

CHAPTER 5. EXISTING TRANSPORTATION SYSTEM CONDITIONS

5.1 Overview

This chapter summarizes the existing transportation conditions within the MPO. The analysis includes an evaluation of the individual transportation modes, the interaction and connectivity between modes and the surrounding land uses and environment. In addition to the impacts of the interaction between the different transportation modes and the surrounding environment, recent policy and tourism play an important role in defining current conditions.

Erie County's traffic flows and travel patterns fluctuate substantially between peak and non-peak tourist seasons. With the introduction of new year-round tourist attractions, the area may experience a transition to a more stable transportation system.

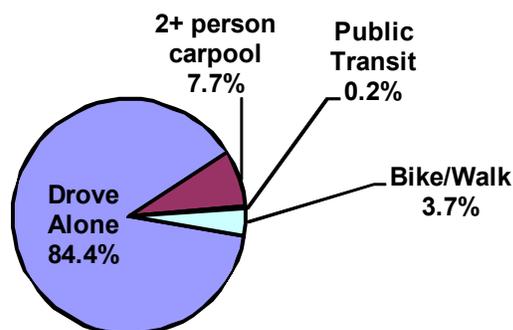
The analysis of existing conditions is a snapshot of a place and time that is continually changing due to new policies or development. Future year conditions are compared to this static snapshot with the knowledge that the data collected were the best data available at the time of collection.

5.2 Travel Behavior Summary

Understanding peoples travel patterns and behaviors are essential to understand how the transportation system is used. It is also important to understand how the transportation system that is available affects peoples travel patterns and behaviors. The following is a summary of the most recent census data; first information provided by the US Census Bureau for 2010 is listed, followed by data from the 2011-2013 American Community Survey.

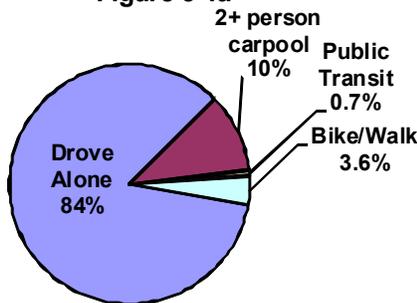
2010 Census: Commuter Mode Choice- More than 96 percent of Erie County residents reported generally using a private vehicle to get to work in 2010; of those, just over 85 percent drove by themselves and 7.7 percent carpooled with at least one other person on a regular basis. According to the US Census Bureau, 0.2 percent reported regularly using public transit to get to their job. 3.7 percent of those living in Erie County reported regularly walking or biking to work (**Figure 5-1**).

**Erie County Commute to Work Mode Choice
US Census 2010, Figure 5-1**



2011-2013 ACS Estimates Commuter Mode Choice: According to the Census Bureau’s 2011-2013 ACS, approximately 94% of Erie County residents reported generally using a private vehicle to get to work; of those, 84 percent drove themselves and about 10 percent carpooled with at least one other person on a regular basis. Approximately 0.7 percent reported regularly using public transit to get to their job while almost 3.6 percent reported regularly walking or biking to work (**Figure 5-1a**).

**Erie County Commute to Work Mode Choice
2011 - 2013 ACS
Figure 5-1a**

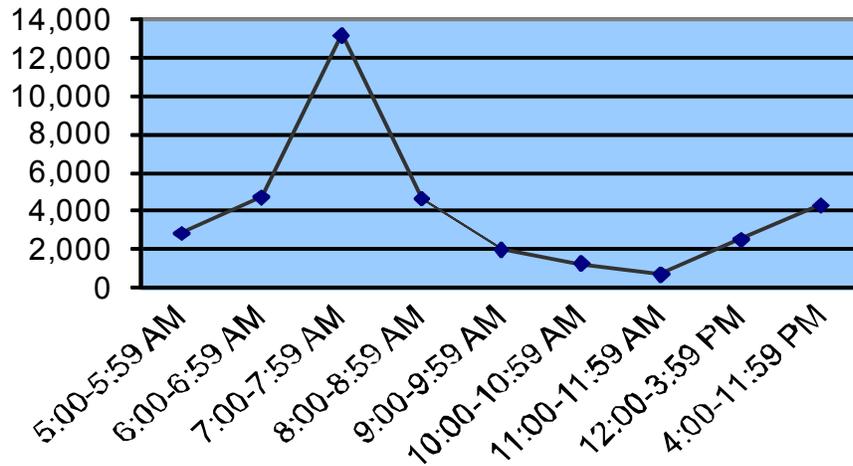


It is interesting to note that of the workers living in Erie County, an average of 1.3% of them worked from home. While there has been much written on the potential impacts of telecommuting on the commuting, there is little evidence to suggest that telecommuting has had much of an impact on commuting behaviors. In fact, the majority of stakeholders interviewed for the LRTP responded that they little experience with telecommuting.

Additionally, when comparing the US 2010 census data to the ACS 2011-2013 data, a slight increase of residents reported carpooling and taking transit as their mode choices to commuting to work. This could suggest that workers might be looking to lower cost modal options for transportation to and from work.

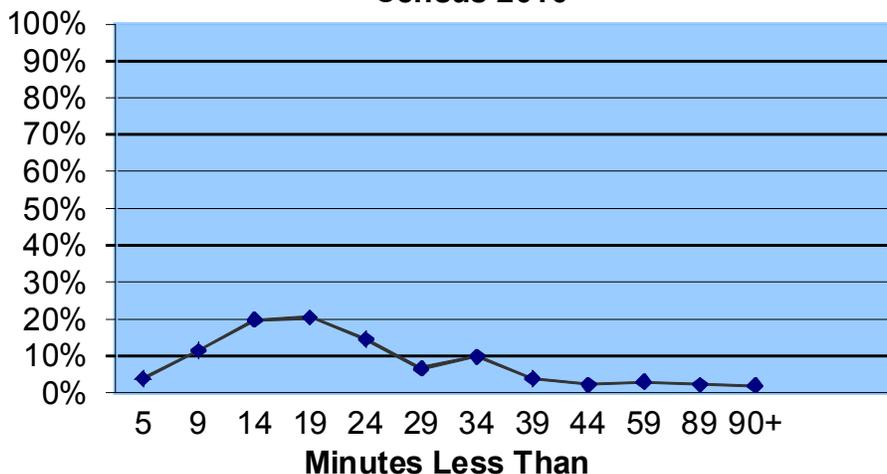
2010 Census: Time Leaving for Work- Nearly 40 percent of residents within Erie County reported leaving for work between 7:00 and 8:00 AM in 2010, as shown in **Figure 5-2**. Another 14 percent leave for work between 6:00 and 7:00 AM and 14 percent leave between 8:00 and 9:00 AM. In 2010, 76 percent of workers reported leaving for work between the four hour time period between 5:00 and 9:00 AM.

**Figure 5-2: Time Leaving For Work
Census 2010**



Travel Time to Work- Travel times are an important factor in measuring the effectiveness of the transportation system. The amount of time it takes to get to work for those living in Erie County, according to the 2010 Census, is illustrated in **Figure 5-2a**. Almost 56 percent of Erie County residents reported traveling 19 minutes or less to get to work and about 31 percent report commute times of between 19 minutes and 34 minutes. Approximately 15 percent of Erie County residents reported that their travel time to work was less than 10 minutes and 2 percent travel longer than 34 minutes. In 2010, Erie County resident’s mean travel time to work was 20 minutes.

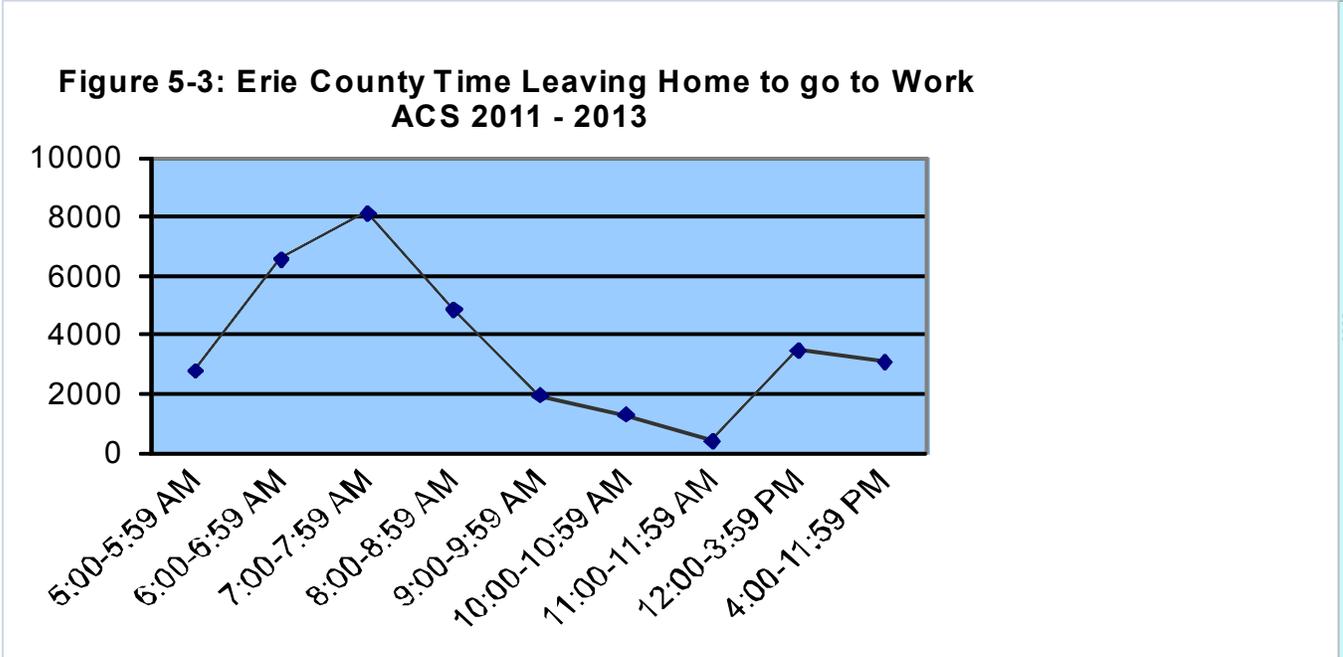
**Figure 5-2a: Erie County Travel Time to Work
Census 2010**



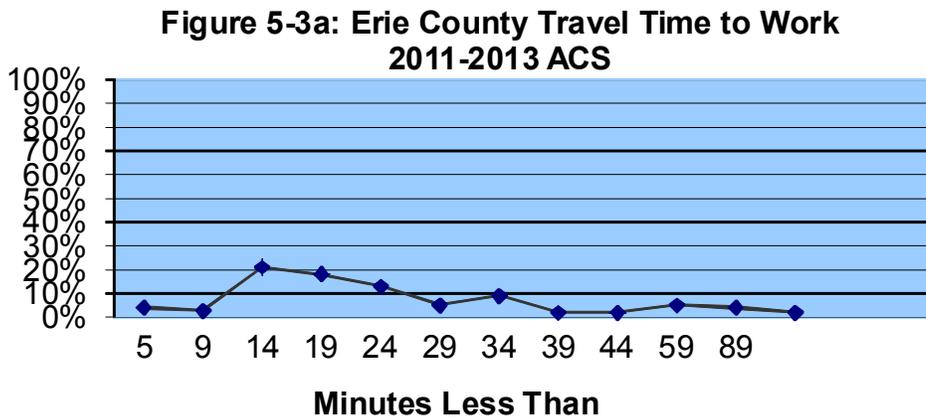
The travel time information indicates that people tend to make decisions based on a “travel time budget.” In other words they tend to live within a particular distance from where they work with respect to the travel time between the two rather than the distance. As such, time saving transportation improvements often impact land use decisions.

The vast majority of people living in Erie County also work here. In 2010, 25,390 people both lived and worked in Erie County. Of the 35,553 total workers living in Erie County, slightly more than 28 percent worked outside the county. Of the total number working in Erie County, almost 31 percent of them commute in from other counties; which calculates to over 1,100 more workers that came into Erie County to work than those that left the County.

2011-2013 ACS Estimates Time Leaving For Work: Nearly 24 percent of residents within Erie County reported leaving for work between 7:00 and 8:00 AM in the 2011-2013 ACS, as shown in **Figure 5-3**. Another 20 percent and 14 percent leave for work between 6:00 and 7:00 AM and 8:00 and 9:00 AM, respectively. The ACS shows two-thirds of workers reported leaving for work between the four hour time period between 5:00 and 9:00 AM.



Travel Time to Work- The amount of time it takes to get to work for those living in Erie County, according to the 2011-2013 ACS, is illustrated in **Figure 5-3a**. 21 percent, of Erie County residents report that they travel between 10 and 14 minutes to work. While those residents traveling over 30 minutes to work is 23 percent.



5.3 Transportation Network

Roads

The urbanized area of the MPO is connected to the surrounding communities and rural areas by a system of Federal, State and County highways.

The MPO's transportation system includes approximately 580 miles of roadway. Major routes include: US 6, US 250, State Routes 2, 4, 13, 60, 61, 99, 101, 113 and 269. The Ohio Turnpike, I-80/90, is accessible at two locations within the county and is one of the primary east-west connections.

Functional Classification System

Functional Classification is the grouping of roads, streets, and highways in a hierarchy based on the type of highway service they provide. Streets and highways do not operate independently. They are part of an interconnected network, and each one performs a service in moving traffic throughout the system. Generally, streets and highways perform two types of service. They provide either traffic mobility or land access and can be ranked in terms of the proportion of each service they perform.

Roadways are also divided into urban and rural functional classification systems. The urban system covers all streets, roads, and highways located within urban boundaries designated by the U.S. Census Bureau including small urban areas (population 5,000 or more separate from any urbanized area) and urbanized areas (population 50,000 or more.) The rural functional classification system covers all streets, roads, and highways outside small urban and urbanized areas. While urban and rural areas differ, for example, in terms of the density of the land use and intensity of traffic and travel, the same general functional concepts apply to highways in both systems. The principal difference between the two systems is the length of trips both in time and distance.

There are four classes of highways in the Functional Classification System; principal arterials, minor arterials, collector streets, and local streets. The Urban Principal Arterial system is divided into three subclasses: a) Interstates; b) Other Freeways/Expressways- non-Interstate principal arterials with limited access; and c) Other, principal arterials without limited access. Rural Principal Arterials have two subclasses: a) Interstates, those routes specifically designated as Interstate highways; and Other, principal arterials. Because of greater population concentrations, more intense land use, and high traffic volumes in urban areas, some characteristics of urban classes differ slightly from their rural counterparts, for example, in the density and spacing of the urban network and the traffic volume and length of trips. **Figure 5-4** below was taken from the 2013 FHWA Highway Functional Classification, Concepts, Criteria, and Procedures manual. The table shows the relationship between classification and travel characteristics.

Figure 5- 4 Relationship Between Functional Classification and Travel Characteristics

Functional Classification	Distance Served (and Length of Route)	Access Points	Speed Limit	Distance between Routes	Usage (AADT and DVMT)	Significance	Number of Travel Lanes
Arterial	Longest	Few	Highest	Longest	Highest	Statewide	More
Collector	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Local	Shortest	Many	Lowest	Shortest	Lowest	Local	Fewer

Interstates and freeways offer no access to land, only to other roadways in the highway system and carry large amounts of traffic longer distances. The Ohio Turnpike and SR2 in the MPO area are examples. Principal arterials are usually expressways or major highways such as US250 and US6 between SR2 west of Sandusky and SR2 to the east. They still carry large amounts of traffic longer distances but also offer access to land. Problems arise when in developing areas, developers and community leaders allow the access to land function become more important than the mobility function. Numerous driveways and cross streets create conflicts which can result in congestion and delay with large volumes of traffic.

Minor arterials support the principal arterial system. Generally they move smaller volumes of traffic moderate to longer distances. In rural areas they connect large towns to each other and larger urbanized areas. US6 (Sandusky to Fremont) and SR4 (Sandusky to Bellevue and Bucyrus) are examples in the MPO area. In Urban areas minor arterials are generally major streets such as Perkins and Columbus in Sandusky and Perkins Township or US6 on the east side of Huron or on the west side of Vermilion.

Collectors collect traffic from local streets (usually residential streets in urban areas and township roads in rural) and deliver it to the arterial street system. Collectors provide access to land but also have a through traffic component. Strub Road in Perkins Township, River Road in Huron, and West River Road in Vermilion are typical urban collectors. Rural major collectors are the principal connections between townships, provide longer distance intra county travel and deliver traffic to arterials. At an urban-rural boundary, rural major collectors connect directly to urban minor arterials. Rural minor collectors are secondary connectors for townships and small communities. Rural collector roads often link to State Routes (major collectors) or County Routes (minor collectors).

Local streets provide access to land-residences and businesses in urban areas: farms, residences and occasional business in rural areas. In urban areas most city streets are local roadways in rural areas they are township roads. The traffic on local roads is usually the traveler who intends to access a residence or business along the street.

Figure 5-5(a) and 5-5(b) show the functional classification and Average Daily Traffic (ADT) of roadways in the MPO area. In looking at the map and reading the descriptions of each class it becomes clear that functional criteria and characteristics are more qualitative rather than quantitative. Geography, population density and land use, the size of road network, and travel patterns vary too greatly from state to state, county to county, or city to city, to develop exact criteria for trip lengths, traffic volumes, spacing of routes, or size of population centers. However classification studies by various states show the relative size of their systems are fairly similar when expressed as a percentage of their total mileage. **Table 5-2** below summarizes data taken from the 2013 FHWA Highway Functional Classification Concepts, Criteria and Procedures manual. The table presents a range of percentages to be used in establishing the relative

size of the rural and urban systems. In establishing the functional classification of roadways in the MPO area, these guidelines are considered. **Table 5-2** also shows the final distribution of the Rural and Urban functional classes in the Erie County area.

Table 5-2: Proportion of Roadway Classes in a Regional Network

Roadway Functional Classification Group	Range Guideline for Class Group Based On:				In Erie County	
	Rural		Urban		Rural % of Miles	Urban % of Miles
	VMT [% of total] (vehicle miles of travel)	Miles [% of total]	VMT [% of total] (vehicle miles of travel)	Miles [% of total]		
Principal Arterial	14 to 30	2 to 6	16 to 31	4 to 5	4.6	9.8
Minor Arterial	11 to 20	3 to 7	14 to 25	7 to 14	2.8	11.6
Major Collector	12 to 23	9 to 19	5 to 13	7 to 15	22.2	12.8
Minor Collector	2 to 9	4 to 15	5 to 13	7 to 15	9.8	N/A
Local	8 to 23	64 to 75	6 to 25	63 to 75	60.6	65.8

The Functional classification system has traditionally been used as a method for allocating transportation improvement funds particularly those considered Federal Aid or received through ODOT from the Federal Highway Trust Fund. Prior to 1991 all roads classified as collectors (other than rural minor collectors) and arterials were eligible for Federal Aid. In 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) created the National Highway System (NHS). The NHS would include the Interstate System plus selected other major roadways serving high volumes of traffic and those providing connections ports and to military facilities. The Interstates and other NHS routes then became the “Federal” system, which Congress and the Federal Highway Administration would focus on. The states (and metropolitan areas) would also receive a block of Federal Aide identified as the Surface Transportation Program, which would cover non-NHS routes except local roads. (Initially Rural Minor Collectors were also excluded.)

The selection of routes eligible for NHS funding was also based on functional criteria although the connectivity to ports and other selected facilities requirement has resulted in lower class roadways such as collectors and local roads are part of the NHS system while principal arterials are not. **Figures 5-5a and 5-5b** also highlight the NHS system in the MPO area. There are 79.6 miles of NHS highways in the MPO including 26.3 miles of Interstate on the Ohio Turnpike. Over half (29.4 miles) of the remaining 53.3 miles is SR 2 and US 250. In Sandusky portions of US 6, SR 101 and collectors and Huron portion of US 6, SR 13 and local roads take up the remainder of the NHS network in the MPO area.

During the drafting of this plan update, The Ohio Department of Transportation was in the process of revising the functional classification maps for Ohio. They worked with the ERPC MPO in reviewing

existing classifications and determining if upgrades or downgrades are necessary for the region's transportation network. The final proposed map and changes were approved and adopted by both of the MPO's Technical Advisory (TAC) and Policy Committees in March of 2015 and are included in the following pages.

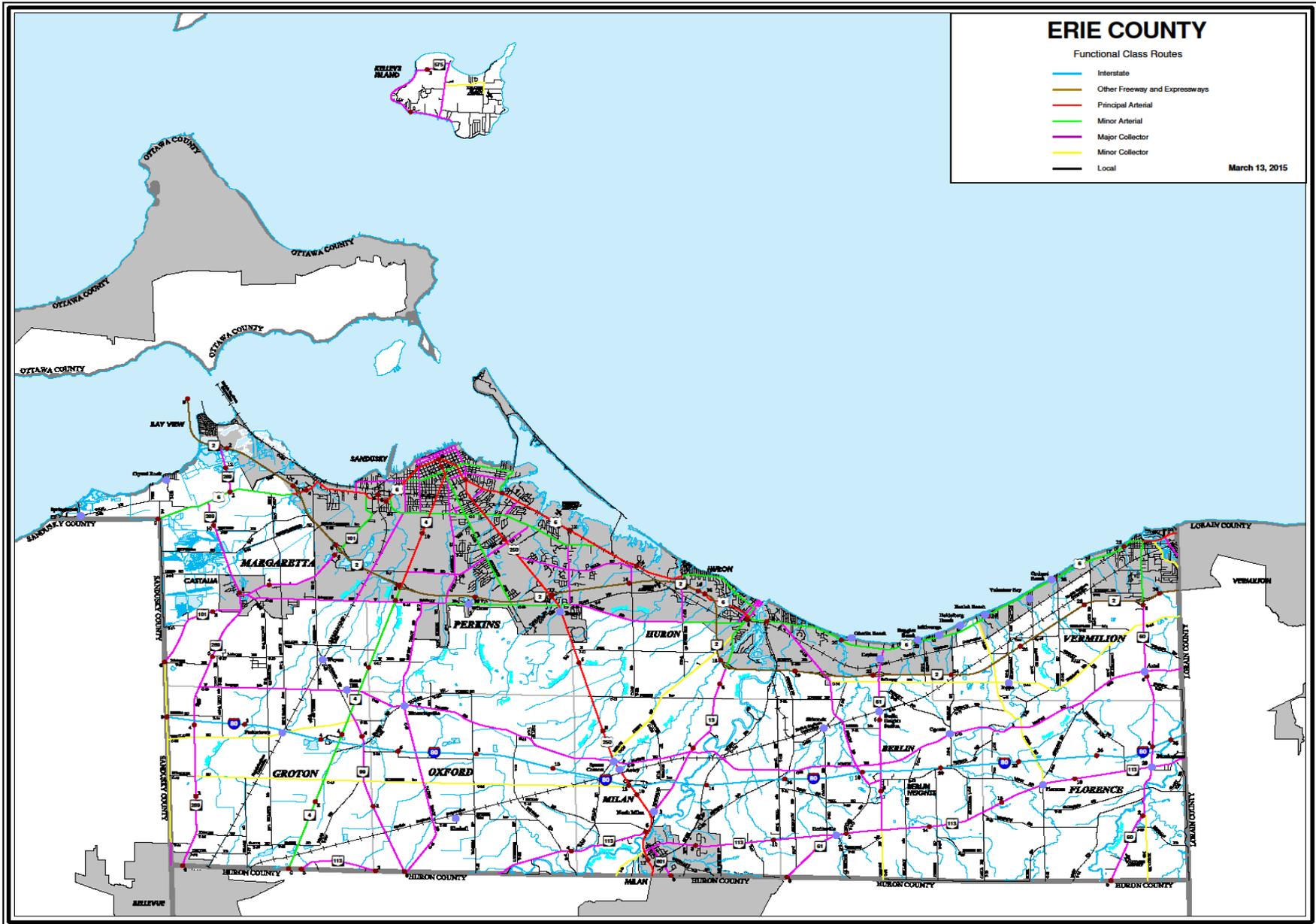


Figure 5-5a: Functional Classification Map for Erie County, Ohio

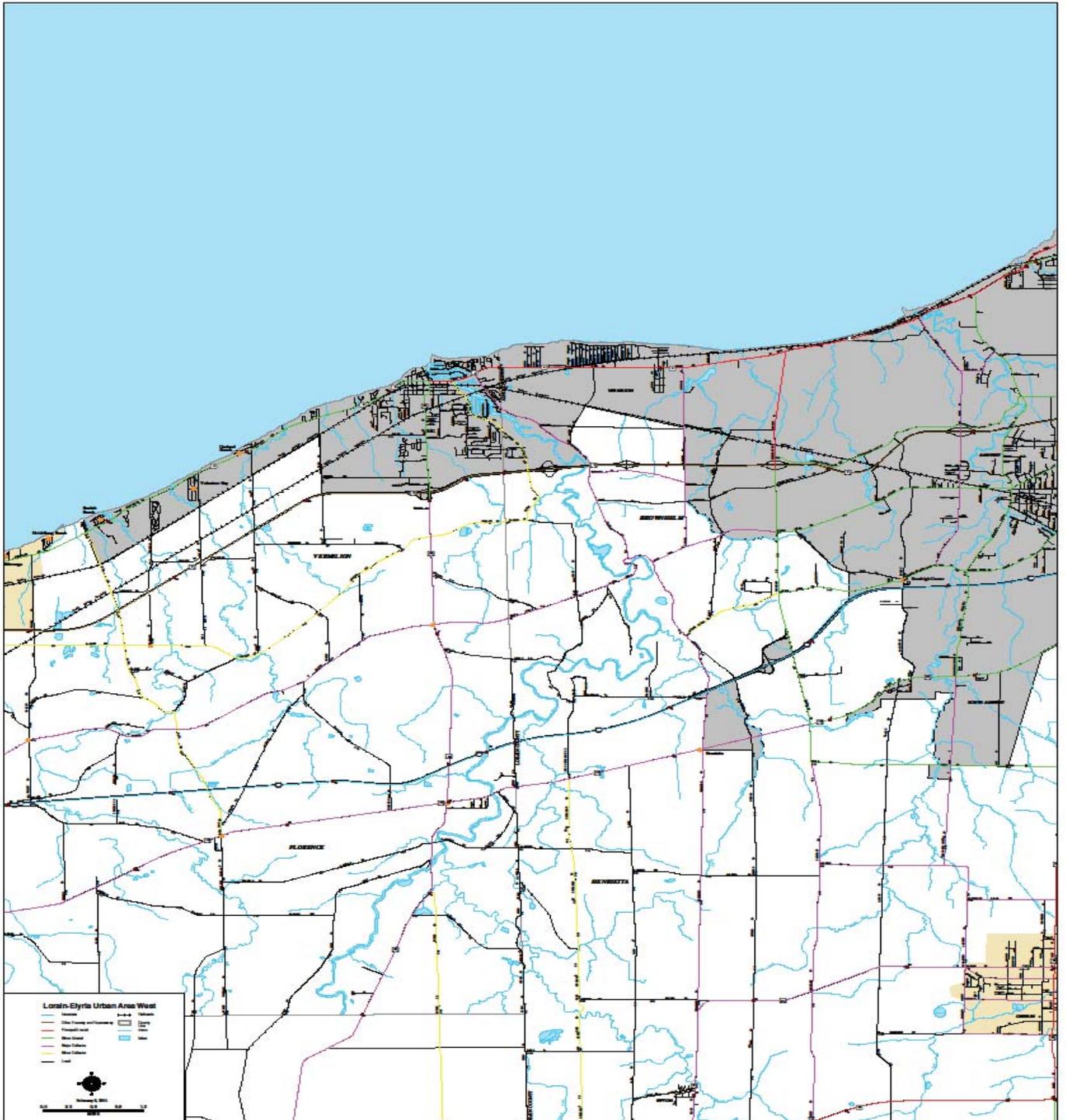


Figure 5-5b: Functional Classification Map for Lorain County, Ohio

ADT MAP
Figure 5-6

Level of Service Analysis

An analysis was completed to evaluate the existing roadway systems Level of Service (LOS). LOS is a qualitative measure describing operation conditions within a traffic stream under a given demand. The system uses levels to represent a range of operating conditions defined by measures of effectiveness.

The transportation LOS system uses the letters A through F, with A being best and F being worst. The Transportation Research Board's Highway Capacity Manual and American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets ("Green Book") list the following levels of service:

A= Free flow
B=Reasonably free flow
C=Stable flow
D=Approaching unstable flow
E=Unstable flow
F=Forced or breakdown flow

LOS A is the best, described as conditions where traffic flows at or above the posted speed limit and all motorists have complete mobility between lanes. LOS A occurs late at night in urban areas, frequently in rural areas, and often seen generally in car advertisements.

LOS B is slightly more congested, with some hindrance of maneuverability; two motorists might be forced to drive side by side, limiting lane changes. LOS B does not reduce speed from LOS A.

LOS C has more congestion than B, where ability to pass or change lanes is not always assured. LOS C is the target for urban highways in some places, and for rural highways in many places. At LOS C most experienced drivers are comfortable, roads remain safely below but efficiently close to capacity, and posted speed is maintained.

LOS D is perhaps the level of service of a busy shopping corridor in the middle of a weekday, or a functional urban highway during commuting hours: speeds are somewhat reduced, motorists are hemmed in by other cars and trucks. LOS D is a common goal for urban streets during peak hours, as attaining LOS C would require a prohibitive cost and societal impact in bypass roads and lane additions.

LOS E is a marginal service state. Flow becomes irregular and speed varies rapidly, but rarely reaches the posted limit. On highways this is consistent with a road at or approaching its designed capacity. LOS E is a common standard in larger urban areas, where some roadway congestion is inevitable.

LOS F is the lowest measurement of efficiency for a road's performance. Flow is forced; every vehicle moves in lockstep with the vehicle in front of it, with frequent slowing required. Technically, a road in a constant traffic jam would be at LOS F. This is because LOS does not describe an instant state, but rather an average or typical service. For example, a highway might operate at LOS D for the AM peak hour, but have traffic consistent with LOS C some days, LOS E or F others, and come to a halt once every few

weeks. However, LOS F describes a road for which the travel time cannot be predicted. Facilities operating at LOS F generally have more demand than capacity.¹

Figures 5-7 displays the results of the LOS analysis for existing intersection conditions within the MPO. The map shows LOS for an intersection based on delay during a peak hour period. All facilities classified as a local road were excluded in this analysis due to low volumes and the fact that as they are not included in the federal aid highway system, they are not eligible for MPO funding. **Figure 5-7** shows LOS under summer weekday condition; which was determined overall to have more traffic than spring or summer weekends. The majority of low ranking LOS facilities on the map are located within the City of Sandusky. As tourism levels hit their height during summer weekdays, traffic increases along main routes particularly those leading to the Cedar Point Amusement Park. Also, it is important to note that the level of service maps generated from the travel demand model may not totally reflect site specific conditions and as such, forecasts of future congestion patterns are typically followed up with site-specific studies before specific improvements are proposed by the MPO's member jurisdictions.

Safety Analysis: Crashes are a measure of highway safety. One way to identify high crash locations is the absolute number of crashes occurring at a location in a specified time period, usually three years. Another is by the crash rate, the absolute number of crashes in the time period divided by the number of vehicles passing through the location in that time period. The location with the highest number of accidents is ranked first, followed by the location with the second highest number of accidents, and so on. This method does not take into account the differing amounts of traffic at each location. Therefore, the frequency method tends to rank high volume locations as high accident locations, even if those locations have a relatively low number of accidents for the traffic volume.

Another way to identify high crash locations is by the crash rate, the absolute number of crashes in the time period divided by the number of vehicles passing through the location in that time period. ERPC uses the frequency method to select a group of high-accident locations and then uses the crash rate method (where traffic counts are available) to calculate the crash rate. ERPC will continue to make concerted efforts in the upcoming traffic counting seasons to capture traffic counts for those locations on the crash frequency list in order to calculate crash rates.

Table 5-4 lists the highest-ranking crash intersections by absolute number of crashes (within 0.10 mile from the intersection) during the three-year period 2011, 2012, and 2013. Calculated crash rates are also listed where traffic volume data were available; however, crash rank order is based on the frequency of crashes at a particular location. Because several locations have the same number of incidents, the top 21 ranked by number of crashes results in the 66 different intersections shown. There are 33 fewer intersections listed in this safety analysis than in the 2035 Long Range Transportation Plan.

The highest number of crashes at any location was 77 in the three-year period, which occurred at US 250 and Strub Rd. This is ten accidents less than the highest crashes as listed in the 2035 plan. The lowest number of crashes at a location of the top ranked 21 (by number of crashes) was nine in the three-year period and this occurred at nine different intersections. Where traffic information was available for all streets at the intersection, the crash rate ranged from 0.36 crashes per million vehicles to 2.02 crashes per million vehicles. Crash information as presented here is an initial step in determining whether a location has an important and correctable safety problem. Both absolute numbers and the crash rate are important

¹ http://en.wikipedia.org/wiki/Level_of_service

guides. However, the crash rate often carries more weight because the number reflects the potential for a crash at a location. The crash rate is expressed as “crashes per million vehicles entering the intersection”. The crash rate provides a basis for identifying "high crash" sites. Typically, optimal levels for crash rates is 1.0 or below. The crash rate takes into account the traffic volume at the intersection, which is one of the greatest predictors of the quantitative risk of a crash. For example, the intersection at SR 4 and Strub Rd. had 23 crashes with a crash rate of 1.23. In comparison, SR 101 at Bardshar Rd. shows fewer crashes at 19, but the crash rate is higher at 2.02.

Also many crashes are not accidents, a crash that no reasonable amount of driver care and caution or roadway improvements could have prevented; i.e. an apparently healthy driver who has a heart attack and crashes into another vehicle. Most crashes are the result of driver carelessness-speeding, following too closely, driving too fast for conditions, or DWI for example. In some cases, correctable roadway conditions have a direct or contributing affect on the number and severity of crashes at a location. A traffic safety study is usually conducted to determine the seriousness of the crash problem at a location and to identify potential remedies to identified deficiencies. Those remedies can include physical improvements such as new roadway geometry, signals to conveying information about roadway conditions to drivers, or enforcing driving related laws.

ODOT and the MPO regularly review the highest (based on absolute numbers and the crash rate) crash locations to identify those with the most serious conditions. That evaluation includes summary statistics on the severity (fatalities, injuries or property damage), weather conditions, time of day, etc. The most serious crash locations are placed on ODOT’s Highway Safety Program (HSP) list for further evaluation and recommendations for potential improvements. US 250 is on ODOT’s HSP list and in 2005 a safety and congestion study was completed by ODOT. Results of the study recommended improvements along the corridor where the MPO worked with ODOT to secure funding for their implementation. All improvements along this corridor are expected to be completed by fall of 2016.

Table 5-4: Crash Intersection Locations (Ranked by Frequency)²

Rank Order	Jurisdiction Name	Intersection Location	Number of Crashes	Crash Rate
1	Perkins Township	US 250 @ Strub Rd.	77	
2	City of Sandusky	SR 4 @ Perkins Ave.	67	
3	Perkins Township	US 250 @ Perkins Ave.	45	
4	Perkins Township	Columbus Ave. @ Perkins Ave.	37	
5	Perkins Township	Campbell St. @ Perkins Ave.	34	
6	Perkins Township	US 250 @ Fun Dr.	26	
6	Perkins Township	Columbus Ave. @ Strub Rd.	26	
7	Perkins Township	Perkins Ave. @ Sherman St.	24	
8	Perkins Township	US 250 @ Bogart Rd.	23	
8	Perkins Township	SR 4 @ Strub	23	1.23
9	Perkins Township	Camp St. @ Perkins	21	
10	City of Sandusky	Hayes Ave. @ Osborne St.	20	
11	City of Sandusky	Scott St. @ Warren St.	19	
11	City of Sandusky	Cedar Point Dr. @ Cleveland Rd.	19	0.65
11	Margaretta Township	SR 101 @ Bardshar Rd.	19	2.02
12	Huron Township	Cleveland Rd. @ Perkins Ave.	18	
13	City of Sandusky	Cedar Point Dr. @ First St.	17	
13	Perkins Township	US 250 @ Ramada St.	17	
13	Perkins Township	Caldwell St. @ Perkins Ave.	17	
14	Huron Township	Rye Beach Rd. @ SR 2 Ramp	16	
14	City of Sandusky	Columbus Ave. @ Monroe St.	16	
14	Perkins Township	Campbell St. @ Strub Rd.	16	
14	Perkins Township	Campbell St. @ Columbus Ave.	16	
15	Huron Township	Cleveland Rd. @ Rye Beach Rd.	15	
15	Perkins Township	US 250 @ N. Mall Blvd.	15	
15	Perkins Township	US 250 @ Parkland Dr.	15	
16	Perkins Township	US 250 @ Hull Rd.	14	
16	Groton Township	SR 4 @ Skadden Rd.	14	0.97
16	City of Sandusky	Cleveland Rd. @ Sycamore Line	14	
16	City of Sandusky	Camp St. @ Monroe St.	14	
16	City of Sandusky	Butler St. @ Cleveland Rd.	14	
17	Village of Milan	Church St. @ Main St.	13	
17	Perkins Township	US 250 @ SR 2 Ramp	13	
17	City of Sandusky	SR 4 @ Grant St.	13	
17	City of Sandusky	First St. @ Meigs St.	13	
17	City of Sandusky	Cedar Point Dr. @ River Ave.	13	
18	Milan Township	US 250 @ Ohio Turnpike Ramp	12	
18	Village of Castalia	Main St. @ Washington St.	12	
18	City of Sandusky	Monroe St. @ Wayne St.	12	
18	City of Sandusky	Columbus Ave. @ Washington St.	12	
18	City of Sandusky	Cleveland Rd. @ Remington Ave.	12	0.64
18	City of Sandusky	Cleveland Rd. @ Huntington Ave.	12	

² ERPC 2014 Crash Summary Report

18	City of Sandusky	US 250 @ Butler St.	12	
19	City of Sandusky	Fulton St. @ Monroe St.	11	
19	City of Sandusky	Columbus Ave. @ Parish St.	11	
19	Perkins Township	Columbus Ave. @ Schiller Ave.	11	
19	City of Sandusky	Cleveland Rd. @ Harbour Pkwy.	11	
20	City of Sandusky	Monroe St. @ Tiffin Ave.	10	
20	Margaretta Township	SR 2 @ SR 101	10	
20	Groton Township	Ohio Turnpike Ramp @ Ohio Turnpike	10	
20	City of Sandusky	US 250 @ Sycamore Line	10	0.36
20	Village of Milan	US 250 @ Shaw Mill Rd.	10	
20	City of Sandusky	Hancock St. @ Reese St.	10	
20	Perkins Township	Perkins Ave. @ 52 nd St.	10	
20	Perkins Township	SR 4 @ SR 2	10	
20	City of Sandusky	Columbus Ave. @ 46 th St.	10	
20	Berlin Township	SR 113 @ Ceylon Rd.	10	
21	City of Sandusky	Monroe St. @ Pearl St.	9	
21	Margaretta Township	US 6 @ Wahl Rd.	9	
21	City of Sandusky	SR 4 @ Polk St.	9	
21	City of Sandusky	SR 4 @ Johnson St.	9	
21	Huron Township	Galloway Rd. @ Hull Rd.	9	
21	City of Sandusky	Water St. @ Wayne St.	9	
21	Perkins Township	US 250 @ Crossing Rd.	9	
21	Perkins Township	Columbus Ave. @ Bogart Rd.	9	
21	City of Sandusky	Adams St. @ Wayne St.	9	

FIGURE 5-7 BASE YEAR – SUMMER WEEKDAY LEVEL OF SERVICE MAP

**CRASH LOCATION MAP
FIGURE 5-8**

Pavement Conditions: A major element of a transportation plan is to maintain the system. Pavements deteriorate for a variety of reasons. In northern Ohio, weather, road deicing salts, lack of maintenance, and traffic are the principal causes. Heavy trucks, both by size and numbers, also have a significant effect on road deterioration. In addition to fixing rough pavements (cracks, patches and disjointed pavement slabs) for comfort, safety, and to prevent future problems, it is also important to eliminate wheel ruts, which hold water and result in hydroplaning or slippery conditions when the water freezes.

There is no formula for estimating the need for pavement maintenance as pavement conditions reflect how the pavement was constructed, the amount and kind of traffic, and weather conditions. Therefore, larger agencies responsible for roadway maintenance have a pavement management system and regularly rate pavement conditions on the streets and roads under their jurisdiction. The general practice is to rate pavement on a scale of 1 to 100 based on observed conditions and some testing. Lower values mean poorer pavement conditions. ODOT classifies roads into one of three policy systems: the priority system, general system or urban system.

Priority System – 1.) All interstate routes, excluding the Turnpike
2.) All divided National Highway System routes (NHS) routes inside incorporated areas with populations of 5,000 or more that have a functional class of 12 (other urban freeways and expressways).
3.) All divided NHS routes outside of incorporated areas with populations of 5,000 or more.

ODOT considers priority system pavements to be in or approaching poor condition if the pavement condition rating (PCR) is less than 65.

General System – Includes all non-priority routes outside of municipalities with populations of 5,000 or more. ODOT considers general system pavements to be in or approaching poor condition if the PCR is less than 60.

Urban System – Includes all non-priority routes within municipalities with populations of 5,000 or more. ODOT considers urban system pavements to be in or approaching poor condition if the PCR is less than 55.

ODOT's pavement condition rating records were utilized in the evaluation of roads for the ERPC MPO region for this plan. Of those roads that ODOT evaluated, none were currently rated as being in poor condition.

Bridges: Bridges are structures over ten feet long, which carry a road way over an obstruction such as a river, railroad or another roadway. Bridges have different, usually longer, maintenance and functional lives than the roadways on either end. Therefore, bridge maintenance is often carried out at a different time than the adjoining roadway. When maintenance is required, however, the maintenance cost can be considerable higher for the same amount of traffic than the same length of adjoining roadway. Because of these costs, the disruption to the transportation system is a bridge is closed and other factors, bridges have special funding categories.

There are 322 bridges in the MPO area. ODOT is responsible for 124 bridges; the Ohio Turnpike Commission, 47; Erie and Lorain (in the City of Vermilion) Counties (for county, township and village bridges), 137; and the larger municipalities, 14. These bridges are inspected annually and the structures rated. The bridge is then appraised, based on the bridge rating, traffic, and other factors, to determine a priority for maintenance. The bridge appraisals are on a ten-point scale with lower numbers indicating more serious structural deficiencies and high impacts to the traveling public should the bridge be closed, while larger numbers indicate bridges in good condition. **Table 5-5** lists the appraisals for bridges in the MPO as of December 2009 are:

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 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.³



Bridge Condition	Appraisal Rating	Number of Structures
Critical	0 through 2	2
Poor	3 and 4	9
Fair	5 and 6	110
Good	7 through 9	201

³ ERPC Freight Inventory 2013

⁴ <http://www.steel-bridges.com/steel-beam-bridge.htm>

Connectivity: Connectivity can be considered the global concept of access. It is the ability to move relatively directly and easily between one area and another. For the MPO there are external trips, between the MPO and the rest of the State, and internal trips, within the MPO. There are as many connectivity issues as there are travelers with an origin (often home) and a destination (work, shopping, recreation). Some of the more important internal connectivity issues raised by stakeholders and the public include the following:

- ✚ **Erie County East-West Connectivity-** The Huron River, NASA's Plum Brook Station and, to a lesser extent, the Wagner Quarry restrict east-west connectivity across the County and the MPO area.
- ✚ **City of Sandusky East-West Connectivity-** The historical roadway pattern of multiple radial roads to the Downtown (and the port) makes east-west travel more difficult.
- ✚ **Cedar Point-** This major traffic destination is difficult to reach because the route designated for visitors is highly congested both with visitors and local residents going to shopping facilities as well as traffic signal proliferation and spacing and lack of access management.
- ✚ **Marinas-** The Cities of Sandusky and Vermilion and to a smaller extent Huron have marinas and associated business including boat sales and repair and waterfront restaurants and motels developing in the old port areas. Reaching these destinations from neighborhoods, rural areas, and SR 2 for longer distance users across older urban streets can be difficult. However, most users are engaged in recreational activities and therefore willing to accept longer and more difficult commuting patterns.
- ✚ **Sandusky Downtown-** The Sandusky Downtown business district is difficult to reach although the principal arterial network focuses on the Downtown area, and most roadways are narrow.
- ✚ **The Islands-** Although not completely a roadway issue, public access to Kelley's Island (and externally the other Lake Erie Islands) is an issue for people in both Sandusky and Vermilion. Griffing Sandusky Airport, and port (Sandusky and Vermilion) is considered important to maintain and in the case of Vermilion, establish.

There are numerous other more localized connectivity/access issues raised in the Public Involvement Summary. Many of these are issues for the specific local community to address. As specific improvements are developed, they may be brought to the MPO for inclusion as specific improvements in the Long Range Transportation Plan. External connectivity issues have also been raised. These connectivity issues cannot be solved solely by the MPO Area but with other agencies such as ODOT, other MPOs or Small Urban Areas. The more significant issues include;

- ✚ **Travel to Cleveland-** Some residents in the eastern part of the MPO particularly the City of Vermilion work in Cleveland. Improving travel, possibly with commuter rail, to Cleveland is desirable.
- ✚ **Travel to Central Ohio-** Currently east-west routes including I-80/90, SR 2 and to some extent US 20 provide good east-west connectivity with roads constructed to Interstate/freeway standards

or with US 20 four lane expressway with urban by-passes standards. Travel south into Central Ohio is via two lane rural arterials with at grade intersections and which pass through small villages and towns. Improved routes might avoid travel through larger towns.

- ✚ **Connections to I-71 and I-75-** This is a companion of the Central Ohio issue. To reach one of these two north-south Interstate routes via the Interstate or freeway system, travelers must go east or west for just under an hour. Upgraded connections could save considerable time for travelers taking the Interstate System to destinations outside the state to the south.

Access Management: Highways have two basic functions: To move people and goods from place to place; and, to provide access to property. Access management also includes the access of lower class roadways onto high classes of roadway. Access points are “points of conflict” where vehicle movements are across or against each other. Drivers slow down or traffic engineers install stop signs, signal or other design elements on a roadway to minimize the conflicts and the crashes that can result. Restrictions on traffic movement reduce the carrying capacity of a roadway. Access management is a means of organizing and designing access points along roadways to balance the movement function while still providing access to lowered classes of roadway or to property.

Currently there are three agencies with access management policies in the MPO. ODOT has an access management policy for all roadways under its jurisdiction including all US and State Routes in unincorporated areas. The Ohio Turnpike Commission manages access to the Interstate Routes in the MPO as the only designated Interstate Highways are under OTC jurisdiction. OTC access policies generally follow ODOT’s policies for Interstate routes with the additional consideration the access points also must meet a revenue test. The third agency is Erie County, which has prepared an access manual as authorized by the Ohio Revised Code for county and township roads. The manual, as adopted in by the County Commissioners and effective as of April 30, 2006; defines the general requirements for access such as the spacing of access points and access point dimensions. The regulation works in conjunction with County and township master plans and associated zoning regulations. It also includes the need for traffic impact studies for new developments generating high volumes of traffic. The cities in the MPO area do not have access management plans but have some control of access with zoning and building codes.

5.4 Transit System

The Sandusky Transit System (STS) provides demand response transit service in the Sandusky urbanized area. The mission of the transit system is “to provide safe public transportation service to all service area residents in a timely, courteous, and cost-effective manner in order to contribute to their quality of life.” Other public bus service in the area is Greyhound with a station on SR 101 just north of SR 2.

Background of the Sandusky Transit System: Until the early 1990’s, Erie County was not served by a public transit system. Instead, public and private agencies provided transportation services for their individual clients and customers. Recognizing a need for an affordable transportation service, several agencies and local government officials formed the Erie County Transportation Committee to undertake a study to determine the feasibility of creating a public transit system in the area. The study found that local agencies were spending at least \$400,000 annually to provide transportation for their clients and it identified an unmet need of transit among the general public.

In late 1992, the City of Sandusky formed the Sandusky Transit System (STS) and began providing demand response service in the city limits and to 32 locations in the county. The next year, STS began operating a contract service to transport Erie County Board of Mental Retardation and Development Disabilities (MR/DD) customers to the agency's sheltered workshop.

In 1997, Erie County began providing financial support to STS in order to expand the service area of STS beyond the Sandusky city limits (ODOT also provided financial support for the expansion). The expansion was incremental and by 1999 service was available to the entire county. In 1999, STS also began providing Saturday service, a US 250 corridor service, and a summer weekend service.

Funding cuts at both the state and local levels beginning in 2001 led to a reduction in the size of the system's service area and hours of service. In 2002, the City of Sandusky and Erie County capped their contributions to the transit system. The result was that the system reduced its hours to Monday through Friday from 6:00 a.m. to 6:00 p.m. and raised its fares for the first time.

In 2003, Erie County withdrew its financial support from the transit system after a sales tax levy with funding for transit failed to pass. The system reduced its service area to the Sandusky City limits and a small area surrounding the city that became Zone Two. Zone Two trips were required to start or end in Sandusky.

The 2000 U.S. Census revealed that the densely populated area around the cities of Sandusky and Huron meets the definition of an "urbanized area." With the urbanized area designation, STS transitioned from being a rural transit grantee to a Federal Transit Administration Section 5307 Urban System. To assist with the transition and to help meet the needs of the service area, STS undertook a Transportation Development Plan (TDP) in 2003.

Based on demographic analysis and surveys of existing transit users, other transportation providers, and community groups, the TDP offered a range of alternatives for potential service improvements and expansions that support the needs and demands that the study identified. The primary barrier to expanding the system is securing the local match that is required by the Federal and state urban grant programs. As a rural system, STS used its MR/DD contract revenue as local match; however, that is not eligible as local match for the Federal urbanized area transit program. STS would need to identify new sources of local match or restructure the MR/DD contract such that MR/DD revenue could be used as local match. By securing local match, STS would be able to take advantage of the increase in Federal dollars that is available to the system.

Since February 2004, STS began working to implement the recommendations of the TDP. STS expanded the service area to include the entire urbanized area and lifted the requirements that trips in Zone Two must begin or end in Zone One. In addition, STS re-structured its contract with MR/DD that will allow the MR/DD passenger revenue to be used as local match for the Federal grant beginning in January 2005. The local match allowed the system to receive more Federal funding and thus increase its hours of service. Since May 2005, STS extended its weekday hours to 10:00 p.m. and provided service on Saturday from 6:00 a.m. to 6:00 p.m. Although the TDP did not identify a need to demand for fixed route service, STS examined the possibility of operating a patterned demand response service along certain corridors (e.g., US 250, SR 4, Columbus Avenue) and in Sandusky.

In July 2007, the Erie County Coordinated Public Transit-Human Services Transportation Plan (HSTP) was completed. The document was prepared by the Erie Regional Planning Commission through the Erie County Metropolitan Planning Organization. Representatives from the Sandusky Transit System (STS) and Serving Our Seniors (SOS) were key partners in developing the plan. The document contains information, analyses, and findings compiled from an evaluation of community characteristics, a stakeholder assessment and an inventory of existing transportation services. It also provides a description of the unmet transportation needs in the Erie County Area as determined by using various methods such as agency surveys, demographic research, and ongoing stakeholder input. The Coordinated Transportation Plan was updated in 2010 and then again in 2013. The Yes Express, a feasibility plan, was conducted in 2013 with Local Government Innovation Funding. The study recommended the hiring of a transportation coordinator. Also in 2013 SPARC received funds to install five bus shelters in the SPARC region and monies to perform improvements.

Demand Response Service-STS currently provides advanced reservation, curb-to-curb, demand response, shared ride transit service Monday through Saturday from 6:00 a.m. to 10 p.m. The service is open to the general public and there are no restrictions on trip purpose. Trips must be reserved at least two weeks advance, although trips may be reserved up to two days in advance if there is availability. The one-way fare for a trip within Sandusky is \$2.00 for the general public and \$1.00 for senior or persons with disabilities within the City of Sandusky. When travelling outside the city tickets are \$3.00 and passengers can go anywhere in the county. Fare tickets can be purchased in \$15 denominations at the City Building. In SFY 2014, the STS operating budget was approximately \$28,900,000.

Ridership Numbers-Historically there was a decrease in ridership from 2001 through 2005 as a result of state and local funding cuts. After 2008 ridership numbers climbed reaching 190,300 in 2013. At the time this plan was written 2014 ridership numbers were unavailable.

SPARC MAP
FIGURE 5-9

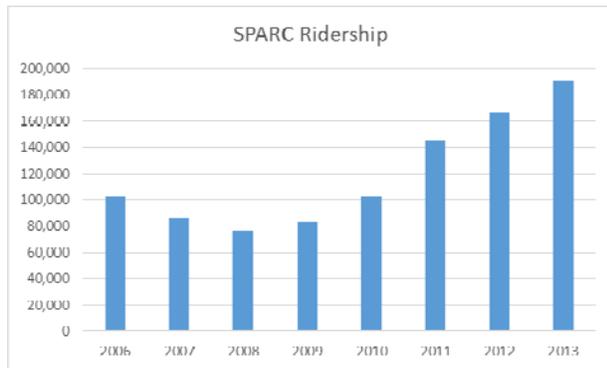


Figure 5-9: SPARC Ridership



SPARC Sign

MR/DD Service- In addition to the system’s general public service, STS operated a contract service for the Erie County Board of MR/DD. Each day, STS transports approximately 120 MR/DD clients to and from the agency’s sheltered workshop on Galloway Road in Perkins Township. The service operates two hours in the morning and two hours in the afternoon.

Job Access and Reverse Commute Program (JARC)-The JARC program is a federal program that was designed to provide funding for local programs that offer job access and reverse commute services to provide transportation for low income individuals who may live in the city core and work in suburban locations. As a result of the 2007 Coordinated Plan, STS was able to apply for funding through the Job Access and Reverse Commute Program. They were awarded approximately \$100,000 in June of 2008 and 2009. Additional grant matching monies were provided by Serving Our Seniors (SOS), Erie County Job and Family Services and the Sandusky Erie County Community Foundation.

With the awarded funding, STS was able to implement a one- hour deviated route service called SPARC (Sandusky Perkins Area Ride Connection) with stops in the City of Sandusky and south in Perkins Township along the US 250 corridor. The vehicle can deviate up to three miles in any direction from the designated route in order to pick up passengers along the way. Deviations must be scheduled ahead of time with the STS Dispatch Office. The SPARC Routes (**Fig. 5-9**) provide affordable daily transportation for individuals needing to travel from the City of Sandusky to their places of employment in the suburban neighboring community of Perkins Township. The point deviation routes incorporate a number of neighborhood and downtown stops within the City of Sandusky and commercial establishments in Perkins Township along the Milan Road US 250 corridor.

Rolling Stock -According to the 2013 Coordinated Transportation Plan the current STS vehicle inventory consists of 20 vehicles. The buses are mainly used for general public service and MR/DD contract service. The general public service is provided using a mixture of sedans and vans. The STS operator MV Transportation, owns the vehicles. The dispatch center and vehicle facility are located at the Sandusky AMTRAK station.

Agency	Year	Make	Model	Capacity	W/C position	Mileage	Condition	Replace in 3-5 Years
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Sandusky Transit System								
1	1994	tmc	rtll	35	2	424,663	average	yes
2	1994	tmc	rtll	35	2	449,533	average	yes
3	2002	Ford	E450	16	7	218,470	good	yes
4	2004	Ford	E350	12	2	182,707	n/a	n/a
5	2004	Ford	E350	12	2	182,707	n/a	n/a
6	2004	Ford	E350	12	2	182,707	n/a	n/a
7	2004	Ford	E350	12	2	198,975	n/a	n/a
8	2004	Chevy	Impala	4	0	120,402	good	no
9	2010	Ford	E450	16	2	31,518	excellent	no
10	2010	Ford	E450	16	2	35,489	excellent	no
11	2010	Ford	E450	16	2	29,383	excellent	no
12	2010	Ford	E450	16	2	22,396	excellent	no
13	2010	Ford	E450	16	2	31,592	excellent	no
14	2010	Ford	E450	16	2	37,227	excellent	no
15	2010	Ford	E450	16	2	82,523	excellent	no
16	2010	Ford	E450	16	2	102,795	excellent	no
17	2010	Ford	E350	6	1	23,488	excellent	no
18	2010	Ford	E350	6	1	23,658	excellent	no
19	2010	Ford	E350	6	1	22,411	excellent	no
20	2010	Ford	E350	6	1	23,626	excellent	no

Table 5-6: STS Vehicle Inventory⁵

ERPC MPO
FISCAL YEARS 2014-2017 TIP FINANCIAL ANALYSIS
SUMMARY OF FEDERALLY FUNDED PROJECTS—TRANSIT

TRANSIT AGENCY NAME: SANDUSKY TRANSIT SYSTEM (STS)

PROJECTS	FY 2014-2017	
	COST	
	TOTAL	FEDERAL
CAPITAL	\$2,830,840	\$2,830,840
OPERATING	\$2,204,232	\$2,204,232
STS TOTAL	\$5,035,072	\$5,035,072

Note: STS applies yearly for rural transit funding. Funding projections through SFY 2017 were based on 2013 award amounts.

6

Table 5-7: STS Budget for SFY 2014-2017

5.5 Bicycle/Pedestrian Facilities

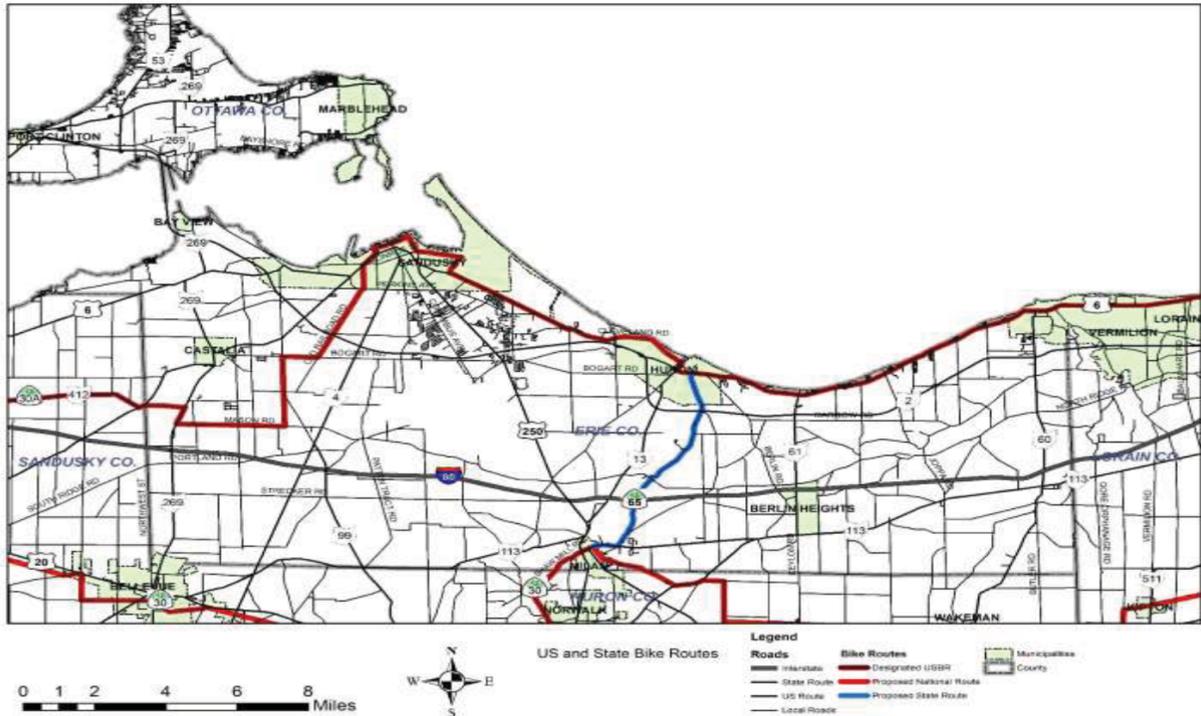
Bicycle and Pedestrian Plan: Bicycle and pedestrian facilities and multi-use trail systems are valuable community assets, which serve utilitarian transportation and recreational purposes. Over the last couple of decades, many communities around the country have been promoting the use of bicycles and walking as an important transportation component that also serves recreational purposes and encourages healthy living. Similarly, the Erie Regional Planning Commission developed a 1999 Bicycle and Pedestrian Plan that addressed bicycle and pedestrian education, safety and the creation of bicycle and pedestrian routes throughout the County. The plan was updated in 2014 and identifies seven consolidated goals in addition to the recommendation to establish a standing bicycle and pedestrian committee; which staff is currently working on. Also, earlier this year, the Ohio Department of Transportation began an initiative to identify and designate bicycle routes on both state and national levels. As staff continues to work with the Department and as such one state route and two federal routes have been identified. It is

⁵ Coordinated Transportation Plan, 2013

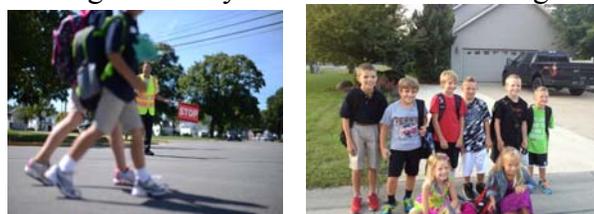
⁶ 2014-2017 TIP, 2013

anticipated that next year, ODOT will submit the proposed routes to AASHTO for consideration of official national designation. The proposed routes are seen below on the map prepared by ODOT.

State Route 65: Erie County



Programs: Under the transportation bill SAFETEA-LU the Safe Routes to School (SRTS) program was established. This program has continued under Moving Ahead for Progress in the 21st Century, or MAP-21 which was passed in 2012. The SRTS program is designed to enable community leaders, schools and parents across the nation to improve safety and encourage more children to safely walk and bicycle to school. In the process, programs work to reduce traffic congestion and improve community health and the environment which ultimately makes communities more livable for everyone. When applying to the SRTS program the first step is for the project sponsor to create a school travel plan. The travel plan identifies and creates recommendations to encourage children grades K-8 to walk and/or bike to school. The Cities of Sandusky and Vermilion in addition to Perkins Township School Districts have completed a school travel plan and have applied for funding. All three jurisdictions have historically been funded for projects. The City Vermilion has successfully implemented various infrastructure projects with their funding award and the City of Sandusky has hosted a well received bicycle rodeo. The ERPC MPO also promotes active transportation through a variety of activities held throughout the year.



Kids walking to school⁷

⁷ Sandusky Register

Existing Bicycle and Pedestrian Facilities Map
Figure 5-10

Multi-Modal Map
Figure 5-11

5.6 Freight and Regional Transportation

Freight

The MPO's freight system is made up of a variety of components including:

- ✚ **Approximately 165 miles of state truck routes and approximately 20 miles of county routes with weight limits of 40 tons;**
- ✚ **Two international ports linked to the world market via the Great Lakes and Norfolk Southern rail;**
- ✚ **Over 85 miles of active rail line; and**
- ✚ **Shared airport with Ottawa County.**

In 2013, ERPC staff worked alongside with consultants from the GPD Group to create a freight study. The study provided an assessment of existing conditions for elements of freight transportation and also provided recommendations for freight related improvements. Group sessions and stakeholder interviews were conducted during the process, which provided additional insight into issues or concerns the freight community might have in regards to the current transportation system. The following survey was sent out to various representatives of the freight community;

1. What sector of industry is your business (retail, service, construction, industrial, etc.)?
2. What are Erie County's logistical strengths (road, rail, port access, other)?
3. Which of the following do you think have the most and least impact on Erie County's freight community?
 - a. NS expansion in Bellevue
 - b. Truck driver shortages
 - c. Intermodal traffic growth
 - d. Increasing US exports
 - e. Canada/Mexico goods movement
 - f. Highway congestion in northern Ohio
 - g. Reduction in funding of transportation infrastructure
 - h. Panama Canal expansion
 - i. Service and access through St. Lawrence Seaway to Great Lakes
 - j. Growth of Gulf and East Coast ports
4. Can you think of any other trends that may affect Erie County?
5. How will Erie County's freight community change in the future (grow, stay same, decrease)?
6. Which of the following do you feel are logistical drivers that affect your business or other local businesses?
 - a. Not enough choices to ship products
 - b. Products not shipped fast enough
 - c. Lack of raw materials
 - d. Increase in overall costs of business
 - e. Other?

7. What does Erie County need to do to improve its success in moving freight?
 - a. Improve port access
 - b. Improve rail access
 - c. Improve air access
 - d. Improve road access
 - e. Other?
8. As a result of logistical problems, which of the following affects have the most impact on your business or other local businesses?
 - a. Increase in raw material costs
 - b. Increase in payroll cost
 - c. Increase in capital costs
 - d. Delay in transportation of goods
 - e. Loss of sales
 - f. Other?
9. How critical is the following mode of transportation for Erie County? (very important, moderately important, unimportant, extremely unimportant).
 - a. Intermodal rail today
 - b. Intermodal rail in future
 - c. Non intermodal rail today
 - d. Non intermodal rail in future
 - e. Trucking today
 - f. Trucking in future
 - g. Air cargo today
 - h. Air cargo in future
 - i. Pipeline today
 - j. Pipeline in future
 - k. Great lakes shipping today
 - l. Great lakes shipping in future
 - m. Ocean shipping today
 - n. Ocean shipping in future
10. What can regional and state governments do to improve logistics and competitiveness in Erie County?
 - a. Offer more tax incentives to businesses
 - b. Improve road movements
 - c. Improve rail movements
 - d. Improve shipping movements
 - e. Improve air movements
 - f. Reduce regulations on transportation
 - g. Increase regulations on transportation
 - h. Other?

- 11. Have you personally made a private investment in infrastructure in Erie County?

- 12. What would motivate people to privately invest in local infrastructure in Erie County?
 - a. Increase in profits
 - b. Increase in timeliness of product delivery
 - c. Increase in customer satisfaction
 - d. Tax breaks
 - e. Aesthetic improvements
 - f. Other?

- 13. Do you have any additional comments or concerns you would like to share regarding freight and logistics in the area?

Highlights from the above 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 Erie County economy.

Also, as it was evident that leisure and manufacturing dominate the region’s economy, the study revealed that the industry composition is such that half of the region’s total output is generated by freight-oriented industries. This is higher either Ohio or US economies:

Location	Percentage of Total Output From Freight-Oriented Industries
Erie County, Ohio	50.5%
State of Ohio	40.8%
United States	35.8%

Table 5-8 Freight-Oriented Percentages of Total Output

Outbound commodity flows are currently at 6.9 million tons with a value of over \$5.78 billion. Projections into 2030 have total export tonnage increasing to 7.43 million tons. Approximately 72% (by volume) of the exports is tied to the mineral industry.

Inbound commodity flows are currently at 2.9 million tons with a value of over \$6.94 billion. Projections into 2030 estimate total import tonnage will increase to 4.07 million tons. Approximately 31% (by volume) of the imports are “other minerals”.⁸

Freight travels in and out of the MPO region by road, rail, air, and water. Below is an overview of the existing transportation facilities that serve the freight industry.

⁸ Erie Regional Planning Commission Freight Study, 2013

Rail Freight: All active rail lines in the region are owned by Norfolk Southern Corporation (NS)⁹ and provide service to major employers in the MPO including the ports of Vermilion and Huron. Triple Crown, an affiliate of Norfolk Southern Corporation, uses a combination of over-the-road and over-the-rail shipping to service the region’s freight community. The Sandusky Triple Crowne terminal is paved and is equipped to handle up to 200 trailers. The facility contains three rail tracks, each capable of accommodating 75 units. Trucks accessing the Triple Crowne terminal were a safety concern raised during the public meetings. The terminal is located adjacent to Old railroad Road just north of the intersection of Strub Road.

Multiple lines provide support for Amtrak passenger rail service. It was also 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.

At-grade Rail Crossing: Within Erie County there are 66 public at-grade rail crossings. Rail crossings can be a significant source of traffic delay depending on the number of trains that operate per day across a particular intersection. **Table 5-9a** lists the crossings with the highest number of trains crossing per day at 50.

Table 5-9a: Highest Train Traffic at Public At-Grade Rail¹⁰

<u>Location</u>	<u>Maintaining Agency</u>	<u>Highway AADT</u>
SKADDEN RD	STATE	3090
CAMPBELL ST	CITY OF SANDUSKY	5548
MILLS ST	CITY OF SANDUSKY	907
OLDS ST	CITY OF SANDUSKY	921
EDGEWATER AVE	CITY OF SANDUSKY	3054
RIVER RD	CITY OF HURON	1597
MAIN ST	CITY OF HURON	7529
WILLIAMS ST	CITY OF HURON	1497
RYE BEACH RD	CITY OF HURON	4582
CAMP RD	HURON TWP	1927
PERKINS AVE	ERIE COUNTY	4867
REMLINGTON AVE	CITY OF SANDUSKY	3269
PIPE ST	CITY OF SANDUSKY	1814
HAHN RD	BERLIN TWP	281
SKADDEN RD	STATE	3090
CAMPBELL ST	CITY OF SANDUSKY	5548
MILLS ST	CITY OF SANDUSKY	907
OLDS ST	CITY OF SANDUSKY	921
EDGEWATER AVE	CITY OF SANDUSKY	3054
RIVER RD	CITY OF HURON	1597
MAIN ST	CITY OF HURON	7529
WILLIAMS ST	CITY OF HURON	1497
RYE BEACH RD	CITY OF HURON	4582
CAMP RD	HURON TWP	1927

⁹http://www.dot.state.oh.us/Divisions/Planning/TechServ/prod_services/Pages/ESRIDwnLds.aspx

¹⁰ Public Utilities Commission of Ohio

Location	Maintaining Agency	Highway AADT
PERKINS AVE	ERIE COUNTY	4867
REMINGTON AVE	CITY OF SANDUSKY	3269
PIPE ST	CITY OF SANDUSKY	1814
HAHN RD	BERLIN TWP	281
SR 61	STATE	2220
BERLIN RD	CITY OF HURON	2219
VERMILION RD	CITY OF VERMILION	2441
MAIN ST	STATE	3600
GRAND ST	CITY OF VERMILION	1381
ADAMS ST	CITY OF VERMILION	1003
COEN RD	VERMILION TWP	1427
JOPPA RD	ERIE COUNTY	200
FRAILEY RD	VERMILION TWP	232
RISDEN	ERIE COUNTY	461
POORMAN RD	VERMILION TWP	236
W RIVER RD	CITY OF VERMILION	7124
PATTEN TRACT RD	ERIE COUNTY	615
JEFFRIES RD	ERIE COUNTY	2102
WIKEL RD	BERLIN TWP	118
HOOVER RD	MILAN TWP	187
STRECKER RD	ERIE COUNTY	625
THOMAS RD	OXFORD TWP	352
RANSOM RD	OXFORD TWP	498
BARNES RD	VERMILION TWP	312
STANLEY RD	VERMILION TWP	148
JOPPA RD	ERIE COUNTY	285
FRAILEY RD	VERMILION TWP	247
DARROW RD	ERIE COUNTY	740
SMOKEY RD	BERLIN TWP	163
CEYLON RD	STATE	2910
BARROWS RD	ERIE COUNTY	934
DOUGLAS ST	CITY OF VERMILION	2146
SR 60	STATE	6730
COEN RD	VERMILION TWP	1429
RISDEN RD	ERIE COUNTY	464
VENICE RD	CITY OF SANDUSKY	10390
MONROE ST	CITY OF SANDUSKY	5938
RIVER RD	ERIE COUNTY	1455
MILL ST	ERIE COUNTY	
STRECKER RD	ERIE COUNTY	1488
SKADDEN RD	ERIE COUNTY	1725
BOGART RD	ERIE COUNTY	3232
TIFFIN AVE	STATE	5490
OLDS ST	CITY OF SANDUSKY	983
POTTER RD	GROTON TWP	323

Location	Maintaining Agency	Highway AADT
KNAUSS RD	GROTON TWP	75
BRAGG RD	GROTON TWP	201
BILLINGS RD	GROTON TWP	174
RIVER RD	ERIE COUNTY	1200
KNIGHT RD	BERLIN TWP	267
RIVER RD	CITY OF HURON	1669
MAPLE AVE	GROTON TWP	199
MASON RD	ERIE COUNTY	1348
BARDSHAR RD	MARGARETTA TWP	290
PORTLAND RD	ERIE COUNTY	1667
SUPERIOR ST	CITY OF SANDUSKY	2563

Highway-Rail Grade Crossing Safety Summary: The Public Utilities Commission (PUCO) is responsible for the Rail Grade Crossing Safety Program and allocating the federal funds for rail crossing improvements in Ohio. The level of safety for an individual railroad/roadway crossing is calculated using a Hazard Index. The Hazard index uses data such as at-grade rail accident information, vehicle traffic at the crossing, and number of trains crossing daily and crossing sight distance. Crossings are compared against each other based on the index and assessed for accident risk by PUCO to determine the need for additional rail grade crossing protection.¹¹



Perkins Avenue and US 6 Rail Road Crossing¹²

Accident History and Prediction: Accident prediction is based on the findings from the Accident Prediction Report for Public at-grade highway rail crossings as provided by the Federal Railroad Administration (FRA) Office of Safety Analysis. The accident prediction formula is based on two independent factors (1) the crossing’s physical and operating characteristics and (2) five years of accident history at the crossing. The prediction report highlights potential hazards and indicates conditions that might be dangerous. The results of the accident prediction formula are not extensive enough to use it as a stand alone measure of whether a crossing needs additional equipment. Other data are needed for a full evaluation on the safety of a crossing include sight distance, traffic operations, and topography and passenger exposure levels. There are a total of 6,100 at grade crossings across the State of Ohio. The top

¹¹ Ohio Public Utilities Commission

¹² [http://gradecrossings.puco.ohio.gov/sites\\$/eri/eri072/1.jpg](http://gradecrossings.puco.ohio.gov/sites$/eri/eri072/1.jpg)

10 at grade crossings in Erie County are listed below according to their rank based on accident prediction values across the state.

Top Ten Predicted Rail Accident Locations 12/2013	
Perkins Avenue	Huron
Rye Beach Road	Huron
Camp Street	Huron
Main Street	Huron
Hahn Road	Vermilion
Campbell Street	Sandusky
Joppa Road	Vermilion
Vermilion Road	Vermilion
Remington Avenue	Sandusky
Main Street	Vermilion

Table 5-9b: Top Ten Predicted Rail Accidents Locations¹³



SR 101 Grade Separation in the City of Sandusky

2013 Erie County Grade Crossing Crashes

DOT #	RR	CITY	HIGHWAY	DATE	FATALITIES	INJURIES
524-062W	NS	HURON	PERKINS AVE	5/28/13	0	0
472-318B	NS	VERMILLION	JOPPA RD	11/20/13	2	0

Source: PUCO

2004-2013 Grade Crossing Crashes

¹³ Annual WPABS 2014 Federal Railroad Administration

Source: PUCO

YEAR	TOTAL CRASHES	FATAL CRASHES	INJURY CRASHES	TOTAL FATALITIES	TOTAL INJURED	CROSSING NUMBER	LOCATION OF FATAL CRASHES
04	2	0	0	0	0		
05	2	0	2	0	2		
06	3	0	1	0	1		
07	0	0	0	0	0		
08	5	1	0	1	0	524-062W	Huron CR 5/ Perkins Ave
09	1	0	1	0	1		
10	0	0	0	0	0		
11	0	0	0	0	0		
12	1	0	1	0	1		
13	2	1	0	2	0	472-318B	Vermilion, Joppa Rd

Table 5-10: Railroad Accident History

Regional Passenger: The regional passenger transportation system consists of Greyhound and Amtrak rail service and access to the Erie-Ottawa International Airport.

Airports-ERPC is home to several small airfields, all of which are privately owned. Hinde, Kelley's Island and Wakeman Airports are located in the area. Since the 2035 plan the Griffing-Sandusky Airport has been relocated to Port Clinton in Ottawa County and is now referred to as the Erie-Ottawa International Airport.

Other nearby airports include:

-  Norwalk-Huron County Airport
-  Lorain County Regional Airport
-  Sandusky County Regional Airport
-  Put In Bay Airport

Since 2005, an airport feasibility study was completed to determine if a new regional airport could be sustained in Erie County. The study indicated that federal funds could not be utilized to support an airport, as the proximity of a new airport would be too close to already existing airport facilities. Additionally, other area airports such as Lorain County Regional Airport and Norwalk-Huron Airport were concerned with potential negative impacts that a new Erie County airport could bring to their businesses. As such, interests turned toward implementing an intermodal loading facility at the NASA Plum Brook Research Facility that would include a new 9000' long runway. The proposed purpose of the runway would be to support freight operations. Efforts to secure funding for the intermodal loading facility are ongoing and more detail on this project is outlined in Chapter 7 of this document.

Passenger Rail: AMTRAK provides daily passenger rail service to the MPO area. The AMTRAK station is located at the intersection of North Depot Street and Carr Street in the City of Sandusky. AMTRAK station services in Sandusky include access to restrooms and payphones during station hours.

A separate rail endeavor has been formed involving the Cleveland MPO (NOACA) and the Toledo MPO (TMACOG). The agencies are working together with other local jurisdictions under the auspices of the Northern Ohio Rail Alliance to improve the Norfolk Southern mainline known as the Westshore Corridor and rebuild the rail infrastructure and improve it so as to provide for passenger service. The group is

currently trying to secure funding for consultant services to develop a Service Development Plan and complete a Tier I Environmental Impact Study (EIS). A TIGER Grant was submitted in the summer of 2014 but wasn't selected for funding. The improvement of this corridor will provide for greater connectivity and will strengthen the logistics so as to enable the North Coast to compete globally. The additional benefits flowing from this transit strategy are such that will provide jobs in the region, improve the quality of life for the citizens and businesses, and improve the environment.

One of the primary issues concerning the commuter rail initiative in the ERPC MPO region, are upgrading the existing train depot located in the City of Sandusky. The city of Sandusky-owned rail station was built in 1892 and was last renovated by the city in 1996. The station has an uncovered platform with a small shelter and waiting room. There are no fixed hours for this location, no ticketing office, and no baggage service. Additionally, no detailed planning has been done since Amtrak's ADA compliance report showing \$956,000 worth of ADA compliance and state of good repair improvements were needed. This included lengthening the existing 80-foot platform to Amtrak's 550-foot standard but not for adding a second platform.¹⁴

Northern Ohio Rail Alliance representatives continue to meet to identify possible funding sources to prepare a Service Development Plan and EIS.

Bus-The Greyhound Bus Corporation provides regional bus service to the MPO area. The bus line had suspended its service to the region in October 2009 after its former local agent quit. The company successfully recruited another agent in 2010 and service was resumed. The Sandusky Greyhound bus terminal provides full service ticketing and package express service. Four Greyhound buses come through Sandusky every day. Eastbound buses, which stop at Elyria and continue to downtown Cleveland, leave at 2:40 p.m. and 7:45 p.m. Westbound buses going to Toledo leave at 1:55 p.m. and 7:10 p.m. The intercity bus terminal is located at 3515 Tiffin Avenue in Sandusky and is open from 5:30am to 8:00pm every day.

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). **Table 5-11** and **Figures 5-10** below identify the intermodal facilities and connectors in the ERPC MPO region.¹⁵

¹⁴ Northern Ohio Rail Alliance, TIGER Grant Summary 2014

¹⁵ Erie Regional Planning Commission Freight Study, 2013

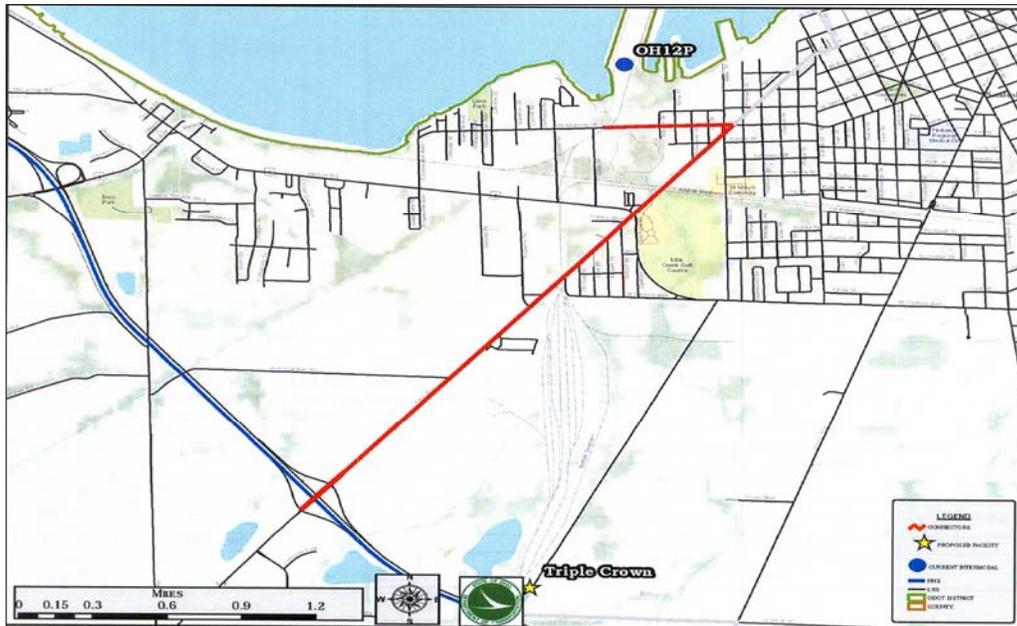
Table 5-11: Erie County Intermodal Facilities and Connectors

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

Source: Intermodal Facility and Connector Update 2011-2012, Ohio Department of Transportation

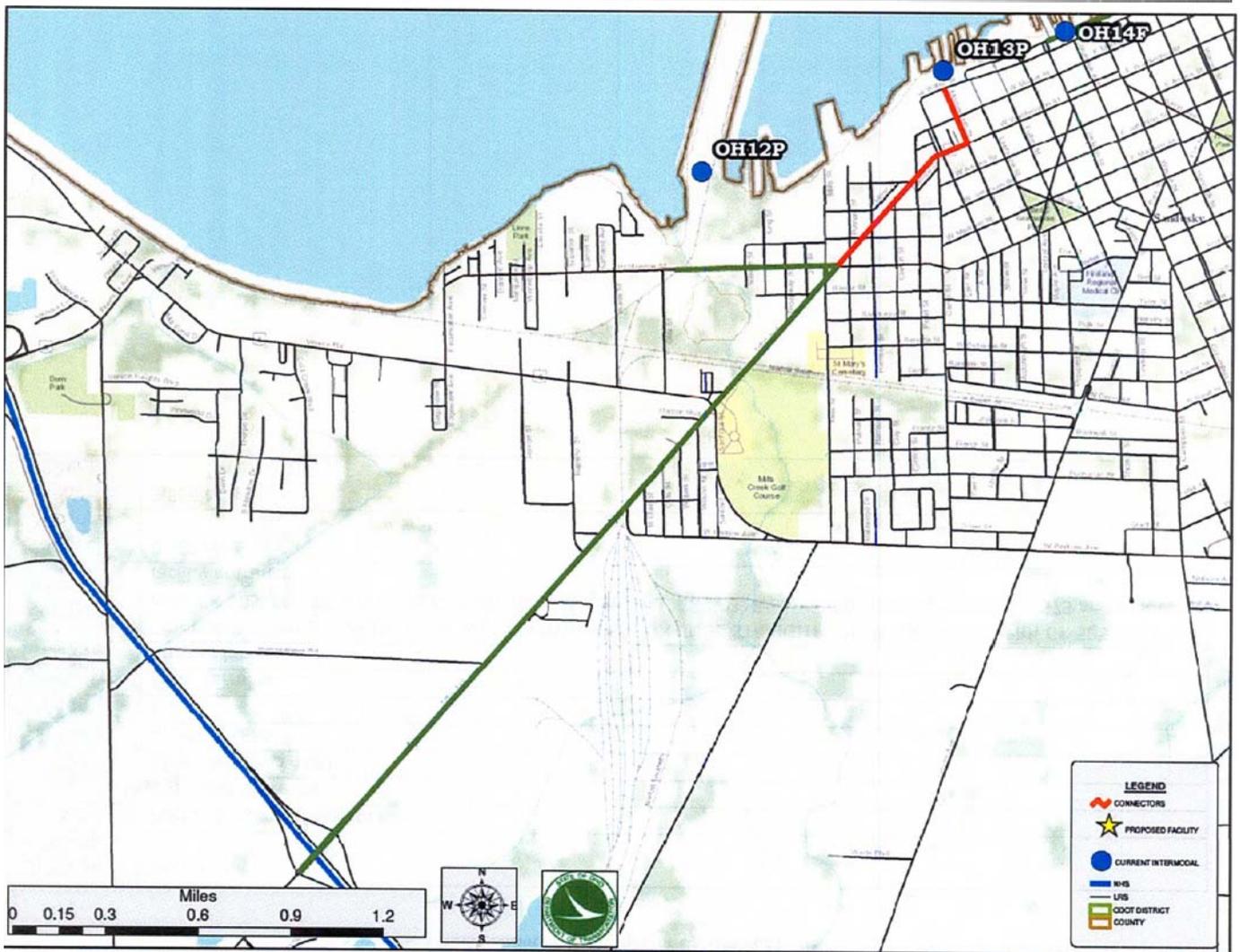
Figures 5-12 Intermodal Facilities and Connectors Maps¹⁶

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

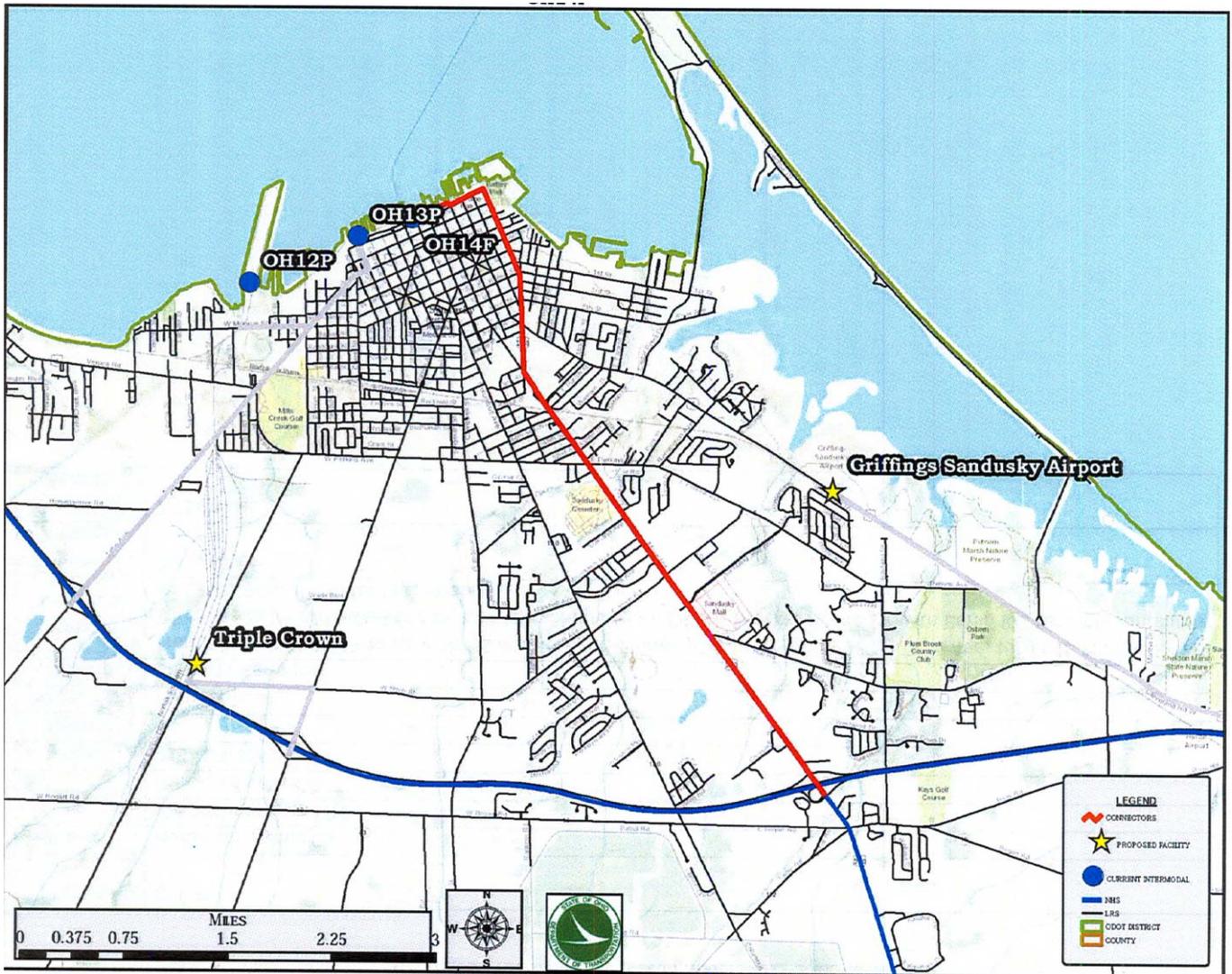


¹⁶ Ohio Dept. of Transportation, Office of Technical Services, 2012

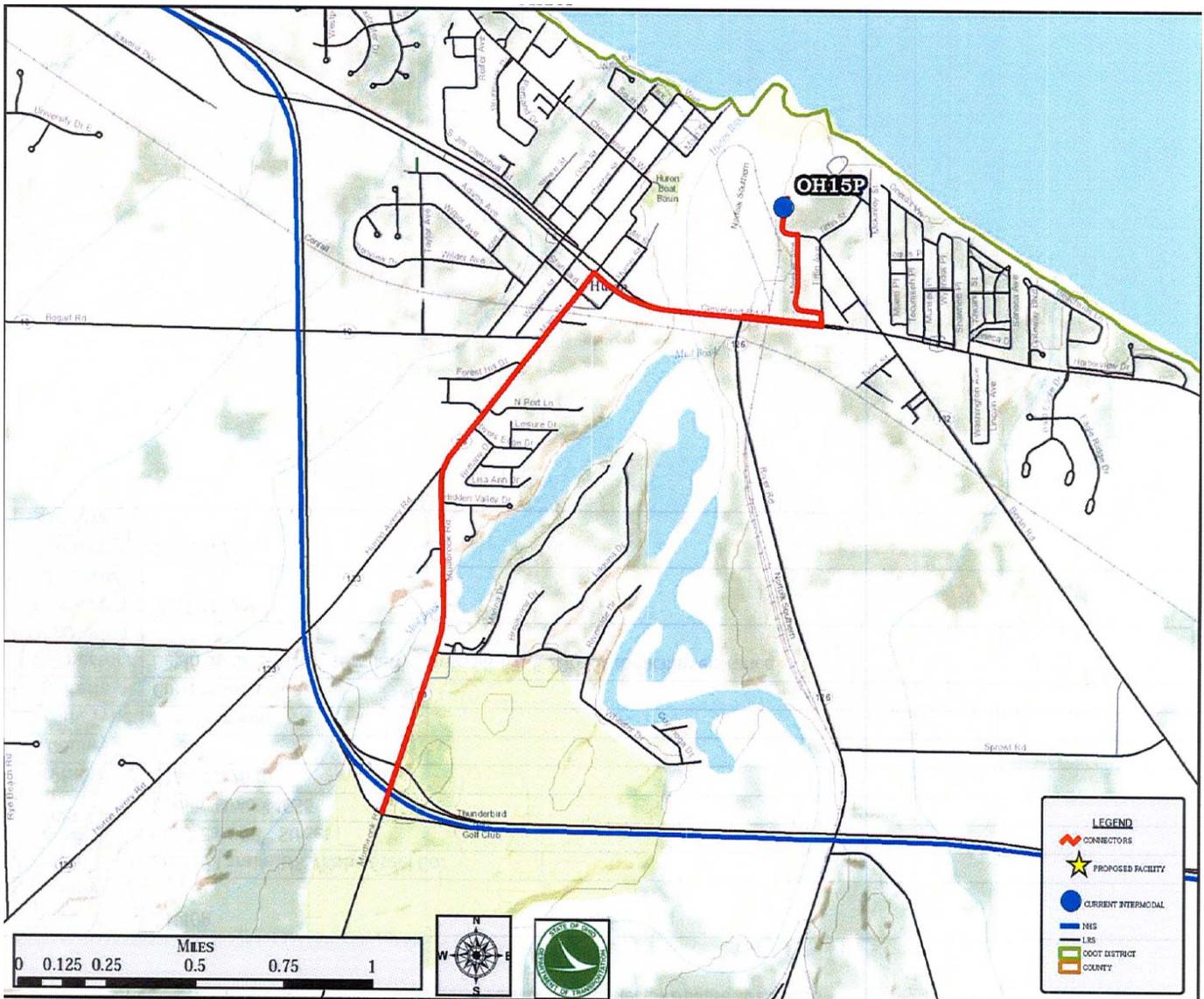
FWHA Name	OH13P
Name	Geo. Gradel Salt Dock
Address	931 West Walter St Sandusky, Ohio 44870
Phone	419-691-7123
County	Erie
Facility Type	Port Terminal
Criteria	Current Intermodal
Connector Description	From SR-2, NE to jct with US 6 From SR-101 NE to jct with C9000 McDonough St From US-6 turn left onto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



5.7 Land Use

Existing and future land uses of each community within Erie County MPO are an important consideration in determining transportation needs. Transportation systems and land use patterns have a well-documented reciprocal relationship. As communities have grown, the demands for transportation system improvements have also grown. However, these transportation improvements have also provided more convenient access to land farther out, thus spurring further growth. More than any other transportation system, it has been the road network and the prevalence of the automobile that has impacted land use patterns over the past half-century. For example the transportation demands of US 250 have changed tremendously since 1958. The corridor has undergone a dramatic change from a rural route to an urban hub as seen in the photos below.



US 250 in 1958¹⁷



US 250 in 2013

¹⁷ Erie County Soil and Water

5.8 Port Facilities

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 other ports, Huron and Sandusky, are two of the state's nine commercial ports are located along Lake Erie's shore. The US Army Corps of Engineers maintains these harbors to a depth of 28 feet. Bulk cargoes such as coal, iron ore and stone make up more than 90% of Ohio's Lake Erie port traffic.

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 Sandusky port is one of Ohio's key ports for movement of Appalachian coal and minerals. The Sandusky Dock is owned and operated by the Norfolk Southern Corporation. 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 to 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 (Fig. 5-11).¹⁸ The facility has an average loading capacity of 2,600 tons per hour and accommodates vessels with a maximum length of 1,000 feet. The facility is in operation April 1 to December 15, 24 hours a day, seven days a week.

As previously mentioned, a freight study was completed for the MPO region by GPD Consultants during 2013. Recommendations from the study that pertain to ports include:

- ✚ 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.

5.9 Intelligent Transportation Systems (ITS)

As thriving tourist areas, Sandusky, Huron, and Vermilion see an abundance of visitors that may be unfamiliar with the layout of the cities. For example, the largest numbers of visitors are trying to find their way to the Cedar Point amusement park on the north end of the city but revitalization efforts in the downtown region is starting to create the need for an overall system to help provide visitors with accurate directions and information about events taking place within the city. Addressing these needs can be accomplished through careful planning and placement of Intelligent Transportation System (ITS) technology throughout the region's transportation infrastructure.

The region is currently in its initial stages of deploying ITS technology. This provides a great opportunity to ensure that all future deployments fall under an overall system plan. Through planning, each piece of

¹⁸ ERPC Freight Study, 2013

hardware or software can be utilized to its fullest potential because careful thought was put into the purpose and placement of the technology. The needs of traveler information and way-finding directions to drivers while en-route suggests the use of permanently mounted Variable Message Signs (VMS) as the main piece of ITS technology deployed.

In the past, the City of Sandusky had completed a study investigating the overall signage used to direct visitors throughout the Sandusky area. The study examined the signage that existed and also investigated what deficiencies existed in the current system. The three types of signs highlighted by this report (gateway, directional, and seasonal festive banners) can be replaced or supplemented by VMS at strategic locations.

The gateway signs are signs that welcome people into the region. The current system only uses the typical green highway signs that define jurisdictional boundaries. Larger gateway signs that make the entrance to an area could supplement these signs. These structures should be distinguished from other types of signs through material and color or could contain a VMS made of a matrix of LED lights. The signs can display messages as simple as “welcome” to more seasonally appropriate messages about current events or festivals. This would provide additional information to visitors the moment they reach the jurisdictional boundaries.

As recommended from the US 250 Corridor Study completed in 2005 by Mannik and Smith consultants on behalf of the Ohio Department of Transportation, a gateway feature was designed and constructed for the US250 and SR2 interchange. The project was funded by the local visitors and convention bureau, Lake Erie Shores and Islands.



US 250 at SR 2 Gateway Sign

Directional signs help travelers get to a particular destination. Static, retro-reflective signs can easily blend into the background of all other street and business signs along the roadside. Instead, mounting smaller VMS on light poles or traffic lights would stand out much more while performing multiple functions. These signs could display words and arrow directions to assist drivers towards multiple destinations. The same sign could be used to show the direction of the amusement park and the downtown district by simply alternating between the messages displayed. Visitors would recognize these directions more easily than small static signs. A select number of VMS could be added at strategic locations to inform visitors to the amusement park of additional destinations within the region. At stoplights or other

key locations, the messages could be alternated to provide more information than could be displayed on a static banner.

In addition to their main purpose, all of these VMS signs can be used to provide additional traveler information beyond the route guidance function. These signs can be used to announce closures or delays due to incidents, detours because of construction, or Amber Alerts to the community. Controlling these signs does not require a significant investment in technology. Advances in technology over the last few months now allow signs to be controlled via a webpage. All that is required to update the messages displayed on the sign is the username and password to a secure webpage. The convenience and multiple uses of VMS make them a great ITS technology to begin building an overall traffic management system.

5.9 Environmental

Although it is the intention of ERPC to strive to avoid, to the fullest practical extent, any activity that adversely impacts the environment during the design, construction, or maintenance of the transportation system; an analysis on recommended LRTP projects is completed to identify if any of those projects could potentially impact the various resources. The analysis results are posted in Chapter 7 Future Transportation System. It is important to keep in mind that projects are conceptual at the Transportation Plan stage. When a “recommended project” advances to an actual “programmed project”, it is moved from the LRTP into the MPO’s Transportation Improvement Program (TIP). The TIP is a subset of the LRTP. Once the project receives the authorization to proceed, the project development process (PDP) begins and is categorized to follow one through five different paths as defined by the Ohio Department of Transportation. Path 1 refers to minimal type projects such as traditional preventative and maintenance projects. Path 5 refers to major projects that are mostly urban projects that have a significant impact to the highway’s level of service, access, traffic flow, mode shares, or mobility patterns. Below is a chart from ODOT’s website providing description for each of the “Paths”.

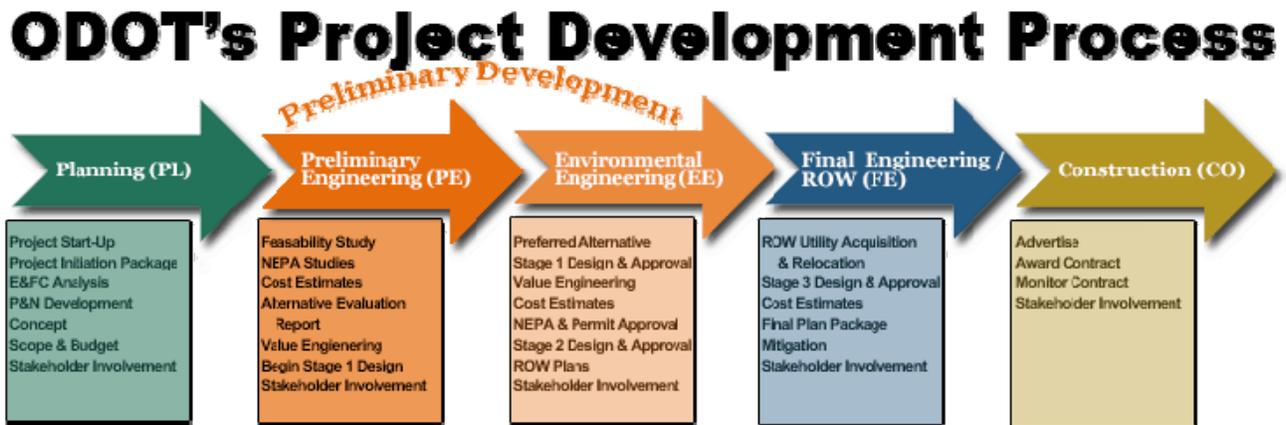
Figure 5-13 ODOT Project Development Paths - Descriptions¹⁹

Path 1	Path 2	Path 3	Path 4	Path 5
Path 1 projects are defined as “simple” transportation improvements generated by traditional maintenance and preventative maintenance. They involve minor structure and roadway maintenance work with no ROW/utility impacts. These projects are typically low level Categorical Exclusion NEPA documents.	Path 2 projects are also simple projects that may be similar in work type to Path 1- projects. They include minor structure and roadway work. Some examples may include: culvert and bridge replacement/reconstruction, resurfacing and addition of turn lanes/shoulders. These jobs can involve non-complex ROW acquisition (strip takes, temporary easements, and or channel easements). These projects are typically low level Categorical Exclusion NEPA documents.	Path 3 projects involve a higher level of complexity than projects in Path 1 or 2. They include work such as: moderate roadway and structure work including, intersection and minor interchange upgrades, minor realignments, reconstruction, median widening, etc. They can involve utility and ROW acquisition including relocations. These projects are usually documented or higher level Categorical Exclusion NEPA documents.	Path 4 projects involve complex roadway and structure work that may add capacity. Path 4 projects typically have multiple alternatives. Projects may include highway widening, new alignments in suburban or rural settings, reconstruction, access management, complex bridge replacement and/or multiple intersection/ interchange alternatives. They may have substantial utility and/or ROW relocations/impacts. These projects typically require higher level Categorical Exclusion, Environmental Assessment, or Environmental Impact Statement NEPA documents.	Path 5 projects have the highest complexity and typically add capacity. They involve projects like new capacity-adding alignments in complex urban centers, major highway widening, reconstructed interchange or new interchange. These projects will have substantial ROW relocations/impacts, complex utility issues, multiple alternatives and access management issues. These projects typically require Environmental Assessment or Environmental Impact Statement NEPA documents, but could in some instances be processed as a high level Categorical Exclusion NEPA document.

¹⁹ <http://www.dot.state.oh.us/projects/pdp/Pages/Path-Views.aspx>

Each project also goes through different phases during its development: planning, preliminary engineering, environmental engineering, final engineering/ROW, and construction. The beginning of the PDP process triggers the planning phase which allows for project specifics to be determined and investigated in further detail. Detailed environmental analysis occurs during the third phase of process (Fig. 5-13).

Figure 5-14 ODOT’s Project Development Process Phases – Descriptions²⁰



General procedures for securing required mitigation for Stream and Wetland, Threatened and Endangered Species, Mitigation, Culture Resources, and Other Mitigation impacts are as follows.

Streams and Wetlands Mitigation: As previously stated, both ODOT and ERPC strive to avoid, to the fullest extent practicable, any activity that adversely impacts streams or wetlands during the design, construction, or maintenance of the state transportation system. ODOT takes appropriate action throughout the project development process to avoid, minimize, and mitigate impacts as required by federal, state, and local law. In the event that impacts to streams and wetlands are unavoidable, ODOT considers a wide variety of mitigation strategies, which always begins with evaluation of on-site opportunities (e.g. natural channel design techniques, bankfull culverts, wetland creation, etc.) within the project work area. Once the on-site (within the project area) resources are exhausted, the search for mitigation opportunities may shift to on-site, within one mile of the project area, followed by a search within a specific 8 Digit Hydrological Unit Code (HUC) watershed. Mitigation opportunities may include mitigation banking, stream and wetland creation, restoration, and/or preservation, and possibly even preservation of upland buffer adjacent to stream and wetland resources.

Impact analysis and mitigation are integral parts of the project development process. Early review and analysis of project alternatives by regulatory and resource agencies combined with effective inter-office coordination are required to develop successful transportation projects.

ODOT follows guidelines for the development of mitigation as required by the U.S. Army Corps of Engineers (USACE) and Ohio Environmental Protection Agency (OEPA). The USACE mitigation guidelines are outlined in the latest USACE Regulatory Guidance Letter (RGL) 02-02, dated December 24, 2002. Ohio EPA has specific guidelines for wetland mitigation which is included in the Ohio

²⁰ <http://www.dot.state.oh.us/projects/pdp/Pages/Path-Views.aspx>

Administrative Code Sections 3745-1-50 through 3745-1-54, “The Wetland Water Quality Standards.” Although mitigation is now being required for unavoidable impacts to streams there are currently no formal rules in Ohio. Stream mitigation for ODOT projects is being accomplished on a case-by-case basis and is negotiated with OEPA and USACE by OES through the pre-application/coordination and waterway permit processes.



Lake Erie



ODOT Mitigation Signs

Development of Mitigation Projects: ODOT’s general procedure for securing required mitigation for stream and wetland impacts includes:

- A. Determination of mitigation needs. The Ecological Survey Report (ESR) documents these potential project impacts.
- B. Analyze potential mitigation opportunities within the project area and/or close proximity (one mile) or within a specific 8 Digit Hydrological Unit Code (HUC) watershed where the impacts are anticipated to occur. This may require a partnership between ODOT and various organizations or individuals such as a watershed groups, conservation groups, a local park districts, the Ohio Department of Natural Resources, or even a private landowner to secure appropriate mitigation.
- C. Develop preferred plan of action for mitigation
 - ✚ Select mitigation site(s); [on-site, off-site, or mitigation banks
 - ✚ Provide funds to partnering organization for mitigation projects
 - ✚ Pursue conservation easements
- D. Develop conceptual mitigation plan/report.
- E. Coordinate conceptual mitigation plan/report with resource and regulatory agencies.
- F. Submit approved conceptual mitigation plan/report with waterway permit applications.
- G. Develop final mitigation plan, for submission to agencies prior to permit authorization.
 - ✚ Develop construction plans
 - ✚ Procure conservation easements
 - ✚ Provide funds to partnering agencies

Procure credits at Mitigation Banks

H. Construct Mitigation Project.

I. Monitor Mitigation Project. ODOT performs post construction monitoring on all mitigation sites for a minimum of 5 years to assure successful development and to meet waterway permit conditions.

Threatened & Endangered Species Mitigation: Statewide, Ohio harbors a great diversity of wildlife and plant communities. Many species receiving federal or state protection are tied closely to their habitats. Land-use change has been the most common cause for decline in species range and diversity. Contamination and degradation of natural waters has also contributed to loss of habitat. Loss of wetlands and forests has contributed largely to the federal and/or state listing of over 500 plants and animals within Ohio, including a variety of mammals, birds, reptiles and amphibians, mollusks, insects, fishes, and plants. Of those species, there are less than 10 mammals including black bear and the Indiana bat.

All projects going through the PDP are planned and designed to comply with the National Environmental Policy Act, Endangered Species Act, Clean Water Act, and Ohio Revised Code to name a few. The Endangered Species Act and Ohio Revised Code are the specific federal and state legislation that provides for the protection and conservation of plants and animals within Ohio. The rules and regulations associated with these laws dictate that ODOT will build and operate their roadway projects with no, or minimal impacts to protected species and their habitat (including potentially unoccupied habitat).

During project development ODOT coordinates with numerous regulatory agencies to determine if protected species are likely to be encountered within the project area. If a threatened or endangered species is suspected of existing within the project area a specific survey is often undertaken to determine presence.

There are a variety of commitments and mitigation techniques that ODOT utilizes on projects to protect listed species. These differ depending on the habitat and the species that are to be protected. The more common commitments and mitigation ODOT makes regarding protecting federal and state listed species include:

-  Restricting the clearing of trees to the period between September 15 and April 15 to avoid potential impacts to roosting Indiana bats.
-  Relocation of listed mussel and plant species out of construction areas.
-  Prevention of disturbance of Indiana bats from blasting activities near sensitive subterranean areas (primarily in southeastern Ohio).
-  Timely removal of carcasses from roadways to minimize the potential of vehicles striking scavenging bald eagles.
-  Measures to allow terrestrial species such as bobcat, black bear, timber rattlesnake, etc. to pass unharmed through construction areas.
-  Measures to ensure that all equipment is in proper working order to minimize construction noise and reduce the risk of equipment spills and leaks.
-  Construction and post construction plan notes are included requiring strict adherence to ODOT's Construction and Material Specifications for Sedimentation and Erosion Control.



Indiana Bat²¹



Kirtland's Warbler²²

Section 4(f) Mitigation: Section 4(f) of the Department of Transportation Act requires that special effort be made to preserve public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) specifies that federally-funded transportation projects requiring the use of land from a public park, recreation area, wildlife and waterfowl refuge or land of significant historic site can only occur if there is no feasible and prudent alternative. Using Section 4(f) land requires all possible planning to minimize harm.

Ohio has numerous Federal, state and local parks, wildlife and waterfowl refuges and national registrar historic sites. These sites are important to our communities and heritage. However at times, transportation projects impact Section 4(f) resources and require specific measures to minimize harm or mitigate the impacts. These activities involve close coordination with the officials that have jurisdiction of the specific resources.

Investigation of Section 4(f) resources and investigation of potential impacts occur throughout ODOT's project development process for individual projects. The intent of evaluating project resources throughout the process helps to guide projects toward practical solutions while minimizing impacts when no feasible and prudent alternative exists. The availability of detail during the PDP on the preferred alternative allows for closer examination of the potential for Section 4(f) impacts and a clearer determination of how impacts should be processed. Once this is known, project sponsors and officials that own the resources can follow a process for mitigation.

Often times, transportation officials are aware of and account for regional Section 4(f) resources that are important for preservation and community cohesion. Other resources may not be as well known, but are afforded the same protection under Section 4(f). Long range planning should account for well-known Section 4(f) resources throughout the region that would pose a significant loss if impacted. It is however, premature to analyze individual projects' Section 4(f) impacts this early in the process.

Measures to Minimize Harm and Mitigation: In cases where projects do have Section 4(f) impacts and there is no feasible and prudent alternative to avoid use of the resource, the project approval process

²¹ http://blog.al.com/wire/2012/05/rare_bat_colony_discovered_for.html

²² <http://www.ownbyphotography.com/traveldiaryp61.html>

requires the consideration of “all possible planning to minimize harm”. Minimization of harm may entail both alternative design modifications that lessen the impact on 4(f) resources and mitigation measures that compensate for residual impacts. Minimization and mitigation measures should be determined through consultation with the official or the agency owning or administering the resource. Neither the Section 4(f) statute nor regulation requires the replacement of 4(f) resources used for highway projects, but this option is appropriate as a mitigation measure for direct project impacts.

Mitigation measures involving public parks, recreation areas, or wildlife and waterfowl refuges may involve a replacement of land and/or facilities of comparable value and function, or monetary compensation, which could be used to enhance the remaining land. Mitigation of historic sites usually consists of those measures necessary to preserve the historic integrity of the site and agreed by FHWA. In any case, the cost of mitigation should be a reasonable public expenditure in light of the severity of the impact on the Section 4(f) resource in accordance with Federal requirements. Mitigation for common Section 4(f) resource impacts may be:

- ✚ Improving access or expansion/pavement of parking area
- ✚ Landscape or screening of resource
- ✚ Installation of beautification enhancements such as park benches, trash receptacles, signage, etc...
- ✚ Maintenance of traffic accommodation or rerouting of traffic
- ✚ Minimizing construction noise or limiting construction to specific times
- ✚ Direct compensation for improvements to on-site resources
- ✚ Design refinements

Cultural Resources Mitigation: Cultural resource reviews during the PDP are planned and designed to comply with the National Environmental Policy Act, the National Historic Preservation Act, the Department of Transportation Act, the Ohio Revised Code and 36 CFR Part 800 (the implementing regulations for Section 106 of the National Historic Preservation Act). All of these require that cultural resources be considered during the development of all highway projects in Ohio. An element of that consideration involves consulting with various entities, including the Federal Highway Administration (FHWA), the State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation (ACHP), City Historic Preservation Offices, local public officials, local organizations, and the public.

Mitigation measures developed through the Section 106 Memorandum Of Agreement consultation process provide ways to avoid, minimize, or mitigate adverse effects to historic properties (i.e., those listed in or eligible for listing in the NRHP) impacted by projects. These mitigation measures are carried through as environmental document commitments and must be completed and accounted for with SHPO and FHWA. Furthermore, the MOA is not closed until all stipulations are fulfilled. A failure to meet all stipulations can potentially jeopardize a project sponsor’s funding or other agreements or projects.

A plan for mitigating an adverse effect is site/property specific and requires a separate research design or approach for each historic property impacted by the project. It should be based on the context development and refinement through the preceding Phase I and Phase II work.

Mitigation measures may involve a variety of methods including, but not limited to, aesthetic treatments, avoidance, archaeological data recovery, creative mitigation, salvage and re-use of historic materials, informing/educating the public, and Historic American Buildings Survey (HABS)/ Historic American Engineering Record (HAER) documentation. Approaches vary widely depending on the type of historic

property, the qualities that enable the property to meet the National Register of Historic Places (NRHP) Criteria of Eligibility, the location of the historic property with respect to the project, etc. Mitigation plans are developed in consultation with ODOT, SHPO, FHWA, consulting parties (i.e., local officials, organizations, public), Federally recognized Native American Indian tribes, and on occasion, the ACHP.



Huron Boat Basin



Main Street Beach Vermilion

HABS/HAER Recordation: HABS/HAER recordation documents buildings and engineering structures (e.g., bridges), respectively, that are listed in or eligible for listing in the NRHP. In Ohio, the SHPO requires Level 2 documentation for HABS/HAER recordation. Level 2 archival documentation consists of large-format (4’x5’) black-and-white negatives and prints, a written historical report, and photographs or photographic reproductions of selected existing drawings.

Documentation must follow the Secretary of the Interior’s Standards and Guidelines for Architectural and Engineering Documentation:

- ✚ HABS/HAER Standards (U.S. Department of the Interior 1993)
- ✚ HABS Historical Reports (U.S. Department of the Interior 2000)
- ✚ Recording Historic Structures & Sites for the Historic American Engineering Record (U.S. Department of the Interior 1996).

All are available online at <http://www.nps.gov/hdp> .

Archaeological Data Recovery : Phase III archaeological data recovery investigations are intended to mitigate the adverse effect to archaeological sites listed in or eligible for listing in the NRHP. Mitigation is achieved through intensive large-scale excavations and through detailed analysis of the resultant cultural remains which were encountered during these excavations. Archaeological data recovery plans are developed in consultation with ODOT’s Office of Environmental Services and the SHPO. The results of all data recovery investigations are summarized as a technical report that are reviewed and approved by ODOT-OES and the SHPO. Completion of the fieldwork and the final report of findings are considered an environmental document commitment. Approval of the final report generally fulfills the agency’s responsibility for the commitment.

Data recovery plans are developed on a project-by-project basis and are designed to recover appropriate types of pertinent information related to the context which makes the sites significant. Field investigations and analyses are problem oriented and are designed to answer specific questions regarding the site and its

context. Data recovery plans specifically outline the site context and formulate hypotheses how site research can address these hypotheses. The plans also outline field procedures and propose methods needed to record a site's physical context and any structural elements related to the resource. Each plan should also outline approaches to better recover data and devise analytical methods to best describe associated artifacts which may be recovered.

The final data recovery mitigation report should include a summary of the approach from the data recovery plan along with the findings of the excavation in order to address how the recovered assemblage relates to the site's historic context. Ways to publicly disseminate the results of data recovery investigations are also considered to be an important part of any mitigation plan.

Other Mitigation: The previous sections discuss some of the more common environmental issues encountered during the development of transportation projects. One other important issue is superfund sites; where land is contaminated from previous uses. If a superfund site is encountered during project development it is addressed during the PDP. Like the other issues, this is dealt with on a project-by-project basis and often entails additional project expense to properly dispose of the contaminated material.³

5.11 Security

Since the September 11, 2001 terrorist attacks, the Federal Highway Administration and many other organizations have been looking closely at homeland security and institutional strategies for providing metropolitan level coordination of transportation system operations. "A comprehensive national approach to incident management, applicable at all jurisdictional levels and across functional disciplines, would further improve the effectiveness of emergency response providers and incident management organizations, across a full spectrum of potential incidents and hazard scenarios".⁴ Such an approach would also improve coordination and cooperation between public and private entities in a variety of domestic incident management activities.⁵ In order to satisfy this planning regulation, ERPC staff coordinated with the Erie County Emergency Management Agency (EMA).

The Erie County Emergency Management Agency is responsible for planning, mitigation, response, and recovery for both natural and man-made disasters in the County. This includes nuclear attack, terrorism, weather phenomena, nuclear power plant accidents, hazardous materials accidents, and any other occurrence deemed a disaster or emergency. With mutual aid agreements, the County's EMA have also responded to situations in surrounding counties when requested.

The Agency insures their Emergency Operations Center (EOC) center is operational 24 hours a day, seven days a week. The center provides emergency communications, radio and telephone, along with other features designed to allow EOC members to help manage any disaster that may befall our country. The County's Emergency Response Vehicle is also outfitted with communications, and other response type equipment, allowing for the capability of a mobile EOC.

³ ERPC MPO SAFETEA-LU Gap Analysis Technical Memorandum

⁴ Homeland Security Act of 2002, Section 2(6)

⁵ Homeland Security – National Incident Management System

Emergency Management is also tasked with maintaining the Erie County 9-1-1 service. The first 9-1-1 systems were called Basic 9-1-1 systems. All 9-1-1 calls were directed to one Public Safety Answering Point (PSAP) per telephone office. 9-1-1 dispatchers only received the caller's telephone and had to ask the caller for name, address and county location. Advances in computer systems and telephone company technology combined to create ENHANCED 9-1-1 systems. Today, 86 of 88 Ohio counties have Enhanced 9-1-1 systems on line. Enhanced systems allow 9-1-1 calls to be routed to the proper Public Safety Answering Point (PSAP) within each county. Also, each 9-1-1 call displays the caller's telephone number, name, and address, as well as the correct police, fire, and emergency medical response agency for each citizen within the county. In March of 2011, Erie County also completed the installation of Phase II Wireless 9-1-1, which will help locate where cellular 9-1-1 callers are calling from utilizing a mapping system. In 2010, our seven (7) Erie County 9-1-1- In 2013, the Public Safety Answering Points (PSAP's) located throughout the county handled 14,557 regular 9-1-1 calls and 27,018 cellular 9-1-1-calls.

The Agency has responded to 43 requests for assistance in 2013, covering hazardous materials spills, flooding, disposal of household hazardous materials, and mercury recovery/recycling. In 2013 the Chemical Emergency Response and Preparedness Plan-was completely updated and reprinted with new hazard analysis of Erie County reporting facilities and impact location maps in 2013. CD copies were distributed to all Erie County Fire Departments for their in house and mobile data computers. As many of the items in this transportation security field are confidential in nature, Erie County does have Emergency Response Plans in place that provides procedures of incident management as developed by the Erie County Local Emergency Planning Committee (LEPC). From the 2002 Chemical Emergency Response and Preparedness Plan, ERPC was able to identify possible areas of vulnerability across the region's transportation network.

Transportation Risks – The main routes for transportation are the Ohio Turnpike, State Routes 13, 4, 6, 113, and 250 all of which are commonly used for transportation to and from Erie County. Also, three rail routes exist in the county. Transportation incidents have the potential for posing the highest risk to both citizens and property within Erie County. Also, seasonal variations exist that will affect accidental releases and subsequent hazards. During the recreation months, the populations of the county increases and could be impacted. This population increase may have a large affect on response operations.

Pipeline Risks - The County has (2) pipelines traversing, starting, or stopping within its borders. These pipelines carry natural gas on a regular basis.

Navigable Waterway Risks – The County has three navigable waterways upon which hazardous materials may travel. These waterways are Lake Erie, Sandusky Bay and the Huron River.

Specific areas in the region considered vulnerable per the LEPC Hazard Analysis Committee:

1. **Sandusky** – The City of Sandusky is the largest municipality in Erie County with 29,000 plus residents, and is situated in the north center of the county, on the south shore of Sandusky Bay/Lake Erie. In the summer, the population more than doubles due to the influx of tourists. State Routes 250, 6, 4, and 101 enter the City. All these routes are used to transport hazardous materials. The Norfolk & Southern Railroad operates north and south, as well east and west lines through the City, and has had derailments within the City. The east/west line especially hauls hazardous materials. The City has numerous marinas and has forty-one (41) facilities reporting hazardous materials to the LEPC.

2. **Vermilion** – The City of Vermilion is the second largest municipality in Erie County with 10,000 plus residents. Vermilion is also located on the south shore of Lake Erie. The Vermilion River runs through the city, empties into Lake Erie, and is used primarily for recreational boating. Marinas on the river hold over 7,000 boats each summer. There have been numerous fuel spills on the river. State Routes 6, 2, and 60 enter, or run close to the city, and the Norfolk and Southern Railroad runs through downtown Vermilion. All these routes are used to haul hazardous materials. Vermilion has thirteen (13) facilities reporting hazardous materials to the LEPC.
3. **Huron** – The City of Huron is also located in the north center portion of the county, on the south shore of Lake Erie. The population of the city is 7,000 plus, and can double in the summer due to tourists. State Routes 6, 13, and 2 run in or near the city, and the Norfolk and Southern Railroad runs through the city. The Huron River also runs through the city, emptying into Lake Erie, and has numerous marinas. Although the Huron River is used primarily for recreational boating, there have been fuel spills on the river, as well as on the state routes and railroad. Huron has fourteen (14) facilities reporting hazardous materials to the LEPC.
4. **Berlin Heights** – The Village of Berlin Heights has the Ohio Turnpike, as well as State routes 61 and 113 running through the village. The intersection of State route 113 and 61 is particularly dangerous, and are all used to haul hazardous materials. Berlin Heights also has two nature preserves in close proximity, with creeks draining into them.
5. **Kelley’s Island** – The Village of Kelley’s Island, located on Kelley’s Island, is located in Lake Erie, and has a year-round population of about 300 people. This figure increases over 30 times during the summer months. The island has one facility reporting hazardous materials to the LEPC. There are also numerous marinas and transient dockages available, all of which could produce hazardous materials spill. Of particular concern is the fact that during the winter, the only way on and off the island is by aircraft.
6. **Bay View** – The Village of Bay View is located in the northwestern end of the county situated on Sandusky Bay. State Route 269 dead ends in the village, and the Norfolk and Southern Railroad runs east and west through the village. We have had train derailments in and near the village in the past primarily due to a bridge over Sandusky Bay and high winds associated in that area. The Village has less than 1,000 residents, but increases during the summer. There is one public marina in the Village and numerous private docks. Bay View has no facilities reporting to the LEPC.
7. **Castalia** – The Village of Castalia is located in the west central part of the county. The village has a population of about 1,000 residents. State Routes 101 and 269 meet in the village. Castalia has one reporting facility within the village. Of particular concern in this area is a State Wildlife Area, and a state managed trout farm within a mile of the village. Cold Creek, which runs through the village, empties into Sandusky Bay.
8. **Milan** – The Village of Milan is located in the south central part of the county and straddles both Erie and Huron County. The village has a population of about 1,500 residents and has five facilities reporting hazardous materials to the LEPC. Two of these facilities are near a creek that runs into the Huron River. State routes 250, 113, 601 and 13 run through or near the village and are known to carry hazardous materials. The Huron River also runs through Milan, but is too shallow for any kind of boat traffic.

High Traffic Areas – Transportation routes within Erie County that are considered vulnerable to a hazardous material accident include the Ohio Turnpike, State Routes 2, 4, 6, 13, 60, 61, 113, 250 and the east/west line of the Norfolk and Southern Railroad. These routes transect areas of differing populations, which present a risk for transportation related hazardous materials incidents.

In conclusion, the plan provides for a coordinated response between state/federal agencies and local response forces. The MPO staff has worked with the Erie County EMA to aid in security initiatives through completing various mapping activities and serving on the steering committee for the recent update to the Erie County Hazard Mitigation Plan. Support will continue to be given to the local, state, and federal agencies to continue networking opportunities relative to transportation security.