
# Niagara Frontier Urban Area Freight Transportation Study

## Technical Memorandum No. 3

### Freight Transportation Market Profiles

GBNRTC

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

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*Prepared for:*
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# BACKGROUND

With Technical Memorandum #2 providing an understanding of freight infrastructure and operations in the Buffalo-Niagara region, Technical Memorandum #3 offers a perspective on the demand for transportation assets and operations. Tech Memo #3 expands upon the preliminary traffic information presented in Tech Memo #1. It describes existing traffic flows and provides projections of future traffic flows through 2035. It identifies the principal commodities and traffic lanes.

Traffic flows and forecasts are presented for freight that originates in the region, terminates in the region, or passes through region. Flows and forecasts have been developed for the trucking, railroad, marine and air cargo sectors.

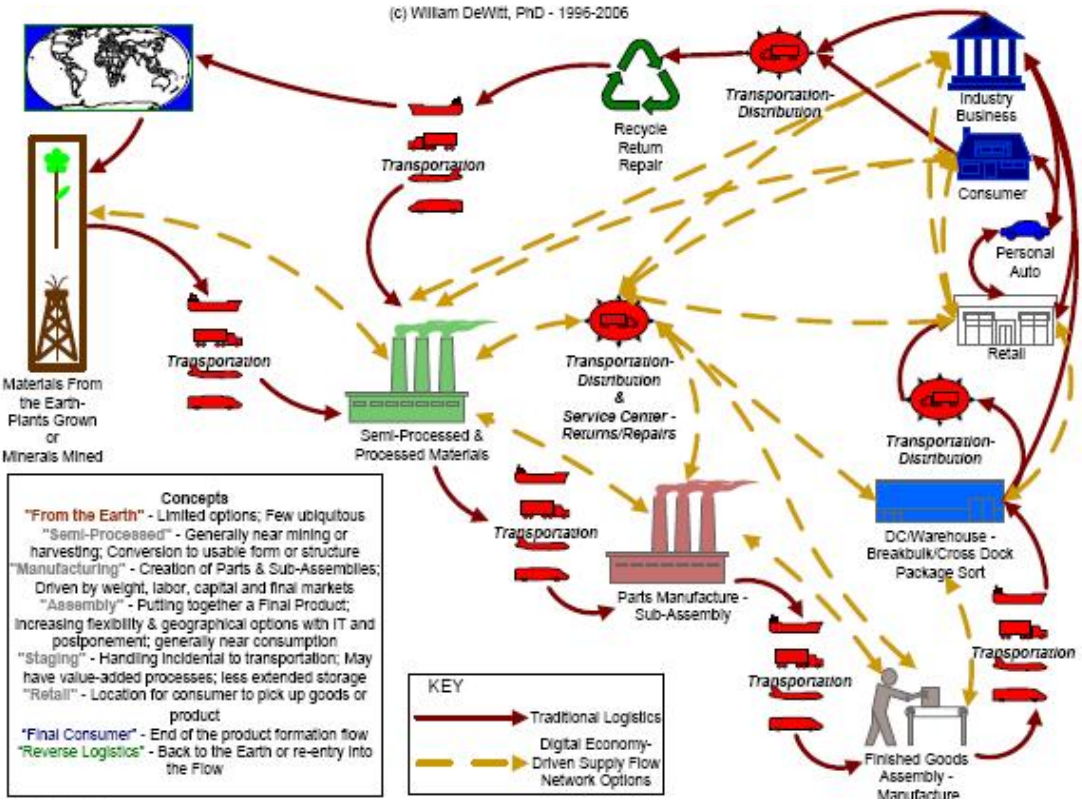
## 1.1 Factors that Influence Freight Transportation Demand

### Supply Chain

Supply chains, as the integration of activities and processes that define the distribution channel of a product from its sourcing to its delivery to the end consumer, comprise multiple participants that include suppliers, distributors, transporters, storage facilities and retailers, as well as government agencies involved in the sale, delivery and production of a particular product.

Early supply chains were comprised of a predefined fixed series of activities that were serially connected. Products moved along predetermined fixed routes with fixed activities. These linear supply chains were optimized by maximizing the volume moved. However, as information availability and timeliness have improved, supply chain management has become more sophisticated. This has resulted in the development of more complex supply chain networks with multiple alternative product channels. In parallel, the consumer has become more discriminating, increasingly requiring a choice among the features of consumer products. Today, supply chains include multiple transportation service providers and product transfer facilities. Figure 1-1 depicts an example of a modern supply chain, with its complex flows and inter-relationships.

**Figure 1-1: Modern Supply Chain**




Source: William DeWitt, *Freight Transportation & Logistics Education*, Presentation to Logistics Education Forum, June, 2006

The diagram portrays the supply chain from the extraction of raw materials to the ultimate disposal of the finished product. Raw materials are grown or mined and transported for processing into semi-finished materials. The semi-finished goods move to a facility where they are used as resources into the manufacture of components, combined into units, and then transported to a facility for combination with other units into a finished product.

The finished product is next transported to a warehouse or distribution center. The product is consolidated with other finished products for shipping to a retail facility where it is purchased by a consumer or business. The supply chain is not yet completed, however. After the product is consumed or no longer has value, what remains is transported for disposal, recycling return, or repair, commonly referred to as reverse logistics.

Changes in the supply chain have produced changes in trade patterns. Globalization of trade has increased the demand for transportation and has led to the evolution of multimodal services. Single mode transportation shipments have been replaced by more

efficient multiple mode movements. Consequently, freight transportation has become more complex and is increasing its demands for infrastructure that supports efficient operations.

**Containerization**

Enabling change in the supply chain has been the advent of containerization. The growth in containerization has revolutionized cargo shipping and freight logistics. It has resulted in the reduction of shipping costs over increasing distances facilitating the internationalization of supply chains. This, in turn, has allowed the pursuit and achievement of export-led growth policies.

Driving the increased growth in containerized freight over the last 50 years have been several factors including: (1) containerization has made possible the widespread use of automation and just-in-time business practices; (2) containerization has enabled the achievement of greater economies of scale through larger ships and cargo transfer areas; (3) non-manufactured and bulk products such as cotton, sugar, forest products, and grains are increasingly being containerized; (4) the growing importance of door-to-door transportation and logistics services; (5) changes in communications infrastructure, which has permitted the real time tracking of cargo movements; and (6) higher capacity containers permitting the movement of larger shipment sizes at lower costs

**Economic Factors**

**Figure 1-2** is a summary of parameters describing the U.S. economy between 1980 and 2004.

**Figure 1-2: U.S. Economic and Social Characteristics**

| Statistic | 1980 | 1990 | 2000 | 2004 | Percent Change 1980 - 2004 |
|---|---|---|---|---|---|
| Resident Population (Thousands) | 227,225 | 249,623 | 282,192 | 293,655 | 29.2% |
| Employment (Thousands) | 99,303 | 118,793 | 136,891 | 139,252 | 40.2% |
| Median Household Income ($2000) | 35,057 | 38,257 | 41,990 | 40,468 | 15.4% |
| Gross Domestic Product ($2000 Millions | 5,161,700 | 7,112,500 | 9,817,000 | 10,755,700 | 108.4% |
| Foreign Trade ($2000 million) | 631,335 | 1,168,168 | 2,572,000 | 2,837,634 | 349.5% |

Source: U.S. Federal Highway Administration, Bureau of Labor Statistics, Census Bureau

The United States population increased by 29 percent during the period, while total employment grew by 40 percent. Gross Domestic Product (GDP) increased at a faster

rate than population or employment at 108 percent reflecting improved productivity. Foreign trade showed a particularly marked increase during that time period, rising by 349 percent.

Demand for freight transportation grows with increases in population and economic activity. As shown in **Figure 1-3**, U.S. freight traffic rose during the same time 1980-2004 period.

**Figure 1-3: U.S. Freight Demand (Millions of Ton-Miles)**

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

Source: U.S. Bureau of Transportation Statistics

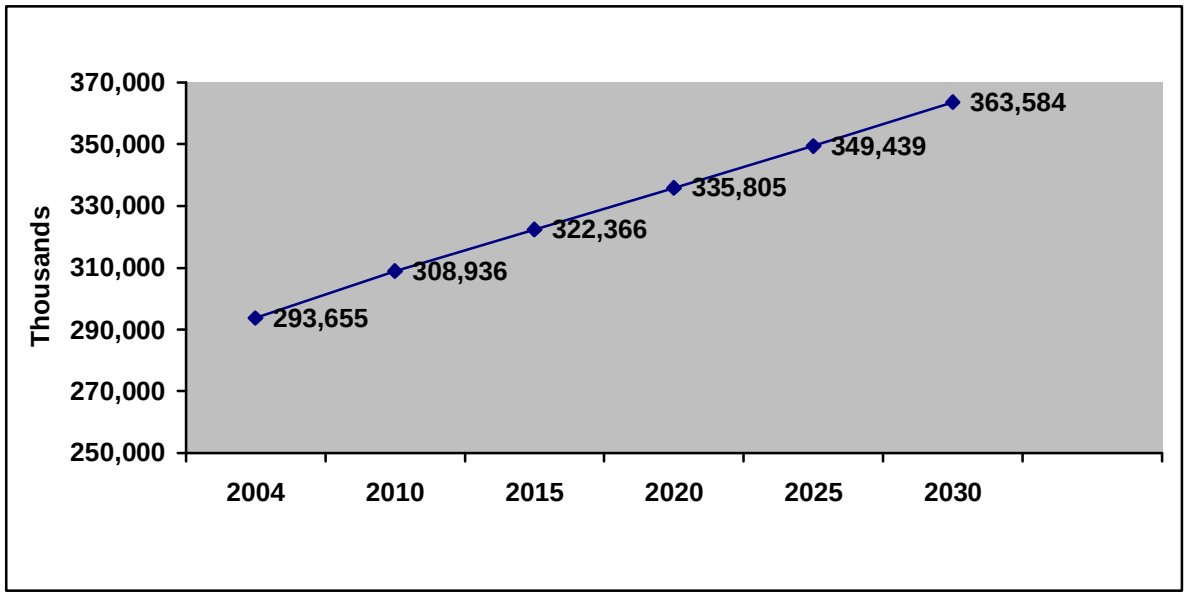
During the period only domestic water transportation showed a decrease in activity, much having to do with the increased competitiveness of rail transportation. While coastwise shipping declined by 55.7 percent, trucking, rail, and air freight showed large growth of 103.5 percent, 80.7 percent, and 239.9 percent, respectively.

## 1.2 Future U.S. Trends

It is anticipated that the U.S. population and employment will continue to grow; GDP per capita will continue to increase, as will the overall size of the economy. Furthermore, foreign trade is expected to continue to increase.

**Figure 1-3** shows the expected growth in population as forecasted by the U.S. Census Bureau. The U.S. population is projected to reach 364 million people by 2030, an increase of 24 percent over 2004.

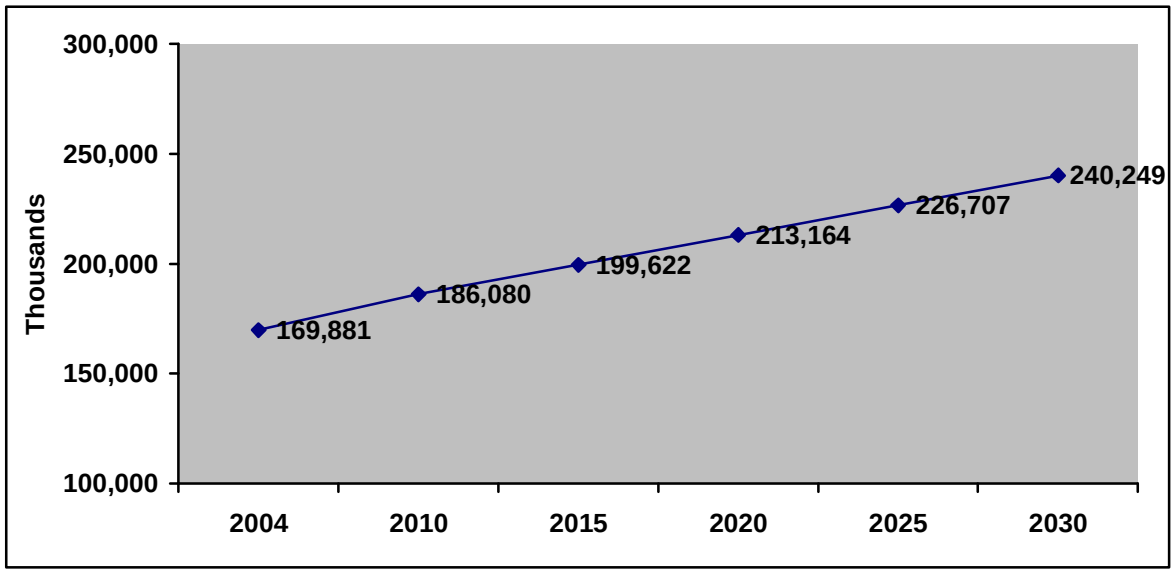
**Figure 1-4: Projected U.S. Population (000s)**




Source: U.S. Census Bureau

Similarly, employment is expected to grow. According to Woods & Poole, a firm that specializes in long-term economic and demographic projections, nationwide employment is expected to increase by 41 percent between 2004 and 2030 (**Figure 1-5**).

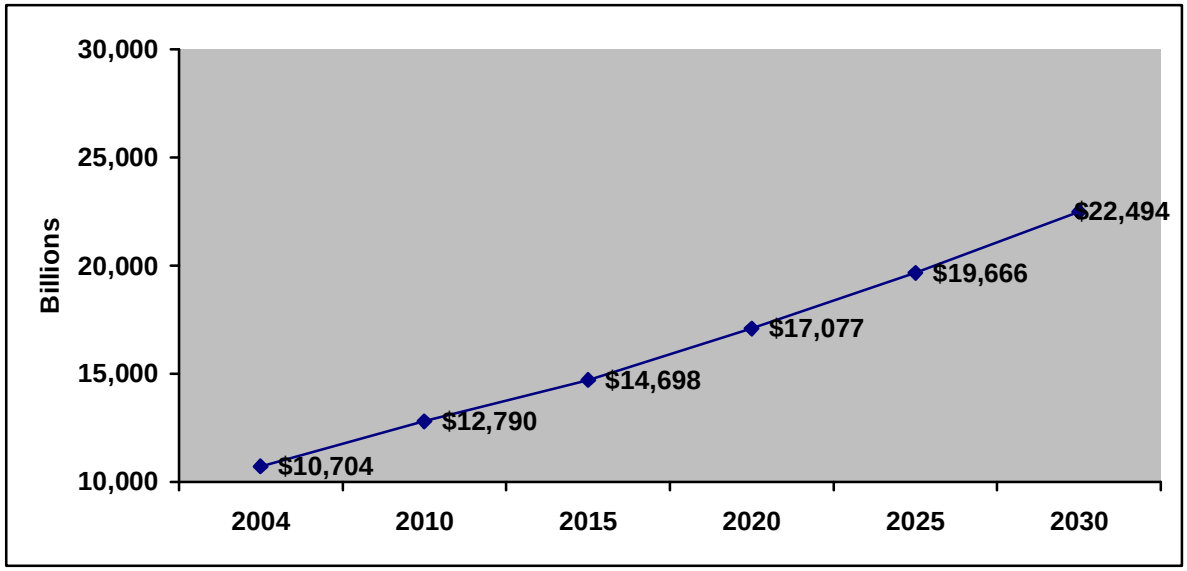
**Figure 1-5: Projected U.S. Employment (000s)**




Source: Woods & Poole

With respect to economic growth outlooks, the U.S. Energy Information Administration (EIA) produces long-term forecasts of the economy, trade, and transportation.[1] The EIA expects that real GDP will more than double between 2004 and 2030 as shown in **Figure 1-6**.

**Figure 1-6: Projected U.S. Real Gross Domestic Product**

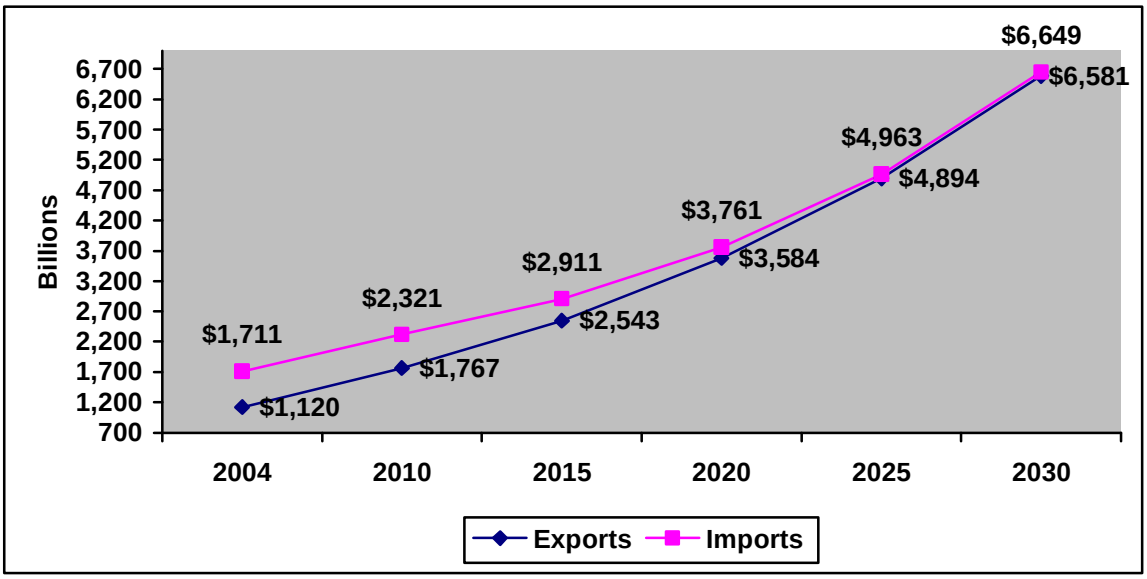



Source: U.S. Energy Information Administration

[1] The Surface Transportation Board which adjudicates rail rate

The EIA foreign trade forecasts show imports almost quadrupling and exports increasing almost five-fold.

**Figure 1-7: Projected Real Value of Imports and Exports**




Source: U.S. Energy Information Administration

The growth in the economy and foreign trade will increase the demand for freight transportation. The U.S. Federal Highway Administration has developed the Freight Analysis Framework, a database that comprises historic and future freight traffic flows by mode and commodity.

**Figure 1-8: Freight Analysis Framework U.S. Freight Flows – Thousands of Tons**

| Mode | 2002 | 2010 | 2015 | 2020 | 2025 | 2030 | % Change 2002 - 2030 |
|---|---|---|---|---|---|---|---|
| Truck | 12,133,069 | 14,283,518 | 15,626,360 | 17,217,699 | 19,149,073 | 21,512,014 | 78% |
| Rail | 1,968,450 | 2,337,259 | 2,534,251 | 2,749,158 | 3,011,003 | 3,324,292 | 67% |
| Water | 701,002 | 742,244 | 796,971 | 842,599 | 901,458 | 966,691 | 38% |
| Total | 14,802,521 | 17,363,021 | 18,957,582 | 20,809,456 | 23,061,534 | 25,802,997 | 74% |

Source: U.S. FHWA, Freight Analysis Framework

By 2030, over 33 million tons of products will circulate through the U.S. transportation system by truck, rail, or inland waterway, an increase of 74 percent over 2002. The most significant growth is anticipated to come in the transportation of freight over highways.

The most explosive growth area in freight transportation will continue to be containers transported by either intercity truck or railroad. Fueled by the continuing growth in trade, the U.S. freight system is expected to transport 118 million twenty foot equivalent container units (TEU) per year by 2020 according to American Association of State Highway and Transportation Officials. This is more than three times the number of TEUs handled in 2002.[2] Putting this growth into perspective, between 1980 and 2002, containerized freight shipments increased by an estimated 25 million TEUs. From 2002 to 2020, 80 million additional TEUs are forecasted to be transported.

## 1.3 Buffalo-Niagara Historic Trends

The Buffalo-Niagara region has not experienced population and economic growth comparable to the overall U.S. during the past several years. The area's population declined by seven percent between 1980 and 2004, compared to the national increase in population of 29 percent over the same time period. Likewise, the region's employment increased by 12 percent, while nationwide, employment increased by 40 percent.

**Figure 1-9: Buffalo-Niagara Region Population and Employment**

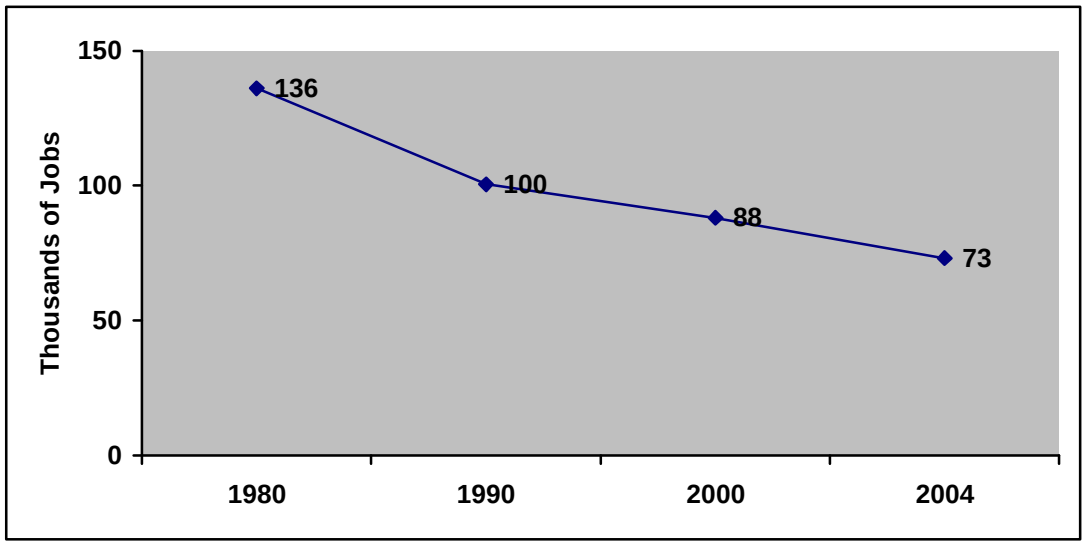
| Statistic | 1980 | 1990 | 2000 | 2004 | % Change 1980 - 2004 |
|---|---|---|---|---|---|
| Resident Population (Thousands) | 1,243 | 1,189 | 1,170 | 1,154 | -7.2 |
| Employment (Thousands) | 585 | 630 | 650 | 643 | 11.6 |

Sources: GBNRTC, Woods & Poole

Contributing to the lack of growth in population and employment has been a significant drop in manufacturing employment, with total manufacturing employment for Erie and Niagara counties dropping by 43 percent between 1980 and 2004.

[2] A TEU is a standard measure of container size representing a unit. 20 feet long.

**Figure 1-10: Manufacturing Employment – Buffalo-Niagara Region**



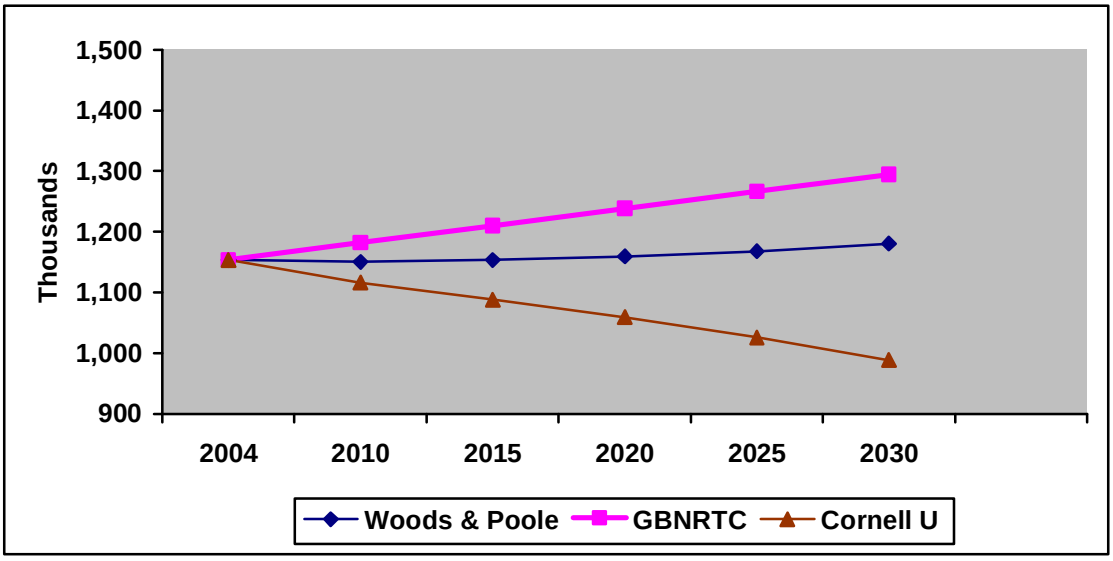

Sources: GBNRTC, Woods & Poole

## 1.4 Buffalo-Niagara Economic Outlook

In the future, the region's population is not expected to decline to the extent it has in the past, however, it is not expected to increase significantly either. Forecasts by both GBNRTC and Woods & Poole are consistent, each showing a relatively stable population to 2030. The Woods & Poole forecasts suggest a population increase of only about two percent for the region over the entire 26 year period from 2004 to 2030. The GBNRTC forecasts a slightly higher population increase with the population of Erie and Niagara counties expected to be about 1.3 million in 2030. This would translate to an increase of about 12 percent from 2004 to 2030. Both forecasts yield population increases significantly lower than the national population increase of 29 percent that the U.S. Census Bureau expects for the United States as a whole.

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

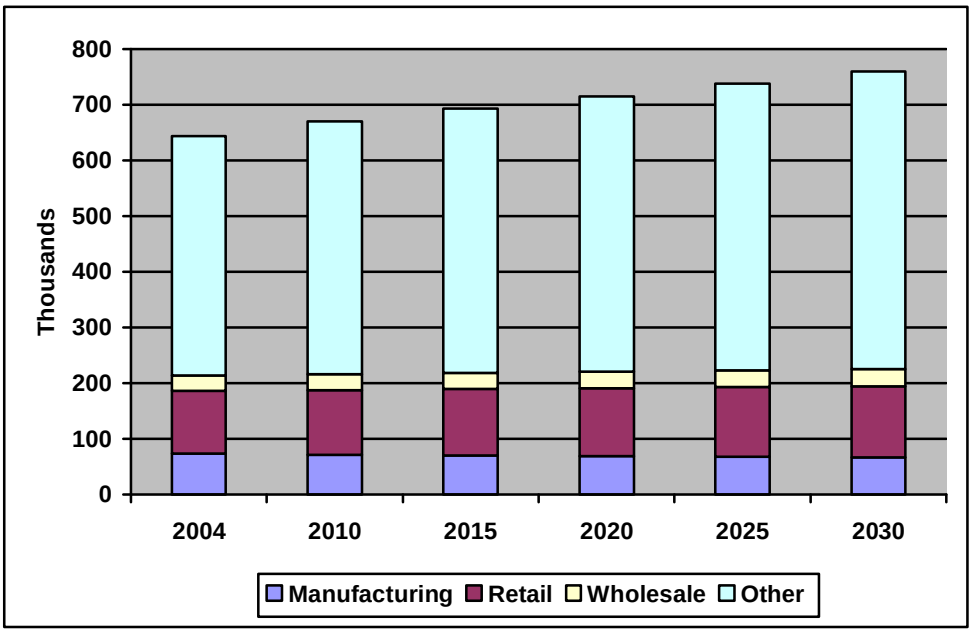
**Figure 1-11: Population Forecast for the Buffalo Niagara Region**




Source: Woods & Poole, GBNRTC

Woods & Poole forecasts employment in the Buffalo-Niagara region to increase by about 18 percent between 2004 and 2030. However, the change in employment varies by sector, with the retail and wholesale sectors projected to post in employment, with a 14 and 10 percent increase in employment between 2004 and 2030, respectively. Manufacturing, on the other hand, is expected to continue its decline, losing an additional 10 percent of its employment over the same period. The "Other" category, which includes the service industries, is expected to increase the most.

**Figure 1-12: Projected Employment Composition in Buffalo-Niagara Region**

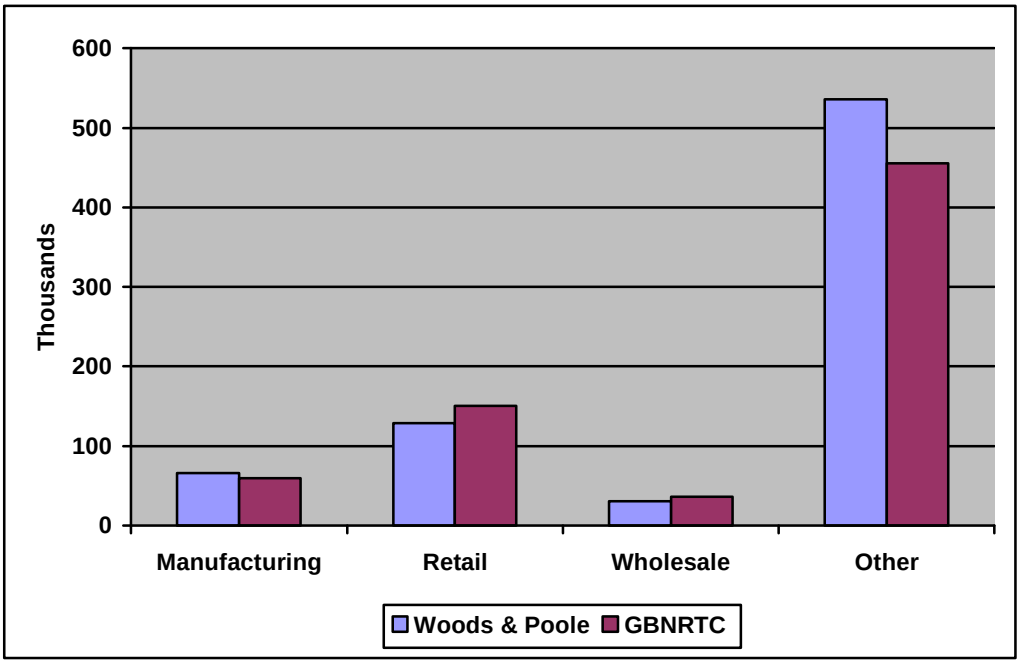



Source: Woods & Poole

The GBNRTC employment outlook is more conservative than that of Woods & Poole. GBNRTC forecasts about half the increase in employment between 2004 and 2030, a 9 percent employment increase over the entire time period. The direction of the forecasted trends between the two forecasts is consistent, in that both show declining employment in the manufacturing sector and increases in other sectors. GBNRTC has a less aggressive perspective on employment growth in the "other" category but is more optimistic than Woods & Poole in terms of retail and wholesale job growth.

Employment growth exceeds population growth. Improvements in the economy generate jobs at a multiple higher than the growth in population. For example a purchase of a consumer good stimulates employment in both the retail and wholesale industries.

**Figure 1-13: Comparison of 2030 Projected Employment of Buffalo-Niagara Region**




Source: Woods & Poole, GBNRTC

## 1.5 Implications for Buffalo-Niagara Freight Traffic

The perspective on the economy serves to inform the forecasting of Buffalo-Niagara region's freight flows. From the data shown above, one can form a number of likely expectations regarding the trends of freight traffic for the Buffalo-Niagara region.

- Freight traffic will tend to increase faster than employment or population. This is due to improvements in employee productivity, which in turn creates additional demand for freight transportation. It is also due to changing trade patterns. As industrial and retail goods are increasingly sourced from locations outside the region, demand for transportation will tend to rise, over and above the population and employment increases
- Overall freight flows should increase for the Buffalo-Niagara region because employment is expected to increase. In turn, freight flows should increase at a rate faster than changes in employment.
- Specific changes in employment could have implications for the region's freight. Because manufacturing employment is expected to decline, this would tend to decrease outbound freight flows, since the area's manufacturing firms have been

major outbound freight generators in the past. This would also tend to decrease the inbound supply of raw materials or intermediate products. On the other hand, increases in expected retail and wholesale employment would tend to increase inbound freight flows, particularly of secondary traffic, i.e. shipments from distribution centers to retail locations.

- Because the population and employment of the Buffalo-Niagara region is expected to increase more slowly than the national average, one would expect freight flows to increase less rapidly than overall national freight flows.
- However, Buffalo-Niagara's status as an international gateway and location along a major east-west corridor, both for rail and motor carrier, would tend to increase the amount of overhead traffic that will flow over the area.

## 1.6 Changes in International Trade Patterns

Several factors are influencing changes in international trade patterns are occurring that will favor the Buffalo-Niagara region. These changes are shifting international freight flows from Southern California gateways to the Northeast.

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

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

- Roadway congestion in the Metropolitan New York area will result in a greater reliance on rail transportation to move containers to inland markets. The opening of the Seneca Yard intermodal facility positions the Buffalo-Niagara region as a logistics hub for this traffic.

- Intermodal train economics are becoming more favorable to short and medium length container movements. Improvements in intermodal technology have reduced the costs of moving containers by train. In addition, increasing fuel costs favor rail transportation over truck. Consequently, the railroads can provide more cost competitive services in shorter corridors.

- The additional container traffic will drive the need to increase the cargo throughput at the east coast ports. Containers will have to move quickly through the port terminals. One way to do this is to rely on inland satellite terminals for container sorting and processing. Seneca Yard can serve as a lynch pin for a satellite terminal in the area.

However, for the Port of New York to fully participate in the future growth in traffic, improvements will be required. The Bayonne Bridge, for example, needs to be raised to allow passage of the next generation of container ships into the Port.

## 1.7 Current Buffalo Niagara Freight Geography

**Figure 1-14** and **Figure 1-15** show the outbound freight clusters by commodity and the principal shippers of outbound freight.

**Figure 1-14: Principal Outbound Freight Clusters**

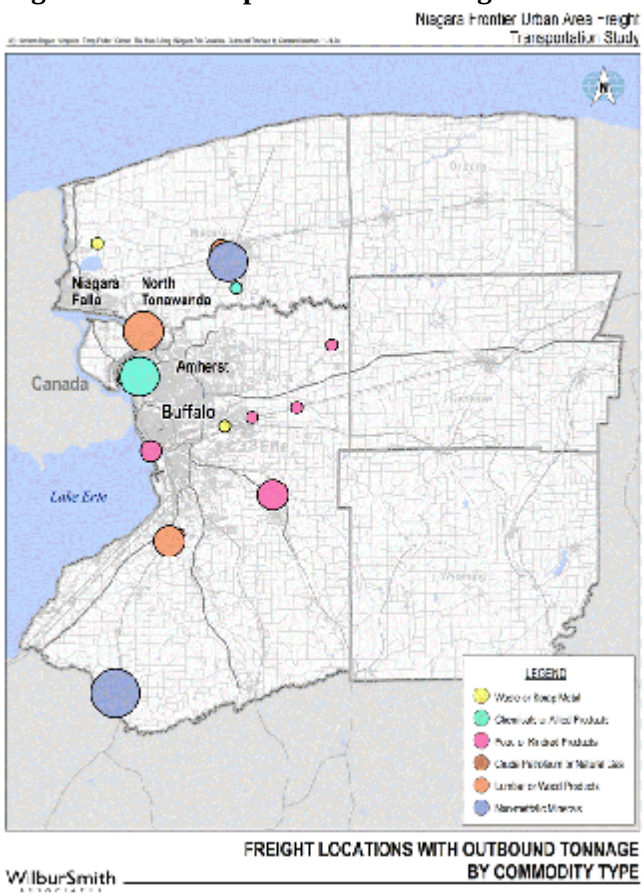



**Figure 1-15: Principal Outbound Freight Shippe**

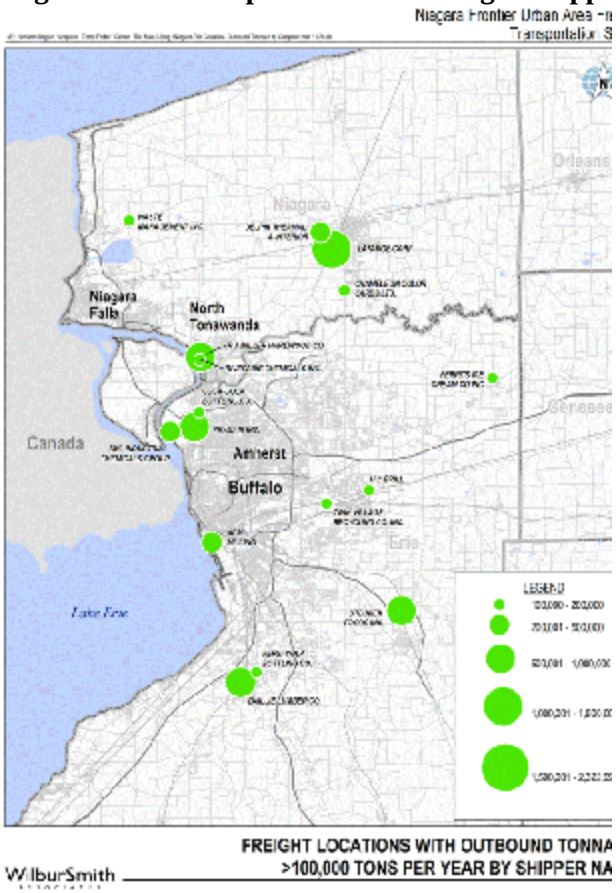



**Figure 1-14** shows shippers of non-metallic minerals, lumber and chemicals to be the most prominent in the region. Following this are shippers of food and food products. LaFarge Corporation, Ballie Lumber, Praxair, R.A Miller Hardwood are the principal companies shipping outbound freight in the two-county region.

**Figures 1-16** and **1-17** map the locations of significant inbound freight activity. Non-metallic minerals, lumber, and petroleum products receivers are the biggest inbound freight clusters. LaFarge, Niagara Lubricant Company, and Safety-Kleen Systems are the principal freight receivers.

**Figure 1-16: Principal Inbound Freight Clusters**

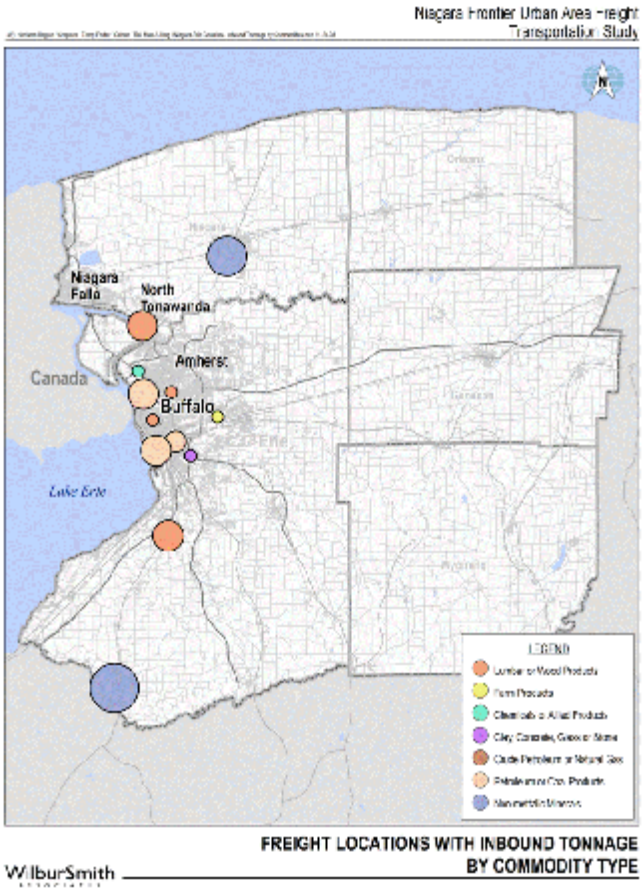
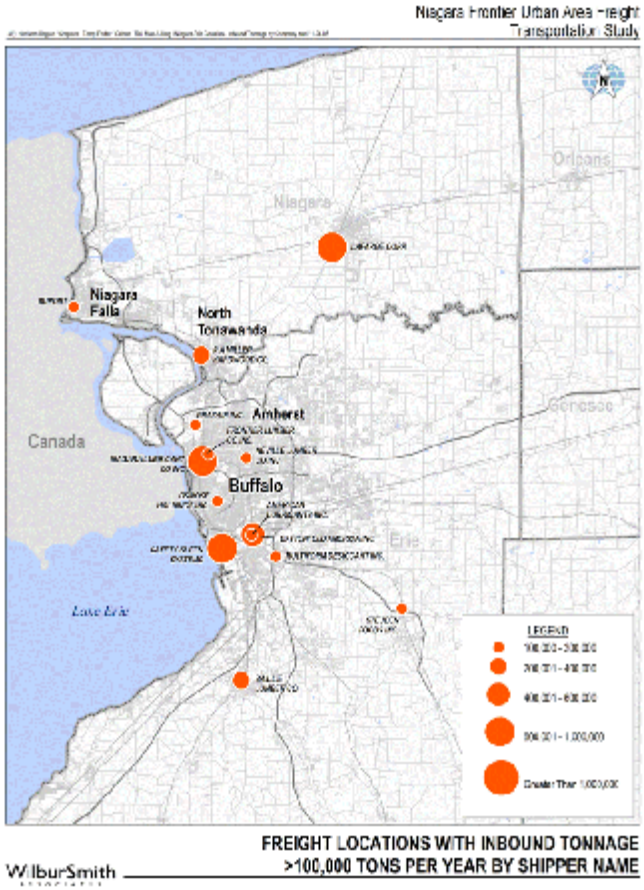



**Figure 1-17: Principal Inbound Freight Receiv**




The following sections describe in more detail the commodity movements and freight flows.

# MOTOR CARRIER TRAFFIC

## 2.1 Approach

The year 2004 transportation is used as the base period with the TRANSEARCH database developed by Global Insight, Inc. (formerly Reebie Associates) as the source of the traffic data. The specific dataset used was a later version obtained from the New York State Department of Transportation than that used for the preliminary traffic analyses presented in Technical Memorandum No.1. In addition, a different dataset with different routing assumptions was used for quantifying overhead traffic.

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

The FAF database was selected to develop growth factors as it is nationally recognized and a well tested source for freight flow information. The FAF provides forecasts for every five years to between 2002 and 2035. An appropriate level of base data for 2004 was estimated by prorating the forecasted change between 2002 and 2010 to 2004. This base data was then assumed to correspond to the 2004 base TRANSEARCH data, and would serve as a basis by which to compare 2010, 2015 data, etc. in order to develop rates of change using FAF.

## 2.2 Summary

Motor carrier traffic in the Buffalo-Niagara region is expected to increase in the future, despite relatively flat population growth. This is attributable to expected increases in employment, employee productivity, and international trade. As described previously, freight traffic tends to increase faster than both population and employment. Increases in personal consumption and employee productivity stimulate proportionately higher economic activity. Truck traffic will also increase due to the national growth international trade. Imports and exports moving through Port of New York and New Jersey as well as

commerce with Canada will pass through the region. Forecasted truck traffic is expected to double between 2004 and 2035. The largest percentage gain is in international traffic passing through the region followed by outbound traffic.

**Figure 2-1: Forecasted Motor Carrier Traffic for the Buffalo Niagara Region (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

## 2.3 Local Motor Carrier Traffic

Local traffic consists of moves within and between Niagara and Erie Counties. Overall, local traffic is forecasted to show an increase of approximately 89 percent between 2004 and 2035 as shown in Figure 2-2. Secondary Traffic represents the greatest increase in local freight traffic within the region, with a projected increase of 4.0 million tons from 2004 to 2035. Clay, Concrete, Glass or Stone and Nonmetallic materials represent increases of 2.8 million and 2.7 million tons, respectively. Primary Metal Products is expected to have the highest rate of growth.

**Figure 2-2: Forecasted Local Motor Carrier Traffic for the Buffalo-Niagara Region (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

## 2.4 Inbound Motor Carrier Traffic

Traffic into the Buffalo-Niagara region is expected to double between the base year and 2035. As can be seen from **Figure 2-3** below, the largest source of increase is expected to consist of inbound interstate shipments. This accounts for 37 million of the expected 62 million ton increase in inbound freight between 2004 and 2030.

**Figure 2-3: Forecasted Inbound Motor Carrier Traffic for the Buffalo-Niagara Region (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

As shown in **Figure 2-4**, secondary traffic accounts for the largest source of inbound traffic growth, representing a 33 million ton increase between 2004 and 2035. This reflects expected increases in consumption due to a growing economy and greater retail and wholesale employment as mentioned above. In addition, retail and wholesale productivity has improved significantly in previous years. According to data from the Bureau of Labor Statistics, retail and wholesale productivity has increased by an average annual rate of over 3 percent over the past 12 years. If this trend were to continue into the

future, overall retail and wholesale distribution and resulting secondary traffic volumes would increase at a rate significantly higher than employment in these sectors. Food and Kindred Products, Clay, Concrete, Glass or Stone also account for large inbound volume increases, showing about 8 million and 7
million ton increases, respectively, between 2004 and 2035.

**Figure 2-4: Forecasted Inbound Motor Carrier Traffic to the Buffalo-Niagara Region by Commodity (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

**Figure 2-5** lists the primary origin states for inbound interstate traffic into the Buffalo Niagara region. As can be seen, New Jersey, Pennsylvania, and Illinois are expected to continue to account for the greatest volume of traffic to the Buffalo Niagara region, accounting for 11 million, 8 million, and 5 million additional tons, respectively in 2035.

**Figure 2-5: Primary Origins for Inbound Interstate Motor Carrier Traffic to the Buffalo-Niagara Region (Tonnage)**

| Origin State | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| NJ | 5,265,547 | 5,829,074 | 6,349,864 | 7,063,027 | 8,015,652 | 9,267,440 | 10,901,876 | 107.0% |
| PA | 5,781,975 | 5,794,499 | 6,052,675 | 6,422,800 | 6,897,881 | 7,478,085 | 8,074,501 | 39.6% |
| IL | 2,983,741 | 3,191,783 | 3,386,039 | 3,635,904 | 3,948,064 | 4,312,497 | 4,907,641 | 64.5% |
| OH | 3,265,412 | 3,581,687 | 3,704,436 | 3,850,954 | 4,017,059 | 4,203,886 | 4,616,951 | 41.4% |
| MD | 1,404,397 | 1,669,715 | 1,806,277 | 2,038,164 | 2,341,806 | 2,692,193 | 3,111,239 | 121.5% |
| IN | 1,995,580 | 2,075,334 | 2,177,597 | 2,298,095 | 2,443,381 | 2,573,966 | 2,850,456 | 42.8% |
| TX | 1,287,131 | 1,330,836 | 1,422,866 | 1,558,841 | 1,747,322 | 1,981,001 | 2,223,897 | 72.8% |
| NC | 1,000,749 | 1,094,976 | 1,204,468 | 1,343,351 | 1,513,712 | 1,707,795 | 1,951,653 | 95.0% |
| KY | 756,292 | 873,099 | 934,938 | 1,006,128 | 1,119,565 | 1,243,086 | 1,511,518 | 99.9% |
| VA | 775,691 | 833,819 | 913,160 | 1,005,491 | 1,115,131 | 1,247,593 | 1,399,487 | 80.4% |
| Other | 11,275,752 | 11,801,363 | 12,513,466 | 13,517,586 | 14,835,556 | 16,448,995 | 18,589,371 | 64.9% |
| Grand Total | 35,792,267 | 38,076,184 | 40,465,785 | 43,740,341 | 47,995,130 | 53,156,537 | 60,138,589 | 68.0% |

Source: Transearch, FAF, WSA Analysis

**Figure 2-6** shows the primary origin counties for inbound intrastate traffic. New York City (Manhattan) not only accounts for the largest volume of traffic in 2004, but it also accounts for the largest increase in traffic, representing an increase of about 5.1 million tons between 2004 and 2035. Other counties with large increasing volumes to the Buffalo Niagara region are Albany County and Monroe County with increases of 3.8 million and 3.3 million tons, respectively.

**Figure 2-6: Primary Origins for Inbound Intrastate Motor Carrier Traffic to the Buffalo-Niagara Region (Tonnage)**

| Origin County | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| New York County, NY | 2,048,786 | 2,577,544 | 3,148,036 | 3,854,422 | 4,728,180 | 5,806,828 | 7,135,580 | 248.3% |
| Albany County, NY | 1,348,698 | 1,696,303 | 2,101,714 | 2,613,572 | 3,262,671 | 4,082,014 | 5,118,399 | 279.5% |
| Monroe County, NY | 1,538,494 | 1,896,102 | 2,274,326 | 2,735,060 | 3,298,036 | 3,985,952 | 4,816,979 | 213.1% |
| Suffolk County, NY | 1,668,909 | 2,083,264 | 2,612,726 | 3,211,513 | 3,737,065 | 4,042,284 | 4,075,387 | 144.2% |
| Kings County, NY | 1,777,304 | 2,158,976 | 2,482,010 | 2,806,226 | 3,181,997 | 3,551,274 | 3,984,754 | 124.2% |
| Allegany County, NY | 666,749 | 944,246 | 1,261,852 | 1,701,935 | 2,179,632 | 2,458,144 | 2,722,606 | 308.3% |
| Onondaga County, NY | 1,183,690 | 1,428,431 | 1,671,483 | 1,957,751 | 2,295,777 | 2,686,671 | 3,164,164 | 167.3% |
| Nassau County, NY | 887,014 | 1,037,598 | 1,206,775 | 1,398,226 | 1,629,956 | 1,884,534 | 2,191,004 | 147.0% |
| Chemung County, NY | 514,694 | 685,050 | 875,027 | 1,132,771 | 1,414,671 | 1,590,068 | 1,766,647 | 243.2% |
| Queens County, NY | 1,069,786 | 1,234,392 | 1,396,754 | 1,575,610 | 1,786,485 | 2,018,468 | 2,262,917 | 111.5% |
| Other | 13,499,672 | 15,397,137 | 17,935,130 | 20,152,843 | 22,475,419 | 24,418,082 | 26,846,149 | 98.9% |
| Grand Total | 26,203,795 | 31,139,043 | 36,965,833 | 43,139,930 | 49,989,889 | 56,524,318 | 64,084,585 | 144.6% |

Source: Transearch, FAF, WSA Analysis

## 2.5 Outbound Motor Carrier Traffic

As shown in **Figure 2-7** below, the primary destinations of the Buffalo-Niagara Region's outbound motor carrier freight are within the state of New York. Although traffic originating outside the state of New York is expected to grow faster, more than two thirds of the truck traffic will be intrastate in 2035.

**Figure 2-7: Forecasted Outbound Motor Carrier Traffic from the Buffalo-Niagara Region (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

As shown in **Figure 2-8**, secondary traffic represents the commodity with the highest increase in outbound total tonnage from the Buffalo-Niagara Region, with an increase in approximately 28 million tons between 2004 and 2035. Clay, Concrete, Glass or Stone and Food or Kindred Products represent the second and third highest increases with 6.8 million and 3.4 million tons, respectively.

**Figure 2-8: Forecasted Outbound Motor Carrier Traffic from the Buffalo-Niagara Region by Commodity (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

As can be seen from **Figure 2-9** below, Pennsylvania and New Jersey will continue to be the principal destinations for interstate outbound traffic. Combined they will continue to account for more than half the traffic.

**Figure 2-9: Primary Destination States for Outbound Interstate Motor Carrier Traffic from the Buffalo-Niagara Region (Tonnage)**

| Destination State | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| PA | 2,165,874 | 2,321,211 | 2,594,180 | 2,922,902 | 3,327,495 | 3,809,686 | 4,349,832 | 100.8% |
| NJ | 1,239,202 | 1,269,745 | 1,396,098 | 1,536,576 | 1,725,446 | 1,885,520 | 2,079,294 | 67.8% |
| CT | 1,009,785 | 1,123,760 | 1,255,445 | 1,407,160 | 1,587,562 | 1,794,626 | 2,015,328 | 99.6% |
| MA | 1,049,470 | 1,080,254 | 1,200,900 | 1,345,068 | 1,530,623 | 1,738,365 | 1,929,047 | 83.8% |
| OH | 657,944 | 739,811 | 829,652 | 942,205 | 1,074,977 | 1,229,057 | 1,379,402 | 109.7% |
| MD | 475,595 | 526,708 | 581,035 | 645,237 | 726,903 | 818,334 | 922,092 | 93.9% |
| NH | 423,310 | 457,699 | 503,583 | 556,848 | 628,178 | 709,894 | 799,844 | 88.9% |
| FL | 312,581 | 355,452 | 400,968 | 453,915 | 517,009 | 591,626 | 678,030 | 116.9% |
| IL | 291,399 | 328,852 | 370,110 | 419,697 | 480,701 | 554,750 | 639,698 | 119.5% |
| GA | 274,375 | 322,174 | 361,095 | 408,394 | 466,755 | 536,885 | 621,574 | 126.5% |
| Other | 5,447,466 | 5,322,607 | 5,837,015 | 6,474,180 | 7,395,033 | 8,270,662 | 9,256,803 | 69.9% |
| Total | 13,347,002 | 13,848,274 | 15,330,080 | 17,112,184 | 19,460,682 | 21,939,404 | 24,670,943 | 84.8% |

Source: Transearch, FAF, WSA Analysis

**Figure 2-10** below shows the primary destination counties for outbound intrastate moves from the Buffalo-Niagara region. Kings County (Brooklyn) accounts for the largest volume of outbound intrastate traffic. New York County (Manhattan) will continue to be the second leading county in receiving traffic from the region.

**Figure 2-10: Primary Destination Counties for Outbound Intrastate Motor Carrier Traffic from the Buffalo-Niagara Region (Tonnage)**

| Destination County | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| Kings County, NY | 3,764,880 | 4,136,761 | 4,694,692 | 5,369,095 | 6,207,663 | 7,202,445 | 8,324,657 | 121.1% |
| New York County, NY | 3,490,540 | 3,911,106 | 4,401,334 | 4,970,111 | 5,636,794 | 6,405,673 | 7,280,592 | 108.6% |
| Onondaga County, NY | 2,198,464 | 2,553,810 | 2,928,675 | 3,363,216 | 3,870,687 | 4,415,181 | 5,073,330 | 130.8% |
| Allegany County, NY | 692,203 | 877,408 | 1,070,481 | 1,308,088 | 1,601,121 | 1,963,182 | 2,411,319 | 248.4% |
| Suffolk County, NY | 1,627,961 | 1,741,855 | 1,961,502 | 2,223,817 | 2,553,273 | 2,937,349 | 3,329,155 | 104.5% |
| Westchester County, NY | 1,619,002 | 1,781,945 | 1,985,105 | 2,219,805 | 2,499,309 | 2,818,866 | 3,161,062 | 95.2% |
| Queens County, NY | 1,450,172 | 1,582,965 | 1,770,213 | 1,987,066 | 2,245,812 | 2,540,768 | 2,861,969 | 97.4% |
| Monroe County, NY | 1,237,633 | 1,356,830 | 1,532,059 | 1,735,230 | 1,973,848 | 2,254,658 | 2,564,317 | 107.2% |
| Nassau County, NY | 1,396,111 | 1,489,757 | 1,663,119 | 1,868,191 | 2,122,292 | 2,413,713 | 2,722,095 | 95.0% |
| Albany County, NY | 1,026,296 | 1,153,265 | 1,315,350 | 1,503,801 | 1,730,054 | 2,001,215 | 2,277,313 | 121.9% |
| Other | 11,888,689 | 13,234,028 | 14,894,548 | 16,825,196 | 19,106,247 | 21,758,555 | 24,682,344 | 107.6% |
| Total | 30,391,950 | 33,819,730 | 38,217,078 | 43,373,617 | 49,547,099 | 56,711,606 | 64,688,153 | 112.8% |

Source: Transearch, FAF, WSA Analysis

## 2.6 Overhead Motor Carrier Traffic

Overhead traffic is shipments that move through the region, but neither originate or terminate in the two counties. In 2004, overhead volume was 44 million tons, nearly two-thirds of which was international traffic. By 2035, overhead traffic is expected to more than double with most of the growth attributable to the international sector.

**Figure 2-11: Motor Carrier Traffic over the Buffalo-Niagara Region (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

Food or Kindred Products were the most significant commodity to move through the region and is expected to remain so in 2035. The most significant absolute growth, however, is expected to occur in secondary traffic and electrical equipment.

**Figure 2-12: Primary Commodities of Domestic Overhead Motor Carrier Traffic over the Buffalo-Niagara Region (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

The motor carrier traffic flows from the Midwest to the East Coast and New England represented more than half the domestic highway traffic passing through the region and will continue to do so in 2035. The back haul flows between these regions represent the next highest volumes

**Figure 2-13: Regional Markets of Domestic Motor Carrier Traffic over the Buffalo-Niagara Region (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

In terms of overhead traffic moving from the United States to Canada, Transportation Equipment and Pulp, Paper, or Allied Products, Chemicals, and Machinery are the most significant commodities (**Figure 2-15**). These four commodities will represent more than half the motor carrier traffic moving through the region into Canada. Transportation equipment and machinery are also two of the fastest growing commodities.

**Figure 2-14: Commodities of Overhead Traffic to Canada through the Buffalo-Niagara Region (Tonnage)**

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

Source: Transearch, FAF, WSA Analysis

Pennsylvania, Ohio, and New Jersey will generate the largest overhead motor carrier traffic volumes in 2035, with traffic from Michigan expected to experience significant growth due to the increase in shipping of transportation equipment.

**Figure 2-15: Origin States of Overhead Traffic to Canada through the Buffalo-Niagara Region (Tonnage)**

| Origin State | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| PA | 4,831,741 | 5,706,208 | 6,479,172 | 7,428,409 | 8,603,372 | 10,097,563 | 11,015,350 | 128% |
| OH | 3,002,944 | 3,604,036 | 4,224,818 | 4,984,929 | 5,921,817 | 7,084,439 | 7,761,517 | 158% |
| NJ | 1,102,573 | 1,382,096 | 1,616,386 | 1,909,111 | 2,262,643 | 2,694,886 | 3,015,003 | 173% |
| VA | 695,042 | 905,730 | 1,105,721 | 1,331,796 | 1,611,571 | 1,969,044 | 2,078,001 | 199% |
| IL | 770,303 | 942,142 | 1,119,408 | 1,335,723 | 1,600,854 | 1,927,314 | 2,186,200 | 184% |
| MI | 724,883 | 802,782 | 966,785 | 1,193,283 | 1,461,767 | 1,783,468 | 2,303,722 | 218% |
| MA | 727,390 | 865,894 | 1,006,696 | 1,171,165 | 1,366,284 | 1,604,248 | 1,881,305 | 159% |
| CA | 634,026 | 748,558 | 862,834 | 998,398 | 1,160,380 | 1,355,492 | 1,610,465 | 154% |
| NC | 525,611 | 641,603 | 767,196 | 919,955 | 1,108,658 | 1,347,288 | 1,538,845 | 193% |
| SC | 470,718 | 580,458 | 695,018 | 836,866 | 1,013,667 | 1,235,613 | 1,472,527 | 213% |
| Other | 5,024,612 | 6,163,728 | 7,151,196 | 8,361,920 | 9,844,526 | 11,697,209 | 13,329,368 | 165% |
| Grand Total | 18,509,842 | 22,343,234 | 25,995,230 | 30,471,556 | 35,955,539 | 42,796,564 | 48,192,303 | 160% |

Source: Transearch, FAF, WSA Analysis

As with traffic moving through the region into Canada, Transportation Equipment will account for the largest volume of traffic from Canada moving through the two counties to destinations beyond the region by 2035 and will demonstrate the greatest absolute growth. Tonnage of Pulp, Paper, or Allied Products will also increase significantly. In terms of rate of growth, Electrical Equipment and Furniture or Fixtures will increase the fastest.

**Figure 2-16: Primary Commodities of Overhead Traffic from Canada through the Buffalo-Niagara Region (Tonnage)**

| Commodity | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| Transportation Equipment | 963,378 | 1,149,216 | 1,429,696 | 1,770,898 | 2,219,900 | 2,823,891 | 3,541,160 | 268% |
| Pulp, Paper or Allied Products | 1,018,499 | 1,212,871 | 1,389,122 | 1,538,407 | 1,676,232 | 1,834,929 | 2,101,939 | 106% |
| Food or Kindred Products | 1,341,036 | 1,630,736 | 1,659,826 | 1,674,092 | 1,684,817 | 1,697,683 | 1,817,158 | 36% |
| Furniture or Fixtures | 240,774 | 278,276 | 386,878 | 532,145 | 720,786 | 982,700 | 1,405,752 | 484% |
| Rubber of Misc Plastics | 453,757 | 555,327 | 693,541 | 832,245 | 980,831 | 1,164,193 | 1,404,338 | 209% |
| Machinery | 360,512 | 468,403 | 555,884 | 656,144 | 783,366 | 953,368 | 1,239,435 | 244% |
| Fabricated Metal Products | 327,208 | 387,637 | 465,960 | 546,182 | 632,413 | 733,221 | 851,177 | 160% |
| Clay, Concrete, Glass or Stone | 363,299 | 400,698 | 473,232 | 536,930 | 607,671 | 691,519 | 796,088 | 119% |
| Electrical Equipment | 115,618 | 155,398 | 213,436 | 285,826 | 382,841 | 518,718 | 758,508 | 556% |
| Other | 3,925,712 | 4,376,768 | 4,672,585 | 5,087,805 | 6,111,596 | 9,313,698 | 11,419,222 | 268% |
| Grand Total | 9,109,794 | 10,615,329 | 11,940,160 | 13,460,675 | 15,800,453 | 20,713,919 | 25,334,779 | 106% |

Source: Transearch, FAF, WSA Analysis

As shown in **Figure 2-17**, Pennsylvania, Ohio and New Jersey are the leading destinations for Canadian originated motor carrier traffic passing through the region and are expected to remain the primary destinations in 2035.

**Figure 2-17 Destination States of Overhead Traffic from Canada over the Buffalo-Niagara Region (Tonnage)**

| Destination State | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| PA | 2,386,229 | 2,748,216 | 2,986,966 | 3,227,926 | 3,563,689 | 4,255,711 | 5,057,721 | 112% |
| OH | 1,817,525 | 2,102,896 | 2,351,251 | 2,599,714 | 2,931,918 | 3,603,426 | 4,252,830 | 134% |
| NJ | 769,154 | 918,599 | 1,025,621 | 1,136,651 | 1,310,213 | 1,674,596 | 1,971,883 | 156% |
| MI | 417,894 | 449,201 | 565,166 | 715,133 | 913,563 | 1,202,268 | 1,429,086 | 242% |
| CA | 122,127 | 143,726 | 189,577 | 276,110 | 478,555 | 1,034,494 | 1,271,759 | 941% |
| MA | 395,788 | 478,788 | 535,911 | 601,799 | 709,092 | 951,268 | 1,215,786 | 207% |
| VA | 311,931 | 369,421 | 417,049 | 475,058 | 564,322 | 728,740 | 922,190 | 196% |
| NC | 327,222 | 372,732 | 428,327 | 490,051 | 577,237 | 742,789 | 920,540 | 181% |
| TX | 187,643 | 224,013 | 262,780 | 315,859 | 415,172 | 649,316 | 861,086 | 359% |
| FL | 225,411 | 276,155 | 309,941 | 360,160 | 451,065 | 663,399 | 858,873 | 281% |
| Other | 2,148,870 | 2,531,582 | 2,867,573 | 3,262,213 | 3,885,628 | 5,207,912 | 6,573,024 | 206% |
| Total | 9,109,794 | 10,615,329 | 11,940,160 | 13,460,675 | 15,800,453 | 20,713,919 | 25,334,779 | 178% |

Source: Transearch, FAF, WSA Analysis

In addition, a small amount of traffic flows over the Buffalo-Niagara region that is originated to going to Mexico. This traffic is expected to increase substantially, but the total volume is not enough to cause a significant impact on Buffalo-Niagara highway networks.

# MARINE CARGO

## 3.1 Summary

Until the late 1950s, the Port of Buffalo was an important logistics node on the Great Lakes. Wheat was most economically shipped from producing regions in the Midwest over the Great Lakes to Buffalo where it was transferred to rail cars for export and for East Coast markets. In addition to serving as a transshipment point for raw grains, the port also received grain that was processed into flour for shipping to the east. The Port of Buffalo began to experience a traffic decline in the mid-twentieth century with the construction of a lock and dam system on the Mississippi River and the dredging of a deepwater channel to New Orleans. This, as well as the building of grain processing plants closer to the farms, allowed an all-water move to the Gulf of Mexico for grain exports. Adding to the deterioration of cargo through the Port was the opening of the St. Lawrence Seaway. This allowed ocean going vessels to exit or enter the Great Lakes, bypassing Buffalo.

The U.S. Army Corps of Engineers publishes the *Waterborne Commerce of the United States*, a compilation of maritime cargo describing tonnages, vessel counts, and vessel drafts for both international and domestic moves to and from U.S. ports and harbors. The domestic traffic statistics are based upon reports to the Corps of Engineers that are filed for all vessels calling U.S. ports. The reports are generally submitted on the basis of completed vessel movements. Foreign data is primarily derived from data purchased from the Port Import Export Reporting Service, a division of Commonwealth Business Media, Inc. and supplemented by data furnished to the Corps of Engineers by the U.S. Bureau of the Census and Border Protection and the U.S. Customs. The Army Corps of Engineers data includes traffic for both the Port of Buffalo and the Niagara River, combined.

Marine cargo represents a small fraction of freight flowing into and out of the Buffalo-Niagara region, representing only about 1,592,000 tons in 2004. By comparison, trucks moved 118 million tons of freight into, out of, and within the Buffalo-Niagara region by motor carrier in 2004. The preponderance of waterborne traffic is inbound as shown in Figure 3-1, which represented 1,511,000 tons in 2004, or about 95 percent of the total maritime tonnage moving through the region's port facilities. Coal and coke accounts for slightly more than a third of the total traffic at about 579,000 tons; limestone, sand & gravel, cement & concrete, collectively account for about 530,000 additional tons, and petroleum products and wheat account for the bulk of the remaining traffic.

**Figure 3-1: 2004 Waterborne Tonnage of the Buffalo-Niagara Region in Thousands of Tons**

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

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

## 3.1 Traffic Projections

The marine cargo volume projections for 2010-2035 period should be interpreted with the understanding that cargos moving through specific ports are not necessarily consistent. Shippers, especially of discretionary bulk and break bulk cargoes, can readily switch ports. A port may be selected for a single vessel shipment or for a series of shipments. Much depends upon where the inland location to which the product is destined (or originated) and the landside transportation service and rate being offered to the shipper at the time of shipment. The service and rate maybe for a spot move or incorporated into a long term contract.

Marine cargo volume projections for 2010-2035 period have been developed using several sources of economic information. Cargo volumes for fuel commodities, such as coal, coke, fuel oils, petroleum coke were forecasted relying on the U.S. Energy Information Administration forecasted consumption rates for the Mid-Atlantic region as found in the 2007 U.S. Annual Energy Outlook. Commodities that relate to the

construction, such as lumber, limestone, cement & concrete, asphalt, tar & pitch were forecasted using projected changes in construction employment in the Buffalo-Niagara region, adjusted by forecasted changes in productivity. Sand & gravel, wheat volumes are forecasted using the U.S. FHWA's Freight Analysis Framework. The results of the forecasts are show in Figure 3-2. Total waterborne traffic is expected to nearly double by 2035. Increases in coal waterborne freight are particularly large, most of all the increases between 2004 and 2010.

**Figure 3-2: Forecasted Waterborne Tonnage of the Buffalo-Niagara Region in Thousands of Tons**

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

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

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

# RAIL TRAFFIC

## 4.1 Summary

Below is a summary of volumes for domestic rail traffic into, out of, and through the Buffalo-Niagara Region.

**Figure 4-1: Domestic 2004 Rail Traffic Buffalo-Niagara Region**

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

Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

As shown in Figure 4-1, the region is primarily a conduit for rail traffic that originates and terminates outside the area with overhead traffic constituting 71 percent of the region's total domestic rail tonnage. Buffalo is located on the main line of CSX connecting metropolitan New York, including the Port of New Jersey, with Midwest and Western U.S. markets. The importance of the route to the Port is evident as nearly one-third of the overhead tonnage is intermodal. More striking is that the number intermodal units moving through the region as overhead traffic is more than two and a half times the number of carloads.

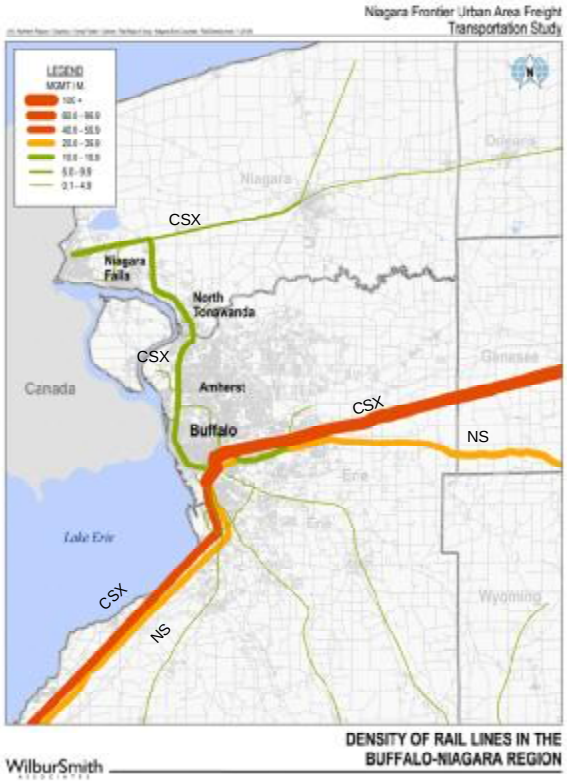
Examining the inbound and outbound rail traffic, the region terminates more tonnage that moves as carload traffic than it originates. Nearly twice as many carload tons and units are received by the region's shippers rather than are originated. Very little intermodal traffic originates or terminates in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

## 4.2 Density

Figure 4-2 below shows the rail traffic densities for the principal rail lines in the Buffalo region. As outlined in the preceding section and shown on the map, the rail line with by

far the most traffic in the region is the CSXT Chicago Line, otherwise known as the Water Level Route.

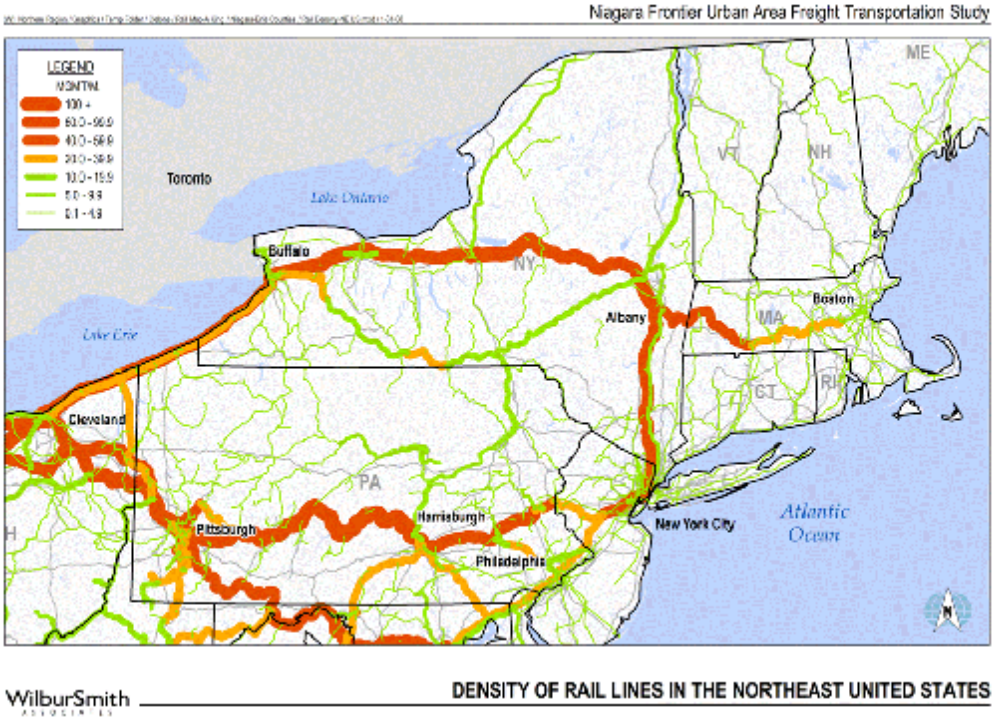
**Figure 4-2: Rail Line Densities in the Buffalo-Niagara Region**




This is the line that connects Buffalo to metropolitan New York/New Jersey area via Albany to the east and to Cleveland, Ohio and Chicago, Illinois in the west. Portions of this line have traffic of over 100 million gross ton-miles per mile.

As can be seen by Figure 4-3 below, the Chicago Line is one of two primary rail arteries that connect New England and much of New York State with Chicago and markets to the west. The other primary corridor is the NS line that runs from the New York City metropolitan area through Bethlehem and Pittsburgh, Pennsylvania and into Cleveland, Ohio.

**Figure 4-3 Northeast Rail Densities**




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

The CSX rail line between Buffalo, Tonawanda, and Niagara carries between 10 and 20 million gross ton-miles/mile per year. The various branch lines in the area carry less than 5.0 million gross ton-miles per mile.

## 4.3 Approach to Estimating Rail Volumes

Because the North American rail network is operated by private companies, much of the data regarding rail freight flows is proprietary. The most complete source of data is the U.S. Surface Transportation Board's Waybill Sample, which is a stratified sample of carload waybills for terminated shipments by railroad carriers. This waybill data is used

to create a movement specific Confidential Waybill File and a less detailed non-proprietary Public Waybill File. The Public Use Waybill file is limited in that it only includes data at a Business Economic Area (BEA) geographic level. This level of geographic aggregation is used to prevent disclosure (or interpretation) of either railroad handling the traffic or the shipper/receiver. In the case of our study area, the BEA that includes Buffalo and Niagara Counties also includes Allegany, Cattaraugus, Chautauqua Counties in New York State, as well as McKean, and Potter Counties in Pennsylvania. While Erie and Niagara Counties comprise the bulk of rail freight volumes for the Buffalo, NY BEA, they do not comprise the entire BEA. Thus, use of the Public Use File would overestimate the amount of the region's rail traffic because of the inclusion of the surrounding counties.

The preferred source of information, thus, is the Confidential Waybill File. Publication of data from the more detailed, disaggregated Confidential Waybill File, however, is governed by significant restrictions. Because of the concern with potential disclosure of proprietary information, NYSDOT, which is providing the traffic data being used in this study, would not permit direct access to the database and would only provide traffic flow information at a summary level.

A procedure was required to allocate the summary data to commodities and geographic markets permitting an analysis of flows. The summary data was allocated to markets and to commodities based upon distributions from two sources: the Federal Highway Administration's Freight Analysis Framework (FAF), and the Public Use Waybill Sample. Both data sources were used because each is better at characterizing some types of traffic than the other. Below is a summary of the strengths and weaknesses of both datasets.

**Figure 4-4: Strengths and Weaknesses of Data Sources on Rail Freight Flows**

| Freight Analysis Framework | |
|---|---|
| Strengths | Weaknesses |
| • Includes 6-year forecasts, not just base, 2030<br>• Buffalo FAF region corresponds to Erie and Niagara Counties | • Does not differentiate between intermodal box (i.e. container-on-flatcar, trailer-on-flatcar) and other truck-rail moves, such as transload moves<br>• Base year is 2002, which is inconsistent with 2004 base year<br>• Includes little information about moves within New York State |
| **Public Use Waybill File** | |
| • Differentiates between intermodal box and other truck-rail moves<br>• Uses 2004 as a base year<br>• Includes significant information about movements between BEAs within New York State | • Does not identify Erie and Niagara Counties separately from other counties in Buffalo, NY BEA<br>• Does not include 6-year forecast, so uncertain whether change is consistent between 2004 and 2030 |

Because the files differed in strengths, both files were used to distribute the summary traffic data across commodities and geographies. Moreover, the files were used to validate each other. In general, use of the FAF file to distribute rail freight flows was preferred, since the FAF specifically identifies Erie and Niagara Counties as a separate region. However, in cases where FAF did not provide sufficient information, the Public Use Waybill file was employed. Because the majority of freight within the Buffalo BEA originates, terminates, or passes through Erie and Niagara Counties, the Public Use File provided a reasonable proxy. The specific application of each file is outlined in **Figure 4-5**.

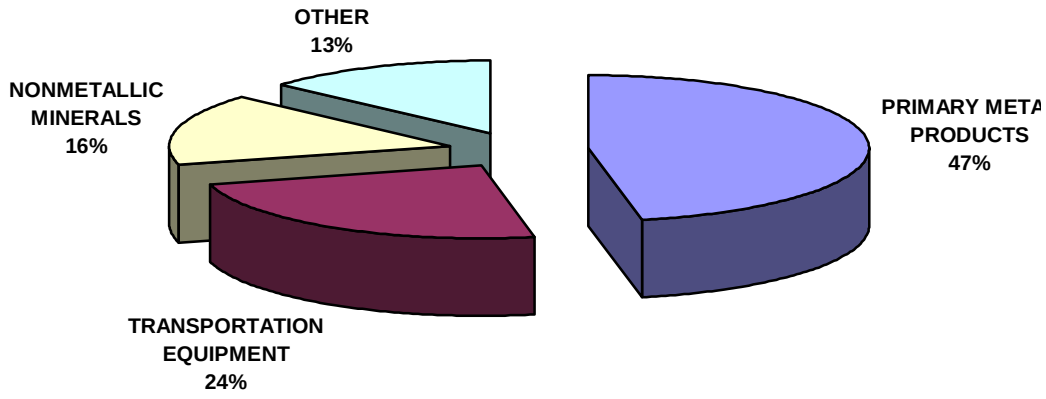
**Figure 4-5: Application of Data Sources to Distribute Freight Flows**

| Traffic Type | Data File | Rationale |
|---|---|---|
| Inbound interstate carload | FAF | Specific to Erie and Niagara Counties |
| Inbound interstate intermodal | Public Waybill File | Separates intermodal box shipments |
| Inbound intrastate carload | Public Waybill File | Provides more information on intrastate freight flows |
| Inbound intrastate intermodal | Public Waybill File | Provides more information in intrastate freight flows, separates intermodal box shipments |
| Local carload | Public Waybill File | Provides more information on local moves |
| Local intermodal | NA | Distribution is unnecessary, since origin, destination, nature of traffic is known |
| Outbound interstate carload | FAF | Specific to Erie and Niagara Counties |
| Outbound interstate intermodal | Public Waybill File | Separates intermodal box shipments |
| Outbound intrastate intermodal | NA | No outbound intrastate traffic |
| Outbound intrastate carload | Public Waybill File | Provides more information on intrastate freight flows |

## 4.4 Local Rail Traffic

As shown in Figure 4-1, rail traffic with both origin and destination within the Erie-Niagara region is a small component of the region's overall rail traffic, only accounting for about one percent of the total domestic 2004 tonnage for the region. The primary local traffic commodities are Primary Metal Products, Transportation Equipment, and Nonmetallic Minerals, comprising 47 percent, 24 percent, and 16 percent of 2004 tonnage, respectively (**Figure 4-6**).

**Figure 4-6: Local Rail Traffic for the Buffalo-Niagara Region – Commodity Distribution**

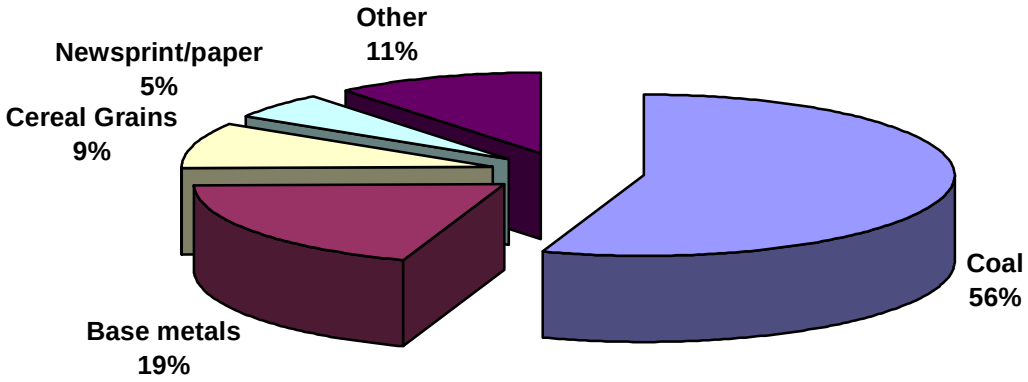



Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

## 4.5 Inbound Rail Traffic

Next to overhead traffic passing through the region, inbound rail traffic has the highest volumes, accounting for almost nine million tons. As depicted in **Figure 4-7**, Coal has by far the largest share of inbound rail traffic, accounting for 56 percent of the total inbound tonnage, followed by Base Metals, Cereal Grains and Newsprint/paper.

**Figure 4-7: Buffalo-Niagara Inbound Carload Rail Traffic – Commodity Distribution**




Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

In terms of origins, most of the inbound coal is from the coal fields in West Virginia or Pennsylvania. The base metals primarily originate in northwestern Indiana. Most of the cereal grains are from North Dakota, and most of the paper products originate from South Carolina

**Figure 4-8: Buffalo-Niagara Inbound Carload Rail Primary Commodities/Origins**

| Commodity | Origin Region | 2004 Tons | Percent Inbound |
|---|---|---|---|
| Coal | West Virginia | 3,044,150 | 39% |
| Base metals | Indiana – Chicago Area | 1,201,837 | 15% |
| Coal | Pennsylvania | 941,216 | 12% |
| Cereal grains | North Dakota | 586,413 | 7% |
| Newsprint/paper | South Carolina | 356,807 | 5% |

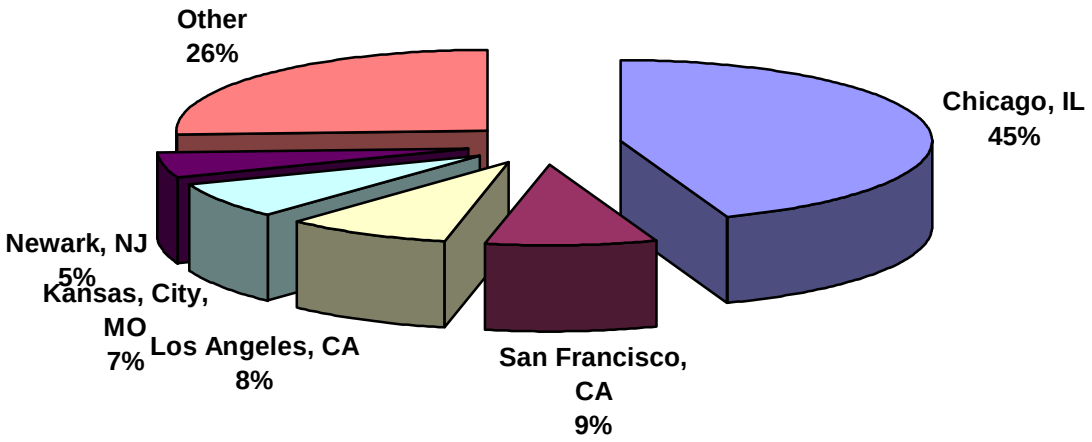
Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

The 2004 inbound intermodal traffic into the Buffalo-Niagara region accounts for slightly under a half a million tons of traffic (30,200 intermodal units), not a significant volume, with Chicago as the most prominent rail origin.[3] Other important origins include the Los

[3] Although Chicago appears as the rail origin, the containers may ultimately originate at another intermodal terminal. A significant amount of traffic that originates on western railroads is still delivered to Chicago where it is transferred cross-town to another intermodal terminal by truck. Waybills for these "rubber tire" transfers show Chicago as origin with no connection made to the preceding rail move.

Angeles BEA, which includes the ports of Los-Angeles/Long Beach, and the San Francisco BEA, which includes the port of Oakland. .

**Figure 4-9: Buffalo-Niagara Inbound Intermodal Rail Traffic – Origin Distribution**

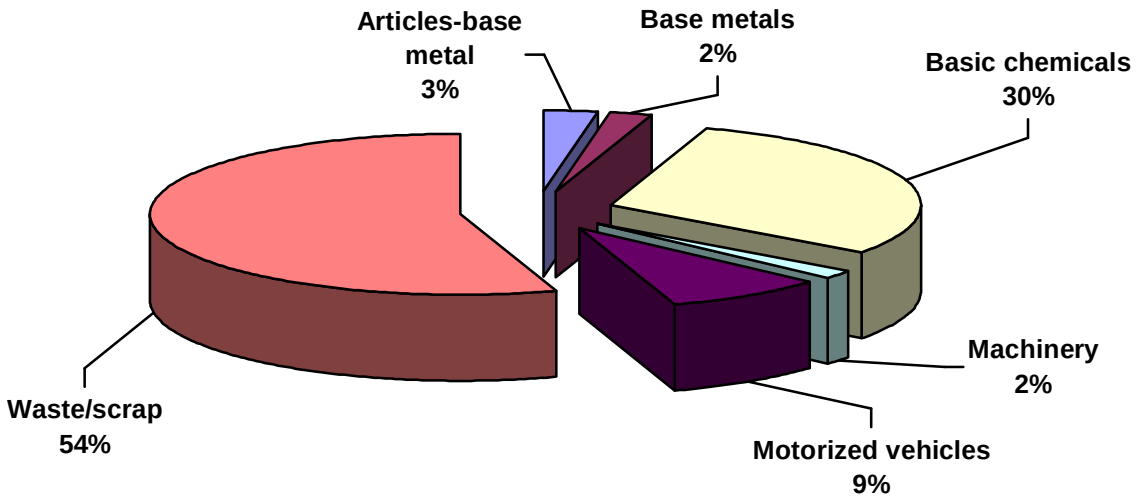



Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

## 4.6 Outbound Rail Traffic

Buffalo-Niagara shippers originated almost five million tons of rail carload traffic in 2004 to destinations across the United States. The two principal commodities were Waste/scrap and Basic Chemicals, which combined accounted for 84 percent of the outbound carload traffic (**Figure 4-10**). The waste/scrap was, for the most part, metallic scrap.

**Figure 4-10: Buffalo-Niagara Region Outbound Carload Interstate Rail Commodity Distribution**




In terms of destinations, the chemical shipment destinations were relatively widely dispersed. Outbound chemical shipments were destined for a variety of locations, including the Chicago, Baltimore, and Dayton, Ohio metropolitan areas, as well as Pennsylvania and North Carolina. In contrast, the destination of waster/scrap shipments was more concentrated, with about 1.5 million tons out of a total 2.3 million tons destined for Ohio.

**Figure 4-11: Buffalo-Niagara Region Outbound Carload Rail Primary Destinations**

| Commodity | Destination | Tons | Percent Outbound Interstate |
|---|---|---|---|
| Basic chemicals | Pennsylvania | 180,412 | 4.37% |
| Basic chemicals | North Carolina | 169,586 | 4.10% |
| Basic chemicals | Chicago, IL Area | 168,685 | 4.08% |
| Basic chemicals | Dayton, OH Area | 163,292 | 3.95% |
| Basic chemicals | New York, NY | 150,947 | 3.65% |
| Basic chemicals | Baltimore, MD Area | 108,895 | 2.64% |
| Waste/scrap | Ohio | 1,471,433 | 35.61% |
| Waste/scrap | North Carolina | 182,022 | 4.41% |

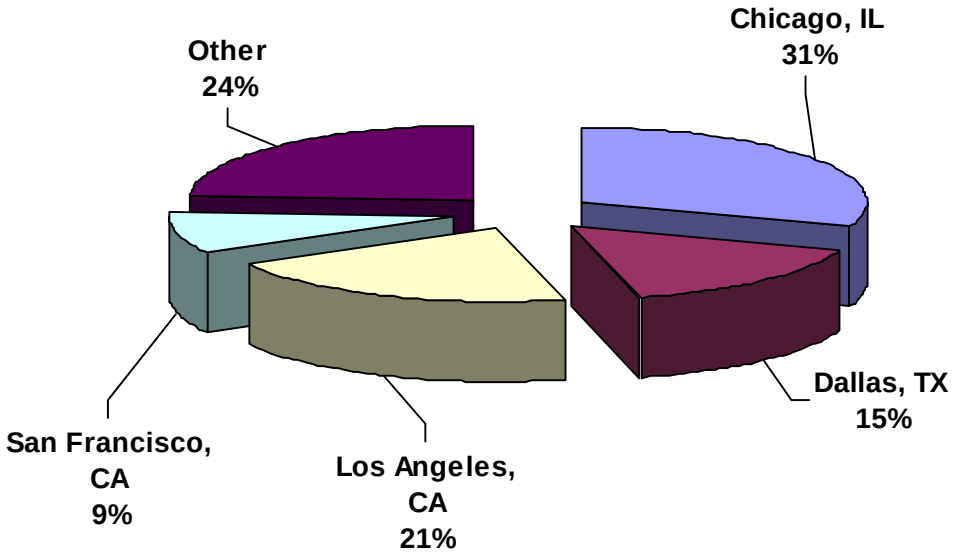
Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

The largest commodity/destination for outbound intrastate shipments from the Buffalo-Niagara region is chemical shipments to the New York metropolitan area, which accounts

for slightly more than 150,000 tons out of a total of slightly over 400,000 tons of intrastate carload shipments.

Similar to inbound intermodal shipments, Chicago is by far the most significant destination for outbound intermodal shipments from the Buffalo-Niagara region. Chicago accounts for over 100,000 tons of slightly less than 400,000 tons of outbound intermodal shipments from the Buffalo-Niagara region. Most of the rest of the intermodal traffic is destined to various western locations. Any intrastate outbound intermodal traffic that may originate in the Buffalo-Niagara region is minimal.

**Figure 4-12: Buffalo-Niagara Region Outbound Interstate Intermodal Traffic**




**Source: Summarized Carload Waybill Sample, FAF, WSA Analysis**

## 4.7 Overhead Rail Traffic

By far the largest volume of rail traffic within the Buffalo-Niagara region is overhead movements. These accounted for over 22 million tons of carload traffic and over 10 million tons of intermodal traffic (825,000 intermodal units) in 2004 reflecting the Buffalo-Niagara region as being located on one of the primary rail corridors to linking the northeast with the west. This corridor connects major rail terminals in Massachusetts and eastern New York with the Cleveland area, Chicago, and points west of Chicago.

Overhead traffic volumes have been made available by NYSDOT in the aggregate. Specific information on the composition of overhead traffic that flows through the Buffalo-Niagara region, however, is not available and inferences from other data sources regarding commodity and geographic market cannot readily be drawn. For example, traffic originating in metropolitan New York, the most significant source of container traffic, destined for the Midwest can be routed either through Albany and Buffalo, if CSX, or through Bethlehem, PA, Pittsburgh, PA, and then to Cleveland if handled by Norfolk Southern. The data that would allow that determination to be made is confidential.

## 4.8 Forecasting Approach

Rail traffic for the Buffalo-Niagara region was forecasted using projections provided by Global Insight through the New York Department of Transportation for 2030 for Erie and Niagara Counties. These forecasts were further distributed to specific commodities and origin-destination pairs, as well as 6-year increments using alternate data sources. Although forecasts may have been distributed using a variety of data sources, the total results were always reconciled with the 2030 forecasts provided by the New York State. Data sources for distributing forecasts were as follows:

- The Freight Analysis Framework
- Forecast of Public Use Waybill Sample for Buffalo-Niagara BEA provided by the New York Department of Transportation
- U.S. Energy Information Administration Value of Steel Shipments
- Woods & Poole Manufacturing Employment Adjusted by the forecasted productivity of the Chemical Industry

A summary of the data used in forecasting by traffic type is as follows:

**Figure 4-13: Rail Forecasting Data Sources**

| Traffic | Data File |
|---|---|
| Inbound interstate carload | FAF applied to distribute forecast to 6-year increments, commodities, OD-pairs |
| Inbound interstate intermodal | Public Waybill File forecast, assuming straight-line growth for 6-year increments |
| Inbound intrastate carload | Public Waybill File forecast, assuming straight-line growth for 6-year increments |
| Inbound intrastate intermodal | Global Insight Forecast, assuming straight-line growth for 6-year increments |
| Local carload | Public Waybill File forecast, assuming straight-line growth for 6-year increments |
| Local intermodal | Global Insight Forecast, assuming straight-line growth for 6-year increments |
| Outbound interstate carload, excl. Chemicals and Waste & Scrap | FAF |
| Outbound interstate carload - Chemicals | Woods & Poole employment forecast for Erie and Niagara Counties, adjusted by forecasted productivity of Chemical industry by U.S. Bureau of Labor Statistics |
| Outbound interstate carloads – Waste & Scrap | Forecasted shipments by Iron and Steel Industries from the U.S. Energy Information Administration |
| Outbound interstate intermodal | Public Waybill File forecast, assuming straight-line growth for 6-year increments |
| Outbound intrastate intermodal | NA |
| Outbound intrastate carload | Public Waybill File forecast, assuming straight-line growth for 6-year increments |

In general, forecasting data sources were selected based upon the source of data used to distribute base period traffic, i.e. if FAF was used to distribute base period traffic to origin-destination pairs and commodities, and then FAF would be used to forecast the dataset. If the Public Used Waybill sample was used to distribute base period traffic to origin-destination pairs and commodities, then the forecast of the Public Use Waybill file would be used to forecast the same traffic. The FAF was the only data source that provided 6-year incremental forecasts.

For Waste/Scrap and Chemicals in Inbound Carload freight, several specific forecasts were prepared. The Freight Analysis Framework (FAF) indicated large declines in rail chemical and scrap/waste traffic. However, interviews with shippers and carriers provided additional information on the prospects of outbound shipments of chemicals and waste/scrap shipments. These two categories of commodity comprise most of the outbound shipments from the Buffalo-Niagara region. These interviews suggested that, in fact, shipments of Chemical and Waste/Scrap were not expected to decrease, but were

expected to increase. Therefore, alternate forecasts were prepared for these two commodities. The Chemical forecast is based upon manufacturing employment and chemical industry productivity.

The scrap/waste forecast is based upon forecasted iron/steel shipments. Most of the waste/scrap metal shipped from the Buffalo-Niagara region is metallic waste/scrap, which is why a forecast of iron/steel shipments was considered to be a suitable basis for forecasting iron/steel shipments. As more iron/steel is produced, plants that use more recycled iron/steel will demand more products. .

## 4.9 Summary Results

As can be seen from **Figure 4-14** below, the largest increases in traffic for the Buffalo-Niagara region are for intermodal traffic, accounting for a nearly 130 percent increase between 2004 and 2030. However, most of that increase, or 15 million out of 16 million in increase is for overhead intermodal moves. In terms of traffic into and out of the Buffalo-Niagara region, the carload traffic is expected to account for a much higher change in volume, simply because the volume of carload tonnage into and out of the Buffalo-Niagara region is much higher than intermodal traffic to begin with. Inbound carload tonnage is expected to increase by slightly below 5 million tons, while outbound carload traffic is expected to increase by over 2.7 million tons.

**Figure 4-14: Summary of Forecasted Rail Volumes**

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

Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

## 4.10 Inbound Traffic

Nearly all of the inbound rail traffic is interstate. Because Coal and Base Metals are by far the largest volume commodities shipped into the Buffalo-Niagara region, they also have the highest expected increases in volumes, account for an increase in 2.1 and 1.1 million tons, respectively.

**Figure 4-15 Inbound Interstate Carload Traffic by Commodity**

| | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| Coal | 4,355,111 | 4,367,026 | 4,766,571 | 5,241,656 | 5,805,787 | 6,461,262 | 7,229,697 | 66.0% |
| Base metals | 1,526,534 | 2,035,506 | 2,245,115 | 2,394,623 | 2,534,184 | 2,656,866 | 2,715,608 | 77.9% |
| Cereal grains | 707,117 | 658,299 | 734,088 | 827,261 | 936,755 | 1,064,414 | 1,203,684 | 70.2% |
| Transport equip. | 132,813 | 200,156 | 236,223 | 282,383 | 373,720 | 474,753 | 589,063 | 343.5% |
| Other foodstuffs | 185,826 | 372,420 | 405,052 | 435,939 | 466,085 | 506,262 | 540,489 | 190.9% |
| Coal-n.e.c. | 162,459 | 267,815 | 270,612 | 294,869 | 347,530 | 433,994 | 496,781 | 205.8% |
| Chemical prods. | 57,018 | 83,455 | 103,006 | 127,607 | 163,814 | 213,688 | 272,284 | 377.5% |
| Newsprint/paper | 423,788 | 379,449 | 409,720 | 443,483 | 472,212 | 501,203 | 525,428 | 24.0% |
| Wood prods. | 14,908 | 12,118 | 15,472 | 19,217 | 22,904 | 27,058 | 31,716 | 112.7% |
| Basic chemicals | 46,275 | 51,699 | 52,940 | 53,890 | 55,017 | 56,038 | 56,932 | 23.0% |
| Other | 247,144 | 229,200 | 193,399 | 175,381 | 164,529 | 155,085 | 153,256 | -38.0% |
| Total | 7,858,995 | 8,657,143 | 9,432,200 | 10,296,309 | 11,342,537 | 12,550,622 | 13,814,938 | 75.8% |

Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

Unsurprisingly, many of the areas where coal is mined, or base metal produced, were the same locations where increases in traffic are expected to be highest. West Virginia accounts for the highest increase in traffic, with an expected increase of about 1.8 million tons, while Northeast Indiana accounts for an expected increase of about 1.2 million tons between 2004 and 2030.

**Figure 4-16: Inbound Interstate Carload Traffic by Origin Region**

| | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| West Virginia | 3,213,099 | 3,597,441 | 3,863,143 | 4,213,356 | 4,569,520 | 5,044,471 | 5,483,202 | 70.7% |
| Northeast Indiana | 1,334,650 | 1,839,130 | 2,028,788 | 2,175,687 | 2,343,429 | 2,495,755 | 2,601,522 | 94.9% |
| Kentucky | 227,818 | 264,832 | 374,148 | 454,261 | 633,105 | 770,443 | 1,025,358 | 350.1% |
| North Dakota | 616,348 | 605,210 | 677,153 | 764,443 | 867,030 | 986,074 | 1,114,309 | 80.8% |
| Ohio | 141,566 | 230,665 | 298,071 | 360,432 | 429,630 | 501,567 | 572,306 | 304.3% |
| Iowa | 113,121 | 222,696 | 236,162 | 247,080 | 259,060 | 277,517 | 292,391 | 158.5% |
| North Carolina | 88,377 | 125,550 | 123,534 | 136,718 | 159,879 | 191,609 | 237,075 | 168.3% |
| Florida | 54,164 | 101,846 | 112,852 | 123,459 | 130,768 | 138,162 | 142,976 | 164.0% |
| Indiana | 120,704 | 112,370 | 125,307 | 141,212 | 159,899 | 181,693 | 205,459 | 70.2% |
| Michigan | 31,497 | 34,534 | 45,235 | 58,384 | 72,951 | 88,984 | 107,868 | 242.5% |
| Other | 1,917,651 | 1,522,870 | 1,547,807 | 1,621,277 | 1,717,267 | 1,874,345 | 2,032,471 | 6.0% |
| Total | 7,858,995 | 8,657,143 | 9,432,200 | 10,296,309 | 11,342,537 | 12,550,622 | 13,814,938 | 75.8% |

Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

## 4.11 Outbound Traffic

As mentioned previously, Chemicals and Waste/Scrap are the dominant commodities shipped from the Buffalo-Niagara region. Also mentioned previously, a separate forecast was prepared for each commodity based upon input from data that was obtained through shipper/carrier interviews. Because Chemicals and Waste/Scrap are the largest commodities shipped from the Buffalo-Niagara region, they also account for the most significant increases in tonnage, forecasted to increase by over 1 million tons each.

**Figure 4-17: Outbound Interstate Carload Traffic by Commodity**

| | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| Basic chemicals | 1,234,213 | 1,457,749 | 1,658,594 | 1,886,499 | 2,144,939 | 2,437,969 | 2,771,032 | 124.5% |
| Waste/scrap | 2,268,908 | 2,505,900 | 2,717,602 | 2,889,601 | 3,125,581 | 3,369,674 | 3,632,829 | 60.1% |
| Motorized vehicles | 353,461 | 478,526 | 535,682 | 565,792 | 627,091 | 666,107 | 692,580 | 95.9% |
| Machinery | 68,436 | 126,678 | 145,130 | 167,673 | 196,523 | 227,630 | 260,543 | 280.7% |
| Articles-base metal | 113,656 | 97,522 | 73,393 | 56,535 | 45,914 | 38,107 | 31,656 | -72.1% |
| Base metals | 93,246 | 30,645 | 18,137 | 13,303 | 14,131 | 15,097 | 17,371 | -81.4% |
| Grand Total | 4,131,920 | 4,697,020 | 5,148,538 | 5,579,404 | 6,154,180 | 6,754,584 | 7,406,010 | 79.2% |

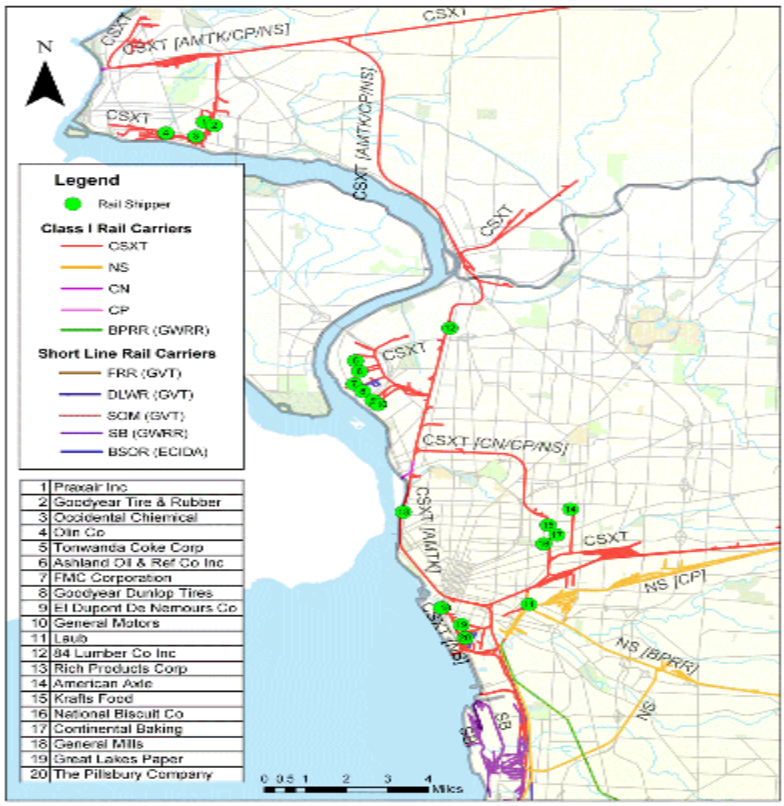
Source: Summarized Carload Waybill Sample, FAF, WSA Analysis

## 4.12 Railroad Shipper Geography

**Figure 4-18** identifies the principal rail customers in the region. There are four principal clusters of shippers. The northernmost is in Niagara County and includes Praxair, Goodyear, Occidental Chemical, and Olin. Further south and located off the CSX north south line through the region is the second cluster. This cluster comprises Erie County's automotive and chemical producers such as FMC, DuPont, and General Motors.

A third cluster to the east includes Kraft Foods,

**Figure 4-18 Principal Rail Shippers**



National Biscuit Company, and Continental Baking with American Axle situated on the perimeter of the cluster. The final cluster includes General Mills, Great Lakes Paper, and Pillsbury.

**Growth Opportunities**

Although intermodal traffic originating or terminating in the region is relatively low at this time, all railroads expect that intermodal and transload facilities will grow in the future. With the recent opening of the CSX intermodal terminal at their former Seneca Yard, the region will have a modern facility with an estimated capacity of 60,000 annual lifts. With the proposed inclusion in the Port of New York New Jersey's PIDN network, container traffic will become an important rail business segment in the region.

Cross border traffic by rail also has the potential to grow. Carriers and shippers in the region echoed the findings of previous studies that identified commodities that can be diverted from truck to rail. This could be supplemented with greater improvements in customs and rail services across the border along with the planning and implementation of efficient facilities that could tap into these opportunities.

Finally, warehouse/distribution is another area for potential growth in Buffalo-Niagara region. Carriers and shippers pointed to the growing demand of warehousing and value added distribution, stressing the importance of supporting "just-in-time" delivery logistics by providing the essential "buffer" in scheduling and inventory control. This relationship makes rail a more "time sensitive" delivery method and, thus, provides a more cost competitive alternative to all truck delivery. This growth potential is evident through the construction of new warehouses and distribution centers in the region such as Sonwil.

Subsequent technical memoranda will identify and evaluate initiatives to increase freight rail use.

# AIR CARGO

## 5.1 Traffic flows

The Transearch database was also used as the source of air cargo traffic flow information and air cargo projections. **Figure 5-1** describes the major destinations for air cargo originating from the Buffalo-Niagara region in 2004.

**Figure 5-1: Erie and Niagara Airports Outbound Air Cargo Destinations**

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

Source: Transearch

In 2004, 56,000 tons of cargo were originated at the two Buffalo-Niagara region airports. About two-thirds of the traffic terminated at ten airports. Nearly 20 percent was destined for airports in Ontario. **Figure 5-2** describes the origin airports for air cargo terminating in the Buffalo region.

**Figure 5-2: Erie and Niagara Airports Inbound Air Cargo Originations**

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

Source: Transearch

Louisville and Philadelphia are the leading locations where the region's air cargo is originated accounting for approximately 25 percent of the landed air cargo.

**Figure 5-3** shows the commodity mix of the region's outbound air cargo.

**Figure 5-3: Erie and Niagara Airports Outbound Air Cargo Commodity Mix**

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

Source: Transearch

Mail represents approximately 25 percent of the outbound air cargo. Mail plus farm products and pulp, paper, or allied products account for half of the outbound traffic.

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

**Figure 5-4: Erie and Niagara Airports Inbound Air Cargo Commodity Mix**

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

Source: Transearch

**Exhibit 5-5** and **Exhibit 5-6** describe the projections for outbound and inbound air cargo according to Global Insight and its air cargo forecasting models.

**Figure 5-5: Erie and Niagara Airports Outbound Cargo Forecast (Tons)**

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

Source: Transearch

Outbound air cargo is expected to double by 2035. Most of the growth is attributable to machinery components, electrical components and miscellaneous air cargo such as parcels.

**Figure 5-6: Erie and Niagara Airports Inbound Cargo Forecast (Tons)**

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

Source: Transearch

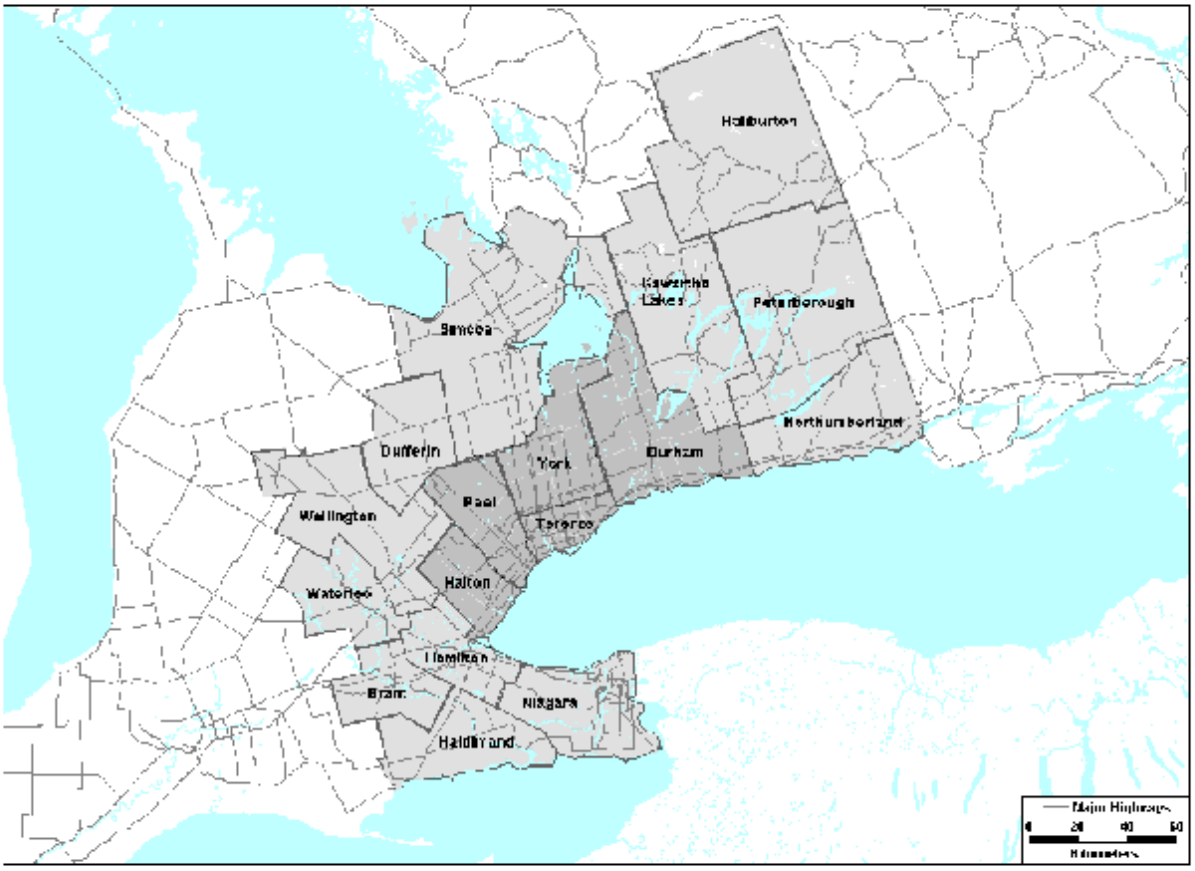
According to Global Insight's Transearch data base, inbound air cargo traffic is expected to grow somewhat faster than outbound. Growth is anticipated to stem from the same commodities as the outbound traffic as well as plastics products.

# CROSS BORDER TRAFFIC

## 6.1 Study Area and Sources

The study area central to this analysis is illustrated in **Figure 6-1**. The area encompasses Central Ontario inclusive of the Niagara Peninsula, the City of Hamilton, the Greater Toronto Area (GTA), areas north of the GTA, the Regions of Waterloo and Huron, and the area between London and Windsor. The Toronto-centered study area is often described as Canada's "economic engine" Since it is a major economic and industrial hub of Canada. Therefore, it is a primary generator/attractor of trade flows across the Niagara Frontier.

**Figure 6-1: Canadian Section of the Project Study Area**



**Study Area Profile**

Central Ontario is the fourth largest urban area in North America with a population exceeding 6.3 million. The population is divided between the City of Toronto, Toronto's satellite communities in the Regions of Halton, Peel, York and Durham, the cities of Hamilton and St. Catharines and the Regions of Niagara and Waterloo. According to the *Growth Plan for the Greater Golden Horseshoe* published in 2006 by the Ontario Ministry of Public Infrastructure Renewal, the population is expected to increase to 11.5 million by the year 2031 with the growth mostly occurring in suburban GTA and in Hamilton.

The employment of 4.1 million people (2006 estimate) is concentrated in the service sector, at 73 percent of all jobs. The concentration of manufacturing based employment, which accounts for one-third of the Canadian total, would rank 7$^{th}$, in terms of employment, if compared with US states and is greater than that of 80 percent of US states. Almost 1 in 6 jobs in Central Ontario is related to the automotive sector, and this is largely dominated by parts manufacturers. The logistics industries constitute 9 percent of Central Ontario's employment. The industry provides support to manufacturing and service supply chains.

Most of goods movement activity in Central Ontario occurs in thirty major freight centers and activity nodes, the largest in the vicinity of Pearson Airport in Mississauga. The cities of Brampton, Mississauga and Vaughan perform vital coordinating logistics roles for the Province at large by providing rail intermodal and classification yards, and are home to leading industry clusters and logistic nodes. Eighty-seven percent of Canada's roughly $400 billion in exports are to the United States and the U.S. accounts for about 64 percent of the $300 billion of goods imported to Canada. Of all Canadian provinces, the province of Ontario is the most focused towards trade with the United States. Exports originating in Ontario represent over 50 percent of all exports from Canada. Roughly 94 percent of Ontario's exports are to the United States.

**Data Sources**

It is important to note that there is no one single source of data for any mode. Moreover, for a given mode, there may be gaps in the data (e.g., not all trucks are captured); some data are held as confidential (rail origin-destination); and, data sources may be fragmented (e.g., air, by airport only). Also important is the fact that, the National Roadside Survey, a primary source for truck origin-destination data, used a common format to collect origin-destination data across the study area. However, different methods were used to expand the survey data to infer total quantities. Therefore, flows or

volumes for the same origin-destination pair might be different depending upon the source of the data.

Data sources used in the analyses are listed below:

1. Traffic Volume at Peace Bridge 2001- 2006
   Source: Buffalo and Fort Erie Public Bridge Authority

2. Traffic Volume at Queenston Bridge, Whirlpool Bridge, and Rainbow Bridge, 2001-2006
   Source: Niagara Falls Bridge Commission

3. Traffic Volume at Peace Bridge & Queenston Bridge 1988 – 2000
   Source: Ontario Ministry of Transportation

4. Truck Freight at Peace Bridge and L-Q Bridge in 2002: gathered from the 1999 National Roadside Study and extrapolated to 2002, provided by the Ministry of Transportation of Ontario.

5. Marine Transborder Shipping Data
   Source: Statistic Canada 2003

6. Rail Transborder Trade data
   Source: Bureau of Transportation Statistics Website, Transborder Freight Data Program, updated until Feb 2007
   http://www.bts.gov/programs/international/transborder/data_field.html

7. Number of incoming trains by Port for 2006
   Source: Bureau of Transportation Statistics Website, Border Crossing Data Program, updated data to 2006
   http://www.bts.gov/programs/international/border_crossing_entry_data/

8. Freight Analysis Framework (FAF) cross-border truck forecasts
   Source: Federal Highways Administration, Freight Analysis Framework
   http://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm

9. Other Reference:
   Bi-National Transportation Strategy for the Niagara Frontier, December 2005

## 6.2 Location of Industrial Activity

This section provides an overview of the location of major goods movement activity nodes relative to the goods movement network and cross-boarder flows.

*The Goods Movement in Central Ontario: Trends and Issues Report*[4] identified 30 major freight centers and activity nodes located within the boundaries of Central Ontario. These activity centers ranged from 5 sq. km occupied by a total of 34 large generators/attractors and service providers to 270 sq. km occupied by over 1100 large attractors/generators and service providers.

Not all of the 30 major freight centers will be relevant to cross-border exchange with the Niagara Frontier. The proximity to customers and efficiency of access often play decisive roles in location selection and market selection. **Figure 6-2** provides the list of 14 freight centers with the potential to participate in exchange with the Niagara Frontier.[5]

**Figure 6-2: Freight Centers with Potential Trade Ties with the Niagara Frontier**

| Name | Type | Adjacent Highways / Streets | Description |
|---|---|---|---|
| ***Potential influence on cross-boarder trade with New York Sate*** | | | |
| Stoney Creek | FC (Freight Center) | QEW | Predominantly carrier terminals and industries that serve carriers in the western half of this node; warehouses feed Hamilton area retailers and several steel related industries also exist adjacent to the Hamilton Harbour Freight Center; good growth potential. |
| Hamilton Harbour | FC | QEW, Burlington Street | Dominated by steel production; also consumer durables manufacturing and materials recovery playing increasingly important roles; virtually no growth potential with harbour constraints. |
| Burlington | FC | QEW, 403 | Anchored by a refinery and tank farm operations on the eastern side; good growth potential. |
| Royal Windsor | FC | QEW, 403 | Two distinct nodes: Ford plant and Petro-Canada refinery joined by trucking terminals interspersed with major shippers along Royal Windsor Drive; limited in-filling potential. |

[4] iTRANS Consulting et al., *Goods Movement in Central Ontario: Trends and Issues, Technical Repor*t, Ministry of Transportation of Ontario, Toronto. December 2004.

[5] iTRANS Consulting et al., *Goods Movement in Central Ontario: Trends and Issues, Technical Repor*t, Ministry of Transportation of Ontario, Toronto. December 2004.

**Figure 6-2: Freight Centers with Potential Trade Ties with the Niagara Frontier**

| Name | Type | Adjacent Highways / Streets | Description |
|---|---|---|---|
| Queensway | FC | QEW, 427 | Center was rail-based (Obico intermodal yards still play role in freight) but now mostly relies on road transportation; Etobicoke portion may experience re-development pressures with increasing land values; limited growth potential. |
| Toronto Downtown | AN (Activity Node) | Gardiner Expressway | Financial hub for Canada with concentrated office-based employment, retail centers and excellent rapid transit connections. Generator and attractor of significant courier movements. |
| Toronto Harbour | FC | Gardiner Expressway, Don Valley Parkway | Once thriving, now in decline with few industries in the immediate harbour area. Most freight activity is related to recycling and waste management; limited growth potential as re-development pressures continue due to high land values. |
| Pearson | Freight Super Node | 401, 403, 407, 409, 410, 427, Dixie Rd | Supercenter because the area has limited land uses (other than industrial), excellent expressway coverage and Canada's largest airport; trucking is mostly along Dixie and Rutherford road corridors; excellent in-fill growth potential. |
| | Northern Sector | 407, 410, 427, Airport Rd | Brampton portion has many large warehouse facilities and Chrysler plant; excellent in-fill growth and expansion potential up Airport Rd corridor. |
| | Eastern Sector | 401, 407, 409, 427 | Carriers in the northeast specialize in air cargo; excellent in-fill growth potential. |
| | Southwestern Sector | 401, 403, 407, 410, 427 | Areas closest to airport are typical of older established freight centers; home to major postal terminal; excellent in-fill growth potential. |
| Weston | FC | 400, 401, 407 | Exists as a land use buffer surrounding Highway 400. Northern sector may become an extension of the Concord Freight Center as the southern side re-develops; now home to significant UPS operations; limited growth potential. |
| Concord | FC | 400, 407 | Anchor is the CN marshalling yard and is becoming increasingly important as a warehousing and break-bulk center as well as a major rail/truck trans-shipment point; excellent growth potential. |
| Kitchener-Waterloo-Cambridge Highways 7/8 Corridors | FC | 401, 7, 8 | The Toyota plant in Cambridge has brought with it many automotive-related industries to the area. Food processing is another significant industry with Schneiders, Dare and Hostess-Frito Lay as some of the largest employers. |
| St. Catharines South Industrial | FC | 406 | GM and TRW predominate; good rail access; good growth potential. |

**Figure 6-2: Freight Centers with Potential Trade Ties with the Niagara Frontier**

| Name | Type | Adjacent Highways / Streets | Description |
|---|---|---|---|
| St. Catharines QEW-Welland Canal | FC | QEW | GM, Algoma Marine, Port Weller Drydocks; access to Welland Canal and the Great Lakes-St Lawrence Seaway is an important factor attracting industry; good growth potential |
| Brantford – Northwest Business Park | FC | 403 | Wescast Industries, Meridian Automotive Systems, Raymond Industrial, S. C. Johnson and Son, Limited are the main anchors; good access to rail; good growth potential |

## 6.3 Freight Traffic Profiles

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

**Truck**

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

Although the Rainbow Bridge has some truck traffic, the primary points of entry for motor carriers in the Niagara Peninsula are the Peace Bridge and the Lewiston-Queenston Bridge. The following sections describe the magnitude of travel, and provide an overview

of the value and key commodities imported and exported through the Niagara River crossings.

### *Traffic Volumes at each Highway Bridge in 2006*

The latest data in 2006, as illustrated in **Figure 6-3** show that 14.4 million motor vehicles travelled over the four bridges annually, and it also indicates that approximately 40,000 vehicles travel between the U.S. and Canada through this Buffalo-Niagara Gateway each day. Of all the vehicles, approximately 2.2 million trucks per year or 6,000 trucks per day cross the border. Trucks accounted for 19 percent of all traffic across the Peace Bridge, and 22 percent of Lewiston-Queenston traffic.

**Figure 6-3: Traffic Volumes at Four Highway Bridges in the Region in 2006**

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

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

Of the four international crossings, the Peace Bridge is the busiest with nearly 7 million total vehicle crossings annually, averaging 18,751 crossings each day. Of all vehicles, 1.30 million trucks cross this bridge annually, averaging 3,556 trucks crossing this bridge each day. In 2005, the Peace Bridge was ranked the third busiest truck crossing in Canada, with a share of 9.4 percent of total truck crossings between Canada and U.S.

The Lewiston-Queenston Bridge is second in overall traffic volume with slightly more than 4.0 million vehicles using that bridge each year, averaging 11,138 daily crossings. In term of trucks, there are 0.9 million crossings for the year 2006, averaging 2,474 crossings for each day. On 2005, the bridge was ranked the fourth busiest truck crossing in Canada, with a share of 6.2 percent of total truck crossings between Canada and the U.S.

Rainbow Bridge is ranked third in overall traffic volume with 3.3 million vehicles traveling over it annually, averaging 9,162 vehicle crossings daily. Commercial traffic is discouraged from using this bridge, so only 17 truck vehicles crossed the bridge each day in 2006.

The Whirlpool Bridge into Canada is a dedicated commuter link with expedited clearance and it is a NEXUS only dedicated crossing. In 2006, nearly 0.2 million autos crossed the bridge, or approximately 500 autos crossed each day. Trucks are not permitted on this bridge.

However, according to the Niagara Falls Bridge Commission, the Whirlpool Bridge is also a potential candidate for further expansion. Redecking would allow it to accommodate truck as well as rail traffic, thus distributing commercial traffic more equally along the Niagara Frontier. Any re-introduction of freight rail service on the bridge would need to consider operations at the Niagara Falls International Rail Station and Passenger Intermodal Center.

### *Monthly Variation of Traffic Volume*

**Figure 6-4** and **Figure 6-5** illustrate the monthly variation of traffic volume on the Peace Bridge in 2006. The summer tourist peak flow occurs for auto vehicles in July and August, and was approximately 40 percent higher than the average for the whole year.

Truck volume remained rather stable throughout the whole year, with the highest volumes observed in March 2006, and the lowest volumes observed in December 2006.

**Figure 6-4: Monthly Variation of Traffic Volume on the Peace Bridge in 2006**

| | East | | West | | | Two-way | | |
|---|---|---|---|---|---|---|---|---|
| Month | Auto | Truck | Auto | Truck | Bus | Passenger Vehicles | Truck | Total |
| 1 | 183,567 | 56,199 | 184,847 | 51,242 | 1,141 | 369,555 | 107,441 | 476,996 |
| 2 | 173,196 | 53,375 | 171,970 | 50,214 | 1,127 | 346,293 | 103,589 | 449,882 |
| 3 | 215,638 | 61,161 | 222,063 | 57,644 | 1,258 | 438,959 | 118,805 | 557,764 |
| 4 | 211,592 | 54,407 | 222,502 | 50,336 | 1,261 | 435,355 | 104,743 | 540,098 |
| 5 | 235,033 | 61,639 | 241,029 | 55,139 | 1,344 | 477,406 | 116,778 | 594,184 |
| 6 | 250,219 | 59,511 | 253,994 | 55,240 | 1,288 | 505,501 | 114,751 | 620,252 |
| 7 | 333,588 | 52,993 | 329,690 | 47,364 | 1,342 | 664,620 | 100,357 | 764,977 |
| 8 | 327,736 | 61,472 | 324,850 | 54,763 | 1,451 | 654,037 | 116,235 | 770,272 |
| 9 | 237,313 | 55,127 | 235,117 | 51,593 | 1,310 | 473,740 | 106,720 | 580,460 |
| 10 | 209,239 | 56,182 | 204,727 | 50,523 | 1,405 | 415,371 | 106,705 | 522,076 |
| 11 | 196,165 | 58,210 | 195,867 | 51,226 | 1,499 | 393,531 | 109,436 | 502,967 |
| 12 | 194,253 | 51,491 | 191,363 | 44,592 | 1,099 | 386,715 | 96,083 | 482,798 |
| Sum | 2,767,539 | 681,767 | 2,778,019 | 619,876 | 15,525 | 5,561,083 | 1,301,643 | 6,862,726 |
| AADT | 7,562 | 1,863 | 7,590 | 1,694 | 42 | 15,194 | 3,556 | 18,751 |
| SADT | 10,667 | 1,846 | 10,557 | 1,647 | 45 | 21,269 | 3,493 | 24,762 |
| SADT/AADT | 1.41 | 0.99 | 1.39 | 0.97 | 1.06 | 1.40 | 0.98 | 1.32 |

Source: Buffalo and Fort Erie Public Bridge Authority

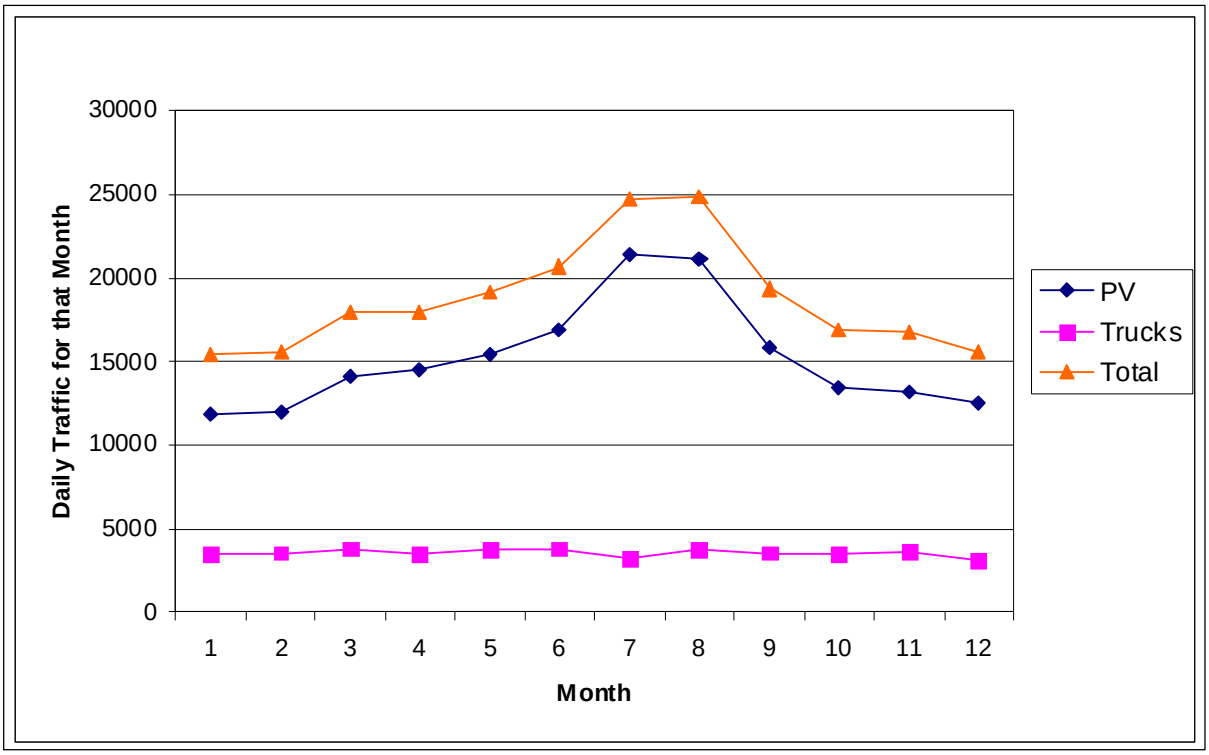



**Figure 6-5: Daily Traffic Volume Monthly Variation on the Peace Bridge in 2006**

**Figure 6-6** and **Figure 6-7** show the monthly variation of traffic volume on the Lewiston / Queenston Bridge in 2006. Similar to the pattern of variation in Peace Bridge, the summer tourist peak flow occurred for passenger vehicles in July and August, with peak variation of 36 percent for autos, 22 percent for buses and 108 percent for RVs.

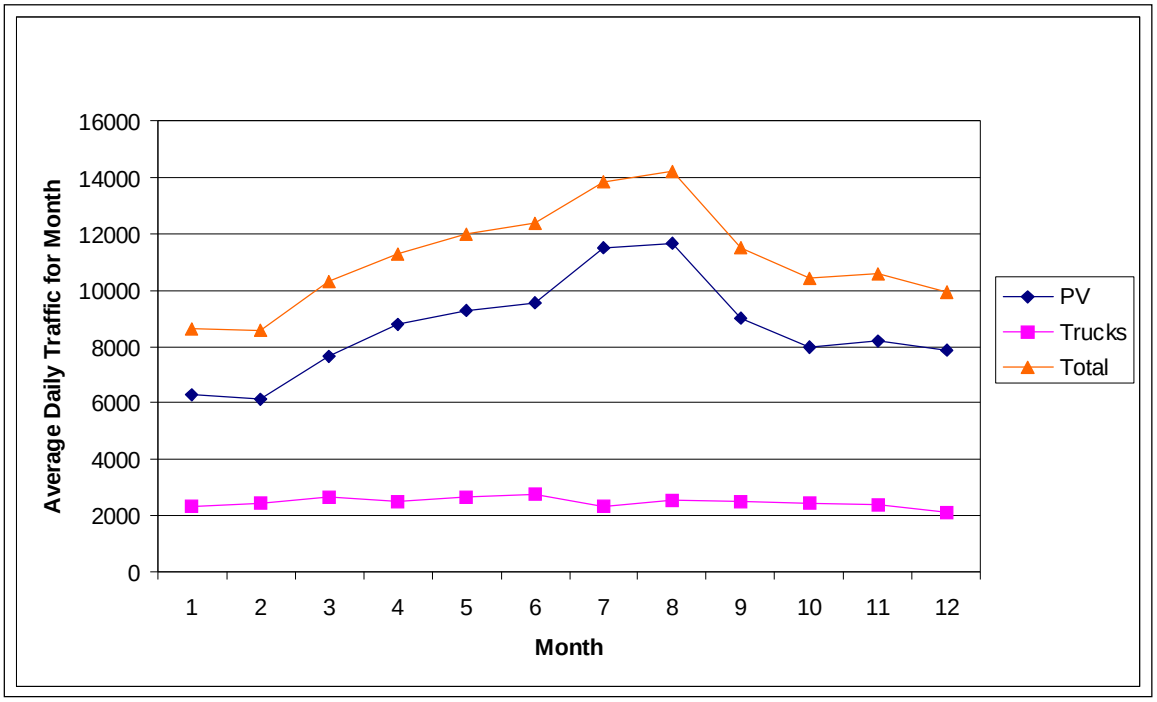
Truck volume remained fairly stable throughout the whole year. It dropped slightly by 1.5 percent during the summer tourist period, and in July dropped by 6 percent compared to the previous month; and again was lowest in December 2006.

**Figure 6-6: Monthly Variation of Traffic Volume on the Lewiston / Queenston Bridge in 2006**

| By Month | Original Data | | | | | | Summarized Vehicle Type | | |
|---|---|---|---|---|---|---|---|---|---|
| | Auto | Trailer | Bus | Truck | RV /Limo | U.S. Bound Free | Passenger Vehicles | Trucks | Total |
| 1 | 102,824 | 900 | 183 | 37,362 | 107 | 126,638 | 195,479 | 72,535 | 268,014 |
| 2 | 93,592 | 1,228 | 203 | 36,243 | 100 | 117,462 | 177,852 | 70,976 | 248,828 |
| 3 | 126,249 | 1,269 | 330 | 42,796 | 207 | 148,386 | 236,901 | 82,336 | 319,237 |
| 4 | 139,505 | 1,504 | 648 | 38,854 | 373 | 157,835 | 263,146 | 75,573 | 338,719 |
| 5 | 153,086 | 2,134 | 651 | 42,341 | 466 | 172,083 | 287,764 | 82,997 | 370,761 |
| 6 | 153,296 | 2,700 | 523 | 42,426 | 632 | 170,645 | 286,512 | 83,710 | 370,222 |
| 7 | 195,315 | 3,483 | 674 | 36,262 | 968 | 192,237 | 356,915 | 72,024 | 428,939 |
| 8 | 200,374 | 3,323 | 532 | 40,825 | 842 | 194,063 | 360,969 | 78,990 | 439,959 |
| 9 | 150,297 | 2,370 | 495 | 39,176 | 658 | 151,803 | 270,575 | 74,224 | 344,799 |
| 10 | 136,177 | 1,712 | 656 | 40,471 | 504 | 143,202 | 246,890 | 75,832 | 322,722 |
| 11 | 136,494 | 969 | 574 | 38,964 | 162 | 139,356 | 245,175 | 71,344 | 316,519 |
| 12 | 131,868 | 712 | 388 | 34,611 | 109 | 140,111 | 242,962 | 64,837 | 307,799 |
| Sum | 1,719,077 | 22,304 | 5,857 | 470,331 | 5,128 | 1,853,821 | 3,171,139 | 905,379 | 4,076,518 |
| AADT | 4,697 | 61 | 16 | 1,285 | 14 | 5,065 | 8,664 | 2,474 | 11,138 |
| SADT | 6,382 | 110 | 19 | 1,243 | 29 | 6,231 | 11,579 | 2,436 | 14,014 |
| SADT /AADT | 1.36 | 1.80 | 1.22 | 0.97 | 2.08 | 1.23 | 1.34 | 0.985 | 1.26 |

Source: Niagara Falls Bridge Commission

**Figure 6-7: Daily Traffic Volume Monthly Variation on the Lewiston-Queenston Bridge in 2006**




***Historical Traffic Volume Trend***

The historical trend of total traffic volumes for each bridge is shown in **Figure 6-7** and **Figure 6-8.** Since 2001, the overall traffic volume on the Lewiston-Queen Bridge remained fairly steady, although traffic on the other three bridges has dropped. Overall, traffic through the Buffalo-Niagara Gateway has dropped from 2002 to 2004 by 15 percent.

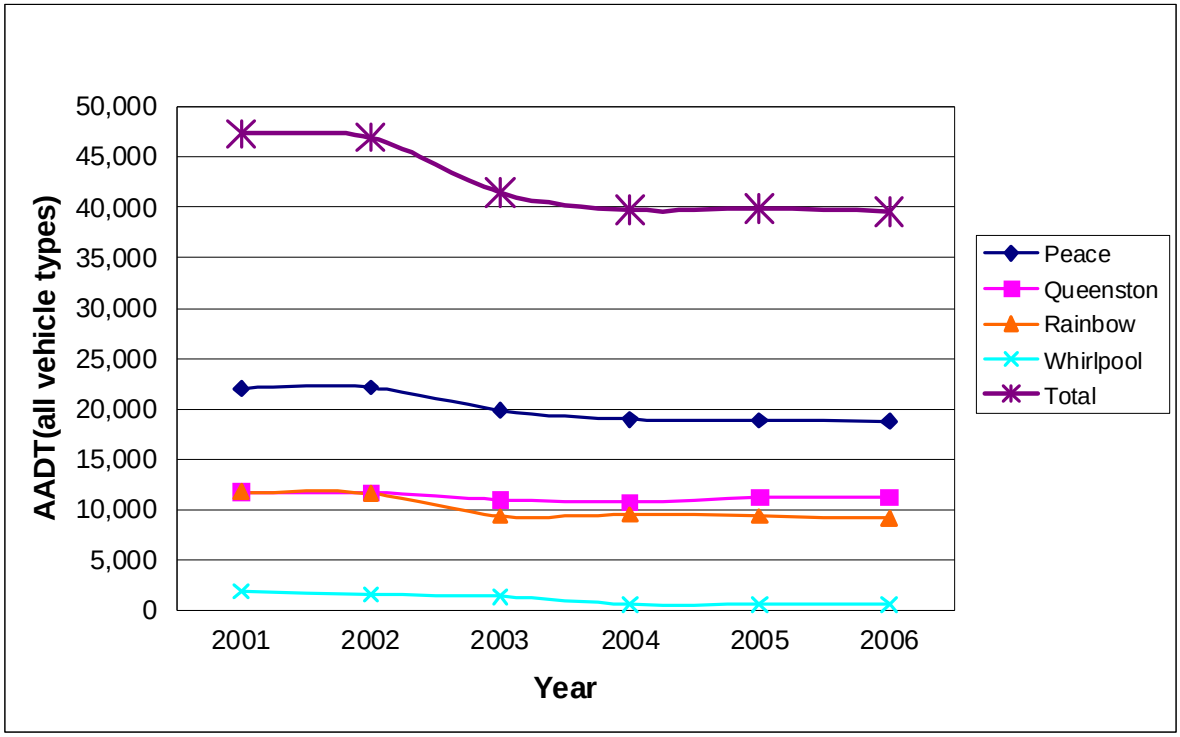
Each bridge showed a similar growth trend for the past six years with a common decline from 2002 to 2004, but volumes have fluctuated slightly since. The Whirlpool Bridge experienced a significant drop after 2003, by 70 percent, and has remained at this low level since then. The Lewiston-Queenston Bridge experienced some slight drops and actually showed slight growth by 4 percent from 2004 to 2005.

**Figure 6-8: Historical Trend of All Traffic Volume for the Four Highway Bridges**

| Historical Traffic Volume | | | | | |
|---|---|---|---|---|---|
| Year | Peace Bridge | Queenston Bridge | Rainbow Bridge | Whirlpool Bridge | Total |
| 2001 | 22,000 | 11,724 | 11,718 | 1,873 | 47,315 |
| 2002 | 22,100 | 11,686 | 11,609 | 1,512 | 46,907 |
| 2003 | 19,815 | 10,975 | 9,340 | 1,338 | 41,469 |
| 2004 | 18,944 | 10,750 | 9,472 | 565 | 39,732 |
| 2005 | 18,865 | 11,147 | 9,346 | 552 | 39,910 |
| 2006 | 18,751 | 11,138 | 9,162 | 542 | 39,593 |
| **Change Since Last Year** | | | | | |
| Period | Peace Bridge | Queenston Bridge | Rainbow Bridge | Whirlpool Bridge | Total |
| 2001-2002 | 0.5% | -0.3% | -0.9% | -19.2% | -0.9% |
| 2002-2003 | -10.3% | -6.1% | -19.5% | -11.5% | -11.6% |
| 2003-2004 | -4.4% | -2.1% | 1.4% | -56.8% | -4.2% |
| 2004-2005 | -0.4% | 3.7% | -1.3% | -2.4% | 0.4% |
| 2005-2006 | -0.6% | -0.1% | -2.0% | -1.8% | -0.8% |

Source: Ontario Ministry of Transportation; Buffalo and Fort Erie Public Bridge Authority, Niagara Falls Bridge Commission

**Figure 6-9: Historical Trend of All Traffic Volume for the Four Highway Bridges**



The historical trend of truck volume for each bridge is shown in **Figure 6-10 and Figure 6-11.**

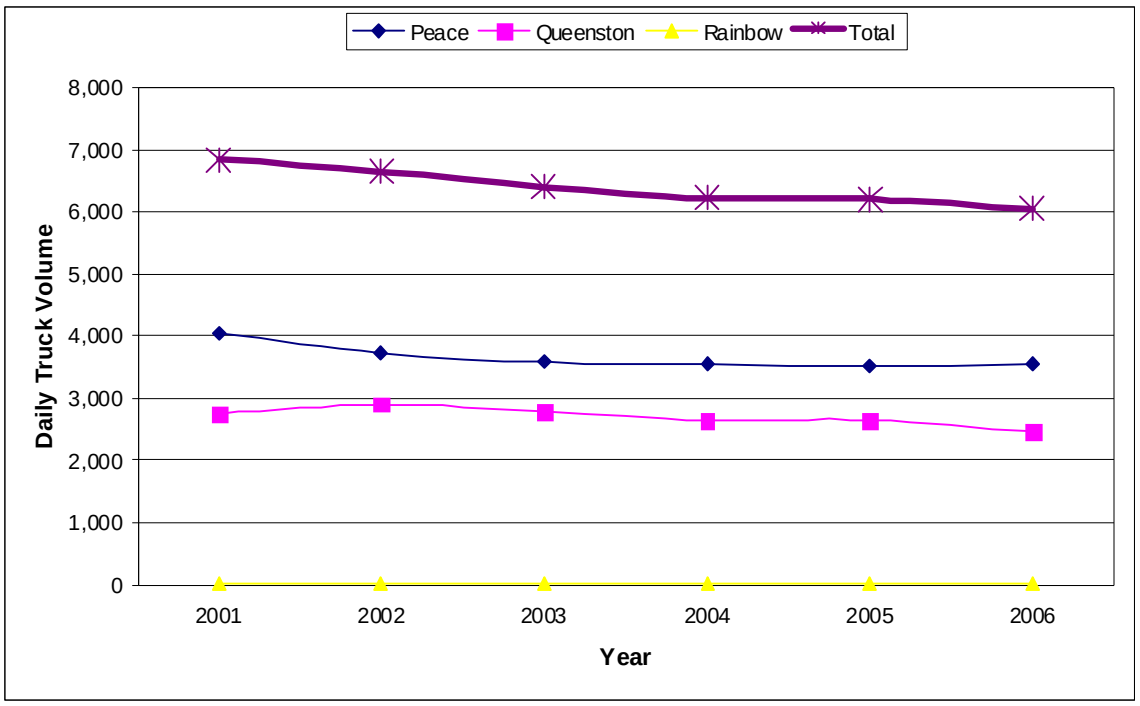
The overall truck volume through the Buffalo-Niagara Gateway has declined slightly over the past few years as commerce slowed, with an overall drop of 14 percent from 2002 to 2006. In terms of each bridge, the Lewiston-Queenston Bridge experienced continuous drops since 2003, while the Peace Bridge remains rather stable since 2003.

**Figure 6-10: Historical Trend of Truck Traffic Volume for the Four Highway Bridges**

| Historical Traffic Volume | | | | | |
|---|---|---|---|---|---|
| **Year** | **Peace Bridge** | **Queenston Bridge** | **Rainbow Bridge** | **Whirlpool Bridge** | **Total** |
| 2001 | 4,055 | 2,754 | 26 | | 6,835 |
| 2002 | 4,073 | 2,908 | 22 | | 7,004 |
| 2003 | 3,582 | 2,796 | 20 | | 6,398 |
| 2004 | 3,540 | 2,653 | 22 | | 6,215 |
| 2005 | 3,523 | 2,657 | 19 | | 6,199 |
| 2006 | 3,556 | 2,474 | 17 | | 6,047 |
| | Year to Year Change | | | | |
| **Period** | **Peace Bridge** | **Queenston Bridge** | **Rainbow Bridge** | **Whirlpool Bridge** | **Total** |
| 2001-2002 | 0.5% | 5.6% | -14.3% | | 2.5% |
| 2002-2003 | -12.1% | -3.8% | -12.1% | | -8.7% |
| 2003-2004 | -1.2% | -5.1% | 9.4% | | -2.9% |
| 2004-2005 | -0.5% | 0.1% | -9.4% | | -0.3% |
| 2005-2006 | 1.0% | -6.9% | -13.5% | | -2.4% |

Source: Ontario Ministry of Transportation; Buffalo and Fort Erie Public Bridge Authority, Niagara Falls Bridge Commission

**Figure 6-11: Historical Trend of Truck Traffic Volume for the Four Highway Bridges**




Long-term historical trends for traffic at the Peace Bridge are shown in **Figure 6-12** and **Figure 6-13**. The overall traffic at the Peace Bridge has increased by 34 percent since 1988. However, during most of the period, the traffic volume remained fairly stable except for a sharp climb in the year 1992 and a significant drop in 2003. In terms of each vehicle type, passenger vehicles showed a steady, albeit slight decline, while trucks remained rather stable after a significant drop in 2002.

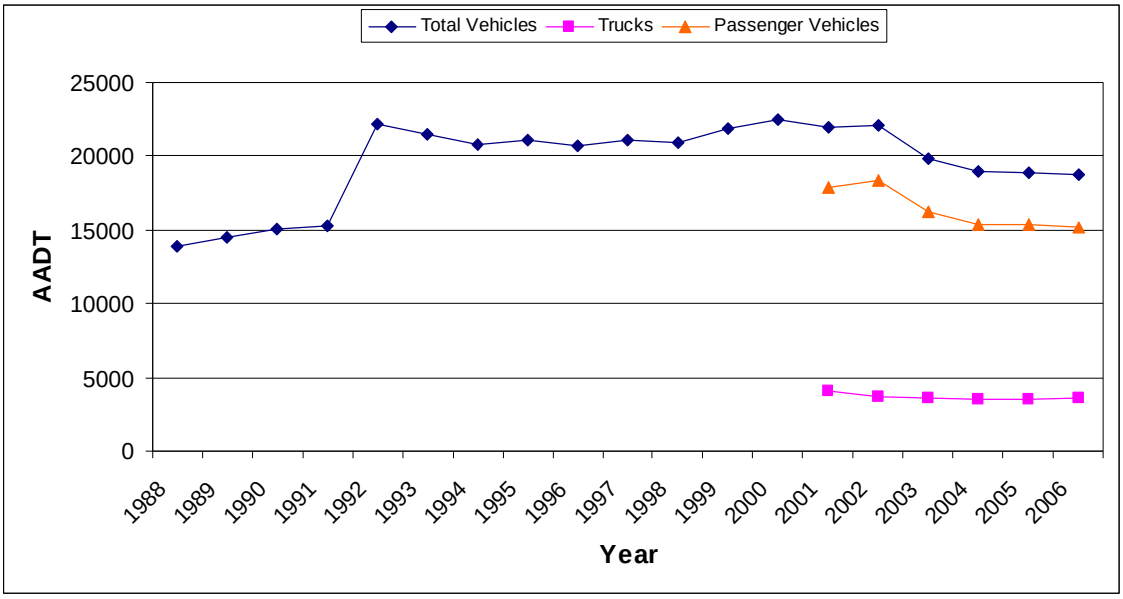
**Figure 6-12: Long-Term Historical Trend of Traffic on the Peace Bridge**

| Year | Truck AADT | Passenger Vehicle AADT | All Vehicles AADT | AADT Growth to Last Year | SADT |
|---|---|---|---|---|---|
| 1988 | | | 13950 | | 18100 |
| 1989 | | | 14500 | 3.9% | 18400 |
| 1990 | | | 15100 | 4.1% | 18800 |
| 1991 | | | 15300 | 1.3% | 19200 |
| 1992 | | | 22200 | 45.1% | 27900 |
| 1993 | | | 21500 | -3.2% | 27100 |
| 1994 | | | 20800 | -3.3% | 26600 |
| 1995 | | | 21100 | 1.4% | 27000 |
| 1996 | | | 20700 | -1.9% | 26500 |
| 1997 | | | 21100 | 1.9% | 27000 |
| 1998 | | | 20900 | -0.9% | 26500 |
| 1999 | | | 21900 | 4.8% | 27600 |
| 2000 | | | 22500 | 2.7% | 28400 |
| 2001 | 4055 | 17920 | 21975 | -2.2% | 27700 |
| 2002 | 3720 | 18380 | 22100 | 0.5% | 27900 |
| 2003 | 3582 | 16233 | 19815 | -10.3% | 26423 |
| 2004 | 3540 | 15404 | 18944 | -4.4% | 24660 |
| 2005 | 3523 | 15342 | 18865 | -0.4% | 25323 |
| 2006 | 3556 | 15194 | 18751 | -0.6% | 24762 |

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

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

**Figure 6-13: Long-Term Historical Traffic Trend on the Peace Bridge**




Long-term historical trends for traffic at the Lewiston-Queenston Bridge are shown in **Figure 6-14 and Figure 6-15.** The overall traffic volume experienced a continuous increase during the 1990s, but experienced continuous decrease since 1999. As a result, the current traffic volume is almost at the same level as twenty years ago. In terms of each vehicle type, passenger vehicles remained stable for the past few years, while trucks declined slightly since 2003.

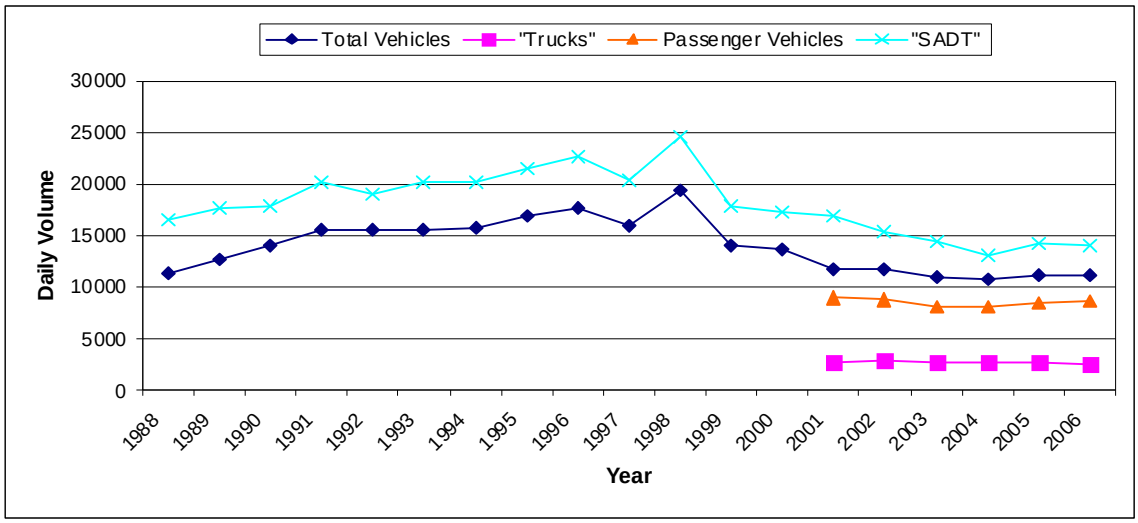
**Figure 6-14: Long-Term Historical Trend of Traffic at Lewiston-Queenston Bridge**

| Year | Truck AADT | Passenger Vehicle AADT | All Vehicles AADT | AADT Growth to Last Year | SADT |
|---|---|---|---|---|---|
| 1988 | | | 11,400 | | 16,500 |
| 1989 | | | 12,800 | 12.3% | 17,700 |
| 1990 | | | 14,100 | 10.2% | 17,900 |
| 1991 | | | 15,500 | 9.9% | 20,100 |
| 1992 | | | 15,500 | 0.0% | 19,000 |
| 1993 | | | 15,500 | 0.0% | 20,100 |
| 1994 | | | 15,800 | 1.9% | 20,200 |
| 1995 | | | 16,900 | 6.0% | 21,600 |
| 1996 | | | 17,700 | 4.7% | 22,700 |
| 1997 | | | 15,900 | -10.2% | 20,400 |
| 1998 | | | 19,400 | 22.0% | 24,600 |
| 1999 | | | 14,100 | -26.3% | 17,800 |
| 2000 | | | 13,700 | -2.8% | 17,300 |
| 2001 | 2,754 | 8,970 | 11,724 | -14.4% | 16,874 |
| 2002 | 2,908 | 8,779 | 11,686 | -0.3% | 15,384 |
| 2003 | 2,796 | 8,179 | 10,975 | -6.1% | 14,381 |
| 2004 | 2,653 | 8,097 | 10,750 | -2.1% | 13,160 |
| 2005 | 2,657 | 8,491 | 11,147 | 3.7% | 14,156 |
| 2006 | 2,474 | 8,664 | 11,138 | -0.1% | 14,014 |

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

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

**Figure 6-15: Long-Term Historical Traffic Volume Trend on the Lewiston-Queenston Bridge**




***Basic Profile of Cross Border Truck Freight***

The Peace and Lewiston-Queenston Bridges are the two key highway crossing facilities for trucks in the region. The basic profile of truck freight for each bridge is shown in **Figure 6-16**. The data shown was gathered from the 1999 National Roadside Study and extrapolated to 2002 and further to 2004; as provided by the Ministry of Transportation of Ontario.

In 2002, 1.4 million trucks crossed the Peace Bridge carrying approximately 14 million tons of cross border goods between Canada and the U.S, while 1.1 million trucks crossed the Lewiston-Queenston Bridge with 9.6 million tons of goods.

In 2002, 14 million tons of cross border goods were moved between Canada and the U.S, with a value of approximately $54,174 million. On average, each truck carried 10.3 tons of goods valued at $39,904.

**Figure 6-16: Basic Profile of Truck Freight on the Peace Bridge and the Lewiston-Queenston Bridge**

| | | 2002 | | 2004 | |
|---|---|---|---|---|---|
| **Profile** | **Unit** | **Peace Bridge** | **Lewiston-Queenston Bridge** | **Peace Bridge** | **Lewiston-Queenston Bridge** |
| **Truck trips/day** | trips | 3,720 | 2,906 | 3540 | 2653 |
| **Tons/day** | tons | 38,270 | 26,293 | 36,423 | 24,002 |
| **Value/day** | $ | 148,421,921 | 99,600,135 | | |
| **Truck trips/year** | million trips | 1.4 | 1.1 | 1.3 | 1.0 |
| **Tons/year** | million tons | 14.0 | 9.6 | 13.3 | 8.8 |
| **Value/year** | million $ | 54,174 | 36,354 | 51,559 | 33,186 |
| **Average Load/truck** | tons/truck | 10.3 | 9.0 | | |
| **Average Value of commodity /truck** | $/truck | 39,903 | 34,270 | | |
| **Average value / ton of commodity** | $ / ton | 3,878 | 3,788 | | |
| **Traveling Km in Canada for All Daily Traffic** | miles | 434,897 | 278,607 | | |
| **Traveling Km in U.S. for All Daily Traffic** | miles | 1,092,138 | 640,014 | | |
| **Average travel distance /truck in Canada** | miles | 117 | 96 | | |
| **Average travel distance /truck in U.S.** | miles | 294 | 220 | | |
| **Average travel distance /truck for whole trip** | miles | 410 | 316 | | |

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

The Lewiston-Queenston Bridge moved slightly less freight than the Peace Bridge. In 2002, 9.6 million tons of cross border goods were moved between Canada and the U.S, with a value of approximately $36,354 million. On average, each truck carried 9.0 tons of goods with a value of $34,270.

On average, each truck on the Peace Bridge travelled 410 miles per trip, with 117 miles in Canada and 294 miles in the U.S. Truck trips on the Lewiston-Queenston Bridge travelled a shorter average distance of 316 miles, with 96 miles in Canada and 220 miles in the U.S. (In other words, much of the truck traffic on the Canadian side originated in or was destined to the Central Ontario study area. The average distances in the U.S. suggest start- or end-points relatively close to the Niagara Frontier.)

***Cross Border Truck Freight by Commodity***

The distribution of cross border commodities carried by trucks is diversified as shown in **Figure 6-17**. For the Peace Bridge, the top five commodities being transported are grain meals, wood, transportation equipment, chemicals and food, which account for 67 percent of all goods. For the Lewiston-Queenston Bridge, the commodity distribution pattern is more even, with ranges of 3 to 14 percent among 12 commodities.

**Figure 6-17: Commodity Distribution for Each Bridge**

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

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

The commodity distribution pattern by inbound to / outbound from the US and through freight for each bridge is shown in **Figure 6-18** and **Figure 6-19.** Basically, the distribution pattern is similar between inbound and outbound flows for both bridges. At the Peace Bridge, it is noted that the inbound flow consisted to a higher degree of food and agricultural products than outbound flow. At the Lewiston-Queenston Bridge, it is noted that the inbound flow contained more metals and transportation than the outbound flow. In general, the overall inbound tonnage (to the U.S.) is significantly more than outbound flow. The tables also summarize through trips along the southern Ontario 'land bridge' to the Michigan border crossings, although these through trips constitute a small percentage of overall flows.

**Figure 6-18: Commodity Distribution on the Peace Bridge by Inbound to / Outbound from US and Through Tonnage**

| Type of Commodity | Tonnage | | | Percent | | |
|---|---|---|---|---|---|---|
| | Outbound | Inbound | Through | Outbound | Inbound | Through |
| Agricultural Products | 116,086 | 432,395 | 2,289 | 2% | 6% | 0% |
| Food | 294,577 | 924,693 | 19,950 | 5% | 13% | 4% |
| Minerals | 492,736 | 543,488 | 5,962 | 9% | 8% | 1% |
| Petroleum & Products | 282,650 | 190,669 | 0 | 5% | 3% | 0% |
| Chemicals & Products | 725,779 | 855,874 | 8,671 | 13% | 12% | 2% |
| Wood & Products | 849,548 | 1,166,902 | 17,384 | 15% | 16% | 3% |
| Metals & Products | 1,013,465 | 1,023,765 | 287,727 | 18% | 14% | 55% |
| Machinery & Electrical | 245,821 | 167,159 | 33,644 | 4% | 2% | 6% |
| Manufactured Products | 371,650 | 504,735 | 42,303 | 7% | 7% | 8% |
| Transportation | 685,550 | 895,507 | 82,528 | 12% | 13% | 16% |
| Waste & Scrap | 419,531 | 190,331 | 2,284 | 7% | 3% | 0% |
| Shipping Containers Returning Empty | 151,050 | 219,282 | 19,110 | 3% | 3% | 4% |
| Sum | 5,648,444 | 7,114,798 | 521,851 | 100% | 100% | 100% |

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

**Figure 6-19: Commodity Distribution on the Lewiston-Queenston Bridge by Inbound to / Outbound from US and Through Tonnage**

| Type of Commodity | Tonnages | | | Percent | | |
|---|---|---|---|---|---|---|
| | Outbound | Inbound | Through | Outbound | Inbound | Through |
| Agricultural Products | 380,331 | 363,131 | 15,126 | 10% | 9% | 2% |
| Food | 554,155 | 550,325 | 102,027 | 15% | 13% | 12% |
| Minerals | 295,473 | 426,012 | 0 | 8% | 10% | 0% |
| Petroleum & Products | 205,551 | 94,634 | 54,429 | 6% | 2% | 6% |
| Chemicals & Products | 497,484 | 495,182 | 52,447 | 14% | 12% | 6% |
| Wood & Products | 351,599 | 349,571 | 10,186 | 10% | 8% | 1% |
| Meals & Products | 243,260 | 408,518 | 50,094 | 7% | 10% | 6% |
| Machinery & Electrical | 75,154 | 128,304 | 69,705 | 2% | 3% | 8% |
| Manufactured Products | 445,914 | 384,207 | 83,281 | 12% | 9% | 10% |
| Transportation | 260,505 | 612,864 | 333,388 | 7% | 14% | 40% |
| Waste & Scrap | 245,972 | 319,643 | 20,623 | 7% | 8% | 2% |
| Shipping Containers Returning Empty | 105,813 | 123,324 | 46,564 | 3% | 3% | 6% |
| Sum | 3,661,211 | 4,255,716 | 837,870 | 100% | 100% | 100% |

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

***Cross Border Truck Freight by Origin / Destination***

**Figure 6-20 and Figure 6-21** show the freight flow tonnage extrapolated to 2004 over the Peace Bridge and the Lewiston-Queenston Bridge by origin / destination. The Greater Toronto Area is the largest single origin / destination on the Canadian side for both

bridges. The Buffalo / Niagara area is the largest single origin / destination on the U.S. side at the Lewiston-Queenston Bridge, whereas Pennsylvania and Ohio are the largest U.S. origins / destinations at the Peace Bridge.

The tables also summarize through trips along the southern Ontario ‘land bridge’ to the Michigan border crossings, although these through trips constitute a small percentage of overall flows.

**Figure 6-20: Truck Freight Annual Tonnage by Origin/Destination on the Peace Bridge for 2004 (Weight in thousand tons)**

| Name of Zone | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Niagara / Peninsula | 1 | | | | | | | | | | | | | 210 | 31 | 307 | 208 | 153 | 14 | 134 | 111 | 54 | 1,222 |
| 2. Hamilton | 2 | | | | | | | | | | | | 0 | 101 | 6 | 75 | 45 | 77 | 26 | 62 | 22 | | 413 |
| 3. GTA | 3 | | | | | | | | | | | | | 594 | 38 | 298 | 733 | 557 | 59 | 773 | 299 | 46 | 3,397 |
| 4. North of GTA | 4 | | | | | | | | | | | | 3 | 38 | | 33 | 5 | 54 | | 73 | 17 | | 222 |
| 5. Waterloo/Huron | 5 | | | | | | | | | | | | | 62 | 8 | 63 | 253 | 73 | 62 | 136 | 35 | 13 | 705 |
| 6. London - Windsor | 6 | | | | | | | | | | | | | 49 | 3 | 82 | 70 | 26 | 64 | 28 | 31 | 0 | 352 |
| 6. Ontario East | 7 | | | | | | | | | | | | | 35 | | 108 | 142 | 44 | 24 | 10 | | | 363 |
| 8. Northern Ontario | 8 | | | | | | | | | | | | | 5 | 1 | 8 | 36 | 37 | | 31 | 3 | 1 | 123 |
| 9. Quebec | 9 | | | | | | | | | | | 1 | | 12 | 22 | | 68 | 112 | | 22 | | 38 | 275 |
| 10. Other East Canada | 10 | | | 1 | 2 | | | | | | | | | 9 | | 1 | 6 | 13 | | 3 | | 1 | 36 |
| 11. Western / Northern Canada | 11 | | | | | | | | | | | | | | | 3 | 3 | | 1 | 5 | 2 | | 14 |
| 12. Michigan | 12 | | | 1 | | | | | | | | | | 173 | 9 | 17 | 7 | | 8 | | | | 216 |
| 13. Buffalo/Niagara | 13 | 174 | 172 | 269 | 22 | 115 | 42 | 35 | 1 | 11 | 2 | | 106 | | | | | | | | | 23 | 972 |
| 14. Rochester | 14 | 12 | 14 | 48 | | 5 | 0 | | | | | | 5 | | | | | | | | | 0 | 85 |
| 15. Other New York | 15 | 80 | 28 | 160 | 43 | 116 | 34 | 5 | 16 | 21 | 3 | 5 | 20 | | | | | | | | | | 532 |
| 16. Pennsylvania | 16 | 103 | 127 | 590 | 80 | 176 | 62 | 48 | 16 | 29 | 2 | 3 | 3 | | | | | | | | | | 1,240 |
| 16. Ohio | 17 | 114 | 35 | 662 | 50 | 77 | 11 | 79 | 13 | 22 | 1 | 1 | | 31 | | | | | | | | | 1,094 |
| 18. New England | 18 | 8 | 13 | 183 | 19 | 24 | 5 | | | | | | 4 | | | | | | | | | | 256 |
| 19. Southeast USA | 19 | 55 | 39 | 545 | 45 | 149 | 17 | 26 | 1 | 29 | 1 | | | | | 2 | | | 1 | | | | 909 |

| Name of Zone | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20. Mid-Atlantic USA** | **20** | 24 | 29 | 265 | 0 | 111 | 34 | 11 | 3 | | | | | | | | | | | | | | 478 |
| **21. Western / Midwestern USA** | **21** | 49 | 8 | 134 | 5 | 4 | | 19 | 9 | 48 | 1 | | | 110 | 1 | | | | 1 | | | | 390 |
| | **Total** | 619 | 466 | 2,859 | 267 | 778 | 204 | 224 | 59 | 159 | 10 | 10 | 141 | 1,429 | 119 | 997 | 1,575 | 1,145 | 260 | 1,277 | 519 | 177 | 13,294 |

Source: Ministry of Transportation of Ontario. 1999 Canadian National Roadside Study (NRS), extrapolated to 2004.

**Figure 6-21: Truck Freight Annual Tonnage by Origin/Destination on the Lewiston-Queenston Bridge for2004**

**(Weight in thousand tons)**

| Name of Zone | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Niagara / Peninsula | 1 | | | | | | | | | | | | | 109 | 1 | 202 | 62 | 16 | 17 | 24 | 5 | 4 | 441 |
| 2. Hamilton | 2 | | | | | | | | | | | | | 29 | 32 | 108 | 28 | 19 | | 7 | 30 | 5 | 258 |
| 3. GTA | 3 | | | | | | | | | | | | | 626 | 133 | 707 | 253 | 22 | 94 | 119 | 512 | 25 | 2,492 |
| 4. North of GTA | 4 | | | | | | | | | | | | | 10 | | 97 | 2 | | 22 | 6 | 40 | | 177 |
| 5. Waterloo/Huron | 5 | | | | | | | | | | | | | 106 | 32 | 152 | 71 | 7 | 32 | 22 | 91 | 30 | 543 |
| 6. London - Windsor | 6 | | | | | | | | | | | | | 70 | 6 | 77 | 48 | | 21 | 1 | 26 | | 249 |
| 6. Ontario East | 7 | | | | | | | | | | | | | 12 | | 0 | 4 | | | 12 | | | 28 |
| 8. Northern Ontario | 8 | | | | | | | | | | | | | 5 | | 1 | 5 | | | | 6 | | 18 |
| 9. Quebec | 9 | | | | | | | | | | | | | 21 | | 9 | 7 | 1 | | 5 | | 1 | 45 |
| 10. Other East Canada | 10 | | | 2 | | | | | | | | | | 1 | | | | | | | | | 3 |
| 11. Western / Northern Canada | 11 | | | | | | | | | | | | | 2 | | 1 | | | 1 | | 1 | | 5 |
| 12. Michigan | 12 | | | | | | | | | | | | | 183 | 22 | 68 | | | 50 | | 1 | | 324 |
| 13. Buffalo/Niagara | 13 | 94 | 89 | 304 | 29 | 150 | 33 | 5 | 11 | 16 | | 11 | 247 | | | | | | | | | 31 | 1,020 |
| 14. Rochester | 14 | 7 | 2 | 132 | 3 | 10 | 14 | | | | | | 52 | | | | | | | | | | 220 |
| 15. Other New York | 15 | 131 | 31 | 645 | | 82 | 19 | 62 | 0 | 13 | | 1 | 123 | | | | | 6 | | | | 8 | 1,120 |
| 16. Pennsylvania | 16 | 27 | 52 | 423 | | 40 | 8 | 4 | 6 | 5 | | | | | | | | | | | | | 563 |
| 16. Ohio | 17 | 29 | | 77 | 1 | | 11 | | | | | | | | | | | | | | | | 118 |
| 18. New England | 18 | | 3 | 65 | 11 | 21 | 47 | | | | | | 34 | | | | | | | | | 9 | 190 |

| Name of Zone | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **19. Southeast USA** | **19** | 12 | | 159 | | 76 | 0 | 4 | | 2 | 1 | | | | | | | | | | | | 254 |
| **20. Mid-Atlantic USA** | **20** | 16 | 29 | 566 | 13 | 27 | 13 | | | | | | | | | | | | | | | | 664 |
| **21. Western / Midwestern USA** | **21** | 9 | | 11 | | | | | | 2 | | | | 4 | 3 | 1 | | | | | | | 31 |
| | **Total** | 325 | 205 | 2,384 | 57 | 406 | 145 | 75 | 17 | 37 | 1 | 11 | 455 | 1,179 | 230 | 1,424 | 481 | 71 | 237 | 195 | 712 | 114 | 8,762 |

Source: Ministry of Transportation of Ontario. 1999 Canadian National Roadside Study (NRS), extrapolated to 2004.

The annual inbound truck freight on the Peace Bridge in 2004 was extrapolated to be 5,648,000 tons, or 43 percent of total freight movement. As further summarized in **Figure 6-22** and **Figure 6-23**, the states of New York, Pennsylvania and Ohio were the top three origins of flows entering Canada, accounting for 66 percent of the inbound tonnage from the U.S. to Canada. Specifically, the Buffalo/Niagara Region accounted for 15 percent of all inbound flow, while the rest of New York State accounts for another 10 percent.

For the Lewiston-Queenston Bridge, the annual inbound truck freight in 2004 was extrapolated to be 3,661,000 tons, or 42 percent of total freight movement. The state of New York was the primary origin, with a share of 52 percent of all inbound flow, which is much higher than the share at the Peace Bridge. Furthermore, the share of Buffalo/Niagara region and Rochester flows is also higher than that at the Peace Bridge, with a total value of 25 percent.

By destination of inbound flow, as expected, the Greater Toronto Area is the primary destination with 51 percent of all inbound flow at the Peace Bridge, while GTA is an even more predominant destination with 65 percent of inbound flow at the Lewiston-Queenston Bridge. The Niagara Peninsula and Hamilton have the next highest inbound flows with 19 percent at the Peace Bridge and 15 percent at the Lewiston-Queenston Bridge. The remaining destinations were located around the GTA, and include Waterloo/Huron regions, London/Windsor regions, north of the GTA, and East Ontario. Overall, Ontario accounts for 97 percent of all inbound destinations at the Peace Bridge, while it accounts for 99 percent at the Queenston Lewiston Bridge.

**Figure 6-22: Tonnage to Canada by Origin in the U.S. for 2004**

| Tonnage to Canada | Peace Bridge | | Lewiston-Queenston Bridge | |
|---|---|---|---|---|
| by Origin in the U.S. | 2004 Yearly | Percent | 2004 Yearly | Percent |
| Buffalo/Niagara | 842,703 | **15%** | 742,227 | **20%** |
| Michigan | 1,450 | .0% | 0 | 0% |
| Mid-Atlantic USA | 477,905 | **8%** | 664,037 | **18%** |
| New England | 252,001 | 4% | 146,876 | 4% |
| Ohio | 1,063,275 | **19%** | 117,540 | 3% |
| Other New York | 511,744 | **9%** | 983,694 | **27%** |
| Pennsylvania | 1,237,496 | **22%** | 562,682 | **15%** |
| Rochester | 79,920 | 1% | 168,122 | 5% |
| South-eastern USA | 905,709 | **16%** | 254,042 | 7% |
| Western / Midwestern USA | 277,691 | 5% | 21,992 | 1% |
| Total | 5,648,444 | 100% | 3,661,211 | 100% |

Source: Ministry of Transportation of Ontario. 1999 Canadian National Roadside Study (NRS), extrapolated to 2004

**Figure 6-23: Tonnage by Destinations in Canada for 2004**

| Tonnage to Canada | Peace Bridge | | Lewiston-Queenston Bridge | |
|---|---|---|---|---|
| by Destination in Canada | 2004 Yearly | Percent | 2004 Yearly | Percent |
| GTA | 2,856,375 | **51%** | 2,381,989 | **65%** |
| Hamilton | 465,659 | **8%** | 204,642 | **6%** |
| London – Windsor | 204,446 | 4% | 145,184 | 4% |
| Niagara / Peninsula | 618,841 | **11%** | 324,768 | **9%** |
| North of GTA | 264,465 | 5% | 57,421 | 2% |
| Northern Ontario | 58,534 | 1% | 16,692 | 0% |
| Ontario East | 224,238 | 4% | 74,898 | 2% |
| Other East Canada | 9,599 | 0% | 1,058 | 0% |
| Quebec | 159,426 | 3% | 37,481 | 1% |
| Waterloo/Huron | 777,772 | **14%** | 405,647 | **11%** |
| Western / Northern Canada | 9,089 | 0% | 11,431 | 0% |
| Total | 5,648,444 | 100% | 3,661,211 | 100% |

Source: Ministry of Transportation of Ontario. 1999 Canadian National Roadside Study (NRS), extrapolated to 2004

The detailed information for outbound flow (from Canada to the U.S.) is shown in **Figure 6-24 and Figure 6-25.**

The annual outbound (to the U.S.) truck freight on the Peace Bridge in 2004 was extrapolated to be 7,115,000 tons, or 54 percent of the region's cross-border highway tonnage. As described previously, the states of New York, Pennsylvania and Ohio were the primary three destinations of flows leaving Canada, accounting for 69 percent of the outbound tonnage from Canada to the U.S. Specifically, the Buffalo/Niagara Region accounted for 16 percent of all outbound tonnage, while the rest of New York State accounted for another 16 percent.

For the Lewiston-Queenston Bridge, the annual outbound truck freight in 2004 was extrapolated to be 4,256,000 tons, or 49 percent of total freight movement. The state of New York was again the primary destination, with a share of 60 percent of all flows, which is much higher than the New York state share at the Peace Bridge. Furthermore, the share of Buffalo/Niagara region and Rochester flows were also higher than that at the Peace Bridge. However, the flow share to Pennsylvania and to Ohio was much lower than that at the Peace Bridge, with only 11 and 2 percent respectively.

In terms of origins, the Greater Toronto Area was also the primary origin with 48 percent of all outbound flow over the Peace Bridge, while at the Lewiston-Queenston Bridge the GTA was only represented 59 percent of outbound flows. The Niagara/Peninsula and City of Hamilton were the secondary origins with 23 percent at the Peace Bridge and 16 percent at the Lewiston-Queenston Bridge. The remaining origins were located primarily around GTA, and included the Waterloo and Huron regions, the London and Windsor regions and north of

GTA. Overall, Ontario accounted for 96 percent of all outbound (to U.S.) trip origins at the Peace Bridge, while it was 99 percent at the Lewiston-Queenston Bridge.

**Figure 6-24: Tonnage to U.S. by Destination in the U.S. for 2004**

| Tonnage from Canada | Peace Bridge | | Lewiston-Queenston Bridge | |
|---|---|---|---|---|
| by Destination in U.S. | 2004 Yearly | Percent | 2004 Yearly | Percent |
| 1..Michigan | | | | |
| 2. .Buffalo/Niagara | 1,114,742 | 16% | 991,477 | 23% |
| 3. .Rochester | 109,314 | 2% | 204,877 | 5% |
| 4. .Other New York | 977,987 | 14% | 1,354,474 | 32% |
| 5. Pennsylvania | 1,568,411 | 22% | 480,902 | 11% |
| 6. Ohio | 1,145,366 | 16% | 64,665 | 2% |
| 6. New England | 249,921 | 4% | 187,274 | 4% |
| 8. Southeastern USA | 1,276,663 | 18% | 195,064 | 5% |
| 9. Mid-Atlantic USA | 519,166 | 7% | 710,986 | 17% |
| 10. Western / Midwestern USA | 153,228 | 2% | 66,000 | 2% |
| Total | 7,114,798 | 100% | 4,255,716 | 100% |

Source: Ministry of Transportation of Ontario. 1999 Canadian National Roadside Study (NRS), extrapolated to 2004

**Figure 6-25: Tonnage to U.S. by Origin in Canada for 2004**

| Tonnage from Canada | Peace Bridge | | Lewiston-Queenston Bridge | |
|---|---|---|---|---|
| by Origin in Canada | 2004 Yearly | Percent | 2004 Yearly | Percent |
| 1. Niagara / Peninsula | 1,222,168 | 17% | 441,233 | 10% |
| 2. Hamilton | 412,107 | 6% | 258,202 | 6% |
| 3. GTA | 3,396,605 | 48% | 2,491,758 | 59% |
| 4. North of GTA | 219,603 | 3% | 176,619 | 4% |
| 5 .Waterloo/Huron | 705,234 | 10% | 542,672 | 13% |
| 6. London - Windsor | 352,390 | 5% | 248,515 | 6% |
| 6. Ontario East | 363,375 | 5% | 28,401 | 1% |
| 8. Northern Ontario | 123,458 | 2% | 17,553 | 0% |
| 9. Quebec | 273,574 | 4% | 44,926 | 1% |
| 10. Other East Canada | 32,781 | 0% | 1,161 | 0% |
| 11 .Western / Northern Canada | 13,502 | 0% | 4,677 | 0% |
| Total | 7,114,798 | 100% | 4,255,716 | 100% |

Source: Ministry of Transportation of Ontario. 1999 Canadian National Roadside Study (NRS), extrapolated to 2004

The overhead (through) flow through Canada occurred mainly between Michigan and the State of New York, especially between Michigan and Buffalo/Niagara. The Peace Bridge transported 521,000 tons of through freight in 2004, which accounted for 4 percent of total tonnage. The Lewiston-Queenston Bridge transported more through freight – of the order of 842,000 tons, which accounted for 10 percent of total tonnage. This is detailed in **Figure 6-26** and **Figure 6-27.**

## Figure 6-26: Through Tonnage by Origin / Destination

| Through Tonnage | Peace Bridge | | Lewiston-Queenston Bridge | |
|---|---|---|---|---|
| By Origin/Destination | 2004 Yearly | Percent | 2004 Yearly | Percent |
| Michigan to other U.S. | 214,277 | 41% | 324,403 | 38% |
| Other U.S. to Michigan | 138,317 | 27% | 455,498 | 54% |
| U.S. to U.S. | 169,256 | 32% | 62,918 | 7% |
| Sum | 521,851 | 100% | 842,819 | 100% |

Source: Ministry of Transportation of Ontario. 1999 Canadian National Roadside Study (NRS), extrapolated to 2004

## Figure 6-27: Summary of All Inbound / Outbound and Through Tonnage (Thousand Tons)

| Through Tonnage | Peace Bridge | | Lewiston-Queenston Bridge | |
|---|---|---|---|---|
| | 2004 Yearly | Percent | 2004 Yearly | Percent |
| Outbound | 7,114,798 | 54% | 4,255,716 | 49% |
| Inbound | 5,648,444 | 43% | 3,661,211 | 42% |
| Through | 521,851 | 4% | 842,819 | 10% |
| Total | 13,285,093 | 100% | 8,759,746 | 100% |

Source: Ministry of Transportation of Ontario. 1999 Canadian National Roadside Study (NRS), extrapolated to 2004

Figures 6-27 and 6-28 present the forecasted tonnage for the two bridges through 2035.

## Figure 6-28: Forecasted Traffic Peace Bridge (Tons)

| Traffic Type | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| From Canada | 7,114,798 | 7,844,604 | 8,745,362 | 9,832,864 | 11,451,861 | 14,892,929 | 17,633,955 | 146.8% |
| To Canada | 5,648,444 | 6,099,786 | 7,030,444 | 8,135,819 | 9,457,445 | 11,075,862 | 12,893,608 | 128.3% |
| Total | 12,763,242 | 13,944,390 | 15,775,806 | 17,968,683 | 20,909,306 | 25,968,792 | 30,527,563 | 139.2% |

Source: TRANSEARCH; WSA Analysis

## Figure 6-29: Forecasted Traffic Lewiston-Queenston Bridge (Tons)

| Traffic Type | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| From Canada | 4,255,716 | 4,692,249 | 5,231,038 | 5,881,527 | 6,849,930 | 8,908,205 | 10,547,749 | 146.8% |
| To Canada | 3,661,211 | 3,953,762 | 4,556,996 | 5,273,479 | 6,130,131 | 7,179,157 | 8,357,385 | 128.3% |
| Total | 7,916,927 | 8,646,011 | 9,788,034 | 11,155,006 | 12,980,061 | 16,087,362 | 18,905,134 | 138.8% |

Source: TRANSEARCH; WSA Analysis

## Marine

### *Transborder Shipping between the Great Lakes /St. Lawrence Region of Canada and the Great Lakes Region of the U.S.*

According to Statistics Canada, in 2003, the overall transborder marine trade between Canada and the United States was 123.5 million tons (Mt), which accounted for 40 percent of all Canadian international marine traffic. Exports to the United States accounted for 81.2 Mt or 66 percent of total transborder shipment, while imports from the United States accounted for 42.2 Mt or 34 percent of the total.

The Great Lakes region of Canada is defined as those ports along the St. Lawrence Seaway, west of the Ontario – Québec border, and those on the Great Lakes. The ports in this region loaded 18 percent of the total Canadian transborder export or 14.3 Mt of marine cargo to the U.S. However, in terms of unloaded tonnage, the Canadian Great Lakes region ports contributed 69 percent of the total Canadian transborder import or 29.0 Mt of cargo from the U.S., as shown in **Figure 6-30.** Furthermore, the total transborder shipment of the Great Lakes region was 43.3 Mt, which accounted for 91 percent of all international shipment for the region.

The St. Lawrence region includes those ports on the St. Lawrence, east of the Ontario-Québec border, and as far east as 63$^{o}$ longitude on the north shore and as far east as Cap des Rosiers on the south shore. Compared to the Great Lakes region, the St. Lawrence region exported and imported less marine cargo to / from the U.S., with 10 Mt of loaded tonnage to the U.S. or 13 percent of the total Canadian transborder export as well as 6 Mt of unloaded tonnage from the U.S or 14 percent of the total Canadian transborder import.

The U.S. defines its Great Lakes region as covering the ports on the adjoining eight states, including New York State. The transborder tonnage shipped to the U.S. Great Lakes region was 19.6 Mt, which accounted for 24 percent of the total U.S transborder import. The tonnage shipped from the U.S-Great Lakes was 31.2 Mt, which accounted for 74 percent of the total U.S. transborder export. The details are shown in **Figure 6-31.**

Specifically, the tonnage from Canadian Great Lakes ports to U.S. Great Lakes ports was 14.2 Mt. This accounted for 99 percent of all transborder exports from the Canadian Great Lakes ports or 73 percent of all transborder imports to the U.S. Great Lakes ports. The tonnage arriving at the Canadian Great Lakes ports from the U.S. Great Lakes ports was 28.9 Mt, which accounted for almost 100 percent of transborder import to Great Lakes Canada, or 93 percent of all transborder export of the U.S. Great Lakes ports.

**Figure 6-30: Transborder Shipping – Marine Cargo Tonnage: Canada to U.S.**

**(Thousand tons)**

| To region of U.S. / From region of Canada | To U.S.-Atlantic and Gulf | To U.S.-Great Lakes | To U.S.-Pacific | To U.S. Total | Percent of U.S.-Great Lakes vs. U.S. Total |
|---|---|---|---|---|---|
| **Atlantic Region** | 46,023 | 0 | 410 | 46,433 | 0% |
| **St. Lawrence Region** | 4,831 | 5,327 | 0 | 10,158 | 52% |
| **Great Lakes Region** | 98 | 14,222 | 0 | 14,320 | 99% |
| **Pacific Region** | 398 | 26 | 9,897 | 10,320 | 0% |
| **Canada** | 51,350 | 19,574 | 10,307 | 81,230 | 24% |
| **Percent of Great Lakes region vs. Canada** | 0.2% | 73% | 0.0% | 18% | |

Source: Statistic Canada – Catalogue no. 54-205

**Figure 6-31: Transborder Shipping – Marine Cargo Tonnage Unloaded by Canada and U.S. Regions**

**(Thousand tons)**

| To region of U.S. / From region of Canada | U.S.-Atlantic and Gulf | U.S.-Great Lakes | U.S.-Pacific | Total | Percent of U.S.-Great Lakes vs. U.S. Total |
|---|---|---|---|---|---|
| **Atlantic Region** | 4,488 | 37 | 55 | 4,580 | 1% |
| **St. Lawrence Region** | 3,463 | 2,221 | 197 | 5,881 | 38% |
| **Great Lakes Region** | 131 | 28,894 | 0 | 29,025 | 100% |
| **Pacific Region** | 12 | 8 | 2,723 | 2,743 | 0% |
| **Canada** | 8,095 | 31,160 | 2,975 | 42,229 | **74%** |
| **Percent of Great Lakes region vs. Canada** | 1.6% | 93% | 0.0% | **69%** | |

Source: Statistic Canada – Catalogue no. 54-205

In summary, Canada has a marine transborder trade surplus over the U.S., with the volume of exports twice that of imports. However, for the Canadian Great Lakes region, there was a trade deficit with the U.S. Great Lakes region, with its import volume twice that of exports. In addition, the Canadian and the U.S. Great Lakes regions were each other's predominant 'international' markets.

### *Cross Border Shipping between Ontario / Quebec and New York State*

The breakdown of cross border shipping between Ontario (essentially, the Canadian Great Lakes region) and the Great Lakes region of the U.S. is shown in **Figure 6-32**. The predominant destination states for Ontario marine exports are Michigan and Ohio, while the

total loaded tonnage from Ontario to New York accounted for only 9 percent of the total Great Lakes region of the U.S., or 1,339,000 tons.

**Figure 6-32: Cross Border Shipping – Total Tonnage Between Ontario and the Great Lake Region of the U.S.**

| By state of Great Lake Region of U.S | Total Loaded at Ontario Ports | | Total Unloaded at Ontario Ports | |
|---|---|---|---|---|
| | '000 tons | Percent | '000 tons | Percent |
| Illinois | 666 | 5% | 660 | 2% |
| Indiana | 672 | 5% | 147 | 1% |
| Michigan | 6,022 | 42% | 4,980 | 17% |
| Minnesota | 369 | 3% | 1,562 | 5% |
| New York | 1,339 | 9% | 15 | 0.1% |
| Ohio | 4,056 | 28% | 13,476 | 47% |
| Pennsylvania | 25 | 0% | 0 | 0.0% |
| Wisconsin | 1,096 | 8% | 8,063 | 28% |
| Total | 14,246 | 100% | 28,904 | 100% |

Source: Statistic Canada

With respect to total unloaded tonnage, the predominate origin states in the Great Lakes U.S. region shipping to Ontario are Ohio, Wisconsin, and Michigan, while the marine cargo arriving in Ontario from New York is only 0.1 percent of the total for the Great Lakes region of the U.S., or 15,000 tons.

As shown in
**Figure** 6-**33, t**he cross border shipping between Quebec and the Great Lakes region of the U.S. is much less than shipping between Ontario and the U.S. Great Lakes. The total loaded tonnage at the ports of Quebec from New York was 608,000 tons in 2003, which accounted for 11 percent of total loaded tonnage from the whole Great Lakes region of the U.S. The predominant destination states for Quebec marine exports were Ohio and Indiana.

With respect to total unloaded tonnage, New York was the top origin state for marine imports to Quebec. In 2003, 762,000 tons of marine shipping arrived from New York to Quebec, which accounted for 24 percent of total imports to Quebec from Great Lakes U.S. Thus, the marine import from New York to Quebec was much more than New York's shipments to Ontario.

In summary, New York has not been a primary market for Ontario marine export, and the Canadian marine import from New York was negligible. Also, Quebec exported less cargo to New York by marine. However, New York was the top source for Quebec's marine imports.

**Figure 6-33: Cross Border Shipping – Total Tonnage Between Quebec and the Great Lake Region of the U.S.**

| By state of Great Lake Region of U.S | Total Loaded At Quebec Ports | | Total Unloaded at Quebec Ports | |
|---|---|---|---|---|
| | '000 tons | Percent | '000 tons | Percent |
| Illinois | 30 | 1% | 83 | 3% |
| Indiana | 1,326 | 23% | 377 | 12% |
| Michigan | 383 | 7% | 161 | 5% |
| Minnesota | 0 | 0% | 463 | 15% |
| New York | 608 | 11% | 762 | 24% |
| Ohio | 3,289 | 57% | 715 | 23% |
| Pennsylvania | 58 | 1% | 170 | 5% |
| Wisconsin | 60 | 1% | 405 | 13% |
| Total | 5,753 | 100% | 3,136 | 100% |

Source: Statistic Canada

The breakdown of total loaded and unloaded tonnage to / from New York State by handling ports at Ontario / Quebec and by origin / destination ports at New York State is shown in **Figure 6-34** and **Figure 6-35.** Of the total of 1,618,000 tons of marine cargo loaded for New York State from Ontario / Quebec, 370,000 tons or 23 percent was destined to the Ports of Buffalo and Tonawanda. Most of the rest of the loaded cargo departed for the Ports of Oswego and New York City, which accounted for 60 percent of all cargo loaded for the State of New York.

With respect to unloaded tonnage, of the total 776,000 tons of marine cargo unloaded in Ontario / Quebec from the State of New York, 732,000 tons or 94 percent arrived at the Port of Montreal / Contrecoeur. No marine cargo from the Ports of Buffalo / Tonawanda was unloaded at ports in Ontario.

***Cross Border Shipping between Ontario / Quebec and Buffalo / Niagara Region***

The Niagara River, Lake Erie and Lake Ontario serve as the boundary between Ontario and New York State. The Port of Buffalo is situated at the eastern end of Lake Erie and has access to Lake Ontario and the St. Lawrence Seaway via the Welland Canal. The port handles bulk commodities and raw materials for its principal customer base of regional manufacturing firms.

The total cross border cargo tonnage exported from Ontario / Quebec to the Buffalo / Niagara region was 370,000 tons in 2003. Of this cargo, as much as 96 percent arrived at the Port of Buffalo, while only 4 percent was destined for Tonawanda Port.

**Figure 6-34 Cross Border Shipping to New York State – Total Tonnages by Ports at Ontario and Quebec and by Region of New York State**

| Handling Ports at Ontario & Quebec | | Destined to Region of New York State | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Buffalo | Tonawanda | Rochester | Ogdensburg | Oswego | New York | Ravena | Total |
| Ports at Lake Erie, Ontario | Port Colborne | 10,515 | | | | | | | 10,515 |
| | Nanticoke | 5,890 | | | | | | | 5,890 |
| | Amherstburg | | | | | 24,419 | | | 24,419 |
| | Windsor Ontario | | | | 28,592 | | | | 28,592 |
| Ports at Lake Ontario, Ontario | Oakville | | | | | 26,314 | | | 26,314 |
| | Oshawa | | | | | | | | 0 |
| | Picton | | | 117,984 | | 120,001 | | | 237,985 |
| | Bath | 141,180 | | | | 143,008 | | | 284,188 |
| Ports at Lake Huron, Ontario | Goderich | 196,599 | | | 103,793 | 52,827 | | | 353,219 |
| | Sarnia | | 6,462 | | | | 6,250 | | 12,712 |
| Ports at Lake Superior, Ontario | Thunder Bay | | | | | 8,346 | | 17,607 | 25,953 |

| | | Buffalo | Tonawanda | Rochester | Ogdensburg | Oswego | New York | Ravena | Total |
|---|---|---|---|---|---|---|---|---|---|
| Ports at Quebec | Montréal /Contrecoeur | | 9,072 | | | 103,401 | 209,782 | | 322,255 |
| | Québec /Lévis | | | | | 85,000 | 158,569 | | 243,569 |
| | Sorel | | | | | 35,049 | | | 35,049 |
| | Valleyfield | | | | | 7,320 | | | 7,320 |
| | Sept-Îles /Pointe-Noire | | | | | | | | |
| Total | | 354,184 | 15,534 | 117,984 | 132,385 | 605,685 | 374,601 | 17,607 | 1,617,980 |

Source: Statistic Canada

**Figure 6-35: Cross Border Shipping From New York State – Total Tonnage by Ports at Ontario and Quebec and by Region of New York State**

| Handling Ports at Ontario & Quebec | | Originated from Ports at New York State | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Buffalo | Tonawanda | Rochester | Ogdensburg | Oswego | New York | Ravena | Total |
| Ports at Lake Erie, Ontario | Port Colborne | | | | | | | | |
| | Nanticoke | | | | | | | | |
| | Amherstburg | | | | | | | | |
| | Windsor Ontario | | | | | | | | |
| Ports at Lake Ontario, Ontario | Oakville | | | | | | | | |
| | Oshawa | | | | | 4,536 | | | 4,536 |
| | Picton | | | | | | | | |
| | Bath | | | | | | | | |
| Ports at Lake Huron, Ontario | Goderich | | | | | | | | |
| | Sarnia | | | | | | 10,158 | | 10,158 |
| Ports at Lake Superior, Ontario | Thunder Bay | | | | | | | | |
| Ports at Quebec | Montréal /Contrecoeur | | | | | 16,122 | 731,696 | | 747,818 |
| | Québec /Lévis | | | | | | | | |
| | Sorel | | | | | | | | |
| | Valleyfield | | | | | | | | |
| | Sept-Îles /Pointe-Noire | | | | | | 13,683 | | 13,683 |
| Total | | | | | | | 20,658 | 755,537 | 776,195 |

Source: Statistic Canada

The Port of Goderich, Ontario handled 55 percent of total marine export to Buffalo Port, or 197,000 tons of cargo, which included184,000 tons of salt as well as 13,000 tons of wheat. The Port of Bath, Ontario contributed 40 percent of total marine export to Buffalo, which was 141,000 tons of hydraulic cement. Port Colborne and Port Nanticoke, both in Ontario, loaded 10,000 tons of wheat and 6,000 tons of fuel oils for Buffalo, respectively, in 2003, which accounted for 5 percent of total marine export to Buffalo. The details are shown in **Figure 6-36**.

The Port of Sarnia, Ontario loaded 6,500 tons of fuel oils, and the Port of Montreal loaded 9,000 tons of minerals to the Port of Tonawanda, which accounted for 4 percent of total marine export to the Buffalo / Niagara Region.

**Figure 6-36: Cross Border Shipping – Originated Tonnage at the Ports of Ontario / Quebec to the Buffalo/Niagara Region (Tons)**

| Handling Port | By Commodity | To Port of Buffalo New York | To Port of Tonawanda New York | Total |
|---|---|---|---|---|
| Nanticoke | Fuel Oils | 5,890 | | 5,890 |
| Port Colborne | Wheat | 10,515 | | 10,515 |
| Bath | Hydraulic Cements | 141,180 | | 141,180 |
| Goderich | Wheat | 12,999 | | 12,999 |
| | Salt | 183,600 | | 183,600 |
| Sarnia | Fuel Oils | | 6,462 | 6,462 |
| Montréal/Contrecoeur | Asphalt & Mineral | | 9,072 | 9,072 |
| Grand Total | | 354,184 | 15,534 | 369,718 |

Source: Statistic Canada

**Figure 6-37: Cross Border Marine Shipping – Commodity Forecasts**

| | 2004 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| Fuel Oils | 12,352 | 12,352 | 13,475 | 13,475 | 13,475 | 13,475 | 14,598 | 18.2% |
| Wheat | 23,514 | 21,887 | 24,549 | 27,655 | 31,500 | 35,789 | 40,669 | 73.0% |
| Hydraulic Cements | 141,180 | 163,427 | 186,529 | 213,909 | 244,712 | 280,649 | 280,649 | 98.8% |
| Salt | 183,600 | 170,898 | 191,683 | 215,932 | 245,955 | 279,442 | 317,547 | 73.0% |
| Asphalt & Mineral | 9,072 | 10,482 | 12,014 | 13,731 | 15,753 | 18,021 | 18,021 | 98.6% |
| | 369,718 | 379,046 | 428,250 | 484,702 | 551,395 | 627,375 | 671,484 | 81.6% |

Source: WSA Analysis

## Rail

### *Cross Border Rail Trade between Ontario and the U.S.*

Data are not available by sub-region. According to the U.S. Bureau of Transportation Statistics, Ontario was the largest source of Canadian rail exports, originating 24 percent of Canadian export volume and 56 percent of export value in 2006. Also, Ontario was the dominant province of import clearance in 2006, with 67 percent of import value.

In 2006, the U.S. imported 18.28 million tons or $35.26 billion of goods from Ontario by rail. The detailed rail flows by destination in the U.S. and by main rail crossings are shown in **Figure 6-38** and **Figure 6-39**. Moreover, a percent breakdown by destination and crossing is presented in **Figure 6-40.**

As shown in **Figure 6-38**, ranked by the weight, the destination of rail trade from Ontario to the U.S. was somewhat diverse. Michigan was the primary destination, receiving 19 percent of total import. Other individual states like California, Pennsylvania and Ohio also received significant imports with 10, 9 and 7 percent respectively. As well, significant percentages were also destined to states located in wider regions of the U.S., such as the north-east, western / Midwestern, and south-east regions.

However, ranked by value, the pattern of distribution is quite different. Almost half (47 percent) of total exports to the U.S. was destined to Michigan, and 29 percent was destined to California. This suggests that the goods destined for Michigan and California were much more valuable than that shipped to other states.

**Figure 6-38: Rail Trade in Weight from Ontario to the U.S. in 2006 by Destination and Gateway (Weight in Tons)**

| Port of Entry / Destination | Niagara-Buffalo | Detroit | Port Huron | Sault Ste. Marie | Others | Total |
|---|---|---|---|---|---|---|
| **New York** | 470 | 21 | 28 | 2 | 70 | 590 |
| **Pennsylvania** | 1,080 | 53 | 430 | 13 | 67 | 1,643 |
| **Ohio** | 199 | 234 | 823 | 21 | 51 | 1,328 |
| **Michigan** | 138 | 914 | 2,021 | 327 | 31 | 3,430 |
| **New England** | 159 | 109 | 13 | 6 | 400 | 687 |
| **Mid-Atlantic** | 531 | 38 | 15 | 1 | 56 | 641 |
| **North East U.S.** | 53 | 579 | 1,289 | 520 | 433 | 2,874 |
| **Alabama** | 1 | 81 | 94 | 5 | 37 | 218 |
| **South-Eastern U.S.** | 333 | 708 | 918 | 123 | 362 | 2,445 |
| **California** | 499 | 840 | 265 | 30 | 169 | 1,802 |
| **Western /Midwestern of U.S.** | 88 | 313 | 979 | 489 | 749 | 2,617 |
| **Total** | 3,552 | 3,889 | 6,874 | 1,536 | 2,425 | 18,276 |

Source: Bureau of Transportation Statistics

**Figure 6-39: Rail Trade in Value from Ontario to the U.S. in 2006 by Destination and Gateway (Value in $ million)**

| Port of Entry / Destination | Niagara-Buffalo | Detroit | Port Huron | Sault Ste. Marie | Others | Total |
|---|---|---|---|---|---|---|
| **New York** | 561 | 4 | 16 | 1 | 49 | 632 |
| **Pennsylvania** | 478 | 19 | 392 | 9 | 39 | 937 |
| **Ohio** | 65 | 102 | 501 | 11 | 22 | 699 |
| **Michigan** | 1,128 | 4,788 | 10,444 | 36 | 17 | 16,413 |
| **New England** | 95 | 12 | 8 | 3 | 208 | 326 |
| **Mid-Atlantic** | 311 | 32 | 11 | 0 | 15 | 369 |
| **North East U.S.** | 24 | 156 | 860 | 225 | 208 | 1,473 |
| **Alabama** | 0 | 19 | 44 | 2 | 18 | 83 |
| **South-Eastern U.S.** | 133 | 737 | 683 | 58 | 176 | 1,787 |
| **California** | 3,505 | 6,439 | 320 | 19 | 118 | 10,400 |
| **Western /Midwestern of U.S.** | 55 | 385 | 984 | 337 | 383 | 2,143 |
| **Total** | 6,355 | 12,692 | 14,263 | 700 | 1,252 | 35,263 |

Source: Bureau of Transportation Statistics

**Figure 6-40: Rail Trade from Ontario to the U.S., Percent Distribution by U.S. Destination**

| Ranked by Weight | | | | Ranked by Value | | | |
|---|---|---|---|---|---|---|---|
| **Rank** | **Destination** | **Weight in '000 tons** | **Percent** | **Rank** | **Destination** | **Value in $ Million** | **Percent** |
| 1 | Michigan | 3,430 | 19% | 1 | Michigan | 16,413 | 47% |
| 2 | North East U.S. | 2,874 | 16% | 2 | California | 10,400 | 29% |
| 3 | West /Midwestern U.S. | 2,617 | 14% | 3 | Western/Midwestern U.S. | 2,143 | 6% |
| 4 | South-eastern U.S. | 2,445 | 13% | 4 | South-eastern U.S. | 1,787 | 5% |
| 5 | California | 1,802 | 10% | 5 | North East U.S. | 1,473 | 4% |
| 6 | Pennsylvania | 1,643 | 9% | 6 | Pennsylvania | 937 | 3% |
| 7 | Ohio | 1,328 | 7% | 7 | Ohio | 699 | 2% |
| 8 | New England | 687 | 4% | 8 | New York | 632 | 2% |
| 9 | Mid-Atlantic | 641 | 4% | 9 | Mid-Atlantic | 369 | 1% |
| 10 | New York | 590 | 3% | 10 | New England | 326 | 1% |
| 11 | Alabama | 218 | 1% | 11 | Alabama | 83 | 0% |
| | Total | 18,276 | 100% | | Total | 35,263 | 100% |

Source: Bureau of Transportation Statistics

As shown in **Figure 6-41**, with respect to main rail crossing ports, Port Huron, Michigan received most of the rail freight from Ontario with almost 40 percent of total freight by weight and by value. The Port of Detroit, Michigan followed second, receiving 21 percent by weight and 36 percent by value. The Port of Buffalo-Niagara Falls, New York received 19 percent of rail freight by weight and 18 percent by value.

**Figure 6-41: Percent of Rail Trade from Ontario to the U.S by Main Port of Entry**

| Rail Trade via Port | Niagara-Buffalo | Detroit | Port Huron | Sault Ste. Marie | Others | Total |
|---|---|---|---|---|---|---|
| Weight in '000 tons | 3,552 | 3,889 | 6,874 | 1,536 | 2,425 | 18,276 |
| Percent by Weight | 19% | 21% | 38% | 8% | 13% | 100% |
| Value in $ million | 6,355 | 12,692 | 14,263 | 700 | 1,252 | 35,263 |
| Percent by Value | 18% | 36% | 40% | 2% | 4% | 100% |

Source: Bureau of Transportation Statistics

According to the Bureau of Transportation Statistics, in 2006 the U.S. exported $15.0 billion of goods to Ontario by rail. The detailed rail flow by origin in the U.S. and by main rail crossing port is shown in **Figure 6-42**. A percentage breakdown by origin and main crossing port is also shown in **Figure 6-43**.

As shown in **Figure 6-43**, ranked by value, the distribution of origins in the U.S is also diverse. Significant individual states of origin were Michigan and Ohio, which contributed 17 percent and 12 percent of total U.S. exports respectively. The other significant contributors were located in disparate regions of the U.S., including the south-east and the western / Midwestern regions, which together accounted for 50 percent of total U.S. rail exports to Ontario.

**Figure 6-42: Rail Trade in Value from the U.S. to Ontario in 2006 by Origin and Main Port of Entry**
**(Value in $ million)**

| By Port of Entry / By Origin | Niagara-Buffalo | Detroit | Port Huron | Others | Total |
|---|---|---|---|---|---|
| **New York** | 28 | 5 | 92 | 0 | 126 |
| **Pennsylvania** | 321 | 7 | 79 | 36 | 443 |
| **Ohio** | 572 | 884 | 153 | 180 | 1,789 |
| **Michigan** | 1 | 2,283 | 113 | 122 | 2,519 |
| **New England** | 13 | 38 | 87 | 1 | 139 |
| **Mid-Atlantic** | 61 | 74 | 198 | 4 | 337 |
| **North East U.S.** | 12 | 786 | 308 | 20 | 1,126 |
| **Alabama** | 219 | 92 | 112 | 85 | 508 |
| **South-Eastern U.S.** | 162 | 2,066 | 1,611 | 53 | 3,891 |
| **California** | 9 | 44 | 374 | 77 | 503 |
| **Western /Midwestern U.S.** | 113 | 1,405 | 2,095 | 33 | 3,646 |
| **Total** | 1,512 | 7,683 | 5,222 | 612 | 15,029 |

Source: Bureau of Transportation Statistics

**Figure 6-43: Rail Trade from the U.S. to Ontario, Percent Distribution of Origin by Value**

| Rank | Origin | Value in $ Million | Percent |
|---|---|---|---|
| 1 | South-Eastern U.S. | 3,891 | 26% |
| 2 | Western/Midwestern U.S. | 3,646 | 24% |
| 3 | Michigan | 2,519 | 17% |
| 4 | Ohio | 1,789 | 12% |
| 5 | North East U.S. | 1,126 | 7% |
| 6 | Alabama | 508 | 3% |
| 7 | California | 503 | 3% |
| 8 | Pennsylvania | 443 | 3% |
| 9 | Mid-Atlantic | 337 | 2% |
| 10 | New England | 139 | 1% |
| 11 | New York | 126 | 1% |
| Total | | 15,029 | 100% |

Source: Bureau of Transportation Statistics

Similarly to the flows from Ontario to the U.S., **Figure 6-44** shows that the Port of Detroit, Michigan captured over half (51 percent) of the rail trade from the U.S. to Ontario, by value. Port Huron captured 35 percent, and the Port of Niagara / Buffalo captured 10 percent.

**Figure 6-44: Percent of Rail Trade from Ontario to the U.S. by Main Port**

| Rail Trade via Port | Niagara-Buffalo | Detroit | Port Huron | Others | Total |
|---|---|---|---|---|---|
| Value in $ million | 1,512 | 7,683 | 5,222 | 612 | 15,029 |
| Percent by Value | 10% | 51% | 35% | 4% | 100% |

Source: Bureau of Transportation Statistics

**Figure 6-45** demonstrates that the top commodity carried by rail from Ontario to the U.S. was vehicles and vehicle parts, which accounted for 78 percent of the total import value from Ontario. Further analysis found that of all this vehicle commodity movement, 59 percent was destined for Michigan, and 37 percent was destined for California.

With respect to commodity distribution for rail freight from the U.S. to Ontario, **Figure 6-46** illustrates that the primary commodity was also vehicles, which accounted for 58 percent of total value of the U.S. export to Ontario. The second-most predominant commodities were plastics and chemicals, which accounted for another 19 percent of total value.

**Figure 6-45: Top Ten Commodities of Rail Freight from Ontario to the U.S.**

| TSU.S.A Commodity Number | Commodity Contents | Value in $million | Percent |
|---|---|---|---|
| 87 | Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof | 27,355 | 76.6% |
| 39 | Plastics and articles thereof | 1,172 | 3.3% |
| 72 | Iron and steel | 979 | 2.8% |
| 44 | Wood and articles of wood; Wood charcoal | 875 | 2.5% |
| 29 | Organic chemicals | 826 | 2.3% |
| 48 | Paper and paperboard; Articles of paper pulp, of paper or of paperboard | 773 | 2.2% |
| 84 | Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof | 622 | 1.8% |
| 27 | Mineral fuels, mineral oils and products of their distillation; Bituminous substances; Mineral waxes | 434 | 1.2% |
| 47 | Pulp of wood or of other fibrous cellulosic material; Waste and scrap of paper or paperboard | 426 | 1.2% |
| 74 | Copper and articles thereof | 296 | 0.8% |
| | Others | 1505 | 4.3% |
| Total | | 35,263 | 100% |

Source: Bureau of Transportation Statistics

**Figure 6-46: Top 10 Commodity of Rail Freight from the U.S. to Ontario**

| TSUSA Commodity Number | Commodity Contents | Value in $ million | Percent |
|---|---|---|---|
| 87 | Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof | 8,663 | 58% |
| 39 | Plastics and articles thereof | 1,676 | 11% |
| 29 | Organic chemicals | 1,222 | 8% |
| 48 | Paper and paperboard; Articles of paper pulp, of paper or of paperboard | 292 | 2% |
| 26 | Ores, slag and ash | 290 | 2% |
| 72 | Iron and steel | 282 | 2% |
| 27 | Mineral fuels, mineral oils and products of their distillation; Bituminous substances; Mineral waxes | 266 | 2% |
| 86 | Railway or tramway locomotives, rolling stock and parts thereof; railway or tramway track fixtures and fittings and parts thereof; Mechanical (including electromechanical) traffic signalling equipment of all kinds | 250 | 2% |
| 38 | Miscellaneous chemical products | 230 | 2% |
| 28 | Inorganic chemicals; Organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes | 220 | 1% |
| | Other | 1,637 | 11% |
| | Total | 15,029 | 100% |

Source: Bureau of Transportation Statistics

***Cross Border Rail Freight via Buffalo-Niagara Falls Gateway***

There are two active rail bridges crossing the Niagara border. The International Railway Bridge just to the north of the Peace Bridge is an exclusive freight-carrying structure that connects Buffalo and Fort Erie. The upper deck of the Whirlpool Bridge connects the cities of Niagara Falls on both sides.

**Figure 6-47**, **Figure 6-48** and **Figure 6-49** show the rail trade in value and weight in 2006 between Canada and the U.S via the Port of Buffalo-Niagara Falls. The source is Bureau of Transportation Statistics. The port of entry is defined as the Customs port where the entry documentation was filed with Customs and the duties paid. Although it may not always reflect the port where the shipment physically crossed the border into the United States, it is a close approximation.

In 2006, $6.1 billion or 5.6 million tons of goods were exported from Canada to the U.S by rail via the Port of Buffalo-Niagara Falls. Eighty-nine percent or $6.3 billion of total Canadian exports originated in Ontario, 7 percent originated in Quebec, and 4 percent originated in Western Canada. Almost half (49 percent), or $3.5 billion of total U.S. imports were destined for California, and the remaining imports were destined for Michigan, New

York, Pennsylvania, and mid-Atlantic east coast destinations such as New Jersey, which accounted for another 42 percent altogether. The details are shown in **Figure 6-50**.

## Figure 6-47: Rail Trade in Weight from Canada to the U.S. via Buffalo-Niagara Falls in 2006

(Tons)

| To / From | New York | Pennsylvania | Ohio | Michigan | New England | Mid-Atlantic | North East U.S. | Alabama | South-eastern U.S. | California | Western /Midwestern | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ontario | 517,970 | 1,190,510 | 219,039 | 151,549 | 175,752 | 585,575 | 58,708 | 930 | 367,138 | 549,844 | 97,134 | 3,914,150 |
| Quebec | 271,327 | 211,251 | 168,767 | 395 | 4,533 | 37,254 | 9,738 | 0 | 116,776 | 586 | 8,153 | 828,778 |
| Canada East | 23,425 | 37,090 | 6,927 | 96 | 1,073 | 11,143 | 377 | 4 | 9,526 | 0 | 2,007 | 91,669 |
| Prairies Canada | 44,759 | 39,727 | 386 | 803 | 16,736 | 37,634 | 8,910 | 0 | 3,855 | 399 | 3,070 | 156,278 |
| Alberta | 72,564 | 80,388 | 473 | 196 | 57,513 | 78,608 | 1,351 | 0 | 4,039 | 0 | 45,202 | 340,334 |
| British Columbia | 140,895 | 57,260 | 1,110 | 871 | 17,620 | 29,484 | 364 | 0 | 4,133 | 97 | 9,779 | 261,611 |
| Total | 1,070,940 | 1,616,226 | 396,699 | 153,910 | 273,229 | 779,698 | 79,448 | 936 | 505,466 | 550,926 | 165,343 | 5,592,821 |

Source: Bureau of Transportation Statistics

## Figure 6-48: Rail Trade in Value from Canada to the U.S. via the Port of Buffalo-Niagara Falls in 2006 ('000 $)

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

Source: Bureau of Transportation Statistics

**Figure 6-49: Rail Trade in Value from U.S. to Canada via Buffalo-Niagara Falls in 2006 ($000s)**

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

Source: Bureau of Transportation Statistics

**Figure 6-50: Percent of Rail Trade from Canada to the U.S. in Value by Origin / Destination**

| | Ranked Number | By Origin of Canada | Rail Trade in 000 $ | Percent of Total Trade |
|---|---|---|---|---|
| Ranked by trade value at Origin of Canada | 1 | Ontario | 6,354,870 | 89% |
| | 2 | Quebec | 467,951 | 7% |
| | 3 | Alberta | 134,241 | 2% |
| | 4 | British Columbia | 92,638 | 1% |
| | 5 | Saskatchewan and Manitoba | 41,694 | 1% |
| | 6 | Canada East | 35,592 | 0.5% |
| | Total | | 7,126,986 | 100% |
| | **Ranked Number** | **By Destination of U.S.** | **Rail Trade in 000 $** | **Percent of Total Trade** |
| Rank by trade value at Destination of Canada | 1 | California | 3,505,862 | 49% |
| | 2 | Michigan | 1,128,942 | 16% |
| | 3 | New York | 779,734 | 11% |
| | 4 | Pennsylvania | 716,917 | 10% |
| | 5 | Mid-Atlantic | 393,959 | 6% |
| | 6 | South-eastern U.S. | 226,072 | 3% |
| | 7 | New England | 138,814 | 2% |
| | 8 | Ohio | 128,640 | 2% |
| | 9 | Western / Midwestern U.S | 76,573 | 1% |
| | 10 | North East U.S. | 31,162 | 0.4% |
| | 11 | Alabama | 312 | 0.0% |
| | Total | | 7,126,986 | 100% |

Source: Bureau of Transportation Statistics

With respect to imports from the U.S. to Canada, **Figure 6-51** shows that $1.86 billion of goods were imported from the U.S. to Canada in 2006 by rail via the Port of Buffalo-Niagara Falls. Of this, 81 percent were destined for Ontario, 11 percent for Quebec, and 5 percent for Western Canada. By origin from the U.S., Ohio was the primary state of origin, contributing 34 percent of total U.S. export. The remaining top origins were Pennsylvania, South-eastern U.S., Alabama and the Western / Midwestern region of the U.S., which accounted for another 56 percent altogether.

In summary, the regional distribution pattern is quite different on each side of the boundary. For Canada, rail shipments at the Port of Buffalo-Niagara Falls served mainly nearby provinces; that is, Ontario and Quebec. For the U.S., the states using the Port were quite dispersed, with Ohio, Pennsylvania, California, and Alabama all contributing significant percentages of total trade. The state of New York accounted only for 11 percent of imports to the U.S and 2 percent of U.S. exports.

**Figure 6-51: Percent of Rail Trade from the U.S. to Canada in Value by Origin / Destination**

| | Ranked Number | U.S Origin | Rail Trade in 000 $ | Percent of Total Trade |
|---|---|---|---|---|
| Rank by trade value at Origin of the U.S. | 1 | Ohio | 635,300 | 34% |
| | 2 | Pennsylvania | 381,156 | 20% |
| | 3 | South Eastern U.S. | 245,577 | 13% |
| | 4 | Alabama | 235,923 | 13% |
| | 5 | Western/Midwestern U.S. | 173,126 | 9% |
| | 6 | Mid-Atlantic | 75,354 | 4% |
| | 7 | New York | 36,699 | 2% |
| | 8 | North East U.S. | 35,983 | 2% |
| | 9 | New England | 21,401 | 1% |
| | 10 | California | 18,004 | 1% |
| | 11 | Michigan | 2,039 | 0% |
| | Total | | 1,860,562 | 100% |
| | **Ranked Number** | **Canadian Destination** | **Rail Trade in 000 $** | **Percent of Total Trade** |
| Ranked by trade value at Destination of Canada | 1 | Ontario | 1,511,507 | 81% |
| | 2 | Quebec | 208,235 | 11% |
| | 3 | Saskatchewan & Manitoba | 45,143 | 2% |
| | 4 | Alberta | 39,188 | 2% |
| | 5 | Canada East | 34,492 | 2% |
| | 6 | British Columbia | 21,997 | 1% |
| | Total | | 1,860,562 | 100% |

Source: Bureau of Transportation Statistics

***Number of Trains Arriving in the U.S.***

For the year 2006, 27,343 trains crossed the border to the U.S. Of these, 19 percent or 5,244 trains crossed the border via Port Huron, 6.7 percent crossed the border via Detroit, while 1,705 trains arrived from Canada to the U.S. via the Port of Buffalo-Niagara Falls, which accounted for 6.2 percent of the total number of trains. On average, this represents just under 5 (4.7) trains across the border from Canada to the U.S. via the Port of Buffalo-Niagara Falls each day.

***Cross-border Rail Freight Growth***

NY State DOT was not able to provide cross-border rail data that would permit a comprehensive analysis of rail traffic by commodity or the distinction between carload and intermodal traffic to be made, in turn the development of commodity specific traffic projections. However, an approximation was developed and is presented in **Figure 6-52.**

**Figure 6-52: Cross Border Rail Traffic Projections (Tons)**

| | 2006 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | % Change 2004 - 2035 |
|---|---|---|---|---|---|---|---|---|
| In-Bound Rail | 5,075,155 | 6,460,552 | 7,381,108 | 8,554,349 | 10,792,822 | 13,179,144 | 15,819,273 | 211.7% |
| Out-bound Rail | 1,360,142 | 1,595,488 | 1,755,592 | 1,866,219 | 2,077,192 | 2,247,139 | 2,404,752 | 76.8% |
| Total | 6,435,297 | 8,056,040 | 9,136,700 | 10,420,568 | 12,870,014 | 15,426,283 | 18,224,025 | 183.2% |

Source: WSA Analysis

Traffic is expected to grow significantly as the primary commodities that will be moved by rail between the US and Canada are transportation equipment and chemicals. These are two rail growth commodities.

# SUMMARY

This Technical Memo provides a profile of the Buffalo-Niagara region's existing and future freight activity. Technical Memo #4 will examine the region's infrastructure to identify both inefficiencies in the freight network that could affect the potential growth and opportunities to expand freight activity and economic development.