ERIE REGIONAL PLANNING COMMISSION (ERPC) FREIGHT STUDY

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Where Resources Abound!
ERIE COUNTY
Erie Regional Planning Commission

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

The purpose of this report is to establish a baseline of information and understanding of existing freight stakeholders, volumes, commodities, flows, and origins/destinations in the metropolitan planning organization (MPO) region. Additionally, it provides the Erie Regional Planning Commission (ERPC) a foundation for showcasing the region's transportation assets, exploring how to leverage existing transportation resources, and improving assets to accommodate future growth in both freight and non-commercial activity.

GPD Group was selected to partner with the Erie County Regional Planning Commission (ERPC) MPO to develop the freight inventory and profile for the metropolitan planning organization region. The freight inventory and profile was developed to provide an understanding of the MPO region's freight generating businesses and the associated infrastructure used to support freight movements in the region. GPD Group teamed with Regionomics®, Dr. Peter Lindquist of the University of Toledo and SF Global Insights to develop the freight profile, identify freight generating businesses and reach out to those businesses.

Regionomics® performed an economic and demographic characteristic and trend analysis for this freight study. From the economic data, ***it is clear that manufacturing and leisure dominate the Erie County economy.*** Cedar Point attracts related industries including retail, hotels and restaurants. The two leisure and hospitality subsectors both grew in relative importance.

It is understood that some industries and establishments play a larger role in generating freight services than others. These are industries that make goods, such as construction, manufacturing, and mining; and service industries that transport goods, such as wholesale and retail trade, transportation and waste services. Hospitals and nursing homes require large inbound shipments of goods, as do many large employers regardless of industry. ***Erie County's industry composition is such that half its total output (gross domestic product) is being generated by freight-oriented industries – a higher percentage than in either the Ohio or US economies!***

It should be noted that manufacturing employment grew in Erie County – as it did elsewhere – during the past two years. Manufacturing added 833 positions (17.2%) between 2009 and 2011, and was a major cause of the outstanding performance of Erie County's employment in the recovery.

In addition to understanding the economy and presence of freight generating businesses, an asset inventory was performed to document the transportation infrastructure in the region. Dr. Lindquist and staff identified and analyzed the region's transportation infrastructure assets. The MPO region is home to several strong freight corridors including SR 2, US 250 and I-80/I-90 (The Ohio Turnpike). An analysis of the road quality shows better infrastructure condition than similar routes in Ohio.

Waterborne freight plays an important role in the regional economy. The Port of Huron is a deep draft commercial harbor that generates over $12 million in revenue annually and moves commodities that include: iron ore, limestone and grain. According to waterborne commerce statistics for 2010, all volume handled at the Port of Huron was in the form of receivables (no shipments originated here). The port primarily receives domestic freight.

Based on the public sector workshop, it is understood that NASA Plum Brook staff is looking at the Port of Huron as a potential entry point into the region. The Port of Huron is an important regional asset and opportunities exist for expanding its operations.

The Port of Sandusky is also a deep draft commercial harbor. The port handles large volumes of bulk commodities generating over $50 million in revenue annually. Sandusky's major commodity is coal, representing over 97% of the volume handled at the port. The channel depths range from 21-26 feet. The domestic-international split, by volume, for 2010 was 43% domestic and 57% international. These ports provide international access not only for cross-lake ferry service to Canada but to markets around the world.

The MPO region has excellent east-west connectivity to the east coast and Chicago with the Ohio Turnpike. It possesses approximately five (5) intermodal facilities. It also has a close proximity to Norfolk & Southern Corporation's Bellevue facility which offers rail access to markets throughout the eastern United States.

The newly authorized transportation bill, *Moving Ahead for Progress in the 21st Century* (MAP-21) places a new emphasis on freight movement with respect to America's transportation infrastructure. Therefore, in order for the region to be more competitive and better align itself with federal funding, it is essential to better understand the region's freight generation, transportation assets, commodity flows and modal movements. In this context, having the ability to link needed regional projects to the national freight network will improve the region's chances for funding transportation projects.

ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS AND TRENDS[1]

This chapter analyzes the general economic and demographic condition in the study area, including population growth, educational attainment and income; employment growth in total and by sector; and the dominant industries in the Erie County economy were identified. The implications for the economic structure for the relative potential of the Erie County economy to generate freight will then be discussed. The chapter concludes with a discussion of considerations relevant to distribution-oriented workforce development.

The study area is primarily Erie County, which is synonymous with the Sandusky Metropolitan Statistical Area (MSA). However, the study area also includes the part of the City of Vermilion in Lorain County. This area is included in the analysis where possible, but because most economic statistics are available only at the MSA or county level, much of the analysis includes Erie County only. In order to eliminate confusion, the discussion will refer to "the study area" when Vermilion in Lorain County is included and "Erie County" when that portion of Vermilion is omitted.

DEMOGRAPHIC TRENDS AND CHARACTERISTICS

Table 1: Population and Household Totals displays the population and household totals for the study area in 1990, 2000 and 2010. As illustrated in Table 1, the study area population declined slightly between 2000 and 2010 versus a small Ohio increase and a much larger US increase. ***Average household size in 2010 was less than state and national averages and has declined more over the past 20 years than either the state or national averages***.[2] The smaller household size is positive for demand for goods and services in the study area: a given number of people in a larger number of households will have a higher demand than they would in a smaller number of households, all else equal. The declining household size also increases demand for housing.

Table 1: Population and Household Totals

	1990	2000	2010
Total population			
Erie County	76,779	79,551	77,079
Vermilion in Lorain County	5,644	5,990	5,852
Study area	82,423	85,541	82,931
Population percentage change			
Study area	---	3.8%	-3.1%
Ohio	---	4.7%	1.6%
United States	---	13.2%	9.7%
Total households			
Erie County	28,932	31,727	31,860
Vermilion in Lorain County	2,259	2,249	1,976
Study area	31,191	33,976	33,836

[1] The analysis and discussion in this chapter were prepared by Bill LaFayette, Ph.D., owner of Regionomics®, a Columbus-based economic and workforce strategy firm.

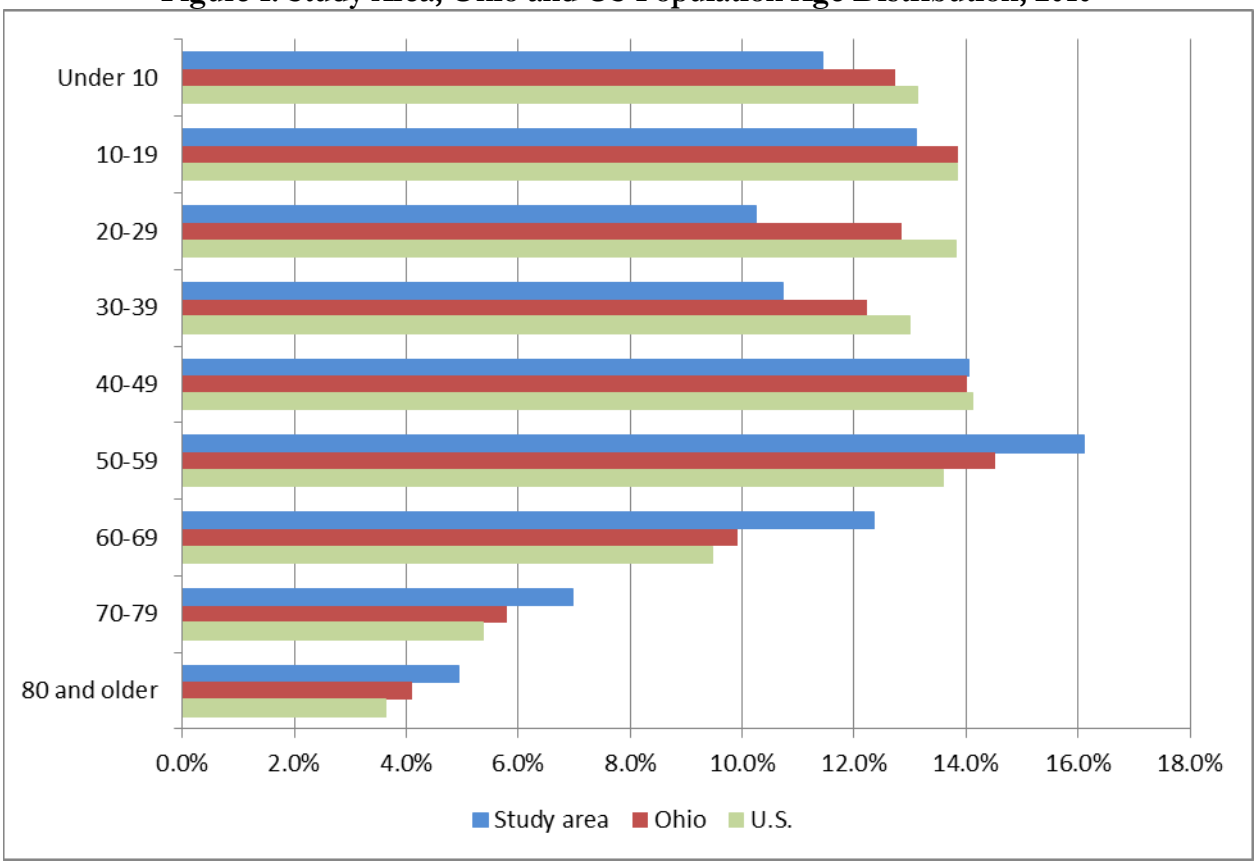
[2] Persons per household is not total population divided by the number of households; rather, it is calculated from the slightly smaller population in households.

Persons per household			
Study area	2.60	2.46	2.40
Ohio	2.59	2.49	2.44
United States	2.63	2.59	2.58

Source: 1990, 2000 and 2010 Censuses, US Census Bureau.

Figure 1: Study Area, Ohio and US Population Age Distribution, 2010 compares the population age distribution in the study area to the statewide and national age distribution. As the comparison makes clear, the population of the study area is far older than average: the share of individuals in younger age groups is lower and the share in older groups is notably higher. Individuals 50 years of age and older in 2010 comprised 32.1% of the US population and 34.3% of Ohio's population, but 40.4% of the population of the study area. The median age in 2010 was 37.2 nationwide and 38.8 in Ohio, but it was 43.4 in Erie County and 44.7 in the Lorain County portion of Vermilion.

Figure 1: Study Area, Ohio and US Population Age Distribution, 2010

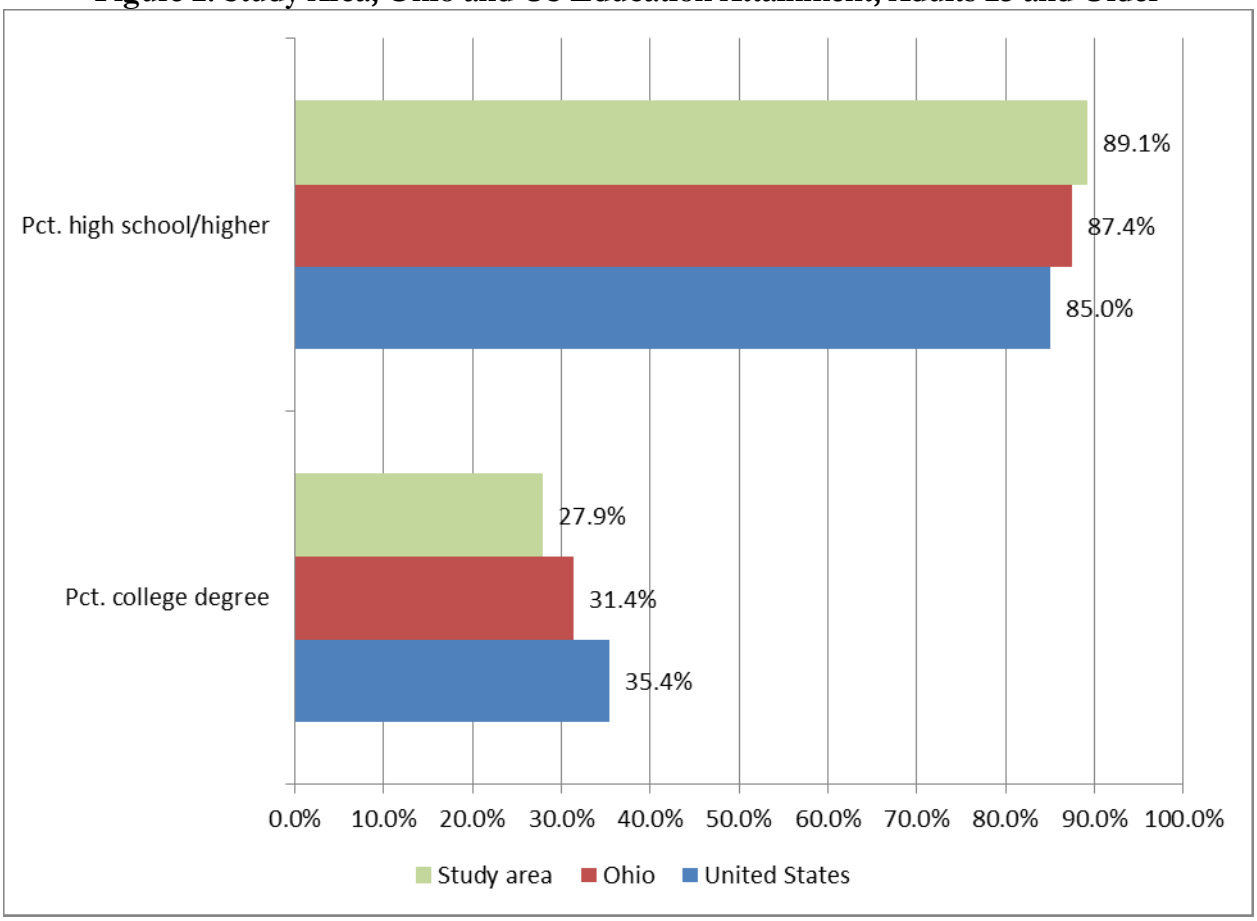


Source: Census 2010, US Census Bureau.

The educational attainment of the adult population is an important indication of the quality of the labor force. The educational attainment for both high school graduates and those with college degrees is shown in Figure 2: Study Area, Ohio and US Education Attainment for Adults 25 and Older for the study area and as compared to Ohio and the United States. A higher-than-average percentage of individuals 25 and older have completed high school; this is the case for Ohio and most other counties in the state as well. However, in Erie County only 29% of adults have completed college versus more than 35% of adults nationwide. Further, only 7.1% of study area

adults have earned advanced degrees compared to 10.3% of adults nationwide. While many warehouse and distribution occupations do not require a college degree, many require or encourage some type of certification such as forklift certification or designation as a certified logistics associate. A major shortcoming of the Census Bureau educational attainment is the unavailability of certification data. Distribution and logistics-oriented occupational characteristics and training needs are discussed at the conclusion of this chapter.

Figure 2: Study Area, Ohio and US Education Attainment, Adults 25 and Older

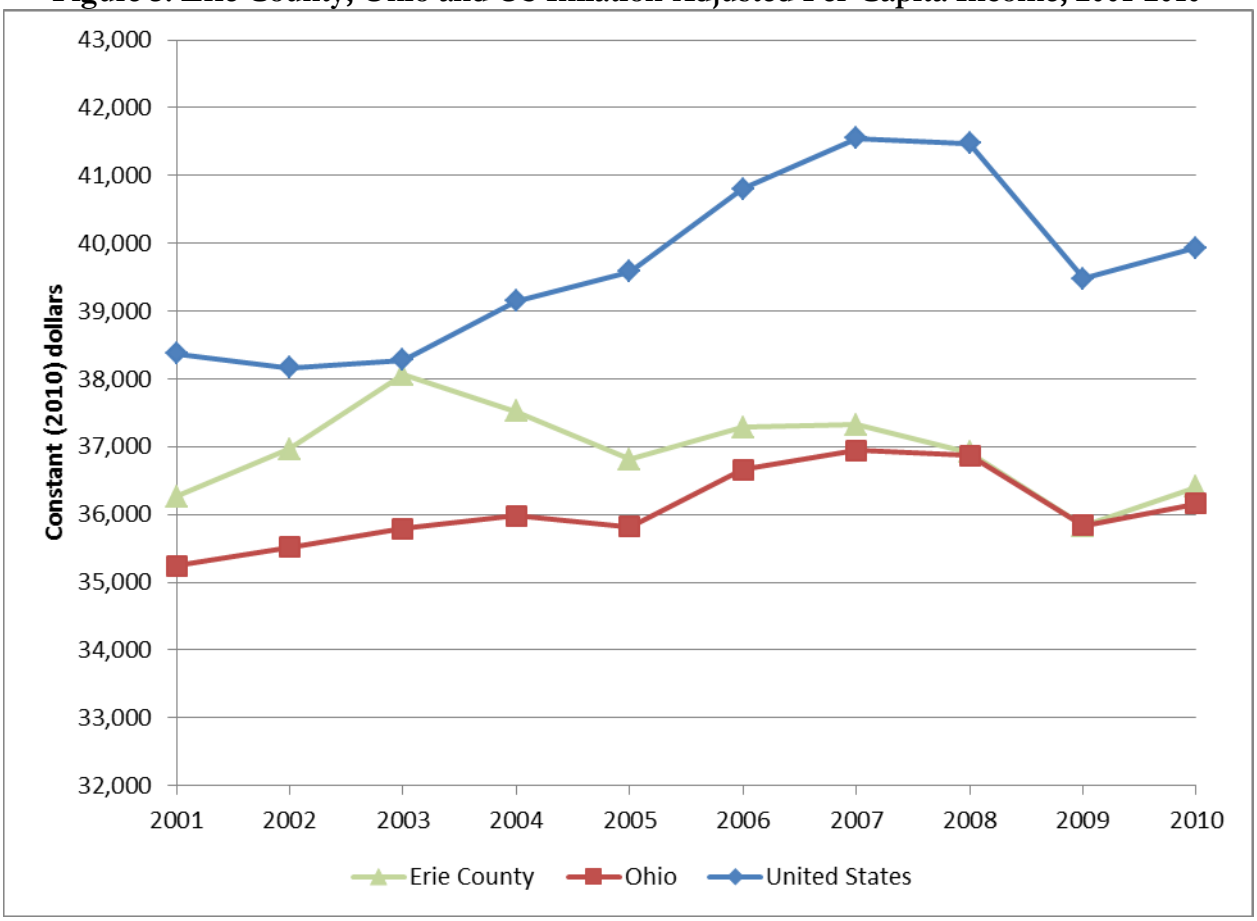


Source: American Community Survey, 2010 Five-Year Estimates, US Census Bureau.

One area where the lower-than-average educational attainment in the study area and Ohio manifests itself is in lower-than-average per-capita and household income. Figure 3: Erie County, Ohio and US Inflation-Adjusted Per-Capita Income, 2001-2010 compares growth over the last decade in inflation-adjusted per-capita income (i.e., total county income divided by total population) in Erie County to state and national averages. County per-capita income began the decade higher than in Ohio as a whole, but well below the national average. County income increased substantially during the 2002-2003 job recovery that followed the 2001 recession, but declined through the following decade, matching the Ohio average by 2008. With the beginning of the recovery in 2010, though, per-capita income in Erie County rose 1.6% after inflation, higher than both the 0.9% Ohio increase and the 1.1% US increase. Nevertheless, Erie County per-capita income remains nearly 9% below the national average. Similarly, median household income during 2011 was $50,502 nationwide,

according to the Census Bureau's American Community Survey. The Ohio median was $45,749, and the Erie County median was $46,949 – 7% less than the national average.

Figure 3: Erie County, Ohio and US Inflation-Adjusted Per-Capita Income, 2001-2010



Source: Regional Economic Accounts, US Bureau of Economic Analysis; inflation adjustment by the Consumer Price Index for All Urban Consumers (CPI-U), Midwest Region, US Bureau of Labor Statistics.

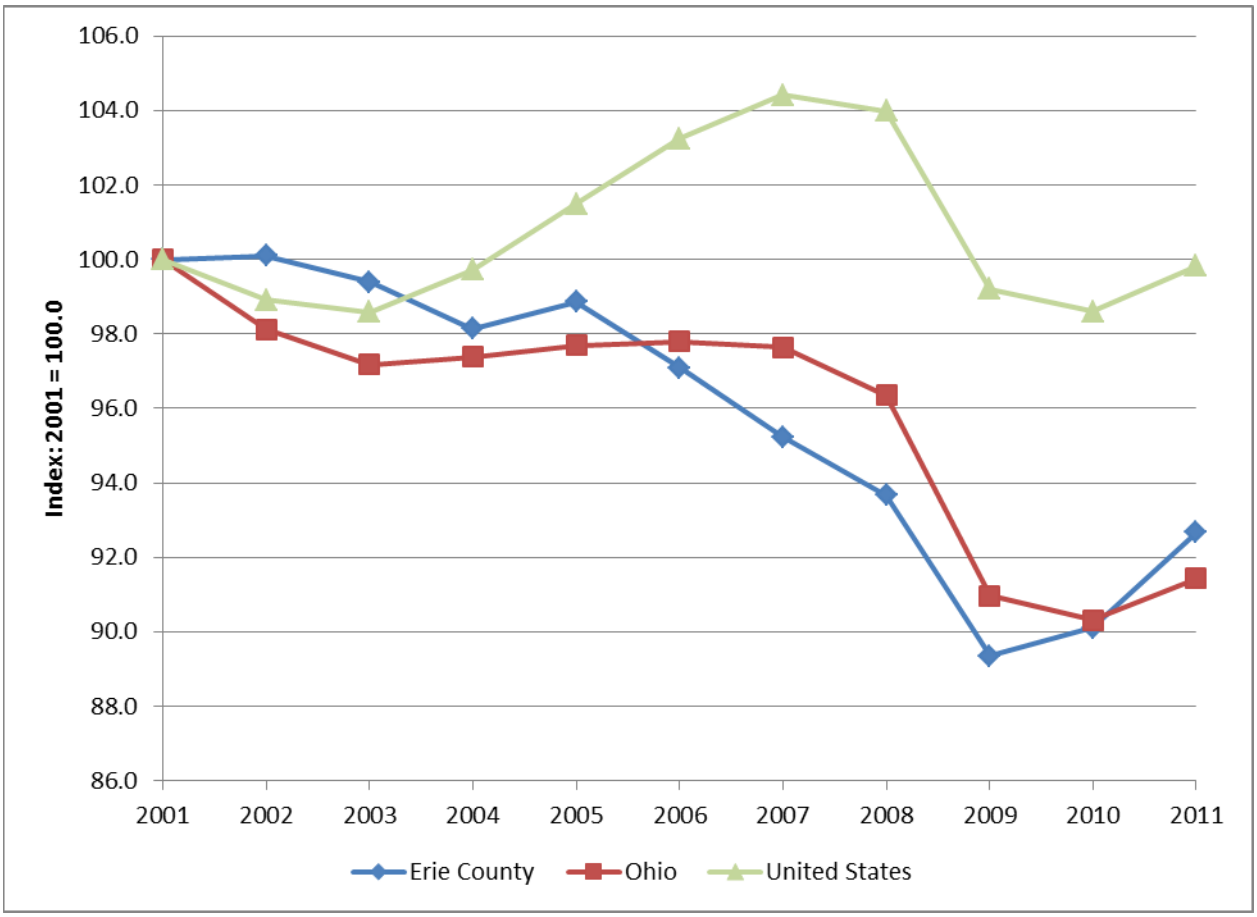
ECONOMIC PERFORMANCE AND STRUCTURE OF ERIE COUNTY

The analysis of job growth in Erie County both in total and by industry sector sets the stage for an analysis of employment trends in freight-dependent sectors. Unfortunately, the labor force and employment trend statistics are not sufficiently detailed to include the Lorain County portion of Vermilion. However, it is not likely that the inclusion of the portion of Vermilion in the analysis would make a substantial difference in conclusions drawn from the job growth analysis.

Figure 4: Erie County, Ohio and US Non-farm Wage and Salary Employment Growth 2001-2011 compares employment growth in Erie County to state and national averages. This chart is constructed on an index basis with all 2001 employment totals set to 100, so it shows cumulative employment growth in each area since 2001. Erie County outperformed both the state and the nation early in the decade, but then suffered a nearly uninterrupted decline in employment through 2009; employment in 2009 was 4,200 (10.6%) less than in 2001. But the current employment

recovery has favored Erie County to a much greater degree, with employment increasing 1,300 (13.3%) from its 2009 through (note, the consistency between this employment trend and the per-capita income trend in Figure 3 above).

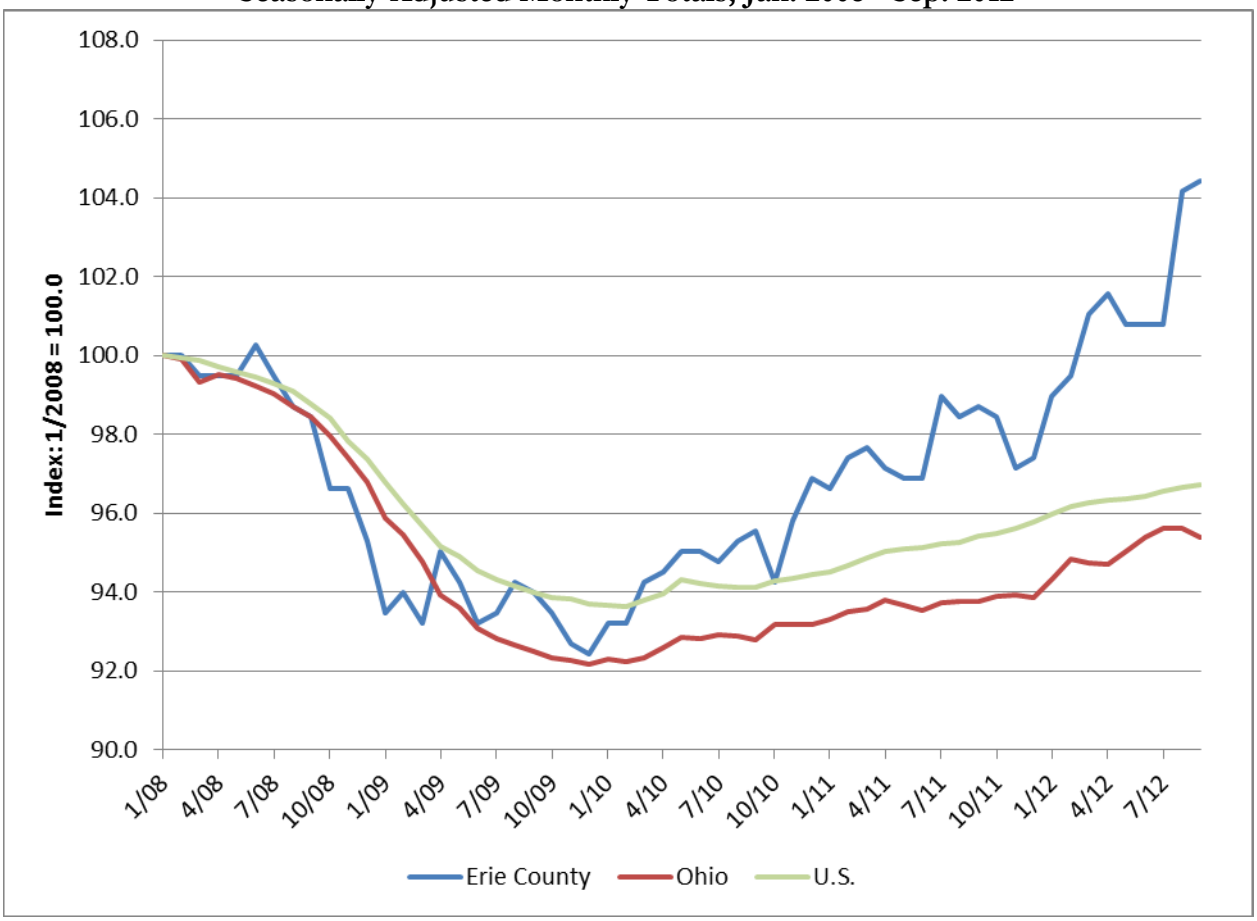
Figure 4: Erie County, Ohio and US Non-farm Wage and Salary Employment Growth 2001-2011



Source: Quarterly Census of Employment and Wages, US Bureau of Labor Statistics.

Figure 5: Erie County, Ohio and US Non-farm Wage and Salary Employment Growth Seasonally-Adjusted Monthly Totals, Jan. 2008 - Sep. 2012 communicates the recent strength of the Erie County economy even more forcefully by analyzing monthly employment changes since January 2008 – the month of peak US employment as the 2007-2009 recession was beginning. These statistics are seasonally adjusted – a statistical technique that removes recurring patterns such as the increase in employment due to holiday hiring and the post-holiday decline. This reveals underlying economic trends and allows employment changes from one month to the next to be compared meaningfully. The 2011 and 2012 employment totals are preliminary and subject to revision, but they show a dramatic increase in Erie County employment in the recovery. Between December 2007 and December 2009, Erie County employment declined 7.6%, more than the 6.4% national average but less than Ohio's 7.8%. But since then, Erie County has added 4,600 jobs (13%) compared to 3.5% growth in Ohio and 3.2% nationwide. As a result, US employment has recovered 48% of the jobs lost in the recession and Ohio has recovered 42%, but Erie County has recovered *all* its lost jobs and has gained an additional 4.4%.

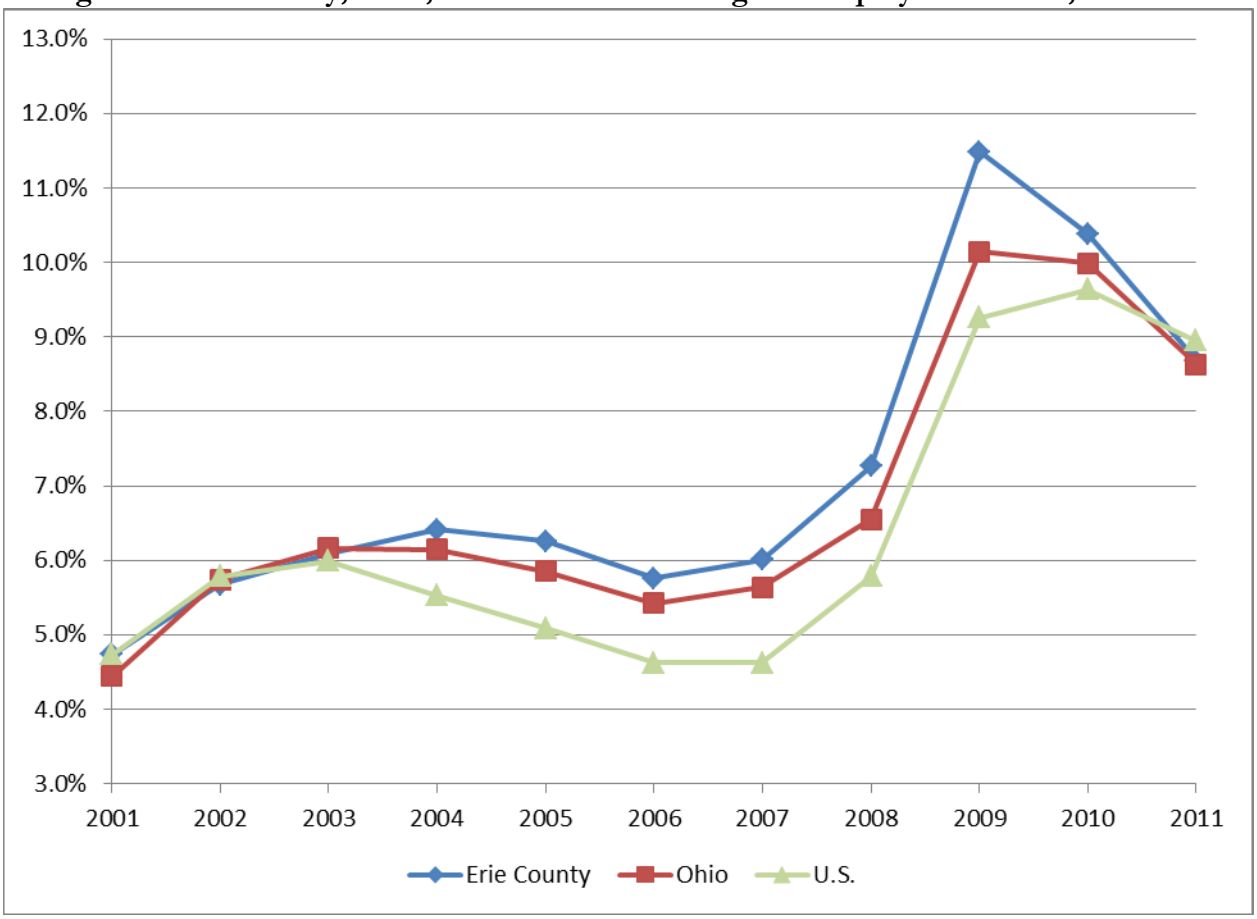
Figure 5: Erie County, Ohio and US Non-farm Wage and Salary Employment Growth Seasonally-Adjusted Monthly Totals, Jan. 2008 - Sep. 2012



Source: Current Employment Statistics, US Bureau of Labor Statistics.

Figures 6 and 7 on the following two pages show unemployment rates annually and monthly, respectively, over time periods consistent with those of Figures 4 and 5. Consistent with the relative weakness of Erie County employment growth, the county's unemployment rate remained above 6% for virtually the entire expansion of 2003-2007. The recession job loss pushed the unemployment rate to an 11.5% average during 2009. During 2011, the county average unemployment rate was 8.7%, close to Ohio's 8.6% but less than the 8.9% national average.

Figure 6: Erie County, Ohio, and US Annual Average Unemployment Rates, 2001-2011



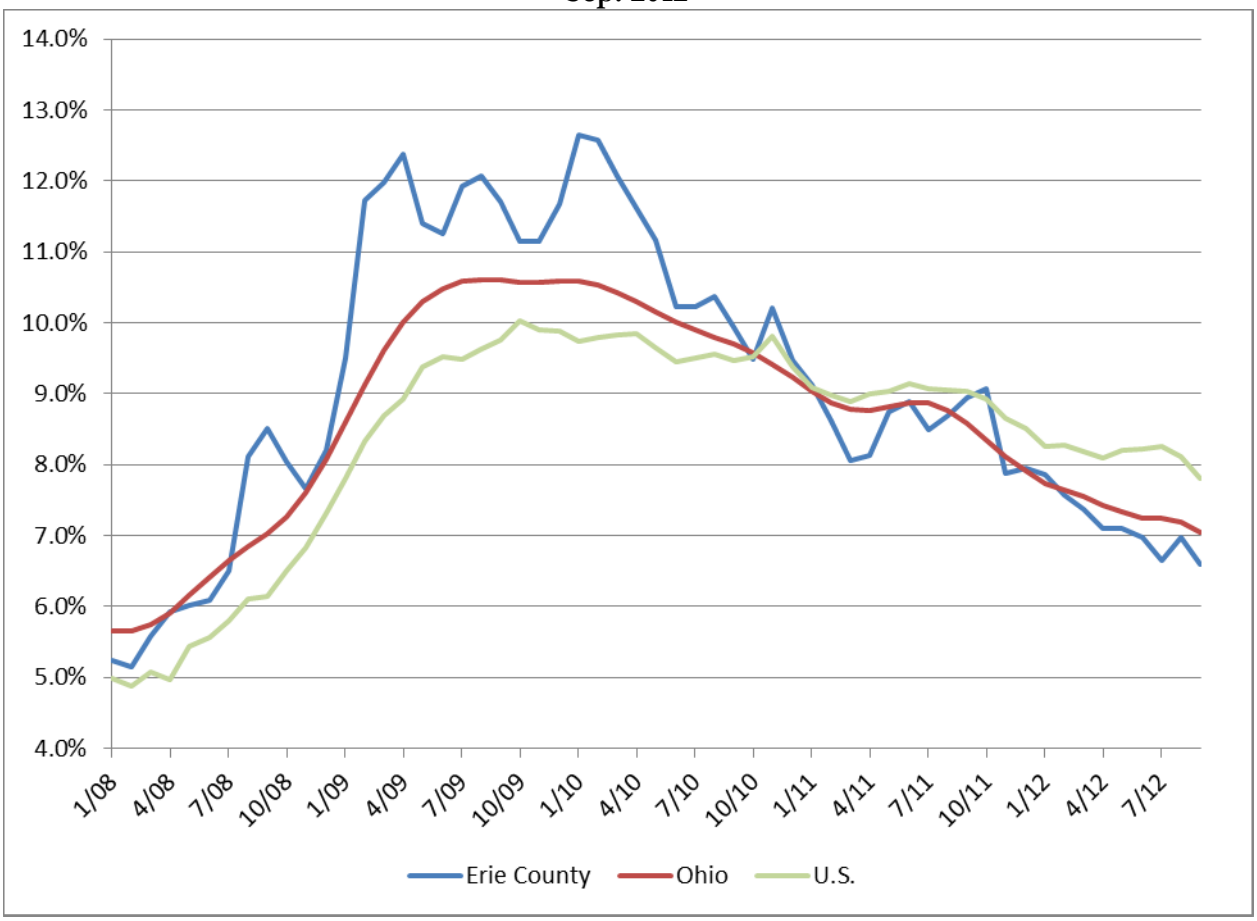
Source: Current Population Survey and Local Area Unemployment Statistics, US Bureau of Labor Statistics.

The monthly chart in Figure 7 shows the recent rise and fall of the unemployment rates in more detail. Again, these rates are seasonally adjusted. National and state rates are seasonally adjusted by the Bureau of Labor Statistics but county rates are not; accordingly, Erie County unemployment rates are seasonally adjusted by Regionomics®. The Erie County unemployment rate peaked at 12.6% in January 2010 (the peak Ohio rate was a steady 10.6% through the second half of 2009, while the US rate peaked at 10% in October 2009). In September 2012, the Erie County unemployment rate was 6.6%, more than a point below the national average and its lowest level since July 2008.

Interpreting changes in unemployment rates is not straightforward. Unemployment rate changes are affected both by changes in the number of people working and changes in the number of people looking for work. As many have come to realize through the ongoing discussions in the media, the **unemployment rate counts only the employed and unemployed individuals actively looking for work**, as economic conditions deteriorate the measured labor force declines and puts downward pressure on the unemployment rate – it is lower due to people leaving the work force. Conversely, as job growth resumes and discouraged workers return to the labor force, the unemployment rate tends to increase. It is not uncommon in the initial stages of a recovery for the unemployment rate to increase even as employment increases. In Erie County's case, the number of Erie County

residents working increased 2,800 between January 2010 and September 2012, while the county's labor force (the number employed plus the number in an active job search) showed a net increase of only 200. Thus, the large six percentage-point decrease in Erie County's unemployment rate was due partially to the improving employment climate and partially to the slow return of discouraged workers.

Figure 7: Erie County, Ohio and US Seasonally-Adjusted Unemployment Rates, Jan. 2008 - Sep. 2012



Source: Current Population Survey and Local Area Unemployment Statistics, US Bureau of Labor Statistics. Seasonal adjustment of Erie County unemployment rates by Regionomics®.

Table 2: Erie County Sector Employment Totals, Changes and Location Quotients, 2001 and 2011, accomplishes two tasks: it shows the changes in employment by industry sector over the past decade and changes in local economic structure over that period. The first columns show employment levels in 2001 and 2011 and local versus US changes. The county's economic structure compared to the national average is shown by the location quotients in the last two columns. Location quotient is the percentage of total employment in a given sector in Erie County divided by the percentage of total employment in that sector nationally. Consequently, a location quotient greater than one in a given sector indicates a greater-than-average concentration of employment in that sector (the location quotient of total employment is always 1.000). For example, manufacturing's 2011 location quotient of 1.719 implies that there are 71.9% more manufacturing jobs in the county than would be

expected in an economy Erie County's size. Conversely, the 0.663 location quotient in construction means that employment is 33.7% less than would be expected.

Table 2: Erie County Sector Employment Totals, Changes and Location Quotients, 2001 and 2011

Sector	Erie County employment		Changes Erie County		US	Location quotients	
	2001	2011	No.	Pct.	Pct.	2001	2011
Total wage & salary emp.	39,440	36,550	-2,890	-7.3%	-8.6%	1.000	1.000
Natural resources & mining	371	434	63	17.0%	-7.2%	0.715	0.813
Construction	1,366	1,037	-329	-24.1%	-26.7%	0.663	0.671
Manufacturing	9,044	5,682	-3,362	-37.2%	-33.3%	1.814	1.719
Trade, transport and utilities	6,945	6,368	-577	-8.3%	-12.7%	0.890	0.909
Wholesale trade	1,387	963	-424	-30.6%	-11.7%	0.796	0.615
Retail trade	4,693	4,611	-82	-1.7%	-15.6%	1.016	1.113
Transportation and utilities	865	794	-71	-8.2%	-3.3%	0.600	0.611
Information	529	360	-169	-31.9%	-28.2%	0.484	0.476
Financial activities	1,009	947	-62	-6.1%	-11.1%	0.432	0.452
Finance and insurance	699	630	-69	-9.9%	-8.0%	0.407	0.405
Real estate, rental & leasing	310	317	7	2.3%	-20.5%	0.500	0.588
Professional & business svcs.	1,443	1,738	295	20.4%	3.7%	0.291	0.356
Professional & tech. svcs.	574	502	-72	-12.5%	3.5%	0.275	0.232
Management of companies	25	115	90	360.0%	41.0%	0.048	0.213
Admin. support & waste	844	1,121	277	32.8%	-5.8%	0.359	0.515
Education & health services	4,569	5,347	778	17.0%	22.3%	1.011	0.995
Education services	317	311	-6	-1.9%	29.3%	0.553	0.433
Healthcare & soc. assistance	4,252	5,037	785	18.5%	21.4%	1.078	1.082
Leisure & hospitality	7,236	8,550	1,314	18.2%	0.2%	2.001	2.277
Arts, entertainment & rec.	2,847	2,902	55	1.9%	-8.2%	5.244	5.344
Accommodation & food svcs.	4,388	5,648	1,260	28.7%	1.6%	1.428	1.758
Other services	1,326	861	-465	-35.1%	-14.8%	1.036	0.692
Government	5,586	5,223	-363	-6.5%	-3.7%	0.903	0.870
Federal Government	205	304	99	48.3%	-2.8%	0.245	0.376
State Government	1,028	1,139	111	10.8%	-1.3%	0.759	0.884
Local Government	4,353	3,781	-572	-13.1%	-4.5%	1.090	0.969

Indented sector titles are subsets of the super-sector above.
Source: Quarterly Census of Employment and Wages, US Bureau of Labor Statistics.

Returning to the employment changes, one major change was in manufacturing, which suffered a greater-than-average decline of 37%. This does not imply that the underlying firms were struggling, however. Nationally, the 16% decline in manufacturing employment between 2001 and 2007 was accompanied by a 28% increase in manufacturing output, leading to a 51% increase in the output produced by a typical manufacturing worker. This implies that the dominant force in the employment decline during the last decade was not movement of jobs out of the US as is commonly believed, but a rapid increase in worker productivity (if exporting of production had been the driving force, output would not have increased as it did; it would have stagnated or declined). It should be noted that manufacturing employment grew in Erie County – as it did elsewhere – during the past

two years. Manufacturing added 833 positions (17.2%) between 2009 and 2011, and was a major cause of the outstanding performance of Erie County's employment in the recovery.

Another noteworthy change was an 18.2% increase in leisure and hospitality jobs, compared to a national average that was essentially unchanged. Most of these jobs were in accommodation and food services. Retail trade's net loss was much smaller than average professional and business services enjoyed an outsized increase in local employment, but the small size of the sector translated to a relatively small numerical increase.

The location quotients indicate sectors that are drivers of the Erie County economy. It is clear that manufacturing and leisure dominate the economy. Cedar Point (which is in the arts, entertainment and recreation sector) attracts related industries including retail, hotels and restaurants. The change in location quotients over the decade shows whether the sector has increased or declined in relative importance over the decade (better-than-average growth in a sector causes the location quotient to increase). The two leisure and hospitality subsectors both grew in relative importance, as did retail, financial activities and business services.

The two supply chain industries, wholesale trade and transportation, play a much smaller role.[3] Wholesale trade employment is 61.5% of average for an economy the size of Erie County's, and has declined in relative importance over the decade. Transportation and utilities employment is 61.1% of average, but its role in the county's economy has remained steady over the decade.

FREIGHT GENERATION IN ERIE COUNTY

Some industries and establishments play a larger role in generating freight services than others. These are industries that make goods, such as construction, manufacturing and mining; and service industries that transport goods, such as wholesale and retail trade, transportation and waste services. Hospitals and nursing homes require large inbound shipments of goods, as do many large employers regardless of industry.

Employment change is not a reliable indicator of changes in demand for freight services. As the earlier discussion of manufacturing made clear, employment and output changes can be significantly different over time and freight volumes are correlated with output (excluding inflation). Because Erie County is its own MSA, output (gross domestic product) estimates are available by sector. Some of these are suppressed for confidentiality reasons, but estimates can be derived. Table 3 shows the output totals for freight-oriented industry sectors over the past decade. ***Erie County's industry composition is such that half its total output is generated by freight-oriented industries – a higher percentage than in either the Ohio or US economies.***

[3] The data are not sufficient to separate transportation and warehousing from utilities, but a separate database (the Census Bureau's County Business Patterns) suggests that utilities employment is about one-sixth of the transportation and utilities total.

Table 3: Erie County Output (Gross Domestic Product) for Freight-Oriented Industry Sectors, 2001-2010
(In millions of constant, 2005, dollars)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Gross domestic product	2,872	2,919	3,002	3,069	3,057	3,009	2,793	2,707	2,639	2,769
Freight-oriented GDP	1,496	1,493	1,553	1,622	1,586	1,573	1,380	1,269	1,244	1,398
Agriculture, forestry, fishing and hunting	11	11	5	18	*13*	*11*	*14*	*11*	*18*	*34*
Mining	35	29	29	22	*21*	*18*	*19*	*16*	*18*	*34*
Manufacturing	931	955	980	1,023	983	997	792	706	693	787
Durable goods	565	594	613	627	613	648	532	508	334	413
Nondurable goods	370	361	365	397	369	351	264	208	350	363
Wholesale trade	141	141	162	160	168	153	175	173	160	149
Retail trade	197	203	211	220	222	220	214	196	196	207
Transportation and utilities	*33*	*32*	*45*	*54*	*54*	*44*	*34*	*29*	*27*	*51*
Waste management and remediation services	8	8	10	9	10	9	10	10	9	10
Hospitals, nursing and residential care facilities and social assistance	*140*	*114*	*111*	*116*	*115*	*121*	*122*	*128*	*123*	*126*
Freight-oriented GDP as percentage of total										
Erie County	52.1%	51.1%	51.7%	52.9%	51.9%	52.3%	49.4%	46.9%	47.1%	50.5%
Ohio	41.5%	41.6%	41.8%	42.7%	42.7%	42.9%	43.1%	42.0%	39.3%	40.8%
United States	35.4%	35.6%	35.8%	36.3%	35.8%	36.0%	36.3%	35.7%	34.8%	35.8%

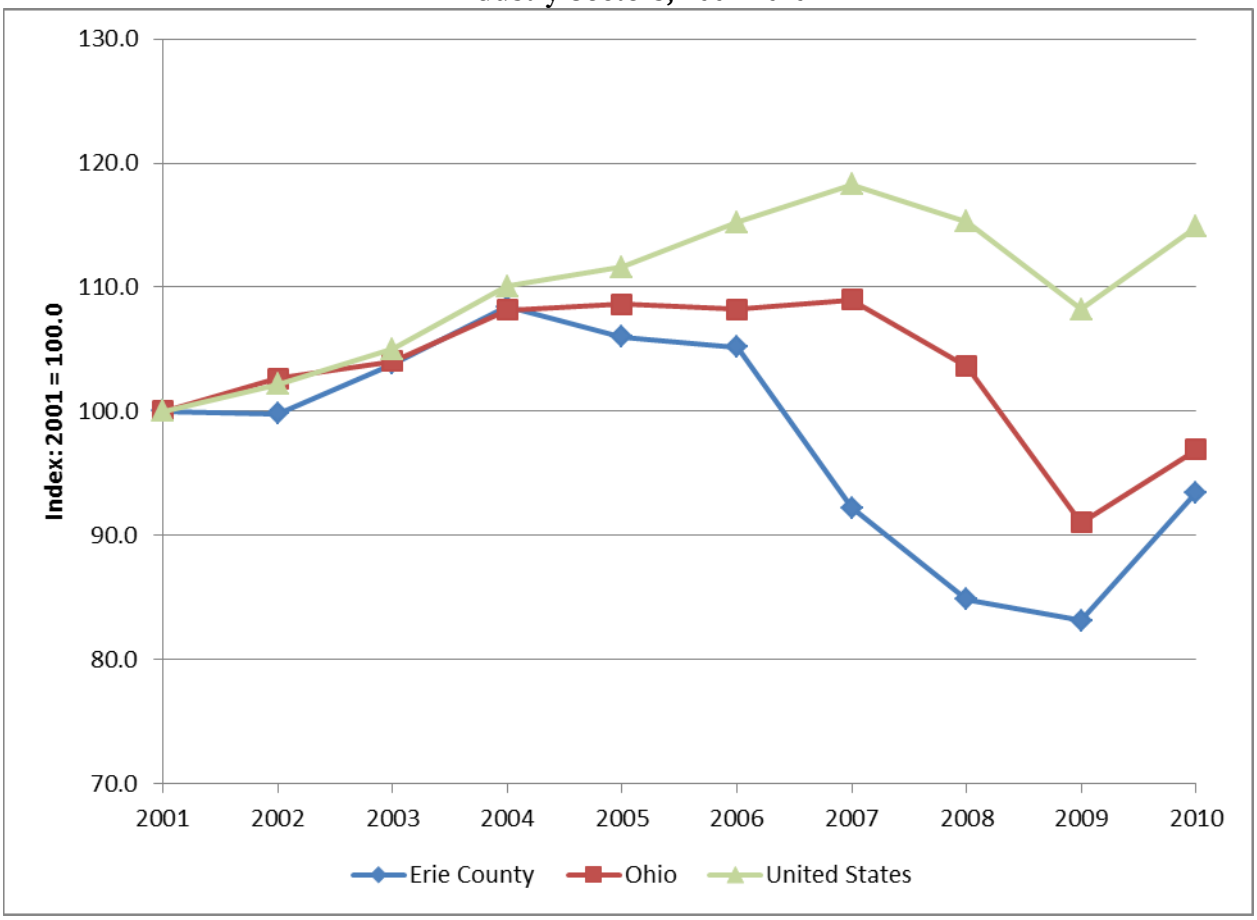
Italicized values are Regionomics estimates.

Source: Gross Domestic Product by Metropolitan Area, US Bureau of Economic Analysis.

Figure 8 graphs the trend in the freight-oriented GDP of Erie County in Exhibit 10 compared to like totals for Ohio and the US, Erie County's freight-oriented output began a significant decline one year sooner than Ohio and the US and fell much further than either. However, its post-recession recovery in 2010 was much stronger than either state or national averages. It remains to be seen whether this above-average growth has subsequently continued.

Specific freight-oriented establishments in the entire study area are shown in Appendix Exhibit A-1. These listings are from the Reference USA database and include all establishments with 50 employees or more in the freight-oriented sectors. A supplemental list includes all other employers of 250 employees or more. These may have significant freight needs as well.

Figure 8: Erie County, Ohio and US Growth in Constant-Dollar Output in Freight-Oriented Industry Sectors, 2001-2010



Source: Gross Domestic Product by Metropolitan Area, US Bureau of Economic Analysis.

WORKFORCE DEVELOPMENT CONSIDERATIONS IN FREIGHT TRANSPORTATION

Workforce is a critical priority in developing strength in supply chain activities. In understanding workforce needs, it is important to distinguish between two different but related activities: transportation and logistics. Transportation is physically moving and storing freight; logistics is strategic planning aimed at ensuring that freight arrives at its destination when needed efficiently and

economically. Logistics is a small part of the overall industry in terms of employment, but it plays a major role and is a highly-skilled field typically requiring workers with specialized college degrees. Another distinction to draw is between classification of employment by industry and by occupation. Classifying employment by industry involves measuring the total employment in distribution firms – including workers such as accountants and human resource managers not directly involved in distribution activities. The earlier discussion of employment in wholesale and transportation industries was taking this perspective. Classifying employment by occupation focuses on activities, including individuals specifically performing transportation and logistics activities regardless of the type of firm, organization or government office in which they are performed. This is an especially important perspective in distribution because many of these activities occur outside transportation firms. There are doubtless transportation managers in many of the large employers in Exhibit A-1, and larger manufacturers often have entire transportation and logistics departments.

Limited information on occupational employment in transportation is available for Erie County because it is its own MSA. Table 4 defines the occupations that are most closely involved with freight transportation and logistics and reports the typical level of training or education required of workers in the position. The code associated with each occupation is the Standard Occupation Category (SOC) code, a classification system analogous to the NAICS scheme classifying industries.

Table 4: Transportation and Logistics Occupations

11. Management Occupations
11-3061 Purchasing Managers
Plan, direct or coordinate the activities of buyers, purchasing officers and related workers involved in purchasing materials, products and services. Includes wholesale or retail trade merchandising managers and procurement managers. Education/training level: College degree plus experience.
11-3071 Transportation, Storage, and Distribution Managers
Plan, direct or coordinate transportation, storage, or distribution activities in accordance with organizational policies and applicable government laws or regulations. Includes logistics managers. Education/training level: Related work experience.
15. Computer and Mathematical Science Occupations
15-2031 Operations Research Analysts
Formulate and apply mathematical modeling and other optimizing methods to develop and interpret information that assists management with decision making, policy formulation or other managerial functions. May collect and analyze data and develop decision support software, service or products. May develop and supply optimal time, cost or logistics networks for program evaluation, review or implementation. Education/training level: College degree.
43. Office and Administrative Support Occupations
43-5011 Cargo and Freight Agents
Expedite and route movement of incoming and outgoing cargo and freight shipments in airline, train and trucking terminals, and shipping docks. Take orders from customers and arrange pickup of freight and cargo for delivery to loading platform. Prepare and examine bills of lading to determine shipping charges and tariffs. Education/training

level: Moderate-term on-the-job training.
43-5061 Production, Planning, and Expediting Clerks
Coordinate and expedite the flow of work and materials within or between departments of an establishment according to production schedule. Duties include reviewing and distributing production, work and shipment schedules; conferring with department supervisors to determine progress of work and completion dates; and compiling reports on progress of work, inventory levels, costs and production problems. Education/training level: Short-term on-the-job training.
43-5071 Shipping, Receiving, and Traffic Clerks
Verify and maintain records on incoming and outgoing shipments. Prepare items for shipment. Duties include assembling, addressing, stamping and shipping merchandise or material; receiving, unpacking, verifying and recording incoming merchandise or material; and arranging for the transportation of products. Education/training level: Short-term on-the-job training.
43-5081 Stock Clerks and Order Fillers
Receive, store, and issue sales floor merchandise, materials, equipment and other items from stockroom, warehouse or storage yard to fill shelves, racks, tables or customers' orders. May mark prices on merchandise and set up sales displays. Education/training level: Short-term on-the-job training.
53. Transportation and Material Moving Occupations
53-1021 First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand
Directly supervise and coordinate the activities of helpers, laborers or material movers. Education/ training level: Related work experience.
53-1031 First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators
Directly supervise and coordinate activities of transportation and material-moving machine and vehicle operators and helpers. Education/training level: Related work experience.
53-3032 Heavy and Tractor-Trailer Truck Drivers
Drive a tractor-trailer combination or a truck with a capacity of at least 26,000 pounds Gross Vehicle Weight (GVW). May be required to unload truck. Requires commercial drivers' license. Education/ training level: Short-term on-the-job training.
53-3033 Light Truck or Delivery Services Drivers
Drive a light vehicle, such as a truck or van, with a capacity of less than 26,000 pounds Gross Vehicle Weight (GVW), primarily to deliver or pick up merchandise or to deliver packages. May load and unload vehicle. Education/training level: Moderate-term on-the-job training.
53-7021 Crane and Tower Operators
Operate mechanical boom and cable or tower and cable equipment to lift and move materials, machines or products in many directions. Education/training level: Moderate-term on-the-job training.
53-7051 Industrial Truck and Tractor Operators
Operate industrial trucks or tractors equipped to move materials around a warehouse, storage yard, factory, construction site or similar location. Education/training level: Short-term on-the-job training.

53-7062 Laborers and Freight, Stock, and Material Movers, Hand
Manually move freight, stock or other materials or perform other general labor. Includes all manual laborers not elsewhere classified. Education/training level: Short-term on-the-job training.

Source: *2010 SOC Definitions* and *2012-2013 Occupational Outlook Handbook*, US Bureau of Labor Statistics.

Table 5 presents available occupational employment information for Erie County compared to the national average, roughly categorized by transportation versus logistics occupations. These data are particularly subject to error, particularly for a relatively small labor market such as Erie County, so shown along with each estimate is its Margin of Error (MOE). Adding the MOE to and subtracting it from the estimate gives a range within which there is a 95% probability that the true value falls. Note that there is no information for Erie County for many of these occupations. This does not imply that the occupations do not exist in Erie County, merely that the sample data were not sufficient to produce a reliable estimate. A range of location quotients is also given with the employment estimate; these are calculated from the minimum, estimated, and maximum employment levels. While the expected values of the location quotients are generally less than 1.0, the fact that most of the ranges extend past 1.0 means that we cannot conclude that Erie County employment in these occupations is any less than average; in several of the cases (53-1031, 53-3032, 53-3033, 53-7062) employment may in fact be considerably more than average.

Table 5: Erie County Transportation and Logistics Occupational Employment, May 2011

SOC	Occupation	Employment		Location quotients		
Transportation occupations						
43-5071	Shipping, Receiving and Traffic Clerks	160	33	0.67	0.85	1.04
43-5081	Stock Clerks and Order Fillers	370	149	0.45	0.76	1.07
53-1021	First-Line Supervisors of Helpers, Laborers and Material Movers, Hand	n/a	n/a	n/a	n/a	n/a
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	50	19	0.56	0.92	1.29
53-3032	Heavy and Tractor-Trailer Truck Drivers	480	107	0.90	1.16	1.43
53-3033	Light Truck or Delivery Services Drivers	90	27	0.30	0.43	0.56
53-7021	Crane and Tower Operators					
53-7051	Industrial Truck and Tractor Operators					
53-7062	Laborers and Freight, Stock and Material Movers, Hand	480	255	0.39	0.85	1.32
53-7064	Packers and Packagers, Hand	90	24	0.35	0.49	0.64
Logistics occupations						
11-3061	Purchasing Managers	n/a	n/a	n/a	n/a	n/a
11-3071	Transportation, Storage and Distribution Managers	n/a	n/a	n/a	n/a	n/a
15-2031	Operations Research Analysts	n/a	n/a	n/a	n/a	n/a
43-5011	Cargo and Freight Agents	n/a	n/a	n/a	n/a	n/a
43-5061	Production, Planning and Expediting Clerks	n/a	n/a	n/a	n/a	n/a
43-5071	Purchasing Managers	n/a	n/a	n/a	n/a	n/a
43-5081	Transportation, Storage and Distribution Managers	n/a	n/a	n/a	n/a	n/a

MOE = Margin of Error calculated at a 95% confidence level. Subtracting the MOE from and adding it to the estimate produces a range within which there is a 95% certainty that the true population value will fall. **Source**: Occupation Employment Statistics, US Bureau of Labor Statistics.

Table 6 shows local and national median annual wage levels for these occupations. Again, local wage levels for many of the occupations are unavailable. The national medians are given to provide a general sense of where these wages are likely to fall. Evaluating the confidence interval for available wage estimates by adding and subtracting the margin of error reveals that most wage levels are not significantly different from the national average (i.e., the Erie County confidence interval intersects the US confidence interval). However, the wage for heavy and tractor-trailer truck drivers is significantly less than the national average – but only between 2% and 12% less – while the wage for shipping, receiving and traffic clerks is between 4% and 18% above average.

Table 6: Erie County and US Transportation and Logistics Occupational Median Wages, May 2011

SOC	Occupation	Erie County		United States	
		Median	MOE	Median	MOE
Transportation occupations					
43-5071	Shipping, Receiving and Traffic Clerks	31,910	1,942	28,790	95
43-5081	Stock Clerks and Order Fillers	21,970	2,277	21,890	72
53-1021	First-Line Supervisors of Helpers, Laborers and Material Movers, Hand	n/a	n/a	44,580	147
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	53,780	6,104	52,950	261
53-3032	Heavy and Tractor-Trailer Truck Drivers	35,270	1,857	37,930	187
53-3033	Light Truck or Delivery Services Drivers	28,960	3,716	29,080	144
53-7021	Crane and Tower Operators	n/a	n/a	46,460	841
53-7051	Industrial Truck and Tractor Operators	n/a	n/a	30,010	197
53-7062	Laborers and Freight, Stock and Material Movers, Hand	22,770	1,348	23,750	156
53-7064	Packers and Packagers, Hand	18,930	1,028	19,870	98
Logistics occupations					
11-3061	Purchasing Managers	n/a	n/a	97,130	639
11-3071	Transportation, Storage and Distribution Managers	n/a	n/a	80,860	532
15-2031	Operations Research Analysts	n/a	n/a	71,950	947
43-5011	Cargo and Freight Agents	n/a	n/a	38,210	503
43-5061	Production, Planning and Expediting Clerks	n/a	n/a	43,100	142
43-5071	Purchasing Managers	35,270	1,857	37,930	187
43-5081	Transportation, Storage and Distribution Managers	28,960	3,716	29,080	144

MOE = Margin of Error calculated at a 95% confidence level. Subtracting the MOE from and adding it to the estimate produces a range within which there is a 95% certainty that the true population value will fall. Occupations in green have Erie County wages significantly higher than the national average; occupations in red have wages significantly lower. **Source**: Occupation Employment Statistics, US Bureau of Labor Statistics.

It is apparent from the occupational descriptions in Table 4 that most workers in the field do not require a college degree, but to conclude from this that these positions are unskilled and therefore easily filled is incorrect. These occupations require attention to detail, following directions and taking initiative in what can be a fast-paced environment, some degree of comfort with technology and coordinating one's work with that of others. In particular, operating a forklift incorrectly can pose a significant hazard both for oneself and for others on the warehouse floor. However, a number of warehouse hiring managers have shared with the author that the largest gap between the skills they require and those possessed by applicants are so-called "soft skills": dependability, self-control, flexibility, ability to work in a team-oriented environment, the ability to communicate effectively with supervisors and co-workers, and the ability to remain drug-free and otherwise unimpaired (the lack of soft skills is actually a common problem, even among degree-requiring positions such as those in information technology). Employers must always train new hires to some extent because every warehouse operates differently, but there is a common core of knowledge. A new hire walking in with this knowledge can save an employer thousands of dollars in training costs and lost productivity as the worker gets up to speed. Columbus State Community College has for the past several years offered a Logistics Attract and Retain Talent (LogisticsART) Program in cooperation with the Columbus Region Logistics Council and several local distribution companies. LogisticsART is an intensive four-week program that includes classroom training, on-the-job training, and a significant emphasis on soft-skills development. Graduates leave with three hours of college credit, forklift certification, and a Certified Logistics Associate designation. Employers have expressed a great deal of satisfaction with graduates of this program in terms of their initial skills, their long-run productivity, and their lower rate of turnover. Those wishing to develop such a program in Erie County could work with Lorain County Community College, which offers its own Associate of Applied Business Degree in Supply Chain Management. EHOVE Career Center offers forklift training. The University of Toledo, Bowling Green State University, and Cleveland State University each have programs in logistics and supply chain management that prepare students for the more highly-skilled occupations in Table 4.

EXISTING AND PLANNED INFRASTRUCTURE & FREIGHT TRENDS PROFILE

This chapter identifies and examines freight trends in the Erie Regional Planning Commission (ERPC) Metropolitan Planning Organization (MPO) Region. The area consists of Erie County and the City of Vermilion portion of Lorain County, Ohio. The region is situated in northern Ohio and comprises of two of the state's eight coastal counties.[4] Erie County has a total land area of 254.5 square miles, 371 square miles of water area and 35 miles of shoreline along Lake Erie and Sandusky Bay. According to the 2010 Census, the population for Erie County was 77,079 people and 10,594 people for the City of Vermilion.

As is evidenced by Figure 9, significant industrial clustering is present in the three cities in the region: Sandusky, Huron and Vermilion. Additionally, a number of larger employment centers are found around key interchanges; for example, US 250 and I-80, US 250 and SR 2 as well as along the coastline on US 6.

Figure 9: Regional Employment Centers[5]

[4]Source: 2035 Long Range Transportation Plan; Page 1, Chapter 4
[5]Source: Hoover's Dun and Bradstreet Business Data, 2011

NASA – PLUM BROOK STATION

Erie County is home to National Aeronautics and Space Administration's (NASA) Plum Brook Station. Plum Brook Station is NASA's 6,400-acre remote test installation site. NASA's Plum Brook Station is home to four unique, world-class test facilities. Located in Erie County, this remote test installation site and employs roughly 120 employees, depending on project workload. Plum Brook's capabilities include:

- Space Power Facility (SPF) - Home of the world's largest space environment simulation chamber, the facility has tested parts of rockets, Mars landers and space stations;
- Spacecraft Propulsion Research Facility (B-2) - This is the world's only test facility capable of full-scale rocket engine firings and launch vehicle system level tests at high-altitude conditions;
- Cryogenic Propellant Tank Facility (K-Site) - This smaller space-environment test chamber allows safe, large-scale experiments using super-cold liquid hydrogen. Cryogenic Components Laboratory (CCL) - A new, state-of-the-art facility for research, development and qualification of cryogenic materials, components and systems. Together these facilities compose the Cryogenic Test Complex; and,
- Hypersonic Tunnel Facility (HTF) - A unique wind tunnel designed to test air-breathing propulsion systems at speeds exceeding five times the speed of sound.

To develop an understanding of the freight movements in and around the ERPC region, an overview of the current infrastructures and conditions are necessary. Section 2 provides an overview of the current conditions of various surface transportation infrastructures in the region. Section 3 discusses the data and methodology employed in the freight flow analysis contained in Section 4. The goal of the commodity flow analysis is to develop a better understanding of the current freight movements in the region. The analysis of the ERPC region includes examining what types of goods are being transported, where they are headed or coming from and how they travel.

SURFACE TRANSPORTATION CONDITIONS

Roads

According to Ohio Department of Transportation (ODOT) Technical Planning Services Division, there are 26.36 interstate highway miles, 41.91 US highway miles and 113.93 state highway miles in Erie County. The City of Vermilion has 3.5 miles of state highway and just over five (5) miles of US highways. The main routes running through the Metropolitan Planning Organization (MPO) region are:

- SR 2 - 33 miles, Northwest-Southeast through Erie County;
- SR 4 – 12.5 miles, terminating at US 6 in Sandusky;
- SR 13 – 6 mile connection between US 250 and US 6 in the City of Huron;
- SR 60 – 10 miles, North from the border of Erie County to Vermilion;
- SR 61 – 8 miles, between SR 113 and US 6;
- SR 99 – 5 miles, heading Southeast from SR 4;

- SR 101 – 8 miles from the western edge of Erie County to US 6;
- SR 113 - approximately 25 miles along the southern edge of Erie County;
- SR 269 - 12 miles, North-South along the western edge of Erie County;
- US 6 – 36 miles, East-West through the MPO area;
- US 250 – 12.5 miles, Northwest-Southeast; US 6 to the southern edge of Erie County; and,
- I-80 – 29.8 miles, East-West along the southern edge of Erie County.

Table 7 displays the minimum and maximum number of lanes, the average pavement roughness and condition ratings, as well as average annual daily traffic (AADT) for passenger vehicles and trucks in the study area for the selected routes discussed above. The roughness rating, also known as IRI, is an index of pavement un-evenness per mile and according to ASTME867, is defined to be the "deviation of a surface from a true planar surface with characteristic dimensions that affect vehicle dynamics and ride quality."[6] It is presented in inches-per-mile, and thus, higher numbers represent rougher roads. Average Condition, or present serviceability rating (PSR) is a rating system based on a scale of zero (0) to five (5); zero being in "extremely deteriorated conditions" and five representing "new, superior pavements" that are "likely to be smooth enough and sufficiently free from cracks and patches".[7]

Table 7: Physical Conditions

	Lanes		Avg.	Avg.		AADT	
Route	Min.	Max.	Roughness	Condition	Max Speed	Cars	Trucks
I-80	6	7	64.09	3.83	70	24,527	12,080
SR 2	4	6	68.69	4.06	65	18,034	2,667
SR 4	2	4	96.79	3.93	55	8,446	757
SR 13	2	2	104.55	3.57	55	3,340	236
SR 60	2	4	79.27	4.11	55	5,019	220
SR 61	2	2	113.84	3.62	55	2,316	186
SR 99	2	2	84.97	4.00	55	1,750	600
SR 101	2	4	112.94	3.52	55	6,680	421
SR 113	2	2	67.25	4.10	55	2,936	213
SR 269	2	2	88	3.84	55	2,862	197
US 6	2	6	97.47	3.86	65	7,155	445
US 250	2	4	107.97	3.72	55	16,431	909

Comparing the ratings contained in Table 7 to weighted averages for the state of Ohio, it becomes clear that the ERPC region's infrastructure is above the state average in nearly all condition categories. When reviewed by road type such as US route or state route, further comparisons can be made. The weighted average roughness rating for US routes found in the state of Ohio is 99.07 while the average condition rating of US routes in the state is 3.60. The conditions of the MPO's US routes are better than that of the state. Average daily truck traffic for the ERPC region US routes is 677 trucks per day, which is far less than the Ohio US route mean of 1,218 trucks per day. Passenger vehicle travels on US routes in the ERPC region are higher than experienced on US routes throughout the rest of the state: passenger vehicle mean for state on US

[6]http://www.astm.org/Standards/E950.htm?A
[7]http://www.fhwa.dot.gov/policy/2004cpr/chap3b.htm#body

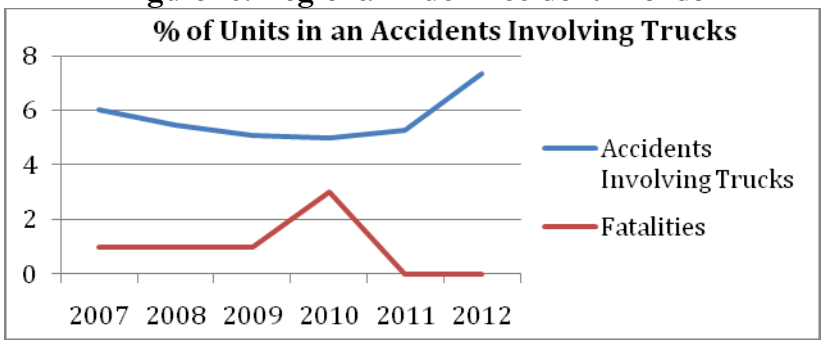
routes is 11,001, compared to the 11,743 for the MPO. This is likely due to the presence of many tourist attractions and resorts.

Of ERPC region's nine major state routes, SR 2 experiences the most traffic (both passenger and truck) - far surpassing traffic experienced on the other state routes in the region. Similar to the condition comparisons for the region's US routes to those found elsewhere in the state, state route conditions also look good. The average roughness rating (IRI) for ERPC State Routes is 81.147, which is substantially better than the weighted average for all Ohio State Routes of 111.29. The average condition (PSR) for Ohio State Routes is 3.6, which is less than the ERPC State Route average of 3.86. Average truck traffic for ERPC is also higher than the State's State Route average: the region experiences an AADT of 611 versus 459 for the state. There are also less passenger vehicles traveling on the region's State Routes; 5,709 passenger vehicles per day versus an average of 6,915 for the rest of the state.

The region's segment of I-80 is also in better condition when compared to the roughness rating of other interstates in the state. The average roughness for state interstates is 77.09 compared to 64.09 for ERPC. PSR weighted average for interstates in the state is 3.83 - matching exactly that which is found in ERPC (3.83). The segment in the region experiences higher than average interstate truck traffic volumes and significantly less passenger vehicles: the average interstate in Ohio experiences 57,420 passenger vehicles per day; substantially more than the ERPC's 24,527. Truck traffic on I-80 in the region is also higher than that found on average for I-80 elsewhere in the state. The weighted average annual daily truck traffic for I-80 in Ohio is 10,493, while ERPC's portion experiences 12,080 trucks per day.

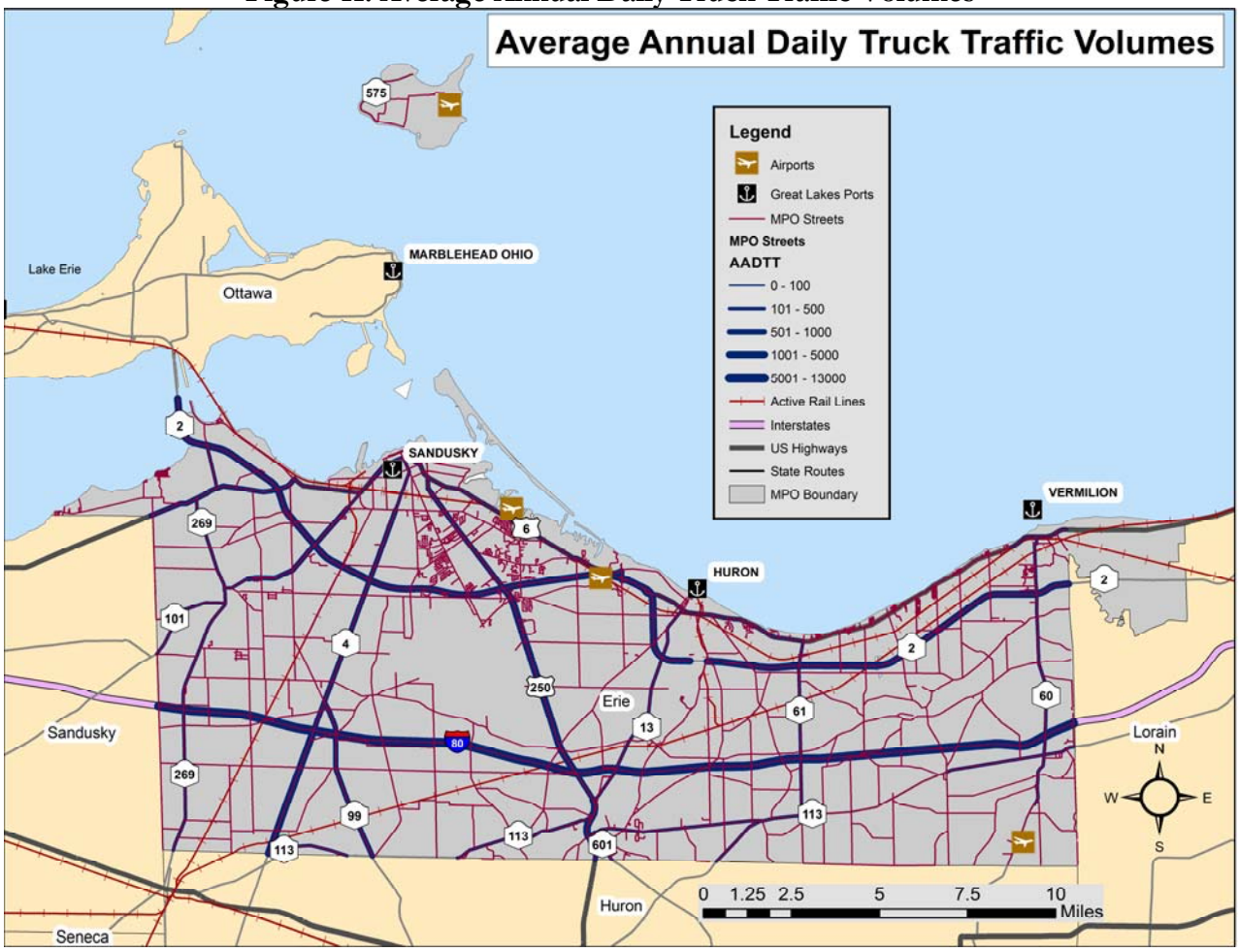
Truck Accident Statistics[8] have remained relatively stable throughout the past few years. Figure 10 shows a trend of truck accident data in the region for the period from January 2007 to November 2012. While 2012 data shows a relatively higher percentage of accidents involving trucks, as of November 12th, 2012, there were only 2,319 units recorded involved in accidents; approximately 54% of the typical annual average rate of 4,210. (Please note, crash data is published by the Ohio Department of Public Safety (ODPS), and is generally available six to eight months into the following year.)

Figure 10: Regional Truck Accident Trends



[8]https://ext.dps.state.oh.us/crashstatistics/CrashReports.aspx

Figure 11: Average Annual Daily Truck Traffic Volumes



As evidenced by Figure 11, SR 2, US 250 and I-80 represent the region's heaviest traveled truck routes. Based on the fact that the majority of US 250 truck traffic appears to be through traffic, it is indicative that the US 250 corridor serves as a connecting corridor for the traffic accessing SR 2 to I-80.

Of the 307 bridge structures listed in the National Bridge Inventory (NBI) Database, 206 are currently active. The Federal Highway Administration (FHWA) Bridge Inventory manual[9] provides ranking criteria on all bridges. There are three criteria by which bridge conditions are measured: the deck, superstructure and substructures. The bridge deck condition describes the overall condition rating of the surface. All in service bridges in the MPO area have a ranking of fair or better. The superstructure ranking criteria evaluates the condition of all structural components of the bridge. All bridges in the NBI database for the region are listed as having fair or better superstructures. The substructure criterion describes the physical condition of the abutments, piles, piers and other base structural components. Two bridges in the area are listed as having poor substructures: Chappel Creek - SR 113 bridge crossing at milepost 1681 in Florence Township and Penn Central Railroad - I-80 turnpike crossing leading to the Castalia Stone Quarry.

[9]http://www.fhwa.dot.gov/bridge/mtguide.pdf

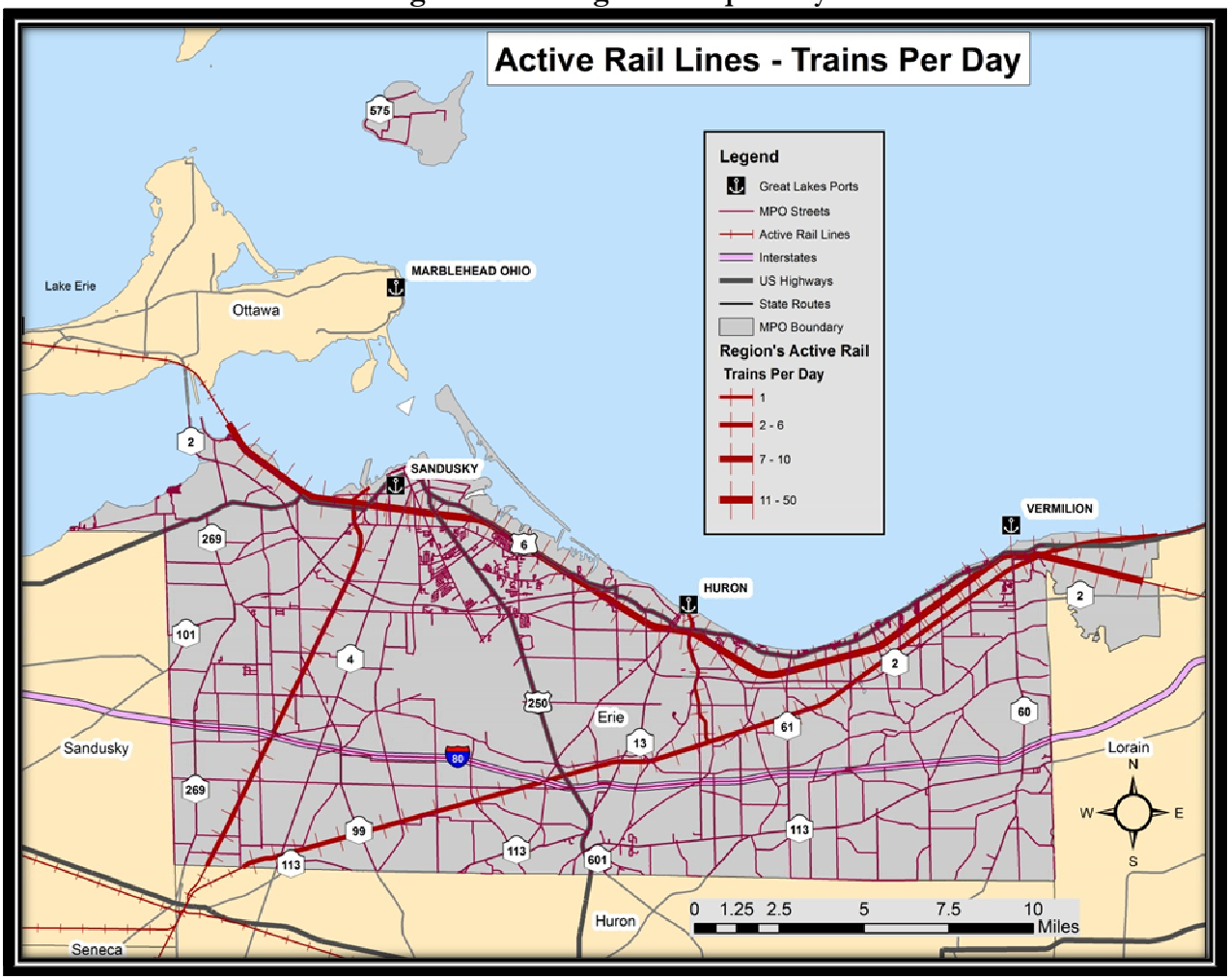
According to the Sandusky Register[10], six county bridges have received a rating of four (poor) in 2012. These six are located at: US 6 at milepost 2215 (above Cranberry Creek) in Berlin Township; US 6, milepost 650 near the Tiffin Ave and Venice Rd intersection in Sandusky; US 6, milepost 652 near Norfolk Southern tracks (currently under construction); SR 113 at milepost 1353 in Berlin Township (crossing over Old Woman Creek); the aforementioned Chappel Creek crossing in Florence; and SR 4 at Norfolk Southern tracks (resurfacing scheduled for SFY 2014 and estimated to cost $817,532), milepost 1110 in Sandusky. The bridges in Berlin and Florence townships are estimated to cost $1.4 million to repair; repairs are not expected until 2016.

Rail

All active rail lines in the region are owned by Norfolk Southern Corporation (NS)[11]. Multiple lines provide support for Amtrak passenger rail service. It was discovered that 61.7 of the 87.2 rail-line miles provide double-stacked clearance. On average, there are 60 trains per day on the NS rail lines through the study region. Figure 12, below, displays the average trains per day on the lines contained in the ERPC region. Due to the proprietary nature of the rail industry, public-use rail data is either unavailable or prohibitively expensive. The data used in Figure 13 is obtained from ODOT Office of Technical Services[12]. The US Surface Transportation Board (STB) releases public Way-Bill data representing a sample of rail shipping data at aggregated levels that combine multiple counties into one origin or destination location. There are a total of 172 Bureau of Economic Analysis (BEA) Economic Areas utilized in the Public Way-Bill Sample data. The BEA Economic Area containing ERPC's region also contains Cleveland, Akron, Lorain and the majority of other Northeastern Ohio Counties. Thus, results of freight analysis coming from this data source have been omitted due to convolution with the surrounding regions in the data set.

[10]http://www.sanduskyregister.com/article/2018471
[11]http://www.dot.state.oh.us/Divisions/Planning/TechServ/prod_services/Pages/ESRIDwnLds.aspx
[12]http://www.dot.state.oh.us/Divisions/Planning/TechServ/prod_services/Pages/ESRIDwnLds.aspx

Figure 12: Average Trains per Day



Air

The Bureau of Transportation Statistics provides aviation data for US international and domestic markets. The data release provides information on the number of flights, passengers, freight, mail, origin, destination and frequency of travels for publicly owned airports. As the ERPC region contains no public airports, no data is contained in these data releases. While ERPC is home to several small airfields, all are privately owned. There are a total of four listed airfields in the region: Griffing-Sandusky, Hinde, Kelley's Island and Wakeman. Recent news reports[13] mention that Griffing Airport is to be relocated to Ottawa County at the end of 2012. Other news makes mention of NASA's Plum Brook Center supporting the idea of a new airport to handle import/export traffic to aid the facility's research and development projects (discussion of NASA's plans for a runway to follow). As previously illustrated, Figure 11 provides the locations of the four airfields in the region currently in service.

[13]http://www.morningjournal.com/articles/2012/06/29/news/mj6427180.txt

Water

There are three main Great Lakes Ports located in ERPC's region: Kelley's Island, Huron and Sandusky.

The Port of Kelley's Island freight handling has diminished over recent years with the idling of the LaFarge operated Kellstone Quarry. Significant limestone was mined on the island in the past and represents the majority of freight originating in the port. In 2010, some limestone was still shipped albeit at levels much below that of previous years.

The Port of Huron is a deep draft commercial harbor that generates over $12 million in revenue annually. The commodities handled include: iron ore, limestone and grain. According to waterborne commerce statistics for 2010, all volume handled at the Port of Huron was in the form of receivables (no shipments originated here). The port primarily receives domestic freight.

The Port of Sandusky is also a deep draft commercial harbor. The port handles large volumes of bulk commodities generating over $50 million in revenue annually. Sandusky's major commodity is coal, representing over 97% of the volume handled at the port. The channel depths range from 21-26 feet. The domestic-international split, by volume, for 2010 was 43% domestic and 57% international. The port primarily serves as an exporting port; in that approximately 96% of the volumes of goods handled are exported.

Intermodal Facilities and Connectors

The US Department of Transportation permits the designation of intermodal connectors, or roads, leading to intermodal terminal facilities, where freight is transferred between modes. These intermodal connectors are critical components to the National Highway System (NHS), and provide for the efficient mobility of goods and products vital to the national, state, regional and local economies. An update of the Intermodal Facility and Connector designations was performed by the Ohio Department of Transportation (ODOT) in 2011-2012. This update ensured Ohio's intermodal facilities and roadway connections satisfied the criteria published by the Federal Highway Administration (FHWA) at http://www.fhwa.dot.gov/resouces/legregs/. Table 8 below identifies the intermodal facilities and connectors in the ERPC MPO region. Additional mapping of intermodal facilities and connectors can be found in Appendix B.

Table 8: Erie County Intermodal Facilities and Connectors[14]

FHWA NAME	FACILITY	TYPE	COUNTY	CITY	LENGTH (MI)
OH12P	Sandusky Coal Docks, Norfolk Southern	Port Terminal	Erie	Sandusky	0.529
OH13P	Geo. Gradel Salt Dock	Port Terminal	Erie	Sandusky	3.434
OH14F	Port Sandusky / Jackson Pier	Ferry Terminal	Erie	Sandusky	5.686
OH15P	Huron Limestone Co.	Port Terminal	Erie	Huron	2.716

[14] Intermodal Facility and Connector Update 2011-2012, Ohio Department of Transportation

The aforementioned ODOT intermodal update also includes the Triple Crown Terminal (Norfolk Southern Subsidiary) as a "proposed facility" in Erie County. Additionally, the Triple Crown Terminal is listed in *Ohio Rail Development Commission's Ohio Intermodal Railroad Terminals* document- http://www.dot.state.oh.us/Divisions/Rail/Documents/Ohio's%20Intermodal%20Railroad%20Terminals.pdf.

COMMODITY FLOW DATA AND METHODOLOGY

To aid ERPC planners and improve cohesiveness of the region's transportation network, an understanding of the network's current use is required. Commodity flow analysis offers this understanding and provides insight into potential areas for future improvements to the region's infrastructure. Freight data in the US lacks granularity; data on specific movements are either non-existent or extremely costly. As such, data at a region as small as ERPC's is difficult to obtain. FHWA's Freight Analysis Framework (FAF) and Surface Transportation Board (STB) Waybill data aggregates flows up to larger geographic regions which represent areas much larger than what could be considered useful for ERPC's purposes. ODOT has purchased REEBIE TRANSEARCH data and made this available for MPO's transportation planning uses. The TRANSEARCH database models county to county level flows by mode, weight origin and destination. Other sources used for the commodity flow study come from US Army Corps of Engineers (USACE) Waterborne Commerce Public Use Database, ODOT's Office of Technical Services as well as FHWA's Highway Performance Monitoring System (HPMS). Other data sources were analyzed but found to be too highly aggregated to be useful for ERPC. As mentioned above, these additional sources include FHWA FAF and STB Public Use Waybill database as well as Global Trade Information Services (GTIS).

TRANSEARCH data for Erie County lists 208 separate commodity classifications, while appropriate for detailed analysis of specific commodities represents too detailed a scheme for understanding regional freight movements. Following the freight commodity re-classification scheme as outlined in ODOT's 2002 Freight Impacts on Ohio's Roadway System report, the TRANSEARCH data has been combined to create a more manageable output. The end result of the re-classification scheme is presented in Table 9, below.

Table 9: Commodity Group Classification

Commodity Group Code	Commodity Group Name	STCC Code Aggregation
1	Agriculture	1, 7, 8, 9
2	Metallic Ores	10
3	Coal	11
4	Other Minerals	13, 14, 19
5	Food	20
6	Non-durable Manufacturing	21, 22, 23, 25, 27
7	Lumber	24
8	Paper	26
9	Chemicals	28
10	Petroleum	29
11	Rubber & Plastics	30

12	Durable Manufacturing	31, 36, 38, 39
13	Clay, Concrete, Glass	32
14	Primary Metals	33
15	Fabricated Metal Products	34
16	Transportation Equipment	37
17	Miscellaneous Freight	40-48
18	Warehousing	5010
19	Hazardous Materials	49
20	Machinery	35
22	Rail Intermodal Drayage	5020
23	Air Freight Drayage	5030

The 208 distinct commodities found in Erie County were reduced to the 22 classes as listed above.

COMMODITY FLOW ANALYSIS RESULTS

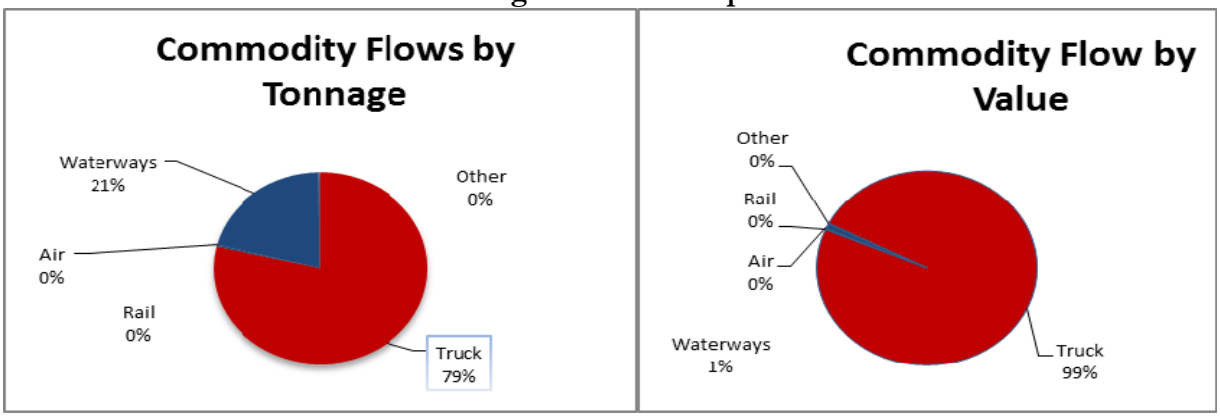
The results of the commodity flow analysis are presented in the following sections. While data for Lorain County was obtained from ODOT, none of the flows were able to be satisfactorily assigned to the Vermilion portion of the county. The TRANSEARCH data provides primary beginning and ending routes that correspond to the national highway network segment identification numbers. Analysis based on joining this data to the specific segments showed all flows in Lorain County being assigned to the City of Lorain. As such, Lorain County data was omitted from the proceeding analysis. This is to say that all figures presented below are restricted to the Erie County portion of the ERPC region.

Totals

Aggregate analysis of the TRANSEARCH data shows that 6.9 million tons of freight, with a value of over $5.78 billion originated in Erie County. Trucks account for over 80% of the outbound freight by weight, and over 98% of the exports by value. Inbound mode-split shares are similar: of the 2.9 million tons of freight entering the region, 2.2 million tons arrive via truck and are responsible for over 99% of the value of the $6.94 billion worth of imported goods. The cargo entering the region is significantly more valuable (on a dollar-per-ton basis) than that of the commodities leaving the region. Imported freight transport is typically associated with providing commodities to the local area for end-use or intermediaries in production processes. As such, they tend to have a higher value– especially when considering the biggest portion of exports are minerals (which tend to have a low price per ton).

Over four million of the nearly seven million tons of freight leaving Erie County remain in Ohio and 2.1 million tons are destined for Michigan. These two states represent over 88% of Erie County's export volume. The next biggest trade partner is Canada. Ontario receives over 90% of the 88,500 tons destined for Canada (1.3% of Erie County' total exports). Freight flow forecasts estimate that by 2030 Erie County exports will have risen to 7.43 million tons - a growth of approximately 6% over the 20+ year period. Imports are also expected to rise to 4.07 million tons by 2030. Figure 13, below, displays the breakdown for all freight into and out-of the region.

Figure 13: Mode Split



As the Figure shows, truck-based trips dominate the freight based movements for the region regardless of whether they are compared by value or volume.

Figure 14 displays a map of trading partners and their respective share of the outbound flow of commodities. Those states shown with the shaded white have no outbound flow data associated with them. The darker states receive higher tonnages of goods from Erie County, and as expected, those states nearest Erie County experience higher volumes. Figure 15 displays the forecasted flows for 2030 for exports originating from Erie County.

Figures 16 and 17 display inbound trading partners and their current and forecasted flows. In similar fashion as Figures 14 and 15, shaded white states and provinces have no flow data associated with them. Similar patterns of trade are exhibited in import flows. The majority of the goods flow from those states and provinces more closely located to the ERPC region. Figures 19 and 20 display the modal split for each trading partner for exports and imports respectively. Figure 19 displays the modal split of exported tonnages that originate in Erie County. The majority of nearby states experience almost all shipments arriving via truck. It is not until the extreme periphery that rail experiences a higher utilization (i.e. British Columbia, Alberta, New Brunswick, etc.) In the US the patterns are very similar - most states across the US that send and receive goods from ERPC are shipped via truck. The difference between imports and exports mode split becomes most apparent when looking to further provinces in Canada. A much higher percentage of Canadian imports are shipped via rail (when compared to those goods originating in ERPC and destined for far-away provinces in Canada.

Figure 14: Exported Trade Partners

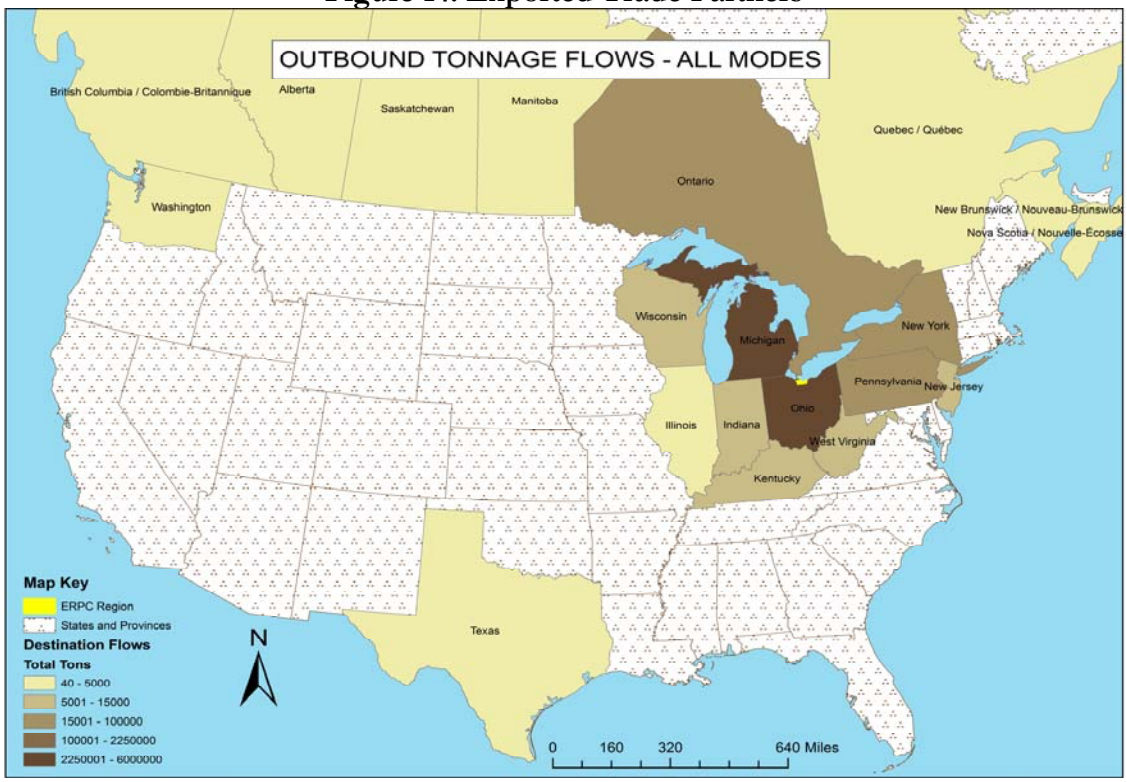


Figure 15: Forecasted Export Volumes

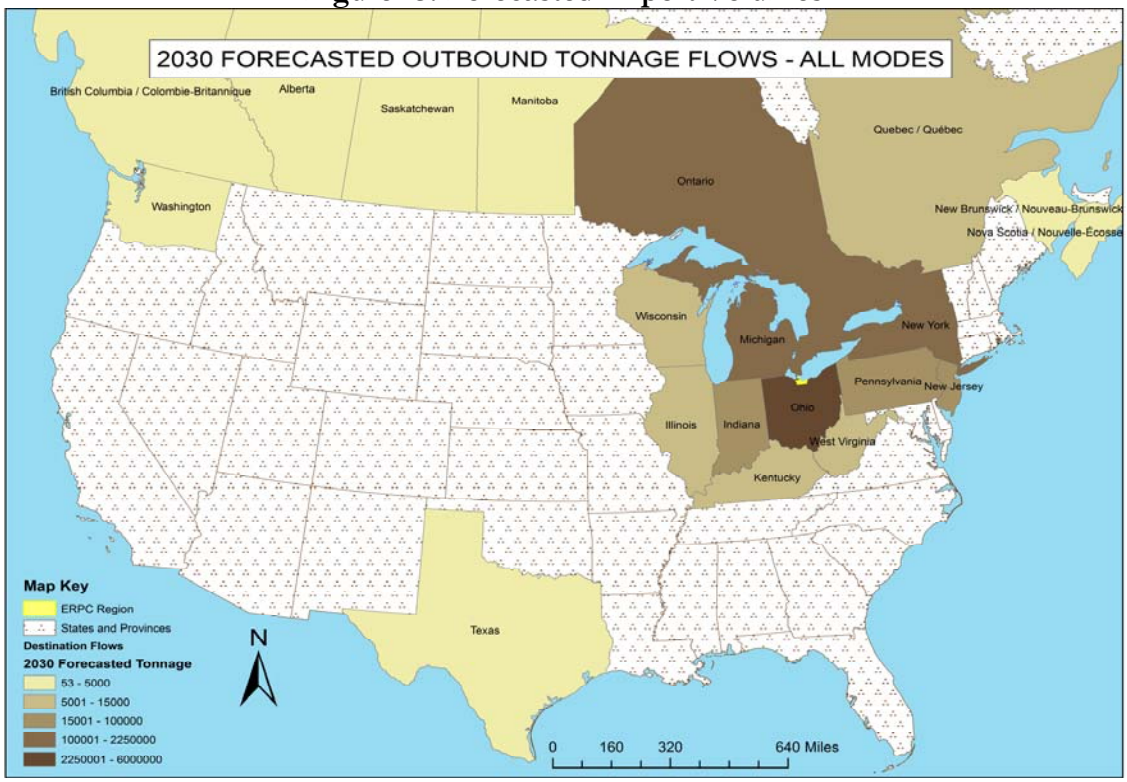


Figure 16: Import Trade Partners

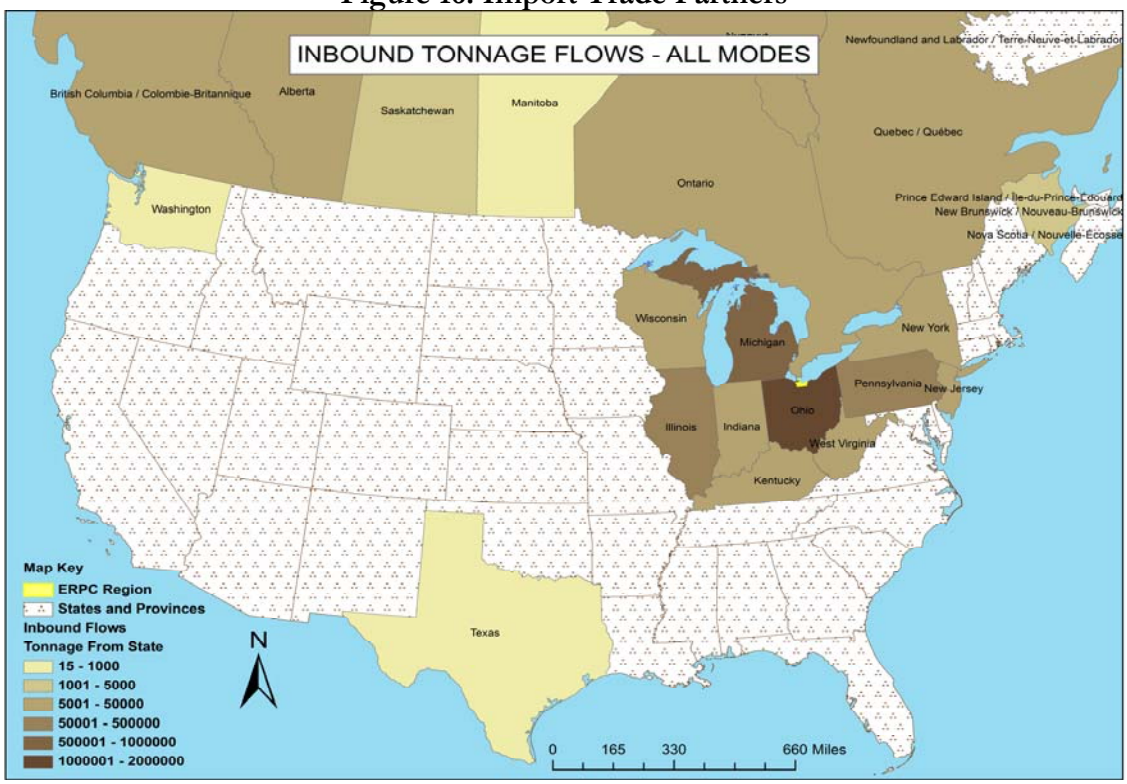


Figure 17: Forecasted Import Volumes

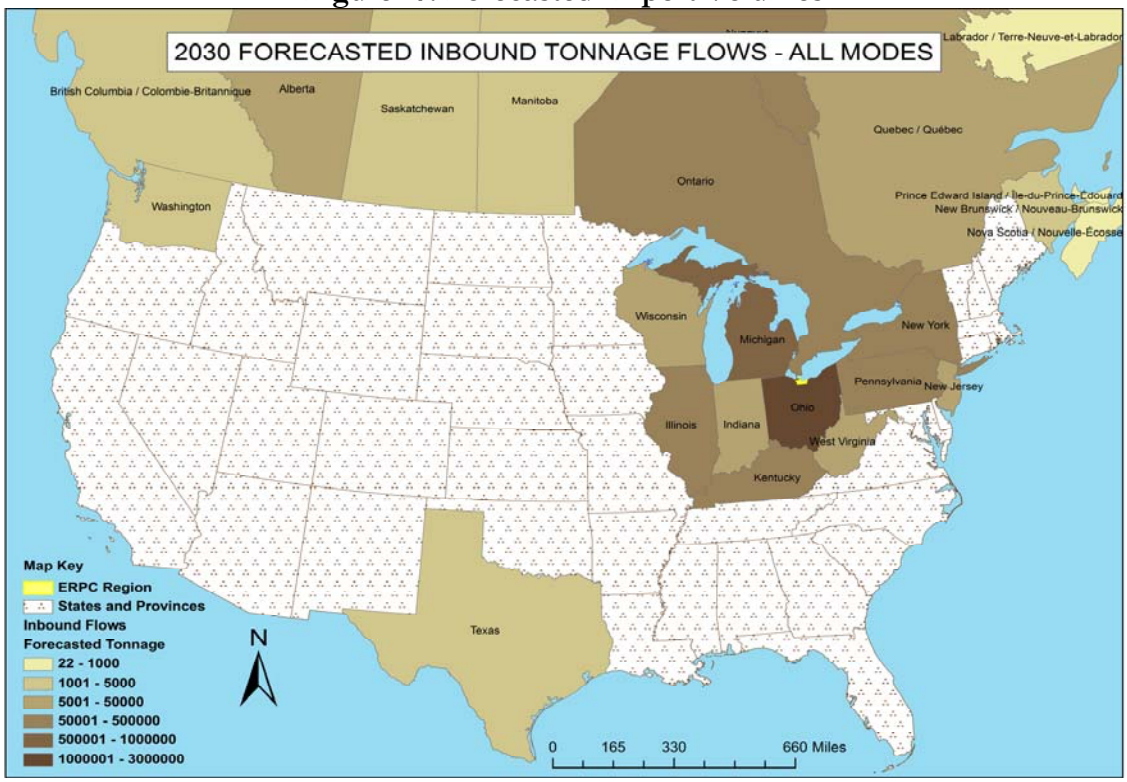


Figure 18: Export Flows Mode Split

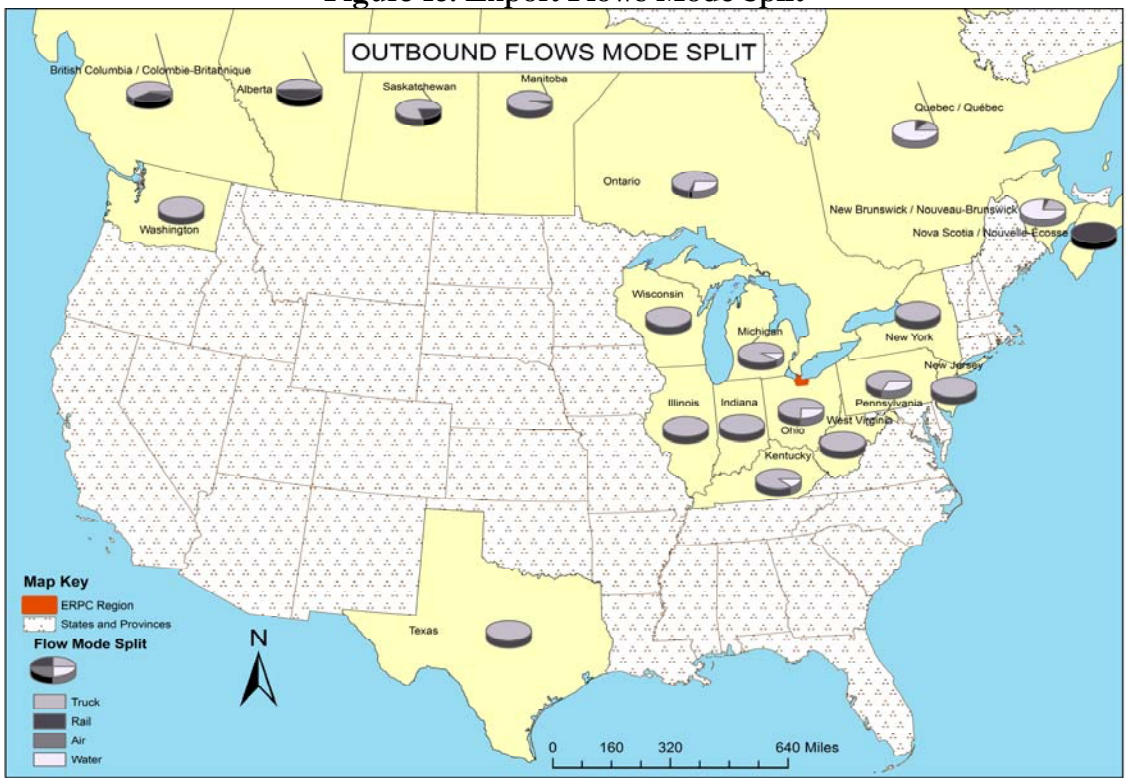
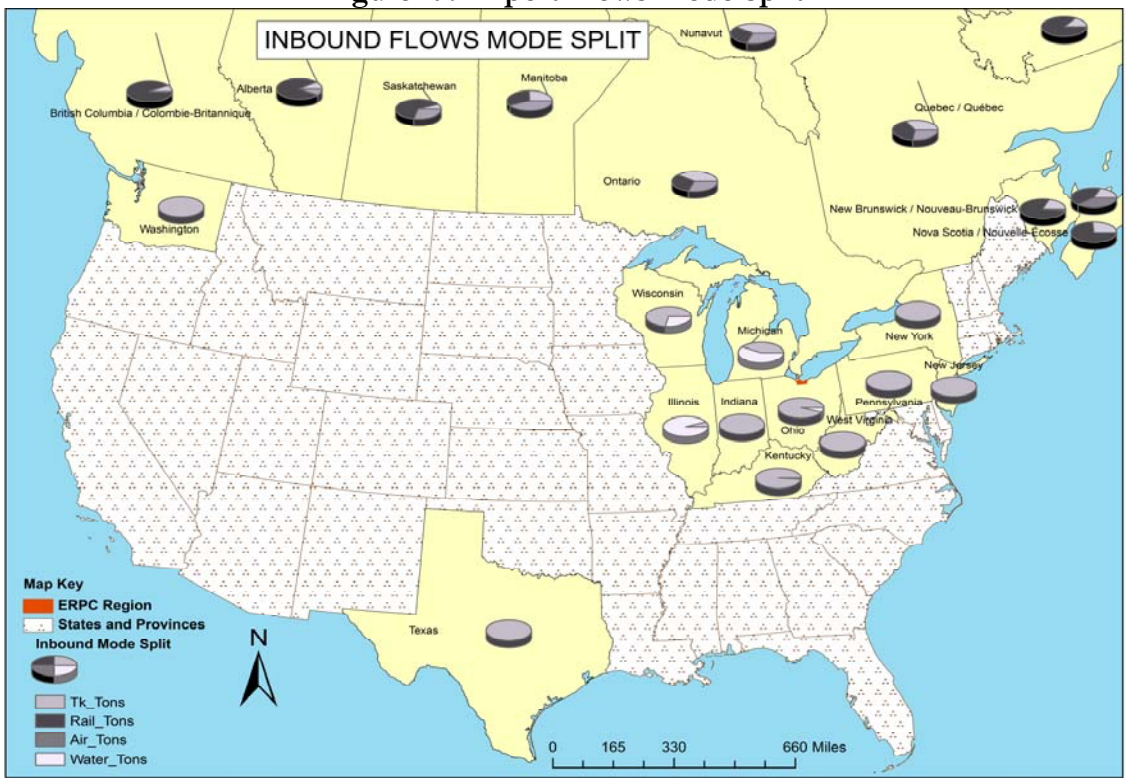


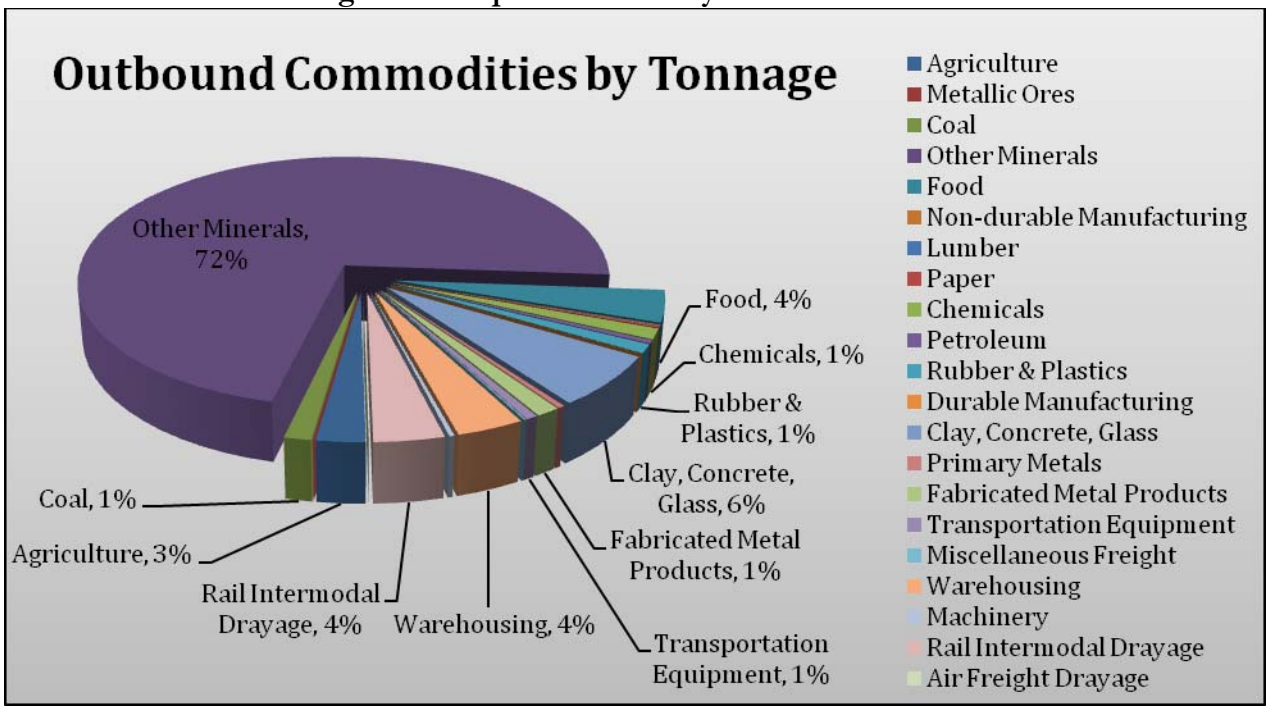
Figure 19: Import Flows Mode Split



Outbound Commodity Flows

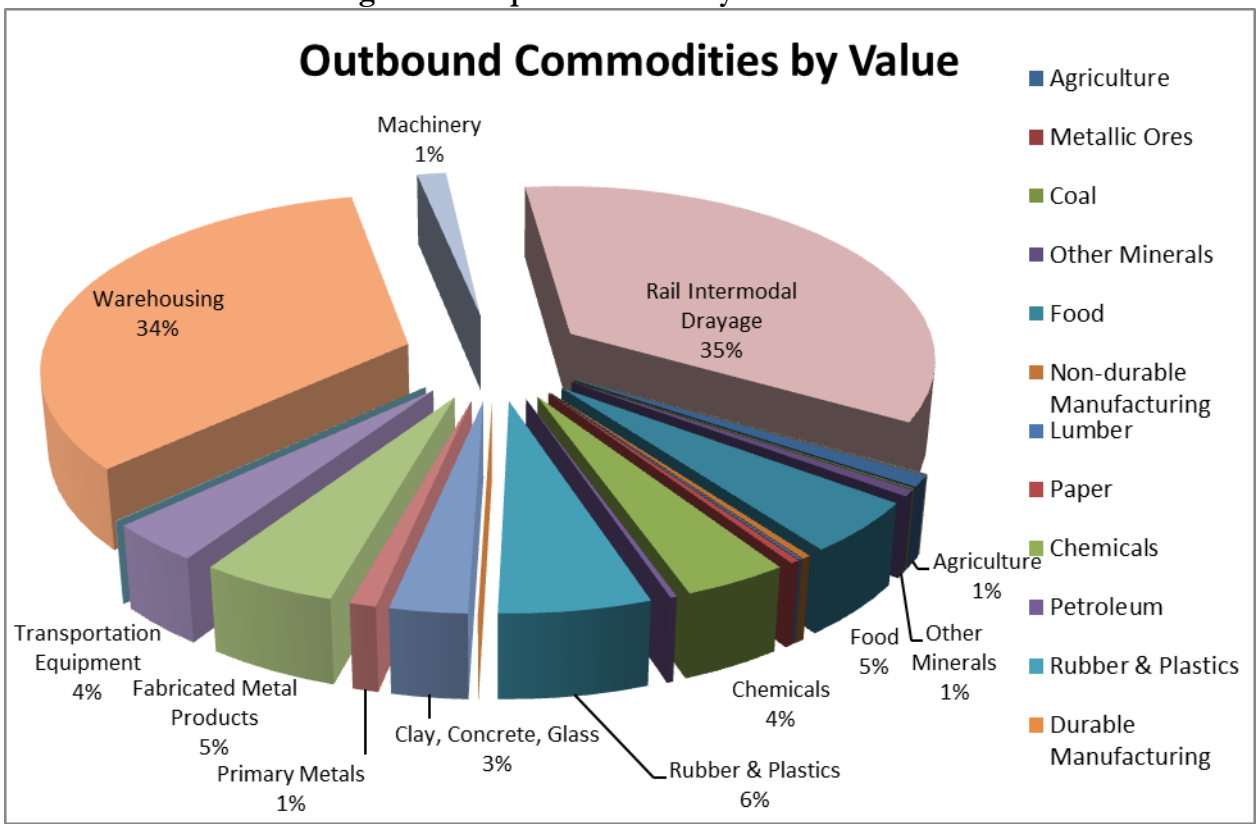
Figure 20 illustrates the region's largest exported good to be 'Other Minerals'. More than 3 million tons are exported to Ohio and over 1.76 million tons are exported to Michigan. Shipments of minerals within Ohio total 2 million tons via truck and 1 million via water. Of the 1.76 million tons destined for Michigan, 1.74 million travels via truck, while the remaining 200,000 travel on water. The majority of the freight volumes originating in the area are tied to the mineral industry.

Figure 20: Export Commodity Share - Volume



When analyzed according to value, the outbound commodity mix becomes quite different, as shown in Figure 21. 'Warehousing' and 'Rail Intermodal Drayage' related commodities present the majority of the regions exports. Warehousing related exports are shipped entirely via truck. Warehousing related exports from Erie County are worth an estimated $1.9 billion; 42% of which was shipped within Ohio; $160 million to Chicago, Illinois and $123 million to Pennsylvania. Rail Intermodal Drayage related shipments carried $2.03 billion worth of goods - 60% within the state of Ohio, and 35% to Michigan. All rail intermodal drayage related shipments were also carried via truck out of Erie County. Figure 21 displays a more robust picture of the region's freight export industry. Separating the data by volume and value is important as it provides insight into the locale's freight industrial mix.

Figure 21: Export Commodity Share - Value



Inbound Commodity Flows

Figures 22 and 23, in similar fashion as Figures 20 and 21, display the breakdown of imported commodities by volume and value respectively. A much broader mix is evidenced in both sorting schemes; consistent with the notion that inbound goods are utilized for end-consumption and as intermediaries in various local production processes. The most imported good by tonnage, other minerals, experiences approximately a 65%/35% truck/water mode split. Warehousing related equipment is entirely shipped in via truck, as are over 99% of agriculture goods.

In terms of value, as evidenced by Figure 24, rail intermodal drayage and warehousing related shipments account for over 84% of all value imported into the region - both solely shipped via truck.

Figure 22: Import Commodity Share - Volume

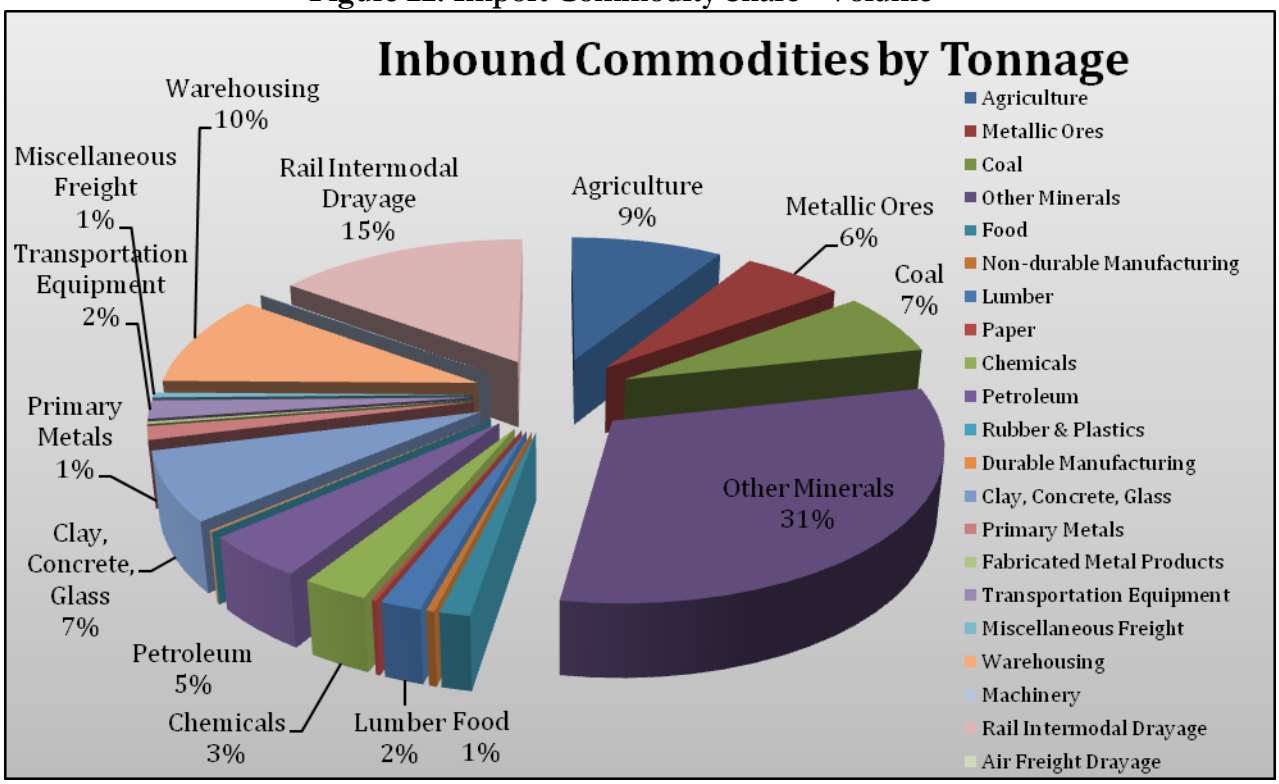
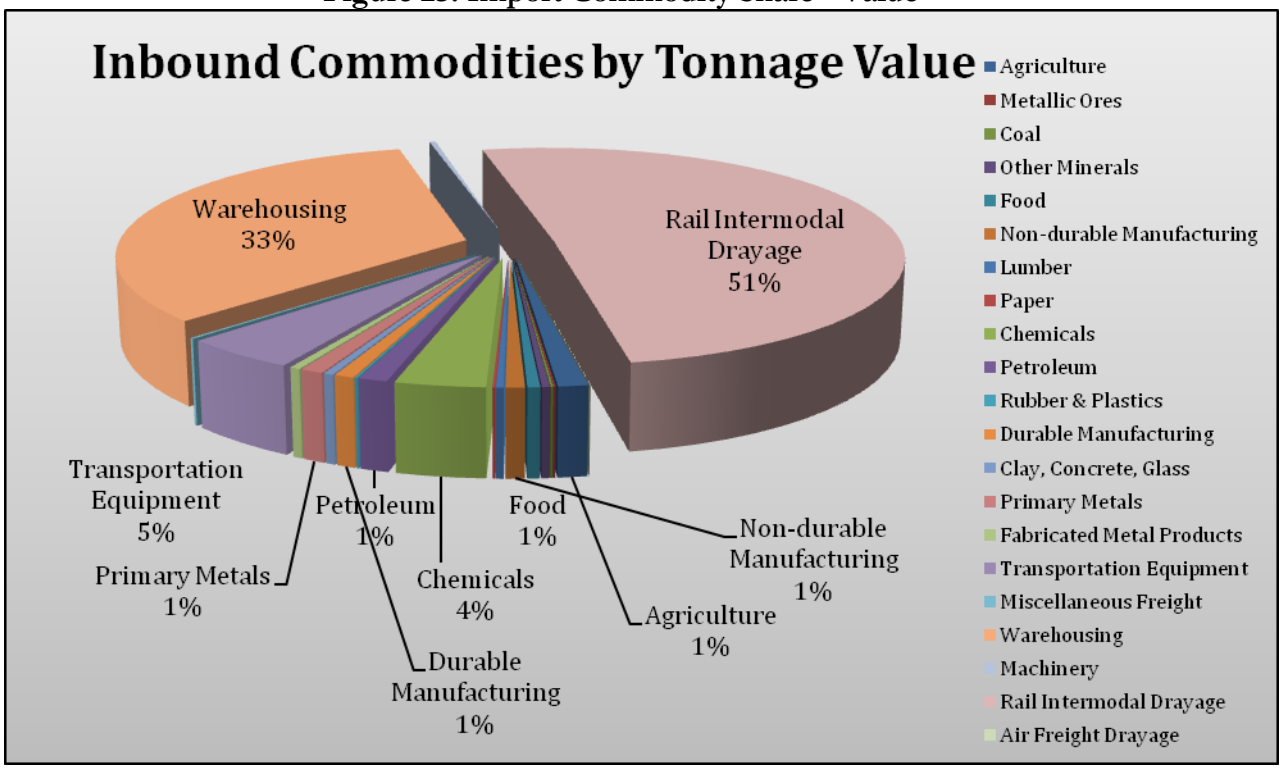


Figure 23: Import Commodity Share - Value



Trucks

Of the nearly 7 million tons of freight originating in Erie County, 5.5 million tons travel out of the county via truck. Of the truck freight that leaves the county, 54% (3,013,432 tons) remains in the State of Ohio. According to the dataset, more than 376,680 truck trips originated in Erie. Average truck values were highest for trips to Ontario; the average truck trip to Ontario was valued at $435,474. There are an estimated 2,640 trips to Ontario originating in Erie County annually. Trips to British Columbia ranked second in terms of value, averaging $279,129 per trip; the frequency of travel is, however, much less than that of Ontario. An average of 17 truckloads per year emanating from the ERPC region is destined for British Columbia. Ohio based truck trips, as expected, make up the majority of trips, at over 63%. Forecasts for the year 2030 estimate Ohio-based truck trips will experience the most growth in terms of tonnage. The forecasted tonnage for 2030 for Ohio based trips originating in Erie County are estimated to grow by 20% to 3.7 million tons annually. Mode share, in terms of volume, is forecast to grow from its current level of 80.5% of freight to 87%. Other Minerals make up the majority of truck loads leaving the region; 3,821,476.6 tons on 157,204 truck loads. The second largest good (by volume) shipped out of Erie County via truck is the group 'Clay, Concrete and Glass' at half a million tons. As shown in Table 10, nearly half of all truck loads originating in Erie County are mineral related.

Inbound trucking is responsible for 74% of the volume into Erie County and 99% of the value. Other minerals account for 26% of all trucking. While other minerals imported into the region account for nearly 64% of weight, they are worth less than one-tenth of 1% of total value of imported goods. Around 20% of truck volume is utilized carrying rail intermodal drayage, which represents 50% of truck imported goods' values. Forecasts for other mineral imports estimate that by 2030 imports via truck related to this commodity group will fall to 16% of all truck based imports. Rail intermodal drayage is expected to increase to nearly 28% of truck based imports.

Table 10: Top Five Outbound/Inbound Goods via Truck

Outbound Goods - Truck			
Commodity	**Tons**	**Value ($)**	**Loads**
Other Mineral	3,821,476	24,157,096.5	157,204
Clay, Concrete, Glass	447,666	168,390,268.5	27,601
Rail/IM Drayage	256,313	2,034,162,707.7	20,631
Food	246,703	229,666,080.8	10,779
Warehousing	244,653	1,941,627,822.5	11,912
Inbound Goods - Truck			
Commodity	Tons	Value ($)	Loads
Other Minerals	593,757	3,588,631.8	24,426
Rail/IM Drayage	443,397	3,518,896,974.9	36,574
Warehousing	292,008	2,317,441,513.2	14,210
Agriculture	263,732	82,232,993.5	17,972
Clay, Concrete, Glass	186,134	25,701,682.5	11,801

Rail

Exports from Erie County via rail are predominantly transportation equipment, at 62% of total rail cargo export volume. Agriculture products rank second, with 16% (of the total). Total exports via rail by volume were 3,107 tons worth $15+ million. Transportation equipment goods originating in Erie County totaled an estimated $14 million, or 93%.

The most imported good into Erie County via rail by volume and value is lumber products. The region consumed $3.3 million worth of lumber (11,080 tons) - representing 33% of all goods imported via rail. The value of all rail imports totals $9.2 million. Transportation equipment is also imported fairly heavily - $2 million worth.

Table 11: Top Five Outbound/Inbound Goods via Rail

Outbound Goods - Rail			
Commodity	Tons	Value ($)	2030 Forecast
Transportation	1924	14,337,783.4	2,542
Chemicals	215	304,118.8	241
Machinery	122	229,239.2	313
Agriculture	506	57,984.4	569
Rubber/Plastic	19	50,798.9	30
Inbound Goods - Rail			
Commodity	Tons	Value ($)	2030 Forecast
Lumber	11,082	3,298,186.9	10,513
Transportation	1,008	1,948,108.5	1,332
Primary Metals	2,027	1,341,830.1	2,418
Chemicals	3,520	1,080,270.9	3,953
Misc. Freight	3,077	506,239	5,289

Air

Exports from Erie County via air are minimal. Only four commodity groups are shipped by air out of the county for a total of 94.4 tons. The commodities (and share of volume) are: food (66%), other minerals (15%), petroleum (11%) and agriculture (8%). Exported goods by air total around $75,000 with food being the most valuable good.

Erie County imports two goods via air: transportation equipment and non-durable manufacturing related goods. Forecasts show imports of these two goods to remain relatively constant.

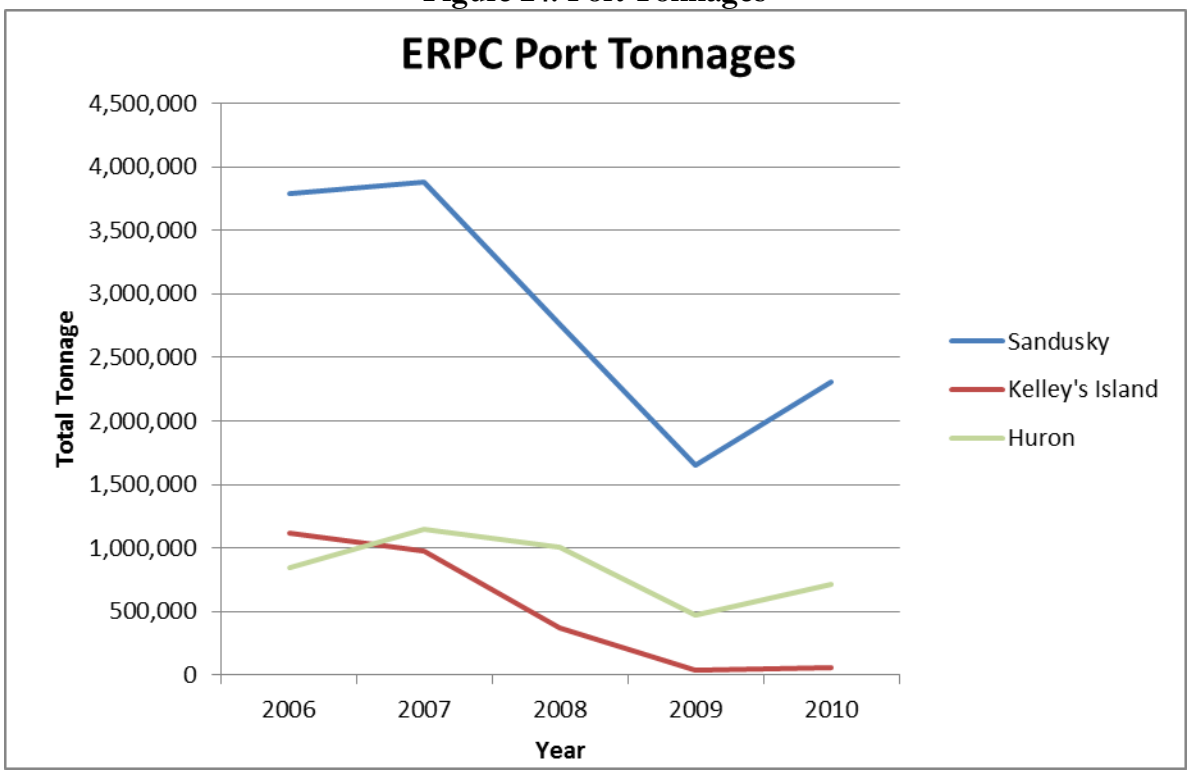
Water

Five commodities are listed as being exported from Erie County via water: other minerals, coal, food, agriculture and petroleum. Total tonnage exports via water totaled 1,318,797 tons worth an estimated $65,392,000. Food presents 70% of the value of goods shipped on water. Other minerals and food exports are expected to fall by approximately 32% and 15% respectively by 2030. Agriculture and Petroleum exports are expected to increase by 16% and 14%.

Imports via water to Erie County total 740,000 tons with a value of $41,730,000. Less than half of all waterborne shipments, by value, are related to other minerals; 16% of waterborne value comes

from coal and 15% is related to metallic ores. Forecasts put other minerals growing by 23% in 2030; coal shipments are expected to grow by approximately 410% and metallic ores by 36%. Figure 24 displays USACE waterborne commerce data from 2006 to 2010 for the three previously discussed ports in the ERPC region.

Figure 24: Port Tonnages



Additional Source: Miami Valley (MVRPC) 2006 Freight Study – Chapter 5 Freight Movement

STAKEHOLDER INVOLVEMENT

ERPC and GPD Group undertook an extensive outreach effort in order to gather both private and public sector input. Due to the timing of the outreach effort during the peak season for freight moving businesses, private sector participation was limited. However, several people contacted stated that they would be willing to participate after the first of the year.

PRIVATE SECTOR OUTREACH

GPD Group emailed and called over 90 freight generating businesses to invite them to participate in a private sector working group held on November 29, 2012 at the Bowling Green State University – Firelands Campus. Of those contacted, the Firelands Regional Medical System participated in the freight roundtable. The Director of Materials Management conveyed much information regarding the importance of freight to the hospital system.

GPD Group presented an overview of the economic profile discussed in this report and discussed global and national freight trends. The majority of the time was used to discuss the specifics of the Firelands health system's freight movements.

- The Firelands Health System is the largest employer in Erie County. They receive shipments from FedEx three times per day and UPS two times per day. They receive "time sensitive" shipments such as spine transplants, harvested veins and items that must be delivered quickly.
- Firelands has facilities throughout the region; however, the facilities on SR 4 are impacted the most by seasonal traffic and construction. It is important to coordinate projects so that alternate routes are not impacted at the same time as this could be detrimental to the health systems business.
- Firelands Regional Medical Center is also affected twice a day due to a nearby school. It was suggested that in a long range plan that SR 4 should be prioritized. An opportunity to coordinate a Safe Routes to School travel plan with the needs of the area businesses exists.
- Firelands is heavily dependent on air freight and truck delivery and has been impacted by fuel surcharges.

In the Spring of 2013, additional private sector outreach was completed by surveying various employers throughout the ERPC region including major employers such as Cedar Fair L.P. (Cedar Point Amusement Park), MetalTek International, Bettcher Industries, Inc., Ventra Sandusky, LLC., Kyklos Bearing International (KBI), and Freudenberg-NOK. Highlights from those surveys were centered on a theme that a company's success and profitability is directly tied to the ability of its supply chain to run efficiently and cost-effectively across all or some modes of transportation; therefore, minimizing the cost of doing business. For example, a majority of companies surveyed indicated that the national shortage in truck drivers, rising fuel prices, and the projected shortfall in future transportation funding will have a dramatic impact on business. Many of the surveyed companies not only found the roadway network critical to operations, but also their ability to access and utilize other modes such as rail, water, and air. From the responses, it can be gleaned how important a trained workforce, and sound multimodal infrastructure is to the Eric County economy.

PUBLIC SECTOR OUTREACH

The public sector outreach effort involved GPD Group contacting approximately 45 public officials and employees engaged in the ERPC region. The list included county commissioners, city staff, ODOT staff, FHWA staff and state and federal elected officials. Of those invited, 18 participated.

Since the public sector group attendance was much larger, GPD Group led a discussion that began by highlighting information obtained from the economic analysis and global freight trends. As the goal was to gather information from the participants, GPD Group started the discussion by asking the group, "Where would the group rate logistics in terms of importance in the region?"

This immediately prompted discussion regarding how the region is working with NASA Plum Brook. Discussed further in the interview summary with NASA Plum Brook the facility is a one of a kind testing facility. However, current access is only by truck. Payloads must reach the area and land at Cleveland-Hopkins International Airport and be moved by truck to the facility. Efforts to look at shipping cargo into the Port of Huron and then moving the payload into the NASA Plum Brook facility is currently being evaluated. Regardless of method of movement, costs to move the payloads are $80,000 to $120,000 one-way. Several in the area believe that a runway at the facility would make the location more attractive for complementary businesses to locate in the area by minimizing risk to the cargo during movement.

The discussion then moved on to logistical strengths in the region. The Ohio Turnpike was certainly the first listed. The Port of Huron, regional connections to Canada via Detroit, Michigan and Buffalo, New York and the Port of Sandusky were also listed as strengths. The acres of available property, central location to Cleveland and Toledo, Norfolk and Southern's Bellevue Facility, Lake Erie, US 250 and the shipper Triple Crown were rattled off as regional logistic assets.

One of the region's shortcomings is good north-south connectivity. While the discussion regarding the north-south connectivity primarily focused on the possible increase in tourism from central and western central Ohio; the discussion also applies to the attractiveness of the region to businesses that need connectivity to central Ohio. It was discussed that SR 4 needs to be improved due to capacity and safety issues such as deep ditches along the roadside. The group remarked that it is perceived as dangerous to drive on SR 4 between Sandusky and Columbus.

In addition to the need to improve SR 4 being discussed, it was also stressed that US 250 could be improved to provide better north-south connectivity.

Some discussion of activity in the area regarding natural gas fueling stations took place. ODOT Central Office staff stated that fuel prices is increasing demand for natural gas vehicles and fueling stations. An attendee stated that the landfill was looking at natural gas conversion and a fueling station as they spend $5k per week on fuel.

The discussion then shifted to the oil and gas industry. Local (statewide) industry does not supply the oil and gas industry to the degree the state had hoped. Sand used during the hydraulic fracturing process, or frac sand, is coming from Wisconsin and Minnesota and could be a huge opportunity for the Great Lakes if the frac sand could be moved via lake vessels.

One of the most telling and interesting discussions focused on this scenario… "If you had an extra $100 million dollars, where would you spend it?" The statement was qualified by stating that police and fire, social services and other community obligations had been met and this was funding for additional infrastructure needs to support the region. This activity was used to help glean what the local priorities for infrastructure were for the area.

Participants were eager to use $30 million to build the runway at the NASA Plum Brook facility. One participant believed the other $70 million should be used to develop the land around the facility. It is clear that the NASA Plum Brook facility is viewed as a regional, state, national and international asset and that investment to leverage NASA Plum Brook will continue to be a regional priority. It was stated that the potential exists for foreign investment to help finish needed infrastructure such as an intermodal dock at the facility.

Another infrastructure focus area was to use $100 million to widen SR 4 and US 250 to improve north-south connectivity. ODOT noted that SR 4 is a crash hot-spot, with portions of SR 4 ranking 20th statewide in terms of high crash locations. According to ODOT it has dropped on the list; however, it is still perceived as unsafe. Additionally, SR 4 in downtown Sandusky is difficult travel due to capacity. It was also discussed that the area needs to be redeveloped to get more people to the area and to include more parking.

US 250 is lined with retail and is experiencing more bicycle traffic in the summer. ODOT has invested money in this corridor but more investment is needed to improve US 250.

Based on the discussion, it was clear that NASA Plum Brook is viewed as the top priority by some attendees and that north-south connectivity is viewed as a detriment to the region. Ultimately, the discussion provided insight into the region's priorities and perceived constraints to realizing more investment in the region and growing the population – both identified as measures of success for the attendees.

NASA PLUM BROOK

GPD Group sub consultant, SF Global Insights interviewed staff at NASA Plum Brook on November 28, 2012. Participants in the meeting included: David Taylor, NASA Plum Brook Deputy Director; Bud Vance, NASA Plum Brook Institution Manager; Jerry Hill, NASA Plum Brook B2 (Engine Testing) Facility Manager; Carrie Whitaker, ERPC; Nicole Grohe, ERPC; and, Bob Fredman, SF Global Insights.

The facility handles testing for both domestic and international customers. Facilities such as SPF and B-2 are the only facilities of their kind in the world. Therefore, it is not a question of customers choosing another facility for testing; rather they may choose smaller scale tests of components or may choose not to test in simulated space conditions.

Rocket stages, large spacecraft components and payload fairings are among the aerospace components tested at the facility with the most complex logistical requirements, many of which are quite large. Payload fairings can be moved by only the largest freighter aircraft, such as the Antonov AN-124, while the largest rocket stages can only be moved by water. Rocket stages (with their shipping containers) can measure over twenty two feet in diameter and forty feet in length. Water

shipments have been received through the Port of Cleveland and serious consideration has been given to the Port of Huron, which can accommodate ocean-going barges.

Ground movement from air or water ports require special permitting, a fleet of escort vehicles, specialized transporters. These moves result in traffic being stopped sometimes in both directions and require utility crews to move low-hanging obstructions such as utility wires and signs. The cost of a one-way move from the Port of Cleveland can be as high as $120,000.

While payload fairings have no sensitive electronics, rocket stages and spacecraft components may have many sensitive electronic components and damage caused by the jarring of an aircraft landing or road transport could pose a significant risk.

Construction of a runway on the facility ground to handle these aircraft is in NASA's long range plan, but is unfunded. The runway would help the facility attract more satellite testing business that is currently very limited but potentially very lucrative. A TIGER grant application was submitted to the USDOT by the Ohio Department of Transportation, Erie County Commissioners and Erie County Metropolitan Planning Organization, requesting $60.2 million. Local officials feel the runway would not only sustain Plum Brook and NASA Glenn jobs, but could create an additional 1,451 jobs with the development of adjacent land. A Job Ready Site adjacent to Plum Brook creates advantages for a client to co-locate, including reduced logistics cost and better integration of testing and assembly.

The facility receives regular shipments of supplies and materials in addition to testing items. Weekly truckload volume can reach 500 per week at peak activity, but is much lower most times of the year. The facility is relocating the main gate to Scheid Rd and US 250, which will both eliminate truck traffic through a residential neighborhood and provide trucks with more direct route. The project, including the intersection, is fully funded by NASA. ODOT's analysis has shown a flashing yellow light would be sufficient, yet NASA has safety concerns and has requested full traffic light and turn signal (operational at a minimum during peak hours).

The aerospace industry is evolving, with an increase in commercial and international launches, which create opportunities for Plum Brook. NASA officials forecast an average of two tests per year of payload fairings as well as other large spacecraft components. Continued rocket stage testing is also projected. These tests are typically large efforts, with durations lasting from three to 18 or more months. In addition, two to three smaller test projects are expected annually.

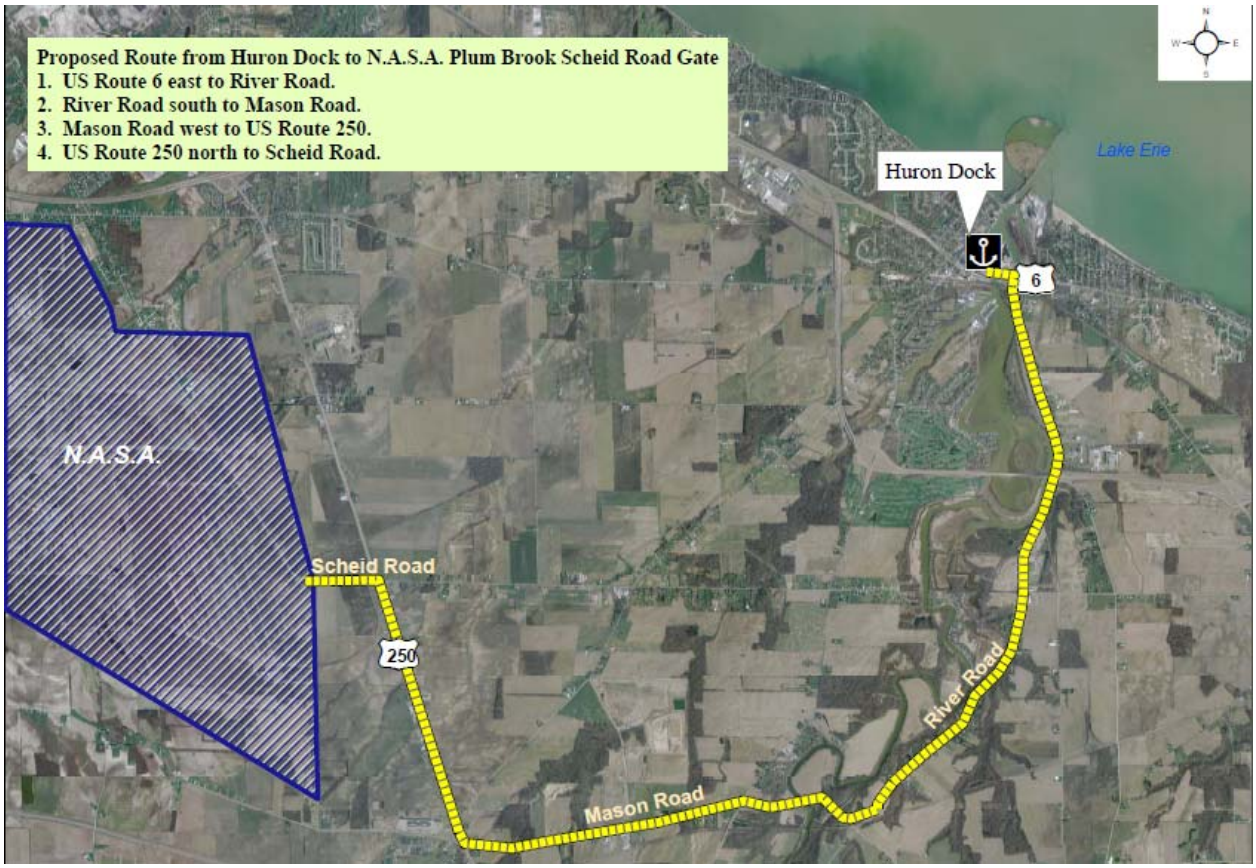
NASA officials feel their Erie County location provides unique advantages. The key strengths of the region are:

1. Availability of utilities, both electricity and water;
2. A specialized and highly skilled workforce is needed at Plum Brook. Ohio-based universities (Case, Ohio State, Kent State, Bowling Green, Wright State, University of Dayton and University of Toledo) provide an exceptional talent pipeline. In addition, the University of Michigan and Purdue University both tout top-five rankings of their Aeronautical Engineering programs, according to the US News and World Report 2012 rankings;
3. Supplier base. Both aerospace firms and diversified firms that support both the aerospace and automotive industries; and,

4. Transportation infrastructure. The interstate system provides efficient access both for goods and the workforce. Proximity to ports on Lake Erie is essential to the facility's business model.

The Port of Huron is a strong potential asset but improvements are needed to ready it for Plum Brook's mission. The terminal itself is controlled by Norfolk Southern. A former grain facility on the site has been torn down. Road access from the facility takes the shipment through the heart of Huron. Figure 25, highlights a preferred route is from Huron Port following River Rd – Mason Rd – US 250 is under consideration and a one way move is estimated to cost $80,000. NASA and local officials feel that investment in readying this route for continuous moves could increase their business activity – lowering transportation cost and risk. NASA officials are willing to participate in further ERPC logistics initiatives and discussion groups.

Figure 25: Preferred Future Freight Route for NASA Plum Brook



RECOMMENDATIONS

Freight-related industries account for over 50% of the regional GDP; therefore, continued support of the movement of freight is critical to the economic health of the ERPC region. Ultimately, the goal of this study is to support local industry and economies through the planning of sound multi-modal infrastructure, workforce development strategies and encouraging investment in freight-oriented technologies/innovations. By understanding the freight trends presented in this report, the ERPC MPO can better address better align with federal policy and future potential funding opportunities. This recommendations section will highlight areas of focus for the ERPC MPO moving forward.

STATE OF GOOD REPAIR

Roadways

As discussed, the MPO region is home to several strong freight corridors including SR 2, SR 4, US 250 and I-80/I-90 (The Ohio Turnpike). An analysis of road quality shows better infrastructure conditions than similar routes in Ohio. Furthermore, the MPO region has excellent east-west connectivity to east coast and Chicago with the Ohio Turnpike. In addition to the Ohio Turnpike, throughout discussions with both the public and private sector representatives, SR 2, US 250 and SR 4 were discussed as critical highway infrastructure to the region.

SR 2 - has adequate capacity and is in very good condition. As discussed above, of ERPC region's nine major state routes, SR 2 experiences the most traffic (both passenger and truck) - far surpassing traffic experienced on the other state routes in the region. The average roughness rating (IRI) for ERPC State Routes is substantially better than the weighted average for all Ohio State Routes; therefore, recommendations for SR 2 are to continue to maintain this corridor in a state of good repair.

US 250 - is a critical piece of infrastructure to the Erie County region. ERPC should support and advocate for projects along US 250 that protect or enhance the capacity of the roadway. US 250 serves as a gateway to Erie County's tourism industry and supporting retail. During the public sector stakeholder meeting, it was suggested that it would require hundreds of millions of dollars to improve both SR 4 and US 250 by adding more lanes.

US 250 does have crash locations in ODOT's top 500. Based on ODOT's new comparative rankings, US 250 ranks relatively low. However, one section of US 250 (ERI-US-250; 3.64 to 3.74) is ranked 44 in the Urban Non Freeway category. This coupled with the rankings of the adjacent intersections and intersections could qualify US 250 for safety funds to study the corridor. Additionally, US 250 is used by bicyclists in both the peak tourist seasons and throughout the year presenting an opportunity to review the corridor in a multi-modal context.

Widening US 250 is likely not going to occur within Erie County due to adjacent development and railroad constraints. However, maintaining and improving congestion on US 250 can be reached through support of access management techniques; improved signal timing and coordination can offer additional capacity and safety benefits. It should be noted, funding for the US 250 Corridor Project is currently under consideration in the last phase of the Transportation Review Advisory

Council (TRAC) process. If approved, access management, and safety and congestion measures will be implemented along the 4.1 mile corridor between Bogart Rd in Perkins Township and US 6 in the City of Sandusky.

A review of the Long Range Transportation Improvement Plan shows the following projects along US 250:

- US 250 – Between Bogart Rd and I-80/90 (5.3 miles)
  - Access Management Study
- US 250 – Between US 6 and Bogart Rd (4.1 miles)
  - Implementation of final recommendations of the US 250 Corridor Study
- US 250/Perkins Rd Intersection
  - Intersection project w/signal improvements, drive revisions and turn lane revisions

As the facility that carries the second most volume of traffic through and to the County, the preservation and improvements in capacity within the US 250 corridor is critical to both freight dependent businesses and the tourism industry in Erie County.

SR 4 - is a two-lane highway that conveys an average of 9203 vehicles (8,446 cars, 757 trucks) daily. This state route carries more traffic than other similar state routes in Ohio which average an AADT of 6,915 cars and 459 trucks. The tourism attractions and trucks seeking to access the region's tourism based business as well as Ohio Turnpike likely contribute to the above average use.

As one nears downtown Sandusky, SR 4 is tough to get in and then get out quickly. If you look at SR 4 within Erie County, there has been significant investment in the medical industry and subsequent facilities. In order to support the medical industry and subsequent freight movements, it is recommended that Erie County focus on improving SR 4 from SR 2 to downtown Sandusky. Improvements to the right of way allowing for better traffic movement should be considered as well as improved busing services.

In order to balance the tourism industry demand on the transportation network, tourists should be guided towards US 250 unless their destination is along SR 4 or downtown Sandusky. A review of the Long Range Transportation Improvement Plan shows the following projects intersecting or along SR 4:

- Strub Rd – Between SR 4 and Old Railroad Rd (0.9 miles)
  - Preservation/Widening of existing 2-lane road to accommodate commercial truck traffic
- SR 4 – Between Perkins Ave and Monroe Street (1.3 miles/6 signals)
  - Retiming of traffic signals
- Strub Rd and SR 4 – 1,000 feet along each leg of intersection
  - Intersection improvements
- SR 99 and SR 4 in Groton Township – 1,200 feet along each leg of the intersection
  - Realignment of SR 99 and SR 4 to correct tight turning radius
- SR 4 – Between Wade Boulevard and SR 2 – 1.5 miles
  - 3-lane roadway expansion (add middle turn lane)

- SR 4 – Between SR 2 and I-80/I-90 – 4.6 miles
  - 3-lane roadway expansion
- SR 4 – Between I-80/90 and Erie/Huron County Line – 4.1 miles
  - 3-lane roadway expansion

Supporting the funding and development of these projects will support the tourism and medical investments in the region.

I-80/90 Ohio Turnpike - The Ohio Turnpike is a critical transportation asset in the region. However, the presence of a tolled facility in a region presents some issues for local roadway systems and users. In the peak of the summer in the ERPC region, there is more mingling of commercial and passenger traffic. Volumes at the interchanges within the ERPC region will increase by an approximate range of 63%-117% over the summer months. The influx of commercial and passenger traffic volumes impact the Region's roadways and portion of the Turnpike in terms of both maintenance and safety.

The impacts of commercial traffic, and increased safety concerns would support investment of ODOT funds from the recent bonding capacity created by leveraging the Ohio Turnpike toll revenues. ERPC should continue to support efforts to increase use of the Ohio Turnpike and to gain funding for routes affected by commercial traffic that should use the Ohio Turnpike.

North-South Connectivity to the ERPC Region - While SR 4 is not reaching its capacity, traveling to the MPO region via SR 4 and its attractions can be perceived as slow and unsafe. It is unlikely that SR 4 will be widened to four lanes or divided; it is recommended that opportunities to widen the existing lanes to 12 feet lanes, improved shoulder widths and passing zones should be explored.

The ERPC should review ODOT's Statewide Transportation Improvement Plan (TIP) to look for opportunities outside of the MPO area as well as follow TIP additions in their area where incremental improvements to a reconstruction or paving project can lead to improved safety and traffic flow on SR 4.

US 250 is a critical north-south route into the ERPC region. As noted by ERPC and stakeholders, access management, safety and congestion hampers US 250 operations. It is crucial that ERPC follow development in the area and preserve capacity and improve safety to allow for north-south connectivity into the region.

The following are roadway recommendations for the region to preserve the critical capacity needed for both freight and passenger cars are dependent upon the following actions:

- ✓ Support for the access management plan in the Long Range Transportation Plan;
- ✓ Investigate opportunities outside of the MPO region to enhance the safety and connectivity of the ERPC region to areas to the south (e.g. Routes to/from Central Ohio);
- ✓ Continue funding and support for the aforementioned projects found in the Long Range Transportation Improvement Plan that support the movement of freight industry in the region;

- ✓ Advocate for funding for maintenance and improvements made to the Turnpike interchanges, and adjacent roadways within the ERPC corridor;
- ✓ Examine signal coordination and retiming of corridors, especially SR 4 and US 250; and,
- ✓ Advocating for funding to support capacity preserving and safety oriented projects.

Rail / Intermodal

All active rail lines in the region are owned by Norfolk Southern Corporation (NS). Primarily due to truck driver shortages and rising fuel costs, more business are turning to rail as a means to move some or all of their cargo. Rail access in Erie County is currently limited. The Bellevue Yard operated by NS is outside of Erie County, but critical to the on-going success of industry within the ERPC region. Additionally, the Triple Crown Services terminal (NS Subsidiary), located near Sandusky, is an incredible asset within the region. It is recommended that the ERPC MPO continue with the following:

- ✓ Support infrastructure improvements that connect intermodal locations such as the Triple Crown terminal and the Bellevue Yard facility;
- ✓ Re-examine the NHS Facilities and Connectors in the region for potential improvements;
- ✓ Encourage grade separation projects when possible;
- ✓ Consider improvements like bridge clearance, intersection turning radii, and improved rail crossings when new projects are being proposed. Incremental improvements to improve access to transloading and intermodal facilities will continue to support these important connections to rail; and,
- ✓ Assist local industries with identifying and securing funding to assist with the necessary rail improvements/additions to translate more freight to rail.

Airports

ERPC is home to several small airfields, all are privately owned. There are a total of four listed airfields in the region: Griffing-Sandusky, Hinde, Kelley's Island and Wakeman. Griffing-Sandusky Airport will soon be closing and moving operations to Ottawa County. Exports from Erie County via air are minimal. Only four commodity groups are shipped by air out of the county for a total of 94.4 tons. However, during the stakeholder surveys that one company had utilized the Griffing-Sandusky Airport for air freight and would now source material from Cleveland or Port Clinton air facilities.

- ✓ Continue to monitor the impact of the closure of the Griffing-Sandusky Airport on local industry, and reach-out to support businesses when possible to offer assistance with logistical needs.

Ports

ERPC should support and advocate for on-going and increased funding for its regional ports. As previously mentioned, the Port of Sandusky and the Port of Huron are deep draft commercial harbors that generate over $50 million, and $12 million in annual revenue, respectively. Total tonnage exports via water totaled 1,318,797 tons worth an estimated $65,392,000. Imports via water

to Erie County total 740,000 tons with a value of $41,730,000. The potential for the growth of the regional ports is dependent on the following actions:

- ✓ Support dredging activities and advocate for continued funding;
- ✓ Advocate for funding to improve regional port infrastructure that supports economic activities and industries that utilize regular shipping activities; and,
- ✓ Examine further the modal connections to the water ports to improve connectivity and mode transfer.

NASA Plum Brook

Supporting NASA Plum Brook facility is a key objective of this study and the ERPC MPO. This asset not only has the potential to support the federal space program through the testing of space materials, but also the clustering and development of aerospace companies near the facility. Generally speaking, NASA Plum Brook is an underutilized asset, with incredible potential for developing considerable jobs in the region. Overcoming the challenging logistics will be necessary to fully achieve the potential for the NASA Plum Brook facility. The following themes are potential transportation recommendations to support freight movement and the facility:

- ✓ Support the development of a route from the Port of Huron to the NASA Plum Brook facility as previously shown in Figure 25. As roadway construction projects occur within the designated corridor, ensure design considerations are given to accommodate the largest footprint of material that could be transported to/from the Plumb Brook facility. (Although, the construction of a runway on the Plum Brook facility is ideal, supporting the development of an overland route is more economically feasible.);
- ✓ Advocate for the continued development of the Port of Huron to support waterborne freight; and,
- ✓ Encourage the utilization and build-out of the Jobs Ready Site (JRS) outside of the new Scheid Rd entrance on US 250.

ECONOMIC COMPETITIVENESS

Opportunities and Workforce Development

GPD sub-consultant, Regionomics®, reviewed transportation and logistics related occupations in the MPO region with some statistics only available for Erie County. The data did not reveal gaping holes in the demand vs. supply of works in these occupations. Two opportunities in light delivery truck and packing did show opportunity.

The fact that a degree is not required presents opportunities for workers willing to be trained to perform transportation and logistics functions such as light truck operation and packing. As identified in the discussion on Page 20, working with potential employees to develop "soft skills" such as dependability, self-control, flexibility, communication skills and the ability to work in team environments will help those succeed in a career in transportation and logistics.

A more specific opportunity in transportation is related to the national short-fall of truck drivers. The national short-fall of truck drivers was noted in the private sector surveys as having a

"dramatic" impact to business. Trucking is a difficult family life with long stints away from home and this fact alone often deters people from entering the industry. Another barrier is the fee to enroll and complete training courses. Often those willing to choose trucking as a career cannot afford to pay for school even though the fee may be reimbursable upon completion.

The success of getting workers to choose trucking as a career may involve working with potential employees to inform them about the hardships and benefits. Removing the mystery may help some enter into the industry that is clearly in need of truck drivers and help them succeed.

Improved economic competitiveness begins with a properly trained workforce. The potential to improve the region's economic competitiveness is dependent upon the following actions:

- Preparing workers for a career in any environment;
- Preparing workers with a focus on transportation and logistics; and,
- Connecting employers and employees to fill needed openings.

The Erie County Economic Development Corporation is spearheading an effort to engage the manufacturing base and various businesses in the area to better understand the "skills gaps" that inhibit economic growth. By collaborating with groups such as the Bowling Green State University (BGSU) Firelands, the Great Lakes Innovation and Development Enterprise (GLIDE), and the Erie Huron Ottawa Vocational Education (EHOVE) Career Center, the Erie County Economic Development Corporation will more closely examine the "skills gaps" in the local workforce and strive to develop programs to better train and prepare for individuals for high-skilled careers in the region.

The following opportunities are recommended for advancing workforce development in the region:

- ✓ Support the Erie County Economic Development Corporation's efforts regarding workforce development. A skilled workforce will enable the growth of industry in the area, and reinforce the importance of the freight network;
- ✓ Encourage the development and funding for freight-related skills and occupations, such as CDL licensing; and,
- ✓ Explore local business opportunities in the light delivery trucking and packing industries.

ENVIRONMENTAL SUSTAINABILITY

CNG/LNG

During the public sector stakeholder outreach meeting, the Erie County Sanitary Engineer discussed the fact that he had been approached to regarding converting his fleet to Compressed Natural Gas (CNG) combustion engines. He also discussed that he had been approached to discuss the capture of gas for sale or use in his converted fleet.

Per the Ohio Statewide Freight Plan and due to the changes resulting in the oil and gas market, the trucking industry is seriously considering adopting widespread changes and adopting natural gas as its fuel of choice. The cost savings would offset fleet conversions many times over. The industry is looking towards both CNG and liquid natural gas (LNG). Regardless, an opportunity to develop the

infrastructure along SR 2 and the Ohio Turnpike exists. Additionally, Erie County could position itself as a distributor of product.

The ongoing challenge is not awareness, but a tempered demand because there are not enough refueling stations and distributions centers. It is recommended that Erie County further explore natural gas infrastructure and begin to support efforts to develop or invest in the businesses that will be needed to support refueling stations, truck manufacturers, suppliers and distribution centers for natural gas. The following is recommended:

- ✓ Explore opportunities to convert Erie County fleets to CNG;
- ✓ Re-examine areas around the Turnpike as potential distribution centers; and,
- ✓ Support local business opportunities in the CNG and/or LNG markets.

PROJECT READINESS

Many of the projects required to support freight movements are often viewed as cost prohibitive or simply infeasible. Sometimes proposed projects to accommodate more personal vehicle traffic, need only to be viewed through the lens of the truck driver in order to positively impact freight movements. Improvements to lane widths, intersection radii and clearance projects can immensely improve the ability of trucks to navigate roadways and make the region more desirable for freight dependent businesses.

In the case of the ERPC several projects on the Long Range Transportation Plan will improve freight movements in the region. Some of the projects are lower in cost while others are multi-million dollar projects. Regardless ERPC should support and advocate for more funding to support these freight-related projects on the Long Range Transportation Plan. The projects not only provide various community benefits but support the freight dependent businesses.

- Perkins Ave and Cleveland Rd – 1,000 feet along each leg of the intersection
  - Safety Improvements to the Perkins Ave – Cleveland Rd (US 6) Intersection
- Old Railroad Rd – From Perkins Ave to Urbanized Boundary (1 mile)
  - Preservation/widening of existing 2-lane road to accommodate commercial truck traffic
- Perkins Ave – Between Camp Street to 50th Street
  - Signal upgrades – funded through the ERPC MPO (80%) and additional local funding sources (20%)
- SR 601/Downtown Milan – 1.3 miles
  - Access Management Study
- Ferry Service from Sandusky and Vermillion to Cedar Point and the Islands
  - Ferry Service – funded through Ferry Boat Discretionary Program
- Near Quarry –Between US 250 and SR 4 (0.8 miles)
  - New East-West Road Connection
- NASA, Plum Brook Research Station – Between US 250 and SR 4 (1,000 feet)
  - New runway with internal roadway network
- SR 60 – in Downtown Vermillion (1,500 feet of roadway)
  - Grade separation

Ultimately, this extensive list can be quite daunting when coupled with existing maintenance needs. However, developing projects to be "shovel ready" will better prepare the region for potential funding programs. The success of funding projects on this list is dependent upon the following actions:

- ✓ Advocating for funding for the projects using a message centered around freight and tourism;
- ✓ Advancing freight-related projects to be "shovel ready";
- ✓ Identifying available funding; and,
- ✓ Evaluating non-traditional funding source based on the project context.

INNOVATION AND PARTNERSHIPS

A major provision in the MAP-21 language encourages each State to establish a freight advisory committee composed of a representative cross-section of public and private sector freight stakeholders. Although this is suggested at a statewide level, the underlying benefits will hold true at the MPO level. Bringing together experts from the private and public sector will allow for greater knowledge transfer, improved collaboration among stakeholders, and an the elevation of freight-related issues. With freight-related industry accounting for over 50% of the regional GDP, the following is recommended to continue the economic growth of the Region:

- ✓ Establish a regional freight working group consisting of both public and private sector freight stakeholders, focused on infrastructure, workforce development, safety, security and technology.

Appendix A
Study Area Freight-Oriented Establishments

Employers of 50 or More in Freight-Oriented Industry Sectors

Company name	Address	City	NAICS	NAICS description	Emp	Est sales
Admiral's Point Nursing	1920 Cleveland Rd W	Huron	623110	Nursing Care Facilities (Skilled Nursing Fclts)	109	$2,304,000
Akro-Mils Inc	4101 Venice Rd	Sandusky	326199	All Other Plastics Product Mfg	75	$17,025,000
American Colors Inc	1110 Edgewater Ave	Sandusky	325130	Synthetic Dye & Pigment Mfg	50	$9,090,000
Automotive Components Holdings	3020 Tiffin Ave	Sandusky	336390	Other Motor Vehicle Parts Mfg	1600	$598,400,000
Barnes Nursery Inc	3511 Cleveland Rd W	Huron	444220	Nursery, Garden Center & Farm Supply Stores	100	$27,300,000
Best Buy	4210 Milan Rd	Sandusky	443142	Electronic Stores	125	$40,375,000
Bettcher Industries Inc	6801 SR 60	Birmingham	333318	Other Commercial & Service Industry Machinery Mfg	135	n/a
Briarfield Of Milan	185 S Main St	Milan	623110	Nursing Care Facilities (Skilled Nursing Fclts)	125	$8,750,000
Camp Patmos Inc	920 Monagan Rd	Kelleys Island	423830	Industrial Machinery & Equipment Merchant Whlsrs	50	$27,200,000
Certain Teed Corp	11519 US 250 N	Milan	324122	Asphalt Shingle & Coating Materials Mfg	250	$186,250,000
Commons Of Providence	5000 Providence Dr # 1	Sandusky	623312	Assisted Living Facilities For The Elderly	72	n/a
Community At Parkvue	3800 Boardwalk Blvd	Sandusky	623311	Continuing Care Retirement Communities	200	$13,200,000
Concord Care & Rehab Ctr	620 W Strub Rd	Sandusky	623110	Nursing Care Facilities (Skilled Nursing Fclts)	50	$3,500,000
Con-Way Freight	12518 US 250 N	Milan	484230	Specialized Freight (Exc Used Gds) Trckng Lng-Dist	50	$7,550,000
Corso's Flower & Garden Ctr	3404 Milan Rd	Sandusky	453110	Florists	165	$14,520,000
Corteco USA	11617 SR 13	Milan	336390	Other Motor Vehicle Parts Mfg	400	$149,600,000
Decko Products Inc	2105 Superior St	Sandusky	311352	Confectionery Mfg From Purchased Chocolate	79	$31,995,000

Dick's Sporting Goods	4020 Milan Rd	Sandusky	451110	Sporting Goods Stores	60	$8,880,000
Double S Industries Inc	4405 Galloway Rd	Sandusky	339999	All Other Miscellaneous Mfg	144	$27,936,000
Douthit Communications Inc	520 Warren St	Sandusky	323111	Commercial Printing (Except Screen & Books)	50	$10,350,000
Elder-Beerman	4314 Milan Rd	Sandusky	452111	Department Stores (Except Discount Dept Stores)	50	$8,100,000
Emh Medical Ctr	8815 Frailey Rd	Huron	622110	General Medical & Surgical Hospitals	90	$9,540,000
Erie Blacktop Inc	4507 Tiffin Ave	Sandusky	423320	Brick, Stone/Related Constr Material Mrchnt Whlsrs	100	$15,900,000
Firelands Birthing Ctr	1111 Decatur St	Sandusky	622310	Specialty (Exc Psychiatric/ Substance Abuse) Hsptl	50	$4,500,000
Firelands Community Hosp	1111 Hayes Ave	Sandusky	622110	General Medical & Surgical Hospitals	90	$9,540,000
Firelands Regional Medical Ctr	1912 Hayes Ave	Sandusky	621340	Offices-Physical, Occptnl/Speech Thrpsts/Audlgsts	60	$4,920,000
Foster Chevrolet Cadillac Inc	2504 Hayes Ave	Sandusky	441110	New Car Dealers	100	$85,900,000
Giant Eagle	4453 Liberty Ave	Vermilion	445110	Supermarkets/Other Grocery (Exc Convenience) Strs	100	$24,700,000
Home Depot	715 Crossings Rd	Sandusky	444110	Home Centers	115	$40,250,000
Humanetics ATD Mfg	900 Denton Dr	Huron	334519	Other Measuring & Controlling Device Mfg	80	$21,840,000
Industrial Nut Corp	1425 Tiffin Ave	Sandusky	332722	Bolt, Nut, Screw, Rivet & Washer Mfg	125	$15,000,000
International Automotive	1608 Sawmill Pkwy	Huron	336390	Other Motor Vehicle Parts Mfg	750	$280,500,000
J C Penney Co	4316 Milan Rd	Sandusky	452111	Department Stores (Except Discount Dept Stores)	130	$21,060,000
J C Penney Co	Sandusky Mall	Sandusky	452111	Department Stores (Except Discount Dept Stores)	70	$11,340,000
J H Routh Packing Co	4413 W Bogart Rd	Sandusky	311611	Animal (Except Poultry) Slaughtering	315	$120,000,000
JBT Food Tech	1622 1st St	Sandusky	332999	All Other Misc Fabricated Metal Product Mfg	350	$25,000,000
Kaman Art Shop	1 Cedar Point Dr	Sandusky	453920	Art Dealers	50	$14,650,000
Kingston Of Vermilion	4210 Telegraph Ln	Vermilion	624310	Vocational Rehabilitation Services	203	n/a

Nursing						
Kohl's Department Store	815 Crossings Rd	Sandusky	452111	Department Stores (Except Discount Dept Stores)	90	$14,580,000
Kroger	508 W Perkins Ave	Sandusky	445110	Supermarkets/Other Grocery (Exc Convenience) Strs	100	$24,700,000
Kyklos Bearing Intl Inc	2509 Hayes Ave	Sandusky	334413	Semiconductors & Related Devices Mfg	800	$456,800,000
Lewco Inc	706 Lane St	Sandusky	332312	Fabricated Structural Metal Mfg	100	$6,000,000
Liberty Ford Lincoln	4215 Liberty Ave	Vermilion	441110	New Car Dealers	72	$61,848,000
Lowe's Home Improvement	5500 Milan Rd # 304	Sandusky	444110	Home Centers	130	$45,500,000
M A Harrison Mfg Co	14307 SR 113	Birmingham	332710	Machine Shops	60	$10,020,000
Macy's	4314 Milan Rd	Sandusky	452111	Department Stores (Except Discount Dept Stores)	175	$28,350,000
Mathews Ford Lincoln	610 E Perkins Ave	Sandusky	441110	New Car Dealers	65	$55,835,000
Meijer	4702 Milan Rd	Sandusky	445110	Supermarkets/Other Grocery (Exc Convenience) Strs	500	$123,500,000
Mickey Mart Foodstores Inc	3619 SR 113 E	Milan	445120	Convenience Stores	100	$22,400,000
Mid-States Packaging	PO Box 1416	Sandusky	322211	Corrugated & Solid Fiber Box Mfg	90	$34,470,000
North Coast Cancer Care	417 Quarry Lakes Dr	Sandusky	621111	Offices Of Physicians (Exc Mental Health Specs)	75	$14,925,000
O E Meyer Co	3303 Tiffin Ave	Sandusky	423450	Medical, Dental/Hospital Equip/Supls Mrchnt Whlsrs	140	$16,200,000
R S Office Solutions	3911 Venice Rd	Sandusky	443142	Electronic Stores	50	$17,150,000
Renaissance House Inc	158 E Market St # 810	Sandusky	624190	Other Individual & Family Services	50	n/a
Sam's Club	614 Crossings Rd	Sandusky	452910	Warehouse Clubs & Supercenters	143	$23,166,000
Sandusky Electric Inc	1513 Sycamore Line	Sandusky	423610	Electrical Apparatus/Wiring Supls/Rel Equip Whlsrs	50	$14,300,000
Sandusky International Inc	615 W Market St	Sandusky	447190	Other Gasoline Stations	125	$27,000,000
Sandusky Limited	3130 W Monroe St	Sandusky	424610	Plastics Materials/Basic Forms/Shps Mrchnt Whlsrs	300	$47,500,000
Target	4020 Milan Rd # 910	Sandusky	452111	Department Stores (Except Discount Dept Stores)	160	$25,920,000

Tenneco Inc	33 Lockwood Rd	Milan	336390	Other Motor Vehicle Parts Mfg	450	n/a
Thor Works Industries Inc	2520 Campbell St	Sandusky	424690	Other Chemical & Allied Products Merchant Whlsrs	85	n/a
Toft Dairy Inc	3717 Venice Rd	Sandusky	424430	Dairy Product (Exc Dried Or Canned) Mrchnt Whlsrs	72	$11,000,000
Toys R Us	5500 Milan Rd # 400	Sandusky	451120	Hobby, Toy & Game Stores	50	$8,450,000
Triple Challenge Racepark	1 Cedar Point Dr	Sandusky	441228	Motorcycle, Atv & All Other Motor Vehicle Dealers	3500	$1,519,000,000
U S Tsubaki Inc	1010 Edgewater Ave	Sandusky	332111	Iron & Steel Forging	160	$47,200,000
US Post Office	2220 Caldwell St	Sandusky	491110	Postal Service	50	n/a
VA Sandusky Clinic	3416 Columbus Ave	Sandusky	621493	Freestanding Ambulatory Surgical & Emergency Ctrs	700	$213,500,000
Walmart Supercenter	5500 Milan Rd # 200	Sandusky	452111	Department Stores (Except Discount Dept Stores)	250	$40,500,000

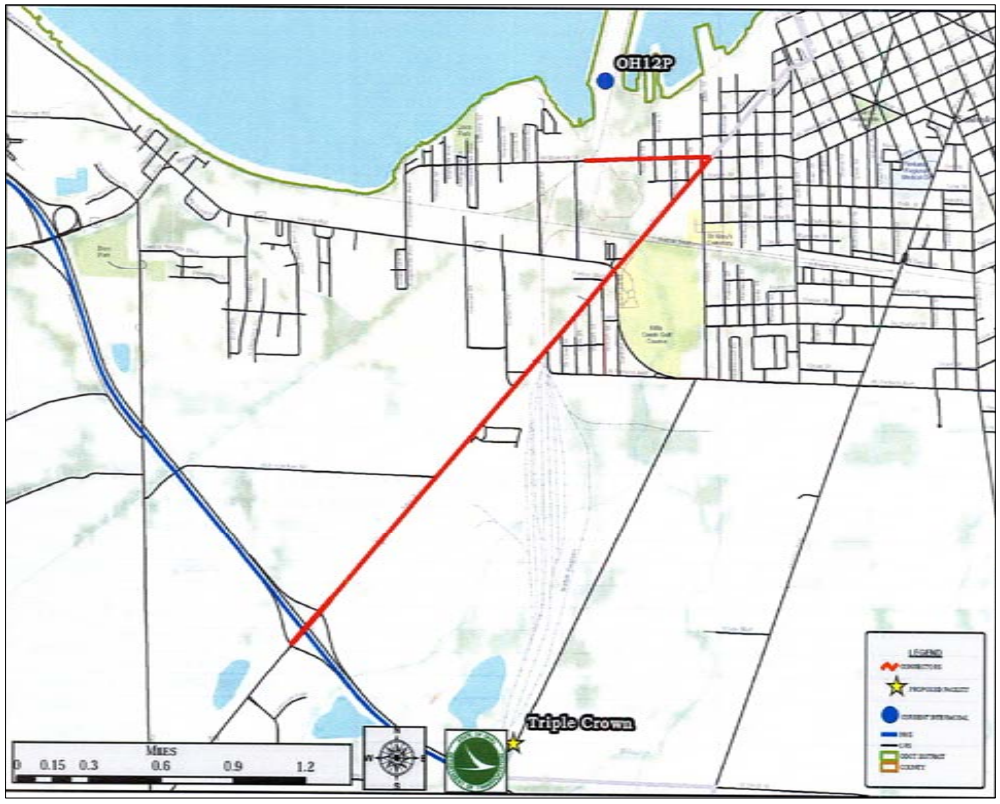
Employers of 250 or More in Other Industry Sectors

Company name	Address	City	NAICS	NAICS description	Emp	Est sales
Breakers Express-Cedar Point	1201 Cedar Point Rd	Sandusky	721110	Hotels (Except Casino Hotels) & Motels	3900	n/a
Camper Village & Lighthouse	1 Cedar Point Dr	Sandusky	721211	Rv (Recreational Vehicle) Parks & Campgrounds	3900	n/a
Castaway Bay Marina & Camper	2001 Cleveland Rd	Sandusky	721110	Hotels (Except Casino Hotels) & Motels	1025	n/a
Cedar Fair	1 Cedar Point Dr	Sandusky	713110	Amusement & Theme Parks	3500	n/a
Cedar Fair LP	1 Cedar Point Dr	Sandusky	721110	Hotels (Except Casino Hotels) & Motels	1800	$1,028,472,000
Cedar Point Amusement Park	1 Cedar Point Dr	Sandusky	713110	Amusement & Theme Parks	350	$466,000,000
Cedar Point Camper Village	1 Cedar Point Dr	Sandusky	721110	Hotels (Except Casino Hotels) & Motels	3900	n/a
Cedar Point Resorts	1 Cedar Point Dr	Sandusky	721110	Hotels (Except Casino Hotels) & Motels	3900	n/a
EHOVE Ghrist Adult Career Ctr	316 Mason Rd W	Milan	611410	Business & Secretarial Schools	450	n/a

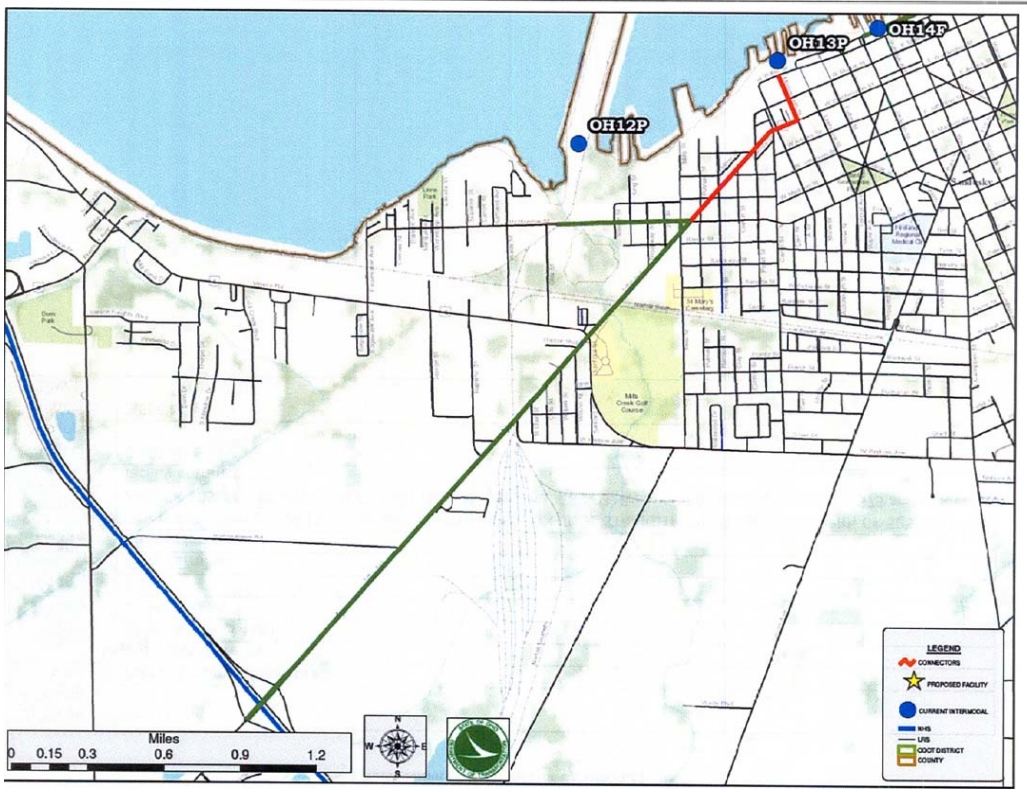
Firelands Counseling-Recovery	2020 Hayes Ave	Sandusky	813319	Other Social Advocacy Organizations	1100	n/a
Freudenberg-NOK	11617 SR 13	Milan	339991	Gasket, Packing & Sealing Device Manufacturing	400	n/a
Great Wolf Lodge	4600 Milan Rd	Sandusky	721199	All Other Traveler Accommodation	250	n/a
Hotel Breakers	1 Cedar Point Dr	Sandusky	721110	Hotels (Except Casino Hotels) & Motels	650	n/a
Jehovah's Witnesses Sandusky	608 King St	Sandusky	813110	Religious Organizations	350	n/a
Kalahari Water Park	7000 Kalahari Dr	Sandusky	713110	Amusement & Theme Parks	1200	n/a
Lighthouse Point	1 Cedar Point Dr	Sandusky	721110	Hotels (Except Casino Hotels) & Motels	3900	n/a
Sandcastle Suites Hotel	1 Cedar Point Dr	Sandusky	721110	Hotels (Except Casino Hotels) & Motels	3900	n/a
Soak City Water Park	1 Cedar Point Dr	Sandusky	713110	Amusement & Theme Parks	3500	n/a
UAW Local 913	1608 Sawmill Pkwy	Huron	813930	Labor Unions & Similar Labor Organizations	880	n/a
Veterans Home	3416 Columbus Ave	Sandusky	623110	Nursing Care Facilities (Skilled Nursing Fclts)	700	n/a

Appendix B – NHS Intermodal Facility and Connectors

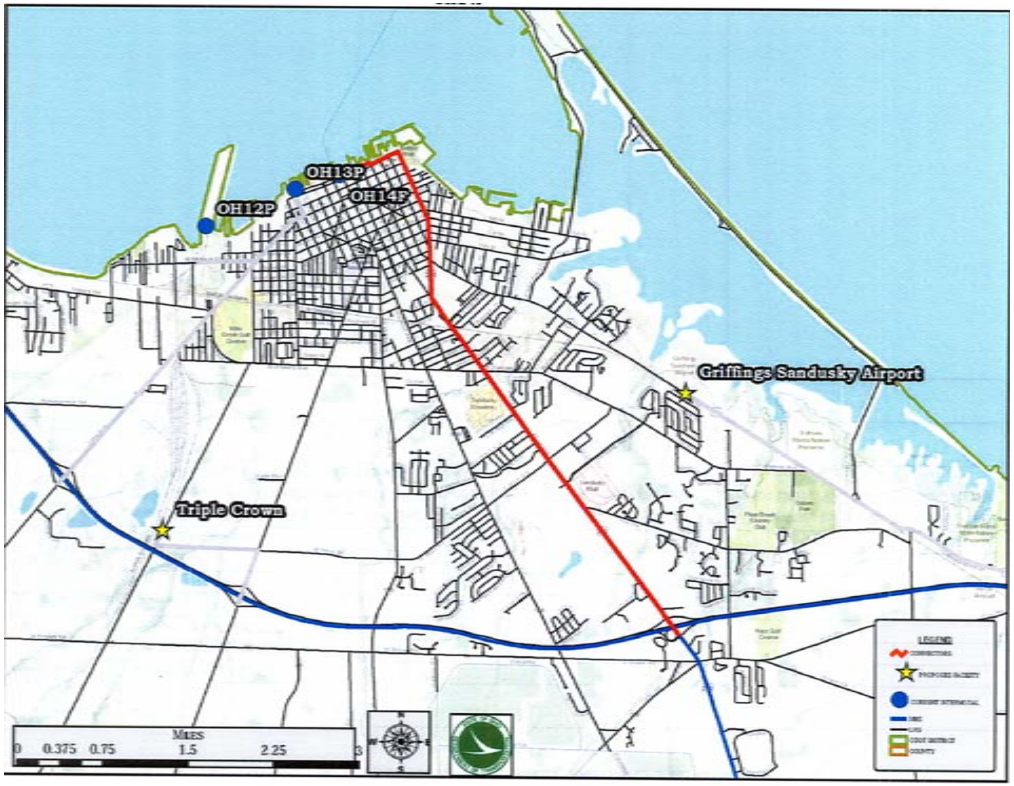
FWHA Name	OH12P
Name	Sandusky Coal Docks, Norfolk Southern
Address	2705 West Monroe Street
	Sandusky, Ohio 44870
Phone	419-626-1214
County	Erie
Facility Type	Port Terminal
Criteria	Current Intermodal
Connector Description	From US-6, West on C500, W Monroe St to Facility Entrance (some mileage on US-6 is listed on OH13P)
Connector Change	0.029 Miles
Connector Length	0.529 Miles



FWHA Name	OH13P
Name	Geo. Gradel Salt Dock
Address	931 West Walter St
	Sandusky, Ohio 44870
Phone	419-691-7123
County	Erie
Facility Type	Port Terminal
Criteria	Current Intermodal
Connector Description	From SR-2, NE to jct with US 6 From SR-101 NE to jct with C9000 McDonough St From US-6 turn left onto McDonough St to facility entrance
Connector Change	0.034 Miles
Connector Length	3.434 Miles



FWHA Name	OH14F
Name	Port of Sandusky/Jackson Pier
Address	181 West Shoreline Dr
	Sandusky, Ohio 44870
Phone	419-627-5886
County	Erie
Facility Type	Ferry Terminal
Criteria	Current Intermodal
Connector Description	From SR-2 North on US-250 to jct with CR-506/US-6. CONTINUE STRAIGHT ON CR-506, to JCT with CR-505, bear left onto CR-505. CR-505 intersects CR-503. Make the left onto CR-503. From CR-503 turn right onto CR-575 and follow to facility entrance.
Connector Change	0.586 miles
Connector Length	5.686 Miles



FWHA Name	OH15P
Name	Huron Limestone Co.
Address	105 East Cleveland Rd
	Huron, Ohio 44839
Phone	419-433-2141
County	Erie
Facility Type	Port Terminal
Criteria	Current Intermodal
Connector Description	From SR-2, N on SR-13 to jct with US-6, turn right, E onto US-6 to jct with C9001, Tiffin Ave, turn left, N onto C9001 Tiffin Ave to jct with Meeker Ave, turn left continuing on C9001, Meeker Ave to jct with Berlin Rd, turn left continuing on C9001 Berlin Rd to facility entrance
Connector Change	0.016 Miles
Connector Length	2.716 Miles