

INTRODUCTION

In order to identify the need for improvements to the transportation system in Erie County, consideration and analysis of several socio-economic factors were completed to assess the impacts. The primary factors being evaluated include area population, employment and land use patterns, as well as regional travel characteristics and goods movement activity. By looking at these characteristics, a picture of the demands on the existing transportation system begins to take shape. Trends in these factors were then forecasted to 2030 in order to anticipate the future transportation demands in Erie County, and provide the basis for developing the needs and recommendations sections of the LRTP.

POPULATION

One of the major elements of estimating travel demand is total population and the distribution of that population throughout the county, since that largely determines where a majority of trips are being generated. Erie County population data was gathered from the US Census Bureau, which provided year 2000 census information for Erie County in several data sets that are utilized in the travel demand forecasting, including: total population and age breakdown, number of households and household size, and household median income. Population information was also obtained from the *Erie County Demographic Study*, completed in 2003, which provided further insights into the raw Census numbers. There are just over 280,000 people residing in Erie County, with well over 50% of the population in their working years.

Age 0 to 19	80,092	(28.5 %)
Age 20 to 64	160,495	(57.1 %)
Age 65 and over	40,256	(14.3 %)
Total Population	280,843	

Approximately 80% of the population, according to the Census 2000 information, resides in the ten most populated municipalities in Erie County. The ten most populated municipalities are:

Erie City	103,717
Millcreek Township	52,129
Harborcreek Township	16,267
Fairview Township	10,140
Edinboro Borough	6,950
Corry City	6,834
North East Township	6,613
Summit Township	5,529
Girard Township	5,133
Greene Township	4,768

The ten least populated municipalities in Erie County are:

Elgin Borough	236
Wattsburg Borough	378
McKean Borough	389
Mill Village Borough	412
Platea Borough	474
Cranesville Borough	600
Amity Township	1,140
Concord Township	1,361
Waterford Borough	1,449
Albion Borough	1,607

Erie County’s population distribution can basically be characterized into three categories: the Erie Metro Area, Other Urban Areas, and the Balance of the County/Rural Areas.

The “Erie Metro Area” includes the City of Erie, Fairview Township, Harborcreek Township, Lawrence Park Township, McKean Township, Millcreek Township, Summit Township, and Wesleyville Borough. This area has traditionally been the population center of the region and comprises 71% of the County’s population.

The “Other Urban Areas” include the City of Corry, Edinboro Borough, Girard Borough, Lake City Borough, North East Borough, and Union City Borough. These communities serve as small hubs for the surrounding townships, maintaining a local importance. Together, they represent approximately 10% of the total residents in the County.

The “Balance of the County/Rural Areas” are the rural townships and smaller boroughs outside the Erie Metro Area. The 24 municipalities included in this category are generally the base of the County’s agricultural communities.

Population Trends

Erie County’s population increased 1.9% in the 1990’s, below the state average of 3.2%. However, the County added more people (5,271) than any other western PA county over that decade other than Butler and Clearfield counties, and also outgrew its neighboring counties in Ohio and New York.

The Erie Metro Area accounted for 35% of this growth (1,841), even though the City of Erie’s population declined by over 5,000 residents during the period. The Other Urban Areas saw a net decrease in population, though Lake City & Girard Boroughs combined grew by almost 600 people. The Balance of the County/Rural Areas municipalities accounted for most of the overall growth over the decade,

although, a significant majority of that growth was attributed to a few urban areas' neighboring municipalities - Girard Township, North East Township, Washington Township, and Waterford Township - with several of the other "rural" municipalities recording decreases in population. **Table III-1** illustrates the population statistics for each municipality.

**Table III-1
Erie County Population by Municipality, 1990-2000**

Municipality	1990	2000	Ten Year % Change 1990 – 2000
Albion Borough	1,575	1,607	2.0%
Amity Township	1,034	1,140	10.3%
Concord Township	1,384	1,361	-1.7%
Conneaut Township (1)	1,938	3,908 (2,023)	101.7% (4.4%)
Corry City	7,216	6,834	-5.3%
Cranesville Borough	598	600	0.3%
Edinboro Borough	7,736	6,950	10.2%
Elgin Borough	229	236	3.1%
Elk Creek Township	1,738	1,800	3.6%
Erie City	108,718	103,717	-4.6%
Fairview Borough (2)	1,988	0	-100.0%
Fairview Township (3)	7,839	10,140	3.2%
Franklin Township	1,429	1,609	12.6%
Girard Borough	2,879	3,164	9.9%
Girard Township	4,722	5,133	8.7%
Greene Township	4,959	4,768	-3.9%
Greenfield Township	1,770	1,909	7.9%
Harborcreek Township (4)	15,108	16,267	7.7%
Lake City Borough	2,519	2,811	11.6%
Lawrence Park Township	4,310	4,048	-6.1%
LeBoeuf Township	1,521	1,680	10.5%
McKean Borough	418	389	-6.9%
McKean Township	4,503	4,619	2.6%
Mill Village Township	429	412	-4.0%
Millcreek Township	46,820	52,129	11.3%
North East Borough	4,617	4,601	-0.3%
North East Township (4)	6,283	6,613	5.3%
Platea Borough	467	474	1.5%
Springfield Township	3,218	3,378	5.0%
Summit Township	5,284	5,529	4.6%
Union Township	1,735	1,663	-4.2%
Union City Borough	3,537	3,463	-2.1%
Venango Township	2,235	2,277	1.9%
Washington Township	4,102	4,526	10.3%

Waterford Borough	1,492	1,449	-2.9%
Waterford Township	3,402	3,878	14.0%
Wattsburg Borough	486	378	-22.2%
Wayne Township	1,679	1,766	5.2%
Wesleyville Borough	3,655	3,617	-1.0%
ERIE COUNTY	275,572	280,843	1.9%

1. Conneaut Township 2000 population includes approx. 1885 persons at the Albion SCI. Township population in 2000 was 2,023 and a growth of 4.4% from the 1990 to 2000 population.
2. Fairview Borough was consolidated with Fairview Township in 1998.
3. Fairview Borough was consolidated with Fairview Township in 1998. Percent change is based upon combined 1980 population and 1990 population, respectively.
4. The Census Bureau as of April 1, 2002 revised the populations in Harborcreek and North East Townships.

Population Forecasts

The *Erie County Demographic Study*, prepared by the Erie County Department of Planning, was utilized as a basis for preparing the population forecasts to the year 2030. The projected growth rate of the County, by each municipality, was established for ten-year periods through 2030. The results were cross-referenced with projection data from Woods & Poole Economics, Inc., a nationally recognized corporation specializing in long-term county economic and demographic forecasts, for relative comparison.

Overall, Erie County is conservatively anticipated to grow to over 303,384 people by 2030, with a large percentage of that growth continuing to occur in the established growth areas. The Erie Metro Area will remain the dominant population center, with the City of Erie population stabilizing and most of its surrounding municipalities expanding. The other urban areas, Edinboro, Girard, Lake City, and North East Boroughs are anticipated to experience growth, with Corry and Union City remaining relatively stable. Rural Areas expected to have the most growth through this period include Franklin, Girard, North East, Washington, and Waterford Townships. **Table III-2** illustrates the forecasted population statistics for each municipality.

**Table III-2
Erie County Population by Municipality, 2000-2030**

	2000	2010	Projected % Change 2000- 2010	2020	Projected % Change 2010- 2020	2030	Projected % Change 2020- 2030
Erie County	280,843	294,368	4.8%	298,876	1.5%	303,384	1.5%
Albion Borough	1,607	1,633	1.6%	1,641	0.5%	1,650	0.5%
Amity Township	1,140	1,201	5.4%	1,222	1.7%	1,242	1.7%
Concord Township	1,361	1,444	6.1%	1,472	1.9%	1,500	1.9%
Conneaut Township (1)	3,908	4,053	3.7%	4,102	1.2%	4,150	1.2%
Corry City	6,834	6,844	0.1%	6,847	0.0%	6,850	0.0%
Cranesville Borough	600	612	2.0%	616	0.7%	620	0.6%
Edinboro Borough	6,950	7,250	4.3%	7,350	1.4%	7,450	1.4%
Elgin Borough	236	239	1.3%	240	0.4%	241	0.4%
Elk Creek Township	1,800	1,870	3.9%	1,894	1.3%	1,917	1.2%
Erie City	103,717	104,540	0.8%	104,815	0.3%	105,089	0.3%
Fairview Township	10,140	10,956	8.0%	11,228	2.5%	11,500	2.4%
Franklin Township	1,609	1,784	10.9%	1,842	3.3%	1,900	3.2%
Girard Borough	3,164	3,366	6.4%	3,433	2.0%	3,500	2.0%
Girard Township	5,133	5,713	11.3%	5,907	3.4%	6,100	3.3%
Greene Township	4,768	5,070	6.3%	5,171	2.0%	5,272	1.9%
Greenfield Township	1,909	2,066	8.2%	2,118	2.5%	2,170	2.5%
Harborcreek Township	16,267	17,499	7.6%	17,910	2.3%	18,321	2.3%
Lake City Borough	2,811	3,194	13.6%	3,322	4.0%	3,450	3.8%
Lawrence Park Twp	4,048	4,079	0.8%	4,090	0.3%	4,100	0.3%
LeBoeuf Township	1,680	1,712	1.9%	1,723	0.6%	1,734	0.6%
McKean Borough	389	414	6.5%	423	2.0%	431	2.0%
McKean Township	4,619	5,148	11.4%	5,324	3.4%	5,500	3.3%
Mill Village Borough	412	438	6.4%	447	2.0%	456	2.0%
Millcreek Township	52,129	56,265	7.9%	57,643	2.5%	59,022	2.4%
North East Borough	4,601	4,837	5.1%	4,916	1.6%	4,995	1.6%
North East Township	6,613	7,466	12.9%	7,751	3.8%	8,035	3.7%
Platea Borough	474	496	4.6%	503	1.5%	510	1.4%
Springfield Township	3,378	3,496	3.5%	3,535	1.1%	3,574	1.1%
Summit Township	5,529	6,162	11.4%	6,373	3.4%	6,584	3.3%
Union Township	1,663	1,704	2.5%	1,718	0.8%	1,732	0.8%
Union City Borough	3,463	3,485	0.6%	3,493	0.2%	3,500	0.2%
Venango Township	2,277	2,513	10.4%	2,592	3.1%	2,671	3.0%
Washington Township	4,526	5,050	11.6%	5,225	3.5%	5,400	3.3%
Waterford Borough	1,449	1,532	5.8%	1,560	1.8%	1,588	1.8%
Waterford Township	3,878	4,371	12.7%	4,536	3.8%	4,700	3.6%
Wattsburg Borough	378	406	7.5%	416	2.3%	425	2.3%
Wayne Township	1,766	1,827	3.4%	1,847	1.1%	1,867	1.1%
Wesleyville Borough	3,617	3,630	0.3%	3,634	0.1%	3,638	0.1%

⁽¹⁾ Conneaut Township 2000 Population includes approximately 1,885 prisoners at the SCI-Albion

Source: Erie County Department of Planning, 2007

EMPLOYMENT

Like population, employment statistics also are a major element of estimating travel demand, with work trips comprising a majority of daily travel. A detailed listing of employment locations in Erie County was compiled from the US Census Bureau – 1998 Workplace Update Database, and the totals compared to the Census 2000 municipal statistics for relative accuracy. The exact location of the business, classification of business activity, and the number of employees were identified for coding into the travel demand model. For each business the following detailed information was gathered:

- Exact business location by address, census tract, census block, latitude, and longitude coordinates.
- SIC Code for each employer. (Standard Industrial Classification given by the Census Bureau) This groups each business by general business activity. Based on the activity, businesses were then placed into one of four categories:
 - Retail Employment
 - Office Employment
 - Industrial Employment
 - Other Employment
- Number of employees per business. This number is representative of persons employed at a particular business location regardless of place of residence.

Annual growth factors were applied to each respective municipality in each category (retail, office, industrial, and other) to identify the calculated year 2000 employment. The calculated year 2000 employment by category is listed in **Table III-3**.

Table III-3
Erie County Employment by Category for 2000

	Total	Retail	Industrial	Office	Other
Erie County	137,507	28,066	41,799	61,023	5,619
Percent		20.4%	30.4%	44.4%	4.1%

The Erie County employment profile, according to the 2000 Census, lists the employment by industry of county residents shown in **Table III-4**. The employment total in Table III-4 is lower than the employment totals in Table III-3. Table III-4 employment is based on Census data of employed residents in Erie County while Table III-3 totals the number of jobs in the county without consideration to the residence of the employees.

**Table III-4
Erie County Employment by Industry for 2000¹**

Industry	Total Number	Percent
Agriculture, forestry, fishing, hunting and mining	1,320	1.0%
Construction	6,113	4.7%
Manufacturing	30,731	23.8%
Wholesale Trade	3,305	2.6%
Retail Trade	15,642	12.1%
Transportation, warehousing and utilities	4,583	3.5%
Information	2,775	2.1%
Finance, insurance, real estate, rental and leasing	6,352	4.9%
Professional, scientific, management, administrative, and waste management services	7,554	5.8%
Educational, health and social services	30,431	23.5%
Arts, entertainment, recreation, accommodation and food services	10,948	8.5%
Other services (except public administration)	5,838	4.5%
Public Administration	3,733	2.9%
Total	129,325	100%

¹Source: US Census Bureau, 2000 Census

Employment Trends

Erie County has gained over 21,000 jobs between 1980 and 2000, as illustrated in **Table III-5**. Retail employment has increased nearly 40% in that twenty-year period, while office and service employment have increased by over 50%. Industrial employment, in contrast, has decreased by 15%.

**Table III-5
Erie County Historic Employment²**

Industry	Change 1980-1990				Change 1990-2000		
	1980	1990	Total	Percent	2000	Total	Percent
Retail	18,012	21,250	3,238	18.0%	24,838	3,588	16.9%
Office & Service	36,197	44,646	8,449	23.3%	55,442	10,796	24.2%
Industrial	50,890	45,021	-5,869	-11.5%	43,278	-1,743	-3.9%
Other	3,553	4,608	1,055	29.7%	6,292	1,684	36.5%
Total	108,652	115,525	6,873	6.3%	129,850	14,325	12.4%

²Source: Pennsylvania Department of Labor and Industry
All numbers above were only used as a reference and were not applied.

Employment Forecasts

Employment forecasts were developed for the year 2030, with differing growth rates applied to each municipality based on current and expected development patterns. The growth rates were also

compared with projections made by Woods & Poole Economics in their 2002 Data Pamphlet. **Table III-6** lists the overall employment forecasts for the year 2030, by category breakdown, generally assuming that the current employment trends in the various general categories will continue.

Table III-6
Erie County Employment by Category for Projected Year 2030

	Total	Retail	Industrial	Office	Other
Erie County	183,832	38,801	55,042	82,044	7,945
Percent		21.1%	29.9%	44.6%	4.3%

LAND USE PATTERNS

The raw population and employment distributions throughout Erie County are the primary land use indicators used in the travel demand analysis; however, other land use issues related to the area’s forecasted population and employment growth are being considered as well. The analysis of other census figures such as the number and size of households, and shifts in residential areas and employment centers, also reveals significant land use patterns having implications to the transportation network.

Review of household characteristics in Erie County showed that though Erie County’s population between 1980 and 2000 was relatively stable (+1,063), the number of households in Erie County, due to the shrinking average household size, has increased dramatically (+10,000). The impact of this phenomenon is a significant increase in demand on land use, and public services, including transportation facilities. If this trend continues, future demands on housing, land, water and sewer capacity, and the additional transportation infrastructure needed to accommodate these housing developments, will be considerable.

Though the significant increase in residential land use has generally occurred in large tracts, mostly within the Erie Metro Area, the growth of the major employment centers in Erie County has occurred in more concentrated areas, with these areas typically being very linear in nature. Recent commercial developments in areas such as Peach Street in Millcreek and Summit Townships, and the Bayfront in the City of Erie, are focused along stretches of specific highway corridors, again placing high demands on the transportation network. It is mainly commercial/retail establishments that encourage this trend of “strip” type development, and with the forecasted growth of this sector of employment in Erie County, comes the challenge of accommodating this growth while minimizing the burden on the roadway network.

REGIONAL TRAVEL CHARACTERISTICS

A review of regional travel characteristics affecting Erie County was completed to provide further insight into the different trends in demands being placed on the County's transportation network. Several statistical areas were looked at, including journey to work patterns, county-to-county worker flows, daily vehicle miles traveled, and goods movement / intermodal activity.

Journey to Work Patterns

Commuters in the Erie area primarily travel by private automobile, with about 80% of commuters traveling alone, as compared to 76% statewide. There has been a general trend toward decreased carpooling both statewide and locally, though Erie had a higher than average rate in 1990 (14%), and continues to have 12% of its commuters carpooling in 2000. As single occupancy vehicle use has increased, so has travel time to work. Workers in Erie traveling 30 minutes or more to work increased 3% between 1990 and 2000, to 21%, which is still significantly lower than the statewide average of 33%. The mean travel time to work, at 18.5 minutes, is also below the state average of 25.2 minutes.

In Pennsylvania, and in Erie County, a vast majority of workers are employed in the county and state that they live. Erie County has a greater proportion of resident workers than many Pennsylvania counties, with approximately 93% of its workers living in the county, however, that figure is down a percent from the 1990 figure. The largest number of non-resident workers is from Crawford County, PA, with nearly 40% of the total non-resident workforce. Chautauqua County, NY, Warren County, PA, and Ashtabula County, OH, comprise most of the remaining workers.

Daily Vehicle Miles of Travel

The Daily Vehicle Miles of Travel (DVMT) is a measure of the total number of miles traveled by all vehicles. On a statewide level, the number of daily vehicle miles traveled throughout Pennsylvania has steadily increased. Between 1993 and 2002, DVMT increased by 15.6%, or an average of 1.6% per year. The PENNDOT 2002 Highway Statistics Report indicated 6.4 million DVMT in Erie County, an increase from 5.8 million DVMT in 1997. This is a 10%, or 2% annual, increase in the Daily Vehicle Miles Traveled during the five-year period.

Some of the increase in miles traveled on the roadways can be attributed to an increase in the miles of roads in the County during that time (approximately 49 miles of new roads were built, mostly in residential subdivisions), but also, a general increase in the number and length of vehicle trips being performed in Erie County on a daily basis is occurring. Recognition of the land use patterns occurring in Erie County is

a key element of understanding why traffic volumes continue to grow in the face of a relatively stagnant population base. Obviously, the shifting population within the county is a contributing factor to the increase in vehicle miles traveled.

GOODS MOVEMENT

According to the 1997 Commodity Flow Survey, the breakdown by mode of transportation for freight originating from the Commonwealth was 428,616,000 tons shipped by trucks, 45,926,000 tons shipped by rail, and 215,000 tons shipped by air. The mode of transportation for freight destined to the Commonwealth was 423,348,000 tons by trucks, 43,007,000 tons by rail, 24,673,000 by water and 191,000 tons by air. Great Lakes freight destined to Pennsylvania totaled 1,151,000 tons.

Rail Freight

Between 1993 and 1997, rail freight tonnage origination in Pennsylvania decreased by 35%. According to the Federal Highway Administration's Office of Freight Management and Operation, 5,000,000 to 20,000,000 tons of freight is transported on the CSX and Norfolk Southern rail corridor in Erie County annually. The Canadian National Railway also moves five million to twenty million tons of freight annually through Erie County.

The Buffalo & Pittsburgh Railroad and the Western NY and PA Railroad transport less than 5 million tons of freight annually on their lines in Erie County.

Water Freight

According to the Office of Freight Management, there are 3.5 million tons of freight that are flowing annually through Lake Erie. Approximately 16 percent (567,000 tons) of the Lake Erie tonnage moves through the Mountfort terminal in the Port of Erie.

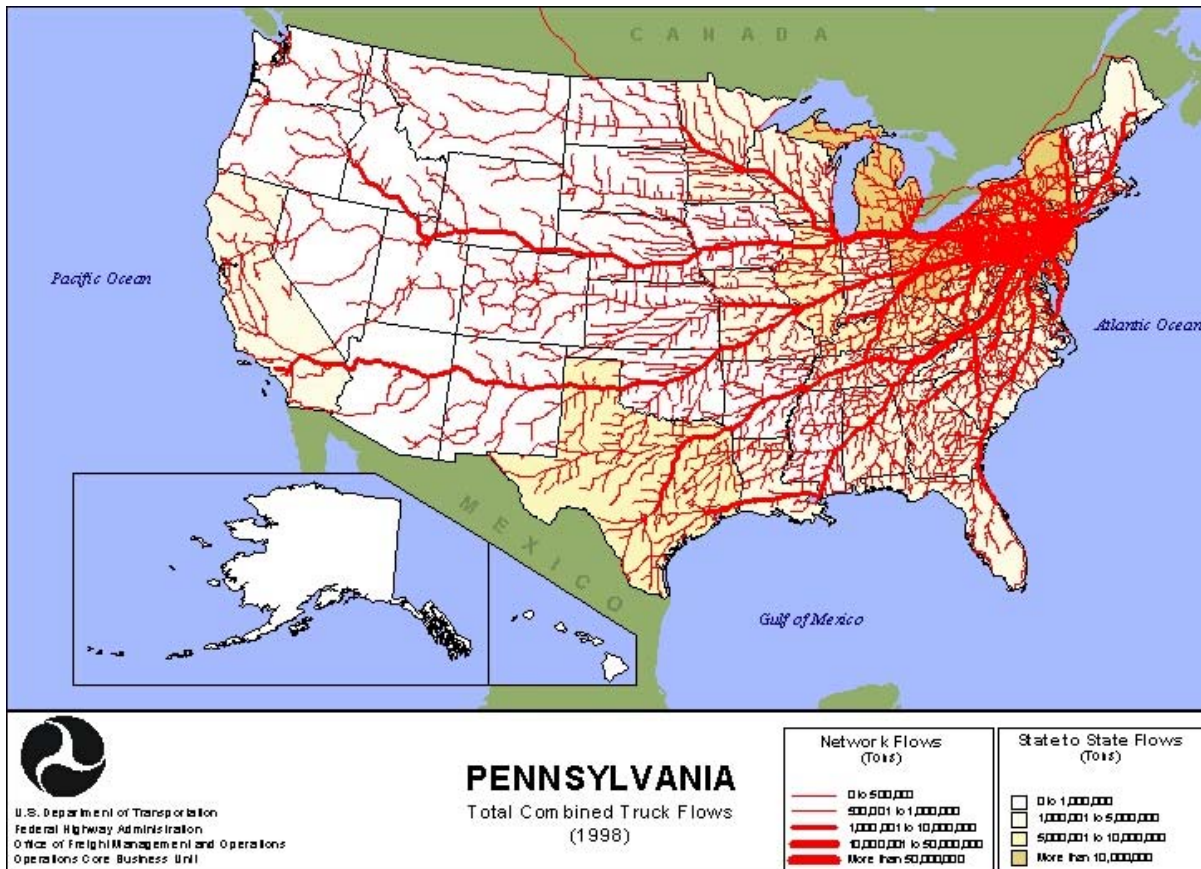
Air Freight

Air freight is experiencing rapid growth nationwide and within the Commonwealth of Pennsylvania. According to the Commodity Flow Survey, air freight tonnage originating in Pennsylvania increased by 246% between 1993 and 1997. The Philadelphia International Airport, Pittsburgh International Airport, Harrisburg International Airport, and the Lehigh Valley International Airport handle the majority of the air freight throughout the state.

Most of the cargo with origins and destinations in the Erie region is processed through Cleveland and Buffalo, and trucked to and from Erie County. According to the Erie Airport Master Plan (January 2002), the Erie International Airport has the opportunity to use the former Fenestra Building and the Penn Brass building sites, which are located within the southeast border of the airport property and adjacent to a rail siding, to create an air cargo market opportunity. The result of a preliminary analysis determined that the airport infrastructure has the potential to lead a highly successful cargo operation.

Truck Freight

Nationally, freight service is on the rise with the freight tonnage expected to double by the year 2020. The 1997 Commodity Flow survey indicates that approximately three quarters of truck freight tonnage have both an origin and a destination point within Pennsylvania. The heaviest tonnage destinations outside of the commonwealth are New Jersey, New York, Ohio, and Maryland, each of which accounts for 17.4 to 21.5 million tons of freight.



Pennsylvania Truck Flows (1998)

The above 1998 “Pennsylvania Truck Flows” graphic shows the truck distribution to the country. Roadways carrying high-volume truck freight are demonstrated with broad red lines.

The top states sending truck freight tonnage destined for Pennsylvania include Ohio, West Virginia, New Jersey, and New York, each of which accounts for 11.6 to 19.9 million tons. In 1998, the total combined domestic and international truck freight flows in and out of the state of Pennsylvania exceeded 50 million tons.

Given the tremendous tonnage carried annually on select roadways in Pennsylvania, the highway system is critical for freight movement nationally, within the Commonwealth and in Erie County. Traffic volume data from PENNDOT indicates that traffic volumes on urban interstate highways increased approximately 10% percent during the latter half of the 1990’s. Volumes on rural interstate highways grew faster, by 13%, during the same period.

Interstates 79 and 90 are principal national trade corridors that travel through Erie County. Both interstate highways carry local, statewide, national, and international freight. **Table III-7** lists major cities throughout the country and the impact their freight tonnage has on Erie roadways.

**Table III-7
Freight Tonnage in Erie County**

CITY	ROADWAYS THAT IMPACT ERIE	ANNUAL FREIGHT TONNAGE (000)
New York	Interstate 90	500 to 1,000
Los Angeles	Interstate 90	500 to 1,000
New Orleans	Interstate 90	500 to 1,000
Cleveland	Interstate 90	1,000 to 10,000
Chicago	Interstate 90	1,000 to 10,000
New York	Interstate 79	500 to 1,000
Philadelphia	Interstate 79	1,000 to 10,000

Although neighboring states such as West Virginia, New Jersey, and New York contribute to the truck freight tonnage destined for all of Pennsylvania, truck freight from Ohio has the highest impact on Erie County. Ten to fifty million tons of truck freight from Ohio pass through Erie County by Interstate 90.

IMPACTS TO TRAFFIC

The various elements discussed in this chapter all are factored into the modeling process and help to shape future assumptions made in the subsequent chapters of this plan. The TP+ Travel Projection

Model uses the demographic data, through mathematical formulas, to generate travel demand estimates within and through Erie County.

Demographic data for the base year 2000 is input to determine the number of trips generated for that year and the projected demographic data for the year 2030 is input to determine the number of trips projected to be generated in that year. In the base year of 2000, there were 1,206,773 total trips generated in Erie County and by the year 2030, there will be 1,353,155 projected trips. This represents a 12 percent increase of 146,382 trips in the year 2030.