

CHAPTER 5: EXISTING CONDITION OF THE TRANSPORTATION NETWORK

INTRODUCTION

This chapter provides an inventory of the bicycle, pedestrian, transit, intercity passenger, freight, and roadway networks in the Sheboygan metropolitan planning area. Each modal section discusses current, planned and proposed alignments (where applicable), as well as the current physical condition of facilities, development policies, user safety, physical barriers, and route connectivity.

BICYCLE NETWORK

The Sheboygan metropolitan planning area contains a variety of bicycle lanes, posted shared-use bike routes, and wider paved shoulders, along with a clearly defined network of multipurpose trails. The *Sheboygan County Pedestrian & Bicycle Comprehensive Plan: 2015 Update* and the *Sheboygan County Safe Routes to School Plan: 2009* have guided and encouraged the development of bicycle facilities throughout Sheboygan County. Through the efforts of NOMO Sheboygan County and various stakeholders, the number of bicycle and multipurpose facilities has grown, providing the public with additional safe alternatives to driving, ultimately increasing bicycle ridership and reducing automobile usage. This section provides an overview of the Sheboygan metropolitan planning area's existing and planned bicycle network. More detailed information is also available through the county's safe routes to school plan and *the county's 2015 update to its pedestrian and bicycle comprehensive plan*.

NOMO Sheboygan County

NOMO Sheboygan County is the local brand for the federally funded Nonmotorized Transportation Pilot Program (NMTTP). Sheboygan County was one of four jurisdictions in the United States that was chosen to receive up to \$25 million for a NMTTP *in the "Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU);"* while this funding was to originally be provided in federal fiscal years 2006 through 2009, delays in the passage of subsequent transportation authorization legislation (MAP-21) and in the completion of projects has meant that this funding remains to be exhausted in 2018. The intent of the program is to construct "a network of non-motorized transportation infrastructure facilities, including sidewalks, bicycle lanes, and pedestrian and bicycle trails that connect directly with transit stations, schools, residences, businesses, recreation areas, and other community activity centers." The purpose of the program is "to demonstrate the extent to which bicycling and walking can carry a significant part of the transportation load, and represent a major portion of the transportation solution."

NOMO Sheboygan County Mission Statement:

By 2045, Sheboygan County's pedestrian and bicycle facilities will be an efficient, connecting system of routes and facilities that provides a safe, convenient, and viable transportation choice for Sheboygan County residents and visitors.

A large number of the bicycle and pedestrian facilities in the Sheboygan Metropolitan Planning Area have been constructed through NOMO Sheboygan County.

Congestion Mitigation and Air Quality (CMAQ) Program

Jointly administered by FHWA and the Federal Transit Administration (FTA), CMAQ provides funding to areas in nonattainment or maintenance for ozone, carbon monoxide, and/or particulate matter (**Currently**, Sheboygan County is designated as a nonattainment area for ground-level ozone). The CMAQ program was implemented to support surface transportation projects and other related efforts that contribute to air quality improvements and provide congestion relief. The CMAQ program typically covers up to 80 percent of project costs. The Shoreland 400 Rail Trail in the City of Sheboygan is an example of a project partially funded under the CMAQ program.

Inventory of Bicycle Facilities

Some facilities in the Sheboygan metropolitan planning area are signed for shared usage of motor vehicles and bicycles. Technically, all roadways located within the metropolitan planning area may be shared by motor vehicles and bicyclists except for Interstate Highway 43 and State Highway 23. However, many of the other major connecting highways located in the metropolitan planning area (State Highways 28, 32 and 42) are not recommended for bicycle travel due to high traffic volumes.

An inventory of the Sheboygan area's on-road bicycle facilities (bike lanes and paved shoulders), off-road multipurpose trails, **and** proposed bicycle projects, is listed in the following sections, while Map 5.1 of this plan displays the location of the bicycle facilities in the Sheboygan metropolitan planning area. Also refer to the *Sheboygan County Pedestrian & Bicycle Comprehensive Plan: 2015 Update* for additional information on these bicycle facilities.

City of Sheboygan**Bike Lanes/**Sharrows**:**

- North Avenue – Taylor Drive to North 3rd Street;
- N. Taylor Drive – North Avenue to Wilgus Avenue;
- Superior Avenue (**County Highway O**) – N. Taylor Drive to N. 3rd Street;
- N. 3rd Street – Superior Avenue to Michigan Avenue;
- N. 25th Street – Superior Avenue to the Sheboygan Urban Recreation Trail;
- 9th Street – Superior Avenue to S. 8th Street;

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- N. 8th Street – Eisner Avenue to Erie Avenue;
- S. 8th Street – S. 7th/S. 9th Streets to Indiana Avenue;
- 7th Street – Superior Avenue to S. 8th Street;
- S. 7th Street/Lakeshore Drive – Indiana Avenue to Weeden Creek Road/County Highway EE;
- New Jersey Avenue – S. Taylor Drive to S. 15th Street;
- Pennsylvania Avenue – S. 15th Street to Broughton Drive;
- Indiana Avenue – S. 24th Street to S. 8th Street;
- S. 12th Street (County Highway KK) – Wilson Avenue to Weeden Creek Road/County Highway EE;
- Wilson Avenue – S. Business Drive (State Highway 28) to Lakeshore Drive;
- Eisner Avenue – N. 21st Street to N. 8th Street;
- County Highway OK/S. Business Drive – Weeden Creek Road/County Highway EE to Camelot Boulevard; and
- S. 15th Street – New Jersey Avenue to Pennsylvania Avenue;

Other Bicycle Routes

- Weeden Creek Road/County Highway EE – S. 12th Street/County Highway KK to West Evergreen Drive;
- S. 12th Street (County Highway KK) – Weeden Creek Road/County Highway EE to Kohler-Andrae State Park (including access to on-road sections of the Interurban Trail);
- Indian Mound Road – Evergreen Drive to S. 12th Street/County Highway KK;
- West Evergreen Drive – Evergreen Drive to County Highway EE; and
- Evergreen Drive – West Evergreen Drive to Indian Mound Road.

Combined On-Road Bicycle Route/Off-Road Multipurpose Pathway:

Sheboygan Urban Recreation Trail

The Sheboygan Urban Recreation Trail is an off-road and on-road facility that provides an east-west link between the Old Plank Road Trail and Sheboygan's Harbor Center and lakefront. The trail accommodates bikers, walkers and in-line skaters. This facility follows clearly marked routes which incorporate bike paths, on-road bicycle routes, bike lanes, and wide curb lanes.

Off-Road Multipurpose Pathway:

The Shoreland 400 Rail Trail

Completed in 2013 through a combination of NMTTP, CMAQ and local matching funds, this 1.7 mile multi-use asphalt trail travels on a former Union Pacific rail corridor through the City of

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Sheboygan between Pennsylvania Avenue and Martin Avenue. Ultimately, it is hoped that the trail can be expanded north to North Avenue and south to Mead Avenue.

Taylor Drive Pathway

Completed in 2016 using NMTPP funds, this 3.3 mile trail is on the east side of Taylor Drive, and runs from Kohler Memorial Drive south to Crocker Avenue in the City of Sheboygan. The project provides many connections to employers, parks, schools and shopping areas. The Shoreland 400 Rail Trail and Taylor Drive Pathway are two of the more significant projects that have been funded through the NMTPP.

County Highway O Pathway

A multipurpose pathway exists along County Highway O (Superior Avenue) from North Taylor Drive to the Interstate Highway 43 overpass.

Other Infrastructure:

In 2014, traffic calming measures were constructed around twelve Sheboygan Area School District schools and at the Sheboygan YMCA. Facilities such as speed tables, in-ground crosswalk lighting, flashing stop signs, curb bumpouts, solar powered radar lights, and traffic circles were installed.

City of Sheboygan Falls

The City of Sheboygan Falls and surrounding area contains numerous bicycle facilities, including bike lanes, paved shoulders, and multipurpose pathways, many of which were most recently constructed in 2013 as part of the Sheboygan Falls Comprehensive Bicycle and Pedestrian Plan project. The following is a listing of streets with these facilities. Refer to Map 5.1 for an illustration of these bicycle facilities in the City of Sheboygan Falls and surrounding area.

Bike Lanes/Sharrows:

- Monroe Street/County Highway PP – County Highway PPP to Buffalo Street;
- County Highway PP – County Highway TT to County Highway PPP;
- Main Street/State Highway 32 – Leavens Avenue to Fond du Lac Avenue/County Highway C;
- Pinehaven Lane – N. 6th Street west to the city limits; and
- N. 6th Street – Pinehaven Lane to Fond du Lac Avenue/County Highway C.

Paved Shoulders:

- County Highway PPP – State Highway 28 to Pine Street;
- County Highway TT – County Highway PP to County Highway O/Entrance to the Sheboygan County Memorial Airport;
- Fond du Lac Avenue/County Highway C – N. Main Street/State Highway 32 to County

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Highway TT;

- Forest Avenue – N. Main Street/State Highway 32 to Rangeline Road; and
- N. Main Street/State Highway 32 from Fond du Lac Avenue/County Highway C to Forest Avenue.

Off-Road Multipurpose Pathways:

City of Sheboygan Falls Trail System

The Sheboygan Falls Comprehensive Bicycle and Pedestrian Plan project included several off-road multipurpose pathways that were built. One pathway was built to connect a significant subdivision in the western part of the city to businesses along State Highway 32 on the north end of the city. A second pathway was built to connect residents of the Acacia Falls Mobile Home Park to the Sheboygan Falls School District's elementary school and soon to be open middle school. A third pathway parallels Monroe Street/County Highway PP from County Highway PPP to downtown Sheboygan Falls. A fourth pathway is just north of State Highway 28, and connects County Highway PP to Giddings Avenue/State Highway 32, which is near Sheboygan Falls High School.

Village of Kohler

Bike Lanes:

- Highland Drive/County Highway Y – Greenfield Drive to State Highway 23/Old Plank Road Trail.

Off-Road Multipurpose Pathways:

Village of Kohler Trail System

The Village of Kohler has an extensive system of multipurpose recreational trails that are interconnected. Users of the Kohler trail system are also able to access the Old Plank Road Trail. The Kohler trail system was enhanced through implementation of the village's Comprehensive Bicycle and Pedestrian Plan in recent years. In particular, enhancements were made in the vicinity of Kohler's public school, including a multipurpose pathway connecting Ebben Field to the school which also connects to Woodlake Road.

Village of Howards Grove

Bike Lanes/Sharrows:

- College Avenue/County Highway A – S. Wisconsin Drive/State Highway 32 west to the village limits; and
- Audubon Road – Oriole Lane to Mill Street.

Paved Shoulders:

- N. Wisconsin Drive/State Highway 42 – Northern village limits to Madison Avenue; and
- S. Wisconsin Drive/State Highway 32 – Madison Avenue to the southern village limits.

Off-Road Multipurpose Pathway:

- A multiuse pathway connects Audubon Road to Howards Grove High School.

Unincorporated Portions of the Sheboygan Metropolitan Planning Area**Bike Lanes:**

- Mueller Road – County Highway Y to State Highway 42 (Town of Sheboygan);
- County Highway O – Interstate Highway 43 overpass to Woodland Road (Town of Sheboygan);

Paved Shoulders:

- Lakeshore Road (formerly County Highway LS) – Eisner Avenue in the City of Sheboygan to the Manitowoc County line (Towns of Sheboygan and Mosel);
- County Highway Y – State Highway 23 to just south of State Highway 42 (Town of Sheboygan);
- County Highway V – Interstate Highway 43 frontage road to County Highway M (Towns of Wilson and Lima);
- County Highway J – Interstate Highway 43 to Highland Road (Towns of Sheboygan and Sheboygan Falls);
- County Highway A – Western limits of Village of Howards Grove to eastern limits of Village of Elkhart Lake (Town of Herman);
- County Highway O – West of Woodland Road to State Highway 32 (Towns of Sheboygan and Sheboygan Falls);
- State Highway 32 – Northern limits of Village of Cedar Grove to southern limits of Village of Howards Grove (Towns of Lima, Sheboygan Falls and Herman); and
- State Highway 42 – Northern limits of Village of Howards Grove to Manitowoc County line.

Combined On-Road Bicycle Route/Off-Road Multipurpose Roadway:***Sheboygan Interurban Trail***

The Sheboygan Interurban Trail is a nearly 14-mile on-road and off-road multipurpose trail that spans from the City of Sheboygan south to the Ozaukee County line. The on-road segments travel south from the City of Sheboygan on S. 12th Street and traverse town roads, including through Kohler-Andrae State Park, before arriving in the Village of Oostburg. From the Village of Oostburg to the Ozaukee County line, the trail is off-road. This trail then links to the Ozaukee Interurban Trail, which ultimately connects to Milwaukee County. The Sheboygan Interurban Trail is intended for year round uses, such as biking, walking, running, and cross-country skiing. Horses and motorized vehicles (including mopeds and snowmobiles) are not allowed on the trail.

Off-Road Multipurpose Pathway:*Old Plank Road Trail*

Paralleling State Highway 23, the Old Plank Road Trail is a year-round recreational trail that runs from the City of Sheboygan west for approximately 17 miles to the Town of Greenbush. The Old Plank Road Trail is among the longest multipurpose trails in Wisconsin that is available for a variety of uses, including, but not limited to, cycling, walking, jogging, moped riding, horseback riding, and snowmobiling in the winter months. Plans call for extending the Old Plank Road Trail to Fond du Lac when State Highway 23 is expanded between Plymouth and Fond du Lac in the near future.

Other Improvements:

- NOMO Sheboygan County installed bicycle racks in eleven different municipalities. Over 700 bike racks have been installed at a variety of locations, including schools, businesses, churches, parks and bus stops.

Planned Improvements

The following bicycle facility improvements have been planned in the Sheboygan Metropolitan Planning Area over the next few years; both of these projects are at least partially funded by NOMO Sheboygan County:

- Construction of a multi-use pathway in the Alliant Energy utility corridor on the south side of the City of Sheboygan (from County Highway OK/S. Business Drive to S. 18th Street);
- Conversion of County Highway PP from the Sheboygan River bridge to S. 24th Street into a linear parkway and trail facility.

In addition, several non-infrastructure projects have been or are being accomplished through NOMO Sheboygan County, including: NMTPP marketing and branding; program oversight (including education and outreach); countywide bicycle and pedestrian comprehensive plan updates; bicycle friendly communities workshops; a guaranteed ride home program; ReBike (a bicycle repair and education program to provide bicycles to residents in need); bike corrals; the annual countywide bike and walk to work week; the annual countywide bike and walk to school day; Safe Routes to School initiatives, etc.

Several bicycle facility improvements have appeared as “illustrative” projects in recent TIPs, meaning that they are priority projects, but do not have sufficient funding to be programmed in the TIP. These projects include the following:

- Expansion of the Shoreland 400 Rail Trail south to Mead Avenue and north to North Avenue (including an eastern extension to S. 9th Street paralleling Indiana Avenue);
- Construction of multi-use pathways on N. Taylor Drive between Kohler Memorial Drive and Superior Avenue and from the intersection of N. Taylor Drive and North Avenue into Evergreen Park;
- Construction of a bridge for bicyclists and pedestrians over the Sheboygan River near the

former Tecumseh Engines plant in the City of Sheboygan Falls;

- Construction of a bridge for bicyclists and pedestrians over the Sheboygan River near the Bemis Manufacturing plant in the City of Sheboygan Falls; and
- Expansion of the multi-use pathway in the Alliant Energy utility corridor on the south side of the City of Sheboygan (from South Taylor Drive to County Highway OK/S. Business Drive, and from County Highway KK/S. 12th Street to Lakeshore Drive).

Current Conditions

Regulations

State Statutes

The State of Wisconsin has established laws based on the national Uniform Vehicle Code affording bicyclists the same rights and responsibilities as motorists. In enacting these laws, bicyclists must adhere to the same rules of the road as motorists. Bicyclists operating on sidewalks must adhere to the same regulations for crossing streets as do pedestrians. However, bicyclists must continue to yield the right-of-way to pedestrians on sidewalks.

For specific regulations pertaining to the rules of the road for motorized and non-motorized modes of transportation, please refer to Chapter 346 (Rules of the Road) of the *Wisconsin Statutes*.

Local Bicycling Ordinances

Most metropolitan planning area communities allow bicyclists to ride on sidewalks, as long as they give the right-of-way and audible warning to pedestrians. However, in the central business districts of the cities and villages of metropolitan planning area, bicyclists are required to ride on the street because bicyclists riding on the sidewalks would pose a hazard to pedestrians.

Land Development Ordinances

While bicycle and multipurpose facilities are of great value to residents of the metropolitan planning area, few area municipalities have included language in their land development codes regarding the provision of bikeways into new developments.

Facility Maintenance

Local jurisdictions in the metropolitan planning area are responsible for the maintenance of intercity and intra-city trails. The Cities of Sheboygan and Sheboygan Falls; the Villages of Howards Grove and Kohler; and the Town of Sheboygan in the metropolitan planning area have signed agreements with the Sheboygan County Planning and Conservation Department committing to maintaining bicycle facilities that were built utilizing funding from the Sheboygan County NMTTP.

Bicycling Facts

Bicycling to Work

Table 5.1 indicates that the number of persons age 16 and older who worked outside the home and biked to work in Sheboygan County, the Sheboygan Urbanized Area, and the City of Sheboygan, as indicated in the 2008 – 2012 and 2012 – 2016 American Community Survey

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(ACS) 5-Year Estimates.

The number of persons age 16 and older who worked outside the home and biked to work increased for Sheboygan County and for the Sheboygan Urbanized Area, but decreased slightly for the City of Sheboygan. Sheboygan County increased by 45 commuting bicyclists and the Sheboygan Urbanized Area increased by 24 commuting bicyclists, but the City of Sheboygan decreased by two commuting bicyclists. This is an 11.7 percent increase in commuting bicyclists for Sheboygan County and a 7.7 percent increase in commuting bicyclists for the Sheboygan Urbanized Area, but this is a 0.8 percent decrease in commuting bicyclists for the City of Sheboygan.

The percentage of persons age 16 and older who worked outside the home that biked to work in Sheboygan County increased from 0.7 percent of all workers in the 2008 – 2012 ACS to 0.8 percent of all workers in the 2012 – 2016 ACS.

The percentage of persons age 16 and older who worked outside the home that biked to work in the Sheboygan Urbanized Area increased from 0.9 percent of all workers in the 2008 – 2012 ACS to 1.0 percent of all workers in the 2012 – 2016 ACS.

The percentage of persons age 16 and older who worked outside the home that biked to work in the City of Sheboygan remained at 1.1 percent between the 2008 – 2012 ACS and the 2012 – 2016 ACS.

The relatively low proportion of commuters by bicycle could be due to several factors, including the ability for more persons to own a motor vehicle, the lack of bicycle parking, a lack of shower facilities at work, and increased driving. An increase in average daily traffic (ADT) can intimidate many persons who may want to bike, but are afraid to do so.

It is important to note that the journey to work numbers represent only a fraction of all trips being made in the metropolitan planning area. People cite many reasons for not biking to work, the most common reason being that they have a professional position with a strict dress code. Most employers do not provide showers or changing rooms, which creates a disincentive to bike to work. Midwest winters are also a huge disincentive for biking with the short periods of daylight, sub-zero temperatures and heavy snows.

Table 5.1: Persons who Biked to Work, 2008-2012 and 2012-2016 American Community Survey*

Region or Jurisdiction	2008 - 2012 ACS**	2012 - 2016 ACS**	Numerical Change	Percentage Change
Sheboygan County	385	430	45	11.7%
Sheboygan Urbanized Area	313	337	24	7.7%
City of Sheboygan	262	260	-2	-0.8%

Notes:

*Workers 16 years and over (a sample of respondents, not based on a 100 percent count).

**American Community Survey (ACS) data is not available for all of the individual local jurisdictions of the Sheboygan Metropolitan Planning Area. The ACS data is only available for Sheboygan County, the Sheboygan Urbanized Area, and the City of Sheboygan.

Source: U.S. Census Bureau, 2008 – 2012 and 2012 – 2016 American Community Survey (ACS) 5-Year Estimates (Table B08006: Sex of Workers by Means of Transportation); and Bay-Lake Regional Planning Commission, 2018.

Other Indicators of Bicycle Travel Demand

As part of the federal requirements for the NMTTP, each community was required to complete manual bicycle counts on an annual basis. In September of each year from 2007 through 2013, a staff member or volunteer was stationed at one of several intersections in Sheboygan County for a two hour period in the morning or evening, during which they counted and recorded bicycle activity for that area. This was to gauge an on-the-ground increase or decrease in nonmotorized activity.

To address the variability of bicyclists on a daily basis at the same location, the results of the counts are presented as a three-year moving average, with each annual count calculated as the average of the current and previous two years. For example, the 2010 count is the average of the 2008, 2009 and 2010 counts.

The following are the annual bicyclist counts in Sheboygan County from 2007 through 2013 (three-year moving averages, except for the 2007 baseline year) according to the FHWA *Nonmotorized Transportation Pilot Program: 2014 Report*:

2007 = 66	2011 = 74
2009 = 71	2012 = 70
2010 = 76	2013 = 65

Bicycle use fluctuated in the county but remained relatively steady overall since the base year of 2007. Bicycle counts grew through 2010 but declined beginning in 2011, likely due to construction of NMTTP-funded facilities at the count locations at the time that counts were recorded; this construction likely made bicycling very difficult. As NMTTP-funded construction winds down and with continued education efforts, these counts are expected to increase over time.

Safety

Pavement Marking and Signage

The ability for bicyclists to travel safely and confidently is essential if the goal is to increase the number of bicycle riders and bicycle trips. Signage and pavement markings warn motorists that bicyclists are sharing the road, plus they guide bicyclists between origins and destinations.

In 2011, over 30 centerline miles of bike lanes and sharrows were striped on roadways throughout Sheboygan County. Bike lanes provide an on-street area designated solely for use by bicyclists, while sharrows are symbols placed in or near the travel lane itself, indicating that motorists and bicyclists are to share the road with each other.

While pavement striping has not been proven to increase safety, merely the perception of increased safety can increase the number of users.

Bicycle route signage used in the metropolitan planning area is generally consistent with the Manual on Uniform Traffic Control Devices (MUTCD). However, supplemental pavement markings are not always installed, and even when signs are present, the intended routing is not always clear. It is imperative that proper attention be paid to replacing, preparing, and upgrading street markings and needed signage when and where needed. Signage along trails is also important because it serves as a method of wayfinding. Those unfamiliar with a trail could easily find themselves exiting at an undesired location.

Marked on-road facilities and specific striped bike lanes in the Sheboygan metropolitan planning area are listed in the “Inventory of Bicycle Facilities” portion of this chapter, and are displayed on Map 5.1.

Roadway Hazards

Two major roadway hazards exist for bicyclists:

- Drainage grates and utility covers: Drainage grates and utility covers should sit flush to the roadway to be safe for bicyclists to travel over them. Bicycle-safe grates can replace existing unsafe grates during reconstruction projects, and should be incorporated into new construction. Most grates and covers sit flush to the roadway, but the freeze and thaw cycle tends to cause the pavement around manhole covers to crack and heave, producing a safety hazard.
- At-grade railroad crossings: Ideally, railroad tracks should sit flush and intersect at right angles with the roadway. Normal train usage causes rail beds to buckle over time, resulting in the track rails sitting above grade. This situation, along with having tracks that intersect the roadway at sharp angles, can result in the front tire of a bicycle getting trapped next to the rail and the bicyclist losing control. In order to reduce this risk, bicyclists should attempt to cross perpendicular to the tracks. Communities in the metropolitan planning area should install wider sidewalks or trails at at-grade railroad crossings where the rail intersects at a sharp angle so that bicyclists can maneuver to cross perpendicular to the tracks.

Bicycle Crashes

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During the period from 2015 through 2017 in the communities of the Sheboygan metropolitan planning area, 53 bicycle crashes were reported, in which 51 bicyclists were injured and one bicyclist was killed. This translates to one bicyclist being injured or killed on Sheboygan area streets and highways about every 21 days (three weeks). Figure 5.1 shows that 23 crashes occurred in 2015 (one fatal crash, 21 injury crashes, and one property damage crash), 16 crashes occurred in 2016 (15 injury crashes and one property damage crash), and 14 crashes occurred in 2017 (all injury crashes). One injury crash had two injured persons, with all other injury crashes having one injured person. Most bicycle crashes occurred during daylight hours (nearly 85 percent) and on dry pavement (over 88 percent of the crashes in which pavement condition was reported). The most frequent cause of crashes involving bicyclists was “failure to yield the right-of-way” on the part of both motorists and bicyclists; seven bicyclists and 15 non-bicycle operators had this as a cause for their crash. Other less frequent (but nonetheless common) factors in crashes were: inattentive driving (two bicyclists and six non-bicycle operators); disregard of traffic control devices (three non-bicycle operators); unsafe backing (one non-bicycle operator); combinations of various factors (two bicyclists); and other unspecified factors (four bicyclists). In most cases (38 bicyclists and 28 non-bicycle operators), there was no specific cause of the crash cited in the crash report.

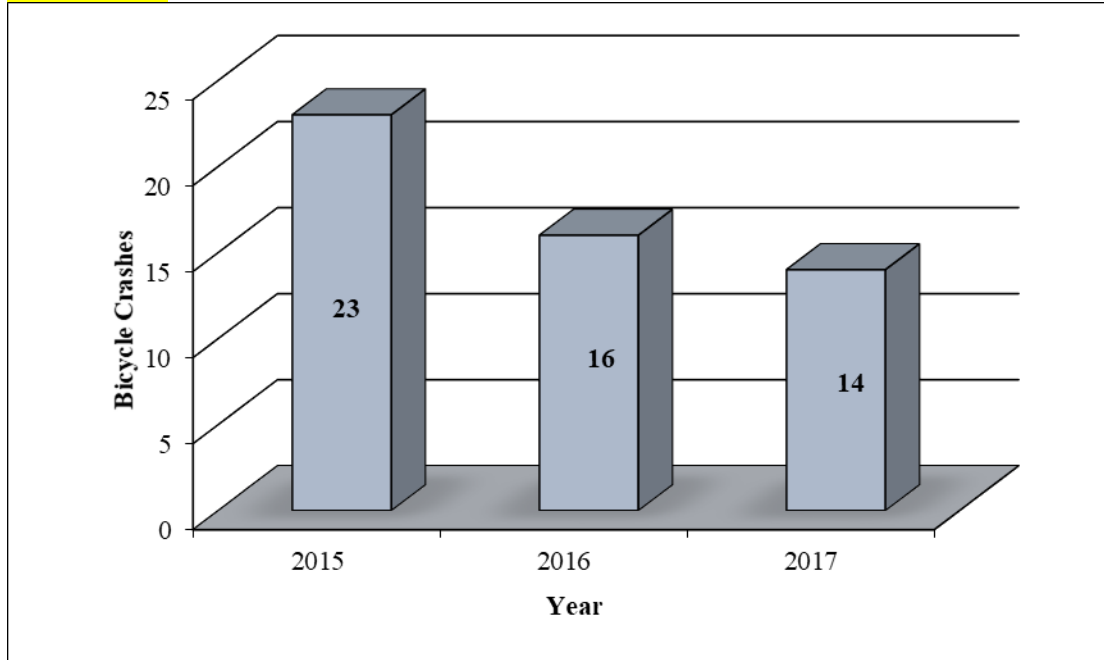
Of the 53 reported bicycle crashes occurring from 2015 to 2017, 43 occurred at intersections; 40 of these intersection crashes occurred in the City of Sheboygan, with the remaining three intersection crashes occurring in the City of Sheboygan Falls. In addition, the majority of the ten non-intersection bicycle crashes occurred just a short distance from an intersection. Because of the number of conflict points, intersections pose a greater safety hazard to all modes of travel. One method for reducing conflicts at intersections is to restrict turning movements. Medians are often used for this purpose, as well as to provide the added safety benefit of a mid-street refuge.

Nearly all intersections in the metropolitan planning area that had a crash involving a bicycle had only one such crash at the intersection. However one intersection stands out as having multiple bicycle crashes from 2015 through 2017 (this intersection is located in the City of Sheboygan):

- South 8th Street and Indiana Avenue.

This intersection had two bicycle crashes from 2015 through 2017.

Figure 5.1: Bicycle Crashes in the Communities of the Sheboygan Metropolitan Planning Area, 2015 – 2017



Source: Traffic Operations and Safety Laboratory, UW Madison, 2015, 2016 and 2017; and Bay-Lake Regional Planning Commission, 2018.

Map 5.2 illustrates the reported bicycle crash locations that occurred at intersections over the period from 2015 through 2017. The high crash location is that which experienced two bicycle crashes over that period of time. Corridors which stand out as being problematic for bicycle crashes at intersections include the following:

- State Highway 23/Kohler Memorial Drive from N. 25th Street to Erie Avenue;
- Erie Avenue from N. 13th Street to N. 6th Street;
- North Avenue from State Highway 42/Calumet Drive to N. 8th Street;
- Pennsylvania Avenue from Commerce Street to 8th Street;
- State Highway 28/S. Business Dr./S. 14th Street from Washington Avenue to New Jersey Avenue;
- S. 10th Street from Georgia Avenue to Clara Avenue;
- Indiana Avenue from S. 19th Street to S. 8th Street;
- Broadway Avenue from S. 19th Street to S. 9th Street;
- Georgia Avenue from S. 17th Street to S. 10th Street;
- Mead Avenue from State Highway 28/S. Business Drive to S. 15th Street;

- Wilson Avenue from State Highway 28/S. Business Drive to S. 21st Street;
- Washington Avenue (partially State Highway 28) from Greenwing Drive to S. 18th Street;
- New Jersey Avenue from S. 17th Street (Northbound) to State Highway 28/S. 14th Street; and
- Huron Avenue from N. 10th Street to N. 8th Street.

Facility Maintenance

Multipurpose trails in the area have been paved with asphalt, and, with a few exceptions, tend to be in good condition. Area municipalities care for their own trails by trimming bordering vegetation and by removing debris. Snow removal during the winter keeps paths open and available to bicyclists and pedestrians. On-road routes are used mainly by motor vehicles, and therefore undergo much more wear. The pavement is cracked and heaved in many sections along designated bicycle routes, but area municipalities regularly program repaving and reconditioning projects for such routes.

Access – Barriers and Connectivity

The main transportation barriers for bicyclists in the metropolitan planning area are active rail lines in the area as well as Interstate Highway 43, and State Highway 23 west of North 25th Street.

Along with man-made barriers, natural features such as wetlands, rivers and streams serve as barriers that must be crossed by bridge. However, most bridges have sidewalk accommodations for pedestrians that are wide enough to also accommodate bicyclists.

PEDESTRIAN NETWORK

The Sheboygan metropolitan planning area contains a variety of pedestrian walkways (including sidewalks, paths or trails, and roadway shoulders) that are necessary to encourage safe pedestrian circulation and travel. **The Sheboygan County Pedestrian & Bicycle Comprehensive Plan: 2015 Update and the** Sheboygan County Safe Routes to School Plan: 2009 have also guided and encouraged the development of pedestrian facilities throughout Sheboygan County. Through the efforts of NOMO Sheboygan County and various stakeholders, the number of pedestrian accommodations has grown, providing the public with additional safe alternatives to driving, ultimately increasing the number of walkers and reducing automobile usage. This section provides an overview of the Sheboygan metropolitan planning area's existing and planned pedestrian network. More detailed information is also available through the county's safe routes to school plan and the county's **2015 update to its pedestrian and bicycle comprehensive plan.**

A walkable community encourages more walking through:

- Continuous sidewalks;
- Safe street crossings;
- Pedestrian signs, signals and markings;
- Sidewalks and setbacks; and

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- Landscaping and lighting.

A walkable community also reduces the number of pedestrian/motor vehicle crashes and injuries, and better accommodates those who use walking as their primary mode of transportation.

Obstacles and conditions that can act as deterrents to walking include:

- Missing sections of sidewalks;
- Uneven walking surfaces;
- Poor or no lighting;
- Misuse of pedestrian facilities;
- Poor maintenance;
- Narrow walkways;
- Missing curb cuts;
- Difficult street crossings;
- Lack of respect for pedestrians (motorists not yielding the right-of-way when a pedestrian is in a crosswalk);
- Barriers on walking routes (such as rivers and railroads);
- Auto-oriented land development; and
- High traffic levels or speeds (especially near schools, parks or retirement centers).

Disabled persons (e.g.: those who use wheelchairs and electric personal assistive mobility devices) also need to be considered when planning pedestrian facilities.

Inventory of Facilities

Pedestrian travel is accommodated through a system of walkways that includes sidewalks, paths or trails, and highway shoulders. Sidewalks offer the most efficient and effective means for making short trips in urban areas. Sidewalks run parallel to streets and highways, providing equivalent connections between origins and destinations as the streets and highways themselves. Generally, streets and highways in suburban and urban fringe portions of the metropolitan planning area are constructed with curb and gutter, yet these streets and highways generally lack sidewalks. The lack of sidewalks forces pedestrians to walk in the roadway, increasing the likelihood of pedestrian/motor vehicle crashes. Paths include walkways through parking lots and multipurpose paths for shared use with bicyclists, in-line skaters, and other users. Multipurpose paths often provide less direct connections, and generally serve more recreational purposes than do sidewalks. Highway shoulders are often paved, but may also be composed of gravel or aggregate. Because shoulders are shared by pedestrians, bicyclists and motorists, pedestrians must take extra care and should walk on the side of the road that faces traffic.

The Cities of Sheboygan and Sheboygan Falls, and the Villages of Howards Grove and Kohler contain the bulk of the sidewalk system within the metropolitan planning area. In addition,

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several of the unincorporated portions of the Sheboygan Metropolitan Planning Area also contain pedestrian facilities. The pedestrian network within the metropolitan planning area is displayed on Map 5.3.

Recent pedestrian transportation improvements have included the following:

- In 2014, traffic calming measures were constructed around twelve Sheboygan Area School District schools and at the Sheboygan YMCA. Facilities such as speed tables, in-ground crosswalk lighting, flashing stop signs, curb bumpouts, solar powered radar lights, and traffic circles were installed.
- In 2015, sidewalk gap filling occurred throughout the City of Sheboygan (construction to fill gaps helps provide a more complete sidewalk network).
- In 2016, the Taylor Drive Pathway was built.

Planned Improvements

The following pedestrian facility improvements have been planned in the Sheboygan Metropolitan Planning Area over the next few years; both of these projects are at least partially funded by NOMO Sheboygan County:

- Construction of a multi-use pathway in the Alliant Energy utility corridor on the south side of the City of Sheboygan (from County Highway OK/S. Business Drive to S. 18th Street); and
- Conversion of County Highway PP from the Sheboygan River bridge to S. 24th Street into a linear parkway and trail facility.

Several pedestrian facility improvements have appeared as “illustrative” projects in recent TIPs, meaning that they are priority projects, but do not have sufficient funding to be programmed in the TIP. These projects include the following:

- Expansion of the Shoreland 400 Rail Trail south to Mead Avenue and north to North Avenue (including an eastern extension to S. 9th Street paralleling Indiana Avenue);
- Construction of multi-use pathways on N. Taylor Drive between Kohler Memorial Drive and Superior Avenue and from the intersection of N. Taylor Drive and North Avenue into Evergreen Park;
- Construction of a bridge for bicyclists and pedestrians over the Sheboygan River near the former Tecumseh Engines plant in the City of Sheboygan Falls;
- Construction of a bridge for bicyclists and pedestrians over the Sheboygan River near the Bemis Manufacturing plant in the City of Sheboygan Falls; and
- Expansion of the multi-use pathway in the Alliant Energy utility corridor on the south side of the City of Sheboygan (from South Taylor Drive to County Highway OK/S. Business Drive, and from County Highway KK/S. 12th Street to Lakeshore Drive).

Current Conditions

Regulations

Federal Highway Administration (FHWA)

The FHWA has recommended guidelines for installing sidewalks based on recommendations of the Institute of Transportation Engineers (ITE). These guidelines suggest where sidewalks should be built based on land use, functional classification of the roadway in question, and the density of housing units. Table 5.2 illustrates these guidelines, as found in FHWA’s *Implementing Pedestrian Improvements at the Local Level* (Publication Number FHWA-98-138).

The USDOT (including FHWA) also issued a policy statement on bicycle and pedestrian accommodation regulations and recommendations in March of 2010. According to this statement, “(US)DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects,” and that “transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.”

The complete USDOT policy statement on bicycle and pedestrian accommodation can be found at: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/policy_accom.cfm(.)

State Statutes/Administrative Code/Policies

Chapter 346 of the *Wisconsin Statutes* (Rules of the Road, 2015 – 2016 update) outlines the expected behavior of all persons who use the road, including bicyclists, pedestrians, motorists and riders of personal assistive mobility devices. When bicyclists and riders of personal assistive mobility devices operate on sidewalks, they must operate under the same rules and regulations for crossing streets as do pedestrians. More information on the policies of Chapter 346 can be found at: <http://www.legis.state.wi.us/Statutes/Stat0346.pdf>(.)

Since the original *Year 2045 SATP* was adopted in May of 2015, the state legislature repealed Chapter TRANS 75 of the *Wisconsin Administrative Code*. However, there is still a state statute (Section 84.01(35)) that addresses the establishment of bikeways and pedestrian ways, although it was modified in mid-2015. Under the revised statute, WisDOT “shall give due consideration to establishing bikeways and pedestrian ways in all new highway construction and reconstruction projects funded in whole or in part from appropriated state or federal funds.” Exceptions to this rule apply when (1) bicyclists or pedestrians are prohibited by law from using the highway that is the subject of the project; or (2) the project is funded in whole or in part from state funds unless the governing body of each municipality in which a portion of the project will occur has adopted a resolution authorizing the department to establish the bikeway or pedestrian way (this does not apply if the federal government provides written notice to WisDOT that establishment of a bikeway or pedestrian way as a part of a project is a condition of the use of federal funds for that project).

Additional information on WisDOT’s policies in regard to establishment of bikeways and pedestrian ways can be found at: wisconsindot.gov/Documents/projects/multimodal/bike/8401-faq.pdf(.)

Table 5.2: Guidelines for Installing Sidewalks

Land Use/Roadway Class/ Housing Unit Density	New Urban and Suburban Streets	Existing Urban and Suburban Streets
Commercial and Industrial/ All Streets ³	Both sides ¹	Both sides. Every effort should be made to add sidewalks where they do not exist to complete missing links.
Residential/ Major Arterials ³	Both sides ²	Both sides.
Residential/ Collectors	Both sides ²	Multifamily residential - both sides. Single-family residential - prefer both sides, but require at least one side.
Residential/ Local Streets/ More than 4 units per acre	Both sides ²	Prefer both sides, but require at least one side.
Residential/ Local Streets/ 1 to 4 units per acre ¹	Prefer both sides, but require at least one side.	One side preferred, with at least a 4-foot shoulder on both sides required.
Residential/ Local Streets/ Less than 1 unit per acre ¹	One side preferred; a shoulder on both sides is required ⁴	At least a 4-foot shoulder on both sides required ⁴

Notes:

¹Any local street within two blocks of a school site that would be on a walking route to school requires a sidewalk and curb and gutter.

²Sidewalks may be omitted on one side of a new street where that side clearly cannot be developed and where there are no existing or anticipated uses that would generate pedestrian trips on that side of the street.

³Where there are service roads, the sidewalks adjacent to the main road may be eliminated and replaced by a sidewalk adjacent to the service road on the side away from the main road.

⁴For rural roads not likely to serve development, a shoulder of at least 4 feet in width (preferably 8 feet on primary highways) should be provided. Surface material should provide a stable, mud-free walking surface.

Source: *Design and Safety of Pedestrian Facilities*, Institute of Transportation Engineers, 1998.

Sidewalk Maintenance

The cities and villages in the metropolitan planning area have general regulations regarding the maintenance of sidewalks, streets and alleys. In all cases, these municipalities require property owners to clean and maintain the sidewalks along their properties; this includes shoveling snow and salting ice within 24 hours of the end of a snow or ice storm. If property owners do not abide by the regulations, they are subject to a fine and a charge for municipal workers to perform the required maintenance.

Land Development Ordinances

The most efficient and effective way for communities to provide pedestrian facilities is for the communities to require installation of sidewalks within new developments. Refer to the municipal codes of the metropolitan planning area communities for any sidewalk requirements, including location and sidewalk widths; Table 5.3 provides a current summary of these requirements.

Table 5.3: Sidewalks as a Required Improvement of Development

Jurisdiction	Sidewalk Location	Sidewalk Width	Required Improvement
City of Sheboygan	City discretion	Not stated	Yes (in areas specified by ordinance); No elsewhere
City of Sheboygan Falls	Specified residential subdivisions and commercial/industrial zones	4 feet, 6 inches	Yes (in areas specified by code); No elsewhere
Village of Kohler	Village discretion	Not stated	No
Village of Howards Grove	Village discretion	5 feet in residential areas; 8 feet in commercial areas	No
Towns (County regulations)	Town discretion. Generally, one side of frontage streets; one or both sides of all other streets within platted subdivisions	Not stated ¹	No

¹The Town of Wilson refers to a minimum sidewalk width of five feet in its ordinances.

Source: Local public works and/or subdivision/development ordinances.

Pedestrian Facts

Walking to Work

Table 5.4 indicates the number of persons age 16 and older who worked outside the home and walked to work in Sheboygan County, the Sheboygan Urbanized Area, and the City of Sheboygan, as indicated in the 2008 – 2012 and 2012 – 2016 ACS 5-Year Estimates.

The number of persons age 16 and older who worked outside the home and walked to work increased from the 2008 – 2012 ACS to the 2012 – 2016 ACS for Sheboygan County and for the City of Sheboygan, while the Sheboygan Urbanized Area experienced a decline. Sheboygan County increased by 40 walkers and the City of Sheboygan increased by eight walkers, but the Sheboygan Urbanized Area experienced a decline of 87 workers walking to work. Sheboygan County experienced a 2.4 percent increase in persons who walked to work and the City of Sheboygan had a 1.2 percent increase in walkers to work from the 2008 – 2012 ACS to the 2012

– 2016 ACS, while the Sheboygan Urbanized Area had a 9.3 percent decline of individuals walking to work between the two ACS periods.

The percentage of persons age 16 and older who worked outside the home and walked to work in Sheboygan County increased from 2.9 percent of all workers in the 2008 – 2012 ACS to 3.0 percent of all workers in the 2012 – 2016 ACS.

The percentage of persons age 16 and older who worked outside the home and walked to work in the Sheboygan Urbanized Area decreased from 2.7 percent of all workers in the 2008 – 2012 ACS to 2.4 percent of all workers in the 2012 – 2016 ACS.

The percentage of persons age 16 and older who worked outside the home and walked to work in the City of Sheboygan increased from 2.8 percent of all workers in the 2008 – 2012 ACS to 2.9 percent of all workers in the 2012 – 2016 ACS.

It should be noted that there was a gain in employment outside the home of 0.8 percent in Sheboygan County between the two ACS periods, which helped contribute to the increase in the number of walking commuters in the county. On the other hand, there were losses in employment outside the home in the Sheboygan Urbanized Area (1.0 percent) and in the City of Sheboygan (1.4 percent) between the two ACS periods; while this helped contribute to the decrease in the number of walking commuters in the urbanized area, the City of Sheboygan still saw a small increase in the number of walking commuters. The improvements and development of pedestrian accommodations (e.g., sidewalks, multipurpose pathways, etc.) through NOMO Sheboygan County contributed to the increase in the number of workers walking to their job in Sheboygan County and in the City of Sheboygan. Continued efforts by NOMO Sheboygan County will likely increase the proportion of walking commuters in the metropolitan planning area over the next few years.

It is important to note that the number of journey to work trips represents only a fraction of all trips being made in the metropolitan planning area. People cite many reasons for not walking to work, the most common reason being that they have a professional job with a strict dress code. Most employers do not provide showers or changing rooms, which creates a disincentive to walk to work. Midwest winters are also a huge disincentive for walking with their short periods of daylight, sub-zero temperatures and heavy snows.

Table 5.4: Persons Who Walked to Work, 2008-2012 and 2012-2016 American Community Survey*

Region or Jurisdiction	2008 - 2012 ACS**	2012 - 2016 ACS**	Numerical Change	Percentage Change
Sheboygan County	1,643	1,683	40	2.4%
Sheboygan Urbanized Area	931	844	-87	-9.3%
City of Sheboygan	666	674	8	1.2%

Notes:

*Workers 16 years and over (a sample of respondents, not based on a 100 percent count).

**American Community Survey (ACS) data is not available for all of the individual local jurisdictions of the Sheboygan Metropolitan Planning Area. The ACS data is only available for Sheboygan County, the Sheboygan Urbanized Area, and the City of Sheboygan.

Source: U.S. Census Bureau, 2008 – 2012 and 2012 – 2016 American Community Survey (ACS) 5-Year Estimates (Table B08006: Sex of Workers by Means of Transportation); and Bay-Lake Regional Planning Commission, 2018.

Other Indicators of Pedestrian Travel Demand

As part of the federal requirements for the NMTTPP, each community was required to complete manual pedestrian counts on an annual basis. In September of each year from 2007 through 2013, a staff member or volunteer was stationed at one of several intersections in Sheboygan County for a two hour period in the morning or evening, during which they counted and recorded pedestrian activity for that area. This was to gauge an on-the-ground increase or decrease in nonmotorized activity.

To address the variability of pedestrians on a daily basis at the same location, the results of the counts are presented as a three-year moving average, with each annual count calculated as the average of the current and previous two years. For example, the 2010 count is the average of the 2008, 2009 and 2010 counts.

The following are the annual pedestrian counts in Sheboygan County from 2007 through 2013 (three-year moving averages, except for the 2007 baseline year) according to the FHWA *Nonmotorized Transportation Pilot Program: 2014 Report*:

2007 = 80	2011 = 102
2009 = 83	2012 = 125
2010 = 86	2013 = 148

Using 2007 as a baseline, walking in Sheboygan County increased an estimated 85 percent between 2007 and 2013. This increase is an estimated 10.8 percent average annual growth rate for walking in the county comparing 2013 to 2007.

Actual walking counts in Sheboygan County nearly doubled each of the first three years of the NMTTP program, and have continued to show considerable growth at the count locations throughout the county. Since sidewalks take less time to construct than the larger scale projects like multiuse pathways and bicycle facilities, sidewalks were some of the first NMTTP projects to be completed. With the completion of new and improved pedestrian accommodations each year since 2007, the number of pedestrians also continues to increase.

Safety

Signage and Pavement Markings

Pedestrian signage and crosswalk markings not only serve to direct pedestrians to designated locations to cross busy streets, but also warn motorists to be more vigilant of pedestrian activity. Most intersections lack marked crosswalks altogether, but the lack of markings only becomes an issue on highly traveled corridors. Proper attention should be paid to replacing, repairing and upgrading street markings and needed signage when and where needed.

Local common councils and village and town boards and some of their standing committees (Public Safety and Public Works Committees in the case of the City of Sheboygan) address pedestrian issues in the metropolitan planning area.

Lighting

Lighting is an essential element in the pedestrian landscape, as it illuminates the walking surface and offers pedestrians a sense of safety and security by deterring illegal activity.

Sidewalks in the downtown areas and in areas involving commercial strip development are generally well lit, but most sidewalks in the cities and villages of the metropolitan planning area receive indirect lighting from existing street lamps. While sidewalks are provided, the lack of sufficient lighting may deter use by potential pedestrians.

Pedestrian Crashes

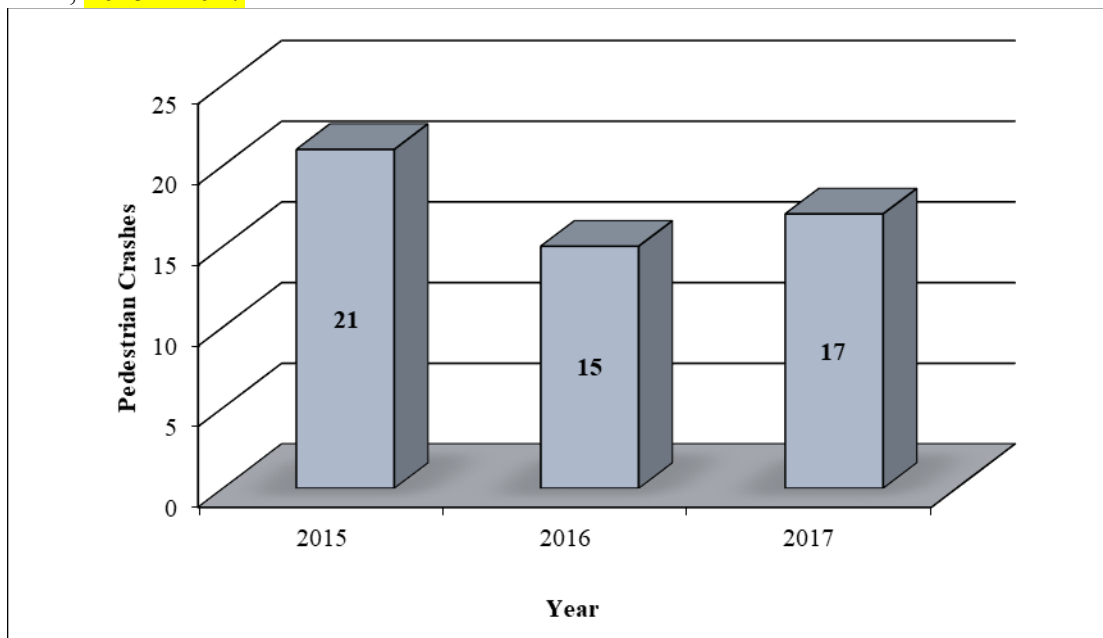
In 2016, one pedestrian was injured or killed about every 7.1 hours in Wisconsin. Some 1,252 crashes involved pedestrians in 2016, including 49 pedestrian fatalities and 1,181 pedestrian injuries. Over 80 percent of crashes occurred either when the pedestrian was in the roadway or in crosswalks. Since 1990, the number of pedestrians killed in crashes in Wisconsin has had its increases and decreases yet has been steadily declining, while the number of pedestrians injured in the state has decreased significantly. At the state level, pedestrian crashes occur most often on weekdays, particularly between the hours of 3:00 p.m. and 6:00 p.m. Most pedestrian crashes occur on streets and highways in urban areas.

During the period from 2015 through 2017 in the communities of the Sheboygan metropolitan planning area, 53 pedestrian crashes were reported, in which 47 individuals were injured and one individual was killed. This translates to one person being injured or killed in a pedestrian-related crash nearly every 23 days. Figure 5.2 shows that 21 crashes occurred in 2015 (one fatal crash, 18 injury crashes, and two property damage only crashes), 15 crashes occurred in 2016 (12 injury crashes and three property damage only crashes), and 17 crashes occurred in 2017 (16 injury crashes and one property damage only crash). It should be noted that one crash involving

pedestrians (in 2015) had two injuries; it is possible that one of the injuries in this crash involved a non-pedestrian party, but this cannot be determined in the crash records that were made available.

Nearly 74 percent of the pedestrian crashes occurred during daylight hours, and over 83 percent of the pedestrian crashes occurred on dry pavement. Motorists were at fault for 20 of the 53 crashes (37.7 percent), while pedestrians were responsible for nine of the crashes (17.0 percent). Four of the reported pedestrian crashes (7.5 percent) appeared to be the joint fault of the motorist and the pedestrian, and 20 crashes (37.7 percent) had unreported or undetermined fault. Of the five pedestrian-related crashes in the metropolitan planning area involving excessive alcohol consumption (based on citations and other factors), one crash involved the fault of the motorist, one crash involved the fault of the pedestrian, one crash involved joint fault of the motorist and the pedestrian (although only the motorist was cited), and two crashes involved unreported or undetermined fault.

Figure 5.2: Pedestrian Crashes in the Communities of the Sheboygan Metropolitan Planning Area, 2015 – 2017



Source: Traffic Operations and Safety Laboratory, UW Madison, 2015, 2016 and 2017; and Bay-Lake Regional Planning Commission, 2018.

The most frequent single causes of pedestrian crashes on the part of motorists involved failure to yield the right-of-way (eight crashes); other causes of pedestrian crashes on the part of motorists were “other” causes (six crashes), multiple causes (four crashes), unsafe backing (three crashes), failure to have control of one’s vehicle (two crashes), and inattentive driving (one crash). The most frequent single cause of pedestrian crashes on the part of pedestrians involved “other” causes (six crashes), with failure to yield the right-of-way (four crashes), disregarding traffic control (two crashes), and multiple causes (one crash) also appearing as causes on the part of pedestrians.

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WisDOT has estimated through analysis of statewide crash statistics that over 40 percent of pedestrian crashes occurred outside of a crosswalk in the roadway in calendar year 2016. While it is difficult to distinguish between crosswalk crashes versus non-crosswalk crashes based on the crash data, we can analyze intersection versus non-intersection crashes as a good substitute. Of the 53 reported pedestrian crashes occurring from 2015 through 2017, 21 crashes (39.6 percent) occurred at intersections; all but two of these intersection crashes occurred in the City of Sheboygan, and with the remaining two crashes occurring in the City of Sheboygan Falls. Of these 21 intersection crashes, nine crashes (42.9 percent) were exclusively the fault of the motorist, while four crashes (19.0 percent) were exclusively the fault of the pedestrian. In addition, two crashes (9.5 percent) were the joint responsibility of the motorist and the pedestrian, while six crashes (28.6 percent) had unreported or undetermined fault.

Map 5.4 illustrates the reported intersection crash locations that occurred in the metropolitan planning area from 2015 through 2017. All intersections that had a crash involving a pedestrian had only one such crash at the intersection. Corridors which stand out as being problematic for pedestrian crashes at intersections include the following:

- N. 15th Street from Geele Avenue to North Avenue;
- Geele Avenue from N. 15th Street to N. 7th Street;
- State Highway 23/Kohler Memorial Drive/Erie Avenue from N. 23rd Street to State Highways 28 and 42/N. 14th Street;
- State Highway 42/N. 14th Street from State Highway 23/Erie Avenue to Michigan Avenue;
- Taylor Drive from New Jersey Avenue to Wilgus Avenue; and
- Broadway Avenue from S. 9th Street to S. 8th Street.

Safe Routes to School

Pedestrian safety and childhood obesity are increasingly becoming problems for school-age children. While many children live close to the school that they attend (particularly in the elementary grades), many more children are driven to school each day. Two of the main reasons that parents drive their children to school are safety concerns and the convenience of dropping their children off at school on the way to work.

Records analyzed in this “safe routes to school” analysis involved all reported pedestrian crash locations for persons ages 5 through 18 in the cities, villages and towns of the metropolitan planning area. While the crash file contains a wealth of information, the most interesting attributes describe: the intersection or mid-block location where each crash took place; the day, hour and date of each crash; the roadway and weather conditions; the conditions affecting the driver of the motor vehicle; and the age of the driver. All of the crashes involved persons between the ages of 5 and 18 who were presumably (based on the location, day, hour and date of the crash) traveling to or from school. One of the ten crashes in the metropolitan planning area involving school-age pedestrians during school days and hours was also confirmed to have involved a teenage driver (ages 16 through 18), also presumably heading to or from school. One

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of the ten crashes in the metropolitan planning area involved wet road conditions due to rain.

School age pedestrian crashes have been analyzed for periods when school is in session (September through early June, on weekdays outside of break periods, and between the hours of 7:00 a.m. and 4:00 p.m.). The City of Sheboygan had all ten crashes in the metropolitan planning area involving school-age pedestrians during school days and hours.

The following ten crashes involved school-age pedestrians during school days and hours in which a student would typically walk to or from school in the metropolitan planning area (Note: All student pedestrians were injured):

- S. 8th Street north of Clara Avenue – 8 year old – near Longfellow Elementary School and the Boys’ and Girls’ Club;
- State Highway 23/Erie Avenue and N. 17th Street – 9 year old – near Jefferson Elementary School and the Sheboygan Leadership Academy;
- Union Avenue and S. 10th Street – 12 year old – near Farnsworth Middle School;
- State Highway 28/S. 14th Street north of Illinois Avenue – 12 year old – near Sheridan Elementary School, but the student likely attended Horace Mann Middle School;
- St. James Court west of N. 9th Street – 14 year old – the student likely attended either Urban Middle School or North High School;
- N. 11th Street south of Huron Avenue – 14 year old – the student likely attended either Horace Mann Middle School or North or South High School (Huron Avenue is the dividing line between the attendance districts of the two main public high schools in Sheboygan);
- Wisconsin Avenue west of N. 10th Street – 16 year old – the student likely attended South High School;
- Union Avenue east of S. 11th Street – 16 year old – the student likely attended South High School;
- S. Pier Drive east of Blue Harbor Drive – 16 year old – the student likely attended South High School; and
- State Highway 28/S. 14th Street south of Virginia Avenue – 18 year old – the student likely attended South High School.

Additional crossing guards are warranted for schools in the City of Sheboygan at all levels. The Village of Howards Grove could also use crossing guards to serve the high school and St. Paul’s Lutheran School. The Village of Kohler and the City of Sheboygan Falls are generally well served with crossing guards, but additional crossing guards might be helpful in downtown Sheboygan Falls. Town of Sheboygan children would benefit from having crossing guards serving Lincoln Erdman Elementary School, while Town of Wilson children would similarly benefit from having crossing guards serving Jackson Elementary School. Continued implementation of items in Sheboygan County’s “Safe Routes to School Action Plan” that

remain to be implemented will go a long way toward making these and other improvements for school age pedestrians in the metropolitan planning area and elsewhere in Sheboygan County.

Facility Maintenance

Despite local sidewalk maintenance ordinances, maintenance does not always occur. A lack of maintenance can lead to cracked and upheaved sidewalks, making walking on these facilities unsafe at best, and do not encourage people to walk or forcing them to walk in the street.

Access – Barriers and Connectivity

Barriers to pedestrian travel can include parking lots, rivers and creeks, railroads and major roadways. Direct, safe and convenient connections between areas divided by such barriers can be challenging, and is only made worse by the acceptance of poor development practices. The metropolitan planning area has several barriers that serve to separate neighborhoods from commercial areas.

Major roadways such as Interstate Highway 43 and State Highways 23, 28, 32 and 42 (outside of core portions of the City of Sheboygan and the City of Sheboygan Falls) involve significant barriers to most pedestrians, particularly disabled persons and children.

TRANSIT NETWORK

Inventory of Facilities

Transit service in the metropolitan planning area is offered in two forms: specialized transportation services and fixed-route transit. Descriptions of transit programs in this section are a snapshot inventory of conditions as of May 2018, and are subject to change.

Public Specialized Transportation Services in the Metropolitan Planning Area

Specialized transportation services include services for disabled persons, the elderly and those eligible to participate in Sheboygan County programs. Since the mid-1980s, Sheboygan County and Shoreline Metro have had a relationship in the operation of transportation services for the disabled, and this relationship continued and strengthened following passage of the Americans with Disabilities Act (ADA) in 1990. Through this cooperative relationship, Sheboygan County and Shoreline Metro have saved thousands of dollars over the past 30+ years. Sheboygan County is the administrative agent for the operation of an elderly (60+), disabled and program-oriented transportation program throughout the county, but Metro Connection (operated by Shoreline Metro) actually provides this service under contract to Sheboygan County. Metro Connection also operates the complementary ADA paratransit program for eligible disabled persons in the Shoreline Metro service area.

Service under the Sheboygan County elderly and disabled transportation program operates from 7:30 a.m. to 3:30 p.m. Monday through Friday. The service area includes much of Sheboygan County, including the Cities of Sheboygan and Sheboygan Falls, the Village of Kohler, and limited service hours to the City of Plymouth and the Village of Oostburg. Meal site trips are also available to the Cities of Sheboygan, Sheboygan Falls and Plymouth and to the Village of Adell on Tuesdays.

Shoreline Metro ADA Transportation Services

In order to meet the special needs of persons with disabilities and to comply with the ADA, Shoreline Metro operates low floor buses on its regular, fixed-route system. For disabled persons who qualify for ADA paratransit service, Shoreline Metro offers demand-response paratransit service during the same hours of operation as its fixed-route service within three-fourths of a mile of all Shoreline Metro fixed routes and within its current transit service area (Cities of Sheboygan and Sheboygan Falls and the Village of Kohler). The ADA paratransit service is provided through Shoreline Metro’s “Metro Connection” division. Current hours of operation are 5:45 a.m. to 8:45 p.m. Monday through Friday and 7:45 a.m. to 5:45 p.m. on Saturdays. There is no service on Sundays or on major holidays.

Clients make their own arrangements for transportation service. ADA certified persons can request next day service prior to 3:00 p.m. the day before the scheduled service. Shoreline Metro can be reached at 920-459-3420 (toll free 800-924-0408) regarding this service, or by e-mailing cverduin@shorelinemetro.com.

Sheboygan County Health and Human Services Department

The Sheboygan County Health and Human Services Department offers transportation services to persons in Sheboygan County who are eligible to participate in various county programs.

In addition, the Sheboygan County Health and Human Services Department’s Aging and Disability Resource Center (ADRC) administers and Metro Connection provides transportation services to the elderly (60 years and older) and to adults of all ages with disabilities throughout Sheboygan County. The Sheboygan County Health and Human Services Department’s ADRC receives funds from the state’s Elderly and Disabled Transportation Program (Section 85.21); \$5 of every \$6 under this program involves State funding, with the remaining funding involving a local (County) match. For information regarding this program, contact the Sheboygan County ADRC office (920-467-4100, or toll free at 800-596-1919) or Shoreline Metro at the contact information listed above.

Table 5.5 summarizes the types of transportation services offered by the Sheboygan County Health and Human Services Department’s ADRC and operated by Metro Connection. Transportation services generally do not go outside Sheboygan County. Clients make their own arrangements for transportation service. Reservations must be made for transportation to and from meal sites and for other county provided transportation services by 3:00 p.m. for the following day. Subscription service is continuing for ongoing appointments.

Table 5.5: Sheboygan County Health and Human Services Department Aging and Disability Resource Center (ADRC) Transportation Programs

Service Type	Hours of Service	Fare
Trips to County Operated Nutrition Sites for Meals	Mid-Day Period, Monday - Friday	\$2.50/Round Trip
All Other Trips	7:30 a.m. - 3:30 p.m. Monday - Friday	\$2.50/One Way Trip

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Source: Sheboygan County Health and Human Services Department, ADRC, 2018.

The Sheboygan County Health and Human Services Department's ADRC also sponsors a volunteer driver program. Rides are provided based on a suggested donation, which is determined by the distance traveled. The program mainly focuses on elderly (60+) individuals needing transportation to medical appointments but who are denied transportation through the paratransit program. Some 2,835 rides covering 72,250 miles were provided to 526 customers through the volunteer driver program in 2017. Contact the Sheboygan County ADRC office (920-467-4100, or toll free at 800-596-1919) for more information regarding the volunteer driver program.

Other Public Specialized Transportation Services

Medical Transportation Management, Inc. (MTM) is a broker of non-emergency medical transportation for Wisconsin residents who participate in Medicaid (including IRIS) or Badger Care and who are not Family Care members. Potential riders need to call at least two business days in advance to determine eligibility or to make a reservation for rides. The following contact information has been provided by MTM:

- Routine Ride Reservations: 866-907-1493 (or online)
- “Where’s My Ride:” 866-907-1494
- Deaf or Hearing Impaired Line (TTY): 711
- “We Care” Ride Concerns Line: 866-436-0457
- Website: <http://www.mtm-inc.net/Wisconsin/>

The American Cancer Society “Road to Recovery” program provides transportation to and from treatment for people who have cancer who do not have any other means of transportation. Volunteer drivers donate their time and the use of their cars so that patients can receive the lifesaving treatments they need. The phone number to inquire about this service is 800-227-2345.

Private specialized transportation services are discussed in the “Intercity Passenger Network” section of this chapter.

Fixed-Route Transit Service

Shoreline Metro is the only fixed-route transit service in the metropolitan planning area. Shoreline Metro operates nine regular fixed routes and one seasonal fixed route. The downtown transfer point (across from City Hall on the 800 block of Center Avenue) is the origin for all of the fixed routes, which are as follows:

- **Route 3 North** serves the north central portion of the City of Sheboygan, and travels for a length of 6.9 miles from its southern terminus at the downtown transfer point to its northern terminus at Eisner Avenue and N. 21st Street. Major trip generators served by Route 3 North include the north side Piggly Wiggly supermarket, Plastics Engineering Company (PLENCO), Pigeon River and Cooper public elementary schools, the Sheboygan Leadership Academy charter school, St. Dominic’s and St. Paul’s parochial

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elementary schools, the Walgreen's pharmacy on Calumet Drive, the McDonald's restaurant on North Avenue, RCS, Locate Staffing, and the historic Michigan Avenue commercial district.

- **Route 3 South** serves the south central portion of the City of Sheboygan, and travels for an average length of 7.0 miles from its southern terminus at Union and Georgia Avenues to its northern terminus at the downtown transfer point. Major trip generators served by Route 3 South on all trips include Georgia Avenue Apartments, Bio Life plasma center, Old Wisconsin, Horace Mann public middle school, James Madison and Sheridan public elementary schools, and Immanuel Lutheran School. In addition, the South Pier District (including Blue Harbor Resort) is served on trips that leave at 6:15 a.m. and 7:15 a.m. and on all trips that leave 45 minutes after the hour on weekdays as well as all trips on Saturdays. Finally, the University of Wisconsin Sheboygan, Bookworm Gardens, and Lutheran High School are served on all trips that leave 15 minutes after the hour between 8:15 a.m. and 8:15 p.m. on weekdays as well as all trips on Saturdays.
- **Route 5 North** serves the northeast portion of the City of Sheboygan, and travels for a length of 6.5 miles from its southern terminus at the downtown transfer point to its northern terminus at N. 10th Street and Eisner Avenue. Major trip generators served by Route 5 North include Save A Lot supermarket, Here We Grow Child Care Center, Urban public middle school, the north side Piggly Wiggly supermarket, Ridge Court apartments, North public high school, Aurora Sheboygan Memorial Medical Center (for now), Vollrath Park, Grant public elementary school, Sheboygan County Christian elementary school, St. Elizabeth Seton Catholic school, the Sheboygan County YMCA (Broughton Drive site), Deland Park and Marina, and the Sheboygan Senior Activity Center.
- **Route 5 South** serves the south central portion of the City of Sheboygan, and travels for a length of 8.3 miles from its southern terminus at Indian Meadows Mobile Home Park to its northern terminus at the downtown transfer point. Major trip generators served by Route 5 South include the Shoreline Metro garage and offices, Rockline Industries, the Heritage Square commercial district along S. 12th Street, Lakeshore Display, the Southtown Mall, Indian Meadows Mobile Home Park, Wilson public elementary school, Bethlehem Lutheran school, and Immaculate Conception Catholic school.
- **Route 7 North** serves the northwest portion of the City of Sheboygan, and travels for a length of 7.3 miles from its southern terminus at the downtown transfer point to its northern terminus at N. Taylor Drive and Main Avenue. Major trip generators served by Route 7 North include the Mead Public Library, the Sheboygan Police Department, Aurora Sheboygan Clinic, Pick & Save supermarket, St. Nicholas Hospital, the N. Taylor Drive medical corridor, the "Field of Dreams" (baseball/softball and soccer fields), the Lakeshore Community Health Care clinic, St. Nicholas Apartments, Jefferson public elementary school, and Trinity Lutheran school.
- **Route 7 South** serves the southeast and extreme southern portions of the City of Sheboygan, and travels for an average length of 9.8 miles from its southern terminus at

the intersection of County Highway EE/Weeden Creek Road and County Highway OK/S. Business Drive to its northern terminus at the downtown transfer point. Major trip generators served by Route 7 South include the Boys' and Girls' Club, Sunnyside Mall, Lakeshore CAP, Country Village Apartments, Lakeshore Display, South public high school, Farnsworth public middle school, Longfellow and Jackson public elementary schools, and Sheboygan County Christian high school. In addition, Route 7 South deviates on demand to serve the Sheboygan Business Center (Industrial Park) on weekdays on the trips that leave at 6:15 a.m., 6:45 a.m., 2:15 p.m., and 3:15 p.m., as well as on Saturdays on trips that leave at 2:15 p.m. and 3:15 p.m.

- **Route 10 North** serves the west central portion of the City of Sheboygan, and travels for a length of 7.0 miles from its eastern terminus at the downtown transfer point to its western terminus at the entrance to the Shopko store on Taylor Drive. Major trip generators served by Route 10 North include the Wasserman Apartments, the Salvation Army Daycare, the Sheboygan Leadership Academy, Aurora Sheboygan Clinic, the Sheboygan County Job Center, Memorial Plaza (including Marcus Cinema, Big Lots and Office Max), Memorial Mall (stop from Erie Avenue, including Kohl's and Bed, Bath and Beyond, with a Meijer supermarket coming in 2019), Shopko, Festival Foods, the Taylor Heights Shopping Center, and the Tamarack Apartments.
- **Route 10 South** serves west central and southwest Sheboygan, and travels for a length of 9.1 miles from its eastern terminus at the downtown transfer point to its western terminus at the entrance to the south side Walmart supercenter. Major trip generators served by Route 10 South include the Washington Square shopping center, the south side Piggly Wiggly supermarket, the Goodwill store and donation center, the south side Walmart supercenter, the Sheboygan County Detention Center, Nemak, Acuity Insurance, Aldi supermarket, Wildwood Park, the City of Sheboygan's Municipal Service Building, and Sheridan public elementary school.
- **Route 20 North** connects the City of Sheboygan to the Village of Kohler and the City of Sheboygan Falls, and travels for a length of 21.4 miles from its eastern terminus at the downtown transfer point to its western terminus in the City of Sheboygan Falls. All but one of the trips on this route are one hour in length, with the Kohler Company Special run (6:45 a.m. on weekdays) being a half hour and 10.5 miles in length. On weekdays, this route runs four times plus the Kohler Company Special run. On Saturdays, this route runs three times. This route runs counterclockwise.

The one destination in the City of Sheboygan that is served by Route 20 North is the south side Walmart supercenter. Destinations in the Village of Kohler that are served by this route include the Shops at Woodlake (including Woodlake Market), the Kohler Company, Kohler Schools, and Deer Trace Shopping Center. Destinations in the City of Sheboygan Falls that are served by this route include the Sheboygan County Aging and Disability Resource Center (ADRC), the Forest Avenue/Acacia Falls Mobile Home Park, the Sheboygan Falls Piggly Wiggly supermarket, the Sheboygan Falls City Hall, Bemis Manufacturing, Rochester Park, Sheboygan Falls public middle school, and Sheboygan Falls public high school.

- **Route 20 South** has the same characteristics as Route 20 North in terms of communities served and length, with its eastern terminus at the downtown transfer point and its western terminus at the Sheboygan Falls Piggly Wiggly supermarket. All trips on this route are one hour in length. There is no Kohler Company Special run associated with Route 20 South. On weekdays, this route runs four times. On Saturdays, this route runs twice. This route runs clockwise. The same destinations served by Route 20 North are served by Route 20 South.
- **Route 40 (the Square)** is a seasonal route that runs from Memorial Day to Labor Day. Route 40 travels for a length of 4.6 miles. Route 40 starts and ends at the downtown transfer point, and serves downtown Sheboygan, the lakefront and marina, the riverfront, and the South Pier. Service is more limited on Route 40 in comparison with the other routes, as Route 40 operates from 10:00 a.m. to 8:00 p.m. on weekdays and from 10:00 a.m. to 6:00 p.m. on Saturdays. Major trip generators served by Route 40 include the Sheboygan County Chamber of Commerce, South Pier (including Blue Harbor Resort and Harbor Pointe Mini Golf), the Riverfront, the John Michael Kohler Arts Center, Deland Park and Harbor Centre Marina, the Northside Municipal Beach, the historic Michigan Avenue commercial district, and various destinations along North 8th Street in downtown Sheboygan (including Fountain Park, Above and Beyond Children's Museum, the Stefanie Weill Center, the Mead Public Library, and Sheboygan City Hall).
- **Shuttle Routes** operate on weekdays between 5:15 a.m. and 5:45 a.m., between 8:45 p.m. and 9:15 p.m., and in the evening hours (after 5:45 p.m.) opposite the north side or south side routes that are operating in any given half hour. Shuttle routes also operate on Saturdays between 7:15 a.m. and 7:45 a.m., between 5:45 p.m. and 6:15 p.m., and all day opposite the north side or south side routes that are operating in any given half hour. Both **North Shuttles** and **South Shuttles** exist. North Shuttles operate at the beginning and end of the service day, and leave at 15 minutes after the hour at times when there is hourly service. South shuttles operate at the beginning and end of the service day, and leave at 45 minutes after the hour at times when there is hourly service. Shuttle service only operates within the City of Sheboygan.

Map 5.5 illustrates the existing fixed routes and the downtown transfer point for Shoreline Metro.

Besides its regular, fixed-route service, Shoreline Metro offers transportation to students of the Sheboygan Area School District who reside in the transit service area. Two customized school transportation routes (which are regular routes open to the public) transport students to school each morning that school is in session, and two similar routes transport students from school each afternoon that school is in session. Weekday afternoon school transportation routes have different hours of operation on certain Wednesdays from other weekdays, largely because of early dismissal days in the Sheboygan Area School District. The regular school transportation routes run for about an hour in the morning and between one hour and fifteen minutes to one hour and twenty minutes in the afternoon, and cover between 15.9 and 24.6 miles.

Yellow school buses primarily transport students of the Sheboygan Area School District residing

outside the City of Sheboygan to schools in the city; the school district has relied on Shoreline Metro to provide much of this service within the city. Exceptions are made where yellow school buses will transport students in cases where it is extraordinarily hazardous to get to school or where students live more than two miles from school (both provisions in state law) and where Shoreline Metro does not offer reasonably close service to the student. The Sheboygan Area School District has found this intergovernmental cooperative arrangement to yield substantial savings in comparison to contracting with private transportation services.

Shoreline Metro completed a Transit Development Program (TDP) for calendar years 2012 through 2016 in mid-2012. The Bay-Lake Regional Planning Commission (through the Sheboygan MPO program) assisted Shoreline Metro in the completion of this TDP. The Commission's MPO staff will also assist Shoreline Metro in completing an update to this TDP in 2018 and early 2019.

Shoreline Metro can be contacted at 920-459-3281 for more information regarding its services. Shoreline Metro's website is <http://shorelinemetro.com/>(.)

Current Conditions

Regulations

State Statutes

As the cost of transit operations rises and federal and state funds allocated to public transit decline, public transit providers often look to other types of funding sources for operating revenues. One method for generating local revenues as well as for coordinating regional transit operations is to create a regional transit (or transportation) authority (RTA). Many states (including the neighboring states of Illinois and Michigan) have enabling legislation allowing the formation of RTAs for the operation and management of transit systems, with such legislation being discussed in many other states across the United States.

Wisconsin approved enabling legislation for a limited number of RTAs in the state a few years ago, but this legislation was repealed in 2011. More recently, efforts have been made to get the state legislature to approve enabling legislation to authorize an RTA in the Fox Cities, but this legislation has not been approved. An RTA has never been authorized for the Sheboygan area.

Before 1999, Chapter 66 of the *Wisconsin Statutes* included Section 66.94, which allowed each county having a population of 125,000 or more to form a metropolitan transit authority without taxing authority. This section of the state statutes has been repealed. Chapter 66 of the *Wisconsin Statutes* does enable cities, villages and towns to enact an ordinance for establishing, maintaining and operating a "comprehensive unified local transportation system," which would be managed by a transit commission created under Section 66.1021. The City of Sheboygan has established a parking and transit utility commission in the manner specified in Section 66.1021. Transit service to the Village of Kohler and to the City of Sheboygan Falls is provided by purchase of service agreements.

Local Transit-Supporting Ordinances

None of the cities, villages or towns in the metropolitan planning area has ordinances that

support transit through land use planning. Neither transit-oriented development (TOD) ordinances nor transit corridor overlay districts have been created to support or encourage transit.

Parking is always an issue for transit in that free or inexpensive (and usually abundant) parking offers no disincentive for people to drive, especially when it takes so little time to get anywhere in the metropolitan planning area by private vehicle. None of the communities in the metropolitan planning area have enacted parking ordinances that address parking pricing, shared parking, or parking space maximums. Public parking (operated by the Parking Utility in the City of Sheboygan) costs 30 cents per hour at metered lots and at on-street locations, and costs \$22 per month for on-street permit parking to \$29 per month for reserved parking stalls in city-owned lots (billed at \$87 per quarter). The \$48 monthly bus pass may seem far more expensive than the monthly cost of parking. However, once the costs of gasoline, maintenance, insurance and vehicle payments are considered, the bus pass appears significantly cheaper.

Transit Stop and Shelter Maintenance

Shoreline Metro is responsible for the maintenance of transit stops and shelters; this includes the removal of snow at key transit stops and shelters. Individual property owners are responsible for the maintenance of sidewalks that passengers use to arrive at these stops and shelters.

Transit Facts

Transit to Work

The number of persons 16 years of age and older who worked outside the home and who took transit services increased for the nation and state, but decreased for Sheboygan County, the Sheboygan Urbanized Area and for the City of Sheboygan between the 2008 – 2012 American Community Survey (ACS) and the 2012 – 2016 ACS. The United States experienced a nearly 6.4 percent increase in the number of commuters to work via transit (up from 6,994,682 in the 2008 – 2012 ACS to 7,438,922 in the 2012 – 2016 ACS). The State of Wisconsin experienced a 7.6 percent increase in the number of commuters to work via transit (up from 50,541 in the 2008 – 2012 ACS to 54,395 in the 2012 – 2016 ACS).

Sheboygan County experienced a nearly 19.0 percent decrease in the number of persons reporting that they commuted to work via transit, decreasing from 290 persons in the 2008 – 2012 ACS to 235 persons in the 2012 – 2016 ACS. The Sheboygan Urbanized Area experienced a nearly 29.1 percent decrease in the number of commuters to work via transit, decreasing from 251 persons in the 2008 – 2012 ACS to 178 persons in the 2012 – 2016 ACS. The City of Sheboygan experienced a nearly 33.8 percent decrease in the number of commuters to work via transit, decreasing from 216 persons in the 2008 – 2012 ACS to 143 persons in the 2012 – 2016 ACS. Within the Sheboygan Urbanized Area, about 0.5 percent of all persons making a journey to work in the 2012 – 2016 ACS made the journey using transit services, down from about 0.7 percent in the 2008 – 2012 ACS.

Transit Ridership

Unlike journey-to-work data in which the numbers are represented by persons, transit ridership is represented by person trips. One person may take two person trips (ride one bus and then transfer to another) on his or her way to work. Total ridership for Shoreline Metro fixed-route services

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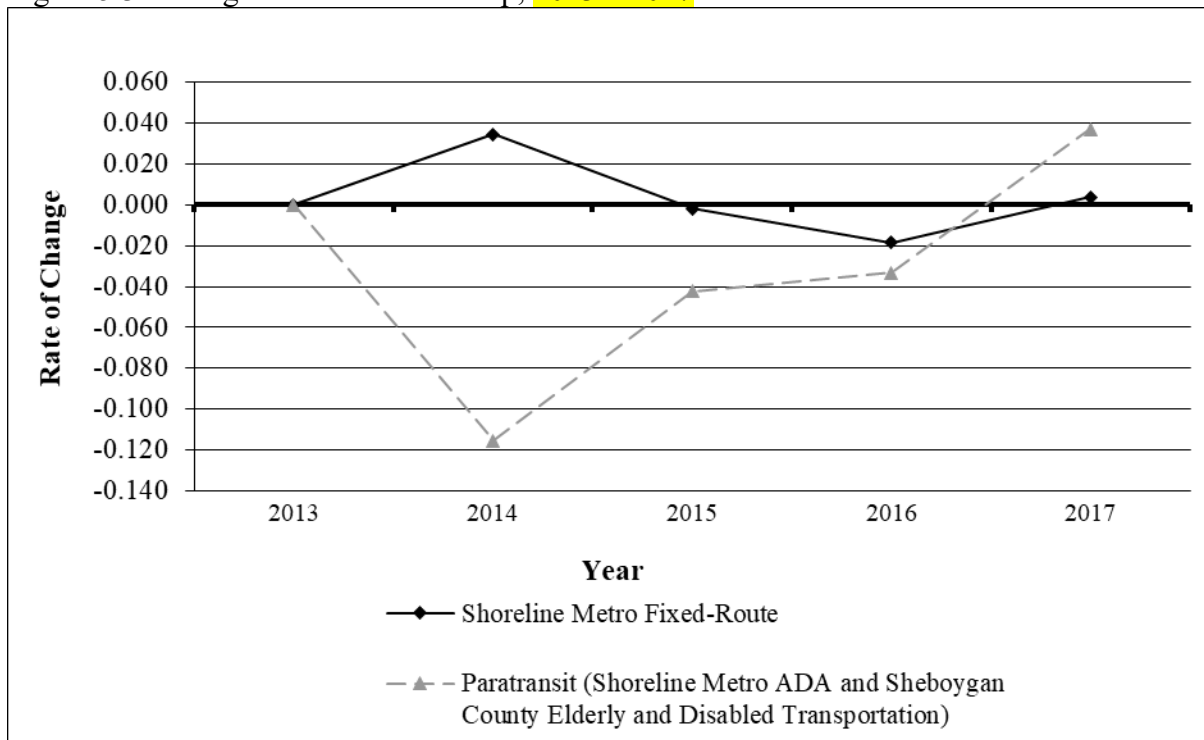
increased by 1.7 percent from 2013 to 2017, while the area's paratransit services (complementary ADA paratransit service in the Shoreline Metro service area and Sheboygan County's non-ADA specialized transportation program, both operated by Shoreline Metro's "Metro Connection" division) decreased by over 15.0 percent between 2013 and 2017. It should be noted that both ADA paratransit and Sheboygan County elderly and disabled paratransit trips are combined in the discussion of paratransit ridership, as Shoreline Metro staff was unable to break out ridership data on these two forms of paratransit that their "Metro Connection" division offers.

Figure 5.3 illustrates the rate of change in transit ridership for Shoreline Metro fixed-route service and for the area's paratransit services. The difference between percentage change and the rate of change is that percentage change only illustrates the change between two given years without consideration of changes that might have occurred during intermediate years. However, rate of change is a cumulative look at change from one year to the next.

Figure 5.3 indicates that Shoreline Metro fixed-route service had a 3.4 percent increase in ridership from 2013 to 2014, followed by a 0.2 percent decrease in ridership from 2014 to 2015, a nearly 1.9 percent decrease in ridership from 2015 to 2016, and a nearly 0.4 percent increase in ridership from 2016 to 2017. Policy changes in the early part of this decade led to the ridership increase from 2013 to 2014; these changes included institution of a \$3 "day pass," route restructuring, and institution of the "bus buddy" program in 2012 that led many ADA passengers who were able to use fixed-route transit to gain confidence in using fixed-route transit service. While there was a ridership decrease from 2014 to 2015, it was fairly insignificant. Elimination of one route contributed to the fixed-route ridership decrease from 2015 to 2016. It is unknown what led to the small ridership increase from 2016 to 2017. All ridership levels after 2013 exceeded the 2013 ridership level.

Figure 5.3 indicates that the area's two paratransit services had an 11.5 percent decrease in ridership from 2013 to 2014, followed by a 4.2 percent decrease in ridership from 2014 to 2015, a 3.3 percent decrease in ridership from 2015 to 2016, and a 3.7 percent increase in ridership from 2016 to 2017. There were several factors that have led to paratransit ridership decreases over time. First, the emergence of managed care organizations (MCOs, such as Family Care) led to greater management of paratransit trips, which led to ridership decreases, in part through use of the "agency fare." Second, the continued acquisition of lift equipped fixed-route buses has generally led to a decreased number of ADA paratransit trips because disabled riders who were unable to utilize fixed-route service previously could now use that service provided that they were able to reach a bus stop. Third, institution of the "bus buddy" program in 2012 led many ADA passengers who were able to use fixed-route transit to gain confidence in using fixed-route transit service.

Figure 5.3: Change in Transit Ridership, 2013 – 2017

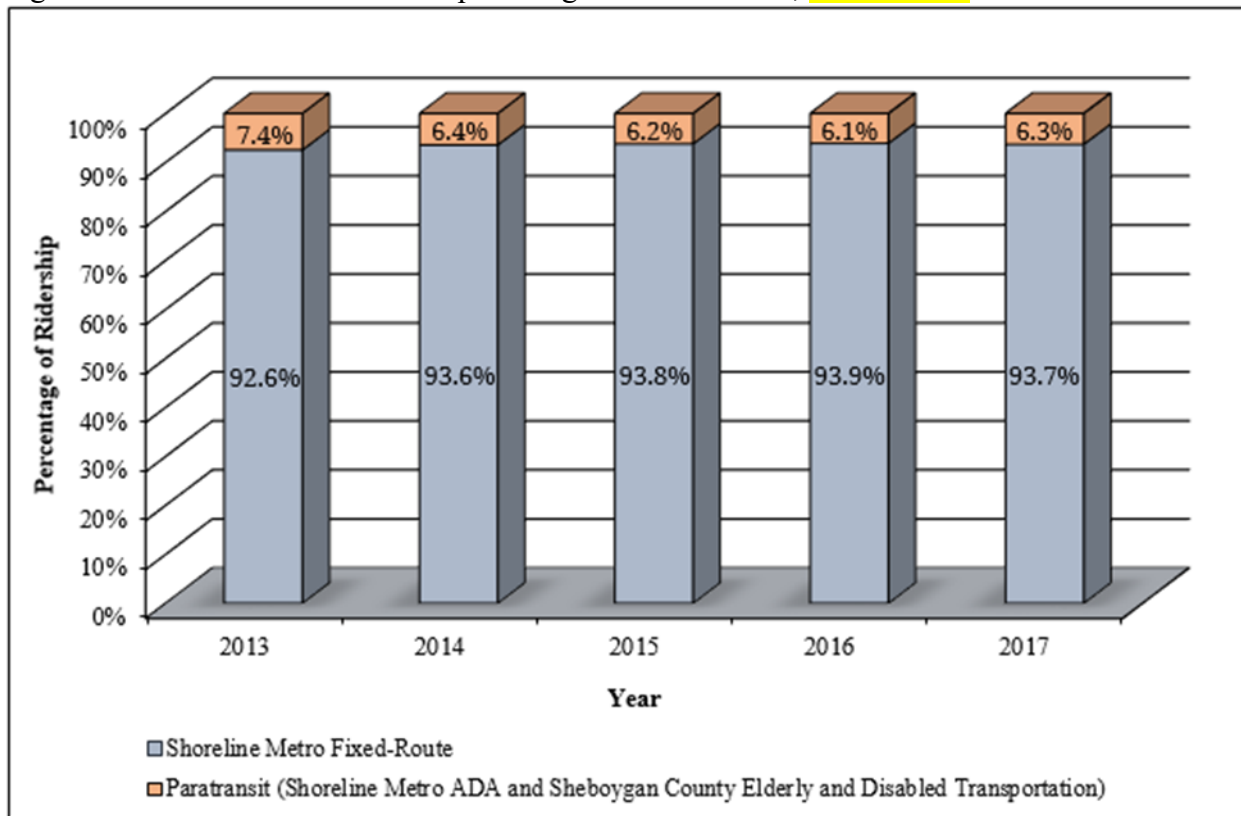


Source: Shoreline Metro and Sheboygan County Health and Human Services Department Aging and Disability Resource Center (for all years listed).

Figure 5.4 illustrates the distribution of ridership (person trips) among local transit services during the period from 2013 through 2017. Most transit ridership occurred on Shoreline Metro fixed routes. The share of total transit ridership (Shoreline Metro fixed route, and paratransit services) as fixed-route ridership increased from 92.6 percent in 2013 to 93.7 percent in 2017, indicating a gradual shift from paratransit services to fixed-route transit.

The share of all transit trips provided by the two paratransit services hovered between six and eight percent throughout the 2013 to 2017 period, from a low of 6.1 percent in 2016 to a high of 7.4 percent in 2013. The number of paratransit trips decreased by about 15 percent, from 41,892 trips in 2013 to 35,589 trips in 2017. The factors that led to these decreases have been discussed.

Figure 5.4: Distribution of Ridership Among Transit Services, 2013 – 2017

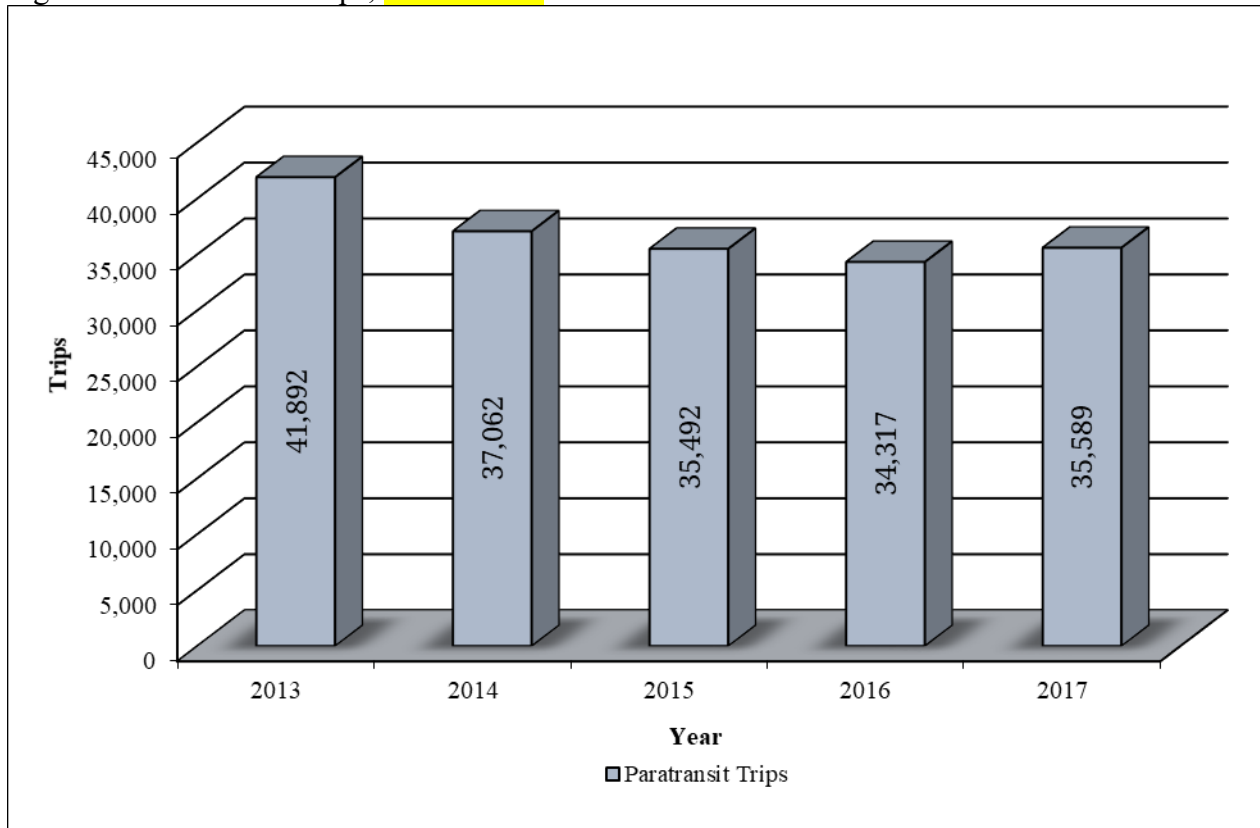


Source: Shoreline Metro and Sheboygan County Health and Human Services Department Aging and Disability Resource Center (for all years listed).

Total ridership across all of the transit programs increased by nearly 0.5 percent, from 562,752 trips in 2013 to 565,315 trips in 2017. Ridership across all transit programs peaked at 575,864 trips in 2014, hovered between 562,000 and 566,000 trips in 2013, 2016 and 2017, and involved over 573,000 trips in 2015.

Figure 5.5 indicates that over the five-year period, total paratransit trips decreased by over 15 percent, from 41,892 trips in 2013 to 35,589 trips in 2017. Paratransit ridership declined from 2013 through 2016, then decreased slightly from 2016 to 2017.

Figure 5.5: Paratransit Trips, 2013 – 2017



Source: Shoreline Metro and Sheboygan County Health and Human Services Department Aging and Disability Resource Center (for all years listed).

Shoreline Metro has been operated by the City of Sheboygan since 1973, when the city took over transit from a private operator. The route structure has changed relatively little in the 45 years since the City of Sheboygan assumed transit operations.

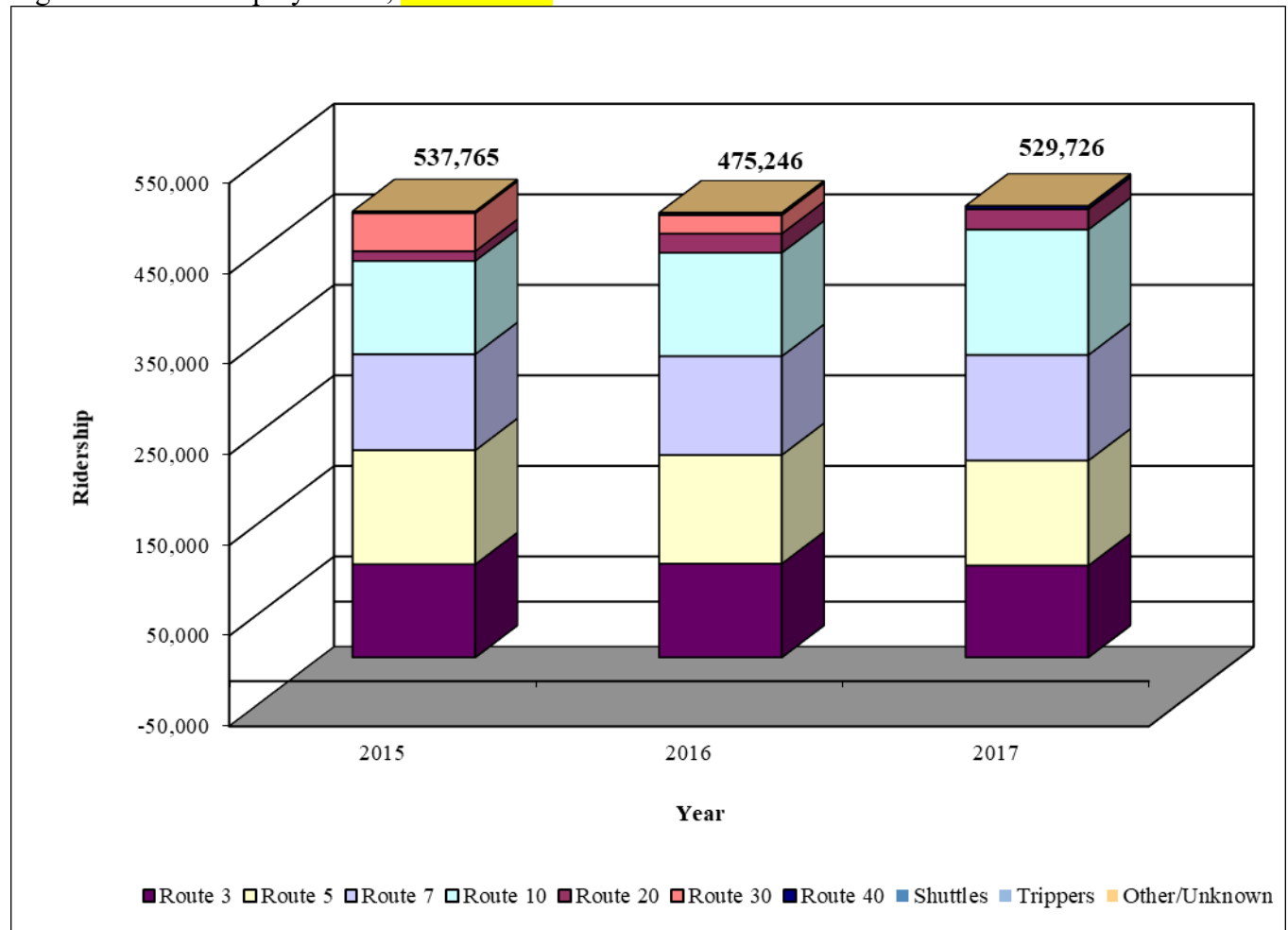
Figure 5.6 illustrates ridership by route by year for the period from 2015 through 2017. While each bar represents total ridership by year, the individual segments of each bar represent ridership by route for that year. As shown in the figure, Route 5 carried the highest number of riders in 2015 and 2016, while Route 10 carried the highest number of riders in 2017. Route 7 carried the second highest number of riders in 2015 and 2017, while Route 10 carried the second highest number of riders in 2016. The third highest number of riders took place with Route 10 in 2015, Route 7 in 2016, and Route 5 in 2017. Route 3 carried the fourth highest number of riders in each of 2015, 2016 and 2017. Route 20 (the Kohler/Sheboygan Falls Route) showed low yet growing levels of ridership from 2015 to 2017, and this route has been important for connecting people to their jobs. Route 30 had lackluster ridership in 2015 and early 2016, and was discontinued in mid-2016. The seasonal Route 40 showed very low yet growing levels of ridership from 2015 to 2017; this route promotes tourism in the City of Sheboygan. Limited service on the North and South Shuttles has existed for years during the early mornings and during evenings on weekdays as well as all day on Saturdays. School tripper routes have

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decreased in number from 2015 to 2017, which has impacted ridership on these routes. A small amount of “other/unknown” ridership (not attributable to any route due to entry errors on the part of transit personnel) took place in 2015, 2016 and 2017.

Route changes resulting from the *Sheboygan Transit Development Program (TDP): 2012 – 2016* were implemented in late 2011 and into 2012. Routes 1 North and 5 North were consolidated, which led to the elimination of Route 1 North and creation of a larger Route 5 North. Route 10 South was created, which has led to increased ridership for Route 10, but decreased ridership for Route 30, since Route 10 South served some of the destinations that Route 30 served, and led to the eventual elimination of Route 30 in mid-2016. Routing changes have been made to most numbered Shoreline Metro routes as well either in late 2011 into 2012 or in 2016.

Figure 5.6: Ridership by Route, 2015 – 2017



Source: Shoreline Metro (for all years listed).

Overall, fixed-route ridership decreased by nearly 1.5 percent, from 537,765 trips in 2015 to 529,726 trips in 2017. A decrease of nearly 1.9 percent occurred between 2015 and 2016, followed by an increase of nearly 0.4 percent from 2016 to 2017. Elimination of one route

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contributed to the fixed-route ridership decrease from 2015 to 2016. Improvements in remaining routing led to the small ridership increase from 2016 to 2017.

Shoreline Metro Operations

Vehicle Fleet

Shoreline Metro acquired five new buses in 2005 and five new buses in 2010 to replace ten 1996 and 1997 Chance buses in its fleet. The fixed-route fleet now contains 23 buses (17 of which are used during peak travel periods, and 21 of which are available for active service). The fleet ranges in age from eight years to 19 years. The average age of the active fleet is now about 13.52 years (12.71 years if the reserve fleet buses are excluded). Buses left inactive during peak times provide a 26 percent spare ratio (19 percent if the reserve fleet buses are excluded) in case of road failure.

Table 5.6 provides a summary of the current fleet size and composition. All of the buses are equipped with either wheelchair lifts or a low floor platform that accommodates disabled passengers. All of the buses accommodate at least one wheelchair.

Table 5.6: Shoreline Metro Fixed-Route Bus Fleet Size and Composition, 2018

Year and Make	Size	Seating Capacity	Standing Capacity	Lift Equipped	Quantity
1999 DuPont Trolley	35 ft.	32	47	Yes	2
2001 New Flyer*	29 ft.	24	35	Yes	5
2003 Gillig Low-Floor Bus	35 ft.	32	44	Yes	6
2005 Gillig Low-Floor Bus	29 ft.	24	36	Yes	5
2010 Gillig Low-Floor Bus	35 ft.	32	44	Yes	5

*Two of these are reserve fleet buses – not in service or used for parts at this time.

Source: Shoreline Metro, 2018.

Operating Budget

Table 5.7 illustrates Shoreline Metro operating expenses for 2013, 2016 and 2017, as well as inflated expenses for 2013 and 2017. Because the value of the dollar changes from year to year, monetary values must be inflated for years prior to a designated comparison year or deflated for years that follow that year of comparison. The Consumer Price Index (CPI) is used to determine the amount of inflation that should be applied when calculating the percent change in operating expenses and revenues. For Tables 5.7 and 5.8, the year of comparison is 2017, thus requiring the monetary values for the years 2013 and 2016 to be inflated to 2017 dollars.

Administration expenses increased by 26.1 percent in inflation-adjusted dollars from 2013 to 2017, while bus maintenance expenses decreased by 7.9 percent and bus operations (including paratransit services) decreased by 12.8 percent during this period.

Administrative expenses decreased by 1.0 percent in inflation-adjusted dollars from 2016 to 2017, while bus maintenance expenses increased by 7.5 percent and bus operations (including paratransit services) decreased by 4.7 percent during this period.

The percentage of total operating expenses attributed to administration increased by 5.8

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percentage points from 2013 to 2017, with 18.2 percent of the operating budget allocated to administration in 2013 and 24.0 percent in 2017. The percentage of total operating expenses attributed to bus maintenance decreased by 1.2 percentage points from 2013 to 2017, with 30.9 percent of the operating budget allocated to bus maintenance in 2013 and 29.7 percent in 2017. Finally, the percentage of total operating expenses attributed to bus operations (including paratransit services) decreased by 4.6 percentage points from 2013 to 2017, with 50.9 percent of the operating budget allocated to bus operations in 2013 and 46.3 percent in 2017.

Table 5.7: Shoreline Metro Operating Expenses, 2013 – 2017

Expense Category	2013	2016	2013 in 2017 Dollars ¹	2016 in 2017 Dollars ¹	2017	Percent Change 2013 - 2017	Percent Change 2016 - 2017
Administration	\$712,777	\$934,747	\$746,921	\$950,899	\$941,750	26.1%	-1.0%
Bus Maintenance	\$1,205,642	\$1,064,408	\$1,263,396	\$1,082,801	\$1,164,062	-7.9%	7.5%
Bus Operations ²	\$1,988,226	\$1,875,243	\$2,083,468	\$1,907,647	\$1,817,071	-12.8%	-4.7%
Total	\$3,906,645	\$3,874,398	\$4,093,785	\$3,941,348	\$3,922,883	-4.2%	-0.5%

Notes:

¹Expenses for 2013 and 2016 were inflated or deflated to 2017 dollars for direct comparisons to 2017 expenses. Inflation from 2013 to 2017 amounted to 4.7903 percent. Inflation from 2016 to 2017 amounted to 1.728 percent. Since inflation data is reported monthly, July of each year was selected in order to consistently measure inflation.

²Bus operations include paratransit services.

Source: Shoreline Metro (for all years listed); Bureau of Labor Statistics, *Consumer Price Index (CPI) Calculator*, 2013 – 2017 and 2016 – 2017; and Bay-Lake Regional Planning Commission, 2018.

Table 5.8 illustrates Shoreline Metro operating revenues for 2013, 2016 and 2017, as well as inflated revenues for 2013 and for 2016. State funding of Shoreline Metro, when adjusted for inflation, decreased by 6.6 percent over the period from 2013 to 2017, and decreased by 11.6 percent from 2016 to 2017. Regular federal funding of Shoreline Metro, when adjusted for inflation, decreased by 9.9 percent between 2013 and 2017, and decreased by 3.0 percent between 2016 and 2017. Combined state and regular federal funding of Shoreline Metro (the typical measure of outside funding support), when adjusted for inflation, decreased by 8.5 percent from 2013 to 2017, and decreased by 6.9 percent from 2016 to 2017.

Shoreline Metro started receiving Community Development Block Grant (CDBG) funds to run transit services starting in 2002; these are funds awarded by the U.S. Department of Housing and Urban Development (HUD) and are administered by the City of Sheboygan Department of Planning and Development. HUD CDBG funding of Shoreline Metro, when adjusted for inflation, decreased by 4.6 percent between 2013 and 2017, and decreased by 1.7 percent between 2016 and 2017.

Funding of Shoreline Metro from the three participating municipalities and from Sheboygan County, when adjusted for inflation, decreased by 4.9 percent from 2013 to 2017, and decreased by 2.3 percent from 2016 to 2017. Passenger revenues, when adjusted for inflation, decreased by 7.3 percent between 2013 and 2017, but increased by 4.0 percent from 2016 to 2017. Miscellaneous revenues, when adjusted for inflation, decreased by 16.4 percent from 2013 to 2017, and decreased by 8.8 percent from 2016 to 2017.

Funding of Shoreline Metro from all funding sources, when adjusted for inflation, decreased by

7.8 percent from 2013 to 2017, and decreased by 4.0 percent from 2016 to 2017. All of these figures compare 2017 funding levels to inflation-adjusted 2013 and 2016 funding levels.

Table 5.8: Shoreline Metro Operating Revenues, 2013 – 2017

Revenue Category	2013	2016	2013 in 2017 Dollars ¹	2016 in 2017 Dollars ¹	2017	Percent Change 2013 - 2017	Percent Change 2016 - 2017
Wisconsin DOT	\$912,780	\$994,311	\$956,505	\$1,011,493	\$893,775	-6.6%	-11.6%
USDOT - FTA	\$1,277,528	\$1,223,238	\$1,338,725	\$1,244,376	\$1,206,561	-9.9%	-3.0%
HUD - CDBG Funding	\$42,493	\$42,493	\$44,529	\$43,227	\$42,493	-4.6%	-1.7%
Municipalities ²	\$877,059	\$879,376	\$919,073	\$894,572	\$874,331	-4.9%	-2.3%
Passenger Revenue ³	\$761,644	\$699,253	\$798,129	\$711,336	\$740,110	-7.3%	4.0%
Miscellaneous Revenue	\$188,539	\$178,118	\$197,571	\$181,196	\$165,249	-16.4%	-8.8%
Total	\$4,060,043	\$4,016,789	\$4,254,531	\$4,086,199	\$3,922,519	-7.8%	-4.0%

Notes:

¹Revenues for 2013 and 2016 were inflated to 2017 dollars for direct comparison to 2017 revenues. Inflation from 2013 to 2017 amounted to 4.7903 percent. Inflation from 2016 to 2017 amounted to 1.728 percent.

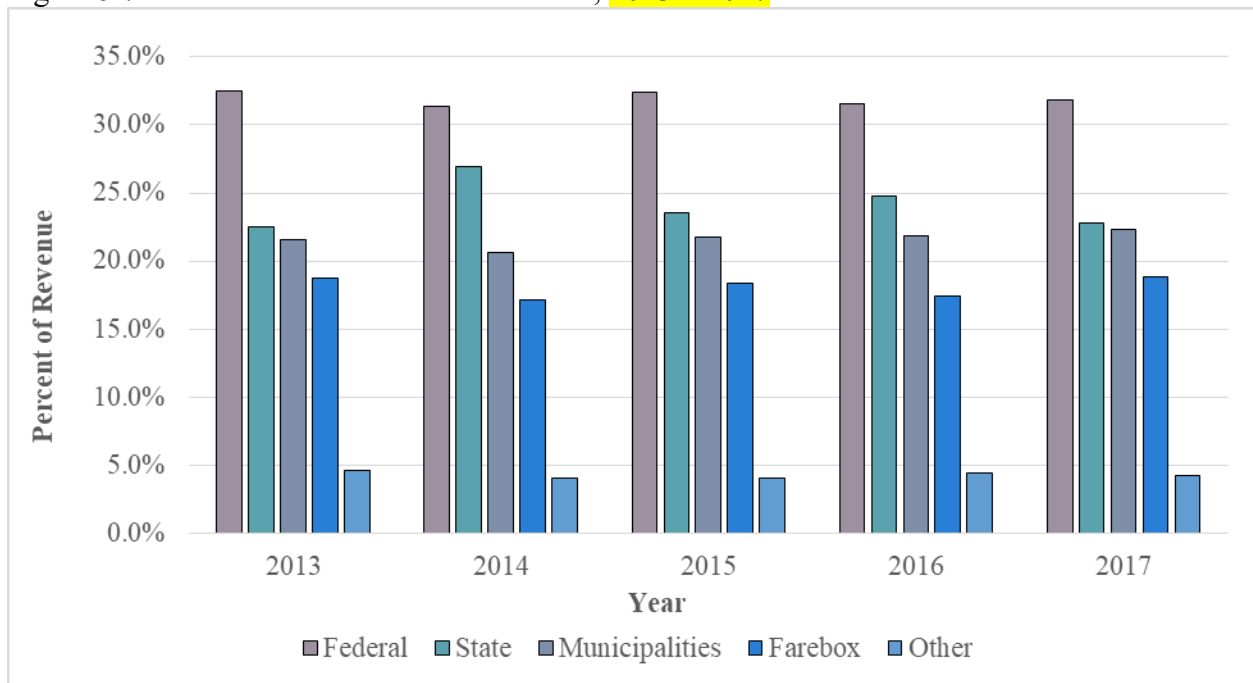
²Municipalities funding Shoreline Metro include the Cities of Sheboygan and Sheboygan Falls and the Village of Kohler. Sheboygan County also funds a portion of the paratransit component of Shoreline Metro.

³Passenger revenues include cash fares, day passes, monthly passes, adult and student tokens, 10 ride student punch passes, elderly and disabled half fares (including half fare punch passes), group fares, ADA paratransit fares, and fares for county paratransit rides.

Source: Shoreline Metro (for all years listed); Bureau of Labor Statistics, *Consumer Price Index (CPI) Calculator*, 2013 – 2017 and 2016 – 2017; and Bay-Lake Regional Planning Commission, 2018.

Figure 5.7 illustrates the percentage of total operating revenue by source by year for 2013 through 2017. The percentage of total revenue from the farebox was in the 17 to 19 percent range for all years in this analysis. The combination of federal and state subsidies was in the range of 54 to 59 percent of total revenue for all years in this analysis, with three of the years ranging between 55 and 57 percent; it should be noted that HUD CDBG funds have been counted as a federal funding source for purposes of this analysis in Figure 5.7. Municipal contributions (including contributions from Sheboygan County for paratransit services) were in the 20 to 23 percent range for all years in this analysis with three of the years being in the 21 to 22 percent range. Finally, other (miscellaneous) revenues were in the 4 to 5 percent range for all years in this analysis.

Figure 5.7: Shoreline Metro Revenue Sources, 2013 – 2017



Source: Shoreline Metro (for all years listed); and Bay-Lake Regional Planning Commission, 2018.

Shoreline Metro Fixed-Route Measures of Effectiveness

Transit performance is usually measured by financial and non-financial indicators. Financial indicators include expenses, revenues and subsidies, while non-financial indicators may include ridership, service quality, level of service and safety. These indicators have two major uses: (1) to assess how well the system is doing with respect to the standards established by management; and (2) to identify areas within the system that need attention or corrective action.

The Federal Transit Administration (FTA) assesses the financial performance of transit systems with measures for cost efficiency and effectiveness. Ratios such as operating expense per vehicle revenue hour (the hours a vehicle travels while available for passenger service) and operating expense per vehicle revenue mile (the miles a vehicle travels while available for passenger service) are used to describe cost efficiency. Operating expense per passenger trip is one measure used to describe cost effectiveness.

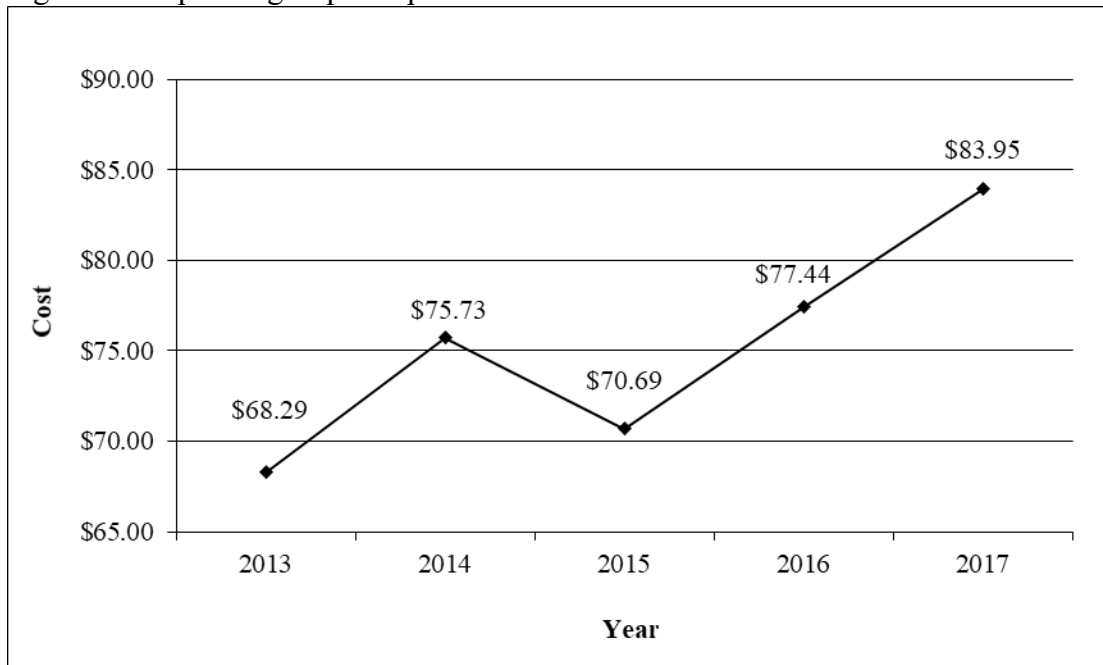
Cost Efficiency

Figure 5.8 illustrates operating expense per vehicle revenue hour as a measure of service efficiency for Shoreline Metro's fixed-route service. Figure 5.8 indicates that the operating expense per vehicle revenue hour increased by 10.9 percent from 2013 to 2014, decreased by 6.7 percent from 2014 to 2015, increased by 9.5 percent from 2015 to 2016, and increased by 8.4 percent from 2016 to 2017. Operating expense per vehicle revenue hour increased by 22.9 percent over the five-year period. While there were no policy changes that affected this measure from 2013 to 2015, there were significant changes in 2016 and minor changes in 2017. Revisions were made to several routes (particularly changes to Route 20 and all south side routes, with

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discontinuation of Route 30 and having other south side routes serve areas previously served by Route 30) in 2016. Minor adjustments to routes (particularly Route 20) took place in 2017, with the changes made in 2016 also impacting 2017.

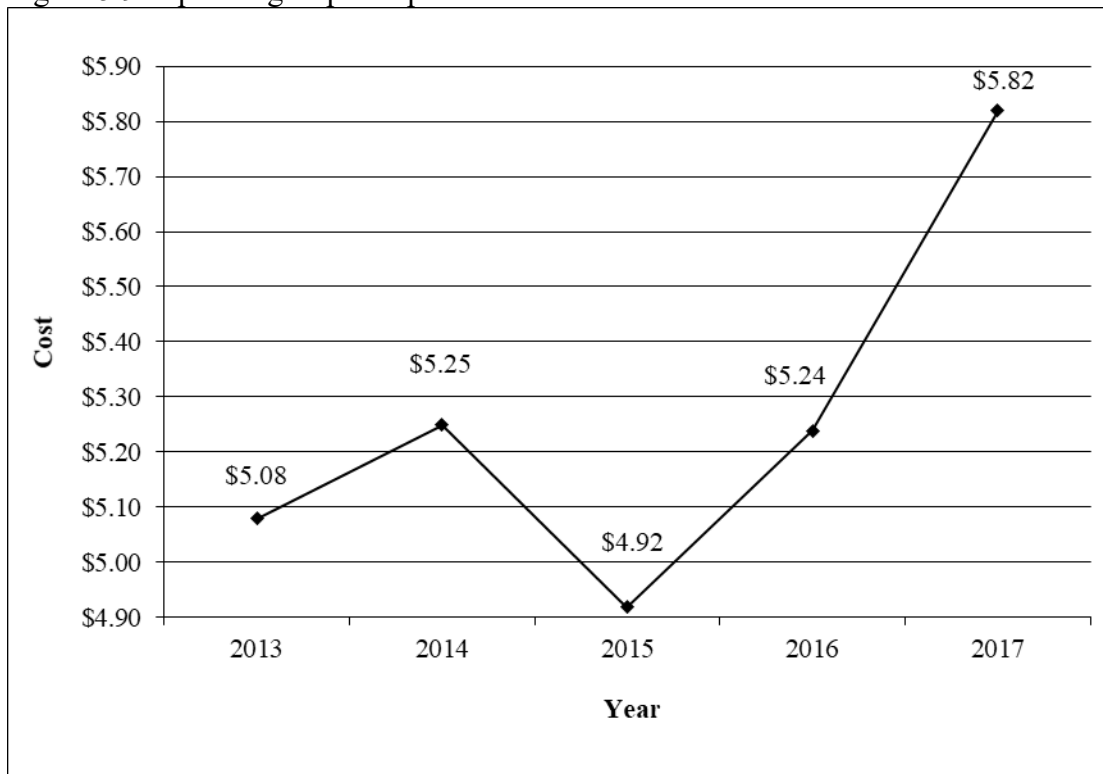
Figure 5.8: Operating Expense per Vehicle Revenue Hour



Source: Federal Transit Administration, *National Transit Database* (for 2013 – 2016 data); Shoreline Metro (for 2017 data); and Bay-Lake Regional Planning Commission, 2018.

Figure 5.9 indicates that the operating expense per vehicle revenue mile increased by 3.3 percent between 2013 and 2014, decreased by 6.3 percent between 2014 and 2015, increased by 6.5 percent between 2015 and 2016, and increased by 11.1 percent between 2016 and 2017. The overall increase in operating expense per vehicle revenue mile was 14.6 percent over the five-year period. The same culprits for changes in the operating expense per vehicle revenue hour led to changes in the operating expense per vehicle revenue mile, particularly in 2016 and 2017.

Figure 5.9: Operating Expense per Vehicle Revenue Mile

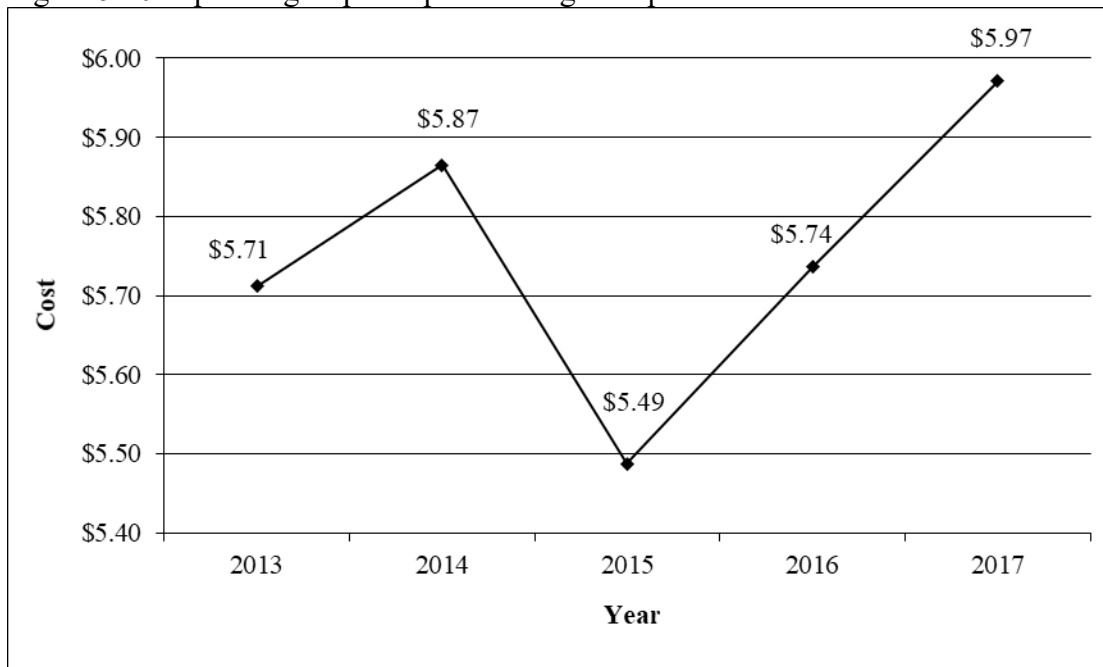


Source: Federal Transit Administration, *National Transit Database* (for 2013 – 2016 data); Shoreline Metro (for 2017 data); and Bay-Lake Regional Planning Commission, 2018.

Cost Effectiveness

Figure 5.10 illustrates operating expense per passenger trip. Figure 5.10 indicates that the operating expense per passenger trip increased by 2.8 percent between 2013 and 2014, decreased by 6.5 percent between 2014 and 2015, increased by 4.6 percent between 2015 and 2016, and increased by 4.0 percent between 2016 and 2017. The overall increase in operating expense per passenger trip was 4.6 percent over the five-year period. The same culprits for changes in the operating expense per vehicle revenue hour and per vehicle revenue mile led to changes in the operating expense per passenger trip, particularly in 2016 and 2017. Fixed-route ridership increases and decreases (although slight) also impacted this measure; fixed-route ridership increased by 3.4 percent between 2013 and 2014, decreased by 0.2 percent between 2014 and 2015, decreased by 1.9 percent between 2015 and 2016, and increased by 0.4 percent between 2016 and 2017. The overall increase in ridership was 1.7 percent over the five-year period.

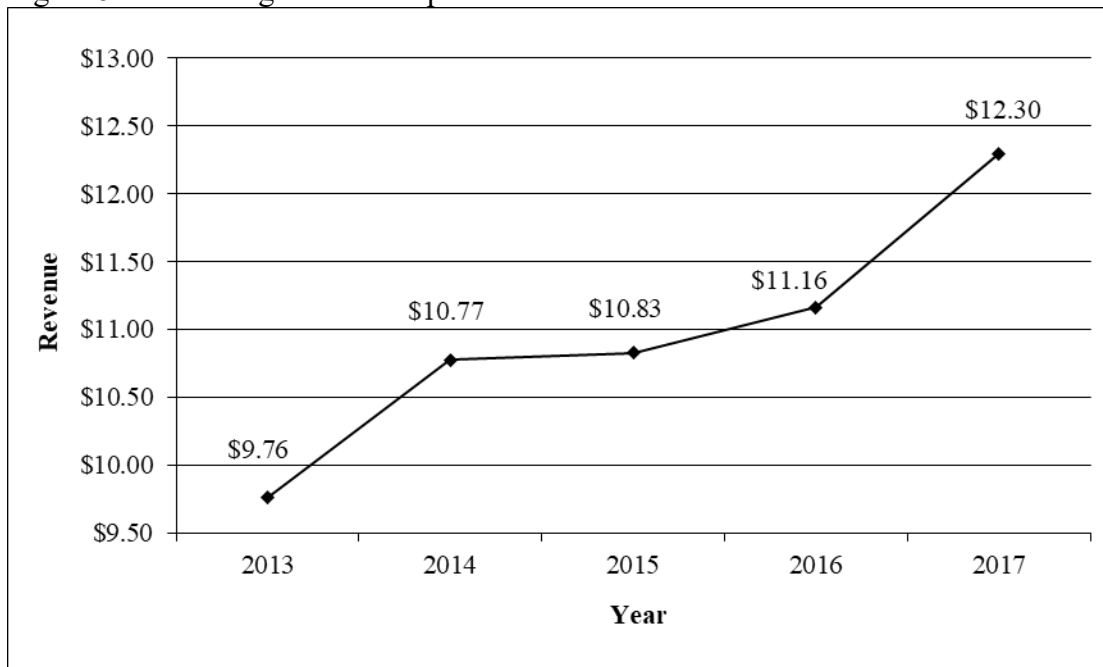
Figure 5.10: Operating Expense per Passenger Trip



Source: Federal Transit Administration, *National Transit Database* (for 2013 – 2016 data); Shoreline Metro (for 2017 data); and Bay-Lake Regional Planning Commission, 2018.

Figure 5.11 illustrates passenger revenue per vehicle revenue hour. Figure 5.11 indicates that passenger revenue per vehicle revenue hour increased by 10.3 percent between 2013 and 2014, increased by 0.6 percent between 2014 and 2015, increased by 3.0 percent between 2015 and 2016, and increased by 10.2 percent between 2016 and 2017. The overall increase in passenger revenue per vehicle revenue hour was 26.0 percent over the five-year period. Passenger revenue increased by 5.7 percent from 2013 to 2014 and increased by 0.5 percent from 2014 to 2015. Passenger revenue decreased by nearly 3.5 percent from 2015 to 2016, but increased by nearly 6.2 percent from 2016 to 2017. The overall increase in passenger revenue was nearly 9.0 percent over the five-year period. Vehicle revenue hours decreased by 4.2 percent between 2013 and 2014, increased by less than 0.1 percent between 2014 and 2015, decreased by 6.3 percent between 2015 and 2016, and decreased by another 6.3 percent between 2016 and 2017; significant route revisions and elimination of one route in mid-2016 led to the decreases in vehicle revenue hours in 2016 and continuing into 2017. The overall decrease in vehicle revenue hours was 13.5 percent over the five-year period.

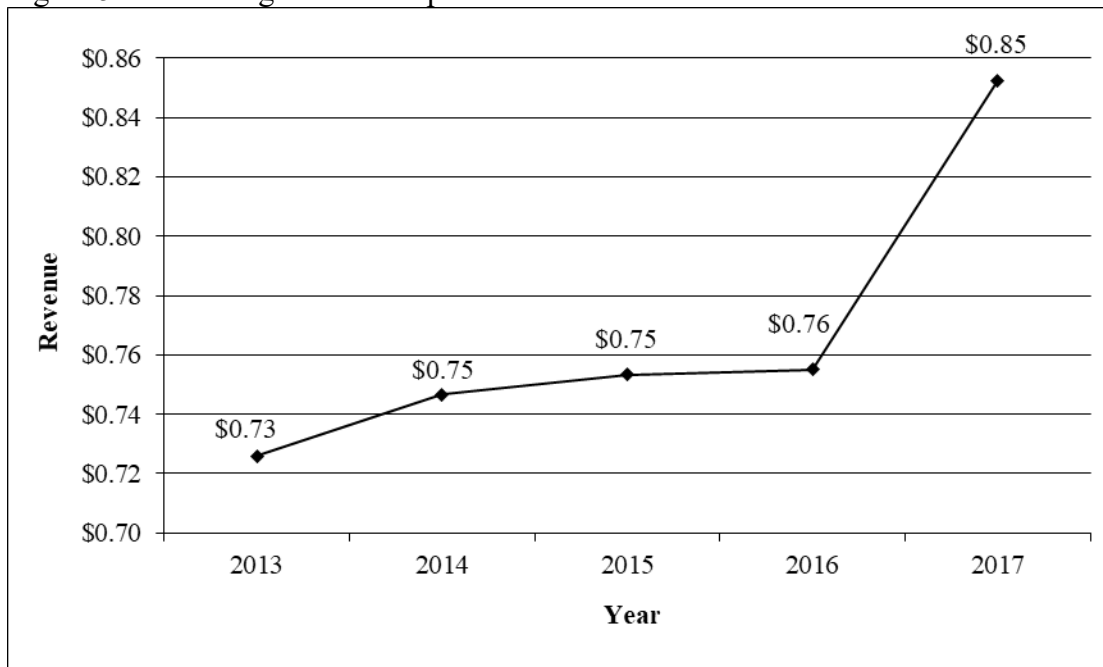
Figure 5.11: Passenger Revenue per Vehicle Revenue Hour



Source: Federal Transit Administration, *National Transit Database* (for 2013 – 2016 data); Shoreline Metro (for 2017 data); and Bay-Lake Regional Planning Commission, 2018.

Figure 5.12 illustrates passenger revenue per vehicle revenue mile. Figure 5.12 indicates that passenger revenue per vehicle revenue mile increased by 2.7 percent between 2013 and 2014, remained stable between 2014 and 2015, increased by 1.3 percent between 2015 and 2016, and increased by over 11.8 percent between 2016 and 2017. The overall increase in passenger revenue per vehicle revenue mile was over 16.4 percent over the five-year period. Changes to passenger revenue over the five-year period were discussed in the narrative preceding Figure 5.11. Vehicle revenue miles increased by nearly 2.8 percent between 2013 and 2014, decreased by nearly 0.4 percent between 2014 and 2015, decreased by nearly 3.7 percent between 2015 and 2016, and decreased by over 5.9 percent between 2016 and 2017; significant route revisions and elimination of one route in mid-2016 led to the decreases in vehicle revenue miles in 2016 and continuing into 2017. The overall decrease in vehicle revenue miles was 7.2 percent over the five-year period.

Figure 5.12: Passenger Revenue per Vehicle Revenue Mile



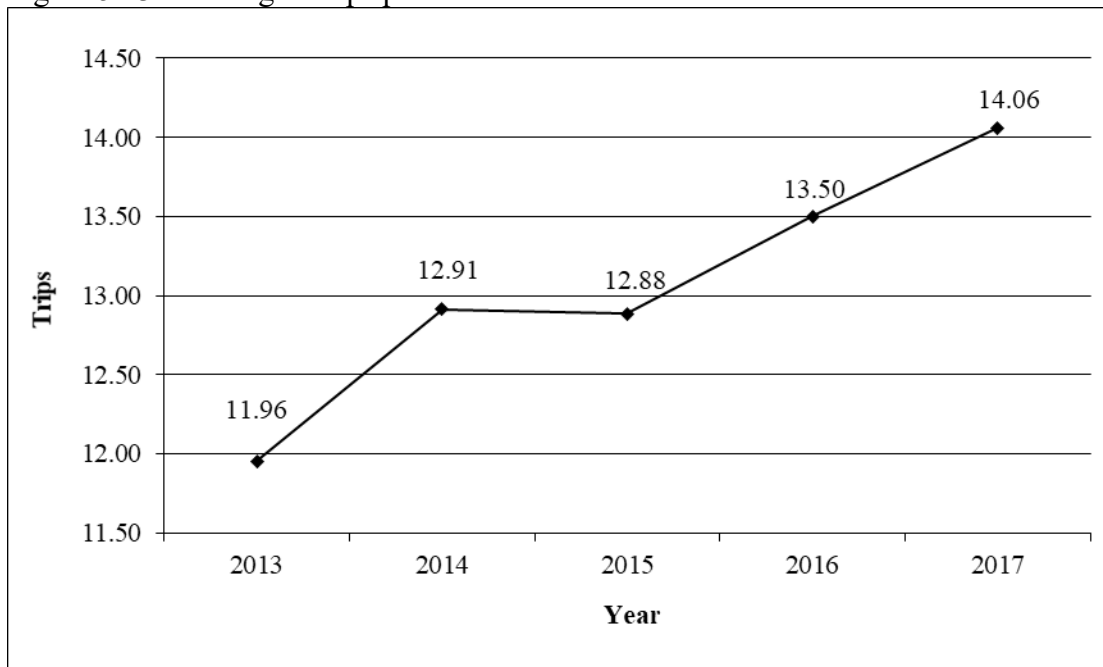
Source: Federal Transit Administration, *National Transit Database* (for 2013 – 2016 data); Shoreline Metro (for 2017 data); and Bay-Lake Regional Planning Commission, 2018.

Service Effectiveness

Figures 5.13 and 5.14 illustrate the effectiveness of Shoreline Metro's fixed-route service.

Figure 5.13 illustrates passenger trips per vehicle revenue hour. Figure 5.13 indicates that passenger trips per vehicle revenue hour increased by 7.9 percent between 2013 and 2014, decreased by 0.2 percent between 2014 and 2015, increased by 4.8 percent between 2015 and 2016, and increased by 4.1 percent between 2016 and 2017. The overall increase in passenger trips per vehicle revenue hour was nearly 17.6 percent over the five-year period. Changes to fixed-route ridership (passenger trips) over the five-year period were discussed in the narrative preceding Figure 5.10. Changes to vehicle revenue hours over the five-year period were discussed in the narrative preceding Figure 5.11.

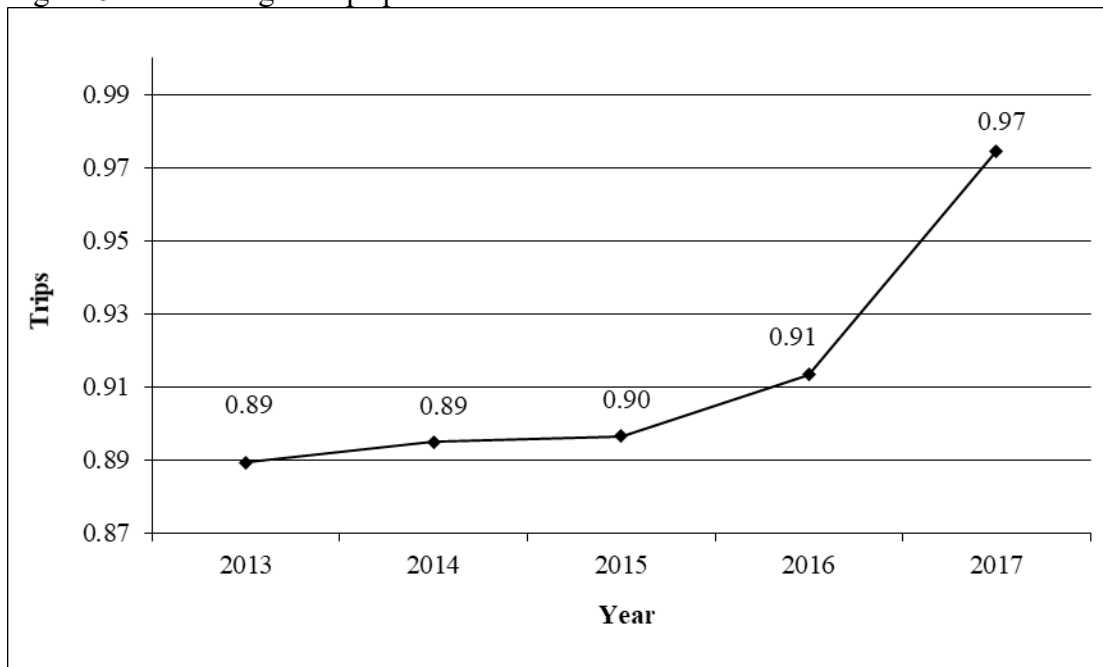
Figure 5.13: Passenger Trips per Vehicle Revenue Hour



Source: Federal Transit Administration, *National Transit Database* (for 2013 – 2016 data); Shoreline Metro (for 2017 data); and Bay-Lake Regional Planning Commission, 2018.

Figure 5.14 illustrates passenger trips per vehicle revenue mile. Figure 5.14 indicates that passenger trips per vehicle revenue mile remained stable between 2013 and 2014, increased by 1.1 percent between 2014 and 2015, increased by another 1.1 percent between 2015 and 2016, and increased by 6.6 percent between 2016 and 2017. The overall increase in passenger trips per vehicle revenue mile was 9.0 percent over the five-year period. Changes to fixed-route ridership (passenger trips) over the five-year period were discussed in the narrative preceding Figure 5.10. Changes to vehicle revenue miles over the five-year period were discussed in the narrative preceding Figure 5.12.

Figure 5.14: Passenger Trips per Vehicle Revenue Mile



Source: Federal Transit Administration, *National Transit Database* (for 2013 – 2016 data); Shoreline Metro (for 2017 data); and Bay-Lake Regional Planning Commission, 2018.

Shoreline Metro Fixed-Route Quality of Service

Many factors affect whether or not someone will take transit: service coverage, pedestrian environment, scheduling, transfers, amenities, transit information, trip time, cost, safety and security, passenger loads, appearance and comfort, and reliability. These factors ultimately define the quality of service of the system from the user's perspective. Traditional transportation planning has considered level of service for streets and highways only; however, levels of service can now be determined for transit and for bicycle facilities as well. Levels of service are assigned (when appropriate) based on the *Transit Capacity and Quality of Service Manual* from the Transit Cooperative Research Program (TCRP).

Service Coverage

Whether or not transit service is available near a person's origin and destination is a key factor in the choice to use transit. The service area for fixed-route transit is typically defined as the area within a quarter mile (a typical five minute walk) of a fixed route. Although the service area may be defined as being within a quarter mile of a route, barriers (including major roadways, overpasses, railroad lines, rail yards and bodies of water) can obstruct would-be transit users from accessing transit service (see the upcoming section on "pedestrian environment" for more details).

The areas currently served by fixed-route transit are compared to the Shoreline Metro service district in Map 5.6. As Map 5.6 illustrates, Shoreline Metro provides excellent coverage in its service district within the City of Sheboygan. Through service agreements with the Village of

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Kohler and the City of Sheboygan Falls, Shoreline Metro has expanded its service area beyond the City of Sheboygan. Many of the portions of the service area that are not covered by existing service involve natural features, or are too sparsely populated or have relatively little employment to sustain transit service.

Transit Propensity

The true test of service coverage is whether or not service is being provided to those areas with the highest propensity (inclination or tendency to take transit) and need. An analysis of transit propensity helps to identify areas of likely transit ridership. Analysis of transit propensity also incorporates environmental justice, which “assures that services and benefits allow for meaningful participation, and are fairly distributed to avoid discrimination.” Some demographic groups are known to have more of an inclination toward taking transit, while others have a basic need for transit service. Low income (persons at or below the poverty line) and minority populations must be considered explicitly in order to avoid any disproportionate negative impact that could result from changes in transit service. This type of analysis can also help to identify areas where service could be added, modified or discontinued.

Because both ends of a transit trip must be considered, the first step is to identify transit-supportive areas (areas that generate enough potential trips to support transit service) by calculating household and employment densities. Map 5.6 illustrates areas (traffic analysis zones, or TAZs) considered transit-supportive for 30 minute and for 60 minute service (headways) in relation to Shoreline Metro’s service district and coverage areas. TAZs with household densities of seven households or more per acre and/or employment densities of nine jobs or more per acre can support fixed-route transit service at 30 minute headways (dark green), while TAZs with household densities between three and seven households per acre and/or employment densities between four and nine jobs per acre can support fixed-route transit service at 60 minute headways (yellow). Areas in gray are in the legal transit service area, but do not meet minimum household or employment densities required to support fixed-route transit service. Areas in light brown are outside the legal transit service area.

Table 5.9 shows that the coverage area of Shoreline Metro (the quarter mile buffer around all transit routes) is **over 74** percent of the legal transit service/district area (the Cities of Sheboygan and Sheboygan Falls and the Village of Kohler). The square mileage for the transit supportive area covered is **nearly 88** percent of the square mileage for the district transit supportive area. A few transit supportive areas within the transit district are partially unserved, as can be seen in Map 5.6. While most of the transit supportive areas within the transit district that are unserved by transit are fairly small and are virtually invisible on Map 5.6, a few of these areas are significant; these areas include: two areas on the northwest side west of North 36th Street and north of Superior Avenue (some of these areas are in the Town of Sheboygan, which currently does not financially participate in Shoreline Metro); industrial and residential areas to the west and southwest of downtown Sheboygan Falls (some of these areas are in the Town of Sheboygan Falls, **which currently does not financially participate in Shoreline Metro**); a portion of the old City of Sheboygan Industrial Park; **portions of four residential and/or employment zones in the City of Sheboygan; and a portion of one residential zone in the City of Sheboygan Falls.** It should be noted that the Kohler Company plant in the Village of Kohler has a high level of

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employment but did not meet the employment density threshold because the zone where it is located is quite large. One of these unserved transit supportive areas is located in portions of two census block groups with high minority populations (in the central portion of the City of Sheboygan), while the same unserved transit supportive area is located in a portion of one census block group with a large low income population. Although outside the legal transit service area, one unserved zone in the State Highway 42 commercial corridor in the Town of Sheboygan could also support transit; however, this area does not have a high minority or low income population.

Table 5.9: Shoreline Metro Service Areas

Area Type	Area (square miles)
District Area	26.887
Coverage Area	19.967
District Transit Supportive Area	8.840
Transit Supportive Area Covered	7.737

Source: Bay-Lake Regional Planning Commission, 2018.

Due to the fact that the transit supportive area covered is between 80 and 90 percent of the district transit supportive area in Map 5.6, Shoreline Metro achieves a level of service (LOS) “B” for fixed-route service covered, as determined in Tables 5.9 and 5.10.

The legal transit service/district area increased by 1.367 square miles (5.4 percent) since the last plan update, largely through annexations. The coverage area of Shoreline Metro increased by 1.627 square miles (8.9 percent) since the last plan update, most likely due to route revisions. The district transit supportive area increased by 1.064 square miles (13.7 percent) since the last plan update, largely due to the addition of either subdivisions or employers that met the density requirements in areas that previously were not part of the transit supportive area. On the other hand, the transit supportive area covered only increased by 0.124 square miles (1.6 percent) since the last plan update, which led to the decrease in the fixed-route service coverage LOS (from “A” to “B”) since the last plan update.

Table 5.10: Service Coverage Level of Service (LOS), Shoreline Metro

LOS	Percent of Transit-Supportive Area Covered
A	90.0 to 100.0
B	80.0 to 89.9
C	70.0 to 79.9
D	60.0 to 69.9
E	50.0 to 59.9
F	0.0 to 49.9

Source: Transit Capacity and Quality of Service Manual, Transit Cooperative Research Program.

While the previous analysis addresses transit supportive areas in terms of household and employment densities, the analysis must go a step further and identify those areas whose population characteristics suggest a propensity for transit. Map 5.7 illustrates the environmental justice component of transit propensity. Low income and minority populations, as well as zero-vehicle households, are used to calculate propensity, while the locations of elderly and disabled

facilities are used to establish proximity to service. (Elderly and disabled persons tend to travel less than the typical quarter mile to a bus stop; therefore, these populations were not included in the calculation of propensity).

Map 5.7 illustrates the excellent service coverage which Shoreline Metro provides to disadvantaged populations in its service district. Portions of the City of Sheboygan that are not within the service coverage area are generally of insufficient population density to warrant transit service; this is also true of most portions of the City of Sheboygan Falls and the Village of Kohler outside the service coverage area. Portions of the Towns of Herman, Lima, Mosel, Sheboygan, Sheboygan Falls and Wilson, the Villages of Howards Grove and Kohler, and the City of Sheboygan Falls outside the service coverage area also appeared to have a “moderate” propensity for transit service; these areas should continue to be examined for potential “targeted” transit services. With the exception of five facilities in the Village of Howards Grove and four facilities in the Town of Sheboygan, all elderly and disabled residential facilities (i.e.: affordable non-subsidized housing, assisted living facilities, senior apartments and condominiums, and subsidized rental housing projects) were within or adjacent to the service coverage area of Shoreline Metro. Two additional elderly and disabled residential facilities (one in the Town of Sheboygan and another in the City of Sheboygan Falls) are on the edge of the service coverage area (possibly a short distance beyond being within a quarter mile of a bus route). It should be noted that data for zero vehicle households, persons in poverty, and minority populations all came from the *2012 – 2016 American Community Survey (ACS) 5-Year Estimates*, and were all available at the Census block group level.

In examining population and employment densities, the vast majority of TAZs that qualify for either 30 minute or 60 minute service are adequately served by Shoreline Metro at this time. Notable exceptions are: two areas on the northwest side west of North 36th Street and north of Superior Avenue; industrial and residential areas to the west and southwest of downtown Sheboygan Falls; a portion of the old City of Sheboygan Industrial Park; *portions of four residential and/or employment zones in the City of Sheboygan; and a portion of one residential zone in the City of Sheboygan Falls.* However, many of these TAZs which appear to qualify for transit service based on density also exhibit a very low to moderate propensity in regard to zero vehicle households and low income and minority populations, making transit service to these areas more challenging than it would be in areas of high or very high propensity.

It should be noted that Shoreline Metro currently serves several low density TAZs in the City of Sheboygan, particularly on the south and west sides of the city. However, these areas either have significant trip generators important to Shoreline Metro and its customers (i.e.: UW Sheboygan, Horace Mann Middle School, Acuity Insurance, and the two industrial parks), or have emerged as significant trip generators in recent years (i.e.: *the commercial development near the Interstate Highway 43/State Highway 28 interchange, including the south side Walmart Supercenter*).

Environmental justice impacts of the planner transit network are addressed in greater detail in Appendix E of this plan.

Pedestrian Environment

Barriers within the walking environment, gaps in the sidewalk system, poor sidewalk and transit stop maintenance, and poor street lighting act to discourage pedestrian travel and transit use. Even if transit service is available (as defined by the coverage area), the areas around and leading to the transit stop must be comfortable in order for transit to be truly available.

Barriers and Connectivity

Barriers to transit within the pedestrian environment include: major roadway facilities; natural features (such as steep slopes, rivers and wetlands); and man-made features (such as railroad lines and culs-de-sac). Many of these features can be seen in Map 5.8. The physical constraints of the area limit transit service between areas north and south of the Sheboygan River to five corridors. Fortunately, all five corridors are on local streets or lower speed connecting state highways (as opposed to higher speed rural state highways). One of the facilities where a Shoreline Metro route crosses the Sheboygan River is Taylor Drive. Taylor Drive is a less than ideal transit corridor because it is a minor arterial with high traffic volumes and higher speeds. In addition, while a bicycle and pedestrian trail has recently been added along much of Taylor Drive, much of this trail is set back some distance from the facility, making it hard to use the trail to access transit service. Route 10 South crosses the Sheboygan River on Taylor Drive on all of its trips. The other four locations where transit routes cross the Sheboygan River in the City of Sheboygan (South 8th Street, Pennsylvania Avenue, North 14th Street, and New Jersey Avenue) all have slower speeds and better pedestrian accommodations. Route 10 South also crosses the Sheboygan River at New Jersey Avenue on all of its trips. Route 10 North crosses the Sheboygan River at North 14th Street on all of its trips. Several routes cross the Sheboygan River at Pennsylvania Avenue on all of their trips, including Routes 3 South, 5 South, 10 North and South, and 20 North and South. Routes 3 South, 7 South and 40 cross the Sheboygan River at South 8th Street on all of their trips. The City of Sheboygan Falls has Routes 20 North and South that cross the Sheboygan River along State Highway 32 and that has slow speeds and pedestrian accommodations.

In addition, Fisherman's Creek can serve as a barrier for pedestrians trying to access Route 7 South on the south side of the City of Sheboygan. Route 7 South is situated along South 12th Street in this area, which can involve higher speeds and poor pedestrian accommodations.

Maintenance of Transit Stops and Sidewalks

An issue of pedestrian access characteristic of the Sheboygan area that can be improved with local policy and enforcement pertains to poorly maintained transit stops and sidewalks. As a northern state, Wisconsin experiences heavy snows that must be dealt with in a timely manner to allow for access to transit. As stated previously under transit stop and shelter maintenance, Shoreline Metro is responsible for the maintenance of transit stops and shelters. Individual property owners are responsible for the maintenance of sidewalks that passengers use to arrive at these stops and shelters; this includes curb cuts. The condition of transit shelters in the winter is generally satisfactory. Transit shelters generally have the pavement shoveled for full access to the street, which is satisfactory for both ambulatory and physically disabled persons, including persons in wheelchairs. Generally, in order for a wheelchair to gain access to a bus, the edge of

the lift ramp for the bus must be able to sit flush with the pavement; this generally requires a clearance of 2.5 feet in width.

Transit stops that do not have shelters tend to receive more maintenance attention if they are observed as highly utilized, but if they are underutilized, they are inadequately maintained in the winter. In cases of inadequate maintenance, transit stops can be virtually inaccessible (unless a passenger walks in the street). Shoreline Metro buses stop at nearly all street intersections involving a route, making maintenance of every bus stop by transit staff cost prohibitive. With snow piled in the street and no pathways shoveled from the sidewalks to the bus stop adjacent to the street, mid-block bus stops (where they exist) are almost always inaccessible, while those located near intersections are accessed in the intersection. Poorly maintained curb cuts are also a problem at these bus stops, particularly in the winter.

Scheduling

Shoreline Metro currently provides transit service six days per week. The following is a summary of current weekday service characteristics (also noted in Table 5.11):

- Routes 3 North and South, 5 North and South, 7 North and South, and 10 North and South offer half hour service between the hours of 5:45 a.m. and 5:45 p.m., with hourly service offered between 5:45 p.m. and 8:45 p.m. For service after 5:45 p.m., routes serving the south side of Sheboygan leave at 15 minutes past the hour, while routes serving the north side of Sheboygan leave at 45 minutes past the hour.
- Route 20 North offers one hour trips that leave at 5:45 a.m., 7:15 a.m., 11:15 a.m., and at 5:45 p.m. Route 20 North also offers a half hour Kohler Special run that leaves at 6:45 a.m. Route 20 South offers one hour trips that leave at 9:15 a.m., 1:15 p.m., 3:45 p.m., and at 7:45 p.m.
- Route 40 (The Square) offers half hour service between 10:00 a.m. and 8:00 p.m. from Memorial Day to Labor Day. There is a 15 minute wait time to connect to the other routes.
- North and South Shuttles operate between 5:15 a.m. and 5:45 a.m., as well as between 8:45 p.m. and 9:15 p.m. In addition, North Shuttles are offered at 6:15 p.m., 7:15 p.m., and 8:15 p.m., while South Shuttles are offered at 5:45 p.m., 6:45 p.m., and 7:45 p.m.
- Two school tripper routes operate in the morning and two additional school tripper routes operate in the afternoon when school is in session (these are not noted in Table 5.11).

The following is a summary of Saturday service characteristics:

- Routes 3 South, 5 South, 7 South, and 10 South involve hourly departures, with buses leaving the downtown transfer point at 15 minutes past the hour. Service on these routes is provided between 8:15 a.m. and 5:45 p.m.
- Routes 3 North, 5 North, 7 North, and 10 North involve hourly departures, with buses leaving the downtown transfer point at 45 minutes past the hour. Service on these routes is provided between 7:45 a.m. and 5:15 p.m.

- Route 20 North offers one hour trips that leave at 9:15 a.m., 12:15 p.m., and 3:15 p.m. Route 20 South offers one hour trips that leave at 11:15 a.m. and 1:15 p.m.
- Route 40 (**The Square**) offers half hour service between 10:00 a.m. and 6:00 p.m. from Memorial Day to Labor Day. There is a 15 minute wait time to connect to the other routes.
- North and South Shuttles operate between 7:15 a.m. and 7:45 a.m., as well as between 5:45 p.m. and 6:15 p.m. In addition, between 7:45 a.m. and 5:45 p.m., North Shuttles are offered at 15 minutes past the hour, while South Shuttles are offered at 45 minutes past the hour.

No transit service is offered on Sundays. In addition, it should be noted that Shoreline Metro does not offer service on the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas.

Table 5.11: Shoreline Metro Fixed-Route Service

Route	Hours of Operation		Service Frequency (in minutes)	
	Weekday	Saturday	Weekday	Saturday
3	5:45 a.m. - 8:45 p.m.	7:45 a.m. - 5:45 p.m.	30; 60 after 5:45 p.m.	60
5	5:45 a.m. - 8:45 p.m.	7:45 a.m. - 5:45 p.m.	30; 60 after 5:45 p.m.	60
7	5:45 a.m. - 8:45 p.m.	7:45 a.m. - 5:45 p.m.	30; 60 after 5:45 p.m.	60
10	5:45 a.m. - 8:45 p.m.	7:45 a.m. - 5:45 p.m.	30; 60 after 5:45 p.m.	60
20	5:45 a.m. - 8:45 p.m.	9:15 a.m. - 4:15 p.m.	Irregular service; 60 minute trips leaving at 5:45 a.m., 7:15 a.m., 9:15 a.m., 11:15 a.m., 1:15 p.m., 3:45 p.m., 5:45 p.m. and 7:45 p.m., with a 30 minute trip leaving at 6:45 a.m.	Irregular service; 60 minute trips leaving at 9:15 a.m., 11:15 a.m., 12:15 p.m., 1:15 p.m. and 3:15 p.m.
40	10:00 a.m. - 8:00 p.m.	10:00 a.m. - 6:00 p.m.	30	30
Shuttles	5:15 to 5:45 a.m., and 5:45 to 9:15 p.m.	7:15 a.m. to 6:15 p.m.	30 from 5:15 to 5:45 a.m. and from 8:45 to 9:15 p.m.; 60 from 5:45 p.m. to 8:45 p.m.	30 from 7:15 to 7:45 a.m. and from 5:45 to 6:15 p.m.; 60 from 7:45 a.m. to 5:45 p.m.

Source: Shoreline Metro, 2018.

Based on the levels of service outlined in Table 5.12 for hours of service, Shoreline Metro would achieve a level of service of "C" for Routes 3, 5, 7 and 10 on weekdays, and would achieve a level of service of "E" for Routes 20 and 40 and for the North and South Shuttles on weekdays. Shoreline Metro would achieve a level of service of "E" for all of its routes on Saturdays.

Table 5.12: Level of Service for Hours of Service

Level of Service	Hours per Day	Nature of Service
A	19 to 24	Night or owl service provided
B	17 to 18	Late evening service provided
C	14 to 16	Early evening service provided
D	12 to 13	Daytime service provided
E	4 to 11	Peak hour service/limited mid-day service
F	0 to 3	Very limited or no service

Source: Transit Capacity and Quality of Service Manual, Transit Cooperative Research Program.

Table 5.13 illustrates level of service by service frequency for fixed-route transit. Routes 3, 5, 7 and 10 have a level of service of “D” during the daytime and a level of service of “E” during the evening hours on weekdays. Route 20 has a level of service of “E” (when operating) at all times on weekdays. Route 40 has a level of service of “D” during the summer weekday hours in which it operates. The North and South Shuttles have a level of service of “D” during the first and last half hours of the service day, a level of service of “E” during most of the evening, and are nonexistent during the daytime hours on weekdays.

On Saturdays, Routes 3, 5, 7 and 10 all have a level of service of “E” throughout the service day. Route 20 has a level of service of “E” (when operating) at all times on Saturdays. Route 40 has a level of service of “D” during the summer Saturday hours in which it operates. Finally, the North and South Shuttles have a level of service of “D” during the first and last half hours of the service day, and have a level of service of “E” during the remainder of the service day on Saturdays.

Table 5.13: Frequency Level of Service for Scheduled Urban Transit Service

Level of Service	Headway (minutes)	Vehicles per Hour	Nature of Service
A	Less than 10	More than 6	Passengers do not need schedules
B	10 to 14	5 to 6	Frequent service; passengers consult schedules
C	15 to 20	3 to 4	Maximum desirable time to wait if bus is missed
D	21 to 30	2	Service unattractive to choice riders
E	31 to 60	1	Service available during hour
F	Greater than 60	Less than 1	Service unattractive to all riders

Source: Transit Capacity and Quality of Service Manual, Transit Cooperative Research Program.

Total Trip Time

Trip time is a major reason that people cite for not taking transit. In a metropolitan area where automobile trip times are low, converting motorists to transit usage can be difficult. The disutility of travel (the real and perceived cost of time) from mode choice studies has placed a high value on out-of-vehicle time (which includes walking, waiting and transferring) as being 1.5 to 7 times as important as in-vehicle time. What this means is that a motorist is willing to spend as much as seven times longer driving a car than the combined time of walking to and waiting and/or transferring at a transit stop. Ironically, motorists do not really consider the time that they walk from their automobiles to where they work as out-of-vehicle time any more than they consider filling their gas tanks as an out-of-pocket cost. In recognizing these considerations, the disutility of a trip can be calculated as:

$$\text{In-Vehicle Time} + (2.5 \times \text{Out-of-Vehicle Time}) + (\text{Fare/Value of Time})$$

In this calculation:

- **In-Vehicle Time** equals the total time riding in one or more vehicles from origin to destination;
- **Out-of-Vehicle Time** includes the total time walking, waiting and transferring;
- **Fare** equals out-of-pocket costs for a trip, including the cost of parking; and
- The **Value of Time** equals, for all practical purposes, one's hourly wages (the value of time will be different from one person to another).

With all else being equal, a five-minute walk (out-of-vehicle time) would add 12.5 minutes to the disutility of a trip, while a ten minute wait at the downtown transfer point would add 25 minutes to the disutility of that same trip.

Table 5.14 illustrates **perceived** travel times by travel activity, as derived from mode choice studies. The perceived times for each activity can be calculated by taking the actual time and multiplying or adding its perceived time. For example, the perceived time riding while sitting is equal to the actual time while sitting, but the perceived time riding while standing is three times the actual time riding while standing. In addition, the perceived time for a timed transfer is 10 minutes longer than the actual time for a timed transfer.

Table 5.14: Perceived Travel Times (in minutes)

Activity	Perceived Time
Time riding while sitting	Actual time
Time riding while standing	3 times actual time
Time walking	1.3 times actual time
Time waiting	1.9 times actual time
Time transferring	16 times actual time
Initial wait	Actual time plus 8 minutes
Each regular transfer	Actual time plus 24 minutes
Each timed transfer	Actual time plus 10 minutes

Source: Transit Route Planning Course, Center for Urban Transportation Studies, University of Wisconsin – Milwaukee.

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Actual travel time for transit users includes walking time from the origin to the bus stop where the passenger boards (averaged to be 3 minutes), waiting time (5 minutes), in-vehicle travel time (variable), walking time from the bus stop where the passenger alights to his or her destination (3 minutes), and transfer time (variable). Travel time for motorists includes in-vehicle travel time, time required to park the vehicle, and the time it takes to walk from the vehicle to the motorist's destination (3 minutes). In order for transit to be competitive with the automobile, its level of service must be at worst "tolerable for choice riders," as outlined in Table 5.15. (Choice riders are persons who have at least two modes of transportation available and choose one mode to use).

With headways of 30 minutes and direct connections to downtown Sheboygan, Routes 3, 5, 7 and 10 achieve levels of service "B" or "C" (depending on the time of day) for those whose destination is anywhere along the route between the origin and downtown. For those who live in Kohler or Sheboygan Falls and wish to travel to downtown Sheboygan using Route 20, the level of service ranges from "C" to "E" (depending upon where one boards the bus in those communities), which, in most cases, would not be tolerable due to a long travel time by bus versus the automobile. When they operate, the North and South Shuttles have a tolerable level of service from downtown to destinations on the north and south sides of the City of Sheboygan.

For travel between the north and south sides of the City of Sheboygan on Routes 3, 5, 7 and 10, under good travel conditions, the level of service would be "C," which is tolerable for choice riders; however, poor travel conditions could reduce this level of service to "D," which is not tolerable for choice riders.

The trip from downtown Sheboygan Falls to either the north side or the south side of the City of Sheboygan takes between 45 minutes and an hour, which is tedious for all riders (level of service "E"). This can easily deteriorate to being a longer trip and therefore becoming unacceptable to most riders (level of service "F") when poor weather or other conditions cause delays.

For Route 40, trips to portions of the City of Sheboygan outside the central business district could be at levels of service "C," "D" or "E," and could be at levels "D," "E" or "F" for trips to the Village of Kohler or to the City of Sheboygan Falls. The variation in level of service is dependent upon where one boards Route 40 and their final destination. Levels of service on Route 40 connecting to other routes are poor because of the 15 minute wait at the downtown transfer point, as Route 40 arrives at the top of the hour and 30 minutes past the hour, while the other routes leave at 15 and 45 minutes past the hour.

Table 5.15: Transit/Auto Travel Time Difference Level of Service

Level of Service	Travel Time Difference (in minutes)	Comments
A	0 or Less	Faster by transit than by automobile
B	1 to 15	About as fast by transit as by automobile
C	16 to 30	Tolerable for choice riders
D	31 to 45	Round trip at least an hour longer by transit
E	46 to 60	Tedious for all riders; may be the best possible in small cities
F	61 or More	Unacceptable to most riders

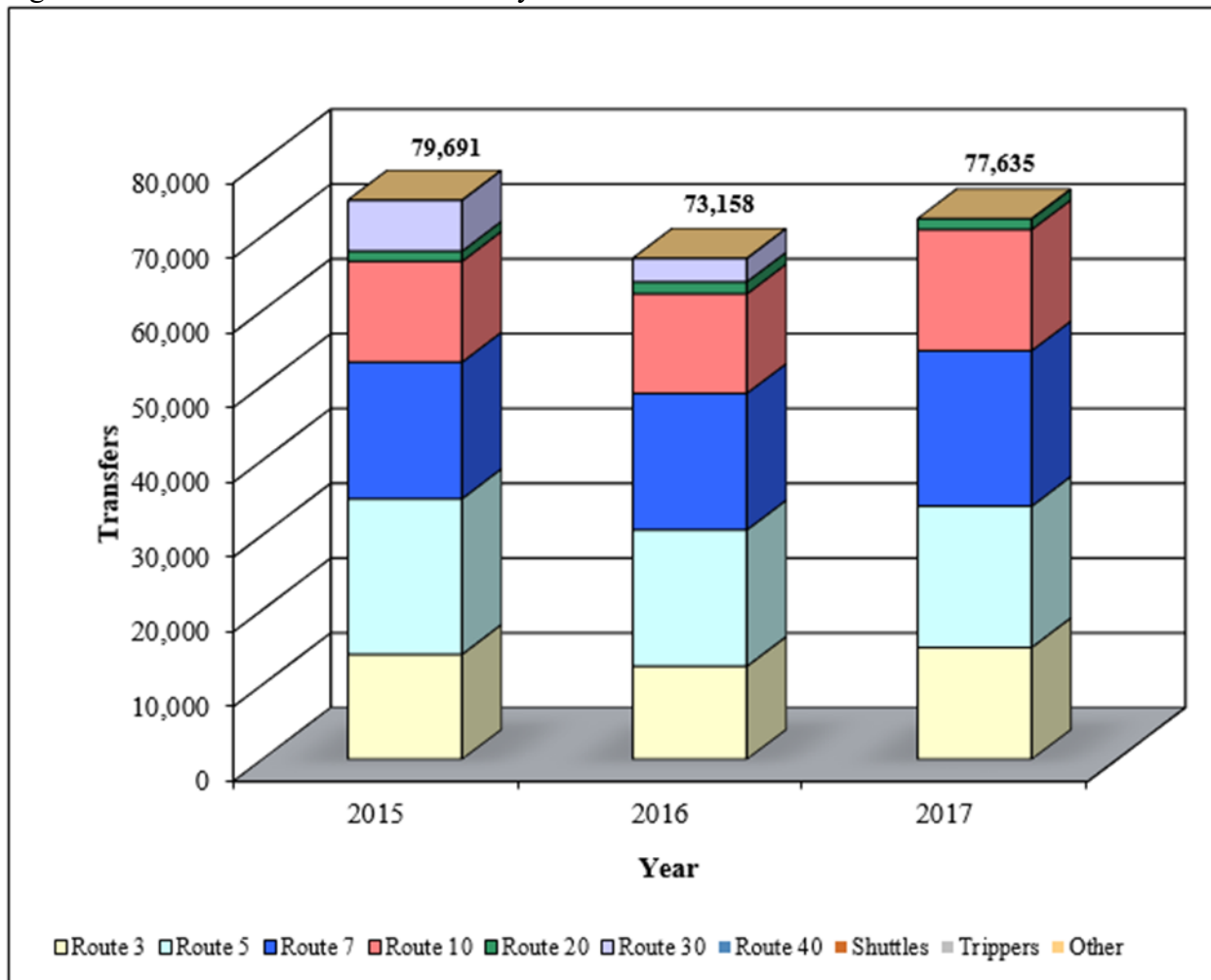
Source: Transit Capacity and Quality of Service Manual, Transit Cooperative Research Program.

Transfers

A transfer, the need to get off one's bus and on to another to complete a trip, can add significantly to a passenger's total trip time. Timed transfers can reduce trip time when compared to untimed transfers; however, the chance of missing a connection is always present. Shoreline Metro drivers work very hard to notify their fellow drivers of transferring passengers so that missed transfers are kept to a minimum. Transfers can increase the complexity of a trip, especially for a new transit rider. On the other hand, transfers can increase the size of the service area.

Figure 5.15 illustrates total transfers received by route by year for Shoreline Metro for the period from 2015 through 2017. The total number of transfers received systemwide decreased from a high of 79,691 in 2015 to a low of 73,158 in 2016, and then increased to 77,635 in 2017. Factors causing the decrease in transfers from 2015 to 2016 included an overall decrease in ridership between those years, elimination of Route 30 in mid-2016, and reduction in school tripper service; significant decreases in transfers were noted for Routes 3, 5 and 30, as well as with the school tripper routes, while there were increases in transfers for Route 20 and the North and South Shuttles. Factors causing the increase in transfers from 2016 to 2017 included an overall slight increase in ridership between those years, as well as increases in transfers to Routes 3, 7, 10 and 40. As would be expected, the routes with the highest ridership generally also had the highest number of transfers. It should be noted that usage of day, monthly and other passes can depress usage of transfers, meaning that transfers received is not a perfect gauge of the number of actual transfers between Shoreline Metro routes, but it is the best measure currently available.

Figure 5.15: Shoreline Metro Transfers by Route

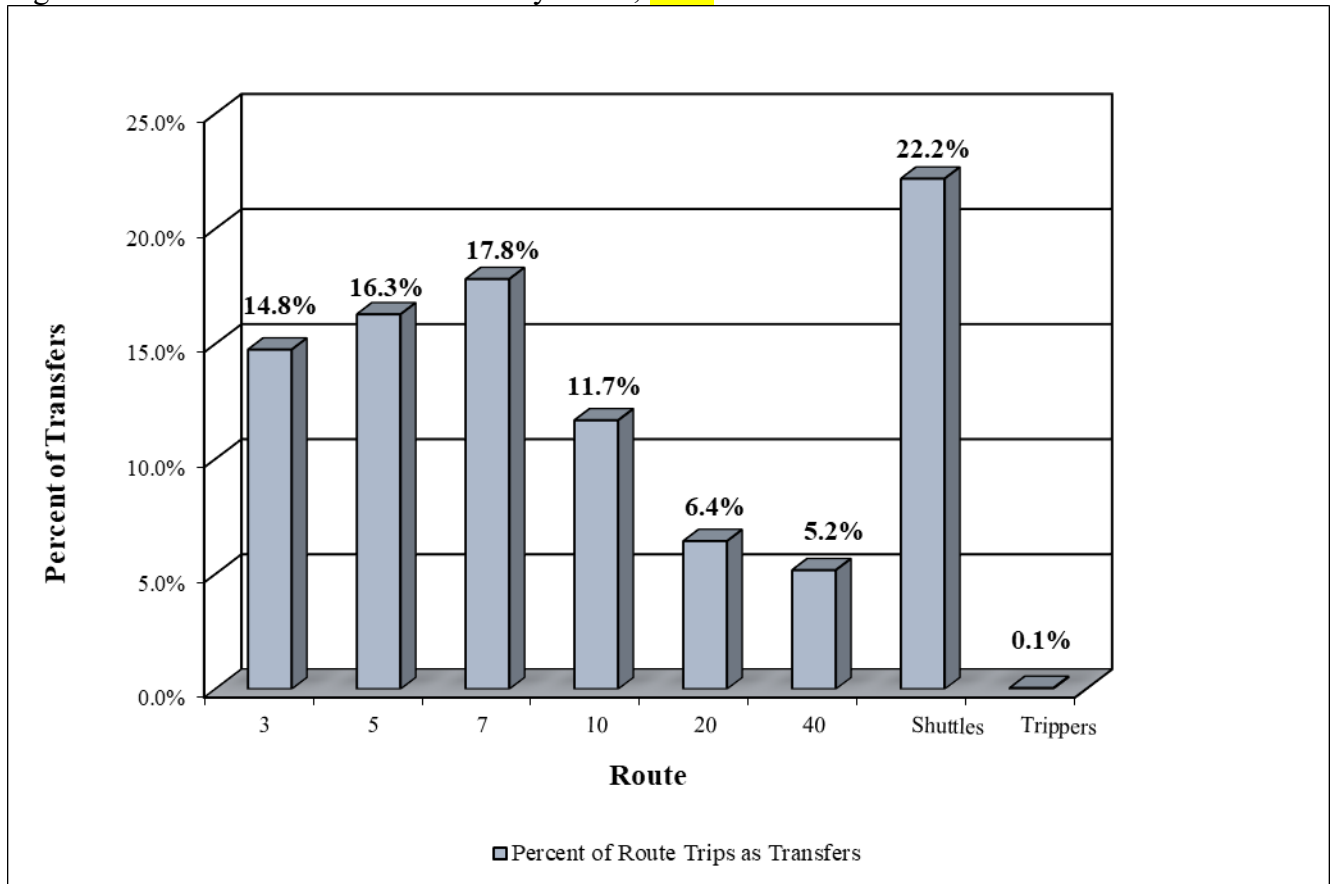


Source: Shoreline Metro (for all years listed).

Figure 5.16 illustrates transfers as a percentage of total route ridership in 2017. The North and South Shuttles had the highest transfer rate of all the routes (22.2 percent), which is logical, due to the interdependence between the shuttles and the regular route structure. Routes 7 (17.8 percent) and 5 (16.3 percent) had the second and third highest transfer rates, respectively. Routes 3 (14.8 percent) and 10 (11.7 percent) also had significant transfer rates. Routes 20 (6.4 percent) and 40 (5.2 percent) had relatively low transfer rates; in the case of Route 20, this is likely due to the length of the route and its relative infrequency, while in the case of Route 40, this is likely due to the fact that this route is marketed to tourists and is seasonal in nature. School tripper routes have the lowest transfer rate (0.1 percent); this is because school trippers are designed to be self-contained, do not directly serve the downtown transport as currently designed, and transport nearly all students (and other paying passengers) to where they want to go. It should also be noted that the number of school tripper routes has been reduced in recent years, which has also contributed to the low transfer rate.

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Figure 5.16: Shoreline Metro Transfers by Route, 2017



Source: Shoreline Metro, 2018.

The systemwide transfer rate in 2017 was nearly 14.7 percent. Shoreline Metro's downtown transfer point can be viewed on Map 5.9.

Amenities

Transit stop amenities make transit service more comfortable and convenient for current users and more attractive to potential users. The types of amenities provided are generally related to the number of passengers boarding at a stop. Amenities may also extend to the transit vehicle itself. Common amenities include:

- **Shelters** in which passengers may be protected from the elements.
- **Informational signs** to identify the routes using the stop, as well as scheduled arrival times.
- **Trash receptacles** to reduce the amount of litter around the area.
- **Air conditioning** on the buses themselves to provide comfort to passengers on hot summer days.

Map 5.9 indicates the location of Shoreline Metro’s passenger shelters and the downtown transfer point. There are 24 passenger shelters owned by Shoreline Metro that are scattered around the City of Sheboygan portion of the service area, including 14 on the north side of the City of Sheboygan and 10 on the south side of the City of Sheboygan. There are no passenger shelters in the Village of Kohler or in the City of Sheboygan Falls. One passenger shelter owned by Aurora Sheboygan Memorial Medical Center is located on North Avenue immediately west of the hospital building, while an unenclosed passenger shelter owned by Tamarack Apartments is located on Erie Avenue near the apartment complex.

There are two informational boards with a map showing the system route structure; these boards are located at the passenger shelter owned by Aurora Sheboygan Memorial Medical Center and at the downtown transfer point. There was an informational board at the west entrance of the Memorial Mall, but it no longer exists due to reconstruction associated with the Meijer supermarket entering the mall in the not too distant future. In addition, most passenger shelters now have information boards as well. Shoreline Metro has also placed signs at its various bus stops along its routes noting the route numbers served at the bus stops as well as times of arrival for the buses at these stops.

Shoreline Metro has an air conditioned (heated in winter and cooled in summer) transfer point that has the following amenities: a vending machine selling Shoreline Metro fare media, Wi-Fi, a customer service office that is staffed during the daytime on weekdays, and bike racks. The downtown transfer point has trash receptacles, and many of the most utilized passenger shelters have trash receptacles as well.

With the exception of two trolleys that primarily serve Route 40 (and can open their windows), all of the buses that provide regular fixed-route service have been equipped with air conditioning.

Transit Information

Potential passengers need to know where and when transit service is available before they can begin using it, while regular users need to be informed in a timely manner of any changes that may be planned to existing service. Shoreline Metro does a good job of posting information regarding route changes and other service modifications on its buses in readily visible locations for passengers. The Shoreline Metro website is a good place to get information on the system for all residents, including those who are not current users. The most convenient locations for a potential passenger to obtain route schedules are from off of the buses at the downtown transfer point or by accessing the Shoreline Metro website. Residents can find out where to purchase fare media by calling the transit office or by accessing the Shoreline Metro website.

The Shoreline Metro office or the customer service office at the downtown transfer point are the best sources of information concerning how to get from one location to another via Shoreline Metro. In addition, Shoreline Metro has a trip planner on its website. All fare media (including monthly and day passes as well as tokens) are sold at the Shoreline Metro office, as well as at the downtown transfer point (customer service office and vending machine) during normal business

hours. In addition, the following locations sell all fare media during their customer service desk hours:

- Both Piggly Wiggly Supermarkets in the City of Sheboygan (2905 N. 15th Street and 3124 S. Business Drive);
- Pick & Save Supermarket (1317 N. 25th Street);
- Festival Foods (595 S. Taylor Drive); and
- Piggly Wiggly Supermarket in the City of Sheboygan Falls (1166 Fond du Lac Avenue).

In addition, transit drivers sell day passes to interested passengers, while drivers of school tripper routes sell student token packs to interested student passengers; in both cases, exact change is required.

Bus schedules and other information can be obtained online at: <http://shorelinemetro.com/>(.)

Cost

The true cost of driving versus taking transit is rarely considered because most motorists only consider the immediate out-of-pocket cost associated **daily** with driving; paying a toll or paying for parking. Rarely does anyone factor into the equation the cost of gasoline, insurance and maintenance. Free parking is a huge disincentive for commuters to use transit. However, transportation demand management (TDM) practices seek to overcome this obstacle by asking employers who provide free parking to encourage transit use through transit pass programs. Unfortunately, businesses and institutions in the transit system service area have not been especially receptive to such programs.

Table 5.16 illustrates the fare structure of Shoreline Metro. The full cash fare is \$1.75. Cash fares for qualified elderly and disabled persons (**with proper identification**) are less than or equal to half the regular cash fare. Adult tokens are \$1.30 **when purchased ten at a time for \$13.00**. Student fares are \$1.10 **when purchased ten at a time for \$11.00 (either as tokens or as a student punch pass)**. Half fare **punch** passes for qualifying elderly and disabled persons (good for ten rides) cost \$8.50 each. **Group fares (individuals traveling in a group of ten passengers or more) are 85 cents per passenger per trip**. The monthly pass is \$48.00; frequent riders can save \$22.00 or more per month (this assumes two rides per day, five days per week for four weeks) by purchasing a monthly pass. The systemwide day pass costs \$3.00, and is less expensive than paying for a round trip at the full cash fare. The day pass for Route 40 (**The Square** seasonal route) costs \$1.00. The standard ADA paratransit fare is \$3.50, or twice the regular cash fare; **punch passes good for ten ADA paratransit rides are available for \$35.00**. Transfers between routes are issued free of charge, and children under age 5 ride free with proper supervision.

Table 5.16: Shoreline Metro Fare Schedule

Payment Type	Cost
Full Cash Fare	\$1.75
Elderly/Disabled Half Fare ¹	\$0.85
Adult Tokens (each - sold in packs of 10)	\$1.30
Student Tokens ² (each - sold in packs of 10)	\$1.10
Student Punch Passes ² (Good for 10 rides)	\$11.00
Elderly/Disabled Half Fare Passes ¹ (Good for 10 rides)	\$8.50
Group Fares ³	\$0.85
Monthly Pass	\$48.00
Day Pass - Systemwide	\$3.00
Day Pass - Route 40 Only	\$1.00
ADA Paratransit Fare	\$3.50
ADA Punch Passes (Good for 10 rides)	\$35.00
Transfers	Free

¹For the elderly, a Medicare card can be presented to the driver to qualify for half fare. For the disabled, a disabled identification card issued by the transit operator or ADA paratransit certification can be presented to the driver to qualify for half fare. A second form of identification may be required as proof of identity.

²Only students in grades K – 12 are eligible for student fares.

³Individuals traveling in a group of 10 passengers or more may take advantage of a reduced fare of 85 cents per passenger per trip. All individuals in the group must travel together and have the same origin and destination to qualify for the reduced rate. Some exclusions may apply.

NOTE: Children under age 5 ride free with proper supervision.

Source: Shoreline Metro, 2018; and Bay-Lake Regional Planning Commission, 2018.

Passenger Loads

The load factor is a ratio between the number of passengers on a bus and the number of seats available. A load factor of 1.0, for example, means that every seat is taken. Load factors greater than 1.0 require some passengers to stand, and are not acceptable for long-distance commuter travel. Crowded buses are generally acceptable for short, intra-city travel, but they are uncomfortable and prevent passengers from using their time productively (one potential advantage to taking transit over the personal automobile). Crowded buses also slow the operation of transit by increasing the time for passengers to get on and off the bus. Transit is most attractive when passengers can sit by themselves and use the seat next to them for personal belongings. Table 5.17 assigns level of service ratings to ranges for load factors (passengers per seat).

Table 5.17: Passenger Load Level of Service

Level of Service	Load Factor	Comments
A	0.00 to 0.50	No passengers need sit next to another
B	0.51 to 0.75	Passengers can choose where to sit
C	0.76 to 1.00	All passengers can sit
D	1.01 to 1.25	Comfortable standee load for design
E	1.26 to 1.50	Maximum schedule load
F	1.51 or More	Crush loads

Source: Transit Capacity and Quality of Service Manual, Transit Cooperative Research Program.

Most Shoreline Metro regular fixed-route service experiences a passenger load level of service “A.” There are occasions where passenger load level of service “B” or “C” is experienced during peak travel times, particularly during commutes to and from school. Passenger load level of service “D” or below is a rare occurrence with Shoreline Metro regular fixed-route service. However, it is possible that regular route trips to and from middle and high schools and one sheltered workshop in the City of Sheboygan have temporary standee loads on occasion on Shoreline Metro buses at certain times on weekdays when school is in session; Shoreline Metro has started to operate additional runs of certain routes in order to alleviate this problem.

Safety and Security

How safe and secure a person feels while walking to and waiting at a transit stop will significantly influence whether or not a person uses transit. Poor lighting, a lack of sidewalks, crime and vehicular conflicts can all contribute to feelings of insecurity and of being unsafe. Although the Sheboygan area is considered a relatively safe small urban area, crime still occurs. Safety lighting can help to deter such crime; unfortunately, very few passenger shelters and bus stops have their own lighting. Most passenger shelters and bus stops rely on indirect lighting from muted street lights.

The lack of sidewalks is felt along portions of all routes. Areas where bus stops with passenger shelters exist but where it is difficult to access those shelters using sidewalks include the following (all in the City of Sheboygan):

- N. 10th Street and Willow Avenue (partial lack of sidewalks);
- Erie Avenue across from Sunny Ridge (lack of sidewalks on shelter side of street);
- Georgia Avenue at Bio Life Plasma Services (no sidewalks);
- Union Avenue at Bollmann Drive (entrance to multiple apartment complexes - no sidewalks);
- Sunnyside Mall area (County Highway KK/S. 12th Street and County Highway EE/Weeden Creek Road – nearly complete lack of sidewalks);
- County Highway OK/S. Business Drive and Thielman Drive (County Village Apartments entrance – partial lack of sidewalks); and

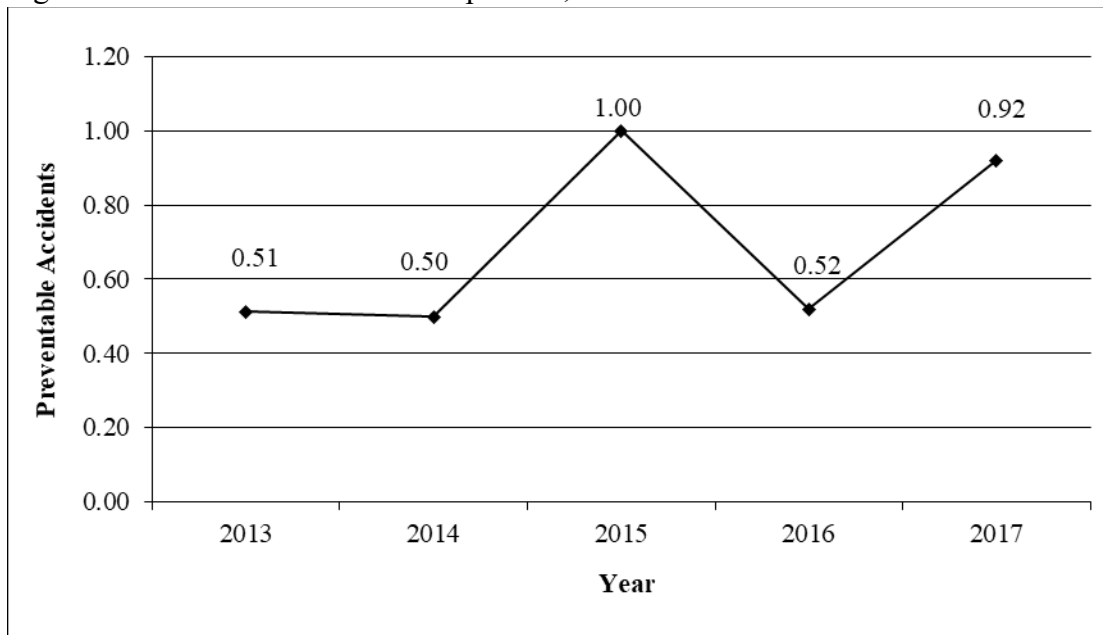
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- New Jersey Avenue and S. 22nd Street (partial lack of sidewalks).

In some cases, bus stops and passenger shelters are accessed by sidewalks, but they are positioned in such a manner that passengers need to cross several lanes of traffic. This type of pedestrian access is not only inconvenient for pedestrians trying to access transit, but it is also dangerous because it exposes pedestrians to several potential conflicts with vehicles and encourages pedestrians to cross streets at locations where they should not cross.

As far as safety and security on the buses is concerned, the number of preventable accidents per 100,000 vehicle revenue miles is one measure of safety for transit. Preventable accidents include accidents where the bus hit some object and where the bus driver could have prevented an accident. As Figure 5.17 illustrates, the number of preventable accidents per 100,000 vehicle revenue miles decreased slightly from 0.51 to 0.50 from 2013 to 2014, increased to 1.00 between 2014 and 2015, decreased to 0.52 between 2015 and 2016, and increased to 0.92 between 2016 and 2017. This analysis only relates to fixed-route service, and does not include paratransit operations.

Figure 5.17: Preventable Accidents per 100,000 Miles: Shoreline Metro Fixed-Route Service



Source: Federal Transit Administration, *National Transit Database* (for vehicle revenue mile data for 2013 through 2016); Shoreline Metro (for vehicle revenue mile data for 2017 and for preventable accident data for all years); and Bay-Lake Regional Planning Commission, 2018.

There were five (5) preventable bus-related accidents in 2017. Shoreline Metro staff indicates that the number of preventable accidents reported does not necessarily reflect insurance claims; all accidents, however minor, have been reported since 2004. The 0.92 preventable accidents per 100,000 vehicle revenue miles in 2017 included:

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- Bus struck a moving vehicle (3); and
- Bus struck a parked vehicle (2).

According to information that Shoreline Metro supplied for the National Transit Database (NTD), a total of 543,561 vehicle revenue miles was traveled in 2017.

Reliability

Transit reliability affects how long a person must wait for transit, as well as whether or not that person will reach their destination on time. Reliability can be critical if a passenger needs to transfer to another bus. Because most of the routes run on 30 minute headways, Shoreline Metro strives to prevent missed transfers through active radio communication between bus drivers. There are few delays that are caused by bridge openings and trains on railroad crossings, at least not at the level observed in many other urban areas. However, the expansion of the City of Sheboygan and the demands that such expansion places on transit to serve new trip generators is the greatest threat to the reliability of the 30 minute pulse system.

One measure of reliability that has been reported is the average number of miles traveled before road failure (when a bus breaks down on the road and needs to be replaced by another bus). The number of miles before “major mechanical failure” (the need to immediately take a bus out of service) increased from 34,456 in 2013 to 75,263 in 2014, an increase of over 118 percent. The number of miles before “major mechanical failure” increased to 119,981 from 2014 to 2015, an increase of over 59 percent. The number of miles before “major mechanical failure” decreased to 115,565 from 2015 to 2016, a decrease of nearly four percent, but still above the 2013 and 2014 levels. The number of miles before “major mechanical failure” increased to 135,890 from 2016 to 2017, an increase of nearly 18 percent. Over the period from 2013 through 2017, the number of miles before “major mechanical failure” increased by over 294 percent, largely due to the acquisition of five Gillig low floor buses in 2010 and an aggressive maintenance program. Shoreline Metro is due to acquire additional replacement buses through the Congestion Mitigation and Air Quality (CMAQ) program in the near future, but will need to have the ability to acquire additional buses if the transit operation hopes to maintain a high number of miles before “major mechanical failure” in the future.

Summary

For a small urban transit system, Shoreline Metro provides good quality of service. Its service coverage is good within the City of Sheboygan, and extends into portions of the City of Sheboygan Falls and the Village of Kohler. Service frequencies by route appear appropriate for the densities and populations served. The “capture rate” for transit is not dependent on density alone; it is based on characteristics of the population, land use and travel. Household and population characteristics identify areas of propensity (areas where populations have a greater inclination toward taking transit). Areas of higher propensity and lower density can generate just as many, if not more, trips using transit than areas of higher density. The objective is to connect origins (households) with destinations (work, shopping, etc.).

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The analyses of density and propensity show that Shoreline Metro provides service frequencies appropriate for the areas served. However, these analyses are insufficient for recommending changes in service. These analyses help identify areas for more detailed analysis. A transit development program (TDP) will be completed for Shoreline Metro in 2018 and 2019 which will include tabulations from a boarding and alighting survey to be completed in 2018 and a passenger opinion survey that was completed in late 2015, and which will examine service levels in areas identified as having high propensity.

System efficiency could be improved through bi-directional service and more direct connections. However, the biggest constraints to improving quality of service are natural features and barriers, existing transportation infrastructure, and land use policies. Shoreline Metro routes between the north and south sides of the City of Sheboygan are constrained to five corridors (as is all traffic), and many roadway segments along the routes lack sidewalks and lighting. Maintenance of existing sidewalks can be poor, particularly in winter. In spite of these issues (over which Shoreline Metro has limited to no control), the system performs well.

INTERCITY PASSENGER NETWORK

Inventory of Intercity Passenger Facilities

Four passenger services are available to residents of the Sheboygan metropolitan planning area: Indian Trails Bus Lines, Jefferson Bus Lines, Lamers Bus Lines, and the Sheboygan County Memorial Airport. In addition, other passenger bus services provide charter and school bus services to the area, but these services are not regularly scheduled intercity passenger services open to all passengers. Map 5.10 illustrates the alignment of intercity bus services in the area (including their jointly shared stop/station at the Shoreline Metro downtown transfer point), as well as the location of the Sheboygan County Memorial Airport.

Existing Services

Indian Trails Bus Lines

Indian Trails Bus Lines is a Michigan-based intercity passenger bus transportation provider. Indian Trails provides airport transfers, casino runs, group tours, bus charters, scheduled bus service, and shuttles. While most of Indian Trails' services are provided in the State of Michigan, there are also routes that connect the Upper Peninsula to Milwaukee and Chicago, as well as routes that connect the Lower Peninsula to Chicago. Indian Trails service to and from Sheboygan is part of a route that connects Hancock, Marquette and Escanaba, Michigan, to Green Bay, Manitowoc and Milwaukee.

Amtrak passengers can use Indian Trails to make connections to cities not served by rail.

The Indian Trails station serving Sheboygan is located at the Shoreline Metro transfer point (Map 5.10). This provides seamless transportation for Indian Trails passengers wishing to continue their trip to a destination within Sheboygan, Sheboygan Falls or Kohler via Shoreline Metro, at least during the service hours of Shoreline Metro. Passengers can arrange for ticket purchase by contacting Indian Trails at a toll free number. Alternatively, passengers can purchase their ticket

for travel online or at larger bus terminals (if seats are available) before they board the bus.

One southbound bus and one northbound bus serve the Sheboygan area, with the southbound bus leaving the station at 7:30 a.m. each day for Milwaukee, and with the northbound bus leaving at 10:00 p.m. for Green Bay. Passengers coming to Sheboygan arrive at these same times, since this stop is part of a larger service route between Milwaukee and Green Bay. As of May 2018, the fare to travel from Sheboygan to Milwaukee was \$15 (\$30 round trip), while the fare to travel from Sheboygan to Green Bay was \$19 (\$38 round trip).

Jefferson Bus Lines

Jefferson Bus Lines is a Minneapolis-based intercity passenger bus transportation provider. Jefferson Bus Lines provides passenger scheduled service in a large area as well as charter services in two markets. Jefferson serves eight states in the Midwest (including Wisconsin), as well as six other states in the south central U.S., the mountain west and the northwest.

Sheboygan is served by a Jefferson route that connects Milwaukee to Green Bay; this same line also connects Green Bay to Wausau, Eau Claire and Minneapolis-St. Paul.

Amtrak passengers can also use Jefferson to make connections to cities not served by rail.

The Jefferson station serving Sheboygan is located at the Shoreline Metro transfer point (Map 5.10). This provides seamless transportation for Jefferson passengers wishing to continue their trip to a destination within Sheboygan, Sheboygan Falls or Kohler via Shoreline Metro, at least during the service hours of Shoreline Metro. Passengers can arrange for ticket purchase by contacting Jefferson at a toll free number or by purchasing their ticket on Jefferson's website. Passengers can also purchase their ticket for travel at larger bus terminals (if seats are available) before they board the bus.

One northbound bus and one southbound bus serve the Sheboygan area, with the northbound bus leaving the station at 9:50 a.m. each day for Green Bay (and continuing on to Wausau, Eau Claire-Chippewa Falls, and Minneapolis-St. Paul), and with the southbound bus leaving the station at 6:15 p.m. each day for Milwaukee. Passengers coming to Sheboygan arrive at these same times, since this stop is part of a larger service route between Milwaukee and Green Bay. As of May 2018, the fare to travel from Sheboygan to Milwaukee was \$24 (\$48 round trip), while the fare to travel from Sheboygan to Green Bay was \$18 (\$36 round trip).

Lamers Bus Lines

Lamers Bus Lines is a Green Bay-based provider of various transportation services, including school bus transportation services (including to and from school and sporting events), charter services, escorted tours, custom tour planning, airport transfers, shuttles to major events (such as the annual EAA convention in Oshkosh and Green Bay Packers home football games), limousine service, and medical transport. Most of Lamers' services are provided to customers in Wisconsin, although Lamers also offers limited services in the state of Florida. Among the services provided by Lamers is a "Lamers Connect" service that specializes in transporting

college students between their campuses and major communities across Wisconsin. The “Lamers Connect” route that serves Sheboygan connects Green Bay and Milwaukee, and only provides service on weekends (Fridays and Sundays).

As with the Indian Trails and Jefferson service, Lamers Connect can take Amtrak passengers to Milwaukee’s Intermodal Station, and Lamers Connect also transports passengers to UW-Milwaukee and to General Mitchell International Airport.

The Lamers Connect station serving Sheboygan is located at the Shoreline Metro transfer point (Map 5.10). This provides seamless transportation for Lamers Connect passengers wishing to continue their trip to a destination within Sheboygan, Sheboygan Falls or Kohler via Shoreline Metro. Customers can purchase their tickets online and print them for use on the day of their trip. Alternatively, “tickets can be purchased during business hours at bus stop agencies with ticketing services or by paying the driver cash for stops without ticketing services.”

On Fridays (or the Wednesday before Thanksgiving in late November) and Sundays, one northbound bus and one southbound bus serve the Sheboygan area, with the northbound bus leaving the station at 4:20 p.m. for Green Bay, and with the southbound bus leaving the station at 10:45 a.m. for Milwaukee. Passengers coming to Sheboygan arrive at these same times, since this stop is part of a larger service route between Milwaukee and Green Bay. As of May 2018, it cost Sheboygan passengers \$18 to travel one-way to UW-Milwaukee and to the Milwaukee Intermodal Station (\$22 to General Mitchell International Airport), and \$18 to travel one-way to both offered destinations in Green Bay (Green Bay Metro/intercity bus station, and UW-Green Bay) on Lamers Connect; round trip to and from each of these destinations is double these costs, and discounts are offered to qualifying children, senior citizens, students, active military and veterans. It should be noted that Lamers Connect does not offer service to or from UW-Green Bay in June, July or August.

Other Passenger Bus Services

Four companies provide miscellaneous bus services. These companies include Discovery Coach, Harms Bus Service, Heidenreiter Bus Service, and Johnson School Bus Service. Discovery Coach provides charter and tour bus services, and also provides school bus services for students of the Sheboygan Area School District who reside and/or attend school outside the City of Sheboygan. Harms Bus Service provides predominantly school bus service to the Howards Grove School District. Heidenreiter Bus Service provides predominantly school bus service to the Sheboygan Falls School District. Johnson School Bus Service provides predominantly school bus service to the Plymouth, Elkhart Lake-Glenbeulah, and Cedar Grove-Belgium School Districts.

In addition, several companies provide miscellaneous transportation services, although the means of transport is an automobile or a van. Taxi companies that served the area (as of late 2017 and early 2018) included All Star Taxi, Blue Cab, The Best Taxi, and Yellow Cab, and informal “taxi” style transportation services (such as Uber and Lyft) have also started to enter the area

market. The roster of taxi companies is always changing, and some unlicensed companies are always entering and leaving the local market. Specialized transportation services for the disabled that serve the area include Custom Care and Transport Service, Lakeshore Transportation, Transtar Medical Transport, and Wheelchair Taxi and Transportation. Ambulance services are provided by the City of Sheboygan Fire Department for city residents, and by Orange Cross Ambulance for residents of the metropolitan planning area outside the City of Sheboygan. Additional ambulance services exist in Oostburg, Plymouth and Random Lake.

Limousine services operating in the Sheboygan area include Luxury Limousine, Santana's Limousine, and Stardust Limousine. Airport transportation services operating in the Sheboygan area include Airport Connection/GO Riteway and Stardust Limousine. These services primarily transport Sheboygan area passengers to and from General Mitchell International Airport in Milwaukee, although Stardust Limousine also transports passengers to Austin Straubel and Appleton International Airports.

GO Riteway also offers a service that transports Lakeshore Technical College (LTC) students who reside in Sheboygan to LTC's main campus in Cleveland. Students can purchase an unlimited ride pass each semester, purchase a 10-ride ticket at a discount, or pay \$2 for each ride. Stops in the City of Sheboygan include LTC's Lakeshore Culinary Institute and the Shoreline Metro downtown transfer point.

Sheboygan County Memorial Airport

The Sheboygan County Memorial Airport is owned and operated by Sheboygan County. There is no passenger service provided by airlines at the airport. However, many local corporations operate their corporate aircraft from this airport.

The nearest airports with regularly scheduled airline passenger service are General Mitchell International Airport in Milwaukee, Austin Straubel International Airport in Ashwaubenon (near Green Bay), and Appleton International Airport in the Town of Greenville, Outagamie County.

Proposed Service

Midwest Regional Rail Initiative (MWRRI)

The Midwest Regional Rail Initiative (MWRRI) is an ongoing effort to develop an improved and expanded passenger rail system in the Midwest. The Midwest Regional Rail System (MWRRS) is a 3,000 mile, Chicago-based passenger rail network, offering high-speed travel competitive with driving and flying. As illustrated in Map 5.11, the system includes a combination of high-speed rail (usually above 90 miles per hour and up to 110 miles per hour), lower speed rail (less than 90 miles per hour, and in some cases, less than 79 miles per hour), and feeder bus service. At this time, the Sheboygan area is proposed to be served by feeder bus service to Milwaukee, where passengers could then access the high speed rail network; this feeder bus service would originate in Manitowoc.

The MWRRI was originally unveiled as a passenger rail vision for the Midwest in 2004. Unfortunately, political will has deteriorated in regard to this vision over the course of this decade, and there are doubts as to whether the original MWRRI vision will be realized any time in the future, at least in Wisconsin.

Current Conditions

Passenger Movement

Indian Trails Bus Lines

- Calendar Year 2016 – For northbound trips, there were 48 boardings and 508 alightings in Sheboygan. For southbound trips, there were 341 boardings and 61 alightings in Sheboygan. There was a total of 5,427 trips provided on all northbound trips for the entire service corridor, while there was a total of 4,723 trips provided on all southbound trips for the entire service corridor.
- Calendar Year 2017 – For northbound trips, there were 64 boardings and 814 alightings in Sheboygan. For southbound trips, there were 486 boardings and 75 alightings in Sheboygan. There was a total of 8,877 trips provided on all northbound trips for the entire service corridor, while there was a total of 7,301 trips provided on all southbound trips for the entire service corridor.

Jefferson Bus Lines

- Calendar Year 2016 – For northbound trips, there were 165 boardings and 419 alightings in Sheboygan. For southbound trips, there were 234 boardings and 235 alightings in Sheboygan. There was a total of 8,895 trips provided on all northbound trips for the entire service corridor, while there was a total of 8,346 trips provided on all southbound trips for the entire service corridor.
- Calendar Year 2017 – For northbound trips, there were 246 boardings and 411 alightings in Sheboygan. For southbound trips, there were 229 boardings and 286 alightings in Sheboygan. There was a total of 10,409 trips provided on all northbound trips for the entire service corridor, while there was a total of 9,703 trips provided on all southbound trips for the entire service corridor.

Lamers Connect

No data regarding demand are available. Indian Trails and Jefferson Bus Lines are subsidized by WisDOT (and therefore must submit quarterly ridership reports to that agency in order to receive the subsidy), while Lamers Connect is not subsidized by WisDOT, and therefore its demand data are proprietary in nature and are not disclosed to the public.

Sheboygan County Memorial Airport

Measurement of air operations at Sheboygan County Memorial Airport has always been challenging because the airport has no control tower and because there is no commercial airline

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service to the airport. Because of this, it is difficult to obtain data on activity at the airport from private sources or from Sheboygan County, WisDOT or Federal Aviation Administration (FAA) sources.

Civilian air operations at Sheboygan County Memorial Airport include local and itinerant general aviation and air taxi (charter) services. Air operations are equal to the number of flights arriving and departing at the airport. According to the FAA, the Sheboygan County Memorial Airport had 64,500 annual operations in the 12 month period that ended on July 8, 2014, but had 65,000 such operations in the 12 month period that ended on August 25, 2017; this represents an increase of nearly 0.8 percent. Of the 65,000 annual operations recorded as of August 25, 2017, about 59,500 operations were general aviation local and itinerant trips, while about 5,000 operations involved air taxi services, and another 500 involved military air operations.

Sheboygan County appears to have had a steady level of military air operations (around 500 per year) between the last four observations collected for the previous three iterations of this plan (2004 – 2005, 2007 – 2008, 2010 – 2011, and 2013 – 2014) and the 12 month period that ended on August 25, 2017.

Unlike airports in many other Wisconsin metropolitan planning areas, the Sheboygan County Memorial Airport does not have annual records on air traffic because the airport has no control tower and because there is no commercial airline service to the airport. The only air operation data maintained for the airport besides airport master records from 2002, 2004 and 2005 and besides FAA records from 2006, 2007 – 2008, 2010 - 2011, 2013 - 2014 and 2016 - 2017 dates back to 1996 and prior years. The most current air traffic observations (66,000 in 2006, 62,000 in 2007 – 2008 and in 2010 – 2011, 64,500 in 2013 – 2014, and 65,000 in 2016 – 2017) are comparable to air traffic levels observed for the airport from 1993 to 1995. Air traffic in 1996 was higher (73,150), and air traffic before 1993 was lower than current levels.

There are approximately 72 aircraft based at the Sheboygan County Memorial Airport. Of these, 50 are single engine aircraft, while twelve are multiengine aircraft, five are jet aircraft, and five are ultralights.

Safety and Security

The security of our transportation networks and the safety of their users have become the driving force for much of the transportation policy enacted since September 11, 2001. Accidents and incidents continue to occur for several reasons. Fortunately, none of those accidents and incidents have been attributed to premeditated attacks.

In the case of intercity bus lines, the Federal Motor Carrier Safety Administration (FMCSA) Safety and Fitness Electronic Records (SAFER) System “offers company safety data and related services to industry and the public over the Internet. Users can search FMCSA databases, register for a USDOT number, pay fines online, order company safety profiles, challenge FMCSA data, access the hazardous material route registry, obtain national crash and out of service rates for hazardous materials (Hazmat) permit registration, get printable registration forms, and find

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information about other FMCSA information systems.” SAFER shows vehicle and driver inspections in the U.S. and Canada, as well as Hazmat and intermodal equipment provider (IEP) inspections in the U.S. Fatal, injury and property damage crashes where a tow was required are also reported in SAFER for each bus line, for the U.S. as well as for Canada. Data reported are for all service operations of each provider, and do not focus on that carrier’s performance within the Sheboygan metropolitan planning area.

Indian Trails Bus Lines

According to SAFER, Indian Trails Bus Lines had a rating of “satisfactory” in January of 2018. Out of 99 U.S. vehicle inspections, Indian Trails had one out of service vehicle (1.0 percent, which is below the national average of 20.7 percent); there were no Canadian vehicle inspections for Indian Trails. Out of 48 U.S. driver inspections, Indian Trails had no out of service drivers; again, there were no Canadian driver inspections for Indian Trails. Hazmat and IEP inspections were not applicable in the case of Indian Trails. Indian Trails had one fatal crash, one injury crash, and three property damage only crashes where a tow was required in the past two years in the U.S.; no such incidents were reported in Canada.

Jefferson Bus Lines

According to SAFER, Jefferson Bus Lines had a rating of “satisfactory” in June of 2017. Out of ten U.S. vehicle inspections, Jefferson had no out of service vehicles; there were no Canadian vehicle inspections for Jefferson. Out of eight U.S. driver inspections, Jefferson had no out of service drivers; again, there were no Canadian driver inspections for Jefferson. Hazmat and IEP inspections were not applicable in the case of Jefferson. Jefferson had no fatal crashes, one injury crash, and two property damage only crashes where a tow was required in the past two years in the U.S.; no such incidents were reported in Canada.

Lamers Bus Lines

According to SAFER, Lamers Bus Lines had a rating of “satisfactory” in September of 2015. Out of 92 U.S. vehicle inspections, Lamers had five out of service vehicles (5.4 percent, which is again below the national average of 20.7 percent); there was one Canadian vehicle inspection for Lamers, and that vehicle was not out of service. Out of 82 U.S. driver inspections, Lamers had one out of service driver (1.2 percent, which is below the national average of 5.5 percent); there was one Canadian driver inspection for Lamers, and that driver was not out of service. Lamers had one Hazmat inspection, and that vehicle was not out of service. IEP inspections were not applicable in the case of Lamers. Lamers had two fatal crashes, 19 injury crashes, and 30 property damage only inspections where a tow was required in the past two years; no such incidents were reported in Canada.

Sheboygan County Memorial Airport

As reported in the Aviation Accident/Incident Database from the National Transportation Safety Board (NTSB), the Sheboygan County Memorial Airport experienced two accidents between

January 1, 2013, and December 31, 2017. The following accidents occurred over that five-year period.

- On June 21, 2015, around 11:30 a.m., shortly after takeoff, a pilot was forced to land in a field about five miles south of the airport due to low oil pressure, failed spark plugs and a loss of engine power. One pilot and no passengers were on board, and there were no fatalities or injuries. However, the aircraft was substantially damaged. The pilot was on his way from the Sheboygan County Memorial Airport to Elkhart, Indiana.
- On May 26, 2017, around 12:30 p.m., a biplane hit the ground during a descent. The pilot and his one passenger were both fatally injured. The airplane sustained substantial damage during the impact. The flight left the airport around 12:10 p.m., and the purpose of the flight was to perform a fly-by over Road America. The pilot and his passenger both appeared well qualified to operate the aircraft. It is likely that mechanical failure contributed to this accident.

After September 11, 2001, the federal government and the Federal Aviation Administration (FAA) required airports and other transportation hubs and systems to enhance security with trace detection inspections for explosives. As an airport that does not offer commercial passenger service, the Sheboygan County Memorial Airport is exempt from having magnometers, x-ray machines, or explosion detection inspections (since there is little or no checked luggage). However, the airport has secure fences around its perimeter, and there are secure entrances to all areas involving air traffic. In addition, since some airport customers have utilized the Sheboygan County Memorial Airport for international business travel (primarily to Canada and to locations in Europe), U.S. Customs inspectors are occasionally brought in from Green Bay and from Milwaukee to conduct customs inspections of incoming passengers.

Access

Indian Trails/Jefferson/Lamers Bus Lines Station

The joint station for Indian Trails Bus Lines, Jefferson Bus Lines and Lamers Bus Lines (which is the downtown transfer point owned by Shoreline Metro) is easily accessible from all directions. From the north and south, 7th, 8th and 9th Streets are all in close proximity to the station. From the east and west, Pennsylvania Avenue abuts the block in which the station is located, and those traveling on Erie Avenue (State Highway 23 west of 14th Street) can use 9th Street and Center Avenue to arrive at the station.

Parking can be problematic for passengers who wish to park on a long-term basis while traveling on Indian Trails, Jefferson or on Lamers. Lots in the vicinity are either metered with upper time limits or are reserved for monthly parkers who are usually employed near where they are parked. Fortunately, most Indian Trails, Jefferson or Lamers passengers are simply dropped off as they begin their trip or are picked up when they arrive in Sheboygan.

Shoreline Metro has its transfer point at the Indian Trails/Jefferson/Lamers station. Indian Trails has a 7:30 a.m. departure for Milwaukee, which is well served by Shoreline Metro on weekdays, and is served by either regular routes or shuttles on Saturdays. Indian Trails also has a 10:00 p.m. departure for Green Bay, which is outside the range of service hours for Shoreline Metro every day of the week. Jefferson has a 9:50 a.m. departure for Green Bay, which is well served by Shoreline Metro on weekdays, and is served by either regular routes or shuttles on Saturdays. Jefferson also has a 6:15 p.m. departure for Milwaukee; this service can be accessed by Shoreline Metro regular routes or shuttles on weekdays, but this departure leaves at the end of the service day for Shoreline Metro on Saturdays. Lamers has a 10:45 a.m. departure for Milwaukee as well as a 4:20 p.m. departure for Green Bay on Fridays or Sundays; Shoreline Metro has service that connects to these departures on Fridays. Shoreline Metro transit service is not available on Sundays or holidays; therefore, Indian Trails, Jefferson and Lamers customers must find alternative arrangements to arrive at the station on those days.

Sheboygan County Memorial Airport

Access to the airport is best achieved by either taking County Highway O (Superior Avenue in the City of Sheboygan) west from the urban area to County Highway TT, or by taking State Highway 23 west and turning north on County Highway TT. The airport is located on Resource Drive just north of the intersection of County Highways O and TT.

The airport is outside the geographic range of service of Shoreline Metro. In any event, passenger service at the airport is minimal, such that transit service to the airport, even if it did exist, would likely be unproductive.

The airport has 175 spaces for public parking: 75 spaces for short-term parking and 100 spaces for long-term parking. The airport also has 25 additional spaces for overflow parking. All parking at the Sheboygan County Memorial Airport is free of charge. Visitors to the area can make arrangements with the fixed base operator (FBO – Burrows Aviation) for car rental, and the FBO can also provide courtesy cars to “qualified aircrew members” who wish to travel to local destinations free of charge (however, there is a two hour limit for this service).

FREIGHT NETWORKS

Inventory of Freight Facilities

Metropolitan Planning Organizations (MPOs), as regional transportation planning organizations, are increasingly incorporating freight planning into their everyday planning activities. The Bay-Lake Regional Planning Commission and its Sheboygan MPO transportation planning program have not until recently addressed freight in the *Sheboygan Area Transportation Plan (SATP)*. As a beginner to freight transportation planning, the Bay-Lake Regional Planning Commission has chosen to focus on collecting inventory and activity data. Some data have already shown to be unreliable, and other data are virtually impossible to obtain at a local level (states are the finest level of geographic detail available for many freight characteristics). Activities to address these

limitations will be discussed in the “Recommended Freight Policies and Strategies” section of Chapter 7, the Recommended Transportation Plan.

Freight movement within and throughout the metropolitan planning area occurs primarily via truck and rail. Freight transported by water and by air is negligible in the metropolitan planning area. Rail freight is carried directly by the Union Pacific and Wisconsin and Southern Railroads, and indirectly by the Canadian National Railroad, with some limited rail freight also carried indirectly by other railroads serving the state. Truck freight is moved by many over-the-road freight carriers, primarily on the National Highway System (NHS). Service costs per pound of freight carried vary widely by mode of transport. Water transport is the cheapest per pound, followed by rail, then followed by truck, with air transport being the most expensive. In general, low-value, high-weight commodities are transported by water, and high-value, low-weight commodities are transported by air.

Larger Trucking Firms and Shipping and Receiving Companies

Map 5.12 shows larger trucking firms as well as shipping and receiving companies with the largest amounts of incoming and outgoing commodities in the Sheboygan metropolitan planning area. Map 5.12 also shows designated truck routes and rail lines in the area.

Intermodal facilities (rail stations which are also truck terminals) exist in the metropolitan planning area in the City of Sheboygan and in the Village of Kohler. One major distribution center which is also a major truck terminal involves Piggly Wiggly Midwest on Union Avenue in the City of Sheboygan. Navigation facilities are rarely applicable to water transported freight in the metropolitan planning area, since transport of freight via water has been minimal in recent years.

Railroad Facilities

Union Pacific Railroad

The Union Pacific Railroad is one of the largest railroads in North America, covering 23 states across the western two-thirds of the United States. “Union Pacific serves many of the fastest-growing U.S. population centers, operates from all major West Coast and Gulf Coast ports to eastern gateways, connects with Canada's rail systems and is the only railroad serving all six major Mexico gateways.”

National-level commodities of the Union Pacific Railroad include: agricultural products (including grain, grain products and food products); automotive products; chemicals; coal; and industrial products. The railroad is also active as an intermodal carrier.

The Union Pacific Railroad crosses Wisconsin “from the Twin Cities through Eau Claire and into Milwaukee, as well as south along Lake Michigan into Chicago.” Top commodities shipped by the railroad in Wisconsin in 2017 included: sand; stone and gravel; grain; canned and paste items; and industrial chemicals. Top commodities received by the railroad in Wisconsin in 2017 included: coal; OTE-CH; lumber and building materials; plastics; and non-metallic minerals. Other commodities transported include finished vehicles, auto parts and potash.

Union Pacific rail lines in Sheboygan County parallel the lakeshore north from Milwaukee, and end in the City of Sheboygan. Another Union Pacific line connects the City of Sheboygan to the Village of Kohler, where a new Wisconsin and Southern Railroad (formerly Union Pacific) line connects Kohler and Sheboygan Falls to Plymouth. The Union Pacific line from Sheboygan to Cleveland is out of service; in fact, some of this line in the City of Sheboygan has been converted to the Shoreland 400 Rail Trail.

The source for quotes and other information concerning the Union Pacific was the railroad's website (<https://www.up.com/index.htm>), as well as the Wisconsin Department of Transportation's map "Wisconsin Railroads & Harbors 2018."

Canadian National Railroad

While the Canadian National Railroad does not directly serve the Sheboygan metropolitan planning area or Sheboygan County, it does impact freight transportation in the area. The Canadian National Railroad acquired the Wisconsin Central Railroad in 2001. The Canadian National extends across eight provinces in Canada, and largely serves states bordering the Mississippi River valley in the United States, including Wisconsin. The Canadian National also serves U.S. cities outside the states bordering the Mississippi River, including Omaha, Mobile, Detroit, Pittsburgh and Buffalo. The Canadian National currently serves sixteen states in the U.S.

Canadian National lines in Wisconsin crisscross much of the northern half of the state, and can also be found in many eastern counties of the state. A Canadian National line can be found running a short distance south of Manitowoc. From Manitowoc, Canadian National lines travel north to near Rockwood and westward to the Fox River Valley and to western Wisconsin. Another Canadian National line connects Kiel to the Hilbert area, where the same connections to the Fox River Valley and to western Wisconsin (as well as to Manitowoc) exist. Some commodities transported via the Canadian National are loaded onto trucks in the Fox River Valley for destinations in the Sheboygan metropolitan planning area.

The source for information concerning the Canadian National was the railroad's website (<https://www.cn.ca/en/>), as well as the Wisconsin Department of Transportation's map "Wisconsin Railroads & Harbors 2018."

Wisconsin and Southern Railroad Company

When the Canadian National Railroad abandoned operations on its line from Saukville to Kiel in 2004, the Wisconsin and Southern Railroad assumed operations of this line (with support from the Wisconsin Department of Transportation and Sheboygan County). More recently, the Wisconsin and Southern Railroad assumed operations on a line formerly operated by the Union Pacific Railroad between Kohler and Plymouth; this involved a major upgrading of this line at a cost of several million dollars, and the Wisconsin Department of Transportation, Sheboygan County, local governments along the line and businesses that would benefit from the line partnered to finance this improvement. Sheboygan County communities served by the Wisconsin and Southern include Random Lake, Adell, Waldo, Plymouth, Elkhart Lake, Sheboygan Falls and Kohler.

The Wisconsin and Southern Railroad operates on many former lines of other railroads that were earmarked for abandonment. The Wisconsin and Southern is a regional railroad operating in southern and portions of east central Wisconsin as well as in northeastern Illinois. Wisconsin and Southern lines connect with many other major railroad lines in Wisconsin. The Wisconsin and Southern transports the following major commodities: forest products; fertilizers; grain (including corn, soybeans and wheat); plastics; consumer foods; paper; aggregates; chemicals; frac sand; ethanol; and liquid petroleum.

Kansas-based Watco Companies purchased the Wisconsin and Southern Railroad in 2012, and owns several short line railroads across the U.S.

The source for most of the information concerning the Wisconsin and Southern Railroad was the following website (<https://www.watcocompanies.com/services/rail/wsor/>), as well as the Wisconsin Department of Transportation’s map “Wisconsin Railroads & Harbors 2018.”

Trucking Facilities

Truck Routes

The National Highway System (NHS) is comprised on Interstate highways, many U.S. and state highways, as well as other roadways established as important connector routes by the Federal Highway Administration (FHWA). By federal law, NHS routes are available to all truck traffic. Local municipalities may prohibit truck traffic by ordinance, but only on local roads and functionally classified facilities that are not part of the NHS.

NHS facilities in the metropolitan planning area include: Interstate Highway 43; State Highway 23; State Highway 28 between State Highway 23 in the City of Sheboygan and State Highway 32 in the City of Sheboygan Falls; State Highway 32 between State Highway 23 and State Highway 28 in the City of Sheboygan Falls; and State Highway 42 between State Highway 23 in the City of Sheboygan and Interstate Highway 43 in the Town of Sheboygan. Non-NHS state highways in the metropolitan planning area that have been designated by WisDOT as official long truck routes include: all of State Highway 32 north of State Highway 23 (including northwest of State Highway 42) and south of State Highway 28; State Highway 42 between Interstate Highway 43 and State Highway 32; and State Highway 28 west of State Highway 32. In addition to these state highways, locally designated truck routes can be found on Map 5.12.

Truck Carriers

Several types of carriers operate within the metropolitan planning area:

- **Truckload (TL) carriers**, who dedicate a trailer to a single shipper;
- **Less-than-truckload (LTL) carriers**, who consolidate smaller loads from more than one shipper into one trailer (such as Consolidated Freightways and Yellow Freight);
- **Private fleets** (such as Walmart and Target); and
- **Local delivery trucks** (such as UPS, FedEx and DHL).

Air Cargo

Use of the Sheboygan County Memorial Airport is primarily for general aviation purposes. Minimal amounts of freight were recorded as coming in by air to Sheboygan County or to the metropolitan planning area in 2015.

Current Conditions

Freight Movement

Overall Freight Movement

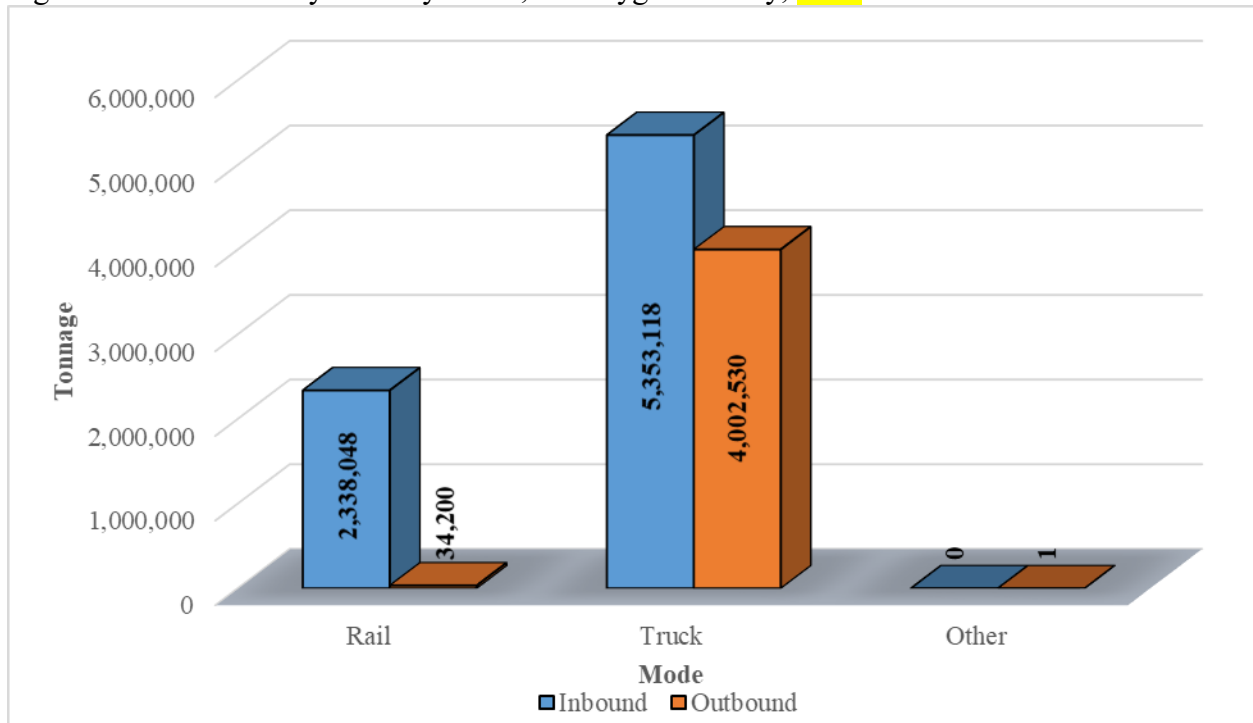
Truck and rail accounted for nearly all of the tonnage for commodities shipped out of and received in Sheboygan County in 2016. Over 79.77 percent of total inbound and outbound freight processed in Sheboygan County was carried by truck in 2016, while rail transport carried nearly 20.23 percent of total inbound and outbound freight processed in the county that year. A small amount (less than 0.01 percent) of inbound and outbound freight processed in Sheboygan County was carried by “other” modes of transport in 2016.

Figure 5.18 illustrates the inbound and outbound commodity flows by mode for Sheboygan County in 2016; these values include commodity movement internal to the State of Wisconsin and to Sheboygan County. The total tonnage of inbound freight exceeded the total tonnage of outbound freight by over 90.5 percent, meaning that Sheboygan County imported 90.5 percent more commodities by weight than it exported. This ratio was especially evident in rail transportation, where more than 68 times as many commodities were imported by weight than were exported. For trucking, the total tonnage of inbound freight exceeded the total tonnage of outbound freight by over 33.7 percent. For the small amount of freight carried by other forms of transportation, there was one (1) ton of outbound freight and no tonnage of inbound freight.

Nearly 45 percent of all inbound commodities came from counties in Wisconsin, and nearly 42 percent of all outbound commodities were shipped to counties in Wisconsin. Nearly 99 percent of all internal freight (movement only within Wisconsin) to and from Sheboygan County was transported by truck in 2016. Rail was the only other significant mode to transport freight between Sheboygan County and other locations within Wisconsin; however, the mode share was slightly more than one percent. A negligible amount of freight (one ton) was transported via other modes between Sheboygan County and other locations within Wisconsin in 2016.

Commodities shipped out of the county and state were largely destined for other states in the Midwest (the states of Illinois, Michigan, Indiana, Ohio, Minnesota and Iowa alone accounted for nearly 37 percent of these commodities). In addition, the “sunbelt” states of California, Texas, and Florida were a significant destination for these commodities (these states accounted for over five percent of these commodities). “Other” locations (other states, Canadian provinces and other locations around the world) accounted for nearly 16.6 percent of these commodities.

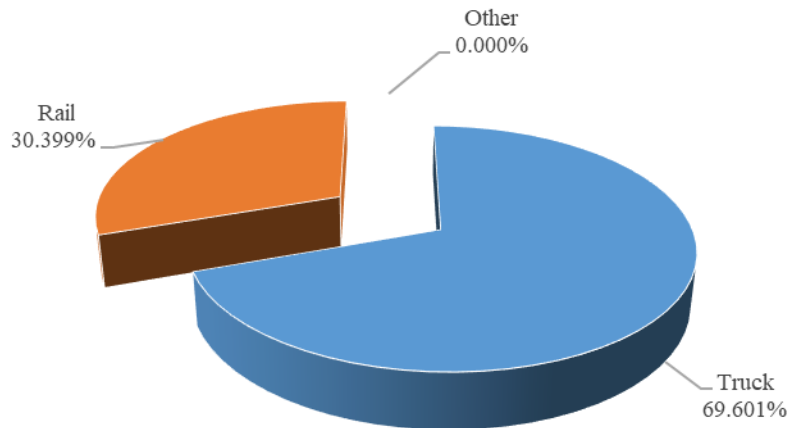
Figure 5.18: Commodity Flow by Mode, Sheboygan County, 2016



Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

Figure 5.19 illustrates the mode share of inbound freight as a percentage of tonnage carried. Over 69 percent of product is trucked in, with about 30.4 percent of product arriving in Sheboygan County by rail; no product arrived by any other means of transportation.

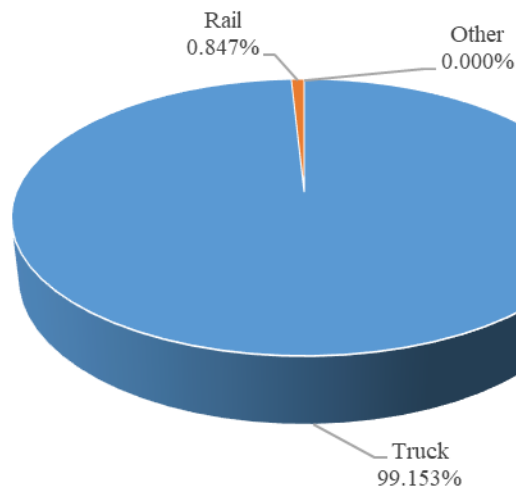
Figure 5.19: Mode Share for Inbound Tonnage: Sheboygan County, 2016



Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

Figure 5.20 illustrates the mode share of outbound freight as a percentage of tonnage carried. Just over 99.1 percent of product is trucked out, while slightly less than 0.9 percent of product is transported out of Sheboygan County by rail.

Figure 5.20: Mode Share for Outbound Tonnage, Sheboygan County, 2016



Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

Because the mode share is illustrated as a percentage of weight, some disparity results from the predominance (based on cost per pound, weight, perishability and time sensitivity) of some commodities to travel via a preferred mode. For example, coal and grain have relatively low

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values, are heavy, and can be stored for long periods; therefore, these commodities tend to be shipped via rail, truck or water transport. On the other hand, medical equipment has high value, has relatively low weight, and is often needed within a certain time frame; therefore, it tends to be shipped by air to nearby airports for delivery to the area.

Table 5.18 illustrates the top ten commodities and their total tonnages for products originating and/or terminating in Sheboygan County in 2016. When both inbound and outbound commodities are combined, the most significant commodity was bituminous coal (over 2.0 million tons), followed by dairy farm products (over 1.9 million tons), gravel or sand (over 888,000 tons), grain (nearly 594,000 tons), warehouse and distribution center products (nearly 593,000 tons), and broken stone or riprap (over 555,000 tons). Other top commodities included: wet ready-mix concrete; cheese or special dairy products; miscellaneous plastic products; and petroleum refining products. These top ten commodities represented over 65 percent of all commodities (by tonnage) transported into and out of Sheboygan County in 2016.

Table 5.18: Top Ten Commodities (Imported and Exported, All Modes), Sheboygan County, 2016

Rank	Commodity	Tons
1	Bituminous Coal	2,014,100
2	Dairy Farm Products	1,934,034
3	Gravel or Sand	888,381
4	Grain	593,973
5	Warehouse & Distribution Center	592,901
6	Broken Stone or Riprap	555,279
7	Ready-mix Concrete, Wet	415,333
8	Cheese or Special Dairy Products	218,281
9	Misc Plastic Products	215,453
10	Petroleum Refining Products	200,579

Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

Table 5.19 illustrates the top ten commodities and their total tonnages for products imported into Sheboygan County in 2016. The most significant inbound commodities were bituminous coal (over 2 million tons), followed by dairy farm products (over 1.6 million tons), gravel or sand (over 880,000 tons), broken stone or riprap (over 370,000 tons), and grain (over 230,000 tons). Other top imported commodities included: petroleum refining products; warehouse and distribution center products; plastic material or synthetic fibers; processed milk; and wet ready-mix concrete. These top ten commodities represented over 77 percent of all commodities (by tonnage) transported into Sheboygan County in 2016.

Table 5.19: Top Ten Imported Commodities (All Modes), Sheboygan County, 2016

Rank	Commodity	Tons
1	Bituminous Coal	2,014,100
2	Dairy Farm Products	1,601,057
3	Gravel or Sand	888,381
4	Broken Stone or Riprap	370,174
5	Grain	230,277
6	Petroleum Refining Products	200,579
7	Warehouse & Distribution Center	199,356
8	Plastic Material or Synth Fibres	150,459
9	Processed Milk	144,366
10	Ready-mix Concrete, Wet	136,099

Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

Table 5.20 illustrates the top ten commodities and their total tonnages for products exported from Sheboygan County in 2016. The most significant outbound commodities were warehouse and distribution center products (over 393,000 tons), followed by grain (over 363,000 tons), dairy farm products (nearly 333,000 tons), wet ready-mix concrete (over 279,000 tons), and cheese or specialty dairy products (over 218,000 tons). Other top exported commodities included: miscellaneous plastic products; broken stone or riprap; aluminum or alloy castings; miscellaneous waste or scrap; and sanitary paper products. These top ten commodities represented over 60 percent of all commodities (by tonnage) exported from Sheboygan County in 2016. Although technically not a commodity, a significant amount of rail intermodal drayage to ramps was also exported from Sheboygan County in 2016.

Table 5.20: Top Ten Exported Commodities (All Modes), Sheboygan County, 2016

Rank	Commodity	Tons
1	Warehouse & Distribution Center	393,545
2	Grain	363,696
3	Dairy Farm Products	332,977
4	Ready-mix Concrete, Wet	279,234
5	Cheese or Special Dairy Products	218,281
6	Misc Plastic Products	215,453
7	Broken Stone or Riprap	185,105
8	Aluminum or Alloy Castings	182,258
9	Misc Waste or Scrap	135,733
10	Sanitary Paper Products	131,541

Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

Freight Movement by “Other” Transportation

A total of one ton of commodities (sanitary paper products) were shipped from Sheboygan County via “other” modes in 2016.

Freight Movement by Rail

The Union Pacific line from Milwaukee to the Edgewater Generating Station experiences train traffic, as does the new Wisconsin and Southern line from Plymouth to Kohler. Train volumes on each of these lines are not readily available. These are the main active lines that serve the Sheboygan metropolitan planning area.

Carload Waybill Sample

The Surface Transportation Board (STB) requires that railroads that terminate over 4,500 cars per year report on various rail shipment data items (including origin and destination points, type of commodity, number of cars, tons, revenue, length of haul, participating railroads and interchange locations) on individual movements sampled from their traffic waybills. Because railroads are allowed to “mask” their revenues for purposes of confidentiality, revenues are not addressed in the following discussion. Generally, tonnage information for commodities transported into and out of Sheboygan County is available for 2001, 2004, 2007, 2011 and 2016, while detailed commodity information is only available for 2007, 2011 and 2016. The STB Carload Waybill Sample data are already incorporated into the Transearch database that is being used to analyze commodity movement elsewhere in this section.

Ashes were the largest commodity group transported by rail from Sheboygan County (as reported in carload waybill samples) in 2016; nearly 86.7 percent of the tonnage exported from the county involved ashes. The only other significant commodities transported by rail from Sheboygan County in 2016 were malt (over 8.6 percent of all tonnage), paper bags (over 2.3 percent of all tonnage), and railroad cars (over 2.3 percent of all tonnage). Total tonnage for all rail transported commodities originating in Sheboygan County was approximately 0.2 million tons in 2001 and 2004, and was less than 0.1 million tons in 2007, 2011 and 2016.

Bituminous coal was by far the largest commodity transported by rail to Sheboygan County (as reported in carload waybill samples) in 2016; over 86.1 percent of the tonnage imported into the county involved bituminous coal. Other significant commodities transported into Sheboygan County in 2016 (in order of tonnage) included: cheese or specialty dairy products (over 4.1 percent); plastic material or synthetic fibers (nearly 2.8 percent); miscellaneous industrial organic chemicals (nearly 1.9 percent); ashes (nearly 1.3 percent); and cyclic intermediates or dyes (over 0.9 percent). Other commodities arriving in Sheboygan County by rail in 2016 included: fiber, paper or pulpboard; petroleum refining products; processed nonmetal minerals; liquefied gases, coal or petroleum; and other commodities; these other commodities were less than 0.9 percent of total commodities (by weight) transported by rail to Sheboygan County in 2016. Total tonnage for all rail transported commodities terminating in Sheboygan County increased from approximately 2.8 million tons in 2001, to approximately 3.1 million tons in 2004, to approximately 3.5 million tons in 2007, but decreased to less than 3.1 million tons in 2011, and decreased further to just over 2.3 million tons in 2016.

Commodity Information Management System

The Commodity Information Management System is conducted as part of the Economic Census by the U.S. Bureau of the Census in partnership with the Bureau of Transportation Statistics of the U.S. Department of Transportation. This survey obtains data on shipments by domestic establishments in manufacturing, wholesale trade, mining and other economic sectors, while the carload waybill sample reports sample data from railroad waybills. Commodities are described as being **external outbound** (originating in Sheboygan County and destined for locations outside of Wisconsin), **external inbound** (terminating in Sheboygan County from origins outside of Wisconsin), **internal outbound** (originating in Sheboygan County and destined for locations in Wisconsin), and **internal inbound** (terminating in Sheboygan County from origins within Wisconsin). Internal inbound and internal outbound flows include movements within Sheboygan County itself.

The Wisconsin Department of Transportation used a private vendor source (the IHS TRANSEARCH Wisconsin Commodity Flow Database) to access this information for 2016.

According to the Commodity Information Management System, 2,338,048 tons of inbound commodities were transported by rail to Sheboygan County in 2016. The commodity share of inbound product transported by rail in 2016 is illustrated in Table 5.21. Of the total tonnage of inbound commodities, 86.1 percent involved bituminous coal. Other common inbound commodities transported by rail to Sheboygan County included: cheese or specialty dairy products (4.1 percent); plastic material or synthetic fibers (2.8 percent); miscellaneous industrial organic chemicals (1.9 percent); and ashes (1.3 percent). Six commodity types involved between 0.3 and 0.9 percent of all commodities transported to Sheboygan County by rail, including (in order of tonnage): cyclic intermediates or dyes; other commodities; fiber, paper or pulpboard; petroleum refining products; processed nonmetal minerals; and liquefied gases, coal or petroleum. “Other” commodities were 0.9 percent of all commodities transported by rail to Sheboygan County in 2016.

Table 5.21: Top Imported Commodities Transported by Rail, Sheboygan County, 2016

Rank	Commodity	Tons	Percent of Total
1	Bituminous Coal	2,014,100	86.1%
2	Cheese or Special Dairy Products	96,760	4.1%
3	Plastic Material or Synth Fibres	65,320	2.8%
4	Misc Industrial Organic Chemicals	44,240	1.9%
5	Ashes	29,640	1.3%
6	Cyclic Intermediates or Dyes	21,840	0.9%
7	Other Commodities	20,988	0.9%
8	Fiber, Paper or Pulpboard	16,800	0.7%
9	Petroleum Refining Products	12,680	0.5%
10	Nonmetal Minerals, Processed	7,920	0.3%
11	Liquefied Gases, Coal or Petroleum	7,760	0.3%
Total		2,338,048	100.0%

Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

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According to the Commodity Information Management System, 34,200 tons of outbound commodities were transported by rail from Sheboygan County in 2016. The commodity share of outbound product transported by rail in 2016 is illustrated in Table 5.22. Of the total tonnage of outbound commodities, 86.7 percent involved ashes, 8.7 percent involved malt, while the remaining 4.6 percent involved paper bags and railroad cars (2.3 percent each).

Table 5.22: Top Exported Commodities Transported by Rail, Sheboygan County, 2016

Rank	Commodity	Tons	Percent of Total
1	Ashes	29,640	86.7%
2	Malt	2,960	8.7%
3	Paper Bags	800	2.3%
4	Railroad Cars	800	2.3%
Total		34,200	100.0%

Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

Freight Movement by Truck

The trucking industry dominated freight movement in Sheboygan County in 2016, carrying over 3.94 times the total tonnage transported by rail, and carrying millions of times the total tonnage transported by other modes. With the exception of ten commodities (bituminous coal; miscellaneous industrial organic chemicals; ashes; cyclic intermediates or dyes; fiber, paper or pulpboard; processed nonmetal minerals; liquefied gases, coal or petroleum; malt; paper bags; and railroad cars), trucks moved some portion of all commodities represented in the Commodity Information Management System for Sheboygan County in 2016. Nearly 9.4 million (over 79.7 percent) of over 11.7 million total tons of commodities were transported by truck in 2016.

Table 5.23 illustrates the top ten commodities and their total tonnages for products imported into Sheboygan County by truck in 2016. The most significant inbound commodities were dairy farm products (over 1.6 million tons), followed by other commodities (over 1.4 million tons), gravel or sand (over 884,000 tons), broken stone or riprap (over 370,000 tons), and grain (over 230,000 tons). Other top imported commodities included: warehouse and distribution center products; petroleum refining products; processed milk; wet ready-mix concrete; and plastic material or synth fibers. These top ten commodities represented nearly 99 percent of all commodities (by tonnage) transported into Sheboygan County by truck in 2016.

Table 5.23: Top Imported Commodities Transported by Truck, Sheboygan County, 2016

Rank	Commodity	Tons
1	Dairy Farm Products	1,601,057
2	Other Commodities	1,443,493
3	Gravel or Sand	884,341
4	Broken Stone or Riprap	370,174
5	Grain	230,277
6	Warehouse & Distribution Center	199,356
7	Petroleum Refining Products	187,899
8	Processed Milk	144,366
9	Ready-mix Concrete, Wet	136,099
10	Plastic Material or Synth Fibres	85,139

Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

Table 5.24 illustrates the top ten commodities and their total tonnages for products exported out of Sheboygan County by truck in 2016. The most significant outbound commodities were other commodities (over 1,564,000 tons), followed by warehouse and distribution center products (over 393,000 tons), grain (over 363,000 tons), dairy farm products (nearly 333,000 tons), wet ready-mix concrete (over 279,000 tons), and cheese or specialty dairy products (over 218,000 tons). Other top exported commodities by truck included: miscellaneous plastic products, broken stone or riprap, aluminum or alloy castings, and miscellaneous waste and scrap. These top ten commodities represented nearly 97 percent of all commodities (by tonnage) transported out of Sheboygan County by truck in 2016.

Table 5.24: Top Exported Commodities Transported by Truck, Sheboygan County, 2016

Rank	Commodity	Tons
1	Other Commodities	1,564,709
2	Warehouse & Distribution Center	393,545
3	Grain	363,696
4	Dairy Farm Products	332,977
5	Ready-mix Concrete, Wet	279,234
6	Cheese or Special Dairy Products	218,281
7	Misc Plastic Products	215,453
8	Broken Stone or Riprap	185,105
9	Aluminum or Alloy Castings	182,258
10	Misc Waste or Scrap	135,733

Source: IHS TRANSEARCH Wisconsin Commodity Flow Database, 2016.

Because trucking is such an integral part of freight movement in the Sheboygan metropolitan planning area, congestion issues on area National Highway System (NHS) routes can have a profoundly negative impact on the trucking industry and on the local economy. Reducing the efficiency of freight movement will only result in increased costs to the consumer. In addition, just-in-time deliveries are increasingly a requirement in the trucking industry.

In addition to the truck freight inbound to and outbound from Sheboygan County, there are several commodities being transported by truck through the county which have neither their origin nor their destination in Sheboygan County.

Freight Movement by Air

The Commodity Information Management System recorded **no** freight movement by air out of or into Sheboygan County in **2016**; these were “masked” as being transported by “other” means that year. Some air cargo from industries based in the area does leave the Sheboygan County Memorial Airport destined to miscellaneous manufacturing industries around the country. Air cargo shipments from the Sheboygan County Memorial Airport occur sporadically, and inbound air cargo shipments to the airport are also rare. Integrated carriers (UPS, FedEx, etc.) do not operate at the Sheboygan County Memorial Airport; commodities transported by these carriers are flown into the Interstate 90 corridor in Winnebago County, Illinois, and Rock County, Wisconsin, and then are transported by truck into Sheboygan County.

Safety and Security

Navigation

In 2016, a minimal amount of freight entered the Sheboygan area via water transportation. The U.S. Coast Guard and its Sheboygan station stand available to assist in assuring safe and secure water transport operations.

Rail

The Federal Railroad Administration (FRA) is responsible for promoting the safety of all freight and passenger railroads in the United States. The FRA accomplishes this by enforcing safety regulations and by monitoring numerous components of the rail transportation system. Some facts that are unique to railroads illustrate the importance of promoting safety; some of these facts include:

- A fully loaded train moving at 50 miles per hour takes about 1.5 miles to come to a complete stop;
- Motorists are 40 times more likely to die in a crash with a train than with a motor vehicle; and
- Most train/motor vehicle crashes are preventable.

FRA safety records indicate that nationally, total rail accidents and incidents increased from **2013 to 2017 by over 0.1 percent**, while total train miles **decreased by nearly 6.6 percent** during that same period. In addition, total rail-related fatalities and injuries **increased by less than 0.1 percent between 2013 and 2017**; fatalities **increased by nearly 20.4 percent over this period**, while injuries **decreased by nearly 1.6 percent over this period**. Total highway-rail grade crossing collisions **increased by over 0.5 percent from 2013 to 2017, with the number of such collisions at its highest point in 2014 and at its lowest point in 2016**. Other train accidents (derailings and

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other non-grade crossing accidents) increased by over 2.2 percent between 2013 and 2017, with the number of accidents at its highest point in 2014 and at its lowest point in 2016.

Locally, an FRA database of train accidents or incidents by type from January 2013 through December 2017 reported one accident or incident occurring in Sheboygan County. This accident involved a train hitting a car at a railroad crossing in late August of 2017. There were no fatalities and one injury (the driver and sole occupant of the car).

Highway at-grade crossings are of significant concern because of the potential conflict between rail and the general public. Map 5.13 illustrates public highway-rail at-grade crossings in the Sheboygan metropolitan planning area. Normally, this map also includes highway-rail accidents in the metropolitan planning area, but there were no such accidents to report between January 2013 and December 2017. Outside of the metropolitan planning area but within Sheboygan County, an accident at a crossing occurred on Hoftiezer Road a short distance southwest of the Village of Oostburg. This accident did not involve fatalities, but there was one injury sustained in the accident. This accident also presumably involved property damage. Neither the train nor the other vehicle in transit was carrying hazardous materials. Speeding and failure to obey a yield sign at the crossing on the part of the motorist were factors in the accident. In addition, the motorist was not wearing a seatbelt at the time of the accident.

Table 5.25 indicates the details of the one highway-rail grade crossing accident in Sheboygan County from January 2013 through December 2017.

Table 5.25: Highway-Rail Grade Crossing Accident Details, Sheboygan County, January 1, 2013 – December 31, 2017

Crossing	Date	Highway User	Equipment	Warning Devices	Locomotives	Cars	Train Speed	Vehicle Speed
Hoftiezer Road (Near the Village of Oostburg)	08/30/17	Auto	Freight Train	Crossbucks, Other	3	136	20 mph	80 mph

Note: This accident did not occur within the Sheboygan Metropolitan Planning Area.

Source: U.S. Department of Transportation, Federal Railroad Administration, Form FRA 6180.57.

Trucking

According to the Wisconsin Department of Transportation (2013 *Wisconsin Traffic Crash Facts*), large trucks are involved in about 10.9 percent of fatal crashes; however, the driver of the truck is at fault only about one fourth of the time in the case of fatal crashes. Most motorists are uneducated as to the blind spots or “no zones” around a truck. These zones are located in the front, in the back, and on the sides of trucks. Some questions that can be used in determining whether a truck driver can see you on the road are:

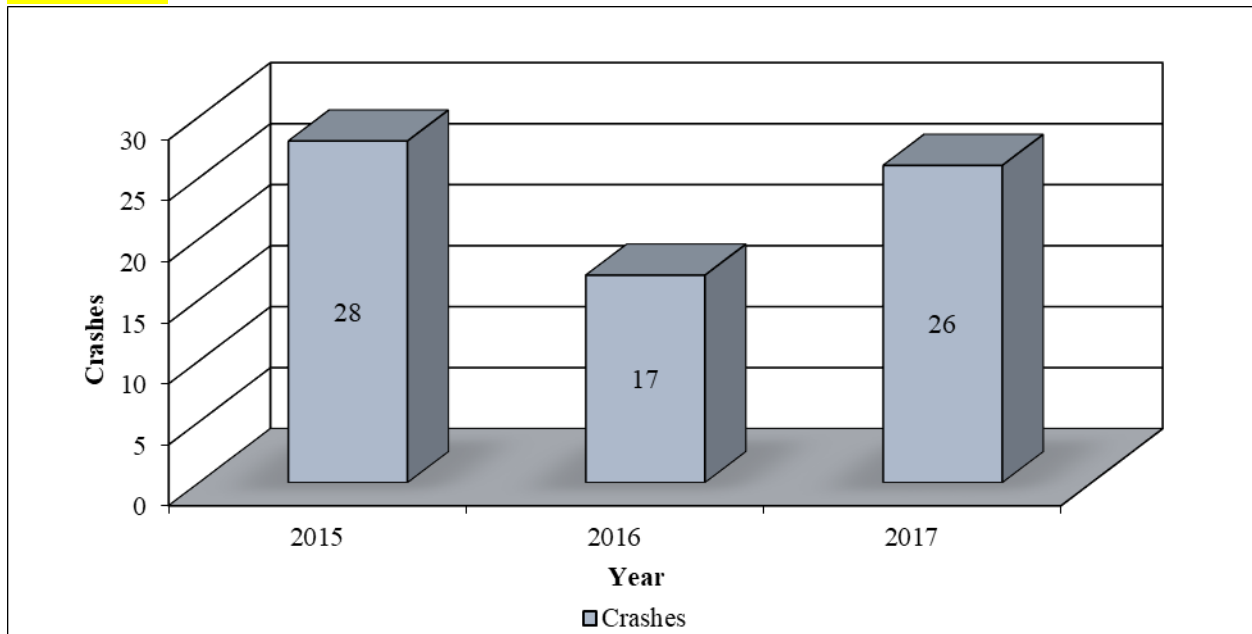
- When passing a truck, can you see the driver’s face in his or her side mirror or window?
- When passing a truck, can you see the entire front of the truck in your rear view mirror before you pull back in front?
- When following a truck, can you see the truck’s side mirrors?

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If you answer “no” to any of these questions, then the truck driver cannot see you.

Data from the Federal Motor Carrier Safety Administration (FMCSA) and its Motor Carrier Management Information System (MCMIS) were available for this plan update, but were rather costly to acquire from the FMCSA’s consultant. Therefore, MPO staff relied on crash data from the Traffic Operations and Safety (TOPS) Laboratory at UW Madison for calendar years 2015 through 2017, isolating the following categories of truck tractors: double bottom, not attached, and semi attached; the vast majority of crashes involving heavy trucks were truck tractors with the semi attached. “Straight trucks” of all sizes were excluded from the analysis. As derived from UW Madison TOPS Laboratory crash data and illustrated in Figure 5.21, there were 28 heavy truck crashes in 2015, 17 heavy truck crashes in 2016, and 26 heavy truck crashes in 2017. Two heavy truck crashes (both in 2015) involved fatalities.

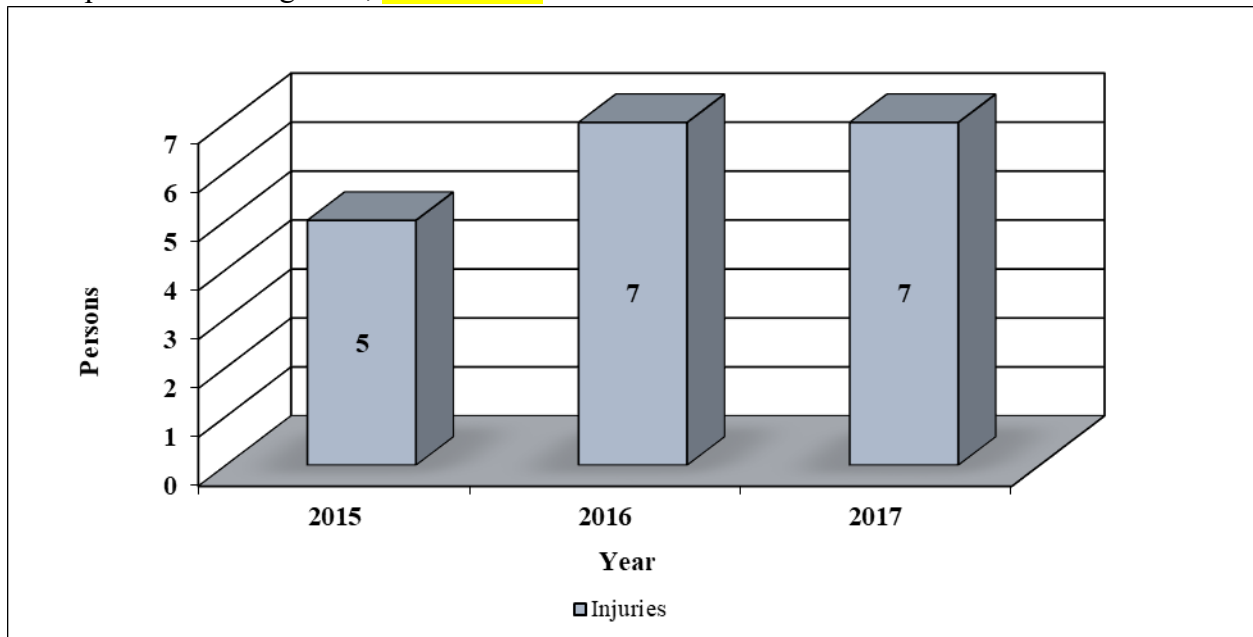
Figure 5.21: Heavy Truck Crashes, Communities in the Sheboygan Metropolitan Planning Area, 2015 – 2017



Source: Traffic Operations and Safety Laboratory, UW Madison, 2015, 2016 and 2017; and Bay-Lake Regional Planning Commission, 2018.

Figure 5.22 illustrates the number of injuries by year associated with the heavy truck crashes. The number of injuries in heavy truck crashes was five in 2015, seven in 2016, and seven in 2017. Two fatalities were observed over this three year period (both in 2015).

Figure 5.22: Injuries Resulting from Heavy Truck Crashes, Communities in the Sheboygan Metropolitan Planning Area, 2015 – 2017



Source: Traffic Operations and Safety Laboratory, UW Madison, 2015, 2016 and 2017; and Bay-Lake Regional Planning Commission, 2018.

Map 5.14 illustrates the locations of the heavy truck crashes occurring in the cities, villages and towns in the metropolitan planning area in 2017.

Air Cargo

To date, very little has been done to address air cargo operators and safety. On a global and national scale, the cargo accident rate is much higher than the equivalent accident rate of passenger flights. This can be caused by several factors, including pilot fatigue and an older aircraft fleet when compared to passenger carrying aircraft.

Major safety issues include: development of guidance for air cargo operators on air cargo operations; and Federal Aviation Administration (FAA) inspectors who oversee air cargo operators. Other major safety issues are pertinent to addressing operational problems with:

- Handling, loading and securing cargo;
- Calculating weight and balance;
- Moving cargo between carriers;
- Loading international versus domestic flights;
- Tracking dangerous goods; and
- Preventing cargo from shifting during flight.

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One other major safety issue involves acknowledgement of the psychological challenges involved with night flying and flight duty time. In response to the unique burden that cargo pilots have in terms of long flying hours, several members of the U.S. Senate have introduced various versions of the “Safe Skies Act” over several sessions of Congress, which would harmonize flight crew duty and rest requirements with similar requirements for passenger carrying pilots. At this point, this proposed legislation has not been approved by either the U.S. Senate or the U.S. House of Representatives, but concepts of the bill have enjoyed sponsorship by representatives of both parties in the past.

The Sheboygan County Memorial Airport experienced no air cargo related accidents between January 1, 2013, and December 31, 2017; the two accidents that occurred during this period involved general aviation flights.

ROADWAY NETWORKS

Inventory of Facilities

Functional Classification

The metropolitan planning area contains nearly 659 miles of roads, over 419 miles of which are classified as urban. Functional classification, the process by which roadways are grouped into classes according to the character of service they are intended to provide, include rural and urban counterparts of arterials, collectors and local roads. Rural and urban roadways are classified into the following functional categories:

- **Rural principal arterials** serve corridor movements having trip length and travel density characteristics of an interstate or interregional nature. These routes generally serve urbanized (populations of 50,000 or more) and urban (populations of 5,000 to 49,999) areas.
- **Rural minor arterials**, in conjunction with rural principal arterials, serve moderate to large sized places (cities, villages, towns, and clusters of communities), and other traffic generators, providing intra-regional and inter-area traffic movements. These routes generally serve places with populations of 1,000 or more.
- **Rural major collectors** provide service to smaller-to-moderate sized places and other intra-area traffic generators, and link those generators to nearby larger population centers (cities, villages and towns) or higher function routes. These routes generally serve places with populations of 100 and over.
- **Rural minor collectors** provide service to all remaining smaller places, link the locally important traffic generators with their rural hinterland, and are spaced consistent with population density so as to collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road. These routes generally serve places with populations of 50 and over.

- **Rural local roads** provide access to adjacent land and provide for travel over relatively short distances on an inter-township or intra-township basis. All rural roads not classified as arterials or collectors are local function roads.
- **Urban principal arterials** serve major economic activity centers of an urban area, the highest average daily traffic (ADT) corridors, and regional and intra-urban trip length desires. In every urban area, the longest trip lengths and highest ADT are characteristic of the main entrance and exit routes. Because they have the longest trip lengths, highest ADTs, and are generally extensions of the highest rural function routes, such routes should be principal arterials. Principal arterial trip lengths are indicative of the rural-oriented traffic entering and exiting the urban area on the rural arterial system, as well as the longest trans-urban area travel demands.
- **Urban minor arterials** serve important economic activity centers, have moderate ADT levels, and serve intercommunity trip length desires, interconnecting and augmenting the principal arterial system. Trip lengths are characteristic of the rural-oriented traffic entering and exiting the urban area on the rural collector system. In conjunction with principal arterials, minor arterials should provide an urban extension of the rural collector system to the urban area central business district (CBD), and connect satellite community CBDs with the main CBD. Although the predominant function of minor arterials is traffic mobility, minor arterials serve some local traffic while providing greater land access than principal arterials. Minor arterials may be stub-ended at major traffic generators.
- **Urban collectors** provide direct access to residential neighborhoods, commercial and industrial areas, and serve moderate to low ADTs and inter-neighborhood trips. These routes collect and distribute traffic between local streets and arterials. In the CBD and areas of similar development and traffic density, the collector system may include the street grid, which forms the logical entity for traffic circulation. Collectors may stub-end in penetrating residential neighborhoods and in serving isolated traffic generators, but should be linked to other collectors and arterials for traffic circulation. Generally, the travel mobility and land access functions of collectors are equal.
- **Urban local streets** predominantly serve to access adjacent uses, and serve the ends of most trips. All urban streets not classified as arterials or collectors are local function streets.

Table 5.26 summarizes the typical distribution of mileage and traffic volume of the functional systems for urbanized areas.

Table 5.26: Functional Classification Guidelines for Urbanized Areas

Urban Functional Classification	Percent of all Mileage	Percent of all Traffic
Principal Arterial System	5% to 12%	40% to 65%
Principal Arterial plus Minor Arterial System	15% to 27%	65% to 80%
Collectors	5% to 11%	5% to 10%
Local Road System	65% to 80%	10% to 30%

Source: *Functional Classification Criteria*, Wisconsin Department of Transportation, 2013; and *A Policy on Geometric Design of Highways and Streets*, 6th Edition, American Association of State Highway and Transportation Officials (AASHTO), 2011.

The functional classification of roads was updated in the fall of 2013 as needed with the increase in the size of the urbanized area (see the discussion in Chapter 2). When the urbanized area increased in size following the 2010 Census, roads that were previously classified as rural had to be reclassified as urban. This process also looked at reclassifying roadways to a higher (or lower) classification if warranted, and also examined whether facilities on the urbanized area boundary should be classified as urban or rural.

Table 5.27 illustrates current mileages by functional classification for streets and highways in the Sheboygan Urbanized Area. The expansion of the urbanized area from 47.11 square miles to 49.35 square miles led to a nearly 0.7 percent increase in the amount of urban roadway. The mileage in roadways considered “classified” (those roadways with functions higher than “local”) increased by over 4.7 percent from over 133 miles (nearly 32.0 percent of all mileage) to over 139 miles (over 33.2 percent of all mileage). The amount of principal arterial mileage increased only slightly (just over 0.1 percent), while the amount of minor arterial mileage increased by nearly 5.9 percent. The amount of urban collector mileage increased by nearly 6.3 percent, while the amount of urban local mileage decreased by over 1.2 percent. It should be noted that some urban local facilities were reclassified as urban collectors. Changes between the 2009 and 2017 functional classification mileages were due to the 2013 update, as well as a small increase in new (primarily local) roads between 2013 and 2017.

Table 5.27: Urban Mileage by Functional Classification

Functional Classification	Urban Mileage 2009	Urban Mileage 2017	Change in Total
Principal Arterial	29.95	29.99	0.04
Minor Arterial	55.84	59.11	3.27
Collector	47.29	50.26	2.97
Local	283.49	280.05	(3.44)
Estimated Total Mileage	416.57	419.41	2.84
Estimated Total Classified Mileage	133.08	139.36	6.28
Estimated Percentage Classified	31.95%	33.23%	

Source: Wisconsin Department of Transportation, 2009 and 2017.

Map 5.15 illustrates the updated functional classification of streets and highways in the Sheboygan metropolitan planning area.

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Enhanced National Highway System (NHS)

The Enhanced NHS (as enacted in MAP-21) is made up of two components: the Base System and the Intermodal Connector System. In total, the NHS includes approximately 220,000 miles of roadway important to the nation’s economy, defense and mobility. Roadways that make up the enhanced NHS base system at the national level (and local examples) include:

- **Interstates** (I-43 throughout the metropolitan planning area): The Eisenhower Interstate System of highways retains its separate identity within the NHS;
- **Other Principal Arterials** (State Highway 23 throughout the metropolitan planning area; State Highway 28 from State Highway 23 in the City of Sheboygan to State Highway 32 in the City of Sheboygan Falls; State Highway 32 from State Highway 28 to State Highway 23 in the City of Sheboygan Falls; and State Highway 42 from State Highway 23 in the City of Sheboygan to Interstate Highway 43 in the Town of Sheboygan);
- **Strategic Highway Network (STRAHNET)**: The network of highways important to U.S. strategic defense (Information on STRAHNET routes is limited due to security issues); and
- **STRAHNET Connectors**, which provide access between major military installations and STRAHNET highways (Again, information on STRAHNET connectors is limited due to security issues).

In addition, **intermodal connectors** are part of the enhanced NHS. Intermodal connectors provide motor vehicle access between the enhanced NHS and major intermodal transportation facilities. There are no intermodal connectors in the metropolitan planning area.

Map 5.16 illustrates the enhanced NHS system in the metropolitan planning area.

A subset of the NHS in Wisconsin is the Wisconsin Corridors 2030 network developed as part of *Connections 2030*. Interstate Highway 43 continues to function as a Corridors 2030 Backbone facility, while State Highway 23 west of Interstate Highway 43 continues to function as a Corridors 2030 Connector facility. While all of the NHS routes are required to meet a minimum level of service, Corridors 2030 facilities have higher minimum standards. This is discussed more fully later in this section, as well as in Chapter 6.

Current Conditions

Regulations

Federal

The Federal Highway Administration (FHWA) adopted the 2011 “Green Book” (more formally known as *A Policy on Geometric Design of Highways and Streets*, 6th Edition, by the American Association of State Highway and Transportation Officials, or AASHTO) in November 2015 as the guide for minimum design standards for projects on NHS roadways. The minimum design Update to the *Year 2045 Sheboygan Area Transportation Plan*

standards establish thresholds for unacceptable levels of vehicular mobility. All states must apply these guidelines to new and reconstruction projects on the NHS. In the case of resurfacing, restoration and rehabilitation projects on the NHS, WisDOT and/or local authorities develop standards that FHWA approves. Part 450 of the *Code of Federal Regulations* (23 CFR 450.324(f)(7)) requires the metropolitan transportation planning process to:

“Assess capital investment and other strategies to preserve the existing and projected future metropolitan transportation infrastructure, provide for multimodal capacity increases based on regional priorities and needs, and reduce the vulnerability of the existing transportation infrastructure to natural disasters. The metropolitan transportation plan may consider projects and strategies that address areas or corridors where current or projected congestion threatens the efficient functioning of key elements of the metropolitan area’s transportation system.”

State

As discussed in Chapter 11 of the *WisDOT Facilities Development Manual* (Section 5, Part 3, revised on March 16, 2018), established level of service (LOS) thresholds are used to trigger mobility improvements on highway segments. Wisconsin Corridors 2030 roadways are expected to maintain higher levels of service because of their importance to the NHS. Roadways with lower functional classifications are allowed lower levels of service (greater levels of congestion). The LOS thresholds for urban roadways illustrated in Table 5.28 allow higher levels of congestion on some routes than under previous WisDOT policy in order to balance the social, environmental and economic costs that would be incurred by using the traditional performance threshold of “moderate” congestion. (Chapter 6 includes pictures of traffic by LOS, as well as an extensive discussion on traffic forecasts).

Table 5.28: Desirable Level of Service Thresholds for Urbanized Areas in Wisconsin

Functional Classification or State Trunk Highway Subsystem	Examples of Roadway Facilities in the Metropolitan Planning Area	Threshold
Corridors 2030 Backbone	Interstate Highway 43	Moderate Congestion (LOS D)
Corridors 2030 Connectors	State Highway 23	Moderate Congestion (LOS D)
National Highway System (NHS) Principal Arterials	Portions of State Highways 28, 32 and 42	Moderate Congestion (LOS D)
Non-NHS Principal Arterials and Minor Arterials	Taylor Dr., CTH PP, Superior Ave.	Severe Congestion (Mid LOS E)
Collectors and Local Function Roads	CTH A, N. 25th St., S. 18th St.	Severe Congestion (Mid LOS E)

Source: Wisconsin Department of Transportation, *Facilities Development Manual*, 11-5-3, Page 4, 2018.

Access Management

Access management is “the proactive management of vehicular access points to land parcels adjacent to all manner of roadways. Access management encompasses a set of techniques that state and local governments can use to control access to highways, major arterials and other roadways.” Access management techniques can include: “access spacing; driveway spacing; safe turning lanes; median treatments; and right-of-way management.” WisDOT regulates access to the state highway system through permit and review (outlined in Chapter TRANS 233 of the Update to the Year 2045 Sheboygan Area Transportation Plan

Wisconsin Administrative Code). However, only local units of government can regulate development adjacent to the highway system. Poor access management practices in the past by both state and local officials have resulted in major facilities whose connecting roadways or the facilities themselves have had an overabundance of closely-spaced driveways. Two such examples are State Highway 28 near Deer Trace Shopping Center in the Village of Kohler and nearby commercial development in the City of Sheboygan, as well as portions of the Taylor Drive corridor. Characteristics of facilities suffering from poor access management include higher levels of congestion, higher incidences of crashes, and queuing of traffic from a connector facility into the main facility.

Roadway Facts

Driving to Work

The most significant contributor to traffic congestion is the single-occupant vehicle, or SOV. According to the U.S. Bureau of the Census, the absolute number and percentage of all workers 16 years of age and older working outside the home and driving alone to work increased for the nation, the state, for Sheboygan County and for the ten communities which are wholly or partially in the Sheboygan metropolitan planning area between the 2008 – 2012 American Community Survey (ACS) and the 2012 – 2016 ACS. All of this information is presented in Table 5.29. The communities of the Sheboygan metropolitan planning area had the smallest percentage change from the 2008 – 2012 ACS to the 2012 – 2016 ACS in workers driving alone (a 0.6 percent increase), followed by Sheboygan County, which had a 2.4 percent increase. The United States had the largest percentage increase from the 2008 – 2012 ACS to the 2012 – 2016 ACS in workers driving alone (a 4.6 percent increase), followed by the State of Wisconsin, which had a 3.0 percent increase. Sheboygan County and the communities of the metropolitan planning area both had over 84 percent of their workers driving alone to work in the 2012 – 2016 ACS, while the State of Wisconsin had over 80 percent of its workers driving alone, and the U.S. had over 76 percent of its workers driving alone.

For all workers 16 years of age and older in the communities of the metropolitan planning area who worked outside the home in the 2012 – 2016 ACS, 84.7 percent (up from 84.1 percent in the 2008 – 2012 ACS) drove to work alone. Of the 34,475 persons driving alone to work in the communities of the metropolitan planning area in the 2012 – 2016 ACS, 19,990 persons (58.0 percent) lived in the City of Sheboygan.

Table 5.29: Workers 16 Years and Older Who Worked Outside the Home and Drove to Work Alone

Geography	2008 - 2012 American Community Survey		2012 - 2016 American Community Survey		Percent Change
	Driving Alone	Percent of Workers	Driving Alone	Percent of Workers	
United States	106,519,805	76.1%	111,448,640	76.4%	4.6%
State of Wisconsin	2,244,032	79.9%	2,310,258	80.7%	3.0%
Sheboygan County	48,413	83.5%	49,589	84.5%	2.4%
Metro Planning Area	34,282	84.1%	34,475	84.7%	0.6%

Note: The percent change represents the change in the actual number of workers driving alone.

Source: U.S. Bureau of the Census, *2008 – 2012 American Community Survey (ACS)* and *2012 – 2016 ACS (Table B08006, Sex of Workers by Means of Transportation to Work)*; and Bay-Lake Regional Planning Commission, *2018*.

Table 5.30 and Map 5.17 illustrate daily commuter work flows into and out of Sheboygan County, as collected for the *2009 – 2013 American Community Survey (ACS)*. The following work commuter statistics are of interest:

- Over 84.7 percent of work trips from Sheboygan County were to communities within Sheboygan County, and nearly 83.9 percent of all trips to Sheboygan County were from communities within Sheboygan County.
- Nearly 94.7 percent of trips from Sheboygan County were to destinations in Sheboygan County or its five surrounding counties (Manitowoc, Calumet, Fond du Lac, Washington and Ozaukee), and nearly 96.7 percent of all work trips to Sheboygan County came from origins within those six counties.

Table 5.30: Work Commute Trips to and from Sheboygan County

County	Trips from County	Percentage of Trips from County	Trips to County	Percentage of Trips to County
Sheboygan County (Internal)	48,746	84.71%	48,746	83.85%
Ozaukee County	2,517	4.37%	1,257	2.16%
Milwaukee County	1,542	2.68%	680	1.17%
Manitowoc County	1,507	2.62%	3,769	6.48%
Washington County	832	1.45%	379	0.65%
Fond du Lac County	628	1.09%	1,274	2.19%
Waukesha County	419	0.73%	134	0.23%
Calumet County	262	0.46%	770	1.32%
Brown County	257	0.45%	261	0.45%
Winnebago County	207	0.36%	67	0.12%
Other WI Counties or Out of State	630	1.09%	796	1.37%
Total	57,547	100.00%	58,133	100.00%

Source: U.S. Bureau of the Census, *2009 – 2013 American Community Survey (ACS) County Flow Files*; and Bay-Lake Regional Planning Commission, *2018*.

Unfortunately, similar work commute data are no longer available for the Sheboygan metropolitan planning area. The average travel time to work for Sheboygan County residents is

just under 19.7 minutes, with just over two thirds of Sheboygan County commuters being able to travel to work in less than 20 minutes.

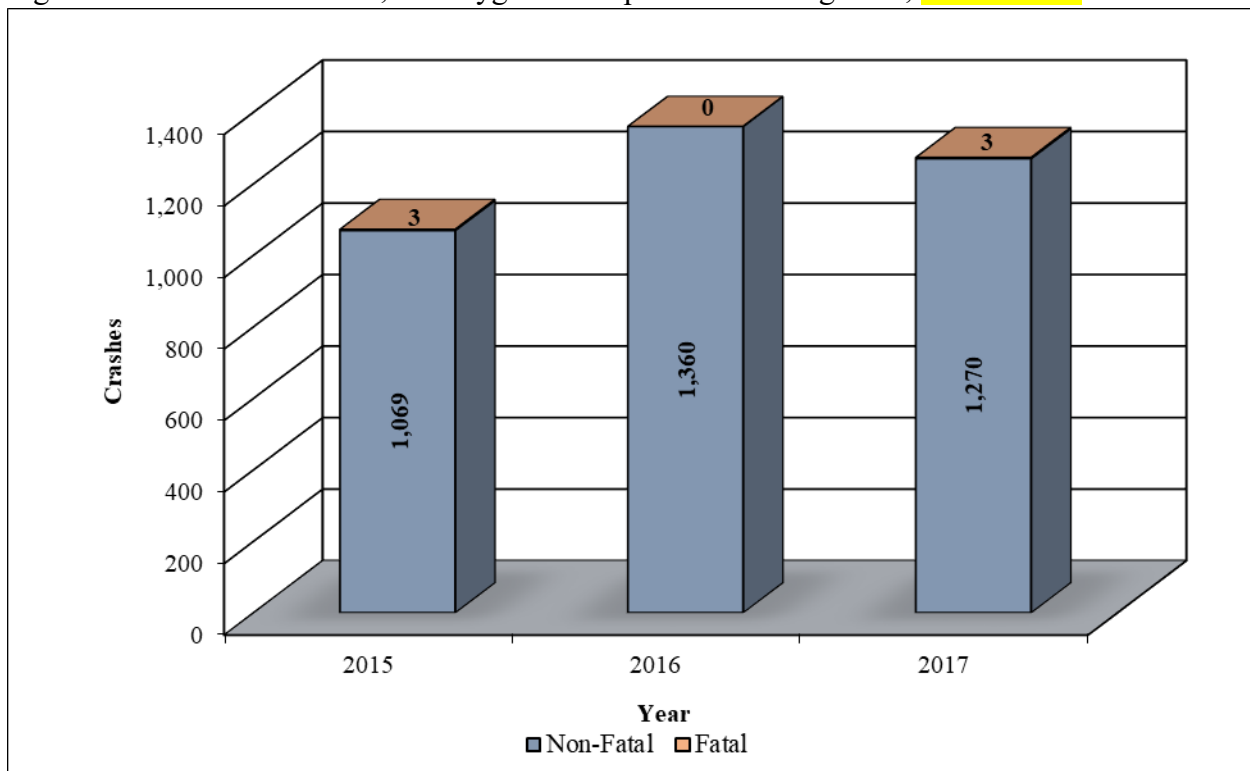
Safety

Vehicular Crashes

Figure 5.26 illustrates the total number of reported fatal and non-fatal crashes that occurred in the Sheboygan metropolitan planning area from 2015 through 2017. The total number of crashes increased by nearly 26.9 percent from an unusually low 1,072 crashes in 2015 to a more typical 1,360 crashes in 2016, then decreased by nearly 6.4 percent to 1,273 crashes by 2017. The crash levels in 2016 and 2017 are similar to crash levels that were observed from 2009 through 2012, but are lower than the pre-recession crash levels observed in 2007 and 2008.

As far as fatal crashes were concerned, three fatal crashes involving three fatalities occurred in 2015, no fatal crashes occurred in 2016, and three fatal crashes involving three fatalities occurred in 2017. One of the fatal crashes in 2017 was alcohol-related. The percentage of all crashes as fatal crashes was nearly 0.28 percent in 2015 and was nearly 0.24 percent in 2017. The crash files do not report seatbelt use; therefore, a correlation between fatal crashes and failure to wear a seatbelt cannot be made.

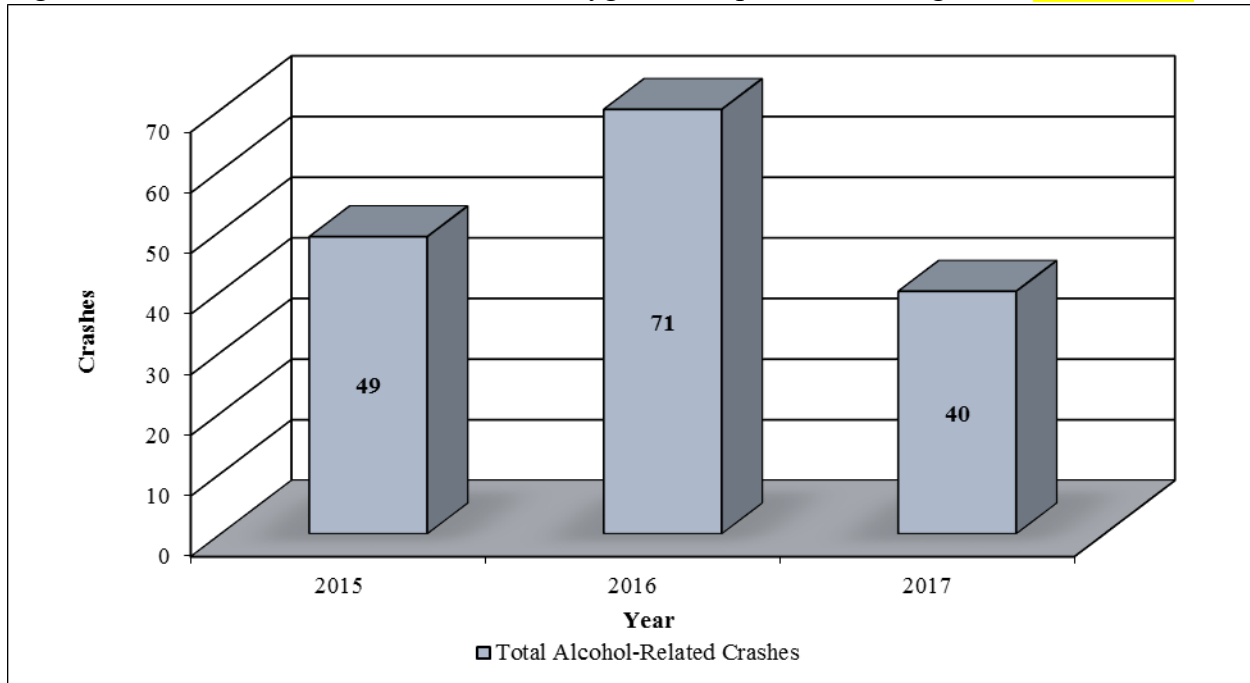
Figure 5.23: Vehicle Crashes, Sheboygan Metropolitan Planning Area, 2015 – 2017



Source: Traffic Operations and Safety Laboratory, UW Madison, 2015, 2016 and 2017; and Bay-Lake Regional Planning Commission, 2018.

Figure 5.24 illustrates the total number of **alcohol-related** crashes that occurred in the Sheboygan metropolitan planning area from **2015 through 2017**. The total number of alcohol-related crashes **increased by nearly 45 percent from 49 crashes in 2015 to 71 crashes in 2016**. However, the total number of alcohol-related crashes decreased by nearly 44 percent between 2016 and 2017, as there were 40 such crashes in 2017. The 2016 figure is slightly higher than what has been observed in recent years, but the 2015 and 2017 figures are significantly lower than what has been observed in recent years, and figures for all three years are significantly lower than pre-recession alcohol-related crash levels observed in 2007 and 2008.

Figure 5.24: Alcohol-Related Crashes, Sheboygan Metropolitan Planning Area, **2015 – 2017**



Source: Traffic Operations and Safety Laboratory, UW Madison, **2015, 2016 and 2017**; and Bay-Lake Regional Planning Commission, **2018**.

There were two alcohol-related crashes involving drivers under the age of 18 in 2015, one such crash in 2016, and three such crashes in 2017. The number of alcohol-related crashes involving drivers between the ages of 18 and 20 decreased from five crashes in 2015, to four crashes in 2016, to two crashes in 2017. This analysis merely examines whether drivers in these age groups were involved in an alcohol-related crash, and does not necessarily imply that all of these drivers were under the influence at the time of the crash; in some cases, the impaired driver was an older driver operating another vehicle involved in the crash.

Table 5.31 indicates the intersections with the highest number of crashes over the three year period from **2015 through 2017**. Some **24 of the top 26 locations** for intersection crashes in the metropolitan planning area were situated in or at the boundaries of the City of Sheboygan. **One of the top crash locations** (State Highway 28 and County Highway EE) was located on the

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boundary of the City of Sheboygan Falls, while one other top crash location (State Highway 42 and County Highway J) was located in the Town of Sheboygan. Eight of the top intersections for crashes involved the Taylor Drive corridor, while another four of the top intersections for crashes involved the Washington Avenue/State Highway 28 corridor, and another four of the top intersections for crashes involved the 14th Street (north and south)/State Highway 28 corridor. Other facilities where intersection crashes commonly occurred from 2015 through 2017 included: South Business Drive/State Highway 28; Erie Avenue (including portions of State Highway 23); Superior Avenue; Calumet Drive/State Highway 42; Indiana Avenue; Union Avenue; Geele Avenue; Kohler Memorial Drive/State Highway 23; New Jersey Avenue; and North 25th Street.

Table 5.31: Top Intersection Crash Locations, Sheboygan Metropolitan Planning Area, 2015 – 2017

Rank	Intersection Location	Number of Crashes			
		2015	2016	2017	3-Year Total
1	Washington Ave./STH 28 & S. Business Dr. (STH 28/CTH OK)	13	19	16	48
2	Washington Ave./STH 28 & S. Taylor Dr.	11	17	9	37
3	Calumet Dr./STH 42 & Superior Ave.	5	22	4	31
4 (tie)	Taylor Dr. & Erie Ave.	13	9	8	30
4 (tie)	Erie Ave./STH 23 & N. 14th St. (STH 28/STH 42)	11	11	8	30
6	Kohler Memorial Dr./STH 23 & N. Taylor Dr.	12	12	5	29
7	S. Business Dr./STH 28 & Union Ave.	9	10	8	27
8 (tie)	S. Business Dr./STH 28 & Wilson Ave.	4	6	11	21
8 (tie)	N. Taylor Dr. & Wilgus Ave.	7	6	8	21
10	Erie Ave. & N. 10th St.	7	8	5	20
11	Indiana Ave. & S. 14th St./STH 28	8	7	4	19
12	Taylor Dr. & New Jersey Ave.	4	6	8	18
13 (tie)	STH 28 & CTH EE	6	7	4	17
13 (tie)	14th St./STH 28 & Pennsylvania Ave.	5	9	3	17
15	S. Taylor Dr. & Union Ave.	9	4	3	16
16 (tie)	Calumet Dr./STH 42 & North Ave.	5	8	2	15
16 (tie)	S. Taylor Dr. & Indiana Ave.	4	4	7	15
18 (tie)	Washington Ave./STH 28 & Greenwing Dr.	2	8	4	14
18 (tie)	S. 14th St./STH 28 & New Jersey Ave.	2	4	8	14
18 (tie)	Washington Ave./STH 28 & S. 32nd St.	6	7	1	14
18 (tie)	Superior Ave. & N. 25th St.	0	8	6	14
22 (tie)	Calumet Dr./STH 42 & Geele Ave.	3	5	5	13
22 (tie)	Superior Ave. & N. Taylor Dr.	3	3	7	13
22 (tie)	Kohler Memorial Dr./STH 23 & N. 25th St.	5	5	3	13
22 (tie)	Geele Ave. & N. 15th St.	5	6	2	13
22 (tie)	STH 42 & CTH J	5	4	4	13

Source: Traffic Operations and Safety Laboratory, UW Madison, 2015, 2016 and 2017; and Bay-Lake Regional Planning Commission, 2018.

Map 5.18 illustrates high-crash intersections in 2017 in relation to the congested street and highway segments (for the base year of 2010) that were identified in travel demand forecast modeling efforts. The highest crash locations tend to occur on principal arterials and on minor arterials with high average daily traffic (ADT) levels.

Traffic Counts

Traffic counts were last counted for Sheboygan County in 2017, and are typically published every three years by WisDOT. Traffic counts can be found at the following website:

<https://trust.dot.state.wi.us/roadrunner/>

This is a statewide interactive map; zoom in to the Sheboygan metropolitan planning area is required. The paper version of the WisDOT traffic count maps is no longer published.

Pavement Condition

PASER data were compiled for the two cities, two villages and six towns and for the county trunk highway network in the Sheboygan metropolitan planning area. Nearly all local jurisdictions used 2017 as their base inventory, while Sheboygan County had a mix of 2015, 2016 and 2017 entries in its most current pavement ratings.

There was only one small segment (53 feet) of unimproved earthen road in the communities of the Sheboygan metropolitan planning area. On a scale from 1 to 4 (with “1” being poor and “4” being very good), this segment was rated a “2” (fair condition).

There were only a few small segments (total of 1,478 feet) of brick or block road in the communities of the Sheboygan metropolitan planning area. On a scale from 1 to 4 (with “1” being poor and “4” being very good), these segments were rated a “2” (fair condition).

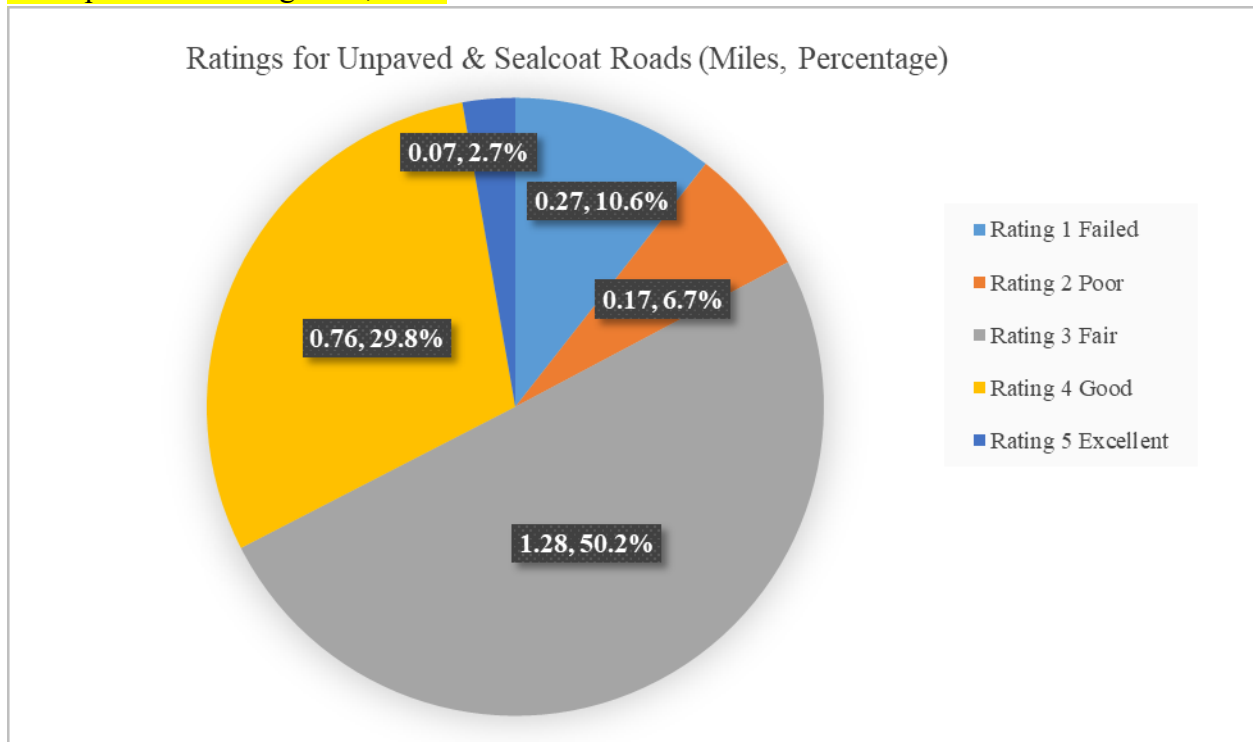
There were approximately 3.32 miles of unpaved (gravel) and sealcoat roads in the communities of the Sheboygan metropolitan planning area. Of these, 2.55 miles were rated. These roads are rated on a scale from 1 to 5 (with “1” being failed and “5” being excellent). The distribution of ratings for unpaved and sealcoat roads in the communities of the Sheboygan metropolitan planning area were as follows:

- Rating of 1 (Failed) = 1,426 feet, or 0.27 miles (10.6 percent);
- Rating of 2 (Poor) = 897 feet, or 0.17 miles (6.7 percent);
- Rating of 3 (Fair) = 6,757 feet, or 1.28 miles (50.2 percent);
- Rating of 4 (Good) = 4,013 feet, or 0.76 miles (29.8 percent); and
- Rating of 5 (Excellent) = 370 feet, or 0.07 miles (2.7 percent).

Average Rating = 3.07

Figure 5.25 shows the distribution of ratings for unpaved and sealcoat roads in the communities of the Sheboygan metropolitan planning area in 2017.

Figure 5.25: Ratings for Unpaved and Sealcoat Roads, Communities of the Sheboygan Metropolitan Planning Area, 2017



Source: Wisconsin Department of Transportation, Wisconsin Information System for Local Roads (WISLR), Pavement Surface Evaluation and Rating (PASER) ratings, 2017; and Bay-Lake Regional Planning Commission, 2018.

There were approximately 656.30 miles of paved (typically asphalt and concrete) roads in the communities of the Sheboygan metropolitan planning area. Of these, 653.81 miles were rated. These roads are rated on a scale from 1 to 10 (with “1” being failed and “10” being excellent). The distribution of ratings for paved roads in the communities of the Sheboygan metropolitan planning area was as follows:

- Rating of 1 (Failed) = 39,601 feet, or 7.50 miles (1.1 percent);
- Rating of 2 (Very Poor) = 100,210 feet, or 18.98 miles (2.9 percent);
- Rating of 3 (Poor) = 238,444 feet, or 45.16 miles (6.9 percent);
- Rating of 4 (Fair) = 443,655 feet, or 84.03 miles (12.9 percent);
- Rating of 5 (Fair) = 567,922 feet, or 107.56 miles (16.4 percent);
- Rating of 6 (Good) = 546,614 feet, or 103.53 miles (15.8 percent);
- Rating of 7 (Good) = 527,784 feet, or 99.96 miles (15.3 percent);
- Rating of 8 (Very Good) = 391,927 feet, or 74.23 miles (11.4 percent);

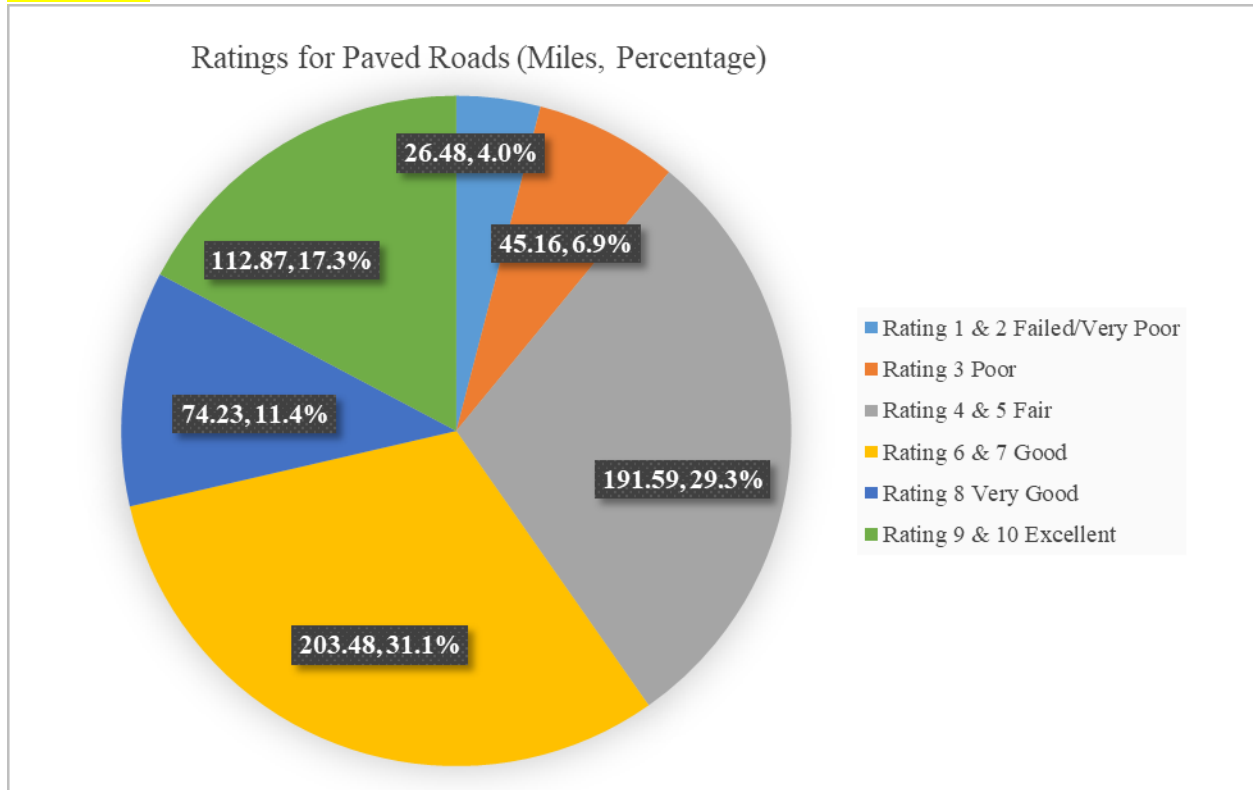
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- Rating of 9 (Excellent) = 410,761 feet, or 77.80 miles (11.9 percent); and
- Rating of 10 (Excellent) = 185,180 feet, or 35.07 miles (5.4 percent).

Average Rating = 6.15

Figure 5.26 shows the distribution of ratings for paved roads in the communities of the Sheboygan metropolitan planning area in 2017.

Figure 5.26: Ratings for Paved Roads, Communities of the Sheboygan Metropolitan Planning Area, 2017



Source: Wisconsin Department of Transportation, Wisconsin Information System for Local Roads (WISLR), Pavement Surface Evaluation and Rating (PASER) ratings, 2017; and Bay-Lake Regional Planning Commission, 2018.

There were approximately 0.19 miles of facilities with an unknown pavement type in the communities of the Sheboygan metropolitan planning area. These roads were rated on a similar scale to paved roads (1 to 10). All of the facilities with an unknown pavement type also had no rating.

Analysis for individual communities and for the county highway network in the Sheboygan metropolitan planning area is also available upon request.

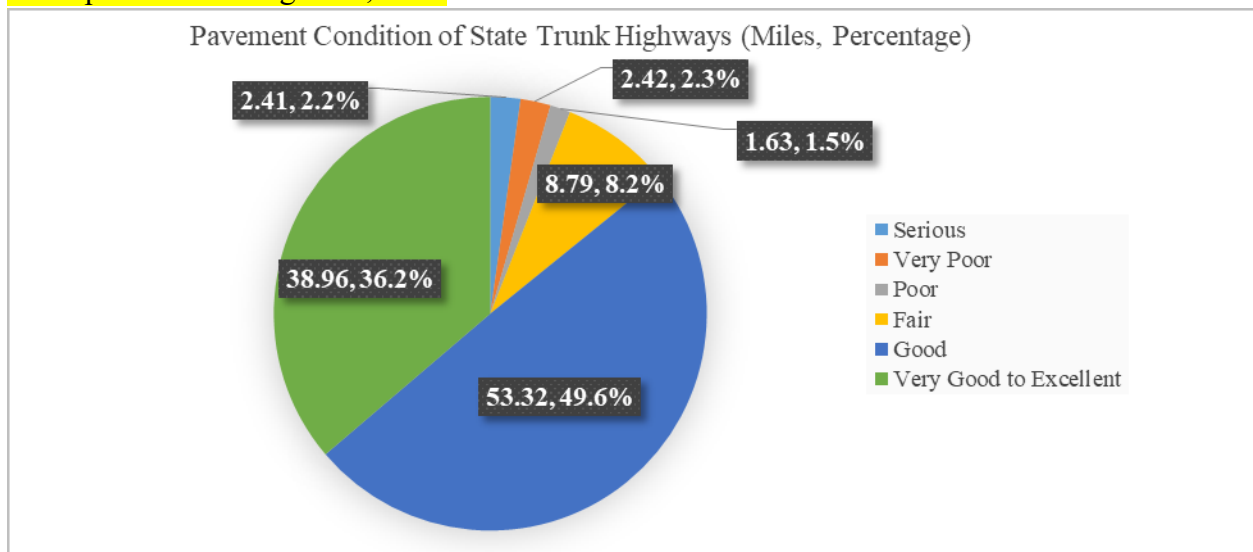
WisDOT has also supplied the MPO with Pavement Condition Index (PCI) data for the state trunk highway system. This information was last collected in October of 2017. MPO staff has tabulated a summary of the condition of state trunk highways that pass through the two cities, two villages and six towns in the Sheboygan metropolitan planning area. “A PCI is calculated based on the results of a detailed pavement distress survey that identifies pavement distress type, distress severity, and distress quantity. The PCI is a numerical rating that ranges from 0 for a totally failed pavement to 100 for a pavement in perfect condition.”

There are approximately 107.53 miles of state trunk highway in the communities of the Sheboygan metropolitan planning area. Of these:

- No miles were rated as “failed” (0 to 9.99 points);
- 2.41 miles (2.2 percent) were rated as “serious” (10 to 24.99 points);
- 2.42 miles (2.3 percent) were rated as “very poor” (25 to 39.99 points);
- 1.63 miles (1.5 percent) were rated as “poor” (40 to 54.99 points);
- 8.79 miles (8.2 percent) were rated as “fair” (55 to 69.99 points);
- 53.32 miles (49.6 percent) were rated as “good” (70 to 84.99 points); and
- 38.96 miles (36.2 percent) were rated as “very good to excellent” (85 to 100 points).

Figure 5.27 shows the distribution of condition of state trunk highways in the communities of the Sheboygan metropolitan planning area in 2017.

Figure 5.27: State Trunk Highway Pavement Condition, Communities of the Sheboygan Metropolitan Planning Area, 2017



Source: Wisconsin Department of Transportation, Pavement Condition Index (PCI) ratings for state trunk highways, 2017; and Bay-Lake Regional Planning Commission, 2018.

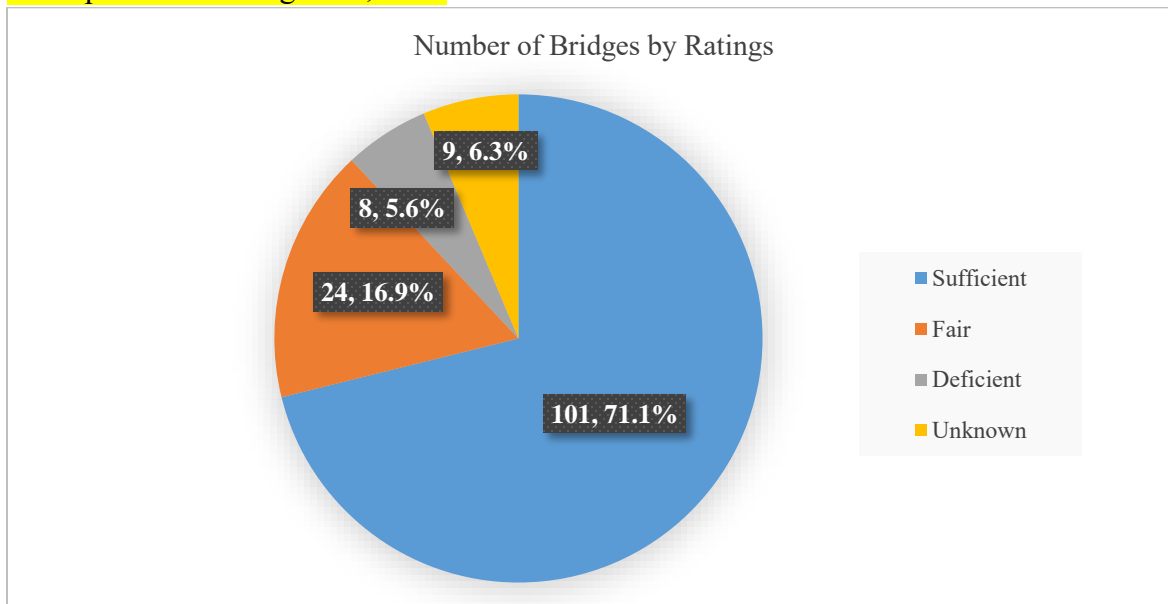
Structural Condition of Bridges

Bridges typically are assessed using a 0 to 100 point scale known as a “sufficiency rating.” WisDOT considers bridges with a sufficiency rating of 0 to 49.99 as being “deficient,” while bridges with a sufficiency rating of 50 to 79.99 are considered to be in “fair” condition, and bridges with a sufficiency rating of 80 or higher are “sufficient,” or in good condition.

There are 142 bridges identified within the communities of the Sheboygan metropolitan planning area. Of these, 101 bridges (71.1 percent) are “sufficient,” or in good condition. Another 24 bridges (16.9 percent) are in “fair” condition. Eight bridges (5.6 percent) were identified as being “deficient,” or in poor condition. Nine bridges (6.3 percent) were of “unknown” condition.

Figure 5.28 shows the distribution of bridge condition by rating within the communities of the Sheboygan metropolitan planning area in 2017.

Figure 5.28: Bridge Conditions by Rating within the Communities of the Sheboygan Metropolitan Planning Area, 2017



Source: Wisconsin Department of Transportation, 2017; and Bay-Lake Regional Planning Commission, 2018.

Table 5.32 identifies the bridges that are considered “deficient” (eligible for replacement). Bridges listed in bold in Table 5.32 are either programmed in the TIP/STIP or are in progress.

Table 5.32: Deficient Bridges*: Communities of the Sheboygan Metropolitan Planning Area, 2017

WisDOT Bridge ID Number	Street or Highway	Over (Stream/Road)	Location	Sufficiency Rating
P590133	Old Park Road	Black River	Town of Wilson (Kohler Andrae State Park)	26.3
P590116	Meadowlark Road	Sheboygan River	Town of Sheboygan Falls	31.4
P590091	County Highway FF	Sheboygan River	Town of Herman	35.8
P590068	County Highway O	Branch of the Sheboygan River	Town of Sheboygan Falls	40.2
P590924	Luelloff Road	Sevenmile Creek (westernmost crossing, just east of County Highway DL)	Town of Mosel	43.7
P590930	Woodland Road	Branch of the Sheboygan River	Town of Sheboygan Falls	46.3
B590064	Pennsylvania Avenue	Sheboygan River	City of Sheboygan	49.2
P590095	Meadowlark Road	Fischer Creek	Town of Herman	49.8

*Bridges listed in **bold** are either programmed in the TIP/STIP or are in progress.

Source: Wisconsin Department of Transportation, 2017; and Bay-Lake Regional Planning Commission, 2018.

Table 5.33 identified bridges that are in “fair” condition (eligible for rehabilitation but not replacement). Bridges listed in bold are either programmed in the TIP or are in progress, while bridges listed in red are those recently completed bridges where MPO staff question the listed sufficiency rating of the bridge.

Table 5.33: Bridges in Fair Condition*, Communities of the Sheboygan Metropolitan Planning Area, 2017

WisDOT Bridge ID Number	Street or Highway	Over (Stream/Road)	Location	Sufficiency Rating
P590921	County Highway W	Branch of the Onion River	Town of Lima	52.3
P590069	County Highway OO	Onion River	Town of Lima	53.0
P590701	Roosevelt Avenue	Pigeon River	Village of Howards Grove	55.1
B590014	County Highway PP	Mullet River	City of Sheboygan Falls	56.1
P590112	Willow Road	Otter Creek	Town of Sheboygan Falls	57.0
P590705	Broadway Street	Onion River	City of Sheboygan Falls	60.1
B590100	South Business Drive	Rail Line	City of Sheboygan	61.1
P590124	County Highway TT	Sheboygan River	Town of Sheboygan Falls	65.0
B590009	Lakeshore Road (formerly County Highway LS)	Sevenmile Creek	Town of Mosel	66.3
P590114	Willow Road	Mullet River	Town of Sheboygan Falls	67.8
P590922	County Highway PP	Branch of the Mullet River	Town of Sheboygan Falls	68.3
B590154	South 8th Street	Sheboygan River	City of Sheboygan	70.5
P590135	County Highway EE/Lakeshore Drive	Fisherman's Creek	Town of Wilson	70.6
P590118	Alpine Road	Sheboygan River	Town of Sheboygan Falls	73.8
P590139	Camp Riverside Road	Onion River	Town of Lima	73.8
B590096	Georgia Avenue	Old Rail Line	City of Sheboygan	74.3
B590105	State Highway 23/Erie Avenue	Rail Line	City of Sheboygan	74.8
B590030	County Highway J	Sheboygan River	Town of Sheboygan Falls	75.3
B590033	State Highway 28/North 14th Street	Sheboygan River	City of Sheboygan	76.5
B590034	Interstate Highway 43 (northbound only)	County Highway EE/Weeden Creek Road	Town of Wilson	76.7
P590914	Lakeshore Road (formerly County Highway LS)	Pigeon River	City of Sheboygan	76.9
B590294	Interstate Highway 43	Old Plank Road Trail Tunnel	Town of Sheboygan	77.2
P590130	West Evergreen Drive	Black River	Town of Wilson	77.8
B590023	Mueller Road	Interstate Highway 43	Town of Sheboygan	77.9

*Bridges listed in **bold** are either programmed in the TIP/STIP or are in progress. Bridges listed in **red** are those recently completed bridges where MPO staff question the listed sufficiency rating of the bridge.

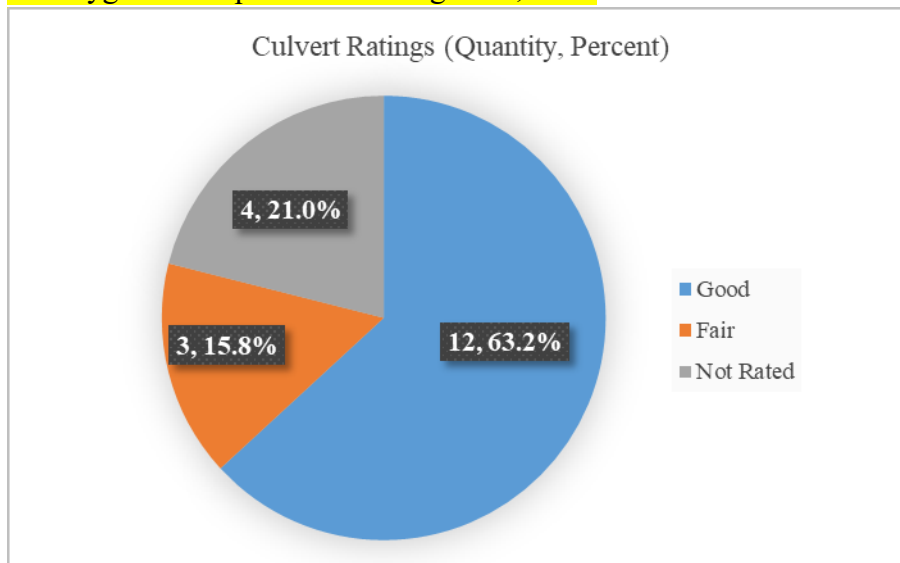
Source: Wisconsin Department of Transportation, 2017; and Bay-Lake Regional Planning Commission, 2018.

Culverts are rated on a scale from 0 to 9, with “0” meaning that the culvert has failed, with “1” or “2” meaning that the culvert is in critical condition, with “3” or “4” meaning that the culvert is in poor condition, with “5” or “6” meaning that the culvert is in fair condition, with “7” or “8” meaning that the culvert is in good condition, and with “9” mainly involving new culverts.

There are 19 culverts identified on various roads and highways within the communities of the Sheboygan metropolitan planning area. Of these, one culvert (5.3 percent) received a rating of “8,” eleven culverts (57.9 percent) received a rating of “7,” and three culverts (15.8 percent) received a rating of “5.” An additional four culverts (21.0 percent) were not rated.

Figure 5.29 shows culvert ratings by number and percentage within the communities of the Sheboygan metropolitan planning area in 2017.

Figure 5.29: Culvert Ratings by Number and Percentage within the Communities of the Sheboygan Metropolitan Planning Area, 2017



Source: Wisconsin Department of Transportation, 2017; and Bay-Lake Regional Planning Commission, 2018.

Table 5.34 identifies the 15 culverts that were rated in the Sheboygan Metropolitan Planning Area in 2017.

Table 5.34: Condition of Rated Culverts: Communities of the Sheboygan Metropolitan Planning Area, 2017

WisDOT Structure ID Number	Street or Highway	Over (Stream)	Location	Culvert Rating
C590080	State Highway 32	Unnamed Creek	Town of Lima (1.37 miles North of County Highway V)	5 (Fair)
C592650	State Highway 32	Unnamed Creek	Town of Lima (0.36 miles North of County Highway W)	5 (Fair)
C592916	State Highway 32	Unnamed Creek	Town of Lima (0.38 miles North of County Highway OO)	5 (Fair)
C590032	Interstate Highway 43	Unnamed Creek	Town of Wilson (0.52 miles North of County Highway KK)	7 (Good)
C590038	Interstate Highway 43	Unnamed Creek	Town of Mosel (1.21 miles North of County Highway MM)	7 (Good)
C590041	Interstate Highway 43	Unnamed Creek	Town of Sheboygan (0.44 miles North of State Highway 42)	7 (Good)
C590048	Interstate Highway 43	Unnamed Creek	Town of Sheboygan (0.32 miles North of State Highway 42)	7 (Good)
C590049	Interstate Highway 43	Unnamed Creek	Town of Mosel (0.58 miles North of County Highway FF)	7 (Good)
C590051	State Highway 42	Unnamed Creek	Town of Herman (0.63 miles West of County Highway FF)	7 (Good)
C590069	State Highway 28	Tributary to Mullet River	Town of Lima (1.43 miles East of County Highway U)	7 (Good)
C590070	State Highway 32	Fischer Creek	Town of Herman (0.87 miles North of County Highway FF)	7 (Good)
C590071	State Highway 32	Drainage Way	Town of Sheboygan Falls (0.40 miles North of County Highway O)	7 (Good)
C590072	State Highway 32	Drainage Way	Town of Sheboygan Falls (0.80 miles North of County Highway O)	7 (Good)
C590073	State Highway 32	Drainage Way	Village of Howards Grove (1.90 miles North of County Highway J)	7 (Good)
C590016	Interstate Highway 43	Seven Mile Creek	Town of Mosel (0.47 miles North of County Highway FF)	8 (Good)

Source: Wisconsin Department of Transportation, 2017; and Bay-Lake Regional Planning Commission, 2018.

Location of Signalized Intersections, Roundabouts and Bridges

Map 5.19 shows the location of current signalized intersections, roundabouts and bridges in the Sheboygan Metropolitan Planning Area.

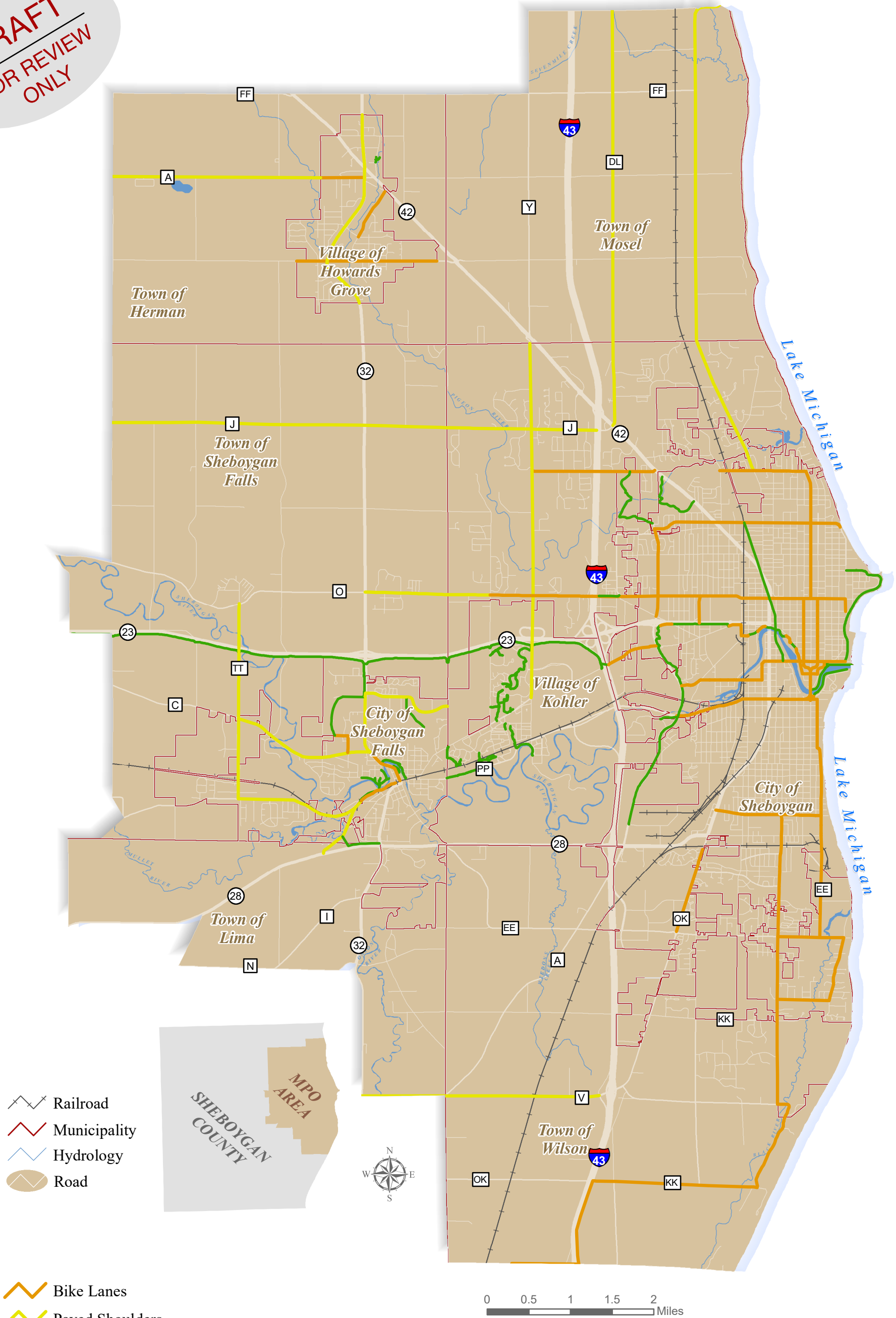
Existing Bicycle and Multipurpose Facilities

Sheboygan Metropolitan Planning Area

Update to the Year 2045 Sheboygan Area Transportation Plan (SATP)

Map 5.1

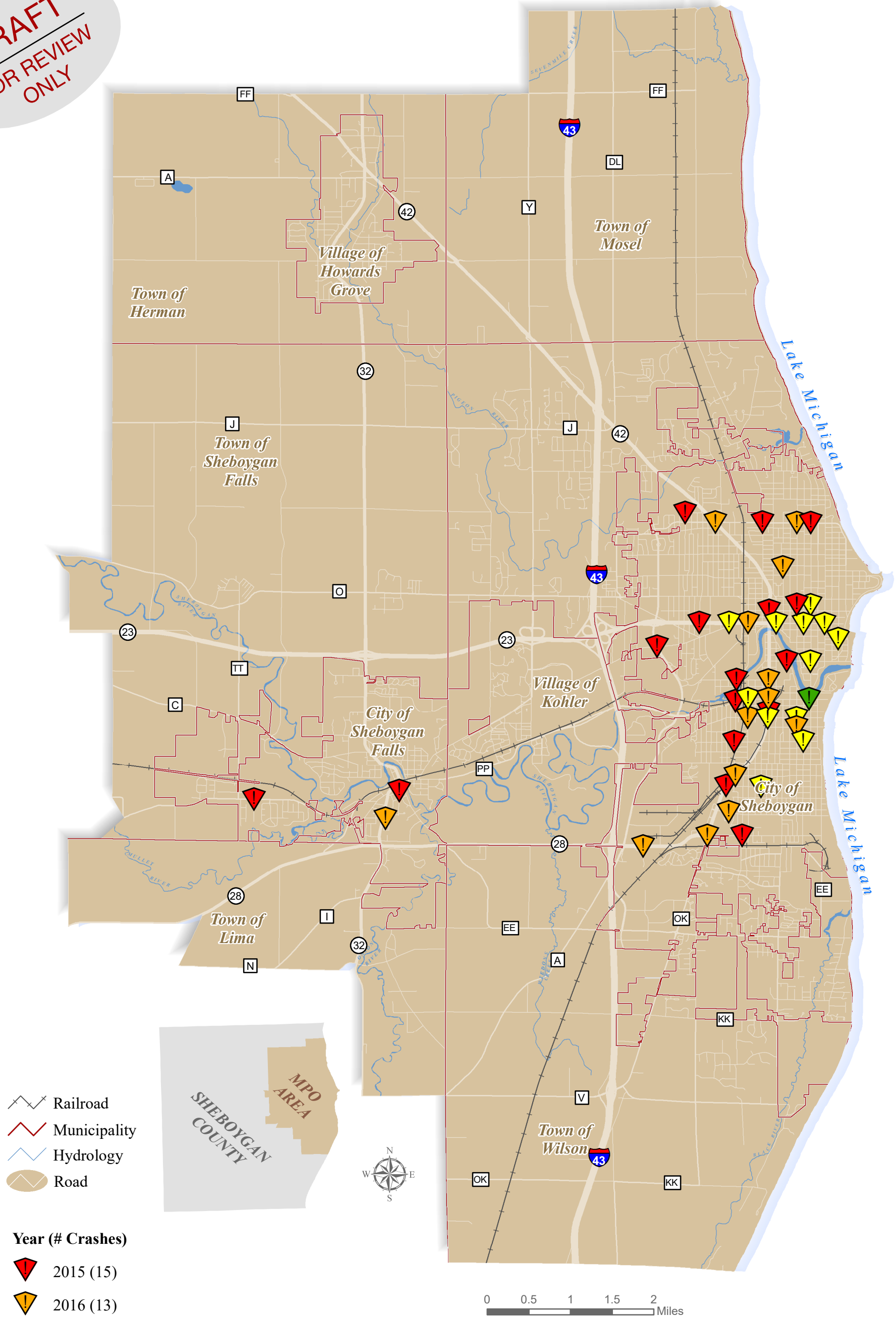
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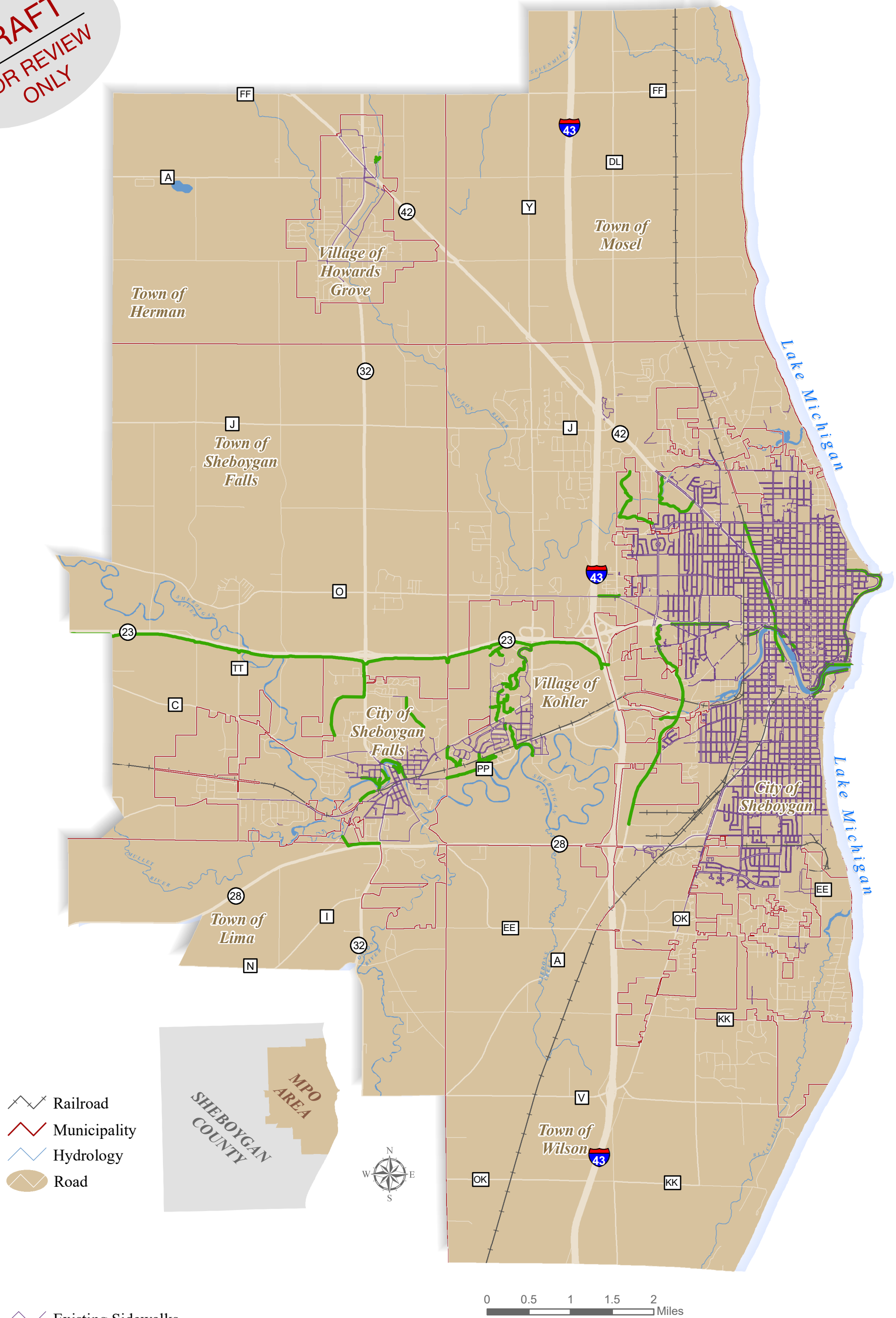
Bicycle Intersection Crash Locations: 2015-2017 Sheboygan Metropolitan Planning Area

Update to the Year 2045 Sheboygan Area Transportation Plan (SATP) Map 5.2

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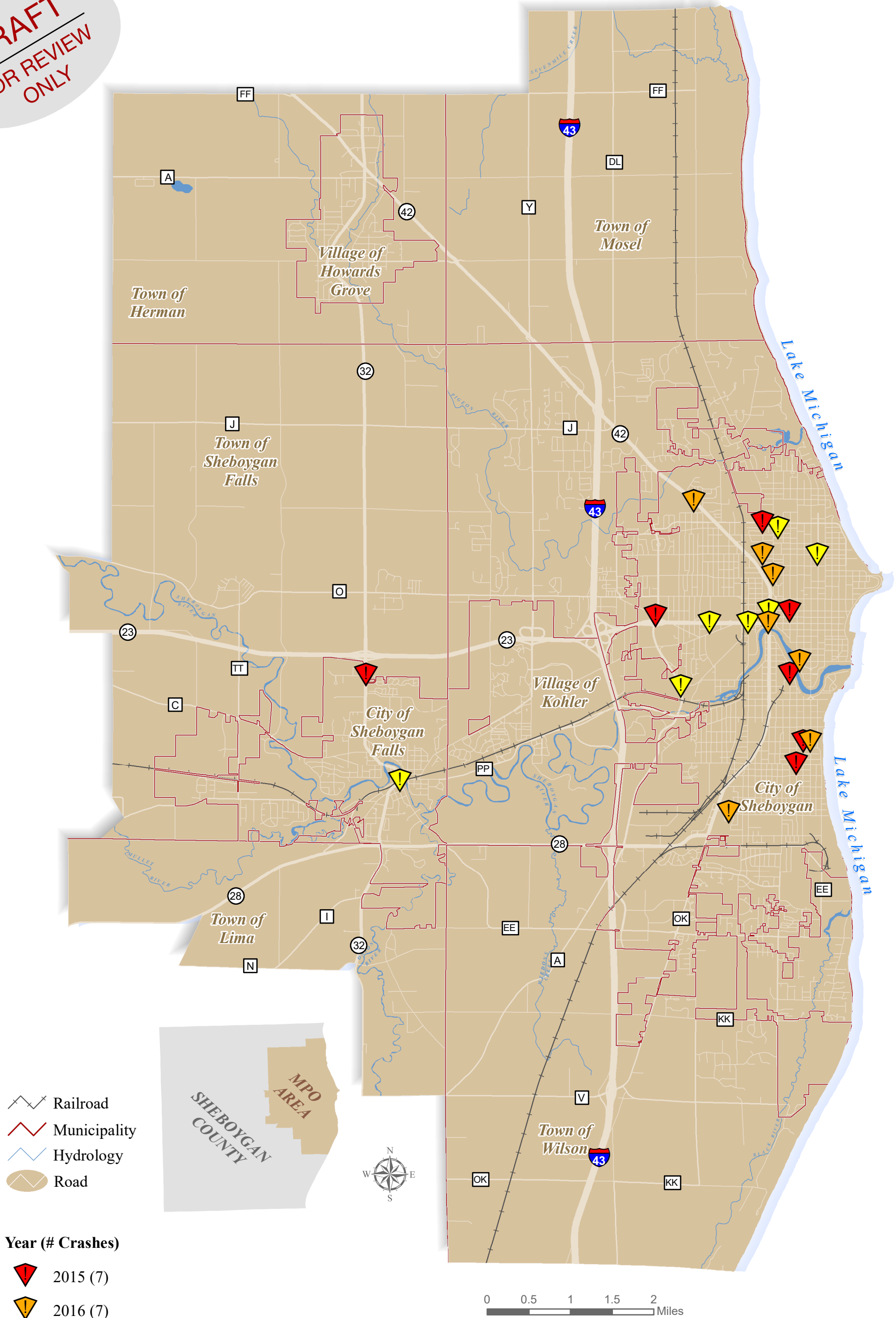
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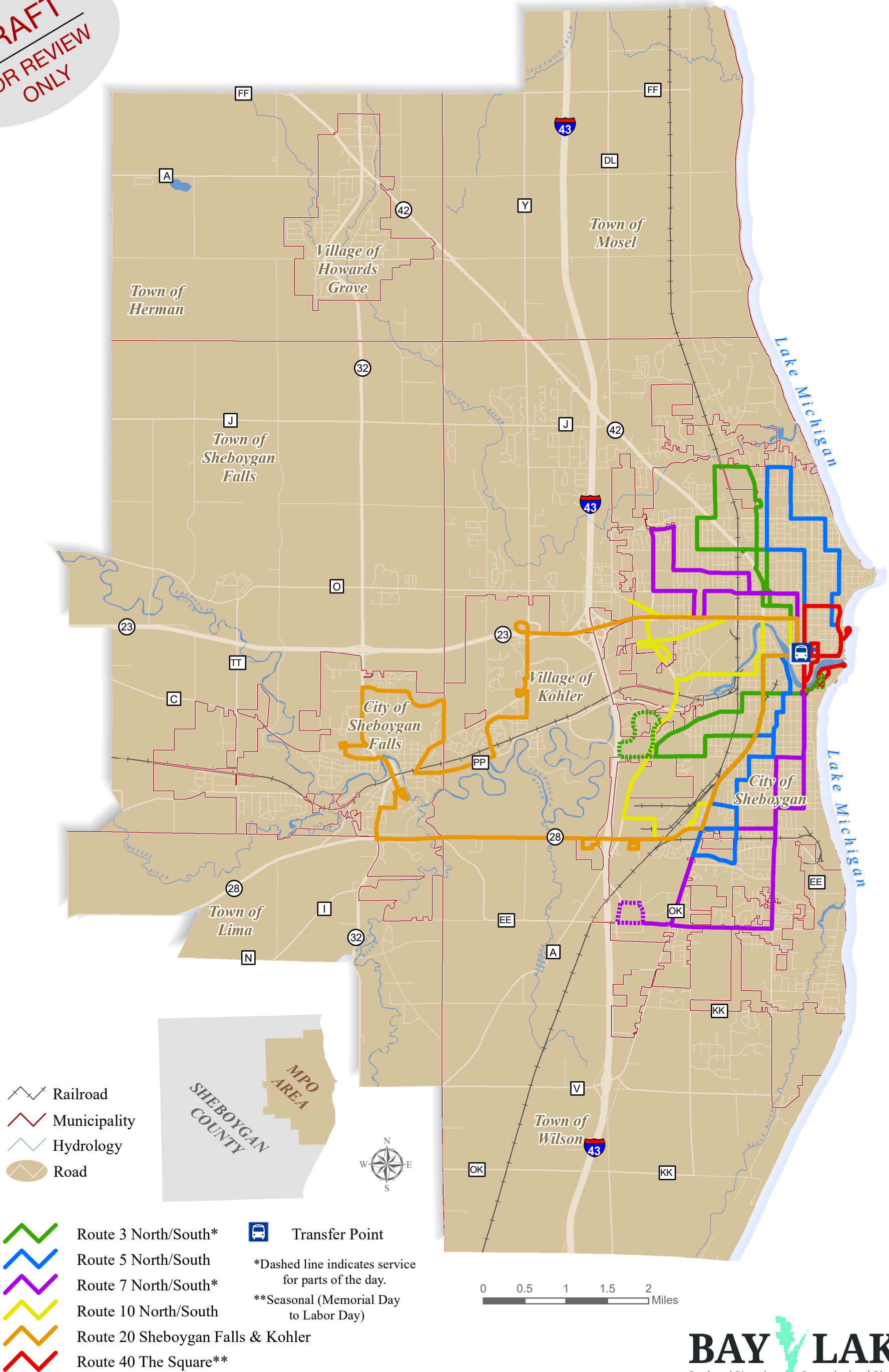
Pedestrian Intersection Crash Locations 2015-2017 Sheboygan Metropolitan Planning Area

Update to the Year 2045 Sheboygan Area Transportation Plan (SATP) Map 5.4

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Shoreline Metro Fixed-Route Service Coverage Area

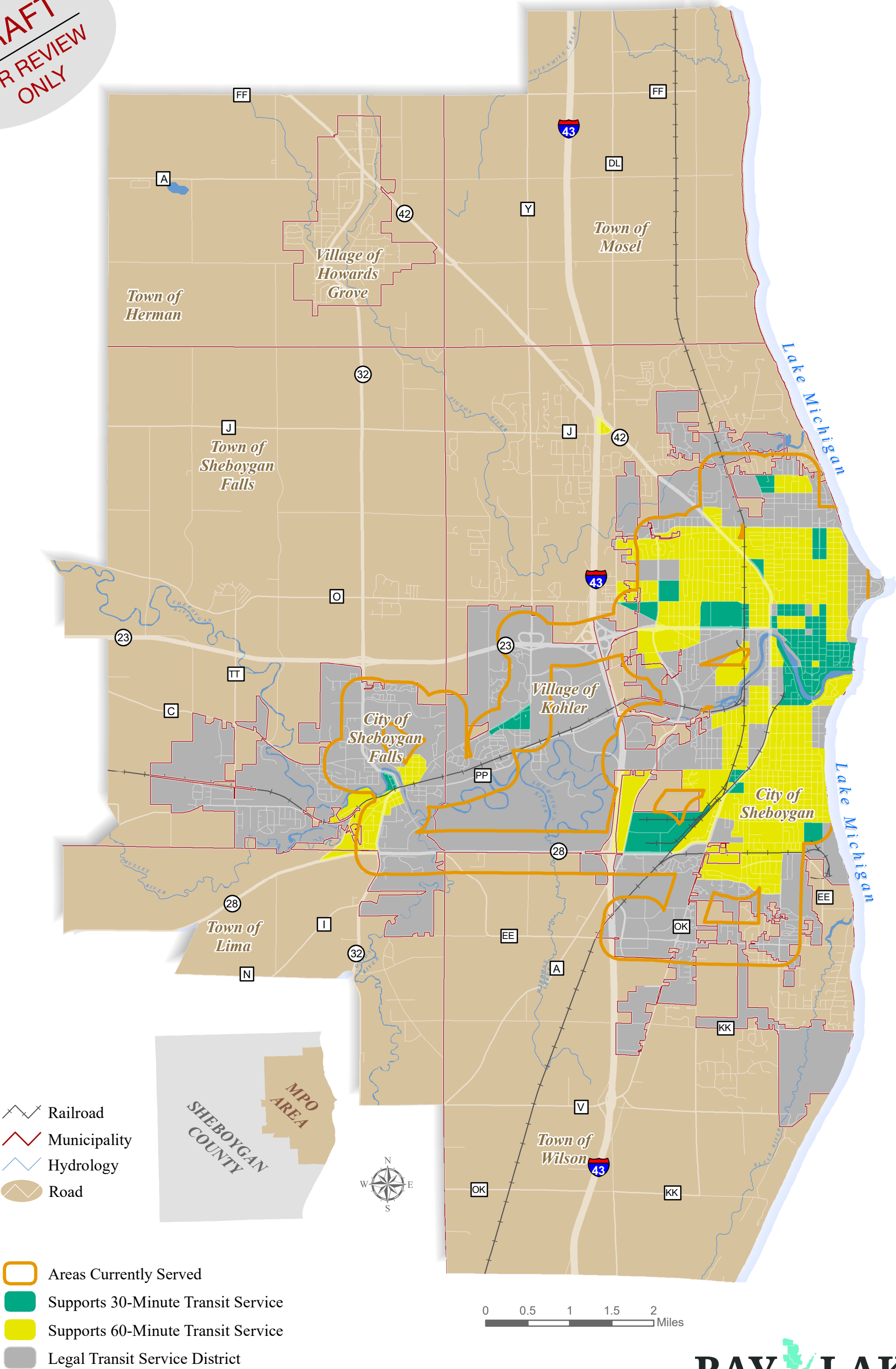
Areas with Transit Supportive Household and Employment Densities

Sheboygan Metropolitan Planning Area

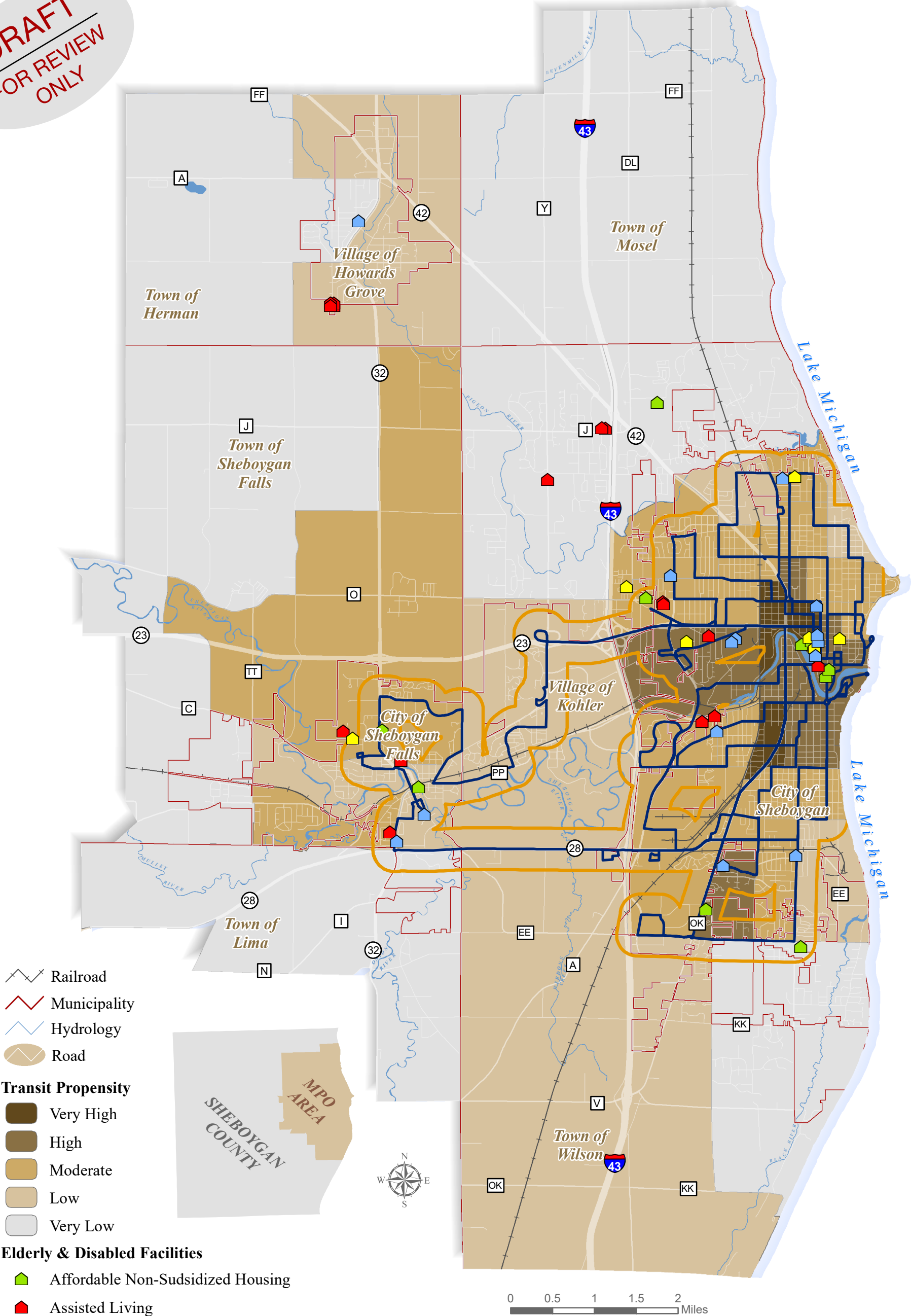
Update to the Year 2045 Sheboygan Area Transportation Plan (SATP)

Map 5.6

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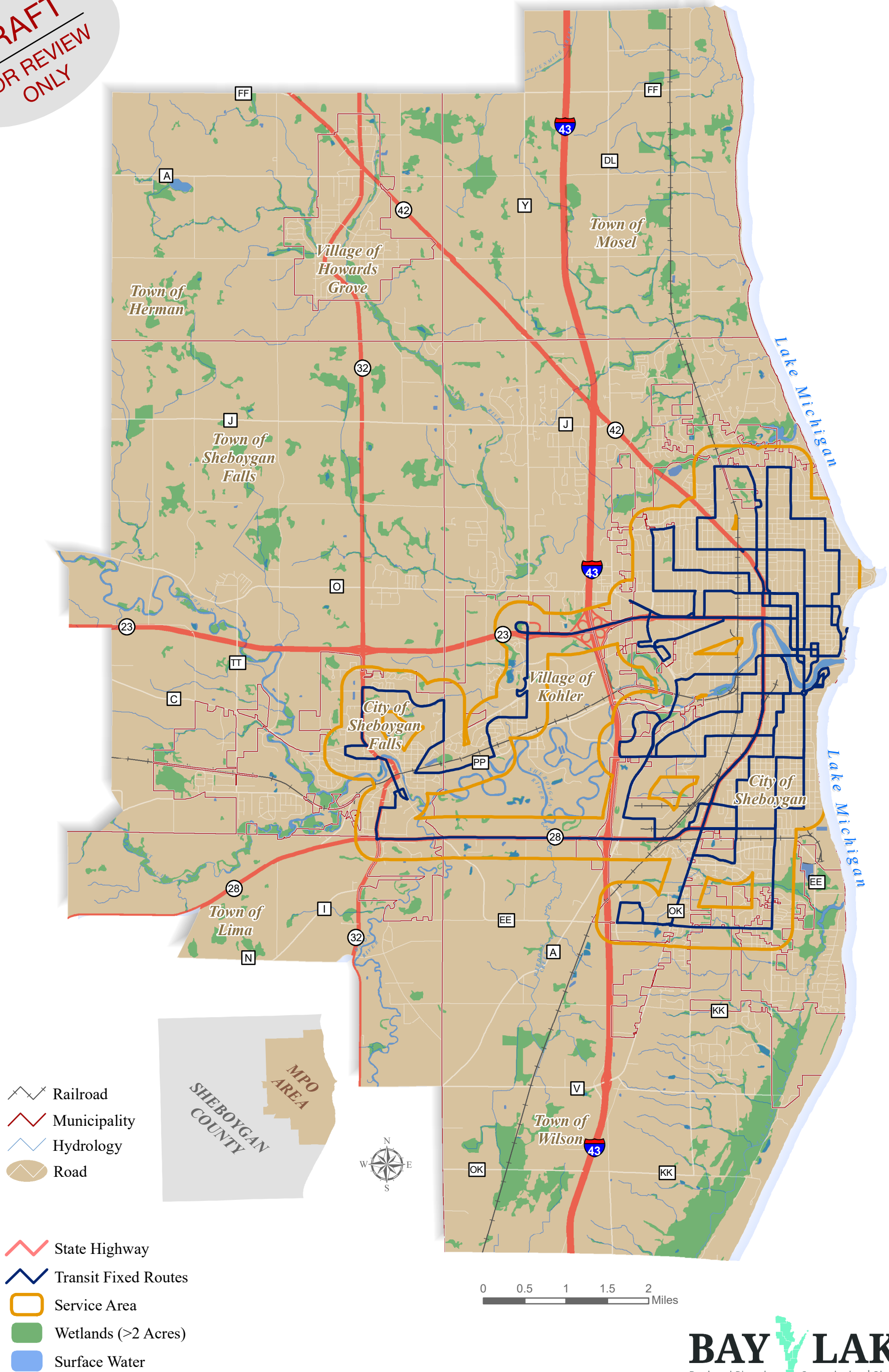
Access Barriers to Transit Usage: Shoreline Metro

Sheboygan Metropolitan Planning Area

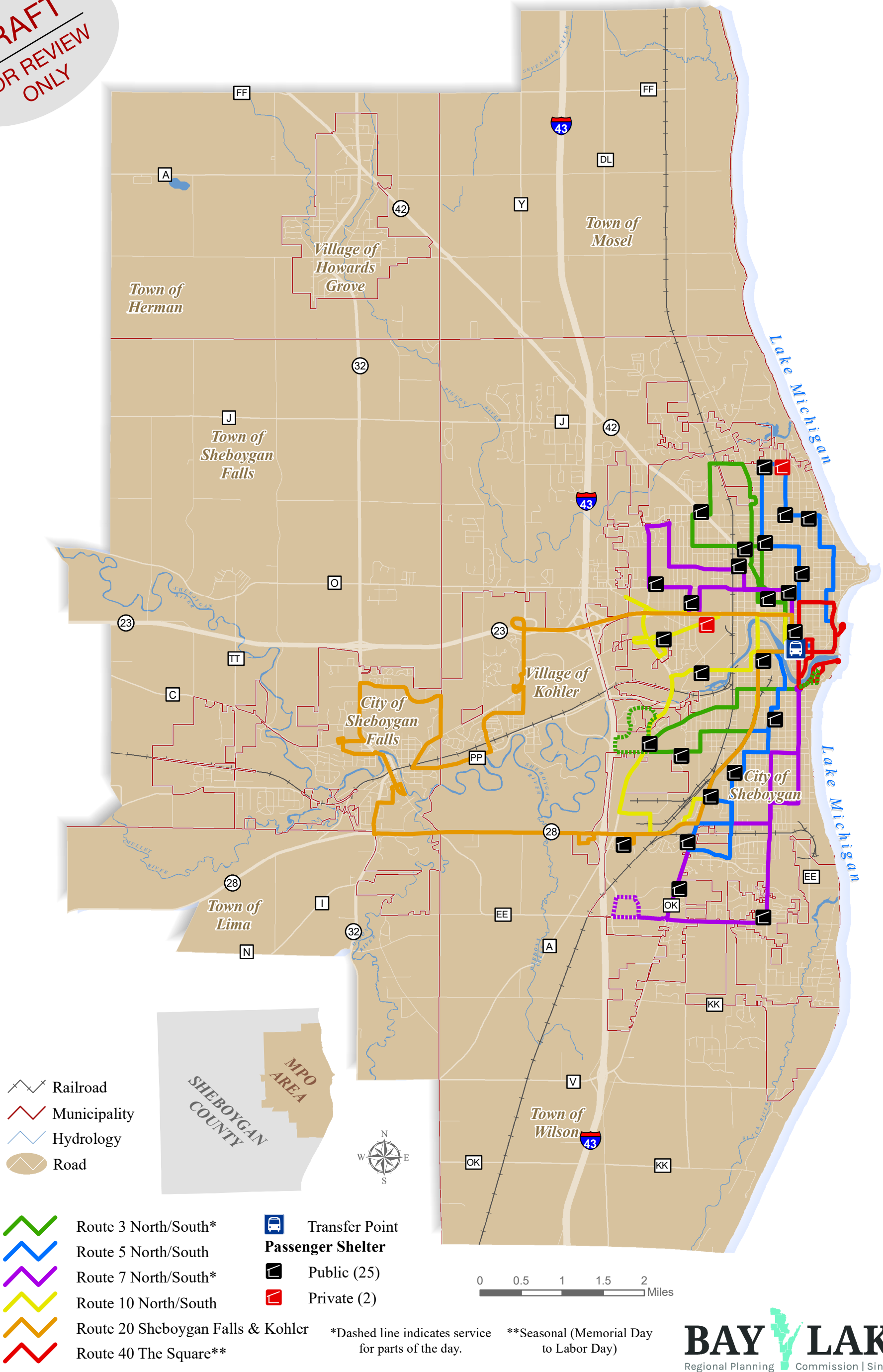
Update to the Year 2045 Sheboygan Area Transportation Plan (SATP)

Map 5.8

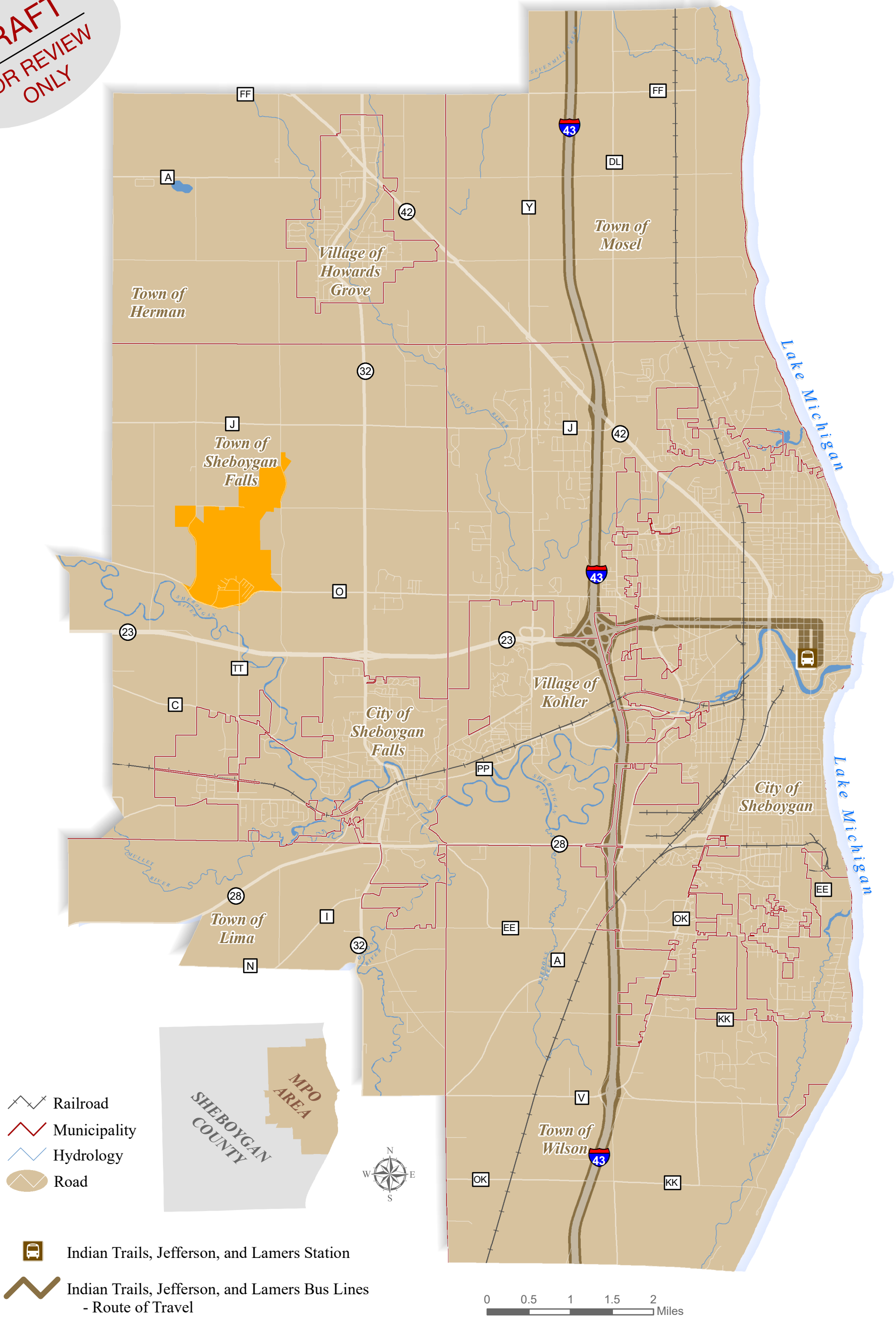
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Rail Corridor*

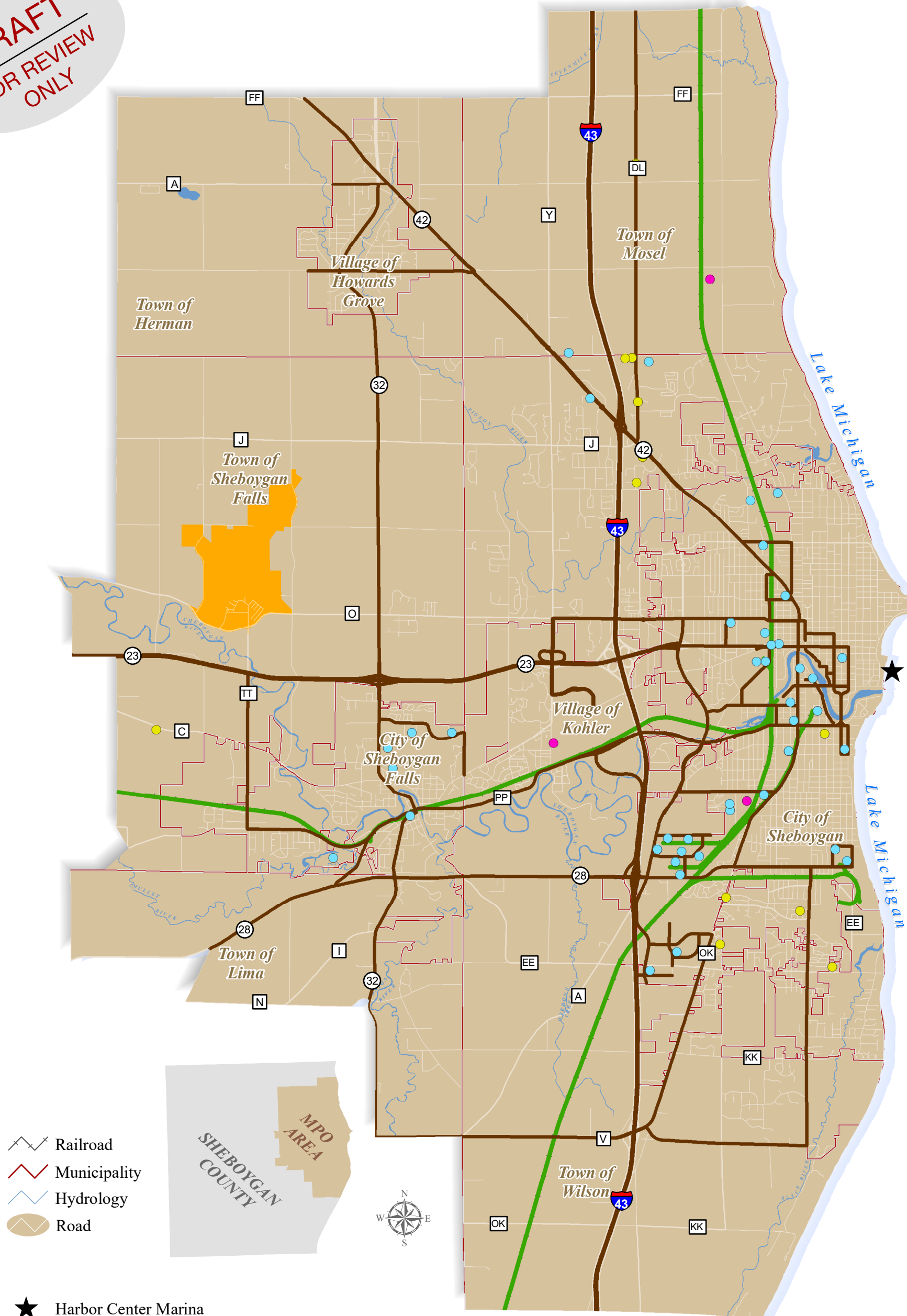
- 110 mph top speed
- 90 mph top speed**
- 79 mph top speed

Feeder Bus Route

**In Missouri, current restrictions limit train speeds to 79 mph.

Update to the *Year 2045 Sheboygan Area Transportation Plan*

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- Railroad

Municipality

Hydrology

Road
- Harbor Center Marina

Companies with Significant Truck Fleets

Trucking Firms

Freight Shipping/Receiving Companies

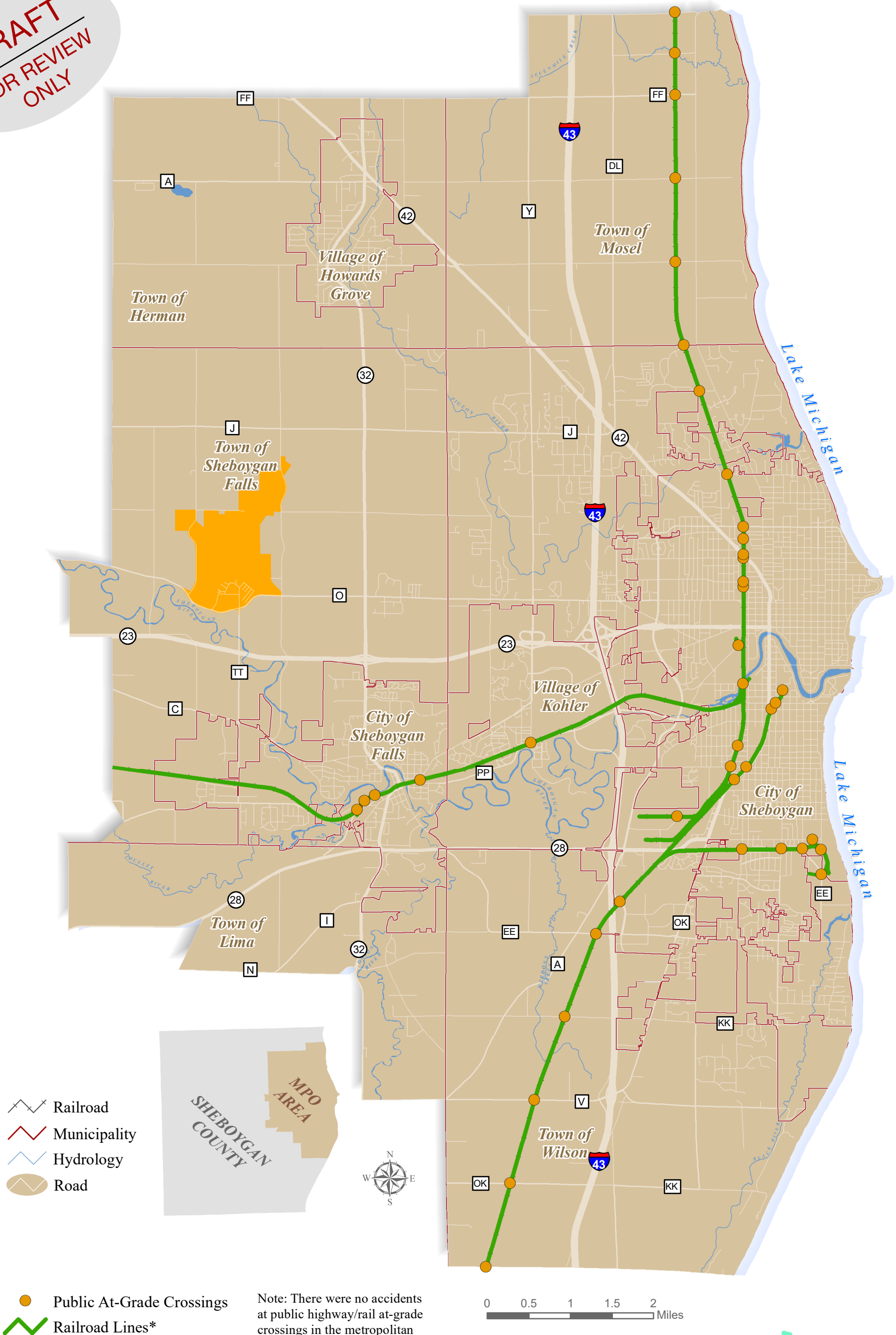
Truck Routes

Railroad Lines*

Sheboygan County Memorial Airport
- 0 0.5 1 1.5 2 Miles

*Note: Some railroad lines are out of service

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Heavy Truck Crashes

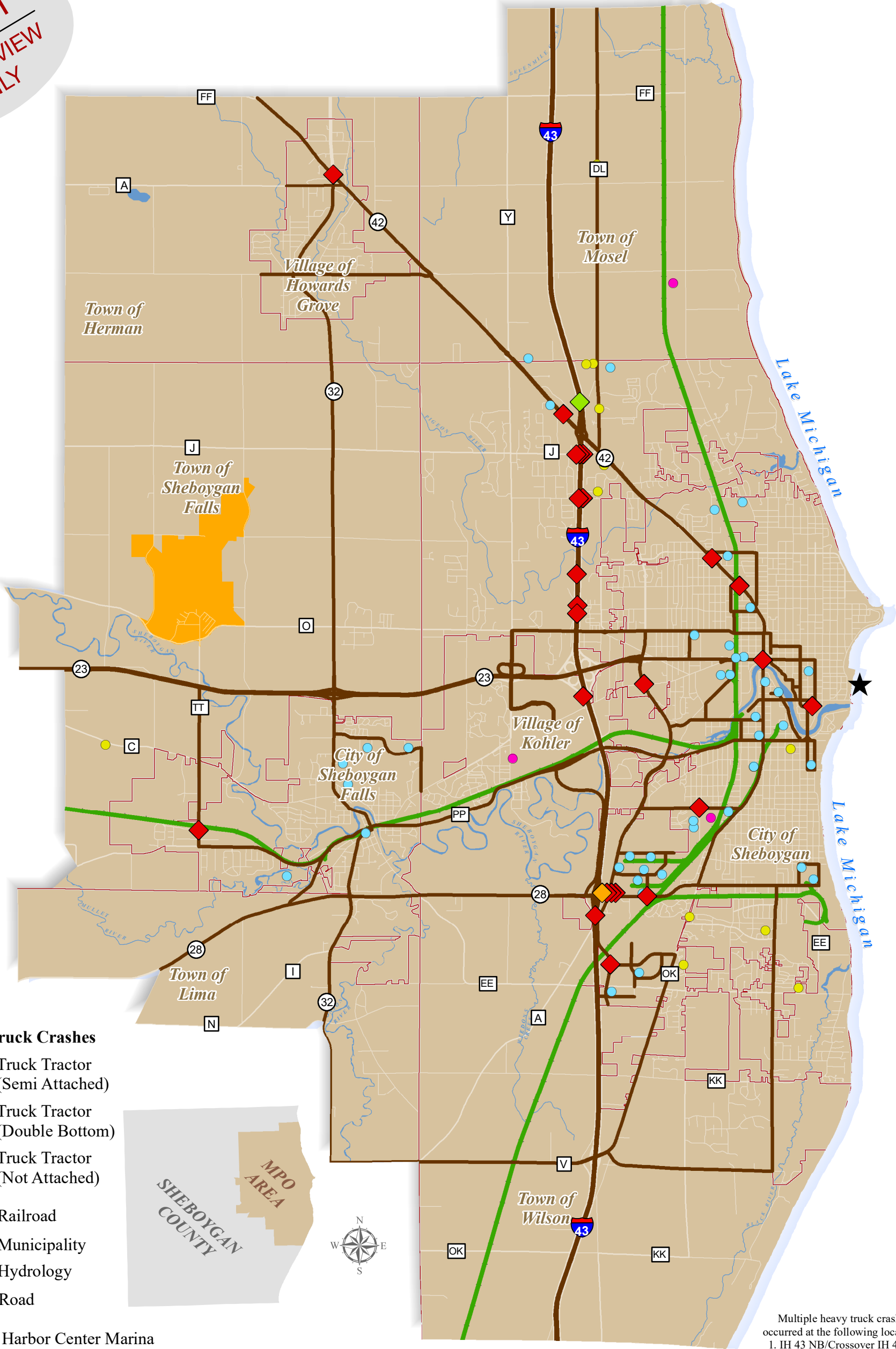
- Truck Tractor (Semi Attached)
- Truck Tractor (Double Bottom)
- Truck Tractor (Not Attached)

- Railroad
- Municipality
- Hydrology
- Road

- Harbor Center Marina
- Companies with Significant Truck Fleets
- Trucking Firms
- Freight Shipping/Receiving Companies

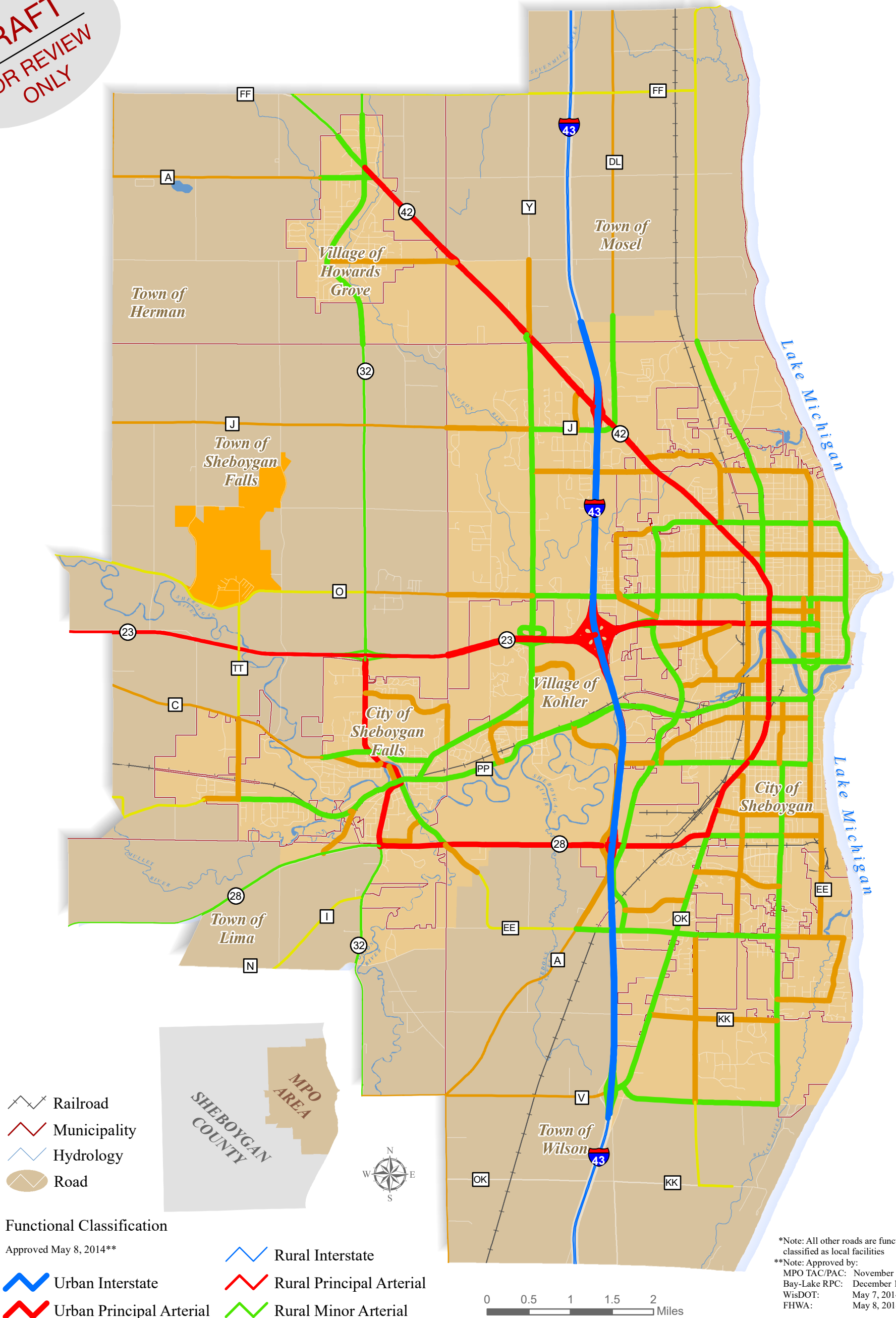
- Truck Routes
- Railroad Lines*
- Sheboygan County Memorial Airport

*Note: Some railroad lines are out of service



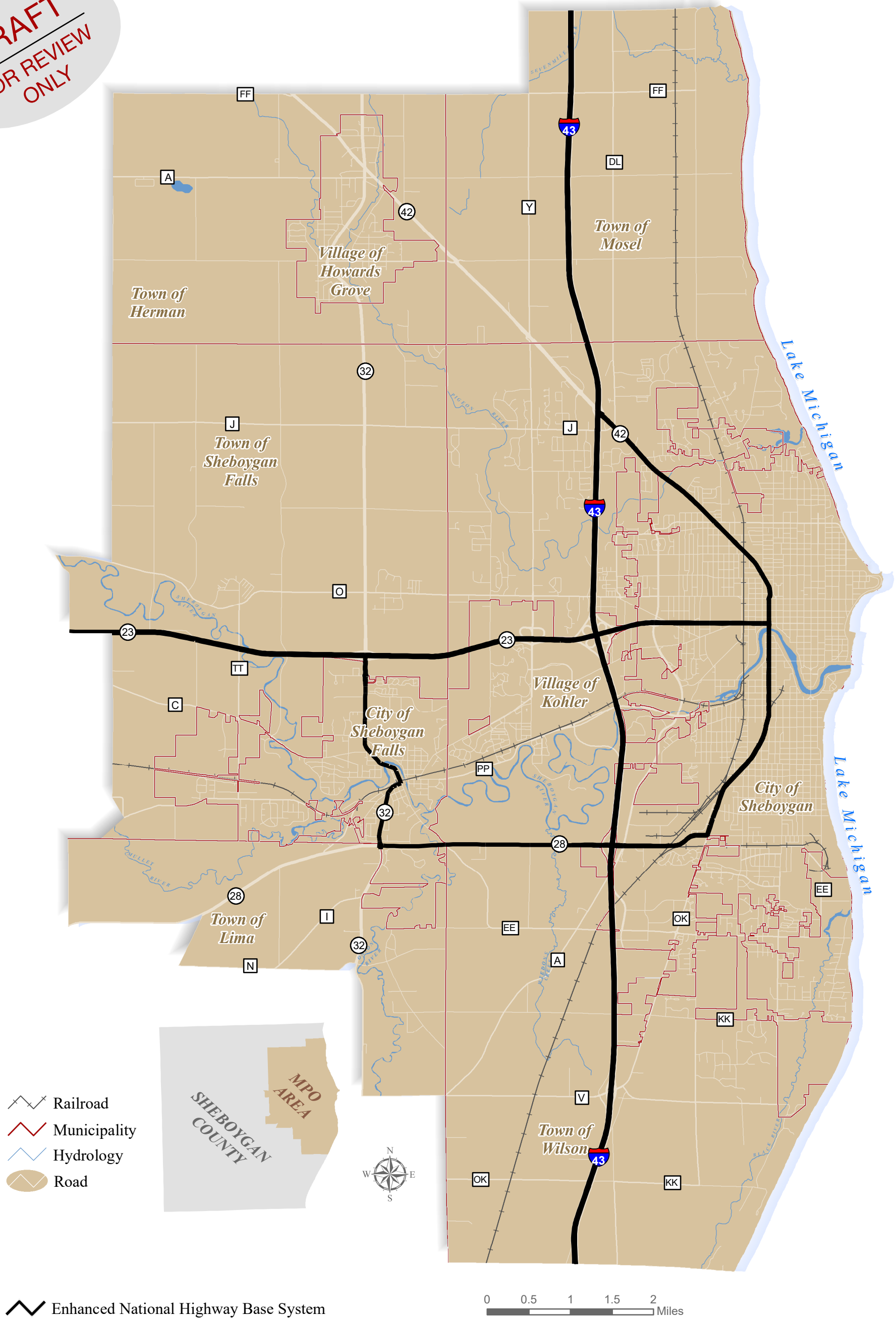
Multiple heavy truck crashes occurred at the following locations:
1. IH 43 NB/Crossover IH 43 (2)
2. IH 43 NB/Mueller Rd (2)
3. STH 28/S. Taylor Dr (4)

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*Note: All other roads are functionally classified as local facilities
**Note: Approved by:
MPO TAC/PAC: November 14, 2013
Bay-Lake RPC: December 13, 2013
WisDOT: May 7, 2014
FHWA: May 8, 2014

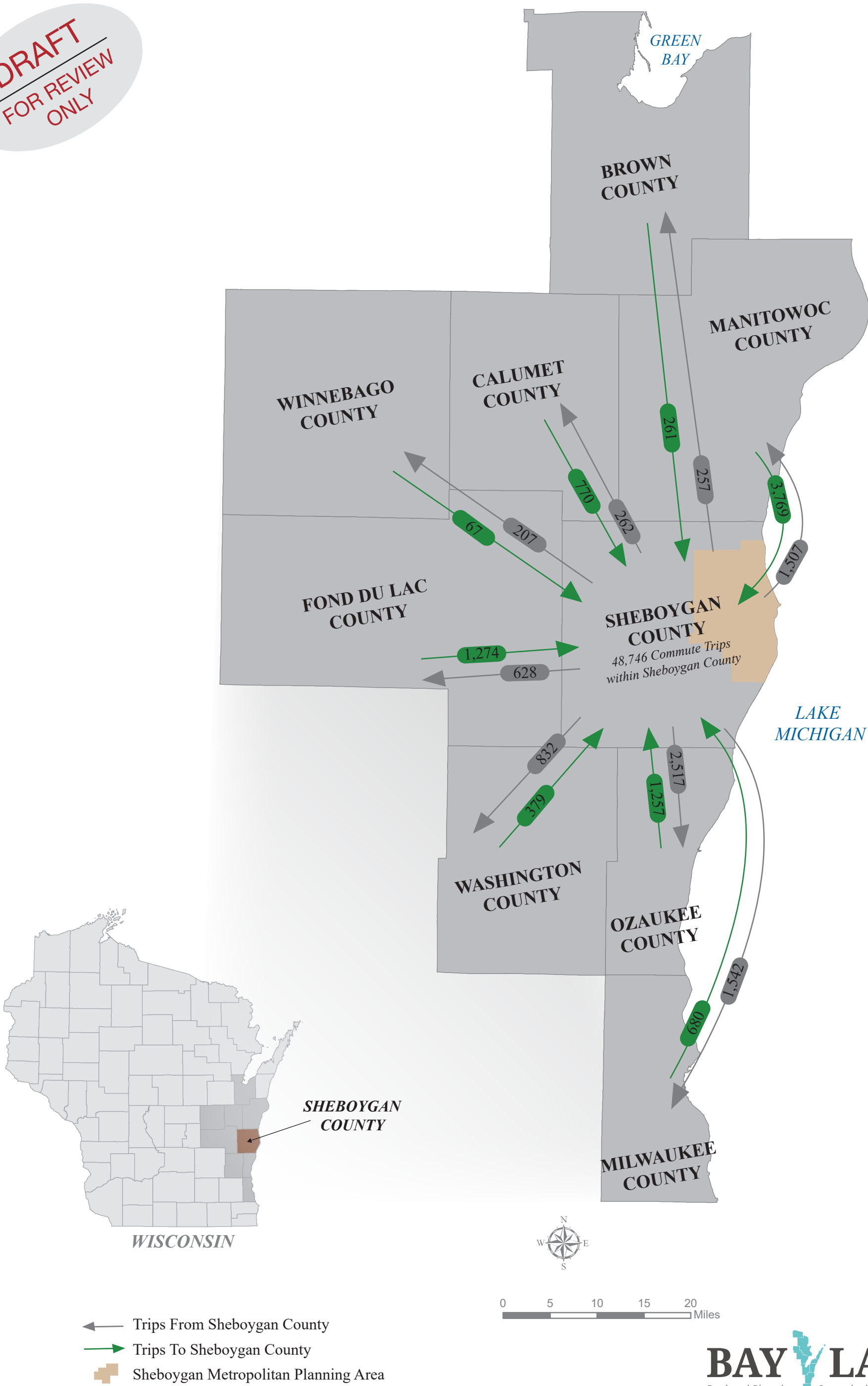
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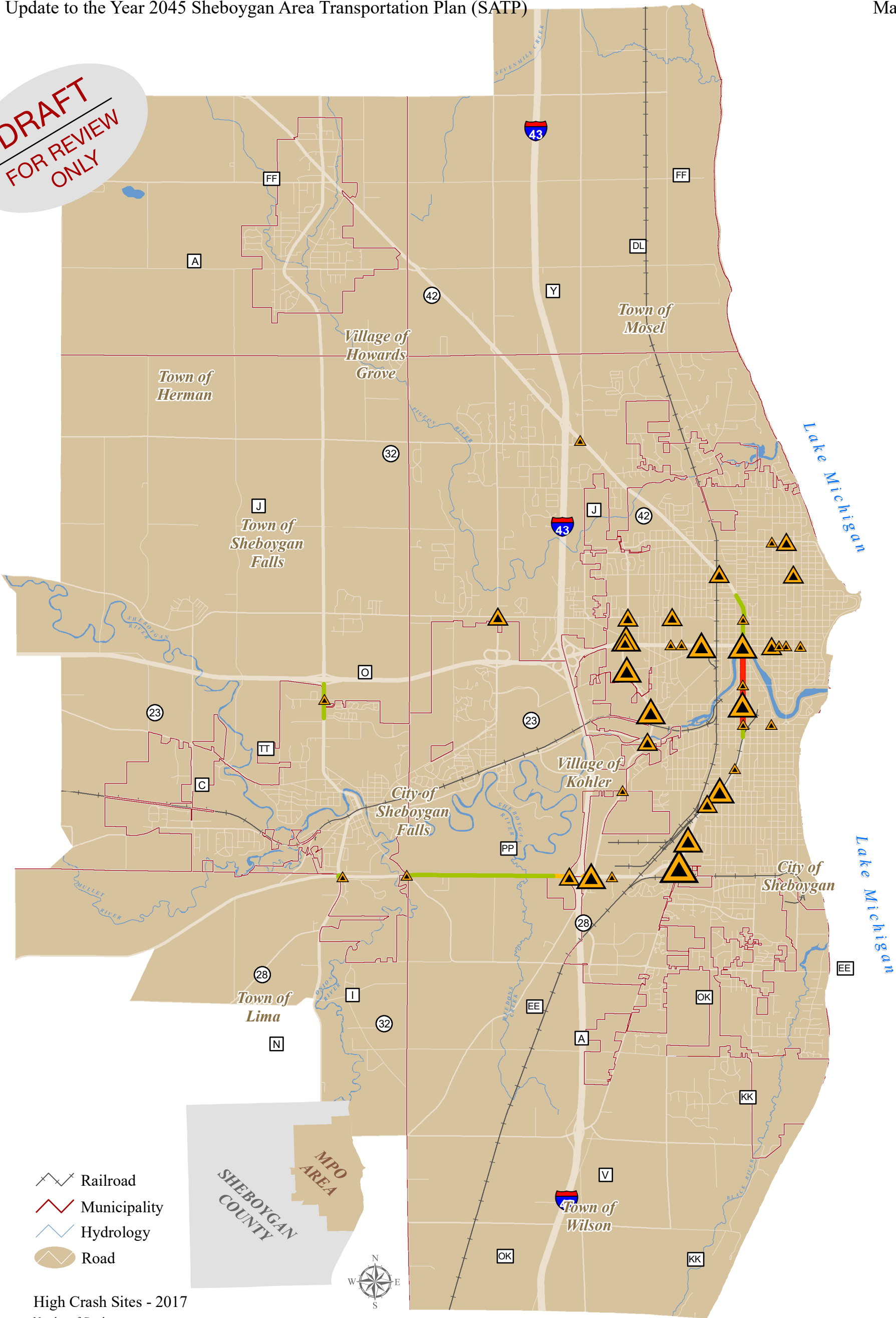
Enhanced National Highway Base System

Daily Workplace Commuters

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High Crash Sites - 2017

Number of Crashes

- 3 - 4
- 5 - 7
- 8 - 11
- 12 - 16

Potentially Congested Facilities

- Moderate Congestion (LOS D)
- Approaching Severe Congestion (LOS E)
- Severe Congestion (LOS F)

Location of Signalized Intersections, Roundabouts and Bridges Sheboygan Metropolitan Planning Area

Update to the Year 2045 Sheboygan Area Transportation Plan (SATP) Map 5.19

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