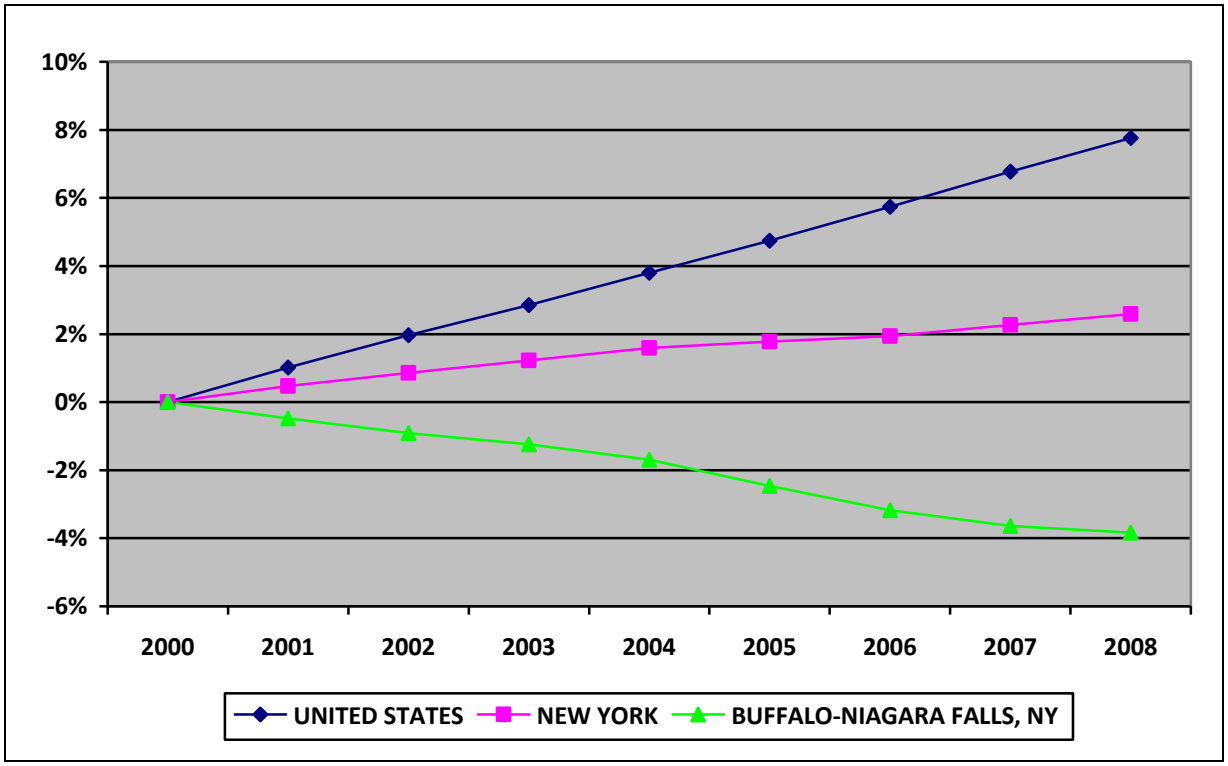
countryside. Railroad companies tend to use older and dirtier locomotives for yard duty. By contrast, a low emission GenSet locomotive, for example, produces only 20 percent of the NOx and 10 percent of the particulate matter of a normal switch locomotive. It also consumes 37 percent less fuel. Providing an incentive to railroads to acquire these low emissions, locomotives could potentially help the Buffalo-Niagara region to stay in compliance for ozone pollution.

8.4 Economic Development Performance Metrics

8.4.1 General

As mentioned in Technical Memorandum #1, population is often used as a barometer for economic development. The economic development challenges that face the industry are well-documented and are a major reason for this study.

Figure 8-17: Percentage Change in Population from 2000

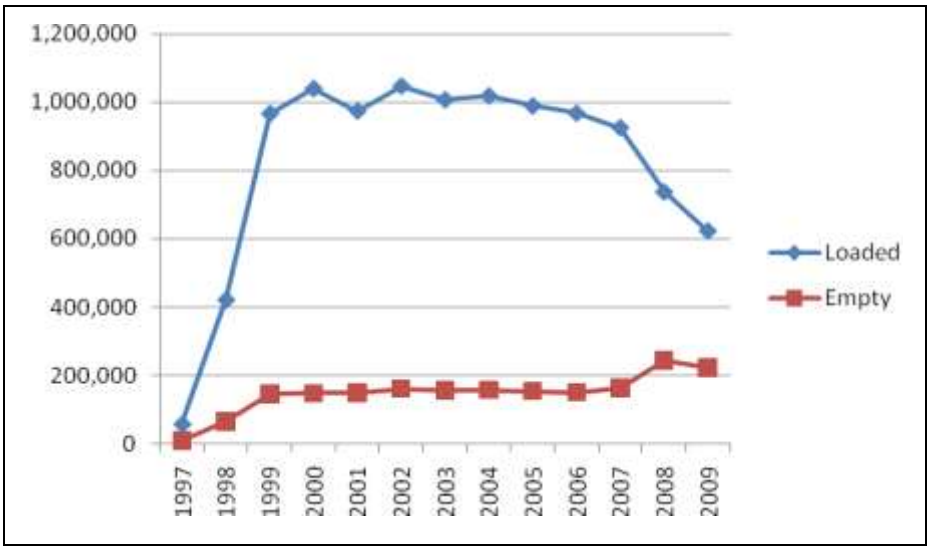


Source: Woods & Poole

8.4.2 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 8-18***, 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 8-18: 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 carrier; 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 8-19***, 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 motor carrier 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 8-19: 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]

8.5 Performance Metrics – Conclusions

Goal/Mode	Regional Advantages	Regional Disadvantages	Implications for Potential Projects
Highway Capacity	Lower congestion than other urban areas of comparable size	Congested areas still remain	
Rail Capacity	-Largest rail line through the area is not expected to exceed capacity over 25 years -CSX classification yard in Buffalo appears to perform well compared to other CSX yards	-Some rail lines in area are unable to accommodate 286,000 lb. cars -CP Draw will likely cause significant delays in coming years	-Lines unable to accommodate 286,000 lb. cars should be upgraded -CP Draw will be an issue in the future
Maritime Capacity	-Buffalo has plenty of available port terminals that could be developed	-Performance measures associates with GLSLS do not show consistent improvement	
Air Cargo Capacity	NFIA is operating far below airfield capacity		
Highway Safety	The region appears to compare favorably to other metropolitan areas in terms of highway safety		
Rail Safety	Rail safety statistics for the area show improvement and are better than in other areas of New York State		
Maritime Safety		While low, the number of incidents/accidents on the GLSLS system have not shown improvement	
Air Quality		Area has recently been in non-attainment for ozone	Projects that help to reduce ozone would help the area to reach its environmental goals.
Economic Development		Economic development remains a critical issue for the region	Projects that effectively promote economic development should have a high priority.

Summary

9.1 Initial Discussions with Stakeholders

Discussions with stakeholders and data analysis for this project suggest several priority areas for the Buffalo freight network. In particular, stakeholders felt that the area's roadway network was adequate to meet current and near term needs, although bottlenecks still exist, and border crossing issues were of concern. Some stakeholders were concerned about the region's rail network in terms of competitive access and the extent to which the network has been updated to meet current needs. Other stakeholders expressed interest in opportunities that may arise from the region's port infrastructure. Above all, there is a sense that freight infrastructure and systems within the Buffalo-Niagara region need to support economic development and promote trade. In particular Buffalo can act as an inland distribution hub for goods flowing from the Port of New York/New Jersey or West Coast Ports, serving not only the Buffalo-Niagara region, but the Golden Horseshoe of Canada as well. Better promotion of Buffalo-Niagara's trade logistics could lower costs for shippers within the area, as well as bring transportation/distribution jobs to the region.

9.2 Subsequent Stakeholder Forum

On April 29, 2010, GBNRTC held a stakeholder forum to receive feedback from public and private sector freight leaders within the area on the preliminary proposed set of projects and identified priorities. Several additional issues came to light. A number of participants suggested that the region needs to develop a more robust marketing plan for freight, as well as to develop a logistics organization. This organization would help to market the area's logistics assets as well as provide ongoing direction to the area's freight investments. Cross border highway issues were not as prominent as in earlier stakeholder discussions, although cross border rail issues were of higher concern. There was also a discussion of more need for truck/rail transfer facilities.

9.3 Subsequent Analysis of Freight Performance Metrics

A subsequent look at statistics related to various goals for the region's freight system revealed additional issues. The area was in non-attainment for ozone pollution over the past several years, which increases the priority of those projects that help to decrease air pollution. Similar to other areas with Class II and Class III rail carriers, portions of the rail network within the area are unable to accommodate new, heavy axle railcars.

9.4 Summary of Projects

A number of truck/highway projects were presented in the technical memorandum. Some were aimed at maintaining essential infrastructure or alleviating bottlenecks, while others are consistent with the goal of improving the connectivity between U.S. and Canadian markets.

The rail project put forth within this study attempt to improve connectivity, add competitive access, resolve bottlenecks, and maintain infrastructure. Several of the proposals are related to the area's most significant rail bottleneck, the CP Draw. Congestion at this rail bridge is expected to increase in the future as traffic

grows. A number of the proposals also attempt to improve connectivity and competitive access, improving shippers' competitive options.

The air cargo projects described within this Technical Memorandum relate chiefly to marketing efforts. Recently completed and proposed infrastructure projects, such as the new terminal and runway resurfacing at NFIA could benefit air cargo, although the improvements are primarily oriented toward passenger operations.

Maritime projects described within this technical memorandum seek to increase the amount of maritime trade in the area in order to lower shippers' costs as well as spur economic development. For example, the introduction of marine container service could potentially lower shipper costs and introduce new trading opportunities, as could improvements to the AES Somerset Dock.

One potential set of initiatives with significant economic development potential is to try to establish Buffalo as a distribution hub. These types of schemes have been proposed in a number of different regions, with differing likelihood of success. However the Buffalo-Niagara Falls region has a number of assets that make it more likely than others to succeed. As a starting matter, with over one million inhabitants, it is a reasonably large metropolitan area. It is located adjacent to Canada's largest and most prosperous region around Toronto, ON. The Buffalo-Niagara region has strong infrastructure connections with both Chicago and the New York/New Jersey region, through roadway and rail connections. The area is naturally well-positioned to participate in GLSL transportation initiatives. The Buffalo-Niagara Falls region is endowed with significant transportation and logistics assets. The efficient highway system, service by multiple railroads, two commercial airports, access to water transportation and warehouse capacity provide the region with significant advantages as the transportation environment moves towards multimodalism. The proposed intelligent logistics complex is intended to leverage the transportation asset base through use of technology and common marketing.

Logistics initiatives within the Buffalo-Niagara Falls region would have both infrastructure and non-infrastructure elements. The infrastructure elements relate to improvements to the Lehigh Valley Yard, as well as the construction of distribution assets and bulk/breakbulk transload facilities at the former Bethlehem Steel site. The non-infrastructure elements would include marketing initiatives aimed at establishing the Buffalo-Niagara Falls region as a logistics center, as well as the provisions of information technology tools that would enable shippers to more efficiently perform international trade functions in the Buffalo-Niagara region. The intelligent logistics complex would not replace public or private development initiatives, but rather, support individual investment with a complete package of the logistics services required by international companies planning to expand distribution in North America. Through integrated services and facilities, the region would be positioned participate in the economic growth of both the U.S. and Ontario. ***Figure 9-1*** and ***Figure 9-2*** below list a draft set of potential projects. Those projects that already appear in the GBNRTC Transportation Improvement Plan have been removed.

Figure 9-1: Potential Freight Operational/Infrastructure Projects in the Buffalo-Niagara Falls Region

Type	Project	Nature of the project	Anticipated Benefits	Anticipated cost (if available)	Notes	Timing
Truck/ Road	Genesee Street (SR 33) rehabilitation	Rehabilitation of Genesee Street from Dick Road to the Buffalo - Niagara International Airport East Entrance in the Town of Cheektowaga with minor improvements to NY 33 (Kensington Expressway segment) between NY 198 and Elm/Oak streets.	Improved access to airport and I-90	$15.2 million (2 phases)		Short
Truck/ Road	ITS at border crossings	Either establish highway advisory radio network or signs to alert drivers of border congestion	More efficient border crossing.	$100,000+		Short
Truck/ Road	Whirlpool Bridge Upgrade	Convert upper deck, portion of upper deck, or adjacent span to truck use.	Truck access to Lehigh Valley Yard	$10 million Additional market analysis required	Customs / security issues (international border crossing), issues of rail crossing redundancy	Long
Rail	CP Draw bridge capacity expansion	CP Draw bridge replacement	Reduced congestion, increased competition between NS and CSX	$40 million	Cost estimate updated based on 2001 STB Report. CSX tracks need to be flipped to other side to allow NS access to interchange yard	Long
Rail	G&W Buffalo Line Connection	G&W Connection from NS Buffalo line to BPRR line	Relieve congestion by avoiding CP Draw for G&W. Better route for NS to CP Draw as well	$2 million	Funding application filed with NYSDOT. Operating agreement required with NS	Short
Rail	CN Northern Connection (Niagara Branch)	Connect CN tracks to Belt Line	Reduced truck congestion on international bridge crossings. Competitive access to South Buffalo/ Lackawanna area.	$3 million Operating agreement required with CSX		Long

Type	Project	Nature of the project	Anticipated Benefits	Anticipated cost (if available)	Notes	Timing
Rail	CN Southern Connection (Avenue Running Track)	Improved CN connection to South Buffalo area.	Competitive access for CN to South Buffalo / Lackawanna (proposed Freight Village); elimination of drayage by truck.	$5 million	Would require operating agreement with CSX	Long
Rail	Portage Bridge Replacement	Replacement of 105 year old bridge to bring weight capacity up to standard	Preserves and improves NS Southern Tier route.	$25 million. Funding application filed with NYSDOT		Short
Rail	Falls Road Bridge over Erie Canal Rehabilitation	Rehabilitate or replace 100-year old structurally deficient bridge that carries significant grain shipments	Maintain freight rail service between Lockport and Niagara Falls	$1 million Funding application filed with NYSDOT		Short
Rail	Lehigh Valley Yard Intermodal Expansion	CSX, GVT and short lines	Expanded intermodal capabilities; Increased warehousing/ distribution facilities	$15 million	Additional market analysis required	Long
Rail	Rehab, upgrade Falls Road Railroad line	Rehab, upgrade rail lines to accommodate heavy cars	Improved shipping options	$2.6 million		Medium
Rail	Rehab, upgrade Buffalo Southern line	Upgrade rail lines to accommodate heavy cars	Improved shipping options	$4 million	Projects in NYS Rail Plan appear to overlap	Medium
Rail	Fund acquisition of low emission locomotives		Reduce emissions	$1.5 per locomotive	Additional analysis would be needed to assess relative benefits.	Short
Air	Runway resurfacing at NFIA	Ongoing facility improvement efforts, including runway resurfacing	Greater attractiveness to commercial carriers for belly freight and all-cargo service.	$9.5 million	$400k federal funds available for resurfacing	Short
Water	AES Somerset dock	Construction of a 3,200-foot long pier–conveyor that will allow the AES facility to obtain water borne deliveries of coal, petroleum coke and limestone	Addition of competing goods shipment mode for large electric generating facility, with reduced costs to operator. Potential for other industries to	$25 million		Short

Type	Project	Nature of the project	Anticipated Benefits	Anticipated cost (if available)	Notes	Timing
			locate in the area that could benefit from water transport.			
Water	Marine highway efforts	Waterborne container services between Buffalo-Niagara Falls area and seaports such as Halifax	Reduced road and rail congestion; availability of lower cost alternatives to local industries	$2+ million, depending upon site		Long
Water	Agricultural export development	This will require development of adequate and appropriate cold storage in combination with working with the agricultural sector to develop the logistics chain.	Potential to build a transport hub for the western NY agricultural sector.		Will require development of sufficient cold storage capacity and development of supply chain. Maritime transportation would provide low cost alternative to serve short haul markets such as metro Toronto.	Long
Water	Erie Canal revitalization (container barge)	Container barge pilot project on Erie Canal	Diversion of traffic from truck and rail; some need for drayage eliminated. Successful demonstration would help make the case for additional ACE-funded dredging, potentially facilitating more canal traffic.		$3 million authorized in 2005 for a canal container-on-barge demonstration project, including design and construction of two container barges specifically built for the canal.	Long
Logistics	Buffalo inland port	Establish an intermodal trade processing center in Buffalo	Make Buffalo a more attractive inland port location			Long
Logistics	Logistics complex at Bethlehem Steel Site	Develop Bethlehem Steel site as a logistics/industrial park	Bring additional logistics employment to the area, potentially save costs to area shippers.		$25 million	Long

Figure 9-2: Potential Freight Organizational/Marketing Initiatives in the Buffalo-Niagara Falls Region

Type	Project	Nature of the project	Anticipated Benefits	Anticipated cost (if available)	Notes	Timing
Across Modes	Logistics Advisory Committee	Create a logistics advisory committee that would promote and provide guidance for Buffalo's logistics assets, provide resources such as marketing data on an ongoing basis	Better marketing and leadership for area's logistics assets			Short
Air	Efforts to retain UPS, FedEx, DHL	Ongoing efforts to improve facilities and ensure carriers' satisfaction with the local market conditions.	Local employment			Short
Air	Airport marketing efforts	Continued efforts to market NFTA airports to shippers and carriers	Potential to attract anchor tenant and additional air cargo facilities and service			Short
Air	Continued economic development efforts	Ongoing economic development efforts focusing on auto and med equipment in order to develop market for improved air cargo service	Increased air cargo traffic at NFTA airports			Short

Appendix A


NEW CP DRAW BRIDGE
(NEW CSX MAINLINE)
EXISTING CP DRAW BRIDGE
(NEW NS MAINLINE)
CHA
CP DRAW BRIDGE REPLACEMENT
GREATER BUFFALO-NIAGARA REGIONAL
TRANSPORTATION COUNCIL
PROJECT NO.
16527
DATE: 9/08
FIGURE XX-XX


NS LINE
G&W BUFFALO LINE CONNECTION
G&W LINE
CHA
G&W CONNECTION FROM NS BUFFALO LINE
GREATER BUFFALO-NIAGARA REGIONAL TRANSPORTATION COUNCIL
PROJECT NO. 16527
DATE: 9/08
FIGURE XX-XX


CN NORTHERN CONNECTION
CN LINE
CSX LINE
CHA
CN NORTHERN CONNECTION
GREATER BUFFALO–NIAGARA REGIONAL TRANSPORTATION COUNCIL
PROJECT NO. 16527
DATE: 9/08
FIGURE XX–XX


CN SOUTHERN CONNECTION
CHA
CN SOUTHERN CONNECTION
GREATER BUFFALO-NIAGARA REGIONAL TRANSPORTATION COUNCIL
PROJECT NO.
16527
DATE: 09/08
FIGURE XX-XX


EXISTING
PORTAGE BRIDGE
CHA
PORTAGE BRIDGE REPLACEMENT
GREATER BUFFALO-NIAGARA REGIONAL
TRANSPORTATION COUNCIL
PROJECT NO.
14527
DATE: 9/08
FIGURE XX-XX


EXISTING FALLS ROAD BRIDGE
ERIE CANAL
CHA
FALLS ROAD BRIDGE OVER ERIE CANAL
GREATER BUFFALO-NIAGARA REGIONAL
TRANSPORTATION COUNCIL
PROJECT NO.
16527
DATE: 9/08
FIGURE XX-XX


LEHIGH VALLEY YARD
INTERMODAL EXPANSION
TO WHIRLPOOL BRIDGE
CHA
LEHIGH VALLEY YARD INTERMODAL EXPANSION
GREATER BUFFALO–NIAGARA REGIONAL TRANSPORTATION COUNCIL
PROJECT NO. 16527
DATE: 9/08
FIGURE XX–XX


LEHIGH VALLEY RAPID
CHA
WHIRLPOOL BRIDGE UPGRADE
BUFFALO-NIAGARA REGIONAL
TRANSPORTATION COUNCIL
PROJECT NO.
16527
DATE: 9/08
FIGURE XX-XX


INTERMODAL FREIGHT VILLAGE
CHA
INTERMODAL FREIGHT VILLAGE
GREATER BUFFALO-NIAGARA REGIONAL
TRANSPORTATION COUNCIL
PROJECT NO.
16527
DATE: 9/08
FIGURE XX-XX

Appendix B

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Intermodal Freight Terminal Volume Feasibility Study

Intermodal Opportunity Assessment in Western New York

July 3, 2008

Table of Contents

Executive Summary

The Buffalo Niagara Intermodal Freight Terminal Volume Feasibility Study in Western New York, as conducted by World Trade Center Buffalo Niagara (WTCBN), reviewed the available volumes of international intermodal container traffic that could use and justify the construction of an intermodal (truck/rail) freight terminal in or near Buffalo, New York .If the volume shows that an intermodal freight terminal is feasible, then the development of infrastructure along with the necessary ancillary services essential to support that infrastructure becomes a viable economic development model.

The study was conducted utilizing primary research derived from surveys of area importers and exporters conducted by WTCBN and using data collected by the Department of Homeland Security.

Study Findings

While it was originally theorized that the Western New York area would have significant import and export container volume via Canadian ports, the current volume was less than anticipated; identified volumes may not be sufficient for the Canadian railroads to extend container service to Buffalo.

When considering all North American ports, the overall volume of loaded containers originating in or destined to Buffalo and Western New York totals about 50,000[39] per year. Significant additional volume exists because of an imbalance of import and export volumes and because of imperfect matching of inbound and outbound loads: many containers are empty when moving to or from the area .The volume of empty containers is close to the volume of loaded containers bringing the volume available to drayage companies and railroads close to 100,000 TEUS.

Because this traffic is routed through many ports in the U.S. and Canada, the Buffalo area volume alone may not be sufficient over any single traffic lane to justify a freight terminal in addition to those now operated locally by CSX Transportation and Norfolk Southern (NS). Additional volume is available from a larger catchment area including Syracuse, Erie and Pittsburgh PA, and Cleveland, but a new Buffalo terminal would have to compete with established services at these cities.

A more promising supplement to the containers now originating in or destined to the Buffalo and Western New York area is the overhead traffic from nearby Ontario, Canada. Overhead traffic refers to traffic which originates and terminates outside the local area; through traffic.[40]

The study found that well over 100,000 TEUS (loaded) move between consignees/ shippers in Ontario and U.S. ports .Generally, these containers do not move by rail, rather the containers move through Buffalo by truck to their end destination. Given Buffalo's strategic geographic proximity, the opportunity exists for an intermodal freight terminal to serve outward and inward Canadian freight traffic. Existing facilities together with expansion to brownfields sites present an opportunity to provide the linkages that allows containers to be transferred from truck to rail (or rail to truck). The net results would result in lower transportation costs for area companies, a reduced carbon footprint, and provide a potential economic stimulus on currently unused brownfields. With

[39] The unit of measure in this report is the "TEU" which is discussed in the Intermodal Opportunity section.
[40] A railroad's traffic which originates and terminates on other railroads, off-line, or takes other forum of transportation.

the combined volume from Ontario and Western New York container and chassis pools could be established:

> At major seaports and inland ports there are container pools or depots from which shippers obtain empty containers to load for export and to which consignees return empty containers after they are unloaded. Because there is no container pool at Buffalo, these empty containers must be drayed to or from the distant container pool .In effect, area companies must pay for two trips to the port – one to get the loaded container, another to return the empty container.

It should be noted that the focus of the study was on containers with U.S. origins or destinations, and no surveys were conducted with Canadian consignees or shippers. The Canadian overhead traffic is key to justification of the freight terminal and logistics park .Additional study and survey work of this traffic is recommended.

Conclusions

- Buffalo has a minimum volume of 250,000 TEUS per year. This volume includes (1) Western New York origins/destinations, (2) overhead traffic through Buffalo to/from Ontario, Canada and (3) empty containers returning to ports.
- Existing regional infrastructure (rail, highway, warehousing and both government and private international trade services in the U.S. and Canada) are adequate for initial marketing of Niagara Intermodal services. The area has the volume, the physical infrastructure and excellent trade services on both sides of the border, but they have not been packaged and marketed to users of international intermodal cargo services.

  The area is recognized as a major gateway for trade between the U.S. and Canada, but the more than 250,000 TEUS of available *intercontinental* traffic has received little attention.
- With successful marketing additional infrastructure will be needed. Certain brownfields sites should be evaluated and secured for intermodal park and related development.
- Development of intercontinental intermodal services in Buffalo will benefit local industry in the following ways:

  - Reduced transportation costs (fuel, driver time)

  - Better frequency and transit times

  - Added opportunity for providing logistics services.
- A number of service providers, both public and private, must be coordinated and marketed together. An existing organization should be designated and funded to perform these functions. (Creation of an additional organization is not recommended.)

  In packaging and branding an effort should be made to include the entire bi-national region (e.g. through the use of a word such as “Niagara”) and to be inclusive of all logistics services providers and modes of transportation. Hence, a name like, Niagara Multimodal Linkway.

Organization Background

World Trade Center Buffalo Niagara

World Trade Center Buffalo Niagara (WTCBN) is a twenty year old international business development and trade services organization committed to the practice of strategic development and implementation services for global markets, including a concentrated practice in logistics and transportation support services. Our commitment is to provide vital trade services and to support companies through our consulting practice, educational programs, and worldwide membership affiliation.

WTCBN is recognized as a **Center of Excellence** by the World Trade Centers Association and achieved Service Quality Standard Certification. With access to 300 World Trade Centers in 100 countries, WTCBN is licensed by the World Trade Centers Association to serve a bi-national region that includes Western New York, the Southern Tier, the Finger Lakes, and Niagara, Ontario.

Objective

Volume Feasibility Study

An intermodal freight terminal requires significant investment. The decision to make this investment is heavily influenced by the availability in Buffalo Niagara of sufficient volumes of intermodal freight. This volume information is not readily available. A principal reason is that some of the U.S. origin/destination freight crosses the border en route to/from a Canadian port and much of the Canadian origin/destination freight crosses the border en route to/from a U.S. port. Overseas intermodal traffic crossing the land border by truck may not be differentiated from intra North American truck traffic by customs and international bridge authorities.

WTCBN expanded Wilbur Smith Associates' original study to include a project determining import/export volume levels and the feasibility of a rail intermodal freight terminal in Western New York. The study addresses information shortcoming and limitations of trade data currently available by conducting primary research. The study is intended to bridge the information gap from both government and private sources to determine the volume of overseas shipping containers, expressed in truck equivalent units, arriving in or departing from the Buffalo/Niagara region via Canadian ports. As mentioned, the data collection component of the study surveyed area importers, exporters, freight forwarders and other stakeholders to verify the data and to gain insights on origins/destinations, routing and price sensitivity.

The principal objective of this study is to determine available volumes of intermodal freight through (a) analysis of international trade data and (b) surveys of area importers and exporters. The study's official title is: Buffalo Niagara Intermodal Freight Terminal Volume Feasibility Study in Western New York (herein referred to as "The Intermodal Study").

Background & Opportunity

Buffalo Niagara's Historical Role

Buffalo Niagara has a storied past in intermodal transportation, including use of lake ships, canal boats, rail and highway. Changes in global trade now offer an opportunity to build on existing infrastructure and make Buffalo Niagara a center in the movement of intermodal freight containers arriving or departing North America.

Current Situation

Currently, Buffalo Niagara is the number two international gateway for trade between the United States and Canada .With 24/7/365 operations at the border, the bi-national Buffalo Niagara area has significant trade infrastructure, including: customs brokers, freight forwarders, logistics firms, and the government agencies that regulate trade. Because of this local expertise, the local offices of customs brokers provide "back office" brokerage and forwarding services for ports around the country. Additionally, area law firms, accounting firms, and other trade service providers offer special expertise in immigrations, customs and international accounting.

Even with this infrastructure, the area has been largely bypassed by the fastest growing segment of international trade: intermodal, containerized freight. The opportunity will continue to diminish as other cities and regions ramp up capacity and infrastructure to support intermodal, containerized freight. The lack of container pools and container rail service increases costs for local industry and makes them less competitive.

Intermodal Opportunity

Most goods moving to and from North America move in intermodal containers: the 20 foot and 40 foot containers that move from origin to destination via vessel, rail and truck. The standard unit of measurement for this trade is the Twenty-foot Equivalent Unit (TEU). Growth has been dramatic: from less than 40 million TEUs in 1995 to 85 million TEUs in 2005 and projections of 120 million TEUs in 2010. This enormous growth has caused congestion at the places where the containers are transferred from one mode of transportation to another: the ports where they move from vessel to rail or truck and the intermodal rail yards where the containers move from rail to truck.

Expansion opportunities at the ocean ports are very limited and there are bottlenecks on the highways serving them. Yet, rail connections to the ports are *under*-utilized. The congestion problems can be overcome by quickly transferring containers from vessels to rail (or vice-versa) at the ocean port and moving the containers by rail to inland intermodal freight terminals for transfer to truck and final delivery.

Additional inland intermodal freight terminals are needed to handle the projected volumes. Such terminals must have rail connections to the ocean ports and highway connections to the end users. The Buffalo Niagara region is ideally situated for such a facility.[41] The Buffalo area has the following differentiators:

[41] Buffalo Niagara is an ideal location for an *inland* intermodal terminal and, possibly, a short sea shipping location .However, due to St. Lawrence Seaway size limitations, container ships cannot use it as an ocean port.

Four Class One railroads serve the region from ocean ports: CSX, Norfolk Southern, Canadian Pacific and Canadian National .Buffalo Niagara has rail connections to major ocean ports in both the United States and Canada.

Highway corridors serving Buffalo are ideal for reaching many end users 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 a large population in New York, nearby states and Ontario.

Intermodal freight terminals in Buffalo Niagara will reduce costs for local manufacturers and distributors and make them more competitive in the global marketplace. Reduced costs also make the region more attractive to manufacturers not yet located here .Cost reductions can be significant: the cost of trucking a container to another port is $600 dollars or more and many area businesses handle hundreds of containers per year.

The opportunity to create jobs in the region includes the logistics sector, but also includes the opportunity to add value to products near the point where they change modes of transportation.[42] In Kansas City a similar intermodal terminal and logistics park are being built. The terminal is expected to generate 350 jobs, but the adjacent logistics park is expected to generate 7,000 new jobs. (See Appendix C)

Data Collection

Data Target

The Intermodal Study measures the volume of containers moving between the study area and overseas locations. .The primary sources for this data are filings with U.S. Customs and Border Protection (CBP). These filings include (a) the manifests for waterborne imports and exports (the Automated Manifest System – AMS) and (b) the filings of Customs entry information for imports and Automated Export System (AES) information for exports. The former is obtained directly from CBP and the latter is obtained from the Foreign Trade Division, U.S. Census Bureau, U.S. Department of Commerce .Discussions of these information sources can be found at the website of the ITDU--International Trade Data Users, Inc., http://www.itdu.org/

For purposes of this study it was determined that the manifest data was more useful than the Customs entry and AES information. The manifest data focuses on trade lanes (port of origin, port of destination, ocean carrier) and volume of containers while the Customs entry and AES information focuses on classification, value and enforcement information.

It should be noted that intermodal containers exported by truck or rail at land border crossings for furtherance by ocean carrier at a port in Canada or Mexico are not treated as waterborne exports. Intermodal containers with an origin or destination in Canada, moving via U.S. ports, are included as waterborne exports or imports.

WTCBN also considered other data sources, including traffic counts kept by the operators of international bridges and work statistics kept by CPB. Neither data source adequately distinguishes between intermodal container traffic and truck traffic. Information from the U.S.

[42] An example: Cheerios are made in Buffalo, not because the grain is grown nearby, but because that grain changed transportation modes in Buffalo.

Department of Transportation (Bureau of Transportation Statistics and Maritime Administration) did not provide the required information.

Information Sources

Primary Sources

Numerous information shortcomings and limitations exist with current trade data, including data used for The Intermodal Survey. In an effort to overcome these barriers, WTCBN conducted primary research to verify existing data sources and contribute to the existing literature.

WTCBN extracted data showed that, depending on trade lane and direction (inbound or outbound) from 10 to 50 companies accounted for 60 to 80% of volume. Since many of these companies are current WTCBN members, electronic and direct communication in the form of a survey instruments was utilized to solicit responses with above average results.

Secondary Sources

Origin-destination information from Global Insight's Trade and Transportation Group was considered as well as products available through the Foreign Trade Division of the Census Bureau. However, these sources did not include the level of detail needed.

Focus shifted to parties that add value to the manifest information obtained from CBP. These parties included PIERS, Zepol and CenTradeX .The PIERS data was found most suitable.

PIERS Data

This Buffalo Niagara Intermodal Freight Terminal Volume Feasibility Study arrived at estimated volumes by using surveys of consignees and exporters to supplement data extracted from PIERS.

PIERS is a division of Commonwealth Business Media, Inc .PIERS traces its roots to the founding of The Journal of Commerce in 1827. It obtains data on waterborne imports and exports from bills of lading and ship's manifests filed with U.S. Customs and Border Protection (CBP) .PIERS claims to standardize, validate and correct the information received from CBP.

The primary data source for PIERS is the Automated Manifest System (AMS) from CBP. In this report the data is referred to as the "AMS data" .CBP requires that ocean carriers transmit to CBP the manifests for the cargo they are carrying from foreign ports to U.S. ports. The AMS has fields for various kinds of information, but for some fields their use and format are not rigorously defined. For example, there is no specific field for a ZIP or postal code. Instead there are free form fields for address information. This, coupled with the fact that original data entry is usually by the foreign offices of the various ocean carriers, results in inconsistencies. These inconsistencies pass from the ocean carrier to CBP, from CBP to PIERS and from PIERS to its users.

Here are some of the issues with the data and various steps WTCBN has taken to overcome them.

Because addresses are written into free form data fields by many different people, it is difficult to select shipments for a specific geographical area (such as Buffalo) .WTCBN largely overcame this issue by using complex search criteria such as "NY adjacent to 14*" (Buffalo area ZIP codes begin with

14) where the asterisk is a wildcard.

Similarly, company names are entered into free form fields by many different people .Often we find a dozen or more variations on a name .This makes aggregation and ranking of importers and exporters difficult .WTCBN overcame this limitation by using methods such as sorting records based on the first nine characters from the name field and by making certain manual adjustments.

In international trade the terms “shipper” and “consignee” may be used differently by various parties .Most often, for example, consignee is used for the party to whom the goods are shipped .However, in some cases the consignee name and address is that of a central office, not that of the party to whom the goods are shipped. WTCBN used the survey to resolve this issue.

The unit of measure for the Intermodal Study is the Twenty-foot Equivalent Unit (TEU) .Because this measure is not included in the AMS data, PIERS uses an algorithm to calculate it .In some cases the algorithm appears to underreport the actual number of TEUS .WTCBN used the survey to verify and correct TEU counts.

Some intermodal containers arriving or departing the United States use Canadian ocean ports .Some of these shipments are included in the AMS data, but others are not .WTCBN used the survey to supplement the AMS data.

Study Plan

Data Extraction and Analysis

The PIERS database includes detailed records of bills of lading for maritime imports and exports at all U.S. ports and certain Canadian ports. The following steps were taken with this data:

Three North American geographical areas were defined as of interest for the Study:

1) The U.S. area with ZIP codes beginning with “14” .This area includes that part of New York State within about 100 miles of Buffalo .Cities include Buffalo, Niagara Falls, Jamestown, Batavia and Rochester.

2) That part of Ontario Canada with Postal Codes beginning with “M” and select codes beginning with “L” .The defined area includes Toronto and the “Golden Horseshoe” area from Toronto to Niagara – including Mississauga, Oakville, Hamilton and St. Catharines.

3) A wider area of the U.S. within about a four-hour drive of Buffalo. Cities include Syracuse, NY; Erie and Pittsburgh, PA; and Cleveland OH.

Records were extracted if they included a consignee or exporter in one of the designated geographical area.

Records were sorted by consignee or exporter and subtotals were created for each consignee or exporter.

The subtotal records were ranked in descending order by volume (TEUS).

Survey

As mentioned previously, the extracted data showed that, depending on trade lane and direction (inbound or outbound) from 10 to 50 companies accounted for 60 to 80% of volume.

All high-ranking consignees and exporters were selected to be surveyed.

Because the data did not include contact names or phone numbers, World Trade Center databases as well as Web searches were used to find initial contacts.

In the initial telephone contact the responsible party for import/export transactions was identified and, when possible, reached to provide an explanation of the Study.

The survey instrument was emailed to the responsible party for completion.

Follow-up phone calls were made to a) obtain the surveys and b) to resolve any anomalies in the responses.

Survey Process

Selection Criteria

The AMS data for calendar year 2007 for the Buffalo/Western New York area was sub-totaled on the consignee or exporter .The consignees or exporters were then ranked by volume (TEUs). The top 30 consignees and top 5 exporters accounted for over 50% of overall volume. Each of these 35 companies and a sampling of other high ranking consignees or exporters were selected for the survey.

Survey Steps

Obtain Contact Information

Initial Contact; Explanation of Study

Send Survey Instrument

Follow-up;

No Response/Incomplete Response

If no response was received or if the response was materially incomplete, searches were made of the AMS data to obtain detailed bill of lading information for the consignee/exporter. In most cases it was possible to answer the survey questions from this detailed bill of lading data.

Summary of Survey & Research Responses

	Companies		TEUS Represented by Companies					
			Import		Export		Total	
	No.	%	No.	%	No.	%	No.	%
Survey Population								
Total Population in PIERS	2680		33786		15034		48820	
Selected for Survey	72	2.7%	20613	61.0%	9522	63.3%	30135	61.7%
Survey Results								
Survey Responses/Research	34	47.2%	14635	71.0%	7618	80.0%	22253	73.8%
No Response	38	52.8%	5978	29.0%	1904	20.0%	7882	26.2%

Note that although only 2.7% of companies were selected for the survey, those companies accounted for over 60% of the volume.

Findings & Opportunity Assessment

In reviewing potential opportunities provided by the new data, the emphasis is on containers with an origin or destination in the Buffalo/Western New York area, or an origin or destination in Ontario Canada since these containers either do or easily could pass through Buffalo .Minimum container volumes for 2007 are summarized in this table.

Loaded TEUS Origin/ Destination / Port	Buffalo/Rochester/ Western New York		Toronto/ Golden Horseshoe		TEUS for Port
	Inbound	Outbound	Inbound	Outbound	
New York	12738	3768	22313	11206	50025
Los Angeles	3637	944	9563	5832	19976
Charleston	559	2479	825	7613	11476
Long Beach	5206	604	4031	945	10786
Savannah	507	732	1269	7456	9964
Tacoma	2011	430	6832	616	9889
Seattle	2179	259	6096	433	8967
Philadelphia	408	257	6215	1186	8066
Norfolk	610	1977	1203	3546	7336
Vancouver BC /1	5566	1391	/2	/2	6957
Baltimore	869	517	1269	132	2787
Oakland	1046	70	698	840	2654
Wilmington DE	42	58	1801		1901
Wilmington NC		1399			1399
Pt. Everglades	131	116	455	599	1301
Pennsauken	133	836			969
Miami	180		359	141	680
Houston				615	615
Chester	183	137	266		586
New Orleans	105	90	301		496
Jacksonville	87	123	121	63	394
Boston	222			162	384
Newport News		91	55	122	268
Portland OR	127		123		250
W Palm Beach			190		190
Panama Cy FL	48		58		106
Loaded Total	36594	16278	64043	41507	158422
Empty TEUS					
Estimated @ ≈90% of Loaded Containers	12619	32935			45553
Estimated @ ≈40% of Loaded Containers			3081	25617	28698
Total TEUS	**49213**	**49213**	**67124**	**67124**	**232674**

/1 Counts include portions of PA & OH

/2 A substantial volume to/from Toronto moves through Canadian ports, but was not analyzed.

Volumes via Canadian Ports

The existing volume of TEUs with a destination in the states of New York, Pennsylvania and Ohio were lower than anticipated and would probably not cause a Canadian railroad to

provide rail service to Buffalo. However, if the Canadian railroads have a competitive service/price offering, there may be a marketing opportunity for them. If they succeed at building their volume, they can further improve their service and the overall cost for consignees and exporters by providing rail service to an intermodal freight terminal or logistics park in Buffalo.

Volumes from/to Buffalo and Western New York via U.S. Ports

The analysis of AMS data and survey results identified a total of just over 50,000 TEUS per year, inbound and outbound, for the entire region. This volume is spread across the region: Northern Pennsylvania, Jamestown, Corning, Waterloo and Rochester as well as in the immediate Buffalo area. Because there is no container pool in Buffalo, in most cases an empty container is drayed to/from the seaport; this move of the empty container is in addition to the 50,000 loaded TEUS and roughly doubles the opportunity for service providers. Some of these containers move from/to ports without passing through Buffalo. For example, Rochester, Waterloo and Corning containers move to the port of New York by travelling South and East, not west toward Buffalo.

Volumes from/to Ontario via U.S. Ports

Overhead traffic between Ontario, Canada and U.S. ports offers the greatest opportunity for a logistics park in the Buffalo area. The AMS data showed over 100,000 TEUS per year passing through the U.S. en route to or from the limited part of Ontario analyzed. Additional volume is available in adjacent parts of Ontario such as Kitchener/Waterloo.

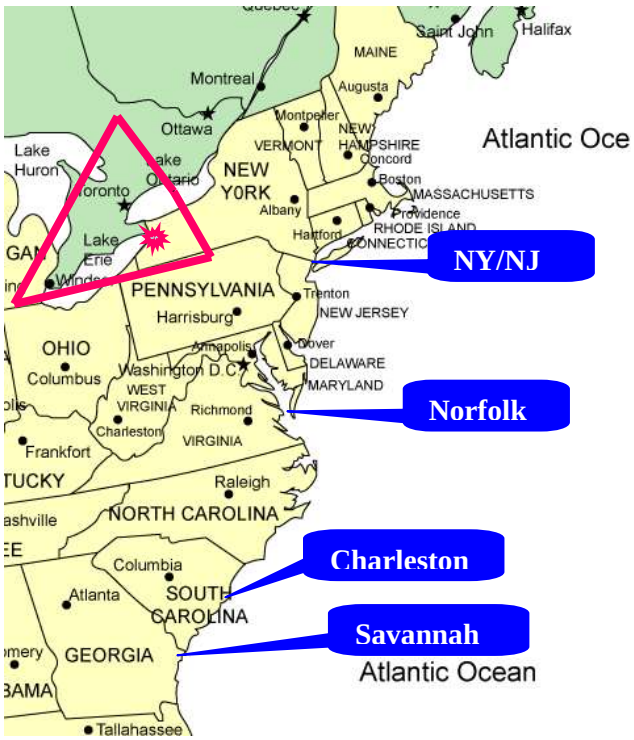
This traffic is concentrated in three lanes:

Ontario – Buffalo – New York

Ontario – Buffalo – Other East Coast (Charleston, Savannah, Philadelphia)

Ontario – Buffalo (or Sarnia/Pt. Huron) – U.S. West Coast via Chicago

An intermodal freight terminal in Buffalo would provide the transfer point between rail service to the U.S. ports and truck service to the consignees and exporters in Ontario. Buffalo is within a 2-hour drive of much of the industrialized part of Ontario: Toronto is in Buffalo's catchment area .For many Ontario consignees and exporters, an intermodal freight terminal in Buffalo serving U.S. ports would eliminate the long truck haul to the ports, allow drivers same day return to their home base and reduce fuel costs.



With service by both CSX and NS, a Buffalo intermodal freight terminal could act as a rail hub with spokes extending to New York,

other East Coast ports and to Chicago for connections to Long Beach/Los Angeles and Tacoma/Seattle.

A similar operation attempted in Ontario would require costly interline arrangements between railroads.

Although container pools are available in Toronto, some containers are drayed empty to/from the U.S. seaport. The estimated volume of empty TEUS is almost 30,000 for the Toronto/Golden Horseshoe area with additional volume available from other parts of Ontario.

Niagara Intermodal Opportunities

The Buffalo/Western New York volumes together with the volumes for Ontario provide the critical mass for branding and marketing the currently available logistics services in the area and for investing in infrastructure development. Niagara logistics facilities would serve both countries. A branded package (such as "Niagara Intermodal Linkway"), consisting of sites and service providers in the vicinity of intermodal freight terminals, would provide a wide range of ancillary services to the inbound and outbound freight .Examples include:

- Inbound Distribution .Devanning (stripping) of containers for furtherance of the contents to locations in *both* the United States and Canada .Being located at the border and with both U.S. and Canadian government agencies and customs brokers, a single distribution facility can serve both countries.

- Foreign Trade Zone .Imported goods can be warehoused in a foreign trade zone without the payment of duties and taxes in either the U.S. or Canada .Later, depending on market demand, goods can be withdrawn and imported into the country where needed.

- Labeling and Packaging .Labeling and packaging may differ for the two countries, e.g. English/French/metric for Canada and English/Spanish/imperial for the U.S .Appropriate labeling and packaging can be accomplished at the Niagara Intermodal Linway.

- Outbound consolidation .Freight forwarders and others can consolidate LTL shipments from a number of shippers in Canada and the U.S. in a single container for a destination overseas.

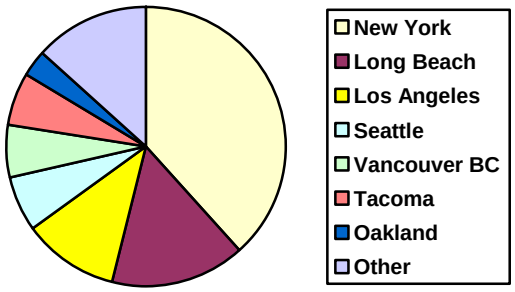
- Container pools and neutral chassis pools would make it possible to match inbound and outbound loads, reducing the need to dray empty containers to and from the seaports.

Inbound to Buffalo/Western New York[43]

VOLUME (TEUS): Annual 36,594 Weekly 704

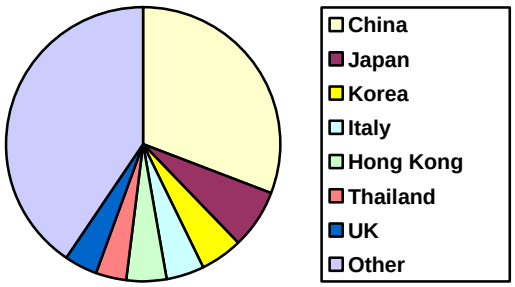
Seaports Used (rank)

1. New York/New Jersey
2. Long Beach
3. Los Angeles
4. Seattle
5. Vancouver, BC



Origin Countries (rank)

1. China
2. Japan
3. Korea
4. Italy
5. Hong Kong



High Volume Consignees (alphabetical)

Cliffstar Corporation
Cummins Inc.
Delphi Harrison Thermal
Eastman Kodak
Goodyear Dunlop Tires N.A.
Hardinge Inc.
Robinson Home Products
Sentry Group
Wegmans Food Markets
Xerox Corporation

Comments

The top 30 consignees accounted for 50% of inbound TEUS to Western New York.

The AMS data included 2366 TEUS with a Western New York destination via the port of Vancouver, BC. One company accounted for about half of the total. Based on survey results the volume of TEUS via Vancouver is underreported by about 19%.

Empty containers being brought to Buffalo/Western New York for loading are not included in the volume shown above. The empty containers are estimated at 12,619 TEUS and represent additional opportunity for drayage companies, railroads and an intermodal transfer facility.

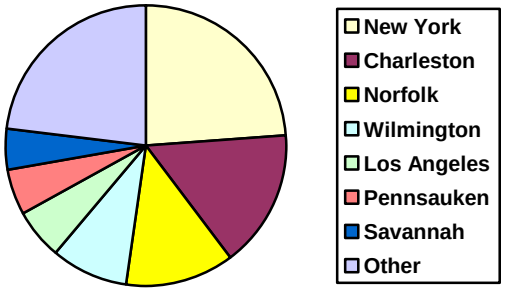
[43] Includes ZIP codes beginning with 14 .This area includes Niagara Falls, Rochester, Batavia, Corning, Olean, Jamestown and Buffalo.

Outbound from Buffalo/Western New York[44]

VOLUME (TEUS): Annual 16,881 Weekly 325

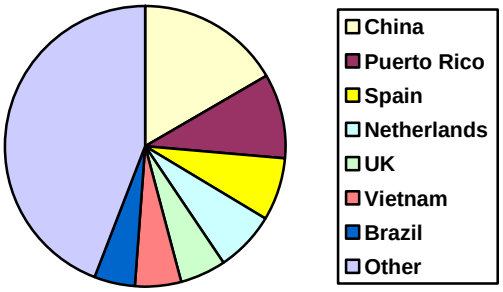
Seaports Used (rank)

1. New York/New Jersey
2. Charleston
3. Norfolk
4. Wilmington NC
5. Los Angeles



Destination Countries (rank)

1. China
2. Puerto Rico
3. Spain
4. Netherlands
5. United Kingdom



High Volume Exporters (alphabetical)

Baillie/American Lumber	O-AT-KA Milk Products
Corning Glass Works.	Rich Products
Cummins Inc.	Seneca Foods
Eastman Kodak	Sentry Group
Morton Salt	Xerox Corporation

Comments

The top 5 exporters account for over 50% of TEUS exported from the area. Over 85% of exports originate at locations 50 to 100 miles East or South of Buffalo. These include manufactured products from the Rochester area; commodities such as lumber and salt; and agricultural products.

Empty containers being returned to ports or container pools after unloading are not included in the volume shown above. The empty containers are estimated at 32,935 TEUS and represent additional opportunity for drayage companies, railroads and an intermodal transfer facility.

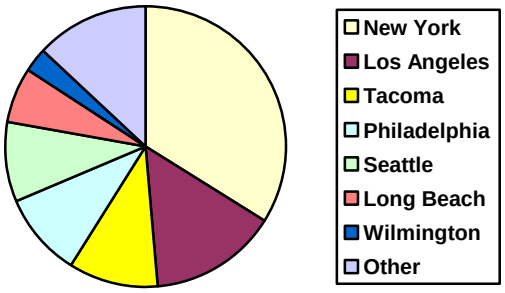
[44] Includes ZIP codes beginning with 14 .This area includes Niagara Falls, Rochester, Batavia, Corning, Olean, Jamestown and Buffalo.

Inbound to Ontario, Canada[45]

VOLUME (TEUS): Annual 65,091 Weekly 1,252

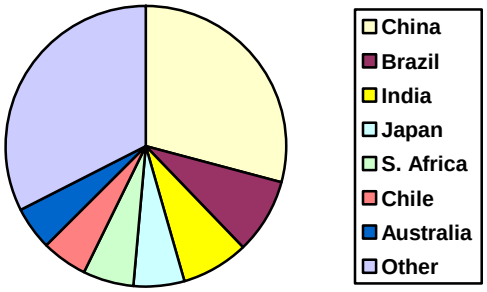
U.S. Seaports Used (rank)

1. New York/New Jersey
2. Los Angeles
3. Tacoma
4. Philadelphia
5. Seattle



Origin Countries (rank)

1. China
2. Brazil
3. India
4. Japan
5. South Africa



High Volume Consignees (alphabetical)

AMC Direct Inc.
Canadian Paper Connection
Canadian Tire Corporation, Ltd.
Colors Fruit (Canada) Inc.
Dynamic Tire Corporation
Export Packers Co. Ltd.
Honda Canada
Liquor Control Board of Ontario
Veitsch Radex America Inc.
Wal-Mart Canada

Comments

The top 36 consignees accounted for 50% of inbound TEUS via U.S. ports to this part of Ontario, Canada.

Shipments via West Coast ports probably moved through the Sarnia-Port Huron border crossing, not Buffalo .The New York, Philadelphia, and Wilmington shipments as well as additional volume, totaling 4500 TEUS, at other East Coast ports (Baltimore, Savannah, Norfolk and Charleston) probably crossed the border at Buffalo Niagara.

Although there are container pools in the Toronto area, some containers are drayed empty to or from U.S. seaports .The empty containers represent approximately 30,000 additional TEUS that could be served at logistics facilities in Buffalo.

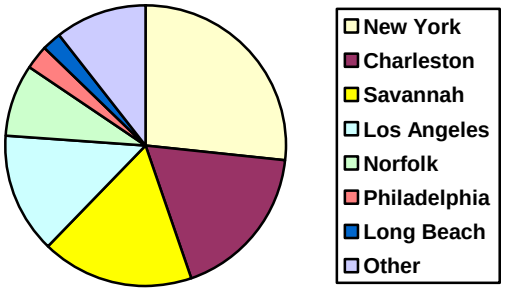
[45] Toronto and "Golden Horseshoe" area around the West end of Lake Ontario to the U.S. border .Guelph, Cambridge, Kitchener/Waterloo, London and Brantford are not included in the counts and would provide additional volumes.

Outbound from Ontario, Canada[46]

VOLUME (TEUS): Annual 42,184 Weekly 811

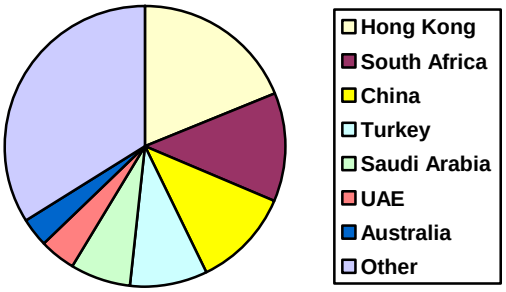
Seaports Used (rank)

1. New York/New Jersey
2. Charleston
3. Savannah
4. Los Angeles
5. Norfolk



Destination Countries (rank)

1. Hong Kong
2. South Africa
3. China
4. Turkey
5. Saudi Arabia



High Volume Exporters (alphabetical)

Asico Int'l Trading	Scrap plastic	General Motors of Canada	Auto parts
Astart Canada Inc.	Scrap plastic	On My Way Inc.	[Central America]
Export Packers.	Frozen meat	Ronald A. Chisholm	Frozen meat
Fortune Metals	Scrap metal	Triple Eagle Logistics	Scrap plastic
G.A. Paper Int'l	Paper	YMI International	Scrap plastic

Comments

The top 10 exporters account for over 67% of TEUS exported from the area via U.S. ports.

Many of the commodities shipped via U.S. ports have greater transportation cost sensitivity than transit time sensitivity. These commodities are good candidates for intermodal rail service from Buffalo to the seaports.

[46] Toronto and "Golden Horseshoe" area around the West end of Lake Ontario to the U.S. border .Guelph, Cambridge, Kitchener/Waterloo and Brantford are not included in the counts and would provide additional volumes .TEUS shipped via West Coast ports are probably routed through Sarnia-Pt. Huron.

Inbound to Erie, PA

VOLUME (TEUS): Annual 7,323 Weekly 141

High Volume Consignees (alphabetical)

General Electric Transportation
Bush Industries
Lord Corp.

Comments

Inbound volume at Erie, PA is dominated by General Electric Transportation and Bush Industries. GE in Erie uses Vancouver BC for about 25% of its imports.

Outbound from Erie, PA

VOLUME (TEUS): Annual 1,068 Weekly 21

High Volume Exporters (alphabetical)

Erie Plastics
Flagship Container Line
General Electric Transportation
Logistics Plus International
Lord
Corporation

Comments

Inbound to Pittsburgh, PA

VOLUME (TEUS): Annual 25,344 Weekly 487

High Volume Consignees (alphabetical)

BHP Billiton Marketing	Lanxess Corp.
Calgon Carbon	Pittsburgh Coring Corp.
Del Monte Corporation	Pittsburgh Forest Products
Dick's Sporting Goods	Sony Technology Center
Gurrentz International	Villares Corporation

Comments

Dick's Sporting Goods is shown as consignee for over 25% of volume at Pittsburgh.

Outbound from Pittsburgh, PA

VOLUME (TEUS): Annual 48,267 Weekly 928

High Volume Exporters (alphabetical)

Alcoa Packaging	H.J. Heinz
American Iron Oxide	Lanxess Corporation
Bayer Pharmaceuticals	PPG Industries
Frigidaire	Reynolds Aluminum
INDSPEC Chemical Corporation	Wimco Metals Inc.

Comments

PPG and Alcoa are each shown as consignee for more than 25% of TEUS at Pittsburgh.

Inbound to Cleveland, OH

VOLUME (TEUS): Annual 25,190 Weekly 484

High Volume Consignees (alphabetical)

Alcan Specialty Aluminas	GM c/o Cleveland Processing Center
CDW Service Center	Hinkley Lighting
Enerco Group	Kichler Lighting
G&S Metal Products	NewPort Tank Containers
General Electric Company	Premier Manufacturing

Comments

Cleveland has about 40 companies with 100 or more TEUS per year; there is less domination by the top 2 or 3 consignees.

Outbound from Cleveland, OH

VOLUME (TEUS): Annual 11,891 Weekly 229

High Volume Exporters (alphabetical)

Lubrizol Advanced Materials	NewPort Tank Containers
Lubrizol (Noveon)	
Flow Polymers, Inc.	
Kirby Company	
Linde Gas	

Comments

Freight forwarders are shown as the exporter for about 25% of TEUS from Cleveland.

Inbound to Syracuse, NY

VOLUME (TEUS): Annual 1,963 Weekly 38

High Volume Consignees (alphabetical)

Advanced Motors & Drives
Carrier Corp.
Mezzalingua Associates
Nationwide Beauty & Barber Supply
Southern Wine & Spirits
Syracuse China

Comments

Outbound from Syracuse, NY

VOLUME (TEUS): Annual 4,912 Weekly 94

High Volume Exporters (alphabetical)

Carrier Corp.
Ontario International Inc.

Comments

A single exporter, Carrier, is responsible for more than 50% of exports.

Volume to NY, PA and OH via Vancouver

Inbound Volume

The AMS data included 10,967 TEUS with a consignee in the states of New York, Pennsylvania and Ohio. Survey results suggest that the AMS data may underreport the volume by as much as 20%; actual volume is estimated to be 13,160 TEUS. Five companies accounted for 50% of the total.

The AMS data included 2,366 TEUS with a destination in Western New York. One company accounted for almost half of this volume.

Outbound Volume

The AMS data does not include exports via Canadian ports. The surveys showed only minor use of Canadian ports.

High Volume Consignees Using Vancouver (AMS data)

Robinson Home Pdts	Buffalo NY	Johnson-Rose	Lockport NY
GE Transportation	Erie PA	Trefilarbed Kiswire	Copley OH
GM.	Cleveland OH	Perfect Fit Gloves	Buffalo NY
East Erie Whse	Erie PA	KOA Speer Elec.	Bradford PA
American Sales	Lancaster NY	Make Waves Inst.	Depew NY

Appendix A

Survey Instrument

Buffalo Niagara Intermodal Freight Terminal Volume Feasibility Study

INTRODUCTION:

World Trade Center Buffalo Niagara is conducting a survey to determine the feasibility of additional intermodal services in the area. This survey should be completed by the person responsible for intermodal imports and exports.

As you may know, CSX railroad has recently opened an intermodal terminal in Buffalo. We are studying the feasibility of a second intermodal rail terminal to serve other U.S. and Canadian railroads. The new terminal would offer intermodal rail service to West Coast and East Coast ports in both the U.S. and Canada.

We are communicating with freight forwarders, shippers and receivers who will potentially benefit from using this yard .Your company was chosen because AMS data shows you with a significant volume of inbound or outbound containers .We need your help in verifying whether these shipments are actually delivered to or originate from this area .This will help make the case with the railroads and steamship companies for additional service and investment.

SECTION I: INBOUND SHIPMENTS:

If you do not receive containers from other countries, skip to Section II.

1. What is the percentage of containers you **RECEIVE** from:

_____**%** Central/South America _____% Europe
_____% Asia _____% Australia
_____% Other

2. How many containers do you receive per year?

_____ 20 foot containers _____ 40 foot containers

3. What are your Peak Months**?**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

4. What ports do you use for **INBOUND** container cargo?

Port	**% of Containers**

5. Where are your inbound containers trucked from? (Location of current terminal or port)

_____

6. What rail carriers handle your inbound containers?

_____

7. What specific improvements are you seeking for your **INBOUND** container shipments?

_____
_____
_____

SECTION II: OUTBOUND SHIPMENTS :

1. What is the percentage of containers you **SEND** to…

_____% Central/South America _____% Europe
_____% Asia _____% Australia
_____% Other

2. How many containers do you **SEND** each year?

_____ 20 foot containers _____ 40 foot containers

3. What are your Peak Months**?**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

4. Are there any special requirements for your shipments; for example, refrigerated service, or special security measures?

_____ No
_____ Yes .If yes, please describe

_____

_____

5. Do you arrange your own transportation or do you use a third party such as a freight forwarder? What third parties do you currently use?

_____

_____

6. What ports do you use for **OUTBOUND** container cargo?

Port	**% of Containers**

7. Where your outbound containers trucked to? (Location of current terminal or port)

_____

8. What rail carriers handle your outbound containers?

_____

9. What specific improvements are you seeking for your **OUTBOUND** container shipments?

_____
_____
_____

Please provide your name, address and contact information.

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Email: _____

Please fax or email this completed form to World Trade Center Buffalo Niagara at:
Fax: 716-852-7161
Email: research1@wtcbn.com

If you have any questions please call Robin Mitchell or John Owen at 716-852-7160.

Survey Compilation

A compilation of the survey results are in an attached file.

Appendix B

Survey Anecdotal Comments

The following comments were extracted from the completed surveys:

Company	Importer/ Exporter	Comment
American Wire Tie	Imp	"Better tracking once it has left port"
Baillie/American Lumber	Exp	"Previously looked into using Buffalo rail yard. Major obstacle was lack of appropriate containers and high cost"
Brighton International Products	Imp/Exp	"Lower demurrage, longer free time, fewer waits for rail in Vancouver. Reefers are 50%of containers for outbound"
Chapin Mfg.	Imp/Exp	"On time delivery and container visibility in rail yard"
Cliffstar	Imp/Exp	"Faster service and lower cost"
Crosman Corp	Imp/Exp	"More wait time and faster transit time"
Cummins Inc.	Imp/Exp	"Better costs and reliable transit".
Goodyear/Dunlop NA	Imp/Exp	"Previously used Canadian ports for many inbound but progressively squeezed out by decreasing wait time /increased demurrage"
Johnson Rose	Imp	"Longer free time and lower costs"
Kee Safety	Imp	"Improve rail car availability and reduce lead time"
Robinson Home Products	Imp	"Prefer Canadian route"
US Salt, LLC	Imp/Exp	"Heavier weight limits and lower costs on outbound"
Zurn Industries Inc.	Imp	"Faster delivery- ocean, rail and truck"
Arctic Fisheries Ltd	Imp	"All go to refrigerated warehouse in Boston and trucked around country"
CCMA, LLC	Imp	"HQ in Buffalo but no containers delivered here"
Family Delight Foods	Imp	"None in this area"
Fedmet Resources Inc.	Imp/Exp	"Most containers not destined for this area. For the few that are would probably not use Buffalo because of NY state taxes. Having inventory in this state creates nexus."
Fleetwood Sales	Imp	"Just consigned here. Nothing in this area"

Hardinge Inc	Imp/Exp	"Precision machinery shipments. Move on air-ride trailers. Have had technical problems with rail."
Henkel Corp	Exp	"Most of current production will move to China"
New Era Cap	Imp	"None in this area. All to Alabama factory"
NTC Marketing	Imp	"None in this area. All to 9 distribution centers.
O-AT-KA Milk	Imp/Exp	"Most of intermodal in and outbound are set up by our customers We cannot provide accurate info"
Pacific High Tech	Imp	"None in this area"
Treibacher Schleifmittel	Imp	"Not interested, short staffed, too busy don't see benefit"
Wegmans	Imp	"Most containers do not come into this area"

Appendix C

Case Study: KC Logistics Park (Inland Port)

His past year and current year has been somewhat of a disappointment for transportation providers .The trucking industry has seen demand shrink, airlines continue to struggle on several key routes, West Coast seaports reported a lackluster 2007 peak shipping season .In addition to this, the prices of gasoline continue to raise.

However, one of the emerging bright spots has been the rail industry, which despite lower intermodal volumes in 2007, is on track to invest billions of dollars in a number of capital improvements this year .The nation's Class I railroads are busy double-tracking main corridors, increasing lift capacity at railheads, and expanding on-dock facilities.

The viability of any inland port hinges on the transportation infrastructure that supports it, and for most that includes intermodal rail, which is why the state of the nation's railroads is so important .Western New York is blessed with a rich infrastructure of roads, rail, air cargo and water access. One recent development is the Kansas City (KC) logistics Park.

The KC Logistics Park serves as a good case study for the Western New York area .The KC Logistics Park, located in Gardner, Kansas, 25 miles southwest of Kansas City, is estimated to have 1,000 acres of land for an intermodal facility and 7 million square feet of distribution and warehouse facilities .The logistics park is adjacent to Interstate 35, State Highway 56 and Burlington Northern Santa Fe's intermodal yard .The current intermodal facility in Kansas City handles about 400,000 containers a year.

The intermodal facility has about a 600-acre park (out of 1,000 acres) for distribution and warehouse facilities .The Logistics Park is part of a trend that has been going on for a decade and a half toward increasing intermodal container traffic on railroads which are currently underutilized .According the Kansas City officials, the fastest growing transportation sector in the nation is in intermodal rail .Rail transportation offers relatively good fuel economy and low costs, while trucks provide flexibility for picking up containers and delivering them

Appendix C

Freight Improvement Resource Guide

This freight improvement guide is intended as a resource for GBNRTC-MPO and local government planners in the Greater Buffalo-Niagara region. This guide can help planners to match potential solutions with a range of freight issues. The matrix presented herein can be used as a starting point to help "brain storm" effective solutions to meet the freight planning goals of local areas. The eventual solutions that are identified may potentially not be included in the matrix and would be customized to the specific area. However, the matrix could provide a starting list from which further alternatives can be explored.

If used for future freight initiatives, this guide would typically be used midway through the analysis. The most important regional freight issues will have already been identified through data gathering and stakeholder outreach. The team will already have an understanding of the strengths and weaknesses of the freight system, how it interacts with the local economy, as well as the demands that are made upon that freight system, not only in the current time period, but also into the future.

The matrix categorizes potential freight solutions along three different dimensions. The rows of the matrix represent freight issues. These are combined into broad issue areas, which are common across the local/regional transportation planning program. These include:

- Land use/zoning issues
- Mobility issues
- Infrastructure preservation/maintenance
- Safety
- Connectivity and access
- Energy and the environment
- Economic development and industrial retention

Within the broad issue areas, common freight issues are presented. Some of these issues may represent higher priorities for specific regions than others.

The second dimension by which potential solutions have been categorized is the broad nature of the solution. Some solutions may relate to changing the manner in which a given freight operation is performed. Other solutions involve the building of new infrastructure, while others require legislative/policy intervention.

Finally, solutions are also categorized by mode, given that each mode will have its own set of solutions. Obviously, the construction of intermodal facilities will overlap across modes, impacting each mode that uses the facilities.

Local Issues in Freight Transportation

Freight Land Use and Zoning Issues

Efficient movement of goods begins with facilities that operate efficiently at both ends of a shipment. For many industrial and warehouse/distribution companies, this means that sufficient land is available at the

facility for all anticipated processes, including any needed expansion. Ideally, these locations are sufficiently isolated from residential uses so as to minimize the possibility of conflict between residential and industrial uses.

Urban Facility Access

Urban facility access issues relate to the ability of goods to move quickly within an urban area and between urban facilities. For truck freight, these issues often relate to the area's truck route network and the degree to which is well connected with regional networks.

Highway Facility Access

Highway facility access can impact land use as trucks travel through local areas to reach their origins/destinations.

Land Use Compatibility

These issues generally relate to the compatibility between freight activities and the surrounding areas and potential conflicts.

General Freight Mobility Issues

Bottlenecks

Bottlenecks are specific chokepoints that hinder or prevent the movement of goods along a corridor. For truck movements, bottlenecks can include weight restrictions on bridges, viaduct clearances, or truck restrictions. Rail bottlenecks can include rail yards, bridges, sections of single track, at-grade crossings and other areas that limit the number and type of train that can pass through a given area. Maritime bottlenecks can include locks or harbor facilities.

Recurring Capacity

Recurring capacity issues typically result from peak congestion in metro areas. These capacity issues have grown in recent years, exacerbated by overall VMT growth as well as the growth in goods movement by truck. In rail recurring capacity could happen on a seasonal basis because of peak shipping seasons. Shipping capacity may be seasonal as well, in part due to water levels and condition. In aviation, capacity occurs during peak travel times.

Non-recurring Capacity

Non-recurring capacity issues result from incidents or accidents (weather?). While occurring less frequently and more randomly than recurring capacity problems, non-recurring incidents can be of greater concern to shippers and receivers because of their unpredictability. An example of this is the common concern of winter weather, crashes from it, slow-down in speeds and the potential for road closures, etc.

Infrastructure Preservation / Maintenance Issues

Issues of infrastructure and preservation and maintenance are associated with damage or aging of transportation facilities.

Safety Issues

Truck safety issues range from single-truck crashes, multi-vehicle collisions, operator fatigue, and gate crossing incidents. Truck/rail incidents, trespasser incidents, and train incidents impact rail. Marine safety

issues often relate to navigation and weather.

Connectivity and Access Issues

Connectivity and access relate to the access that users have to freight transportation networks, as well as the connections between various links within and between freight transportation networks.

Energy and Environment Issues

Freight transportation can impact not only air quality, but also water quality and other issues. Environmental issues may also relate to noise, although these issues interrelate to land use issue concerns as well.

Economic Development and Industrial Retention Issues

Cost Competitiveness of Goods Movement

Cost competitive goods movement can help to attract new employers and provide a competitive advantage to existing employers. Numerous factors can drive cost-competitiveness. Among these are the availability of transportation options and lower cost transportation modes. Other issues relate to the efficiency of transportation operations, such as the availability of backhauls or potential delays. The availability of competitive options also impacts costs.

Industrial Agglomeration and Complementarities

The factors that make an area a good location for a company often make it attractive to competitors in the same industry. This can lead to growth of related services, further increasing the area's attractiveness for the primary industry. The presence of industries can also attract complementary industries that can take advantage of the in-place infrastructure and make use of extra transportation capacity.

Intermodal Issues

Intermodal transportation can not only reduce the costs of goods movement, but can also promote economic growth under the right circumstances. Certain areas become transportation and distribution hubs, thus creating transportation and warehousing jobs in these areas. Transportation and distribution employment in turn generates light manufacturing employment, since many shippers choose to add value of customized products midway through the distribution chain.

Types of Approaches to Freight Issues and Problems

The range of issues involving freight transportation requires a comparably wide range of approaches. These have been grouped here into three categories:

- Operational approaches involve changes to the operation of a freight transportation system.
- Infrastructure approaches involve changes, improvements or additions to goods movement infrastructure.
- Policy and legislative approaches require changes in law or regulation in order impact goods movement.

Of these, operational approaches are often quickest to implement and are relatively low cost, but not always. Infrastructure approaches typically require larger expenditures and multiple years to implement.

Policy/legislative approaches have a mix of costs and benefits depending on the project, and are also typically longer term approaches.

Operational Approaches

Operational approaches to freight issues are intended to improve the efficiency of the existing freight transportation infrastructure.

Truck/Road Approaches

Signage projects are intended to provide better information to truck operators as well as private vehicles. This can include replacement of worn-out signs, way-finding, or new signage to enhance a corridor, route or visibility of a particular location.

ITS approaches: A number of intelligent transportation systems (ITS) approaches can be used to address goods movement problems. Appointment scheduling and computerized dispatch systems can ensure that vehicles are routed efficiently. Weigh-in-motion (WIM) programs can provide an effective means of enforcement for preventing damage from overweight trucks.

Truck parking and staging areas provide operators with places to rest or sleep during mandatory rest periods. An operational approach would include designating truck parking facilities and information projects to improve driver knowledge of available rest areas. Development of new parking and staging facilities is discussed below as an infrastructure approach.

Access management refers to the spacing and form of access to a highway or arterial. Access management techniques include the spacing of entrances, exits and driveways; placement and layout of turning lanes; median treatments that control movement across traffic lanes; integration of pedestrian and transit facilities, and management of the right-of-way to facilitate sight distances and future widening, if needed.

Signal timing projects can improve the speed of goods movement by coordinating signals along a corridor. The projects may need to involve multiple jurisdictions.

Bridge posting policies are intended to ensure that weight limits are posted in such a way as to deter trucks from attempting to cross weight-restricted bridges.

Enforcement approaches are intended to improve regulatory compliance. They can be relatively costly, and unlike infrastructure projects, they must be funded from an agency's operating budget.

Driver training programs are intended to provide information to drivers regarding hazardous conditions such as steep grades or choke points.

Corridor identification and designation programs review an area's existing truck route network and identify changes that can better make.

Rest area AC outlets make electrical power available to parked trucks. This can enable trucks to use line power for onboard needs while eliminating the need for the truck to idle. These devices can help bring an

area into attainment for air quality.

Rail Approaches

Quiet zones are areas where trains traverse grade crossings without sounding horns. This process must be approved by the Federal Railroad Administration (FRA) and usually involves upgrading the grade crossing gates and signals.

In-gate/out-gate terminal flow improvements are focused on the movement of trucks as they enter and leave truck/rail intermodal terminals.

Interchange agreements between railroads provide for the transfer of railcars from one railroad's system to another's. The nature of these interchanges can influence shipment costs.

Speed limits established by the railroad can influence the relative safety of rail-highway grade crossings.

Access agreements are established between railroads to allow one carrier access to shippers on another carrier's rail line. These agreements influence the competitive options of shippers.

Locomotive idling reduction policies are intended to reduce the air pollution associated with idling locomotives, most often switch locomotives used within rail yards. New devices are available that reduce the need for locomotives to run while not in use. Some governments have encouraged railroads to adopt these devices to help bring the area into attainment for air quality.

Green locomotives are newer locomotives that are designed lower air emissions than older models. At times local governments have bought lower emissions locomotives for railroads to help bring the area into attainment for air quality.

Inland customs clearance/container tracking projects enable containerized shipments to be moved out of port, clearing customs at an inland location, reducing congestion at port rail yards. These projects help to make a region more desirable as an intermodal hub for international shipments.

Water/Port Approaches

Loading improvements facilitate handling of cargo.

In-gate/out-gate terminal flow improvements address the efficiency of truck traffic flow within port facilities.

Information technology approaches include a number of intelligent transportation systems (ITS) approaches that can enhance the performance of the freight system. One of these is PORTS, (Physical Oceanographic Real Time System) which provides information regarding channel depth and weather is currently available at a number of U.S. ports.

Maritime facilities: Local governments can support maritime freight operations by using existing economic development programs to support ancillary port businesses, such as ship repair yards, fueling, and chandlering facilities.

Navigational aids: The U.S. Coast Guard is responsible for placement of buoys, beacons, markers and other aids to navigation on waters that are navigable to open sea, and may grant permission to other entities to install supplementary navigation aids. Local governments can work with stakeholders to identify any needs for navigation aids and work with the Coast Guard to get them placed.

Truck idling programs are intended to reduce pollution from trucks that operate in port facilities.

Port promotion efforts: A local government may wish to market port facilities as part of its economic development efforts. Agencies can assist with port promotion outreach to potential exporters and export goods producers.

Air Approaches

Truck terminal flow improvements: As with other modes, air freight efficiency depends on efficient traffic flow of trucks at terminals. As air freight usually handles higher value shipments, efficient traffic movement is especially critical for air cargo facilities.

Airport industrial parks can be incorporated into local zoning and land use plans to ensure compatible uses of land near airports.

Ramp congestion may be a problem at more crowded airports, and can be addressed by reviewing ground traffic flows and taxiway design.

Aircraft idling and taxiing emissions may be addressed at the policy level by working with carriers to identify causes of taxiing delays and develop policies to minimize ramp idling.

Air traffic control enhancements can increase an airport's capacity for takeoffs and landings, and should be considered if operational capacity is an issue.

Runway maintenance and painting efforts can facilitate use of the airport by larger aircraft, increasing its cargo capacity.

GIS instrument landing approach: To facilitate commercial use of an airport, a local agency may wish to work with the Federal Aviation Administration (FAA) to develop and publish a GIS instrument approach that makes it possible to land and takeoff in less than optimal weather.

Weather reporting systems can be installed at minimal costs to ensure that pilots have real-time access to local weather conditions.

Aircraft rescue firefighting (ARFF) programs provide fire department staff with training and equipment that may be needed for aircraft emergencies. They are required at all airports operating under Part 139 of the federal aviation regulations, which are applicable to most airports with commercial air services.

Deicing solution runoff potentially impacts ground water. Operational approaches to the problem include glycol recovery systems, which can reduce deicing runoff by about 20 percent.

Hours of operation: Some airports may not operate around the clock due to local noise regulations or other reasons. Extending hours to include late night/early morning operations can make an airport more useful to air freight carriers.

Infrastructure Approaches

Truck/Road Approaches

Acceleration lane projects provide for longer acceleration lanes at entrances to limited access highways. The longer acceleration lane improves safety by providing sufficient distance for trucks to accelerate to highway speed.

Truck lane projects are the infrastructural complement of truck route designations. Trucks are separated from other roadway vehicles. These lanes can improve safety as well as potentially enable trucks of larger configurations than would be possible if trucks and automobiles intermingled.

Bridge clearance projects increase the clearance heights of roadways that pass under or through bridges and viaducts. Simple bridge clearance projects may involve lowering roadways; more complicated ones require rebuilding or replacing a bridge.

Signal upgrades provide for greater signal improvements than can be gained from operational changes. These may include new signals, upgraded traffic controllers, signal interconnections along a corridor, or other signal modifications.

Truck parking and staging area projects provide facilities that can be used for truck operators to take mandated rest periods. They can also be used to assemble multiple trailer loads if applicable. Truck parking projects help to prevent trucks from parking in non-designated and potentially dangerous locations.

Road capacity expansion projects increase the capacity of a truck corridor by providing additional lanes, increasing speeds, or rebuilding roadbeds to enable greater loads.

Bottleneck elimination projects include point-specific capacity expansion projects at intersections as well as the bridge and viaduct clearance projects described above. They can also include projects that expand the carrying capacity of an unobstructed roadway, making for a longer freight arterial.

Rail Approaches

Grade separation projects eliminate highway/rail grade crossings. Safety is increased as the possibility of collisions between trains and road vehicles is eliminated. Traffic flow and driver convenience are improved, since cars no longer need to wait at grade crossings. Grade separation projects are usually costly and require cooperation between the local area and the railroad.

Crossing improvements include upgrades to rail/highway countermeasures, such as flashing signals and crossing gates. These decrease the likelihood of collisions between trains and roadway users.

Improved crossing approaches address problems with traffic geometry at highway/rail grade crossings

that make them unsafe. Most often, these problems include angled intersections between roads and rails.

Crossing closures: Roadway segments are closed as the highway/rail crossing is closed. Traffic is diverted to another crossing.

Signal system projects include upgrades to more automated train signaling systems, such as automated block signaling (ABS) or centralized traffic control (CTC). These projects improve the capacity of rail lines.

Rail yard location projects are intended to minimize land use conflicts between rail yards and surrounding neighborhoods.

Rail bypass projects involve the construction of a rail line around a city center. Several of these projects have been proposed around the country, including in Denver, CO and Memphis, TN. In most of these plans, the existing rail line through the city center is intended to be converted to light rail or other passenger rail. The purpose is to decrease the inconvenience of the train traffic traveling through the city center, as well as to potentially free the rail corridor for other uses.

Sidings, lead tracks and crossovers: Passing sidings allow trains to pass each other. Crossovers provide for trains to move between two parallel tracks. Leads connect separate tracks. Local governments sometimes fund these projects to improve the capacity and flow of rail traffic through their localities.

Adding tracks improves the capacity of a rail line. Government agencies sometime fund these projects in anticipation of a new or expanded passenger service on an existing freight corridor. The capacity of the rail line must be increased to accommodate the new passenger trains.

Bridge rehabilitation/bridge replacement projects are sometimes funded by government entities when it does not appear that rail carriers will be able or willing to fund these projects on their own.

Track upgrade projects include ballast, roadbed and rail replacement needed to facilitate faster speeds and heavier loads. This could include the upgrade of a track to carry maximum permissible weight railcars at 286,000 lbs gross weight. It could also improve the speed at which trains can travel over a line, increasing the Federal Railroad Administration rating of the rail line.

Double stack clearance projects address vertical barriers that prevent double stack railcars or high clearance automobile cars from using a rail segment. These include bridges, tunnels, and other obstructions that limit the vertical clearance along much of the nation's older rail lines. Double stack clearance projects can help to improve the efficiency of intermodal operations and encourage increased trade into or out of a given region.

Branch line rehabilitations and acquisition projects are intended to ensure the long-term viability of low density rail lines.

Industrial sidings and spurs provide rail access to new customers. Governments sometimes fund these projects to help spur economic development and encourage companies to locate in their area.

Intermodal facilities projects can provide transportation options to shippers that were previously not available. Intermodal containers are also frequently accompanied by nearby distribution facilities, which can spur economic growth.

Inland ports relieve congestion at large ocean ports. The inland port receives containers on trains from an ocean port. Many of the same activities that occur at seaport also occur at an inland port, thus spurring economic development and connecting a region with global trade.

Water/Port Approaches

Port access projects improve road access to a port. Local governments or port authorities may fund these projects to make a port more accessible to highway and rail networks, and thus more attractive to potential tenants and shippers.

Rail preservation projects may be funded by local governments to ensure that rail access to a port is not lost due to a railroad's attempt to abandon a spur or branch.

Transportation enhancement projects include twelve categories of federally-funded, relatively low cost capital projects. An agency may use these projects to improve the visual appeal of an intermodal connector and address residents' concerns relating to industrial and freight land uses.

Port property preservation/acquisition projects ensure that vacant port land is not developed for uses that are incompatible with port activities.

Port-oriented industrial site developments take a similar approach, and may be of interest to local governments that wish to attract an industry that will provide traffic to the port.

Channel preservation and improvement projects include dredging projects and other capital projects that widen or deepen channels and make ports more accessible to a wider variety of vessels.

Construction of new berths or terminal areas enables a port to service more vessels, making it more attractive to shippers and industry. New berths or terminals may also make it possible for different types of ships to use a port.

New loading/unloading equipment, storage, material handling equipment: Because different cargoes have different handling, loading and storage needs, a port's facilities may become outdated.

Marine highway facilities are intended to relieve congestion on railroads and highways by developing port infrastructure such as ramps for roll-on/roll-off (RORO) vessels and cranes for lift-on/lift-off (LOLO) vessels.

Lock capacity improvements include projects that enable locks to accommodate wider, longer and/or deeper draft ships.

Fendering projects involve replacement and updating of the fender materials that absorb the impact of docking ships, making it possible for a wharf to handle newer and larger ships.

Lock maintenance projects improve the reliability and efficiency of lock operations.

Channel dredging projects increase the depth of access channels, making them accessible to deeper draft vessels.

Dredging material disposal projects ensure that dredged materials are handled in a way that complies with relevant regulations.

Cold ironing refers to the process of connecting ships to dockside electrical power while in port. This enables the vessel to power down its diesel engines and can greatly reduce air pollution from vessels.

Dust suppression programs work with bulk commodity industries to reduce dust resulting from shipments of bulk commodities such as cement and wood products.

Air Approaches

Airport access road improvements: Trucks serving air cargo areas may require roads with higher weight limits and better access to limited access highways.

Home sound insulation programs may be required by the FAA for areas that fall under a 65 DNL area.

Sound barriers can be installed at runway thresholds and run-up areas to help reduce the extent of 65 DNL areas.

Parallel taxiways provide relief for taxiing congestion by facilitating bi-directional ground movements for aircraft.

Runway pavement maintenance programs improve the service life and performance of runway surfaces, potentially avoiding or delaying the costs of pavement replacement.

Runway overlay projects renew the surfaces of runways, resulting in safer operation and extended service life.

Rubber removal projects address safety hazards resulting from accumulated tire deposits on runways.

Runway Protection Zones (RPZs) can be established to prevent buildings and structures from interfering with takeoffs and landings. Local governments may want to consider acquiring parcels in these zones as they become available to ensure the long term viability of an airport. RPZs can also be enforced through the purchase of easements that impose development restrictions on properties near runway thresholds.

Ramp expansions enable additional airside development, providing additional aircraft parking capacity.

Lighting improvements make an airport useable for nighttime operation, which can help an airport attract freight carriers.
Warehouse improvements make existing airport facilities more attractive to potential air cargo users.

Air Traffic Control towers increase the number of flights an airport can safely handle.

ATC systems and electronics upgrades may be funded through FAA programs.

Runway extensions make it possible for an airport to handle larger aircraft with heavier loads.

Automated Weather Systems provide weather information that can be used by air carriers for flight and route planning. Automated surface observing systems (ASOS) are older systems operated by the FAA and other entities. The automated weather observing system (AWOS) is a newer system primarily operated by the National Weather Service (NWS).

Navigational Aids (NAVAIDS) make it possible for aircraft to navigate and land in bad weather. Newer NAVAID systems based on GPS are relatively inexpensive and can largely be funded by FAA grants.

Hangar maintenance: A plan to maintain hangars by local governments or airport operators can ensure that vacant hangars are attractive to businesses that may be looking to locate at the airport.

Runway safety areas (RSAs) are located at the ends of runways, and are intended to minimize damage and injuries resulting from aircraft that may overshoot the end of the runway. Airport agencies may wish to plan to acquire land for RSA extensions when it becomes available.

Engineered materials arresting systems (EMAS) are beds of destructible material located at the ends of runways. They are intended to stop aircraft that overshoot the end of the runway. EMAS systems may be used where standard-length RSAs are not possible, such as congested urban areas.

Aircraft rescue firefighting (ARFF) stations are required at most airports with commercial air services.

Deicing pads are systems that include basins that catch deicing runoff chemicals and prevent them from entering groundwater. The EPA is moving toward requiring larger airports to install deicing pads capable of collecting 60 percent of deicing runoff.

Policy and Legislative Approaches

Many problems in goods movement relate more to law and policy rather than to capital or operational constraints. These must be addressed by enacting changes in policy and legislation. Because of the time and stakeholders involved, crafting these approaches can take a relatively long time.

Truck/Road Approaches

Commercial parking regulations and enforcement affect how trucks can meet federally mandated rest requirements. Parking regulations also impact trucks that need to wait in advance of delivery or pickup windows.

Weight limits are enacted by state and local governments to ensure that loads do not damage roads, bridges, or viaducts. Weight limits also influence the productivity of trucking operations.

Idling regulations limit the time that trucks can idle their engines, resulting in reduced diesel engine emissions.

Rail Approaches

Abandonment efforts: Railroads must file applications with the U.S. Surface Transportation Board (STB) before they are permitted to abandon an existing rail line. At times local shippers and/or government agencies will attempt to stop the abandonment of the line by opposing the carrier's application at the STB or by proposing an alternative to abandonment.

Paper barriers: Class I rail carriers have, in the past restricted the ability of short line and regional railroads to interchange with competing carriers, even when a physical connection exists or could easily be built. Recent regulatory changes have decreased the impact of these practices.

Water/Port Approaches

Working waterfront preservation efforts can assist in the retention of marine transportation businesses and the industries that use marine transportation. These approaches include zoning to protect port land uses and incentives for maritime waterfront support service businesses.

Ballast water regulations address problems relating to invasive species that reach rivers and lakes. Regulations requiring treatment of vessel ballast water would address the problem.

Short sea shipping initiatives are intended to mitigate truck and rail congestion at ports by transferring containers to barges or ferries to less congested ports. Development of short sea shipping could potentially attract other industries that could take advantage of the available transportation facilities.

Strategic partnerships with hub/feeder ports are intended to move some functions that normally take place onsite at congested seaports to smaller ports, including inland or Seaway ports.

Port marketing efforts may include establishing a government supported port promotion organization to complement private sector marketing efforts.

Air Approaches

Part 150 Airport Noise Study: An FAA airport noise study, commonly called a Part 150 study, identifies the airport's noise contours. Residential areas impacted by average day-night noise level (DNL) of 65 decibels or higher may be subjected to costly mitigation measures, including requiring the airport to purchase the affected properties. Airports considering expansion may wish to consider zoning changes or preemptive purchases of areas within the 65 DNL areas.

Home sound insulation program: Areas impacted by airport noise may also be eligible for federally funded noise insulation efforts.

National Air Traffic Control (ATC) system improvements: Because of the interconnected nature of the national air corridor system, delays and congestion at one airport can reverberate throughout the system. Ongoing federal efforts to update and improve the system will have widespread benefits.

Airport planning approaches include airport master plan, system plans, and economic impact studies. Federal funding is available for many of these.

Freight Issues / Solutions Matrix - Highway

Problem / Issue Definition	Solutions: Low cost operational → High Cost Major Investment									
	Operational (Lower Cost)				Infrastructure (Higher Cost, Longer Timeframe)				Policy / Legislative	
	Lowest Cost			Highest Cost	Lowest Cost			Highest Cost	Lowest Cost	Highest Cost
Freight Land Use / Zoning										
Urban Facility Access	Signage	ITS / Appointment scheduling	Staging Areas / Truck Parking			Acceleration Lanes	Designated Access Lanes / Road		Commercial Parking Enforcement	
Highway Facility Access	Access management									
Freight Mobility										
Bottlenecks (point specific)		Signal timing projects			Signal upgrades	Bridge clearance	Bridge replacement			
Recurring Capacity						Bottleneck elimination				
Non-recurring capacity (incident management)						Arterial improvement	Arterial capacity			
Infrastructure Preservation / Maintenance										
	Bridge posting policy	Enforcement improvement	ITS / Weigh in motion						Axle weight limits	Inch per width of tire limits
Safety										
Rear-end collisions involving trucks	Speed enforcement	Driver Training			Truck Lanes					
Run off the road crashes					Staging Areas / Truck Parking					
Connectivity & Access										
	Corridor identification and designation									
Energy & Environment										
Emission reduction	Rest Area Plug-ins					Bottleneck elimination			Idling Regulations	
Congestion reduction						Bottleneck elimination				
Economic Development										
Cost-competitiveness of goods movement		ITS / Appointment scheduling				Arterial improvements	Capacity expansion			
Industrial agglomeration and complimentarily										
Intermodal Issues										

Freight Issues / Solutions Matrix - Rail

Problem / Issue Definition	Solutions: Low cost (operational) → High cost (major Investment)							
	Operational (Lower Cost)		Infrastructure (Higher Cost)				Policy / Legislative	
	Lowest Cost	Highest Cost	Lowest Cost			Highest Cost	Lowest Cost	Highest Cost
Freight Land Use / Zoning								
Facility Access			Connecting Roadways					
Land use compatibility	Quiet Zones			Rail yard location	Rail bypass projects	Rail bypass projects		
Freight Mobility								
Bottlenecks (point specific)	In-gate/ out-gate terminal flow improvements	Carrier interchanges		Passing sidings, lead tracks & crossovers to reroute traffic	Double track	Bridge replacement, rail/rail grade separation		
Capacity constraints			Upgrade signal system to CTC or ABS	Upgrade track FRA class or upgrade to accommodate 286K cars	Double stack clearance projects			
Non-recurring capacity (incident mgt)								
Border delays						Bridge rehabilitation		
Infrastructure Preservation / Maintenance								
				Branchline rehabilitation/ acquisition	Bridge rehabilitation		Abandonment proceedings	
Safety								
Grade crossing safety	Speed limits		Crossing improvements	Improve crossing approaches	Crossing closure	Grade separation		
Connectivity & Access								
		Access agreements		Industrial sidings	Construct connections between rail lines, spurs to industry			"Paper barrier" regulations, reciprocal switching
Energy & Environment								
Emission reductions		Locomotive idling reductions	Green locomotive acquisition (typically yard locomotives)					
Economic Development								
Long-term efficiency, reliability, and cost-competitiveness of goods movement		Inland customs clearance/container tracking		Encourage modal shift by making rail options available				
Net new investments in facilities or hiring				Rail spur development	Constructing/ expanding intermodal facilities	Inland ports		
Efficiency improvements								
Business retention & attraction								
Economic stimulus effects of construction								

Freight Issues / Solutions Matrix - Port

Problem / Issue Definition	Solutions: Low cost (operational) → High cost (major Investment)									
	Operational (Lower Cost)				Infrastructure (Higher Cost)				Policy / Legislative	
	Lowest Cost			Highest Cost	Lowest Cost			Highest Cost	Lowest Cost	Highest Cost
Freight Land Use / Zoning										
Facility Access					Port access					
Land use compatibility					Preserve rail; connector enhancements	Port property preservation/ acquisition			maritime waterfront support services preservation policy Zoning to protect working waterfront > Zoning is local, preservation policy local or state	
Freight Mobility										
Bottlenecks (point specific)	Loading improvements	In-gate/Out-gate terminal flow improvements								
Capacity enhancements	Information technology / ITS				Channel improvements, Improve loading capacity of docks	Construction of new berths or terminal area	New loading/ unloading equipment, storage, matl handling equipment	Lock capacity improvement		
Infrastructure Preservation / Maintenance	Protect and strengthen ship repair yards; adequate fueling/ chandelling					Channel preservation	Lock maintenance			
Safety	Navigational aids; physical oceanographic real time system (PORTS)						Dredging Channels			
Connectivity & access	Information technology / ITS									
Energy & Environment										
Water							Dredging material disposal		Ballast water regulations	
Air	Truck idling				Cold ironing, Dust suppression (cement)					
Economic Development										
							Ramps for Ro/Ro marine highway; cranes for Lo/Lo marine highway			
Long-term efficiency, reliability, &cost-competitive					Ship repair facility retention/improvement				Short sea shipping initiatives	
Net new investments in facilities or hiring							Port-oriented industrial site development		Strategic partnerships with hub/feeder ports	
Efficiency improvements									Governmental port promotion organization in addition to business association;	
Business retention & attraction	Port promotion organizations Marketing efforts for export/outward bound goods producers								Active marketing efforts for export	
Economic stimulus effects of construction										

Freight Issues / Solutions Matrix - Air

Problem / Issue Definition	Solutions: Low cost (operational) → High cost (major Investment)		
	Operational (Lower Cost)	**Infrastructure (Higher Cost)**	**Policy / Legislative**
	Lowest Cost → **Highest Cost**	**Lowest Cost** → **Highest Cost**	**Lowest Cost** → **Highest Cost**
Freight Land Use / Zoning			
Facility Access	Truck traffic	Cargo area road access improvements	
Land use compatibility	65 dnl noise contours, Airport industrial parks	Home sound insulation; RPZ Acquisition	Part 150 study; Federally funded: Home sound insulation program
Freight Mobility			
Bottlenecks (point specific)	Airport access roads; Ramp congestion improvements	Ramp expansions; Warehouse improvement; Highway access improvements	
Capacity enhancements	Air traffic control; Runway Taxiway design	Upgrade FAA ATC systems and electronics; Air Traffic Control Tower	Improved FAA ATC systems; Improve FAA ATC research and funding
Infrastructure Preservation / Maintenance			
Pavement		Rubber removal; Maintain runway pavement; Runway overlays	
Runway	Runway length issues; Runway painting	Runway extension	
Taxiways	Parallel taxiways	Develop parallel taxiway systems	
Ramp	Aircraft parking	Aircraft ramp expansions	
Navaids	Approach with vertical guidance; Weather reporting	Install ASOS AWOS; Maintain lighting; Improve NAVAIDS	
Hangar		Maintain hangars	
Warehouse			
Safety			
Runway Safety Areas		Install EMAS systems; Land acquisitions, RSA extensions	
PART 139 Airports	Airport Rescue & Fire Fighting (ARFF) Stations	Install and maint. ARFF stations	
Connectivity & Access			
Limited Access highways	Truck traffic congestion mitigations	Improve access from Airport to Limited Access highways	
Energy & Environment			
Water	Deicing solution runoff	EA of deicing pad; Install deicing pad	
Air	Idle, taxi time and take off emissions	Improve Air Traffic Control	
Noise	Late night, early morning operations	Install sound barriers; Home sound insulation; RPZ Acquisition	
Economic Development			
Air industrial parks			
Airport marketing			
Airport land lease			
Airport Master Plan			Federal funding of airport master plan, system plans & economic impact studies
Airport econ impact			

Appendix D

Stakeholder Interview Summary

To fully understand and address the needs of stakeholders, the study team conducted interviews of public sector agencies, freight carriers, and users of freight transport services.

Railroad Stakeholders

CSX Transportation (CSXT), Norfolk Southern (NS), and the Genesee & Wyoming Railroad (GWRR) were interviewed. Both NS and CSXT railroads report that much of their traffic from the Buffalo-Niagara region travels to Chicago, with connections to California terminals in Los Angeles and Lathrop, as well as to the ports of Portland and Seattle in the Pacific Northwest.

Both NS and CSXT interchange with the CN and CP railroads for cross-border traffic. CSX has trackage rights through Ontario between Buffalo and Port Huron, Michigan. Both railroads interchange with each other, as well as with a number of regional and short lines, including the Buffalo and Pittsburgh and South Buffalo lines.

Local Facilities

NS and CSXT each have four or five active yards in the Buffalo-Niagara region, and each operates an intermodal terminal. For each railroad, the connections to cross-border traffic as well as to container ports are a significant advantage. Each has excess yard capacity. One of the railroads reported that much of their traffic is through traffic that does not terminate in the area.

Opportunities, Concerns and Constraints

CSXT staff mentioned a number of potential projects that they feel would improve goods movement in the area. A Selkirk bypass would eliminate some train delays. Double-tracking the segment near the auditorium would enable unit trains to bypass the city center, lessening their impact at grade crossings. CSX is considering development of an intermodal facility at Lehigh Yard in Niagara Falls, taking advantage of the close proximity of Interstate 190. The planned River Wright ethanol plant would provide new business for CSXT, but would require upgrading currently unused tracks.

Norfolk Southern is considering double-tracking the segment between Bison Yard and the CP Draw drawbridge in order to increase bi-directional capacity. The railroad does not currently see CP Draw as a significant bottleneck, but understands that efficient movement at the bridge requires a high degree of cooperation from all parties involved.

Recent slowdowns in the auto manufacturing industry have adversely impacted both railroads and decreased traffic, although the availability of additional capacity in the area can also be considered an opportunity. The current economic situation makes it difficult for railroads to consider expansion, and problems in the automotive industry have reduced demand from some of the major trans-border shippers. GWRR felt that the lack of distribution facilities within the area is a concern. They would also like access to a neutral intermodal yard, such as at the former Bethlehem Steel site.

Manufacturing & Distribution Stakeholders

To understand the needs and concerns of manufacturing and distribution businesses in the area, members of the study team interviewed representatives of a number of companies that use a variety of goods transportation modes. Interviewees were selected to provide a broad representation of the needs of different sectors.

A total of six manufacturing and distribution companies were interviewed. The businesses included two manufacturers and distributors of chemicals and plastics, a producer of aggregate and paving materials, a manufacturer of steel products, a manufacturer of automotive components, and a distributor of household products.

Descriptions of Local Manufacturing and Distribution Facilities

Stakeholders in the manufacturing and distribution sector were identified and contacted in and around Buffalo and Niagara Falls, including Tonawanda and Lancaster.

The companies typically operate around the clock, from 5 to 7 days per week. The chemical businesses reported more seasonal fluctuation than the other businesses. The chemical concerns also reported operating 24 hours a day, seven days a week. Others typically operate two or three shifts. The steel and automotive companies reported multiple locations in the Buffalo-Niagara region. The chemical manufacturers either had only one facility, or operated multiple independent facilities producing different lines of products.

The companies reported varying degrees of reliance on third-party logistics providers. For some, the logistics providers managed every aspect of transportation. One of the chemical companies owns and leases rail cars, and the steel company owns a private truck fleet. Container freight was not important for the basic chemical and pavement concerns, but was an important part of the higher value manufacturing and distributing companies.

Products Shipped

Most of the companies use both rail and truck, though paving materials were shipped exclusively by rail, and high-value plastic home materials were shipped only by truck. For most companies, air freight was used sparingly, though more frequently for high-value auto components. Most companies reported some control over their inbound shipments, and worked with customers on outbound shipments, though steel shipments were almost exclusively under the control of the steel company. The companies shipped bulk chemicals, paving materials, finished plastics, home and kitchen goods, steel products and automotive components. The products ship primarily to various secondary and tertiary manufacturing centers and distribution centers in the Midwest and Northeast. Household goods and finished plastics are shipped around the U.S., and auto components and plastics ship worldwide.

Outbound Performance and Time Sensitivity

On-time and just-in-time (OT/JIT) service for inbound and outbound shipments was important to nearly all of the companies interviewed, though the time frame varied depending on the value and shipping mode. For most shipments, JIT requires arrival within a day, though for bulk chemicals traveling by truck, an

outbound shipping time frame of one hour was reported. Estimated quantities of outbound shipments ranged from 40 to 100 truckloads per week, and a minimum of five rail cars per week.

Inbound Performance and Time Sensitivity

The companies generally participated in inbound transportation decisions, though the steel firm reported that the supplier controlled inbound decisions, and the household products firm reported that inbound shipments were under the auspices of a the third party logistics provider. For manufacturers, inbound goods generally came from neighboring states, though some raw chemicals came from southern states, and raw steel was supplied from a variety of areas. Rail was involved in most inbound shipments, though some raw chemicals arrived only by truck. Household goods were shipped by containership to west coast ports then transferred to rail cars to inland terminals before being trucked to Buffalo.

Quantities of inbound shipments were generally comparable to outbound for each company, ranging from 35 to 60 truckloads per week. Cost and OT/JIT were important to all shippers. Equipment availability was also cited as important by several firms. Loss and damage were less important factors for some but not all firms.

Experience with Rail

Most of the firms interviewed used rail for some of their inbound or outbound shipments, and most had Class I rail service at their facilities. One of the companies surveyed reported that they depend on three different railroads for shipments. Three firms provided direct evaluations of rail service.

Service ratings varied significantly, with each firm providing both high and low ratings for different aspects of the service. Manufacturers tended to find a tradeoff between service quality and cost with rail compared to truck. Shipper views of their truck costs varied widely. Service reliability and flexibility were rated highly by one of the chemical companies, but only fair by the automotive manufacturer. Interviewees were asked to rate service both within the Buffalo-Niagara region as well as outside of the region. The other chemical company found reliability and flexibility to be excellent at the local level but fair to poor from outside the area. Shippers generally reported little problem with loss and damage, although the chemical company considered this to be a problem outside the local area. The chemical companies rated the railroad services between poor and fair. Mostly, this shipper was dissatisfied with his rates. The automotive manufacturer did not provide feedback on costs.

Logistics

A number of logistics and transportation challenges were mentioned by companies. Several companies mentioned difficulties in attracting truck drivers to the area because of the low level of demand for deliveries from other parts of the country. The area's proximity to Canada was a plus for shippers, but one noted problems with customs. Water and air transportation were generally not significant to the companies interviewed, though one manufacturer was generally open to the possibility of using water transportation.

Outlook

Both chemical companies expressed interest in greater use of rail transportation, and one is currently improving their rail siding facilities. The other was looking to use rail to coordinate operations with a newly acquired subsidiary. While none of the companies directly addressed rail congestion, several noted concerns with service reliability.

Warehouse and Logistics Service Providers

Members of the study team interviewed representatives of two warehouse and logistical service companies that operate in the Buffalo-Niagara region. One of the companies emphasizes services to the food industry, and also moves other consumer goods. The other company is more focused on facilitating steel shipments for the auto industry. Both companies use truck and rail shipment.

General Information about Providers

One of the companies is looking for a piece of property in Tonawanda to build an additional warehouse along with a rail siding, and hopes to be served by CSX at this location. After the rail siding is built, it is anticipated that the company will generate demand for approximately 30 to 40 car loads per week.

The company transports steel coils via rail from Lackawanna to Tonawanda for processing. The finished product is then transported to an automotive plant via truck. Another company has warehouse locations in the Buffalo area, including one with rail access. The company's customers include food and appliance companies, both of which mostly use trucks. The company also coordinates movement of paper products largely using rail. Company staff was asked about their general operations in the area.

Needs and Concerns

One company placed a high importance on JIT service, generally within a one-hour window. As a third-party logistics provider, interviewees noted that the customer had a significant say in both inbound and outbound transportation.

Rail was seen by one interviewee as less susceptible to damage, and rated their rail service as good for time reliability and loss and damages, poor for cost, and fair for service flexibility. One noted that truck is their preferred mode for its point-to-point flexibility and ability to handle smaller shipments. For one client, rail was available, but not used.

The companies felt that new state regulations would cause trucking companies to avoid the state as much as possible. Other concerns included the cost of truck tolls, and a shortage of drivers and trucks in the area. Other challenges mentioned included equipment availability during holidays and slow preclearance on Canadian shipments.

Food Processing Stakeholders

Three food processing companies were interviewed, including a manufacturer of pet foods, a flour mill and grain processor, and a sugar packager and processor. The sugar processor is independently owned, while the other two are owned by large conglomerates with numerous facilities nationwide.

The grain miller provided only general information, but the other two companies provided detailed transportation information. The pet food company reported no seasonal peak in their business, while the sugar processor reported a seasonal peak at year end. Both processors could run 24 hours per day, 7 days per week at their busiest times, but did not do so at all times.

Outbound Shipments

One of the processors shipped in bulk to distribution centers, while another shipped to customers around

the country. Both reported using third-party logistics providers, who along with customers are involved in outbound transportation decisions. OT/JIT was more important to the company that shipped directly to customers, and only modestly important to the company that shipped to distribution centers. Cost was an important factor to both of the companies. The number of truckloads shipped ranged from 25 to 110 per week.

Inbound Shipments

All of the processors receive shipments of basic food commodities and packaging. The grain miller primarily receives inbound goods by ship, receiving about 20 grain shipments annually. The other two receive 5 to 20 railcars per week, and inbound truckloads ranged from 10 to 70 per week, with additional LTL inbound shipments. Inbound goods were received from much of the eastern half of the U.S. and from Canada. OT/JIT was reported to be the most important factor, with significant importance also given to equipment availability and cost. Loss and damage were less important. For inbound shipments, an OT/JIT window of one day was preferred.

Rail Service

Two of the companies were generally satisfied with their rail service, with one noting that the ability to track shipments online was helpful. One of the companies noted the need for a scale in the area, and had general concerns about the age and condition of the area's rail infrastructure. The companies felt that improvements were needed to sidings to better facilitate outbound shipments. One issue noted by one of the respondents was the maintenance of a bridge near a yard that serves their plant. Rail congestion was mentioned as a general area of concern for the pet food plant.

General Logistics Concerns

One of the companies was generally satisfied with logistics services available in the area. The sugar processor echoed this satisfaction, but cited concerns with high tolls and echoed other manufacturers' concerns about the limited availability of backhaul loads. The condition of the Peace Bridge and the slow process of planning its replacement was a concern for the grain miller. The grain miller was also concerned that regular dredging be performed on the Buffalo Ship Canal.

Summary of Shipper Logistics Concerns

- Problems with customs on inbound shipments from Canada
- Rail service has suffered, and interaction with rail carriers is more automated
- Tolls are high
- Limited backhaul opportunities
- Inadequate intermodal infrastructure for large volumes of containers
- Equipment availability
- Truck driver availability
- Outdated rail infrastructure
- High costs, poor communication from rail carrier
- High truck/rail costs

World Trade Center Buffalo-Niagara

The World Trade Center Buffalo Niagara (WTCBN) is a private international business development organization in the Buffalo-Niagara region. The organization lists many large businesses in the area as members, including Speed Global Services, New Era Cap, Rich Foods, and FedEx.

World Trade Center staff echoed Niagara Falls Airport staff's interest in gaining direct cargo service to the airport, but agreed that a backhaul would be necessary. Staff noted the potential for markets in Southern Ontario between Buffalo and Toronto. They felt that the border crossing was not an issue in serving that market. Among the area's advantages is the Vantage Park development, which features roads, utilities, and large buildings ready for use by logistics and warehouse businesses.

The staff noted that some improvements were needed to advance initiatives, mostly soft infrastructure such as a licensed customs broker. The staff felt that growth in truck traffic highlighted the need for a new bridge in Buffalo to serve goods movement.

Air Cargo Carriers

Two air cargo firms were interviewed as part of the study efforts. One is an integrated air cargo carrier, while the other is a less-than-truckload (LTL) freight forwarder.

The integrated air cargo carrier operates an off-airport sorting facility, where packages from a 7 a.m. arriving airplane are sorted into six trucks for distribution. The company contact did not report any problems with traffic congestion, though they specified that they mostly used local roads, particularly in the event of congestion on Interstate 90 or State Route 33. The trucks return for an evening aircraft departure between 8:30 p.m. and 9:30 p.m. The company noted that a third of their business involves shipments to Canada, and that ease of processing at border crossings is important. Freight to Canada is centered on the automobile, cosmetics, and printing industries.

The LTL freight forwarder operates a similar schedule, on a smaller scale, running only two trucks in the Buffalo-Niagara region, supplemented by drayage from other firms. The company reported no major problems relating to traffic, though it was noted that delays at SR 33 and I-90 are a concern.

Public Sector Stakeholders

To better understand the concerns and priorities of government agencies regarding freight movement in the Buffalo-Niagara region, the study team interviewed staff from a number of these agencies. Agencies identified as stakeholders included local county government departments, economic development agencies, and the Army Corps of Engineers. Additionally, staff from the Port Authority of New York and New Jersey was interviewed in order to better understand the port inland distribution network (PIDN) as it applies to the Buffalo-Niagara region.

Public agencies generally focused on water and rail improvements. Road facility improvements were less frequently mentioned.

Niagara County Department of Economic Development

WSA staff interviewed Sam Ferraro and Michael Casale of the Niagara County Department of Economic

Development. The interview focused on Niagara County goals for improving goods movement within the region.

Overview

The staffers began by reviewing other county and regional efforts. The County Strategic Plan describes potential development locations, including the East/West campus of county government facilities. Significant increases in freight movement are anticipated in the area, particularly relating to food processing, distribution, cold storage, and agricultural exports.

Staff also reviewed air freight developments at Niagara Falls International Airport, including the construction of a new terminal and new scheduled passenger routes. The Niagara Cargo Park consortium is developing facilities at the airport that are expected to include tenants such as Vista Cargo, Atlantis Transportation, and Speed Global Services. Perishable agricultural commodities that require cold storage, such as cherries, apples, pears, and peaches, are generally seen as a potential market for Niagara county freight facilities.

Port & Maritime Efforts

County staff discussed a variety of water transportation efforts underway, including a planned ferry service between Youngstown, New York and Niagara-on-the-Lake in Ontario. Only a passenger ferry is under consideration at this time, but if traffic builds, there may be a possibility of freight service in the future. Other efforts include a planned breakwater to Olcott and two federal piers on Lake Ontario that will be developed for Homeland Security vessels. A deep water port is also being developed by AES Somerset that will enable coal to be delivered by water to a coal fired electric power plant.

Other initiatives under consideration by county economic development staff included conversion of the South Bridge, currently a rail bridge, to be used by trucks only. This would have provided dedicated right of way to the New York State Thruway, but it has not advanced because of community opposition. The Lehigh Valley Yard, a state-owned parcel near the Thruway in Niagara Falls, has been considered for development as an intermodal yard. This would follow the example of an industrial site developed by Niagara County that was two-thirds sold at the time of the interview, mostly to Canadian interests. The Lehigh yard could potentially be developed as a foreign trade zone if an operator can be identified.

Erie County Department of Economic Development

Study team members interviewed Ken Swanekamp of the Erie County Department of Environment and Planning's Office of Economic Development on March 7, 2007. Mr. Swanekamp suggested that the study examine ways that the region could advance economic development by leveraging its assets, including the proximity to the Canadian border city and a strong manufacturing base.

The office thought there was potential growth in logistics and warehousing/distribution facilities. The proximity of the border crossing was considered the region's key differentiator, and streamlined border inspections were considered necessary if the area is to build on its geographical advantages. Maintaining and improving the area's extensive rail network is also important.

Freight Planning Efforts

Although the county's Regional Development Framework mostly addresses residential development, the

framework was developed in the overall context of freight planning efforts.

The county currently has 31 industrial parks that are 10 acres or larger; the county works closely with 24 of them. The parks are generally located on the waterfront or along the rail corridor. Many of the waterfront facilities are redeveloped brownfields. These were redeveloped with the help of tax incentives that encouraged businesses to relocate; however, in some cases, it was felt that incentives overshadowed other considerations in business location decisions.

Port of Buffalo and Bethlehem Steel Site

The Port of Buffalo has been privatized for nearly two decades. The owner, Gateway Metroport, has developed a number of facilities along the Buffalo waterfront, including a large wind farm.

The former Bethlehem Steel site in Lackawanna has been a focus of the county's redevelopment efforts in the port vicinity. Tecumseh Redevelopment, the owner of the vacated site, is attempting to develop facilities that will be attractive to logistics and transportation businesses. To facilitate these efforts, the rail track adjacent to State Highway 5 is being moved west to better serve a new business park. ArcelorMittal, the successor to Bethlehem and the owner of Tecumseh, continues to operate a steel manufacturing facility on a portion of the site. Demolition and cleanup of the former coke ovens on Union Canal will facilitate additional port development. The legacy of the area's steel manufacturing has left excellent rail connections to the site.

The County has invested $10 million in the Business Parks just north and east of the site. Numerous businesses are located along the Highway 5 Corridor south of the Buffalo River, including a Ford assembly plant.

North Buffalo and Tonawanda

Additional areas with redevelopment potential were identified in the northern section of Buffalo and in Tonawanda, along the Niagara River. These areas are generally well served by rail. Existing industries in the area include General Motors, Dunlop Tire, DuPont Chemical, and FMC Corporation.

Niagara Riverworld is considering development of a clean coal port business at the former Roebling Steel site. The developer anticipates that its location would be more accessible to western clean coal than the planned dock at the AES facility in Somerset.

Erie County Industrial Development Agency (ECIDA)

The study team interviewed John Cappellino, director of business development and marketing for the Erie County Industrial Development Agency, on May 1, 2007. The agency is a public benefit corporation created by the State of New York.

Mr. Cappellino reviewed a number of recent developments in the county, including the redevelopment of the former Niagara Frontier Transportation Authority (NFTA) port site. Sonwil Distribution has established a warehouse and distribution facility at the site. Other terminals in the area include the General Mills terminal, an asphalt terminal, and a sand terminal.

ECIDA has requested Transportation Bond act funding for port improvements. Among the projects under consideration are building and equipment improvements for the Gateway coal blending facility, a dry warehouse building, and an upgraded crane for offloading. The Riverwright ethanol facility is expected to receive corn shipped by lake-freighter and to ship out ethanol or corn by rail.

Maritime Opportunities

ECIDA sees opportunity in congestion at other ports in the northeast. Mr. Cappellino cited the example of steel plate from Baltimore that is shipped to Buffalo and then distributed by rail. Coal and corn for biofuel are considered the most promising commodities to be shipped by water, but higher fuel prices in the long term could result in other cargoes shifting from truck to rail and marine transportation.

Possibilities may exist for other consumer goods, and Buffalo could potentially serve as a secondary distribution center for the Toronto market. The large populations within a 200 mile road distance of Buffalo were cited as further potential for Buffalo and Erie County as an inland port warehouse and distribution center. However, the lack of a connection between the CN and CSX rail networks is considered a potential obstacle, as it complicates increased movement of goods by rail across the border.

Other opportunities related to maritime goods movement include the possibility of short-sea shipping between Buffalo and the port of Halifax, Nova Scotia.

Other Opportunities

Mr. Cappellino referenced a New York Department of Transportation study of food distribution. There may be some potential for the Buffalo-Niagara region as distribution hub for fresh produce. Canadian produce is relatively inexpensive; locally grown produce tends to find its market further south. Another study saw potential in dairy and cheese, as well as biofuel and soy products.

Niagara Frontier Transportation Authority (NFTA)

The study team conducted a brief interview with Ruth Keating of NFTA on April 27, 2007. NFTA owns two terminals and a seaport on the Lake Erie waterfront.

The total available land is 120 acres, with 6,900 linear shoreline feet available. No maritime freight activities currently take place at the terminals and there are no plans for maritime freight transport in the terminals in the near future. The terminals have rail lines, but they are inactive and it is not known whether they could be readily activated.

U.S. Army Corps of Engineers

Members of the study team met with Roger Haberly of the U.S. Army Corps of Engineers on March 26, 2007. The team anticipated that the Corps would have a unique understanding of the barriers to improved maritime freight transport in the area, and was particularly interested in a Corps study of potential freight ferry routes across Lake Ontario.

Review of Great Lakes Maritime Supply Chains

Mr. Haberly reviewed some of the basic supply chains that use the Great Lakes for transportation. Salt typically originates in Cleveland or Fairport; iron ore originates in Upper Michigan and Lake Superior ports. Cement travels from Canada to U.S. ports. Western coal comes from Lake Superior and from Escanaba,

Michigan, avoiding the Soo Locks, while eastern coal comes from Pennsylvania, West Virginia and Ohio via Erie, Pennsylvania. Coal is consumed in Canada for steam generation and in the U.S. for steelmaking. Other coal ports include the Ohio ports of Ashtabula and Conneaut. Grain also is shipped via the lakes.

Lake Ontario Freight Ferry

A study of potential cross-lake ferry traffic had been requested by Niagara county officials. The Corps began a reconnaissance study to see if there was a positive cost benefit ratio and an opportunity for federal partnership in the construction of access channels and breakwaters. The corps funded the study and conducted it according to federal requirements for determining costs and benefits.

The study considered four possible U.S. ports-- three in Niagara County and one in Orleans County. Costs of construction of the necessary port improvements and landside modifications were estimated according to prevailing rates in Rochester.[47]

Mr. Haberly identified a number of potential improvements that would be needed to facilitate a successful cross-lake ferry service. These included identifying a basic traffic load that would use the service, developing inspection stations on both sides of the border, improving truck routes to the proposed ferry terminal locations, and intermodal rail facilities. Although the lake itself is naturally deep, coastal waters are shallow, requiring dredged channels or long piers for deep-water vessels.

The next step for the Corps would be an in-depth feasibility study. Costs for this are shared with the local sponsor; the cost sharing process itself requires a memorandum of agreement, which may take a year or more to execute. An alternative to the Corps-conducted feasibility study is for the local government to take the lead. This would be faster and would enable the local sponsor to determine the approach of the study and control costs. However, the process of obtaining federal funding for in-water infrastructure such as access channels and breakwaters may necessitate retaining the Corps to analyze the water infrastructure costs and benefits.

Maritime Freight Constraints

Water depth has become a concern in some channels. The Corps dredges to a specific depth, without regard to changes in the water level. However, as the levels of the Great Lakes decrease, vessels may find some channels with insufficient depth.

Another concern in the Buffalo-Niagara area is the Black Rock Channel lock, located on a key shipping route for coal ships. Because of size of lock, only Class 3 vessels can traverse the lock. The coal-fired power plant at Huntley gets most of its coal by rail, but also receives some by water. The Black Rock lock could be made longer, but it would be difficult to widen or deepen. Additionally, traffic is currently about one third what it was in the 1980s, making it difficult to establish the lock as a priority for improvement.

Port Authority of New York and New Jersey (PANYNJ)

Study team members met with Port Authority staff on February 12, 2007, to discuss the possibility of a port inland distribution network (PIDN) in the Buffalo-Niagara region.

[47] A full report of the study effort ("Lake Ontario Fast Ferry Section 107 Niagara County" Appendix B Economic Evaluation) was released by the Corps in September 2002.

Port Inland Distribution Networks

Port staff reviewed the benefit of PIDNs to the Port Authority. By transporting containers out of the port area by alternative modes such as rail or water, port area congestion can be reduced, and yard space can be freed up. Benefits to the locality of the PIDN include use of available labor and the potential for value-added business.

Albany PIDN Experience

Tom Hanna of PANYNJ described the Albany PIDN and explained the reasons for its discontinuance. The service involved transport of international containers on barges from terminals in the New York metro area for distribution in the Albany area and vice versa. The PIDN was planned with an assumption that operation would need to be subsidized for 10 years. However, service was subsidized federally for only three years and was then discontinued. Operational problems included empty container interchange and matching of the weekly river services with the ocean carrier schedules.

Cost savings to users were estimated at $105 per container. While the service did not operate profitably, value added to the businesses and the economy in the Albany area was significant. The GE silicone plant in Waterford was able to use Albany as the point of transfer instead of Baltimore; and a log exporter was able to use a surplus building for fumigation before loading logs into boxes for the PIDN barge.

Potential of PIDN in Buffalo-Niagara Region

PANYNJ staff noted that the Albany PIDN was a startup service, incorporating a barge system where there was none before. Buffalo's PIDN would involve an expansion of existing rail service, which would be easier and cost less. Space would be needed for rail to truck transfer; it is likely that Seneca Yards will have adequate capacity

Possible commodities for PIDN in Buffalo would include candy from Brazil, non-dairy products produced by Rich Products in Buffalo, dairy products to Puerto Rico via PANYNJ, copper to Scandinavia, fruit juice, and lumber.

Considerations for Buffalo PIDN

It was noted that another PIDN pathway was possible linking Toronto to Buffalo by truck, and then by rail to PANYNJ. This would require improved rail capacity at both ends to facilitate critical point timing.

Longer term considerations include how Buffalo would present significant advantages over competing ports. PANYNJ staff generally agreed that the situation of Buffalo as a gateway to Canada would be the main competitive advantage.

It was generally agreed that ongoing changes in trade routes such as the shift to all-water routes and the emergence of new ports such as Prince Rupert and Lazaro Cardenas will have significant and unpredictable impacts on capacity. These could open up opportunities for the Buffalo–Niagara Frontier area, but again, the changes are unpredictable.

Virtual Container Yards

PANYNJ staff reviewed a study of Virtual Container Yards (VCY) that was funded by the New York and New Jersey Departments of Transportation and the I-95 Corridor Coalition. At the time of the interview, the

study was not yet half completed.

Staff noted that ocean carriers already swap containers to some degree, and that VCY would expand this practice and improve and standardize protocols. They expected that VCY could be helpful to Buffalo in making its PIDN a success. Adequate space is necessary; however, this is not expected to be a constraint for Buffalo.

VCY has been tried at the west coast ports of Oakland and Los Angeles. Ocean carriers tended not to use them, possibly due to the need for long-term leases.

Port of Buffalo

Members of the study team met with James A. Yamonaco, director of the Port of Buffalo, to better understand the port's operations, the barriers and opportunities it faces. The port is privately operated, owned by New Enterprise Lime and Stone, which bought Buffalo Crushed Stone in 2000.

Goods Processed

Limestone destined for AES Somerset is a significant portion of the port's traffic. The limestone is used for the scrubbers at the coal-fired plant; at the time of the interview, the limestone was moved by truck, with plans to switch to rail. Coal is also significant; arriving from Thunder Bay by ship and transported by rail to power plants and steel producers. Salt comes to the port by ship from Goderich, Ontario, on Lake Huron. The port also handles some steel parts destined for the Ford stamping plant.

Operation and Configuration

The port's channel is fairly wide and without any physical obstructions. However, tug assists are necessary to get through the breakwater channel on windy days. Depth at dockside is 28 to 30 feet, which exceeds the depths of many other ports and the Welland Canal.

The port is well served by South Buffalo rail line tracks, though some improvements are needed. About 50 to 75 rail cars arrive at the terminal three times per week. Road access is provided by SR 5. Ample land is available for expansion.

Crane conveyers are used to unload the ships, taking about 23 hours to unload a 30,000-ton ship. The lack of more efficient conveyers hinders unloading. Another constraint is the need for drayage from ship to train. Rail equipment at the port makes it possible to invert a rail car and dumps the typical 100-ton load of coal on the ground for blending. The port is not equipped to handle containers.

Other port tenants include American Flouroseal Corporation's Buffalo plant, North Shore Recycled Fibers, a lumber yard, and a concrete fabricator. The port is seeking a fertilizer tenant; currently, fertilizer from Hamilton and is trucked to the Buffalo area, though it could come direct by ship.

Opportunities and Obstacles

Mr. Yamonaco felt that the port is well served by all transportation modes and has ample available capacity. Significant industrial park development is underway, including the Lakeside Industrial Park, Seneca Yards,

and Erie County is developing three additional business parks. All of these make the port a prime location for freight villages and warehouse/distribution centers.

Air Cargo Stakeholders

To better understand the multifaceted needs of goods movement by air, members of the study team interviewed a range of air cargo stakeholders. Interviewees included management of local and nearby cargo airports, port authorities, and air carriers and forwarders.

Hamilton International Airport

Richard Koroscil, CEO of Hamilton International Airport, met with members of the study team in 2007 to discuss the airport's cargo activity, development potential, goals and concerns.

Current Facilities and Activity

At the time of the interview, the airport's air cargo activity was driven by integrated express and all-cargo carriers Purolator, CargoJet, United Parcel Service (UPS) and BAX Global. Purolator Courier, the largest Canadian express cargo carrier, operates from a 93,000-square foot sorting facility with Hamilton International Airport as the hub of its Canadian route network. UPS operates from a 47,800-square foot facility at the Airport; with Hamilton the hub for its Canadian operations. Hamilton is also the connection point between UPS' Canadian operations and its U.S. network. All-cargo carrier CargoJet Canada also operates multiple daily flights to Canadian destinations.

All-cargo and integrated express activity is supplemented by belly-cargo and charter operations. WestJet and Air Canada provide scheduled service to multiple Canadian destinations; however, cargo capacity on these flights is limited due to airline equipment operating from the airport. Currently, domestic carrier operations are limited to regional jets or narrow-body aircraft with limited cargo carrying capacity. One carrier was planning wide-body service to the United Kingdom, which would offer significant trans-Atlantic belly cargo capacity.

There are several freight forwarders with operations at Hamilton International Airport that cater to niche markets, primarily the automotive industry. It is estimated that freight forwarders charter 1,000 cargo flights per year to and from the airport.

Cargo Development

Air cargo development efforts are focused on making Hamilton International Airport a primary North American gateway for both Canadian and U.S. markets. Targeting the Toronto-Pearson International Airport air cargo market is a part of this strategy. Advantages of Hamilton International Airport include less congestion, more available infrastructure development acreage, lower cost, and no night-time restrictions.

At the time of the interview, Hamilton was served by Purolator and CargoJet Canada for the Canadian market and UPS for the U.S. market. International products arriving in Hamilton, bound for North American destinations beyond trucking range, can easily be fed into the Purolator, CargoJet and UPS networks on an ad-hoc basis or via block-space agreements. Mr. Koroscil felt that the presence of these carriers' hubs provides Hamilton International Airport a distinct competitive advantage over other airports seeking to attract international air cargo carriers and operations.

Finding suitable back-haul traffic is a significant issue in the development of direct, scheduled international air cargo routes. While inbound aircraft can easily be filled, finding commodities for the return flights can be more difficult. Forwarders and all-cargo carriers want to be assured of a substantial back-haul for their aircraft before considering service to new markets; this factor will be a key challenge for Hamilton International Airport international cargo development efforts.

Airport Access

Immediate Airport access is provided by a number of routes. Highway 6, a relatively uncongested two-lane road, provides the most direct access to the airport's cargo facilities and offers excellent connectivity to points north, east and west. There are plans to widen Highway 6 to four lanes. Connections to the east and points south, particularly the Canada-U.S. border crossings at Buffalo and Niagara, are more difficult, traveling via local roads.

Buffalo International Airport

The study team met with Buffalo International Airport staff to learn their perspectives and concerns regarding goods movement at the airport. At the time of the study team's interview, three all-cargo carriers served the airport: UPS, DHL, and FedEx.

Only minimal belly-freight is processed at the airport. Sporadic cargo services were also provided by other carriers. At the time of the interview, Kitty Hawk Aircargo processed a significant amount of Canadian freight, and airport staff felt it was easier for the shipments to clear customs at the border before being loaded onto aircraft at Buffalo. However, the carrier has since gone out of business.

Airport staff felt that their airport enjoyed significant advantages over both Lester Pearson and Hamilton airports. Pearson was seen as expensive and congested, while Hamilton's runway access was less than optimal, and its location was seen as inconvenient. The team felt that imports from Latin America represented a market with great potential, but that back haul cargo would be needed.

The interviewees generally felt that the airport was readily accessible, with no traffic congestion problems. A dedicated access road is planned to extend from the cargo buildings to the passenger terminal.

Hamilton Port Authority

Members of the study team met in 2007 with Linda MacDonald, the Hamilton Port Authority vice president of operations, to discuss the Port's activity, development potential, and goals and issues.

Current Facilities and Activity

The Port of Hamilton includes 18 piers dedicated to bulk, break-bulk and liquid freight. Of these, 13 piers are owned and operated by the Hamilton Port Authority, while the remaining five are owned and operated by private firms. The Port is an origin and destination port only, meaning that there is currently no ship-to-ship transloading of freight. The Port is served by the Canadian National, Canadian Pacific, and Southern Ontario Railroads.

Most of the activity at the Port service regional Canadian markets, with some limited international and trans-border movement of freight.

Port Development

The Port of Hamilton hopes to develop container handling facilities to serve both the international market and regional short sea shipping market. A container facility is currently under development on 15 acres of Pier 22 that is designed to accommodate 200,000 TEUs in its first year of operation.

A regional, short sea shipping network is envisioned for the port that connects points as far east as Montreal utilizing roll-on/roll-off (RORO) ferries. These ferries and port facilities would allow trucks to drive directly on and off the ferry or barge to rapidly deposit and remove freight containers without the aid of a crane or lift. In addition to RORO operations, the port also plans to accommodate more traditional regional and international container traffic. The port anticipates capturing trans-Atlantic container traffic currently utilizing East Coast ports such as Halifax, and will be capable of handling container ships with a capacity of 1,050 containers.

Once the Port achieves a critical mass of regional and international container activity, trans-loading (ship-to-ship transfers) of freight becomes possible, with the potential for a regional feeder network of scheduled, short sea container ships. It is anticipated that these operations will serve both the Canadian and U.S. markets.

Port Access

Road access to the Port of Hamilton is provided by Burlington Street which connects to Queen Elizabeth Way (QEW). Connectors to major highways to the east require transit on residential and commercial district roads through the City of Hamilton. Rail infrastructure at the port will need to be upgraded to handle container traffic, requiring additional rail sidings to the container facilities on Pier 22. Total capacity upgrade requirements have not yet been determined by the port's rail operators. Transitioning the port from a strictly origin and destination bulk commodity port to a container port is anticipated to require additional trucks transiting the port, though the exact number will be dependent upon how many containers are moved though the port, how many arrive and depart via rail and how many are transloaded. The single access point of Burlington Street could prove to be a bottleneck for arriving and departing trucks.

Customs clearance for trans-border freight is also an issue. Truck clearance at the border typically takes two to four hours, while customs clearance for container, barge and rail traffic can take 24 to 48 hours. The potential for U.S.-bound freight needing to clear customs twice, once in port and again at the border, is an issue that will need to be addressed.

Overall, the outlook presented by the port is positive. The Port of Hamilton sees growth in new container operations, with interest already expressed by several shipping lines and port facility operators. The regional short sea shipping network is also seen as an alternative to increasingly congested regional highways, which should serve to increase demand for the port's container facilities.

Previous Reports

To understand the background of efforts to improve freight transportation in the Buffalo-Niagara region, the study team reviewed a variety of background documents and plans that were identified by stakeholders

and GBNRTC staff. The documents include a number of county and regional plans, as well as federal agency documents, particularly those relating to the Conrail partition.

Niagara County Comprehensive Economic Development Study

The Niagara County Department of Economic Development developed a Comprehensive Economic Development Study (CEDS) in 2006. The document was produced under guidelines of the U.S. Department of Commerce, and submitted to that agency's Economic Development Administration.

Goals

The study identified five general goals: 1) improving quality of life through sustainable development practices; 2) increasing employment opportunities by expanding key economic sectors; 3) strengthening the competitive position of county businesses; 4) diversifying the county's economic base; and, 5) developing a comprehensive education and training program. The document also includes detailed supplemental goals, an action plan, and a project list, as well as a county-wide summary list of municipal projects.

Transportation Projects

The following transportation projects were specifically identified in the report:

Airport development: Several air cargo projects were identified in the study, including a contract with Niagara Port, Inc. to build cargo facilities at Niagara Falls International Airport. A new terminal that would handle both passengers and cargo was also identified, and the county continues to lobby to expand the adjacent air force base.

Road improvements: Several road improvements were identified, including an extension of Meadow Drive that would link the central business district of North Tonawanda with US Highway 62. The plan anticipates expansion of a direct highway route to Rochester along with a Grand Island bypass. Improvements at road border crossings area also recommended.

Other Projects Identified

The study identified a number of projects that were intended to advance economic development in the area. A number of these have implications for goods movement in the Buffalo-Niagara region.

Countywide GIS: Ongoing development of county GIS capabilities was identified as a project with implications for agricultural development.

Brownfields redevelopment in general was identified as an important component of the county's economic development strategy. Brownfields were also referenced as an industrial development strategy, with specific mention of the Roblin steel site.

Infrastructure development efforts included reconstruction of the Tuscarora Bridge in the Town of Niagara, and improved drainage on Witmer Road, where flooding was impacting both local residents and the plastics company.

Waterfront redevelopment was generally described in the study in terms of recreational use. However, some of the projects specified, such as the planned mitigation of Robert Moses Parkway impacts, could affect freight transportation.

Erie County Rail Service Assessment

The Erie County Industrial Development Agency (ECIDA) commissioned an assessment of growth opportunities relating to rail service. The study, "Rail Service Assessment and Opportunities for New Growth in the Buffalo-Niagara Region," was conducted by James Cartin and delivered in November, 2004. The study included both transportation and marketing components.

Findings and Recommendations

The report made ten specific recommendations, grouped into four major categories:

- Advancing the port inland distribution network (PIDN)
- Expanding the flexibility of existing investment programs
- Addressing strategic issues relating to the Southern Tier gateway and rail connections to Canada
- Establishing a terminal area committee to outline improvement plans

Specific opportunities were identified in the potential for rail diversion of cross border truck freight and expansion of intermodal service. The consultant recommended that PIDN efforts be pursued in coordination with intermodal development efforts, in order to best leverage the benefits of the PIDN to the region.

The consultant recommended that Erie County work with the state to pursue a market study of the Southern Tier route and Portage Bridge, as expansion of the bridge capacity would make the route available to standard-weight railcars. The consultant also recommended that the county work to ensure that rail access to the Whirlpool Bridge, currently used only by Amtrak, is retained.

Agricultural Economic Development Study (2006)

Buffalo-Niagara Enterprise commissioned a study of potential economic development relating to agriculture in 2006. The study was conducted by Informa Economics and Moran, Stahl & Boyer, LLC. The final report was entitled "Agriculture-Dependent Economic Development for Western New York State."

Findings and Recommendations

The study reviewed recent trends in agriculture and included recommendations of ways that the region could pursue economic development opportunities that would be well positioned for these trends. Certain crops and commodities were identified as presenting the greatest opportunity for the region, including dairy products, wine, vegetables, forestry and wood products, and maple syrup. Renewable energy was considered an accompanying benefit to most of these. The primary opportunities were identified for yogurt, specialty cheeses, biodiesel, ethanol, fluid milk, and wine.

Many of these opportunities were driven by the proximity of nearby population centers. The study notes that shipping a refrigerated truckload to the New York City area from Buffalo costs $765, about one-third of

the cost of shipping the same truckload from Wisconsin, and about one-eighth the cost of shipping it from California. The study also notes growing interest in agricultural tourism relating to cheese and wine.

Each of the identified commodities would have specific transportation needs, and growth in each would have some impact on the transportation system. For most commodities, specific impacts were not identified. However, ethanol plants were noted as needing large quantities of water, as well as access to water and rail transportation. The study predicted growth in ethanol as a fuel additive, as other emission-reducing additives have been found to be hazardous. The Buffalo-Niagara region meets these transportation requirements, and also offers access to the Canadian market.

NYSDOT Lehigh Valley Yard Memorandum (2001)

This interdepartmental memorandum from the Intermodal Projects Bureau of the New York State Department of Transportation summarizes possible uses for the Lehigh Valley Yard.

The memo includes an inventory of the available tracks and their measurements. Eight tracks were found remaining in the yard, measuring a total of 13,460 feet. Additional lead, ladder and runner tracks were also identified, measuring a total of 17,480 feet. Needed repairs to all tracks were identified, including replacement of some missing rails.

Three possible uses for the yard were identified, including use as an intermodal terminal, an automotive terminal, and a bulk transfer terminal. The author felt that the yard had sufficient space for all three uses, if a market could be identified for each.

G. W. Fauth & Associates Reports (1997, 1998)

For these reports ECIDA retained G. W. Fauth & Associates to evaluate the impacts of the pending acquisition of Conrail by Norfolk Southern (NS) and CSX.

The reports noted that although CSX would succeed Conrail as the dominant carrier in the area, some of the advantages of scale that Conrail had offered would be lost as rail assets in the area were apportioned between NS and CSX. The CP Draw bridge was identified as a key chokepoint that would need to be addressed if competitive services were to be available in the area. The reports also noted that although other lines had varying access rights to Conrail, high reciprocal switching charges had the effect of limiting use of these rights.

ECIDA Testimony on the Conrail Takeover (2000)

Ron Coan, executive director of ECIDA, spoke at a legislative hearing on the subject of the Conrail takeover, addressing potential impacts of the planned partition of Conrail assets in the area. Mr. Coan testified that switching fees in the area were three times the national average in the area, and that these fees were particularly detrimental to the local chemical industry. Other industries were also mentioned as being adversely affected by high rail costs. He noted that the switching fees effectively prevented Canadian railroads from operating in the region.

The CP Draw bottleneck was identified by Mr. Coan as a particular concern for the area. He noted that NS had committed to spend $6 million to resolve the CP Draw chokepoint in its application to the STB outlining its plans for Conrail.