APPENDIX B

MARQUETTE CHARTER TOWNSHIP

MARQUETTE COUNTY| MICHIGAN

TRANSPORTATION PLAN| 2019-2024

MARQUETTE COUNTY ROAD COMMISSION
LARGEST IN MICHIGAN

MDOT
Michigan Department of Transportation

MARQUETTE CHARTER TOWNSHIP
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TABLE OF CONTENTS

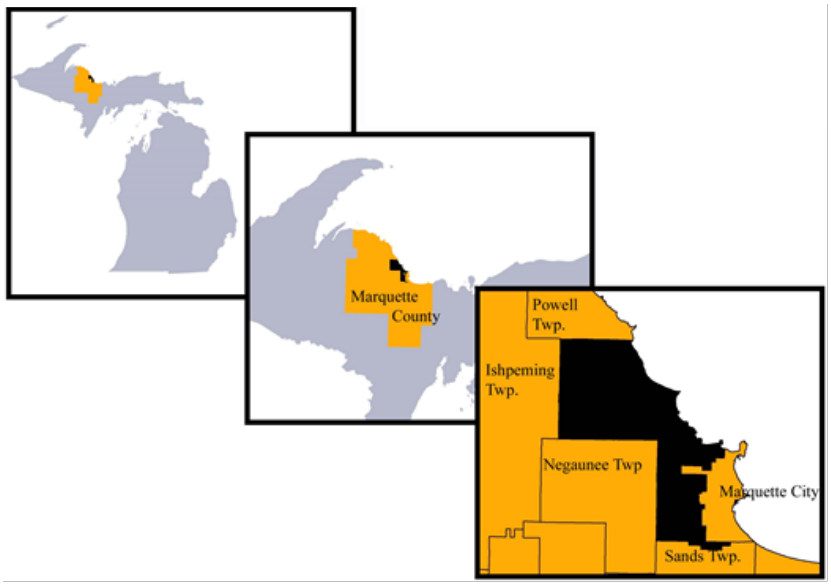
CHAPTER ONE | INTRODUCTION

1.1 DESCRIPTION OF MARQUETTE TOWNSHIP

Marquette Charter Township is located in the central Upper Peninsula of Michigan in Marquette County, adjacent to the City of Marquette, the most populous city in the Upper Peninsula. Marquette County lies on the southern shore of Lake Superior, and consists of 19 townships and three cities.

A general location map is provided as Figure 1-1 and a map showing the location of the Township within the county is shown as Figure 1-2. The Township has a land area of about 54.7 square miles, making up three geographic townships: T48N-R25W, T49N-R25W and T49N-R26W. The Township's northeast edge borders Lake Superior. Powell Township is to the north; Ishpeming Township makes up a portion of the west boundary; Negaunee Township makes up part of the south and west boundaries; Sands Township is to the south; and the City of Marquette is to the east.

Figure 1-1 Location of Marquette Township



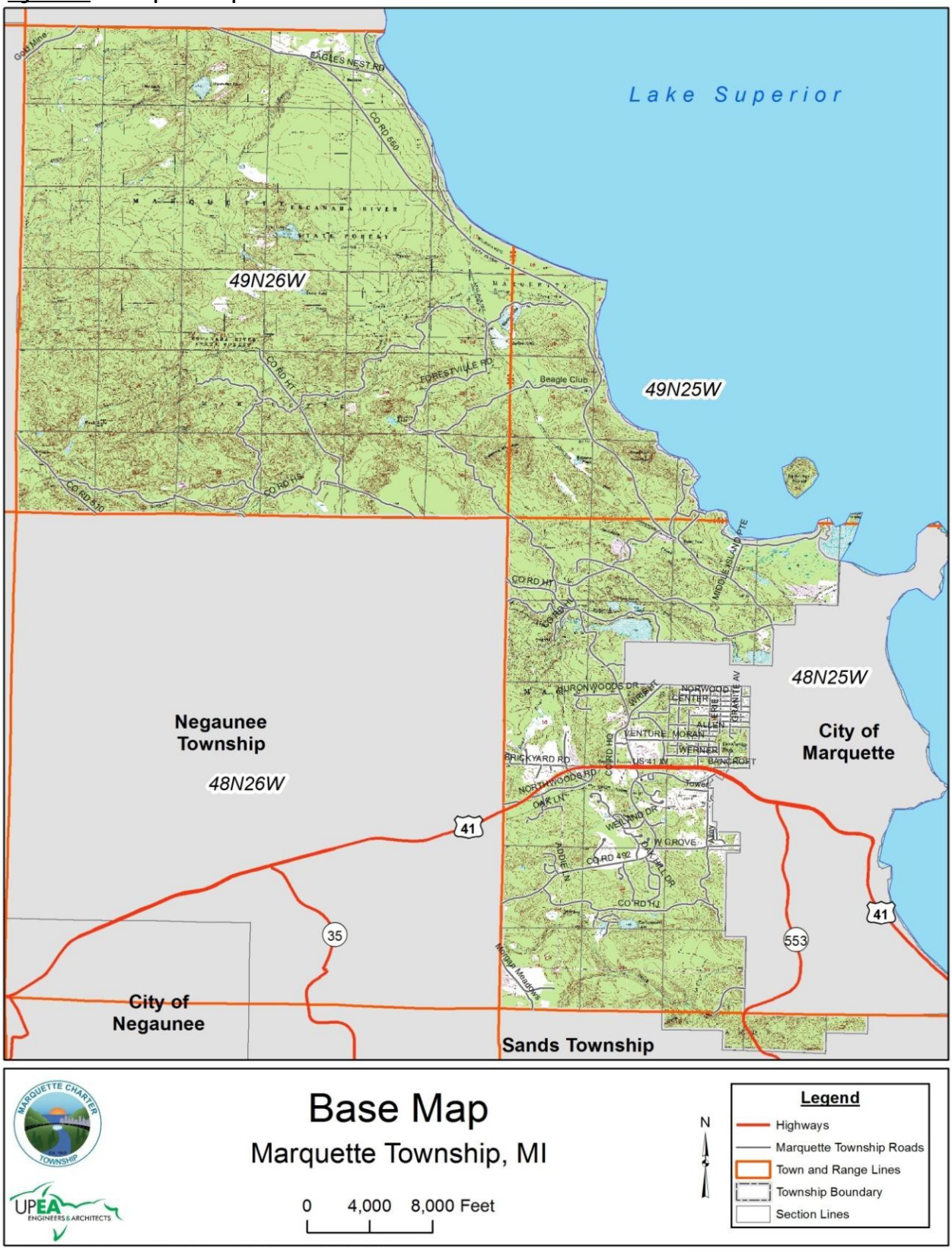
Source: Marquette County RMD

The Township's geographic location is relatively remote from large urban areas of Michigan. It is an eight-hour drive to Detroit and seven hours to Lansing. However, the City of Marquette is adjacent to the Township, offering amenities found in larger urban areas, such as a university and hospital. The Marquette area has become a regional shopping hub for much of the Upper Peninsula. Other recreational and resort areas of the Upper Peninsula are in close proximity.

The major transportation route in the Township is U.S. Highway 41/M-28. US-41 and M-28 are merged through the Township, and consist of a multi-lane highway running from Harvey through the City of Ishpeming. US-41 is an important north/south corridor connecting the central and northern Upper Peninsula with larger cities in Wisconsin and Illinois including Green Bay, Milwaukee and Chicago.

Although M-28 follows US-41 from Harvey to Baraga County, it is an important east/west highway. M-28 traverses the northern half of the Upper Peninsula from the City of Wakefield to Interstate 75 near Sault Ste. Marie. Other major transportation routes include County Roads 492 and 550.

Figure 1-2 Township Base Map



Source: Michigan Geographic Data Library, UPEA GIS, MAB, 5-9-2011

CHAPTER TWO | GOALS & OBJECTIVES

2.1 BACKGROUND

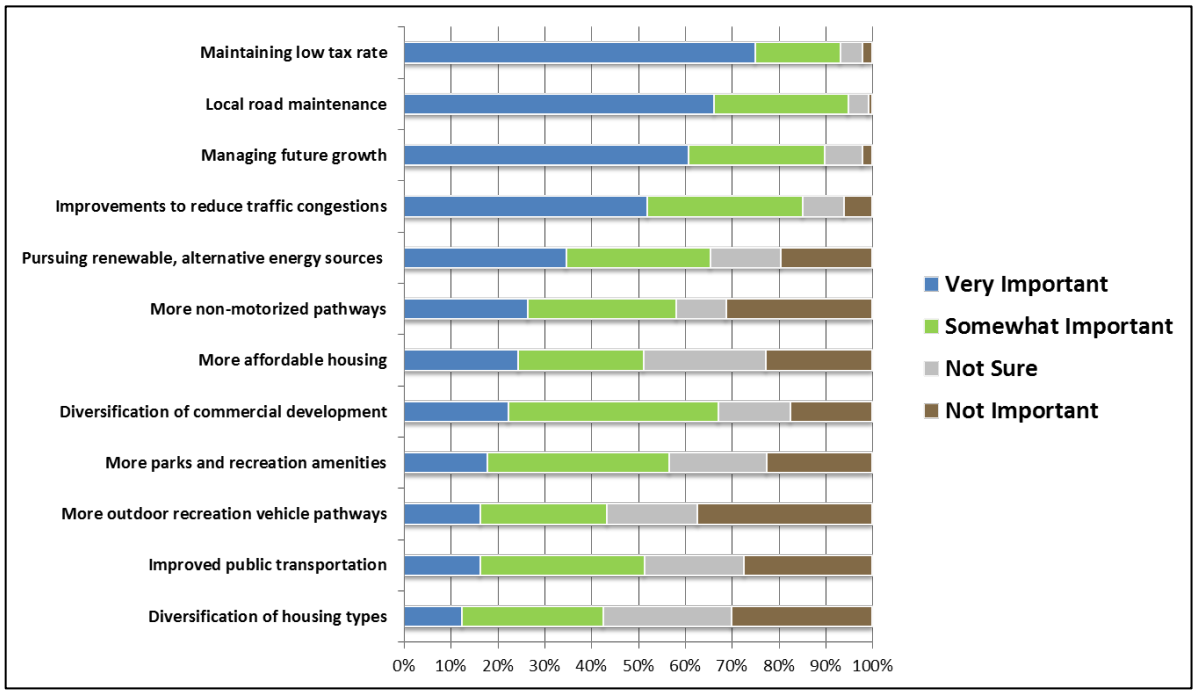
The goals and objectives of this plan are created on a foundation of previous planning initiatives. The *Charter Township of Marquette Master Plan* has specific transportation goals and objectives, as does the *US-41/M-28 Comprehensive Corridor and Access Management Plan, and 2005-2030 MDOT State Long-Range Transportation Plan.* These three plans specifically address transportation, and provide significant insight for Marquette Charter Townships Tranportation Goals.

The 2010 *US 41/M-28 Comprehensive Corridor and Access Management Plan* was contracted by the Michigan Department of Transportation and prepared by The Central Upper Peninsula Planning & Development Regional Commission (CUPPAD) and Marquette County Resource Management and Development Department. The original plan was prepared by the Planning and Zoning Center, Inc., Traffic Engineering Associates, Inc., and The Land Information Access Association in April 2004.

Crucial to the creation of this plan's Goals and Objectives was the input of Marquette Township Residents. In the summer of 2018 Marquette Township staff conducted a community survey which garnered 248 responses from a distribution of 750 survey questionnaires. Findings regarding transportation from the 2018 Marquette Township Community Survey include the following:

- Importance of Various Issues Facing Marquette Township (Fig 2-1)
  Sixty percent (60%) of respondents indicated that the expansion of non-motorized transportation was either very or somewhat important.

Figure 2-1 Community Survey Responses: Importance of Issues Facing Marquette Township's Future



Source: 2018 Marquette Township Community Survey

- Satisfaction with Major Township Services
  Streets and road management was ranked second to last in satisfaction (63%), and overall effectiveness of traffic and congestion management was ranked last in satisfaction (48%).

- Most Important Statements Regarding the Township's Future
  Seventy-six percent (76%) of respondents indicated that the improvements to reduce traffic congestion were either very or somewhat important. Sixty-two percent (62%) of respondents indicated local road maintenance were either very or somewhat important. Both were indicated as top five statements of importance to Marquette Townships Future.

2.2 GOALS & OBJECTIVES

Goal 1
Maintain a high quality integrated transportation system for economic benefit and improved quality of life though 'Transportation Asset Management'. Use asset management to preserve Marquette Charter Township's transportation system investments, protecting the environment and utilizing public resources in a responsible manner.

- ASSET MANAGEMENT: The Committee needs an annually updated asset management program to determine the 'order of repair' and maintenance for the Marquette County Roads in the Township.

- ROAD REPAIR AND MAINTENANCE: The Road Committee will analyze the Pavement Surface Evaluation and Ratings (PASER) and together with available traffic counts, emergency access routes, Complete Streets planning and attention to improving east/west and north/south traffic flow through the Trowbridge area, recommend a street specific "order of repair."

- Committee will follow the 'order of repair', with an estimate of the associated costs and various funding options.

- The Committee will consider available grants and/or an extension of our current millage.

- The Committee will make recommendations to the Township board based on recent data, and the order of repair and maintenance as identified by the Township's Transportation Asset Management Program.

- SNOW PLOWING: The Road Committee will explore options to initially open roads following a significant snow event with attention to emergency access routes followed with the balance of our more populated areas, and regular clearing of the service strips and other pedestrian walkways within our urban areas. The Committee will recommend various options, to include policy and required equipment, and the associated costs of each for the Board's consideration.

Goal 2
Plan, Build, maintain, and operate the safest transportation system possible. Continue to improve transportation safety and ensure the security of the transportation system in a post 9/11 world.

- MARQUETTE TOWNSHIP FIRE DEPARTMENT: The Committee will work closely with the Fire Department in planning and implementing a safe transportation system.

- TRANSPORTATION FACILITIES PLAN: The Committee will submit recommended changes and updates of the Transportation Facilities Plan to the Township Manager for referral to the Township Planning Commission for consideration.

- LIGHTING: The Committee will recommend amendments to the Transportation Plan regarding recommended and minimum lighting standards required within residential areas. The Committee will ensure compliance of the 2014 Marquette Township Street Lighting Policy. This recommendation will include initial associated costs as well as long term budget impact.

- ORDINANCES: The Committee may initiate consideration for modification to established Township Ordinances specifically related to local road maintenance issues by submission of recommendations to the Township Manager for referral to the Township Planning Commission.

Goal 3

Modernize and enhance the transportation system to improve mobility and accessibility. Expand, and connect the system to support economic growth and better facilitate the movement of goods, people, and services.

- AUTOMOBILE ALTERNATIVES: Place high priority on the planning and funding of pedestrian, bicycle, and public transportation systems as an alternative to automobile circulation. Meet the circulation needs of persons who cannot or choose not to use the automobile by providing safe and convenient bicycle and pedestrian circulation systems throughout the developed areas of the Township.

- PUBLIC TRANSPORTATION: The Committee supports public transportation services that assists those with limited mobility, and promotes techniques that encourage public transit and other multiple occupant vehicle use.

- ACCESS MANAGEMENT: Explore and make recommendation of acquisition and enhancement opportunities to ensure compliance with Marquette Township Access Management Ordinance.

Goal 4

Improve the efficiency and effectiveness of the transportation system and transportation services and expand Marquette Township's coordination and collaboration with Michigan Department of Transportation, Marquette County Road Commission, regional municipalities, the Marquette County Transit Authority, and local private land owners. Facilitate a transportation system that provides services that ensure modal choices for citizens and stakeholders.

- MARQUETTE COUNTY ROAD COMMISSION: The Committee will confer and co-ordinate with the County Road Commission and its' engineer/manager, to address the Township's road maintenance, priority projects, and safety issues.

- MICHIGAN DEPARTMENT OF TRANSPORTATION – ISHPEMING TRANSPORTATION SERVICE CENTER: The Committee will confer and co-ordinate with the manager of the Ishpeming Transportation Service Center and the US 41 Corridor Advisory Committee, in planning for US 41 improvements and Complete Street components.

- MICHIGAN DEPARTMENT OF TRANSPORTATION - SUPERIOR REGION: The Committee will confer and co-ordinate planning with the Superior Region of Transportation Service Centers.

- MARQUETTE TRANSIT AUTHORITY – MARQ-TRAN: The Committee will confer and co-ordinate with Marq-Tran in planning transit routes and pedestrian transfer stops.

- LOCAL PRIVATE LANDOWNERS: The Committee will make recommendations to the Township Board to co-ordinate with local private landowners in remedying local road issues.

- FUNDING SOURCES: The Committee will assist the township staff in identifying possible alternative sources for County road maintenance funding. The Committee will provide input in developing and preparing grant applications and potential road millage campaigns. Preparation and submittal of grant applications and potential millage language will remain the responsibility of the township staff.

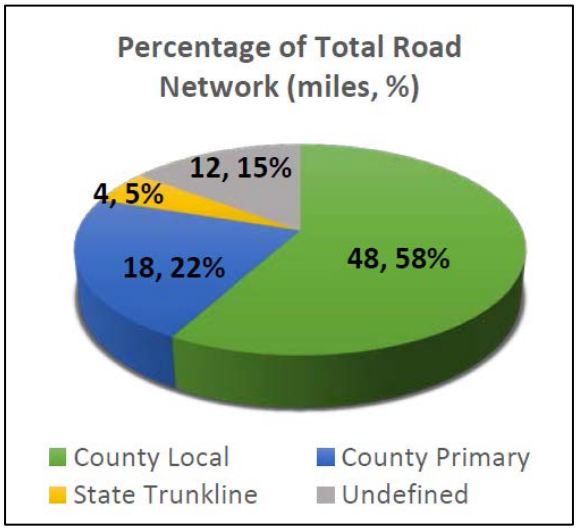
CHAPTER THREE | CURRENT CONDITIONS

3.1 PUBLIC ACT 51 ROADS

Public Act 51 of 1951 is the primary mechanism under which roads are currently maintained in the State of Michigan. There are two essential components of the Act. First, the Act creates the Michigan Transportation Fund into which gas tax and vehicle registration fees are deposited to provide financing of road facilities (detailed explanation in Chapter 7, Finance), and secondly, a classification system is developed which, utilizing specific criteria, assigns a classification to each road.

The road classification system consists of state trunkline, county primary, and county local roads. The classification assigned to a road tells a number of things about it, but most significantly, its importance to the transportation system. The following are general descriptions of the classifications and how they pertain to Marquette Township. Figure 3-1 shows the classification breakdown for Marquette Township.

Figure 3-1
Act 51 Legal System Classifications: Marquette Township



Source: Marquette County Road Commission

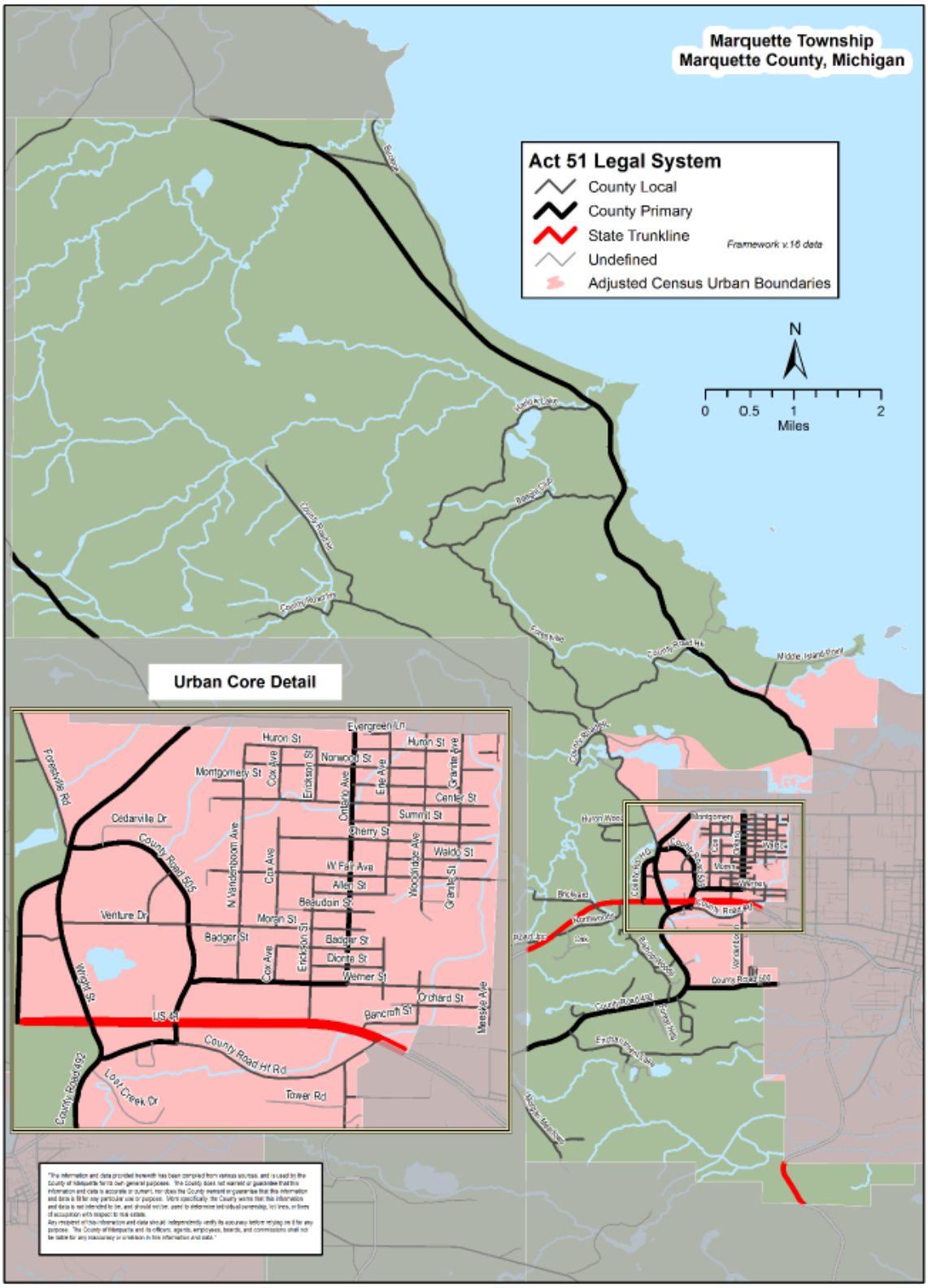
The State Trunkline portion of the road network contains both state and federal highways and comprises the main highway corridors within the State as well as providing for connectivity with other states. This classification of road typically handles the largest volume of traffic in a 24 hour period. Highway US 41/M-28 between Marquette, Negaunee and Marquette Township accommodates more traffic than any other road in the Upper Peninsula with a daily average of 32,000 vehicles (MDOT, 2016). A small portion of M-553 also crosses the southern boundary of the Township. There are four miles of trunkline representing 5% of the entire Township road system. Act 51 assigns MDOT the direction, supervision, control, and cost of maintenance, construction, and improvements to State trunkline highways.

The County Primary system is made up of those roads that are considered to be of "greatest general importance to the County" (excluding state trunkline). These roads serve as a supplement to the state trunkline systems and provide connection between population centers not on trunklines. There are about 18 miles of primary road in Marquette Township or approximately 22% of the Township road system.

County Local roads total 48 miles or 58% of the Township's total road mileage. Local roads are further classified as year-round or seasonal depending on whether or not they are plowed in the winter. According to the December 31, 2015 report of the MCRC, 17 miles of local roads in the Township are seasonal.

Non-Certified roads are typically private roads. There are 12 miles or about 15% of the Township system that are not Act 51 certified.

Figure 3-2 Act 51 Legal System Map



Source: Marquette County

Marquette Township has an extensive and well-developed road network extending nearly 85 miles. This network consists of State trunkline (which includes federal highways) county primary, and county local roads, see Figure 3-2. Additionally, the road system extends into more remote areas through informal and private roads. Some subdivisions also have private roads.

The principal east-west route through the Township is combined US 41/M-28 highway. This highway extends across Marquette County, the Upper Peninsula, and eventually provides connectivity with Northern Wisconsin, Minnesota, and Canada to the west and Lower Peninsula of Michigan and Canada to the east. Other significant east-west travel routes are County Road 492 (known as Wright Street north of US 41/M-28), Fair Avenue, and County Road 500. North-South travel routes are not as well developed; County Road 550, County Road 492, S. Vandenboom Road, and Ontario Avenue are probably the most significant. A small segment of M-553 enters the south extreme of the Township.

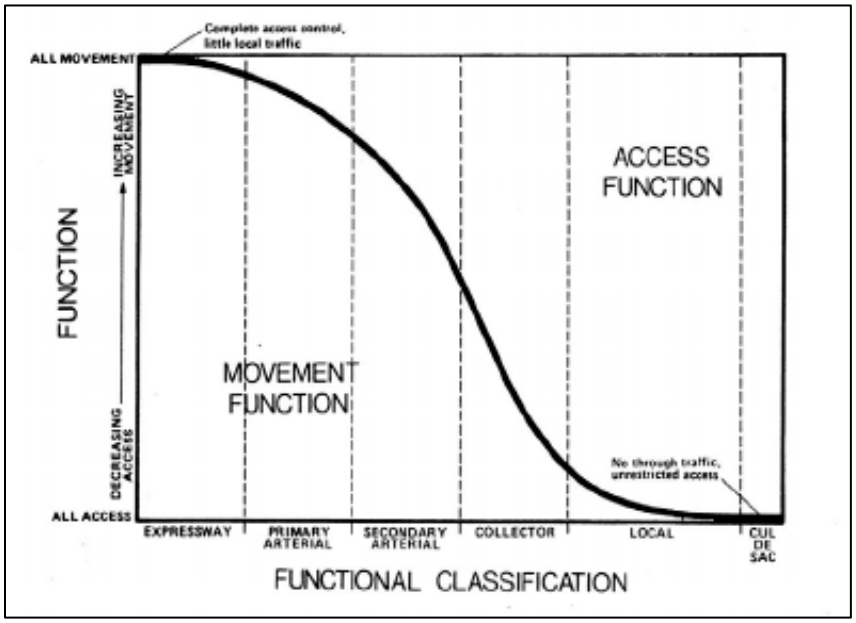
The MCRC has a countywide road naming system. Primary roads are numbered and local roads start with a unique letter per the township where they are located. Local roads in Marquette Township start with an "H." A comprehensive listing of all Township roads and their Act 51 classification can be found in Appendix B, Road Classification by Road Name.

3.2 NATIONAL FUNCTIONAL CLASSIFICATION SYSTEM (NFC)

In the late 1960s, the Federal Highway Administration (FHWA) developed a system of classifying all streets, roads, and highways based on their functions. This system has been utilized as a planning tool by federal, state, and local transportation agencies since that time.

The basis of this scheme is that roads and streets do not act independently. Most travel takes place over a network of roads, which vary in design, carrying capacity, and travel speeds. Function varies from that of moving traffic to accessing property. Property access is at both ends of the trip with varying levels of mobility in between.

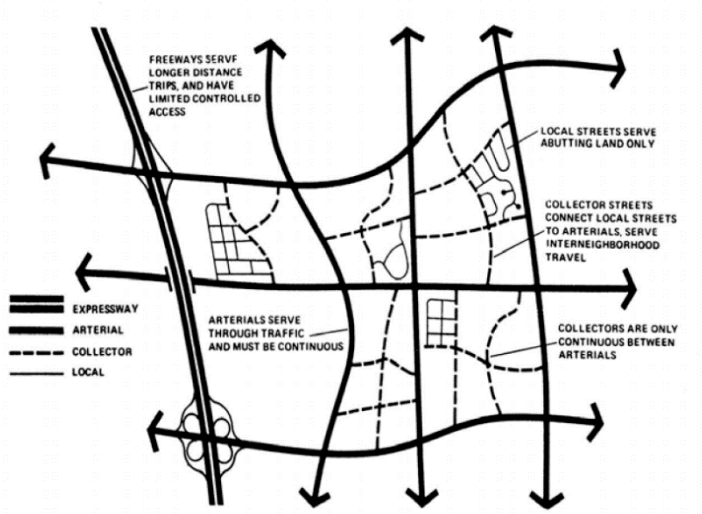
Figure 3-3 Functional Relation to Movement & Access Graph



Source: Michigan Access Management Guidebook, Planning & Zoning Inc., 2001, p. 2-6

Figure 3-3 shows the relationship between the movement and access function of a road. Roads with increased movement, such as interstates, have limited access. At the other end of the spectrum are roads with unrestricted access. Cul-de-sacs, for example, do not allow for through traffic rather their function is to access property. The functional classification of a road is directly related to the amount of movement and access that road allows. Figure 3-4 shows the varying functions and characteristics of roads within a network.

Figure 3-4 Road Function Types within a Network



Source: Michigan Access Management Guidebook, Planning & Zoning Inc., 2001, p. 2-6

The "hierarchy" lists principal arterials at the top followed by minor arterials, collectors, and local roads. MDOT provides the following definitions of the categories

Principal Arterials are at the top of the NFC hierarchal system. Principal arterials generally carry long distance through-travel movements. They also provide access to important traffic generators, such as major airports or regional shopping centers.

Example: US 41/M-28

Minor Arterials are similar in function to principal arterials, except they carry trips of shorter distance and to lesser traffic generators.

Example: Wright Street

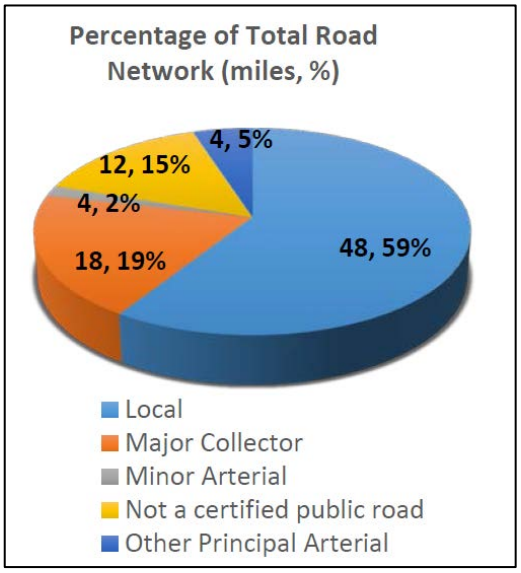
Collectors tend to provide more access to property than do arterials. Collectors also funnel traffic from residential or rural areas to arterials.

Examples: Ontario Street, Werner Street

Local roads primarily access property.

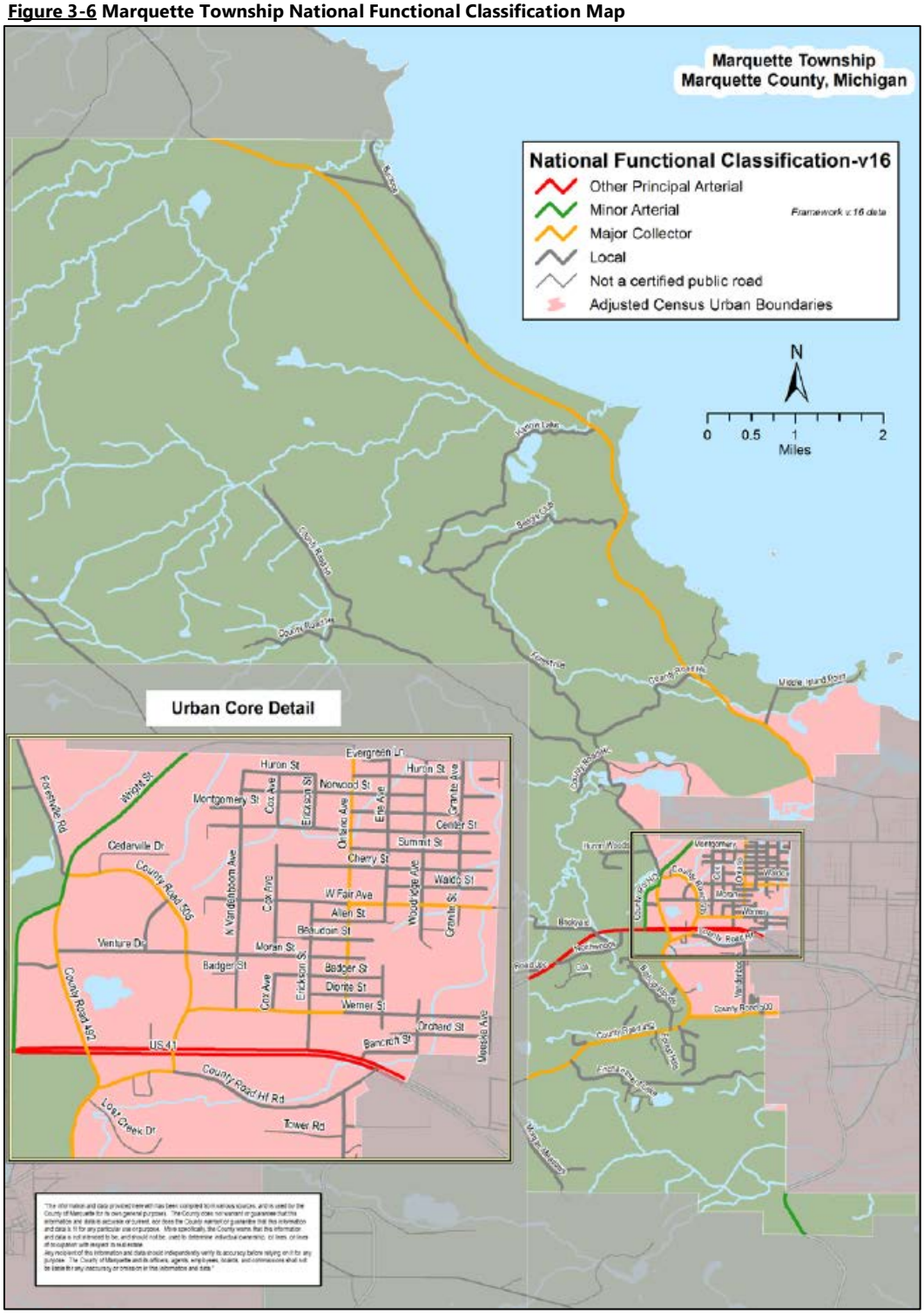
Examples: Center Street, Vandenboom, and similar neighborhood streets.

Figure 3-5 NFC for Marquette Township



Source: Marquette County Road Commission

Figure 3-6 Marquette Township National Functional Classification Map



Source: Marquette County

Functional classifications can also be considered as rural or urban and are defined by U.S. Census urban boundaries. These boundaries are based on areas with a population that exceeds 5,000 persons. Urban and rural areas vary in characteristics such as density, types of land use and the extent of road development. Marquette Township has both rural and urban areas. The urban portion of the Township is part of a larger area that includes all of the City of Marquette and part of Chocolay Township. The urban area has grown since the initial Plan was adopted, most notably to the north along County Road 550. The balance of the Township is considered rural. Figure 3-6 shows the urban and rural areas of the Township and the functional classifications of roads. Figure 3-5 shows the breakdown by function of roads in Marquette Township.

3.3 FEDERAL FUNDING

The NFC designation assigned to a particular road determines if it is a federal-aid road and eligible for federal funds. The classifications that qualify are principal arterials, minor arterials, urban collectors, and rural major collectors. This translates into approximately 22 miles of the roads in the Township.

Current federal funding, called the Fixing America's Surface Transportation Act (FAST Act), was signed into law in December 2015 and allocated over $305 billion through the year 2020. The Fast Act builds on the changes made by MAP-21, an act enacted in 2012 that included provisions for addressing challenges facing the country's transportation system.

Federal funding for the urban area of Marquette Township will mainly fall under the federal Surface Transportation Program (STP). Each year, small urban areas throughout the state apply for road improvement projects along the federal aid eligible road system. Currently, the maximum amount of funding awarded to a small urban area is $375,000. Only road agencies can apply for STP funds and a minimum twenty percent (20%) local match is required. Rising construction costs coupled with an increasing number of small urban areas throughout the state have increased the competitiveness for these monies.

3.4 ROAD SURFACE CONDITION ANALYSIS

Every other year, the Marquette County Road Commission rates the surface condition of the paved county road system. Additionally, the MCRC participates with the Michigan Department of Transportation (MDOT) and the Central Upper Peninsula Planning and Development (CUPPAD) Regional Commission to rate the surface condition of paved federal aid eligible roads in Marquette County.

The rating method used is called PASER and stands for pavement surface evaluation rating. The surface condition of roads is analyzed and rated through a windshield survey. PASER is a one through ten (1-10) rating with "1" considered failed and "10" considered brand new construction. Raters evaluate visible deterioration and look for distresses such as cracking and rutting to determine an accurate rating.

The PASER results fall into three (3) general asset management categories: routine maintenance, capital preventive maintenance, and structural improvement. A description of the three categories from the *Asset Management Guide for Local Agencies in Michigan* follows.

Routine Maintenance is the day-to-day, regularly scheduled activities to prevent water from seeping into the surface such as street sweeping, drainage clearing, gravel shoulder grading, and sealing cracks. PASER ratings 8, 9, and 10 are included in this category. This category also includes roads that are newly constructed or recently seal coated. They require little or no maintenance.

Capital Preventive Maintenance (CPM) is at the heart of asset management. It is the planned set of cost-effective treatments to an existing roadway that retards further deterioration and maintains or improves the functional condition of the system without significantly increasing the structural capacity. The purpose of CPM fixes is to protect the pavement structure; slow the rate of deterioration; and/or correct pavement surface deficiencies. PASER ratings 5, 6, and 7 are included in this category. Roads in this category still show good structural support but the surface is starting to deteriorate. CPM is intended to address pavement problems before the structural integrity of the pavement has been severely impacted.

Structural Improvement is the category of roads requiring some type of repair to improve the structural integrity of the pavement. Roads with a PASER rating of 1, 2, 3, and 4 are included in this category. Typical structural improvement activities include major rehabilitation or reconstruction.

Figure 3-8 compares surface condition ratings of asphalt roads in 2007 and 2016 by Act 51 classification in Marquette Township. The graph depicts a significant improvement to the local road system since 2007. County local roads went from having only 15% of total roads to over 75% in the routine maintenance category. This signifies that a significant investment has been made in the township. The percent of roads classified as requiring structural improvements decreased from approximately 56% in 2007 to 16% today.

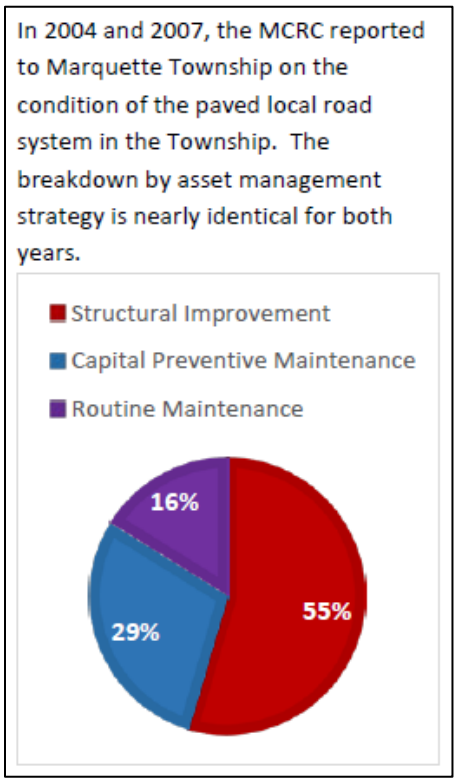
The structural condition of county primary roads has also significantly improved since 2007. This can be attributed to the reconstruction of roads such as County Road 550 and Werner Street.

The state trunkline, however, shows a decrease in surface condition quality. The total length of trunkline is relatively low in the Township. MDOT plans to reconstruct part of the trunkline in the summer of 2019. That project will greatly improve the overall breakdown of surface condition.

In 2007, the estimated cost to bring the local road system into excellent condition was $4.63 million. At that time, only 17% of the system was considered excellent. Today, 75% of the system is considered excellent as a result of investment funded by a locally funded millage. As the Township continues implementation of its asset management strategy on the local road system, the percent of roads in excellent condition will increase.

In order to protect and prolong the significant investment made recently to the road system in Marquette Township; funds should be earmarked for near future fixes, such as crack sealing and or chip sealing. These fixes should be applied to road segments once they fall out of excellent condition to prevent accelerated deterioration.

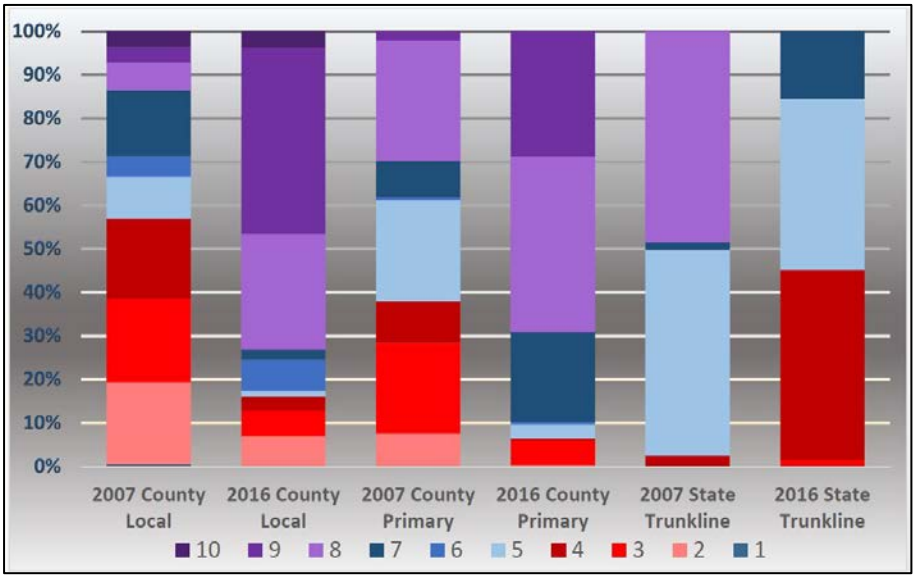
Figure 3-7 2004 & 2007 Road Conditions



Source: Marquette County Road Commission

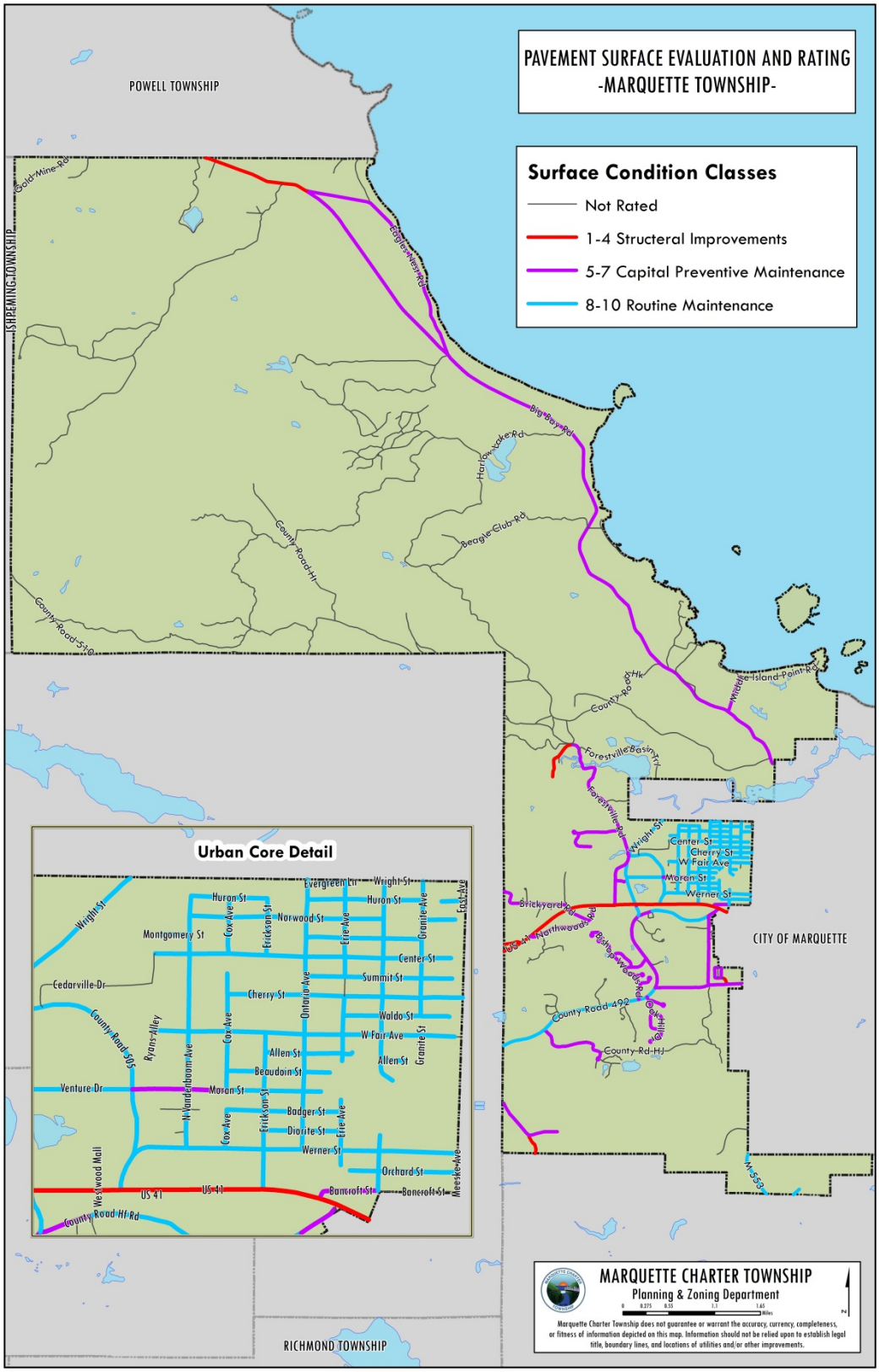
Marquette Township should continue to use the PASER surface condition results to aid in determining future road projects. Preserving roads that are currently in fair condition will be less expensive than reconstructing them once they deteriorate. This approach is known as applying a "mix of fixes" and moves away from the "worst first" mentality. A challenge of this approach to road management is educating the public.

Figure 3-8 Surface Ratings per Act 51 Classification



Source: Marquette County Road Commission

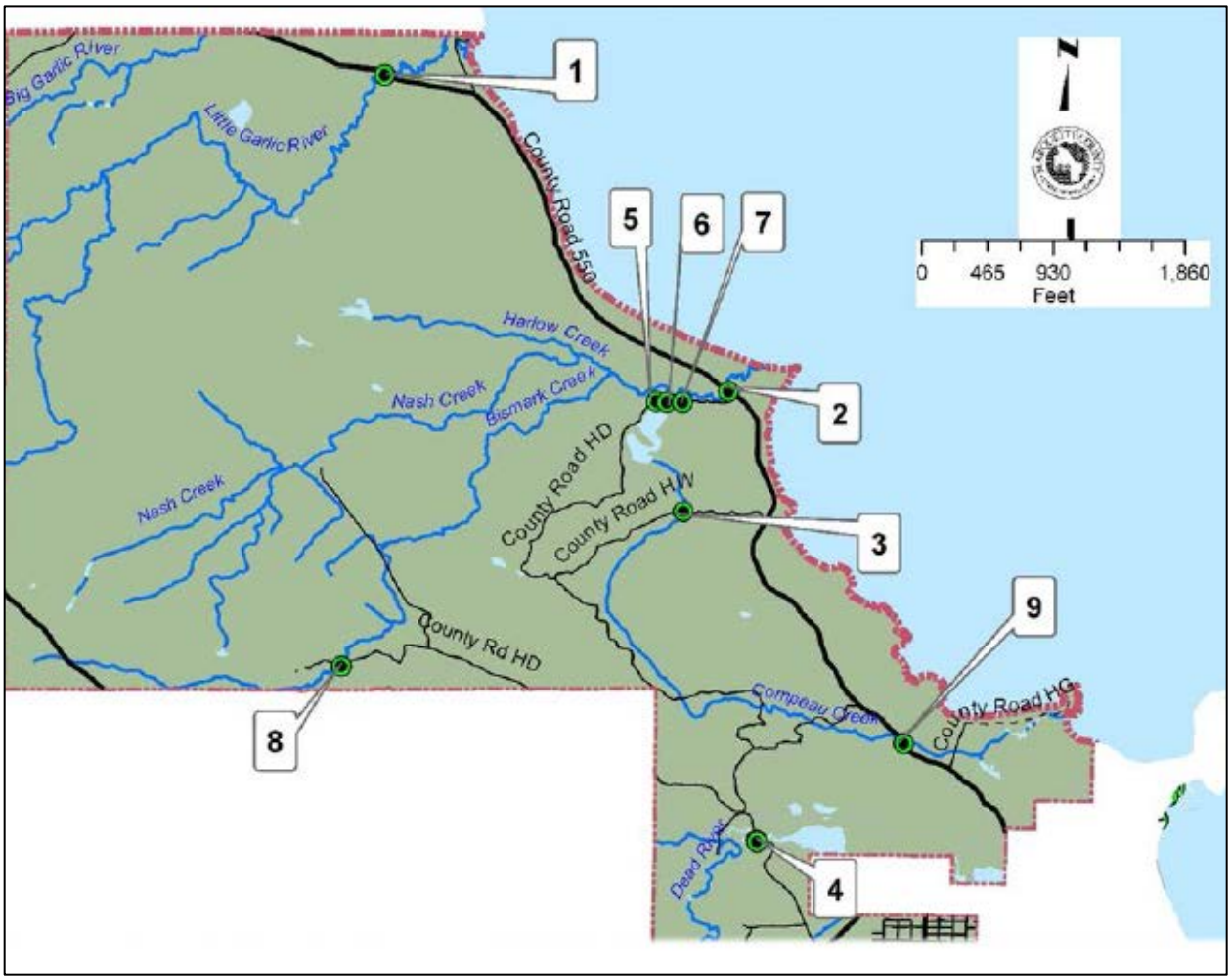
Figure 3-9 Marquette Township PASER Rating Map



3.5 BRIDGES

Bridges are an important component of any road system. There are nine bridges in Marquette Township that must be monitored and maintained by the MCRC. See Figure 3-10 for bridge locations.

Figure 3- 10 Bridge Locations, Marquette Township



Source: Marquette County RMD

Biannual inspections, an Act 51 requirement of local road agencies, are performed on bridges to determine their condition. The MCRC inspects all bridges on the county road system. The MDOT inspects bridges on state trunklines and cities inspect bridges within city limits. In a critical situation, Road Commission staff may obtain services of a structural engineer. These inspections are performed on even numbered years. Some bridges may require closer monitoring and may be inspected at 3 month, 6 month, or annual basis as appropriate. A variety of criteria are used to assess the status of the decking, girders, and abutments as well as other components such as traffic counts and environmental impacts (both the stream/river on the structure and the structures impact on the stream/river) among others.

Table 3-1 lists the MCRC bridges located in Marquette Township and their conditions. The Map ID corresponds to Figure 3-10.

Table 3-1 Marquette County Road Commission Bridges, Marquette Township

Map ID	Road Name	Water Feature	Category	Rating	Comments
1	County Rd 550	Little Garlic River	Not Deficient	93.6	Built in 2014
2	County Rd 550	Harlow Creek	Not Deficient	96.8	Built in 2014
3	County Rd HW	Inlet to Harlow Lake	Structurally Deficient	24.5	Off List (Abandoned/Closed)
4	County Rd HD	Dead River	Not Deficient	99.8	Built in 2012
5	County Rd HD	Harlow Creek	Functionally Obsolete	56.8	Built in 1928
6	County Rd HD	Bismark Creek	Functionally Obsolete	58.8	Built in 1928
7	County Rd HD	Bismark Creek	Functionally Obsolete	47.8	Built in 1928
8	County Rd HL	Reany Creek	Not Deficient	85.7	Built in 1950
9	County Rd 550	Compeau Creek	Not Deficient	99.1	Built in 2014

Source: MCRC

The bridges are divided into three categories; structurally deficient, functionally obsolete, and not deficient. The FHWA definition of the terms follow.

> Structurally Deficient Status – A highway bridge is classified asstructurally deficient if the deck, superstructure, substructure, or culvert is rated in "poor" condition. A bridge can also be classified as structurally deficient if its load carrying capacity is significantly below current design standards or if a waterway below frequently overtops the bridge during floods.
>
> Functionally Obsolete Status – Highway bridges classified as functionally obsolete are not structurally deficient but their design is outdated. They may have lower load carrying capacity, narrower shoulders, or less clearance underneath than bridges built to the current standard.

The table also contains a federal sufficiency rating. Sufficiency rating is a numerical score from 0-100 points that indicates the condition of a bridge relative to ideal conditions. A rating of 100 points implies that a bridge meets all criteria in exemplary fashion. A rating of 0 points indicates a bridge that is closed to traffic because of its condition.

The process by which a bridge is assessed and eventually repaired or replaced is described in the following text. The local agency, for Marquette Township, the MCRC performs an inspection. MCRC uses the information collected from all the bridges and ranks them to arrive at their "top ten". The Board of County Road Commissioners utilizes the rankings and other considerations to finalize the list. MCRC staff completes an application and submits to the MDOT in June of the year for funding consideration. A maximum of five projects can be submitted. MDOT looks at all applications and re-inspects the bridges. MDOT compiles all the data collected and sends it to the Regional Bridge Council. The Council meets in the fall to determine which bridges in the Region should be funded (the Superior Region includes the entire Upper Peninsula). MDOT reviews all regional selections and notifies agencies of which bridges were selected. If selected, money becomes available in three years.

3.6 TRAFFIC COUNTS

Michigan Department of Transportation Traffic Counts

MDOT conducts traffic counts on the state trunkline system annually. In recent years the State launched interactive map online showing traffic volumes by segments of trunkline. Figure 3-11 shows a screenshot of the interactive map.

Figure 3-11 MDOT Annual Average Daily Traffic Map

Source: Marquette County RMD

Table 3-2 Historic Average Daily Traffic (ADT) State Trunkline

Location	2013	2010	2006	2005	2004	2000	1996
Near County Road 502	19,300	19,100	19,600	20,600	31,400	29,700	25,100
Near Northwoods Road	30,100	30,600	34,700	33,400			
Near County Road HQ	30,100	30,600	34,700				
Near Erickson Street	32,800	32,300	31,700	30,500	31,400	30,900	32,800
Near Washington Street	16,500	16,000	16,600	15,400	15,800	14,300	13,300
Between M-553 & Grove Street	16,300	16,500	15,700	15,800	15,800		
Near Township Boundary	6,400	6,800	6,700	7,000	7,000	5,800	

Source: Marquette County RMD

To understand varying traffic volume levels of the corridor, it is necessary to evaluate the average daily traffic (ADT) or number of vehicles, beyond the Marquette Township boundary.
Traffic volumes increase from east to west along the corridor. The highest recorded volume was in the Wal-Mart/Target area.
This is the highest traffic volume in the Upper Peninsula.
Volumes drop off significantly outside of the urban area signifying the impact of local traffic.

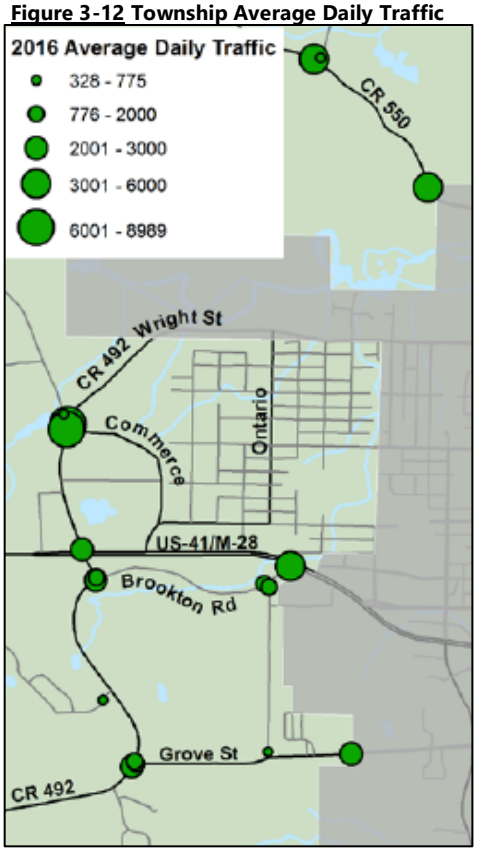
Historically, traffic volume has increased (Table3-2). The following table compares State trunkline volumes over time. Traffic count locations have varied slightly throughout the years. Traffic counts generally are increasing in the Marquette area; however there has been a decline in volume recently along the highest volume segment of trunkline (near Walmart/Target).

Marquette County Road Commission Traffic Counts

The MCRC has conducted traffic counts throughout the County for many years. Generally, traffic counting is carried out every three years. In 2016, the MCRC had eighteen (18) different count locations in Marquette Township. A handful of counts could not be conducted due to construction activity, but will be captured in 2017. Figure 3-12 shows volumes per count location for 2016. County Road 492 (Wright Street), north of US 41/M-28, yielded the highest traffic volume (8,989 ADT) of the MCRC counts. The second highest count location at 3,877 ADT, was on County Road 550 (Big Bay Road).

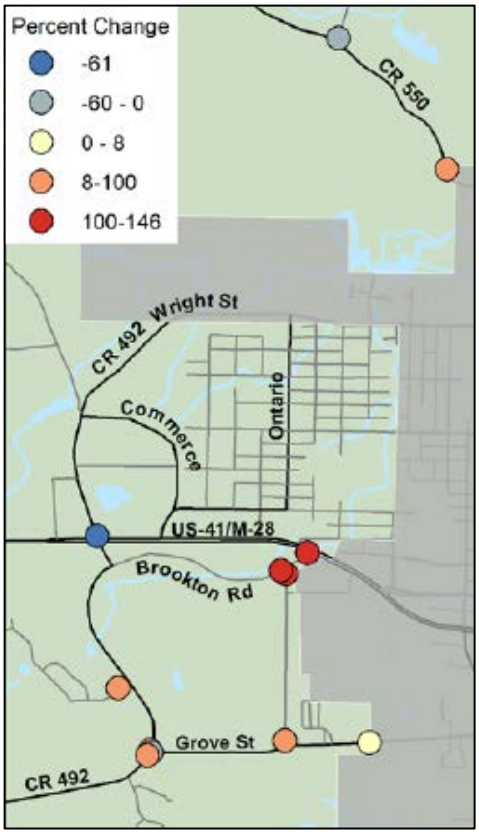
Figure 3-13 shows the percent change in traffic volume from the years 2007 and 2016. In that timespan, volume has increased 8% overall on the county road system in Marquette Township. The Wright Street segment north of US-41/M-28 has had a substantial decrease in volume, -61%, since 2007 reflecting the impact of the CR HQ extension. Volume along Brookton Road has seen an increase since 2007 likely as a result of its improved condition and the Commerce Rd extension that created a new traffic signal at US-41/M-28.

Figure 3-12 Township Average Daily Traffic



Source: MCRC

Figure 3-13 County Road System Traffic Volume



Source: MCRC

Commercial Traffic

Although commercial traffic can cause challenges to motorists, it is a necessary component to the economy of a region. Without truck traffic, natural resources could not be extracted and delivered and everyday goods could not be supplied to local consumers. Table 3-3 compares commercial traffic in years 2007 and 2016 around the Township. Commercial traffic is considered vehicles with more than two axles.

The MDOT also monitors commercial traffic. According to their interactive map, the commercial ADT along the US-41/M-28 corridor is 700. This equates to about a 2.25% commercial traffic.

Average daily traffic volumes can vary depending on what time of the year, and even what day of the week, the count took place. Other factors affecting daily traffic are construction detours or special events. Local traffic uses US 41/M-28 to access business and retail establishments. Providing alternative methods to access such establishments will reduce the amount of local trips on the corridor.

Table 3-3 Commercial Traffic Comparison 2007 & 2016

Location	Total 2007 ADT	% Commercial	Total 2016 ADT	% Commercial
CR 550 SE of CR HG (Middle Is. Pt.)	2832	14.10	3468	10.61%
CR 500 (Grove St) at Mqt. city limits	2378	13.97	2452	3.53%
CR 492 N of CR 500 (Grove St)	1425	9.83	1604	3.14%
Wright St, N of US-41	6896	9.06	2669	5.61%
CR 550 at Marquette city limits	3077	8.79	3877	9.63%
CR HF (Brookton Rd) E of CR 492	530	7.99	1381	9.06%
CR HC (Vandenboom) N of CR 500 (Grove)	379	7.85	538	5.03%
CR 500 (Grove St) E of CR 492	1958	5.60	1935	
CR HG (Middle Is. Pt.) at CR 550	344	5.36	328	7.18%
Weiland Dr, west of CO RD 492	326	5.05	637	7.30%
CR HF (Brookton) W of CR HC (Vandenboom)	505	5.03	1239	7.86%
CR 492 W of CR 500 (Grove St)	1792	4.68	2730	
CR HC (Vandenboom) S of CR HF (Brookton)	469	2.81	1074	4.72%
CR HF (Brookton Rd) at US-41	1556	2.37	1485	9.94%

Source: MCRC

3.7 TRAFFIC CRASHES

Traffic crashes are a concern of every community. The amount and severity of crashes can be used as a performance measure of a transportation network. Often, driver confusion is accredited to the cause of a crash. Driver education, good road and access design, and quality signage are a few tools that can be used to reduce driver confusion. The number of crashes for a given segment of road or intersection has a direct relationship to the traffic volume. The same is true for the number of access points along a given segment of road. Considering these two factors, the highest crash intersections in Marquette Township are along the US 41/M-28 highway corridor with exception to Cr 492/ Wright St. Using an Intersection Ranking Report from an application called Roadsoft and data from 2007 through 2015, Table 3-4 lists the highest crash intersections in the Township. The data used, from MDOT, were derived from a database of police records. The numbers listed reflect the number of crashes, not the number of injuries.

Table 3-4 Highest Crash Intersections in Marquette Township

Intersection	Total Crashes	PDO	Injury	Type A	Fatal
US 41 & CR Hq	116	93	23	1	0
CR 492 & US 41	71	60	11	0	0
US 41 & CR 505	70	55	14	1	1
CR Hf & US 41	57	49	8	2	0
US 41 & CR 505	42	30	12	1	0
CR 492 & Wright St & Forestville Rd & CR 505	37	29	8	1	0
Brickyard Rd & US 41	31	25	5	0	1
Westwood Mall & US 41	30	29	1	0	0

PDO- Property Damage Only

Injury- an injury less than incapacitating

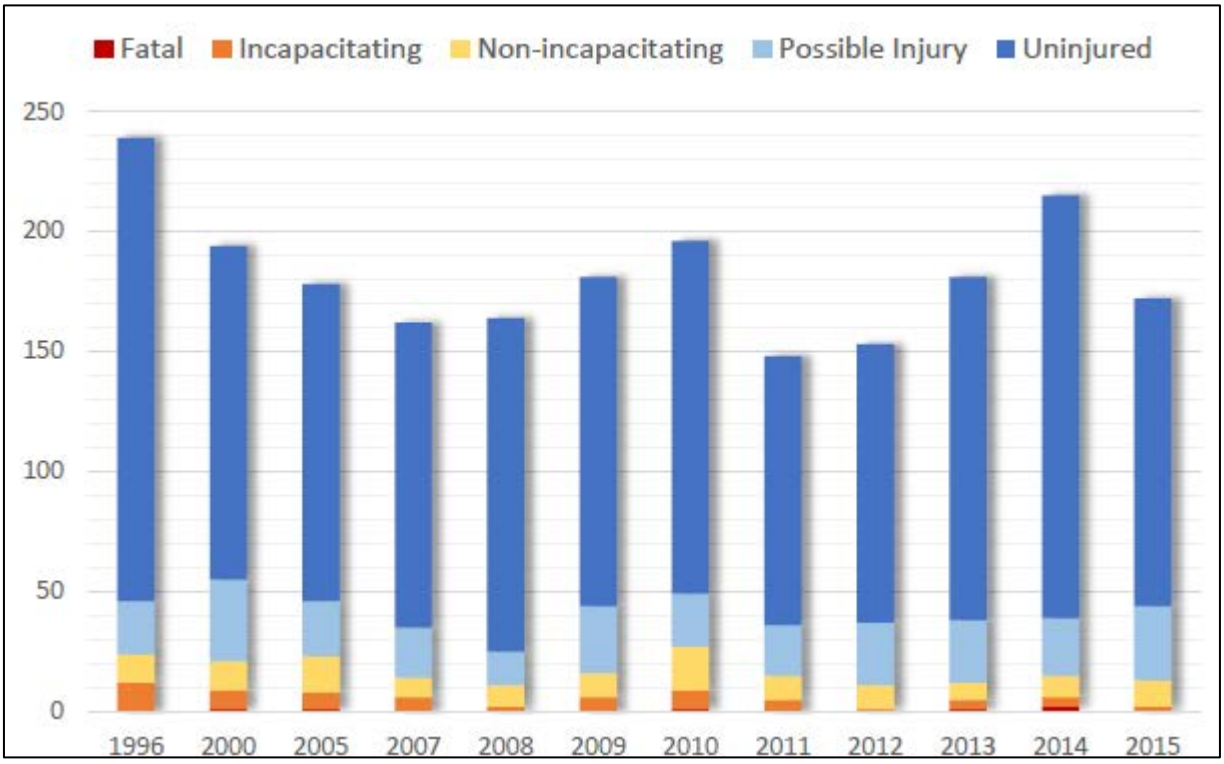
Type A- an incapacitating injury

Source: MCRC

Figure 3-14 shows total traffic crashes in Marquette Township by year and type excluding animal crashes. Although some years, like 2010 and 2014, had an increase in total crashes, the long-term trend continues to decline. This trend is true at the State and County level. Since 2007, there have been four crashes resulting in fatalities.

The State of Michigan has implemented crash reduction initiatives. One strategic area of focus is safety with a goal of moving Michigan toward zero deaths through the incorporation of safety in all transportation efforts. State strategies include collaborating with safety partners and prioritizing safety investments toward projects with high probability of achieving this goal.

Figure 3-14 Total Crashes by Type, Marquette Township



Source: MDOT Data, 1996-2015

In addition to the many State initiatives for improved transportation safety, the US-41/M-28 Corridor Advisory Group has met monthly since the mid-2000s to discuss access-related issues affecting the highway corridor. The Advisory Group reviews site plans for proposed developments and provides recommendations to improve access and safety.

Although crashes are on a declining trend, preventing them is as important as always. Reducing driver confusion should always be a priority when making improvements to or developing an area.

3.8 MARQ-TRAN

The Marquette County Transit Authority (MARQ-TRAN) has provided transit service to Marquette County since 1985, when three former transit services combined. In 2005, construction of a new transit facility, located on Commerce Drive in Marquette Township was completed. MARQ-TRAN offers a variety of services including fixed and feeder routes, small bus curb-to-curb, special contract runs, and specialized

service runs. The MARQ-TRAN facility is also a service center for Indian Trails and is located along the Calumet-Chicago route. Indian Trails offers transit service from Marquette to Milwaukee, Wisconsin daily. Their fleet is equipped with bicycle racks allowing more transportation options for their passengers.

Figure 3-15 MARQ-TRAN Fixed Routes in Marquette Township

Source: Marquette County RMD

The urban area of Marquette Township is well serviced by MARQ-TRAN. Two fixed routes, Trowbridge Park and the Marquette Shopper's Shuttle, service the area. (See Figure 3-15) Riders can transfer onto other fixed routes, such as the Ishpeming-Negaunee and North-Mall routes at the Westwood Mall. Small bus curb-to-curb is also available in the area.

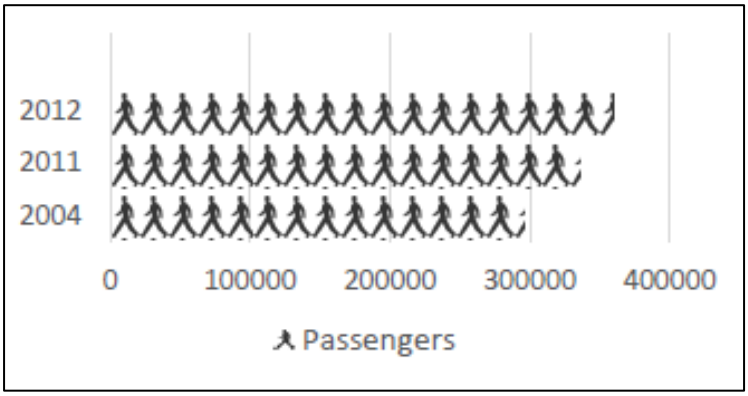
The Trowbridge Park route cycles mainly every half hour and operates Monday through Saturday. Stops include the Upper Peninsula Medical Center, Westwood Mall, MARQ-TRAN, Marquette Mall, Econo Foods, and Northern Michigan University/ UP Health System Marquette Hospital.

The Marquette Shopper's Shuttle also cycles every half hour and makes stops at retail and multi-family housing locations. Stops along the Shopper's Shuttle include the MARQ-TRAN facility, Westwood Mall, Super One Foods, Target, Wal-Mart, Goodwill, Lost Creek Village, Whetstone Village, Marquette Mall, Shopko, and Tourville Apartments.

Marquette County's steadily aging population and the potential for fuel prices to increase are securing the future dependency on transit services. Marquette Township serves as the regional retail hub and has the highest traveled corridor in the Upper Peninsula. Utilization of transit service is an essential piece of maintaining the corridor's level of service, elderly mobility, and reducing automobile emissions.

Marquette Township should work closely with MARQ-TRAN and MDOT representatives to accommodate changing transit needs into the future. Local businesses should be encouraged to share access and connect parking lots. Such practice increases safety for transit and automobile passengers along the corridor, optimizes the fixed transit routes in the Township, and enhances customer accessibility to businesses. Additionally, underutilized parking lots along transit routes should be evaluated and considered for potential park-n-ride lots, where people could transfer from private vehicles to transit. One example is the Target parking lot along US 41 and M-28.

Figure 3-16 Number of MARQ-TRAN Passengers



Source: MARQ-TRAN

Marquette Township should require developers to make accommodations for transit movement within sites when designing subdivisions regardless if transit service exists in the nearby area. New residential and commercial developments should cater to transit and pedestrian movement rather than automobile convenience.

CHAPTER FOUR | ONE TOWNSHIP, MANY COMMUNITIES

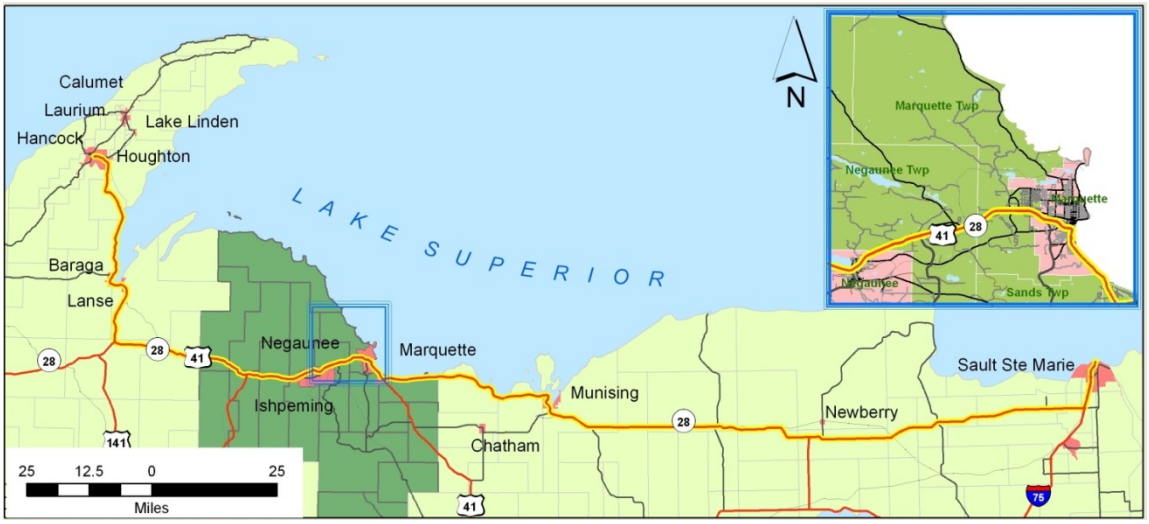
4.1 INTRODUCTION

There are four distinct development settings in Marquette Township, all of which have their own transportation needs. The urban residences of Trowbridge Park, businesses of the US-41/M-28 highway corridor, cul-de-sac subdivisions, and dispersed rural residences are all native to Marquette Township. The road facilities infrastructure of Marquette Township is an integral component that connects and sustains these unique communities.

4.2 US-41/ M-28 HIGHWAY CORRIDOR

US-41/M-28 is a Statewide Corridor of Highest Significance, See Figure 4-1. This corridor begins in Houghton and extends to the Canadian border in Sault Ste. Marie. This is one of only two such corridors in the Upper Peninsula, the other running along the "south shore" from Menominee, Escanaba, to St. Ignace.

Figure 4-1 Statewide Highest Corridor of Significance



Source: Marquette County RMD

The *State's Long Range Plan (SLRP*) indicates that highway corridors are a primary focus "to make the most effective use of limited transportation revenues, improvements will be focused on corridors of highest significance". Taken on a statewide basis, 98.7% of Michigan's population lies within a 20 mile area along these corridors.

The US-41/M-28 highway corridor is the most significant road feature in the Township. Although US-41/M-28 Highway Corridor accounts for only 7 percent of Marquette Township 71 miles of roadway, it is a conduit for the Township and Upper Peninsulas highest daily volume of traffic (33,686 AADT). The corridor serves as the commercial center of the Township, composed of 155 businesses. The Michigan Department of Transportation (MDOT) is charged with the responsibility of developing, operating, and maintaining this right-of-way.

Figure 4-2 US-41/M-28 Corridor Imagery

The two primary purposes of this corridor are to provide a route on which vehicles can move safely at the speeds for which the facility was designed. Secondly, State Highways are constructed to connect communities. From a traffic perspective, MDOT's responsibility is facilitating the movement vehicles through the corridor. MDOT also plays a role in Michigan's Economic growth. MDOT recognizes that quality road facilities are important to creating, expanding, and keeping jobs in Michigan. This dual role requires MDOT attain a balance between moving traffic while providing safe and efficient access to business and industry.

Marquette Township promotes best practice planning principles with regards to access management and aesthetics when working in conjunction with MDOT's management of the US-41/M-28 highway corridor. These principles are applied as MDOT makes improvements to physical components of the Township highway corridor, such as directional crossovers, turn lanes and intersections.

4.3 ACCESS MANAGEMENT

The *Michigan Access Management Guidebook* defines access management as "a set of proven techniques that can help reduce traffic congestion, preserve the flow of traffic, improve traffic safety, prevent crashes, preserve existing road capacity, and preserve investment in roads by managing the location, design, and type of access to property".

These are goals which Marquette Township has embraced through adoption of access management techniques and regulations as a component of the Township's Zoning Ordinance. By directive of the Ordinance, the adopted standards are applied by the Zoning Administrator and by the Planning Commission during their respective site plan review processes.

According to the *Michigan Access Management Guidebook*, there are five major reasons why access management is beneficial.

1. Access management improves traffic safety and can prevent vehicular crashes.
    - ❖ By limiting or reducing driveways, conflict points, where crashes can occur are also reduced.
2. Access management results in shorter travel times and reduced motorist costs.
    - ❖ Fewer access points results in less "mixing" of traffic traveling at varied speeds.
3. Access management extends the function and capacity of roadways.
    - ❖ Vehicles slowing to turn or accelerating from driveways reduces the ability of the roadway to move cars diminishing its carrying capacity.
4. Access management improves access to private property while enhancing the value of private land development.
    - ❖ Businesses with easy and safe access are more inviting to customers.
5. Access management results in nicer communities.
    - ❖ In communities with access management there is more green space between driveways, fewer signs and more attractive appearance overall.

Access management balances maintaining the functions of a road to carry traffic, with the need to provide safe and reasonable access to adjoining properties. Its success relies on the cooperative effort between the local unit, Marquette Township, and the appropriate road agencies. The MDOT is the responsible agency for state trunk lines and the Marquette County Road Commission for county system roads. Integral in determining the need or quantity of access is the Township through its land use control mechanism, zoning.

Figure 4-3 Access Management

An example of the application of access management principles can be found in the Lowes, Meijer and Shoppes of Marquette Development. Common drives are shared from US-41 allowing patrons to visit each establishment without re-entering the corridor.

Marquette Township is a member and active participant in the US-41/M-28 Corridor Advisory Group, a cohesive group of local officials tasked with identifying solutions to common issues along the US-41/M28 corridor. An accomplishment of this group was participation in the development of a *Comprehensive Corridor Access and Management Plan*. Central to this plan was assisting municipalities through which US-41/M-28 passed to adopt language in their zoning ordinances facilitating control of access to the corridor. The Marquette Township Zoning Ordinance has been amended to reflect the principles.

The Advisory Group continues to meet on a monthly basis. At these meetings proposed site plans impacting the corridor, 1000 feet along each side of US-41/M-28, are reviewed and access management techniques applied. Comments are provided to developers and municipalities as appropriate.

4.4 DIRECTIONAL CROSSOVERS

Congestion at intersections throughout the State was worsening and crashes at intersections continued to rise. Michigan's solution came in the 1960's through implementation of a concept called Median U-Turn Intersection Treatment (MUITT), more commonly known as directional crossovers or "Michigan Left". This concept has been implemented successfully in several other states since.

This "treatment" entails elimination of left turns at signal lights and allows the maneuver to be made utilizing median crossovers beyond the intersection. The Federal Highway Administration cites past research that shows reported numbers of crashes at MUITT's are anywhere from 20 to 50 percent lower than conventional intersections. Furthermore, crashes that do occur result in less severe injury do to "glancing" type impacts from vehicles traveling the same direction versus right angle side impacts. Though still a fairly new concept some 40 years ago when the US-41/M-28 corridor was designed through Marquette Township, directional crossovers were the method of choice for accomplishing easterly or westerly directional change. The design incorporated 19 crossovers at locations determined by proper spacing relating to intersections, topography, and other factors which resulted in the system present today.

Today's system, however, does not match today's conditions. Much of the corridor during original design was undeveloped where today a vacant parcel is rare and cases of redevelopment of existing properties are even taking place. This advanced state of development, along with growing vehicle numbers and both intentional and unintentional misuse by drivers has resulted in a functional decline of many of these directional crossovers.

In 2007, the US 41/M-28 Corridor Advisory Group recognized a need to revisit the directional crossover configuration within the corridor. MDOT staff undertook the project and prepared the *US 41/M-28 Highway Corridor Directional Crossover Analysis, Marquette Township*. Many of the proposed recommendations outlined in the *US 41/M-28 Highway Corridor Directional Crossover Analysis* have been successfully completed. Figure 4-4 shows the locations of crossovers in Marquette Township at the time of the analysis. Following Figure 4-4 is a summary of the MDOT's report recommendations, as well as the proposed recommendations current status. Figure 4-5 indicates the current location of directional crossovers within Marquette Township. Figure 4-6 reflects the highway corridor after the proposed improvements are implemented.

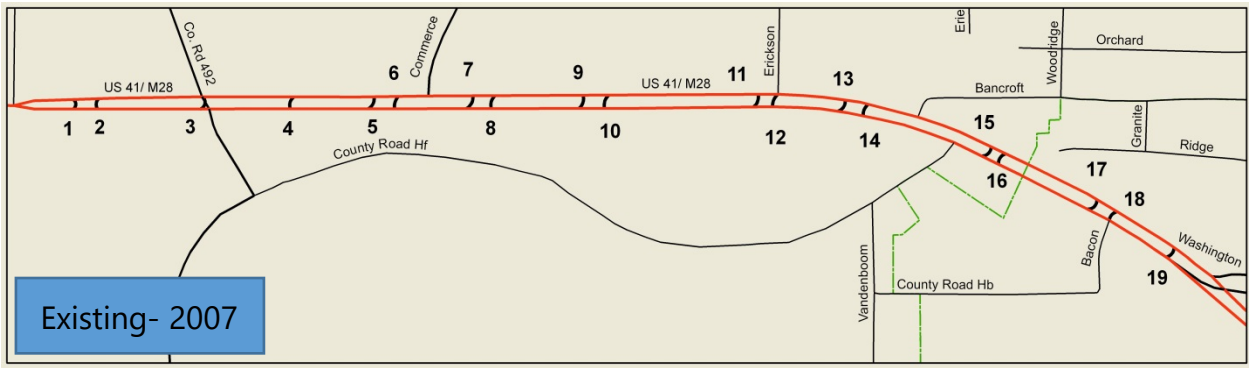


Figure 4-4 Corridor Crossover Analysis, 2007 *Source: Marquette County RMD, MDOT data*

MDOT US 41/M-28 Highway Corridor Directional Crossover Analysis, Marquette Township Recommendations:

1. Remove- *Completed*
2. Relocate crossover further east, past the eastern Walmart entrance- *Completed*
3. Relocate crossover further east to prevent vehicles from cutting across westbound US 41/M-28 to access Wright St.**-** *Incomplete*
4. Remove-*Incomplete*
5. a.) Maintain as is and close if Westwood Mall signal is relocated to Commerce Dr. – *Completed (Maintained as is)*
   b.) This signal may be relocated in the future, further east to Commerce Dr. If and when this occurs, Kohl's/Mall entrance should also be moved to the Commerce Dr. location (or modified to right-in/right-out only). *It is recommended that the proposed new signal at Commerce Dr. should not allow left hand turning movements onto Commerce Dr. This will eliminate the potential for "T-bone" type crashes between westbound US 41/M-28 traffic and eastbound US 41/ M-28 traffic wishing to travel northbound on Commerce Dr. Instead, two new crossovers one on the east and one on the west sides of Commerce Dr, will function as "Michigan-lefts" for the proposed Commerce Dr signal. -*Completed*
6. a.) Repaint with hatching to discourage double stacking.
   b.) Maintain as is and close if Westwood Mall signal is relocated to Commerce Dr. –*Complete (Crossover Removed)*
7. a.) Repaint with hatching to discourage double stacking.
   b.) Maintain as is and close if Westwood Mall signal is relocated to Commerce Dr. –*Complete (Closed)*
8. a.) Repaint with hatching to discourage double stacking.
   b.) Maintain as is and close if Westwood Mall signal is relocated**-** *Completed (Closed)*
9. a.) Repaint with hatching to discourage double stacking. -*Complete*
   b.) Maintain as is and close if Westwood Mall signal is relocated. -*Incomplete*
10. a.) Repaint with hatching to discourage double stacking. -*Complete*
    b.) Maintain as is and monitor once crossover #12 is closed. -*Completed*
11. Remove -*Incomplete*
12. Remove -*Completed*
13. Repaint with hatching to discourage double stacking. - *Completed*
14. Repaint with hatching to discourage double stacking. - *Completed*
15. Repaint with hatching to discourage double stacking until future realignment of Brookton Rd. can be accomplished. -*Completed*
16. Relocate this crossover to the east, past the mall entrance; make the mall entrance right-in/right-out only. -*Incomplete*
17. Remove, traffic will utilize crossover #19 to change direction. -*Incomplete*
18. Remove -*Incomplete*
19. Repaint with hatching to discourage double stacking. -*Completed*

Figure 4-5 Current Crossover Locations, 2018

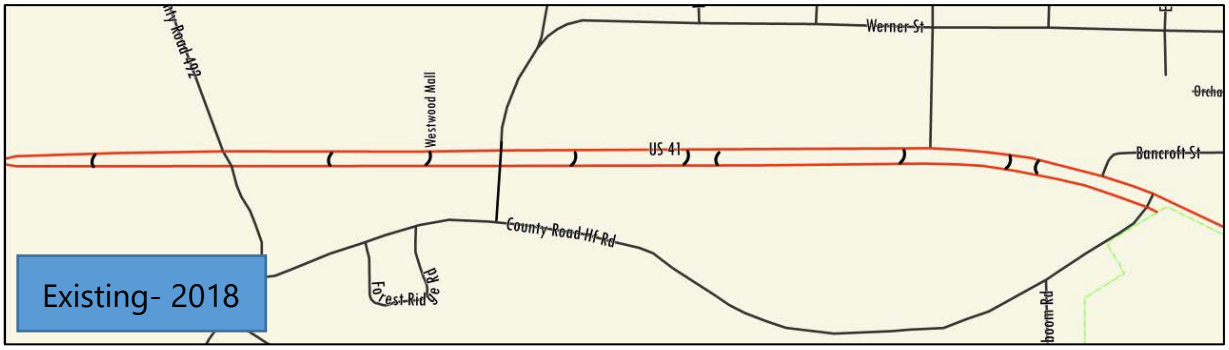
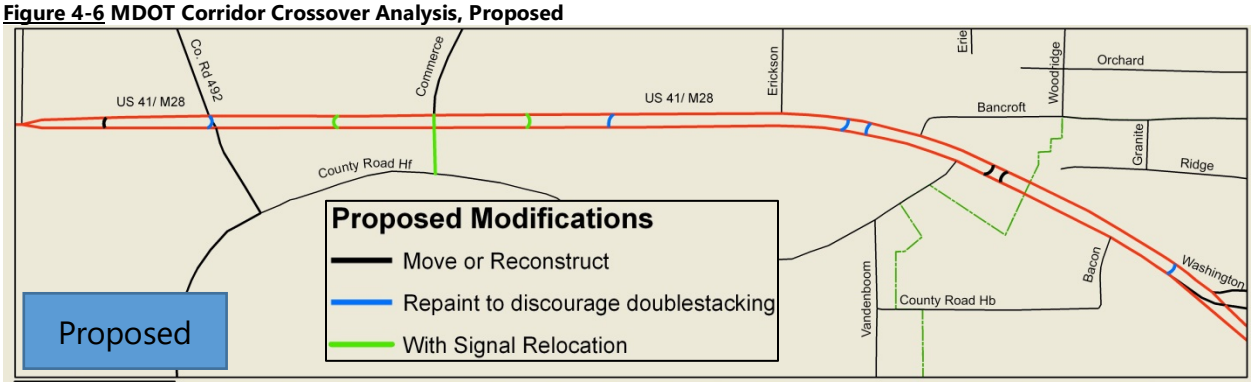


Figure 4-6 MDOT Corridor Crossover Analysis, Proposed



Source: Marquette County RMD, MDOT data

Used as a guide since 2007, fifteen of the nineteen Marquette Township recommendation indicated within the Corridor Crossover Analysis have been completed. The crossover improvement recommendations provide both short-term and long-term strategies for improving traffic safety throughout the US-41/M-28 corridor.

4.5 TURN LANES

Turn lanes are used primarily to separate turning traffic from through traffic. With turn lanes, vehicles waiting to turn are removed from the through lanes thereby reducing delay to through traffic. Turn lanes can also be used by vehicles as a deceleration area when leaving a major road or street. According to the Institute of Transportation Engineers, by removing turning vehicles from the through lane safety is improved. Studies have shown a 52% decrease in rear-end crashes at locations of major driveways when turn lanes are added.

MDOT, the Township, and the US41/M28 Corridor Advisory Committee concur that the implementation of turn lanes would be beneficial for a number of businesses located along the corridor. These entities are attempting to "partner" with the private landowners in developing these turn lanes. MDOT has proposed providing services at no cost such as drawing plans, preparing for bids, layout staking and inspection of the jobs, and also a waiver of permit fees.

4.6 ROUNDABOUTS

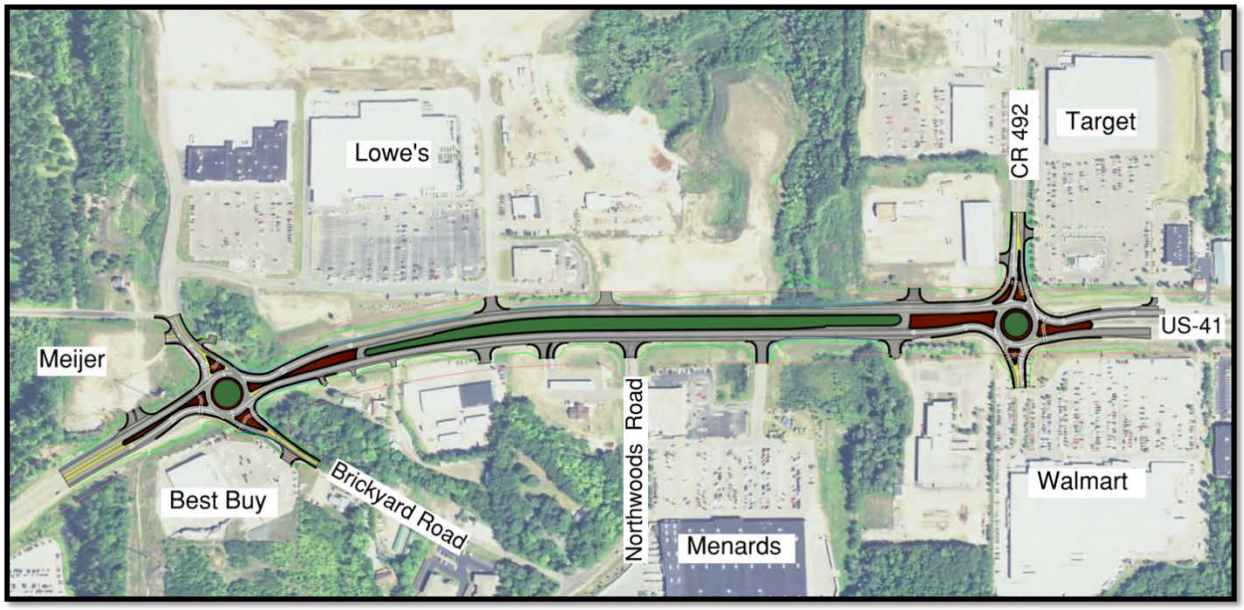
Evolving from early attempts called traffic circles the modern roundabout was developed in the United Kingdom in the mid 1960's. The difference between the traffic circle and the roundabout is that vehicles entering a roundabout yield to traffic that are already circulating. This single change dramatically improved the safety characteristics of these intersections and decreased severity of collisions. There are several reasons for increased safety of roundabouts:

- There are fewer conflict points in a roundabout then a conventional intersection (no right angle or head on collisions.)
- Lower speeds in roundabouts allow drivers more time to react.
- Pedestrians only cross traffic coming from one direction at a time.
- Increased access to adjacent properties

In addition to the proven safety enhancement provided by this type of intersection, the yield approach allows drivers to flow through the circular pattern without having to stop at a traffic light. According to the *US 41/M-28 Comprehensive Corridor and Access Management Plan* "The injury crashes are documented to be 35 to 78 percent lower than a typical signaled intersection." While at the same time "the average delay at a roundabout is estimated to be less than half of that at a typical signalized intersection."

In 2019, MDOT plans to begin a 6.7 million dollar reconstruct of US-41 between Marquette County Road 492 to just west of Brickyard Road, extending the existing boulevard roadway. The westbound lanes will be moved north to accommodate space needed for the divided highway. The 2019 project includes replacing signalized intersections at Brickyard Road and at County Road 492 near Walmart and Target with roundabout (Figure 4-7).

Figure 4-7 2019 Roundabout Design



Source: MDOT

Marquette Township is in favor of MDOT's implementation of these two US-41 roundabouts with the belief that they will benefit the health wealth and safety of Township residents and travelers alike. Safety

benefits as result of reduced conflict points, and reduced speeds are desirable amenities that are warranted for Marquette Township, and Upper Peninsula of Michigan's highest volume roadway. A further benefit of roundabout implementation along the US-41 corridor is that the intersection type complements a number of Marquette Township transportation objectives such as complete streets, corridor access management and multimodal transportations, without compromising the ability to transport travelers, residents and freight.

4.7 AESTHETICS

The growth of the highway and road network has had and will continue to have a visual impact on the environment. In Marquette Township, much of the development occurred along a highway corridor (US 41/ M-28) just as it has elsewhere in the state and country. "Big box" franchise stores, large billboards, acres of paved parking all took their places.

Through its power to control land use (zoning and subdivision regulations) the Township has been very proactive in developing regulations for signs and parking lots as well as provision of "green space" for a softening effect on the built environment.

Design Guidelines to Enhance Community Appearance and Protect Natural Resources, a publication funded by the Dunn and Wage Foundations offers the following strategies to maintain visual quality along roads.

- Place restrictions on the size and number of signs.
- Bury utility wires to reduce visual clutter.
- Screen industrial buildings with landscaping.
- Use landscaped islands in parking lots to direct traffic, provide shaded parking, and create a pleasing view.
- Locate parking lots behind or beside buildings, rather than in front. When possible, share parking between businesses and institutions that are open at different hours of the day, or days of the week.
- Leave natural vegetation along roadways.
- Plant flowers or provide landscaping along main roadways entering town, on traffic islands, and along main streets to add color and beauty.
- Reduce light pollution at night by using non-glare, downward-directed, motion lights to limit constant lighting.

Potential aesthetics projects, when considering the built environment along the US 41/M-28 corridor primarily, range from large to small and economical to costly. Burying of utilities, for example, would be very expensive. Planting flowers and landscaping on the other hand could be done at reasonable cost.

4.8 TROWBRIDGE PARK

In 1887, Luther Trowbridge purchased all of Section 16, T48N-R25W which became Trowbridge Park. It was not until 33 years later when 8 plats of the area would be recorded. These are the oldest plats in Marquette Township.

The urban residential neighborhood of Trowbridge Park features a "city-like" platted local road system. Trowbridge Park is also home to 2,176 (55%) of the Townships 3,905 residents (US Census 2010). It should also be noted that there are 931 household units in Trowbridge Park, accounting for 53% of the housing stock in Marquette Township. The population density in Trowbridge is 1,462 people per square mile, versus 60 people per square mile on a Township wide basis.

The high population density of Trowbridge Park and the percentage of Township population residing there require important consideration in determining future connectivity of the "community" to the destinations (work, shopping, school etc.) they need to access. Similarly, allocation of Township resources for transportation enhancement can affect a large number of residents by being applied in a small geographic area.

Right of Way Preservation

The plats of Trowbridge Park make a grid of interconnected streets forming residential blocks. Some portions of the street system were never constructed, largely due to topography (steep slopes), geology (rock outcrops), water features (streams) and hydric soils (wetlands). The right-of-ways (ROWs) however, remain reserved from the original plats. Figure 4-8 shows all the street layouts conceived when the original platting took place.

Figure 4-8 Trowbridge, ROWs from Original Plat

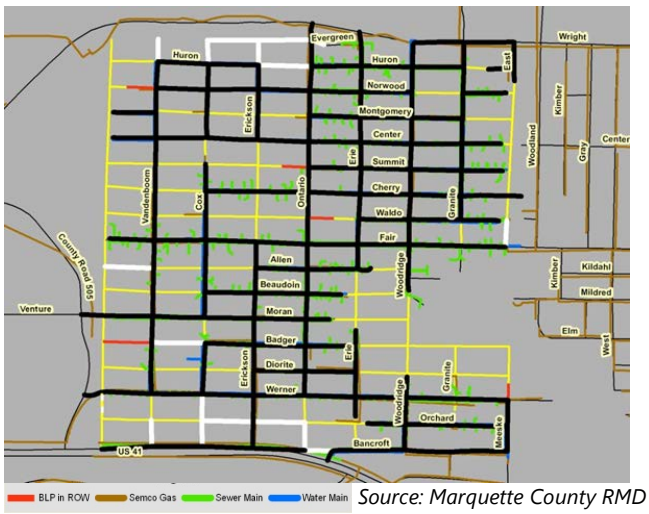
Source: Marquette County RMD

Township Administration views Trowbridge Park ROW that remains undeveloped (Figure 4-10) as beneficial assets to the community and aim to preserve all existing undeveloped ROWs within Trowbridge Park in perpetuity. Preservation of these assets for future road, trail and green way development, is a priority in preserving existing undeveloped ROWs.

Roads

The Township has developed a system of what they refer to as "future roads". Of this system, one road segment known as Ryan's Alley is located in Trowbridge Park. The portion of Ryan's Alley extending north from Moran Street to Center Street has been identified as a component of this "future road" concept

Figure 4-9 Trowbridge Roads, ROW & Utilities



Source: Marquette County RMD

Figure 4-10 **Trowbridge Undeveloped ROWs**

and should be preserved. Another consideration in determining if a right-of-way should be preserved is to avoid the "land locking" of parcels. There are some parcels that exist, though undeveloped, that could only be accessed by means of the platted right-of-way.

Trails and Greenways

Trails, like roads and utilities, are a public purpose for which Trowbridge right-of-ways may be preserved. Another similarity is that they are all linear features that need to be continuous to function. That is, connect point "A" to point "B" and back. In a developed urban environment, opportunities for these connections are difficult, if not impossible, to come by. This challenge often restricts bike riders and pedestrians to sidewalks and streets. In Trowbridge, however, many of these vacant right-of-ways provide logical trail connections and simultaneously divert trail users from the "sanitized" urban environment into natural areas without leaving the neighborhood.

The Recreation Committee has identified several systems of trails; greenway-trail, greenway-waterway, multiuse existing road, sidewalk, pedestrian/bicycle paved path, and shoulder bicycle paths. Further information regarding Marquette Township trails and greenways plan can be found in the Marquette Township Recreation Plan.

4.9 SUBDIVISIONS

Subdivision may be defined as the act of dividing land into pieces that are easier to sell or otherwise develop, usually by means of a plat. The original piece of land then, if used for housing purposes, is typically known as a housing subdivision or housing development. Developers often times refer to these areas as "communities".

As demand for rural home sites grows more and more subdivisions appear. For Marquette Township the first plats were in Trowbridge Park from 1910-1920. Then one in the 1950s, a couple in the 1970s, but since the 1980s the Township has been averaging a new subdivision every other year according to the Marquette County Register of Deeds department.

Figure 4-11 Marquette Township Subdivision

Source: Google Earth

In a Cost of Community Service Study (COCS) performed by the Center for Land Use Education, University of Wisconsin-Stevens Point, it was determined that for every dollar raised in revenue, farm and forest land requires government to expend 31 cents, commercial and industrial property 29 cents, while residential results in a cost of $1.11 for every dollar of revenue raised.

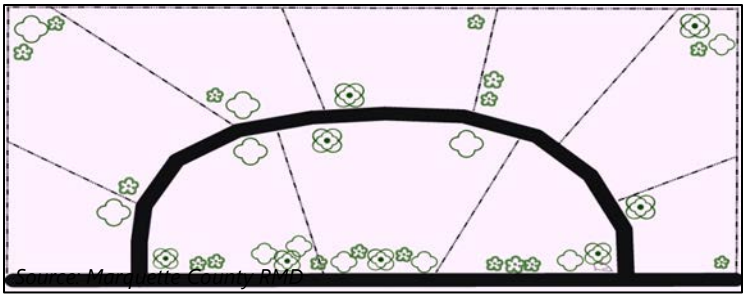
As applied to transportation facilities, the infrastructure itself is of initial concern. Developers likely will carry this burden, at least

early on. Many times, it is the intent that the roads will become part of the public system in time. To safeguard against future local expense, a private road ordinance, clearly defining road standards is recommended. Even if it is not the intent to transfer the roads, it is essential that roads be built to strengths and dimensions capable of supporting and providing sufficient turning radius for fire trucks and other emergency equipment as-well-as school buses, garbage trucks, and snowplows. As our population ages, there will likely be demand to access these locations with mass transit for those that are unable to provide their own transportation.

Connectivity is another problem associated with cul-de-sac type subdivisions in that there is only one ingress/egress that congests traffic or could be potentially blocked trapping residents (Figure 4-11). Additionally, cul-de-sacs are a maintenance problem from a snow plowing perspective and take longer to clean. Regardless, it is imperative that a natural center be preserved at the end.

Another subdivision design, the "eyebrow" (Figure 4-12) offers a good solution to the connectivity issue associated with the standard cul-de-sac design by offering two entrance/exit points to the subdivision.

Figure 4-12 Eyebrow Subdivision



Source: Marquette County, PMD

If cul-de-sac design is the preferred method of the developer, attention should be given to future build out of the area. To the extent possible, some connection should exist between subdivisions of this type. Some property of the subdivision should be preserved for future connecting right-of-way to other subdivisions and ideally, a return to a main road. These factors should be considered in any subdivision Site Plan Review.

4.10 DISPERSED DEVELOPMENT

Dispersed development makes up the balance of development in the Township and is characterized as "scattered" about the Township. These are typically homes located adjacent to County primary roads or are on private roads/drives. Most residents do not locate in these areas anticipating a high level of service from local government such as solid waste disposal or water and sewer utilities. Some services may be required regardless such as fire, police, ambulance, or school buses.

In a Hazard Mitigation Plan completed by Marquette County in 2015, the most serious condition regarding this type of development was access. An example of these types of concerns is locations such as those on County Road 550 west of the bridge on the Dead River. When the Silver Lake Dam breached in May of 2003, the bridge over the Dead River was closed due to the threat of failure and residents on the west side were cut off. A similar situation still exists along the Forestville basin.

Fire is another substantial concern in some locations, particularly those on private roads with inappropriate access. Compounding this is a lack of water supply for trucks. There are limited water

sources. According to the Marquette Township Fire Department, through September of this year there were 167 calls responded to. There were 19 west of the Dead River Bridge. All but two of these were for fires.

Another potential problem for access by road is at grade railroad crossings that can potentially block traffic. There have been cases where continued development on seasonal roads has required conversion to year round use, placing an increased burden on the County Road Commission for the benefit of a few people. The impacts on transportation facilities should be considered carefully when developing the Township Future Land Use Plan and zoning districts.

CHAPTER FIVE | NON-MOTORIZED TRANSPORTATION

5.1 INTRODUCTION

Trails, bikeways and other non-motorized enhancements are widely shown to attract new development, increase property values, support businesses that serve users, and help other businesses who have employees who want to use the trails or bikeways to get to and from work. Encouraging active travel for recreation or transportation can help reduce childhood and adult obesity, increase senior mobility, provide increased opportunity for citizen engagement, and increase levels of activity in all segments of the population. Having the ability to move about the Township safely, comfortably, and conveniently, on foot or by bicycle, provides numerous benefits to residents, visitors and businesses.

Non-motorized Transportation or human-powered transportation, includes walking and bicycling, and variants such as small-wheeled transport (skates, skateboards, push scooters, hand carts, etc.) and wheelchair travel. These modes provide both recreation and transportation alternatives, and access to goods and other points of interest. The following chapter has been crafted to ensure the provision of adequate, quality non-motorized transportation opportunities for people of all ages and abilities.

5.2 THE NON-MOTORIZED USER

People traversing the community utilizing anything other than an automobile are a non-motorized user of the transportation system. Providing access for non-motorized users addresses a major component of planning in the township. For instance, requiring Americans with Disabilities Act (ADA)-compliant entrances to storefronts are one example of ensuring safe non-motorized pedestrian travel in the township. Non-motorized users include but are not limited to pedestrians, bicyclists and those utilizing adaptive-mobility devices. Almost all trips beginning or terminating in the township take place on foot or by other non-motorized modes. One of Marquette Township's existing goals is to develop a transportation system that provides for safe and equitable access for all users.

<u>Bicyclists</u>
There are three types of bicycle riders to accommodate when planning for non-motorized transportation improvements. Although a typical rider only needs forty (40) inches of operating space, a bicyclist's skills, confidence and comfort level will dictate where they chose to ride.

Advanced – experienced riders use their bicycles like a motor vehicle and are comfortable with motor vehicle traffic.

Basic – less confident adult riders prefer low traffic roads, shared use paths, designated bike lanes or wide shoulders.

Children – want to ride to key destinations within a community with or without parents, but are best suited by residential streets and well-designated shared use paths.

It should be noted that there is significant crossover between bicycle route choices. Advanced riders show preference for low-traffic routes and wide lane or bike-lane routes. Basic and child riders may be seen riding along high-speed road corridors in the township out of routing necessity.

Pedestrians

Walking trips tend to fall into one of the following four categories: relatively short trips (under one-mile) to local destinations, including schools, parks, stores, and civic facilities (e.g., libraries and recreation and community centers); recreational or fitness trips; commute trips (where residents live within walking distance to where they work) and trips made by individuals without access to other transportation modes.

There are several types of pedestrian traffic users to consider in the township, although all have similar needs and include improved surfaces on which to walk, including clear pathways in winter. People using mobility devices such as scooters or motorized wheelchairs should be considered pedestrians within the context of planning for non-motorized improvements in the Township.

5.3 BENEFITS OF NON-MOTORIZED TRANSPORTATION

Trails, bikeways and other non-motorized enhancements are widely shown to attract new development. They also increase property values, support small businesses that serve users, and help other businesses who have employees who want to use the trails or bikeways to get to and from work. Encouraging active travel for recreation or transportation can help reduce childhood and adult obesity, increase senior mobility, provide increased opportunity for citizen engagement, and increase levels of activity in all segments of the population. Healthy families, active seniors and reduced healthcare costs come from encouraging non-motorized travel. Having the ability to move about the Township safely, comfortably, and conveniently, on foot or by bicycle, will provide a number of benefits to residents and businesses in the following ways:

Increased Mobility

Costs related to transportation are a household's highest expense after housing. Improving accommodations in the Township for bicyclists and pedestrians will make it easier for people to get around without an automobile, particularly for shorter distance trips. This may allow some families to reduce the number of vehicle miles traveled, gas consumed and the number of cars that they own. Improving walkability and bikeability in the township will allow increased community engagement and activity by all ages.

Enhanced Economy

Bicyclists and pedestrians are also consumers. Making the township more bicycle and pedestrian-friendly will increase people's access to businesses. Providing non-motorized infrastructure improvements will encourage residents to travel to local shops on foot or bicycle instead of jumping in their car to spend money outside of the township. Non-motorized travel provides a direct economic payback to households by freeing up some of their transportation dollars for other purposes. Non-motorized transportation planning is also associated with an increase in property values when located near a non-motorized facility.

Improved Health

Sedentary lifestyles are contributing to record levels of obesity and health issues in the United States, including heart disease, stroke, diabetes, and other weight-related problems. Active living is a solution. Residents of walking friendly neighborhoods are less likely to be depressed or to have poor mental or physical health. Traveling by foot or by bike, whether for commuting or recreational purposes, is an inexpensive and convenient way to integrate healthy, physical activity into everyday life. Many residents of the township walk in the township for fitness. By making the streets safer and easier to walk along, it will result in increased public health.

Environmental Factors

Improving bicycle infrastructure and encouraging more bicycling activity has the potential to reduce the number of vehicle trips and vehicle miles travelled in the Township. Fewer cars on the road means less traffic congestion, reduced vehicle exhaust emissions, cleaner air, and a reduced reliance on finite energy resources. Making these choices available to residents allows free exercise of a sustainable lifestyle by allowing the choice of carbon-free travel within the Township.

5.4 NON-TRANSPORTATION IN MARQUETTE TOWNSHIP

Marquette Township staff works closely with the Marquette County Road Commission (MCRC) to implement the Township Board, Planning Commission and committee's desired improvements to the transportation network to provide both motorized and for non-motorized mobility. Recreational project development and a growing segment of non-motorized users have encouraged local officials to rethink the way rights-of-way perform in our community. Most municipalities within Marquette County conduct recreational and non-motorized planning at some level. Therefore, Township officials should also coordinate with surrounding municipal, educational and stakeholder planning efforts to support their goals.

Non-motorized travel already occurs along all traffic corridors in Marquette Township. Many of these corridors lack specific infrastructure such as a sidewalks or multiple-use trails. Non-motorized users primarily utilize the space within, and adjacent to, public rights-of-way to traverse the community. It is also recommended that future roads and planning directives consider repurposing or enhancing space within the right-of-way in order to compliment non-motorized modes of transportation. Identifying potential non-motorized connectivity points help identify corridors for pedestrian improvements beyond the minimum requirements called for by the functional class of a roadway. The Marquette Township Complete Streets Ordinance and map address identify existing and desired non-motorized pathways within the community.

Off-Road Trail Network

Several types of trails exist in the township: the Iron Ore Heritage Trail is a 48-mile length mixed-surface rail-to-trail corridor traverses Marquette County from Republic to Chocolay Township. Approximately 2.7 miles of the IOHT lies within Marquette Township. The Noquemanon Trail Network (NTN) features a mixed recreational trail network of varying difficulty and includes trails for skiing, biking and hiking. Hiking trails, such as the North Country Trail that bisects the North half of the township and the Songbird Trail in the Escanaba River State Forest are also part of the community's trail network. Shared roadway-trail use of gravel roads and forested, unimproved roads such as those found north of the Dead River Basin and within Forestville can also be utilized.

On-Road Bicycle Route & Pedestrian Network

Marquette Township features an existing network of on-road bicycle routes, maintenance strips, and paved shoulders throughout the community. Although far from complete, the segments represent the current state of non-motorized facilities along township road corridors. Along Wright Street, County Roads 492 and 550, three to four foot wide paved shoulders provide a facility for bike and pedestrian travel. The Township has one designated bike route in the Township along the shoulder of Co. Rd 550. Bicycle and pedestrian travel along the US-41 corridor is facilitated along the MDOT paved shoulder, maintenance strip, off the shoulder or in the parking lots of adjacent businesses. Alternate access to the business corridor is maintained along informal "desire line" paths between US-41 and the Iron Ore Heritage Trail. There are also short sections of sidewalk or ramped curb and shoulder in the commercial district along US-41 but provide limited continuity.

The Marquette County Road Commission has been installing 8 foot wide maintenance strips with ramped, mountable curb faces on some of the higher functional class roads in the township as a part of some road reconstruction projects. The maintenance strips commonly have detectable warning strips at curb cuts for road intersections. These maintenance strips, while acceptable for use by pedestrians and some bicycle riders, do not meet Americans with Disabilities Act (ADA) standards or State of Michigan standards for bicycle facilities. Despite their common use by bicyclists, improvements to the maintenance strip standards are necessary if the maintenance strips are to be officially designated for bicycle traffic. Absent those modifications, recommended planning for bike traffic along these maintenance corridors should include, at minimum, adequate roadway width for safe passing of bicyclists.

Local Road Network

A more robust and connected non-motorized transportation network can reduce average daily trips and reduce road wear, environmental impacts and increase standard of living metrics for households. The Township should also attempt to integrate non-motorized transportation networks in all future developments to minimize private automobile trips. Providing an effective non-motorized network leaves the choice of mobility to the individual. Lack of suitable non-motorized facilities limits individual mobility and choice while negatively impacting several quality of life indicators. Moving some individual trips to non-motorized travel has the ancillary benefit to remaining motorized traffic by reducing traffic volumes, congestion and parking stress. In essence, non-motorized networks benefit motorized as well as non-motorized users.

This chapter also aims to demonstrate optimized development of a non-motorized network of pathways that meet both recreational and transportation needs of the general public. There are several distinct development areas within in Marquette Township, all of which have their unique transportation needs.

Urban Residential Development

The urban residential neighborhood of Trowbridge Park features a “city-like,” platted local road system. Trowbridge Park is also home to 2,176 (55%) of the Township’s 3,905 residents (US Census 2010). It should also be noted that there are 931 household units in Trowbridge Park accounting for 53% of the housing stock in the township. Thus, the population density is the higher in Trowbridge Park than in any other area in the community and is an important consideration in determining future connectivity of this neighborhood to destinations (work, shopping, school, etc.) its residents need to access. Future transportation enhancements may positively affect a large number of residents by being applied in this one-mile section of the community.

The Commercial Corridor Development

Marquette Township also serves as a regional hub for commercial retail development in the Upper Peninsula. The 2.7-mile segment of US41/M28 features local, regional and nation retailers as well as motels, restaurants and service stations. The Township aims to further connect non-motorized transportation users and to provide options for those who wish to visit the commercial corridor by means other than an automobile.

Subdivision Residential Development

Marquette Township aims to provide residential development for all stages of life. In doing so, several subdivisions exist in the community that are served by county primary roads and feature single-family homes that not “connected” to a non-motorized pathway to other development areas of the community. Though autonomously unique in their setting, these developments are an integral part of the transportation system. Future non-motorized transportation planning should include strategies that connect these development areas to other amenities in the community.

5.5 PROPOSED INFRASTRUCTURE IMPROVEMENTS

This section outlines recommended modifications that would improve and enhance non-motorized access in Marquette Township.

County Road 550
A recent enhancement to a portion of County Road 550 is an extended designated bike route from its former terminus at Sugarloaf Mountain, to Eagles Nest Road and beyond to the Little Garlic River- Elliot Donnelly Wilderness. Marquette Township should coordinate with MCRC to provide signage and establish a dedicated bike route sweeping schedule, recommend a regular schedule of street sweeper runs to clear gravel and debris from bike route. The Township should also work with Michigan Department of Natural Resources (DNR) to provide end of trip facilities (U-lock friendly bike racks) at trailheads in the Escanaba State forest. Marquette Township desires to work with adjacent municipalities in order to improve this designates bike route.

County Road 492 – Grove Street to Brookton Road
Increase paved shoulder width where feasible to at least 4 feet wide. Extend maintenance strips from Grove Street to Brookton Road. Continue to develop the Schwemwood Park/IOHT Trailhead Master Plan.

County Road 492 – US-41 to Wright Street
This segment of roadway serves the North Star Academy charter school as well as businesses along the road. Maintenance strip improvements as part of a proposed Safe Routes to School program are desired in this area. Development of adjacent recreational trail corridor from US-41 corridor north to Forestville Road is proposed.

Grove Street
A 4-6 foot paved shoulder and/or non-motorized maintenance strip is desired in this recommended and would assist residents with accessing both the business corridor and the Iron Ore Heritage Trail.

Vandenboom Road – South of US-41
A 4-foot paved shoulder from Grove Street to Brookton Road is recommended so to help connect residents to the Iron Ore Heritage Trail.

Forestville Road
A 4-foot paved shoulder along this route would assist residents and visitors with accessing NTN's trail to the north of the Dead River Basin, providing access to over 100-miles of non-motorized trails.

Ontario Street
A 4-foot paved shoulder or MCRC maintenance strip along this route would provide a "backbone" and a North/South corridor (with Complete Streets amenities) for other non-motorized routes in the platted area of Trowbridge Park.

Venture/Moran from Wright Street to Ontario Avenue
Specific enhancements along this corridor could transition from dedicated side path or maintenance strip on Venture, west of Commerce into a shared lane or 4-foot shoulder and would provide residents with the ability to access businesses and offices from Trowbridge Park.

Commerce Drive – US-41 to Wright Street
This is a major road corridor in the township serving Marq-Tran and dense residential development. Commerce Drive should receive at minimum interim 4-foot walking shoulders, dedicated sidewalk or path network that serves the Cornerstone Business Park and the Thomas Theatre.

Ryan's Alley
It is recommended to develop a path connector between Moran Street and Fair Avenue.

Lions Field Recreation Area
Enhancements should be made to assist Trowbridge Park residents with non-motorized access to the Lions Field Recreation Area.

Non-Specified Improvements
A goal of this non-motorized chapter is to provide a network of lighted, low traffic roads throughout Trowbridge Park. Greenway corridors in the Township should be identified and developed with citizen input. Physical improvements to routes would include signage, lighting, benches and connectivity to other non-motorized transportation routes.

The preservation of greenways and easements for future non-motorized access should become a priority of the Planning Commission and Township Board. Sustainable funding for these acquisitions needs to be identified and pursued. Possible enhancements could include public/private partnerships along designated greenway corridors. These improvements would help to reduce traffic speeds and through traffic; provide adequate street lighting for safer evening travel. They may also hold the potential to increase resident satisfaction and property values along the corridors.

End of Trip Facilities
Marquette Township should continue to work with Marq-Tran to provide secure, U-lock compliant bike racks, video surveillance of bike facilities, and locker space for bike commuters. If done correctly, bike commuters will feel comfortable choosing to leave personal vehicles (bikes) all day in a publicly accessible space. Current racks at Marq-Tran are non-compliant and do not allow for adequate levels of bike security. The Township could also revise zoning codes so parking area at commercial building include secure, inverted "U" style racks at two bike spots per hundred car parking spaces, as an example.

These suggested infrastructure enhancements are not intended to substitute for engineering level design. The township will work with MCRC to ensure engineering compliance with all relevant mandatory design guidelines. The Township will continue to will work the MCRC to develop a series of acceptable roadway cross-section designs that exceeds Michigan Manual on Uniform Traffic Control Devices (MMUTCD) minimums for safe non-motorized travel for implementation during future road improvements. All future road improvements will take into consideration the American with Disabilities Act (ADA) requirements, Universal Design guidelines and Complete Streets amenities in their design and implementation.

5.6 COMPLETE STREETS

Complete Streets in Marquette Township
Marquette Township was the first township in the Upper Peninsula to adopt a Complete Streets Ordinance. A goal of Complete Streets planning is design of all roads in a community to consider non-motorized travel. Providing for access on all roads in the township is imperative in future township land use and road

planning. What must be kept in mind is the one size does not fit all. Many township roads will be complete will little to no modifications, and some locations will require more robust infrastructure improvements. What should continue to be emphasized is that non-motorized travelers should be considered along all roads in the township, from the short dead-end segments to roads that feed directly to US-41. How access is provided will rely on engineering practices to meet or exceed minimum requirements for non-motorized travel.

There are a variety of non-motorized facilities already built in the township. These existing facilities should serve as a framework on which to build out a non-motorized transportation network. Non-motorized travel improvements should be implemented block by block, using context sensitive design. Context sensitive design will provide greater accessibility on more routes and allow for future flexibility in right of way utilization.

Non-motorized transportation planning should coordinate with the City of Marquette, MDOT, the MCRC and adjacent townships to provide network connectivity across the region providing cost effective planning and increased usability of residents and visitors alike. Convenient routes to access Northern Michigan University (NMU), the recreational trail networks, township offices, cultural features and the commercial district should be emphasized in future planning endeavors.

Recommended Road Network Typology

The following are proposed categories of roads in the township complete street network:

Unimproved Roads – Typically gravel roads, privately maintained or seasonal roads not maintained by the County Road Commission. Roads in this category can be considered "complete" with no modifications unless a specific need is demonstrated to the Township Local Roads – Roads serving limited destinations and end of trip-residential needs. Low volumes of non-motorized traffic use these streets as shared space. Local roads, not part of a designated non-motorized route, can be considered "complete" with little to no modifications beyond ensuring an adequately maintained paved surface.

Local Roads & Non-Motorized Routes – Local roads identified as part of a non-motorized network are also low-speed roads with very low traffic volumes. The recommended strategy to "complete" these streets would be to discourage through traffic while improving street lighting, route signage and shoulder markings. Marquette Township should also consider public/private partnerships with individuals or groups who agree to adopt corners and/or add elements along non-motorized routes like street trees, flowerbeds and benches.

Collector & Arterial Roads – Higher traffic roads in the township will require greater separation between classes of road user. Typically, a higher functional class road identified as part of the non-motorized network will receive a maintenance strip, separated sidewalk or non-motorized pathway during reconstruction. On lower traffic collector routes, a wider shoulder design exceeding recommended minimums for pedestrian access and may be requested to be installed as an interim improvement, on a route awaiting facility improvements, prior to a road classification upgrade by the MCRC, or as non-motorized path facility when exceptions to design standards are merited.

County Roads – There are several county roads that run through the township. These are typically higher speed, higher volume corridors but some are rural and unpaved. County Roads in the urban areas of the township can be considered "complete" if a maintenance strip or adequate shoulder space is provided for non-motorized users. Where higher levels of pedestrian and bicycle traffic is

expected, a non-motorized path should be installed in cases of a) demonstrated need, and b) established connectivity to project testing alternate striping patterns to facilitate adequate level of pedestrian safety and comfort along county road designated as part of a county-wide non-motorized network.

US-41 Commercial Corridor – "End of trip" facilities, public transit bays, and a "park once" strategy for the business district. "Park Once" strategies designate a transit-rich zone of business and retail where workers can park once during the day and have adequate access to business and retail without returning to their vehicles before leaving the business district at end of day. "Park Once" also designates a retail strategy whereby consumers can park once and enjoy convenient access to multiple shopping venues without returning to their vehicle. Developing zoning requirements for "Park Once" and other non-motorized enhancements will improve access and reduce mid-day traffic volumes.

Further, improved access and safety for the corridor's non-motorized traffic is a priority. Pedestrian and wheeled access enhancements are recommended to be developed in conjunction and partnership with all future MDOT and/or MCRC projects. Zoning amendments could also be made to further encourage "end of trip" facilities on commercial properties.

5.7 CONCLUSION

Planning objectives and timelines for non-motorized travel are already well-formulated in existing township planning documents. The Township is well-positioned to enhance ROWs in the community to more adequately provide for all modes of travel and users. Planning that provides for active transportation, has the potential to increase property values, improve public health, senior mobility and personal well-being. Active living opportunities have the potential to pay the Township back far beyond the cost of implementation. Marquette Township's non-motorized transportation planning and Complete Streets Ordinance formalize the intent to plan, design, and maintain streets so they are safe for all users of all ages and abilities. These documents help to guide transportation planning and engineering to design and construct future ROWs to accommodate all anticipated users, including pedestrians, bicyclists, public transportation users, motorists, and freight vehicles.

Pedestrian travel is used at some point by everyone and is a critical component to everyday life. Public officials should be cognizant of the various physical abilities and limitations of pedestrians in order to ensure the development of facilities that provide Universal Access. While improving conditions for non-motorized travel often requires public resources, the public cost per trip is usually less than that of automobile travel. Investment in the Marquette Township non-motorized environment is likely to be of equal or better value than other transport projects.

CHAPTER SIX | FUTURE LAND USE

6.1 INTRODUCTION

The Marquette Township future land use plan is representative of the preferred future and how the community would like to grow. Future Land Use planning sets the desired amounts and locations of all land uses including: residential, commercial, industrial, public facilities, open space, recreational areas and changes to traffic circulation throughout the Township. Within the 2019-2024 Marquette Township Master Plan, the recommended future land use map (Figure 6-2) was divided into the following eight land use categories:

- Development District
- Forest Recreation
- General Business
- Industrial
- Resource Production
- Rural Residential
- Scenic Residential
- Urban Residential

Traffic generation will increase throughout the Township regardless of land use designation or how developed an area currently is. However, each Future Land Use type has a unique impact on traffic circulation throughout the Township.

6.2 LAND USE TRANSPORTATION IMPACTS

Figure 6-1 Urban Residential & Adjacent Commercial Land Uses

Urban Residential

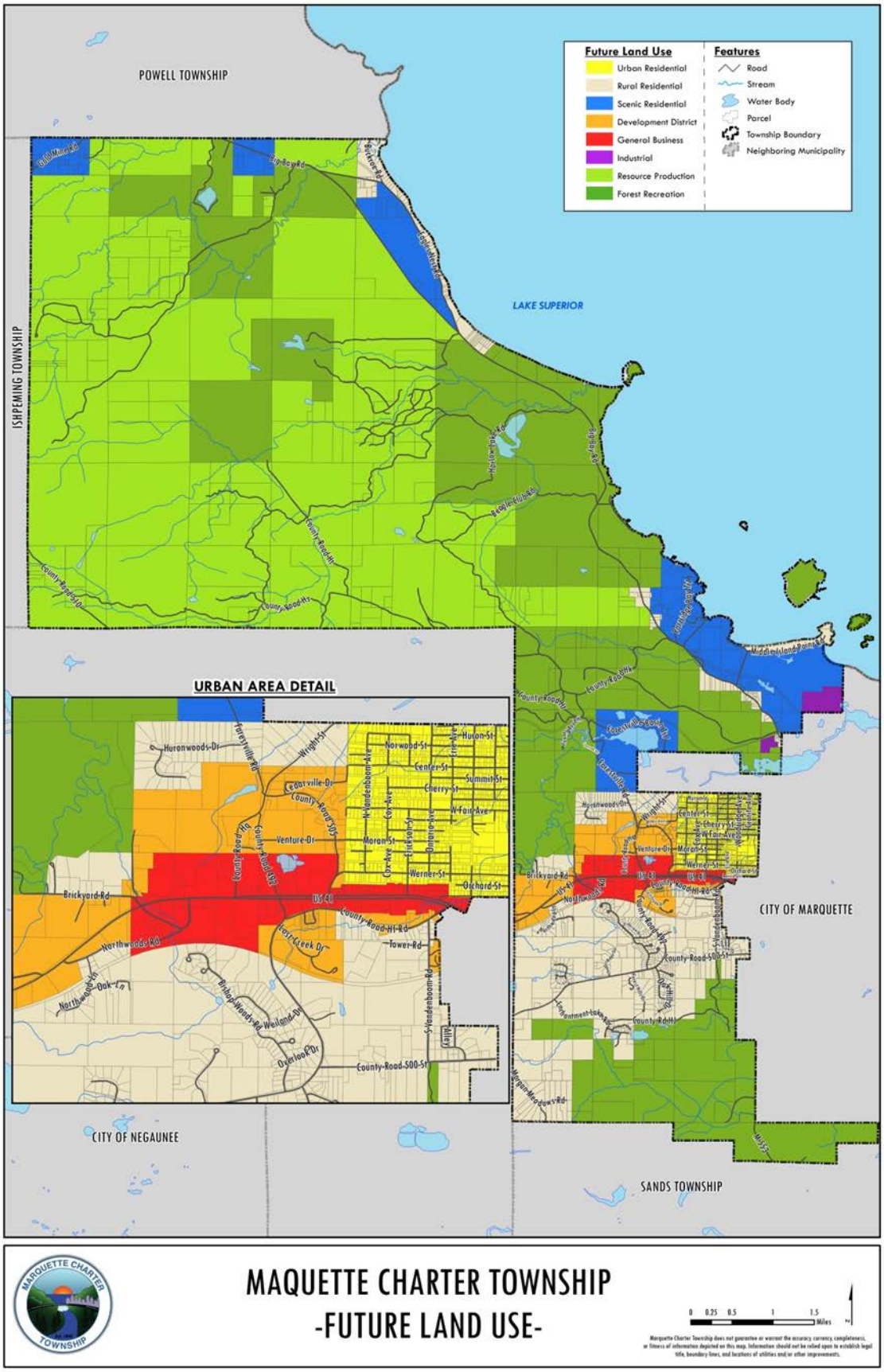
The Urban residential Area is considerably developed, however opportunities to increase density still exist. Homes are generally on smaller lots, and it is intended that homes could be interspersed with neighborhood offices or businesses, churches, and parks, especially near main intersections or shopping areas. A mix of housing is permitted, although single-family housing is predominant. In addition, institutional uses such as churches, schools, playgrounds, etc. are permitted and it is possible for some small-scale commercial development to occur near existing commercial areas.

Rural Residential

The Rural Residential Future Land Use category includes properties with a residence normally with septic and private well infrastructure. These properties have access to a primary County road and exist in various levels of density. A slightly higher residential density is envisioned for properties along existing roads when the development is designed as conservation or open space subdivision, provided that at least 60 percent of the space is usable, undeveloped, open space. The land use could have nearly 1,800 single-family homes

if parcels are divided to the maximum and proposed roads are constructed. This number of homes could generate 17,340 daily vehicle trips from local residents throughout the Township.

Figure 6-2 Marquette Township Future Land Use Map



Scenic Residential

The Scenic Residential Future Land Use category includes lower residential densities such as one unit per five acres. It is preferred that these homes be located close to the road to preserve more space for recreational opportunity. A higher residential density and smaller lots is allowable for properties when the development is formatted as conservation or open space subdivision, provided that at least 75 percent of the space is usable, undeveloped, open space. As a result of the land uses' low density, the Scenic Residential area would contribute minimally to increased traffic volume.

Development District

The Development District Future Land Use category is designed to serve as a buffer between higher intensity commercial areas and residential areas. It is designed to be a flexible, transitional area where commercial, business and residential land uses may all be present. The perimeter of this area will have light uses such as single-family, duplexes, or multi-family housing. Institutional and office establishments will produce moderate commercial traffic along the US 41/M-28 highway corridor.

General Business

The General Business land use is concentrated along the US 41/M-28 highway corridor in the Township. Retail, service, recreation, and office businesses will likely make up this area and light non-polluting industrial uses will be considered. Presently, General Business designated land is mainly developed however, as land is redeveloped; traffic generation is likely to change. Strictly adhering to the adopted access management regulations will be critical in managing increased traffic volume along the corridor.

Figure 6-3 General Business Land Use on the US-41 Corridor

Industrial

The Township has designated land for industrial activities where present industrial activities exist. It is possible for new industrial uses to develop in these areas which would ultimately influence traffic volumes. Few customers, especially the general public, come to the site. These areas are characterized by the presence of heavy machinery, building materials, and raw materials for processing and storage, and the utilization of chemicals and intense processes. This future land use area is also for uses that are not compatible in any other districts.

Forest Recreation

The Forest Recreation Future Land Use category includes lands primarily used for sustainable forest management, recreation, and preservation of natural resources and sensitive environmental areas. This area is for uses that are compatible with natural resources, such as low impact recreation, trails and wildlife areas. Existing residential uses are accommodated at a very low density but further subdivision of lands is not encouraged so as to maintain the integrity of the land for productive and conservation purposes. These lands are generally in close proximity to publicly owned conservation/recreation lands or are currently maintained in a Commercial Forest Program. Traffic generated from this area is minimally as the land uses intent is to remain undeveloped.

Resource Production

Resource Production is the final future land use category. The Resource Production Future Land Use category includes much of the land in the northern part of the Township. Much of these areas are not accessible year-round and are only served by roads designated as seasonal roads by the Marquette County Road Commission. For this reason uses recommended for this area includes agricultural activities, extraction of earth products, hunting and fishing camps, forest products harvesting, wood processing facilities and outdoor recreational facilities. Although minor, all of these land uses would contribute to an increased traffic volume.

6.3 CONCLUSION

Marquette Township should thoroughly examine land use changes and proposed developments to consider what the impact of increased traffic generation will be. It is certain that new development, both inside and outside of the Township, will increase traffic volume on collector and arterial streets in Marquette Township.

CHAPTER SEVEN | FUTURE ROAD ENHANCEMENT & DEVELOPMENT

7.1 MICHIGAN DEPARTMENT OF TRANSPORTATION

The MDOT Transportation Service Centers (TSCs) develop five-year programs for road construction/improvement projects. The Ishpeming TSC covers Baraga, Houghton, Keweenaw, and Marquette counties. Their current five-year program (2019-2023) has three scheduled construction projects in Marquette Township.

- 2019: US-41 COUNTY ROAD HQ TO WEST OF BRICKYARD ROAD
  Project includes .92 miles of road reconstruction for four lanes of US-41, constructing two new roundabouts, as well as further enhancing safety and access to the commercial business along this corridor with a multi-use tunnel. The tunnel will improve safety by providing pedestrians, bicyclists and snowmobilers with a separated grade crossing of this busy commercial corridor and the rapidly developing retail and entertainment district.

- 2021: US-41/M-28 FROM FRONT STREET TO COUNTY ROAD HQ
  Project consists of 2.65 miles of US-41 road rehabilitation west of County Road HQ. Marquette Township is seeking opportunities to pair non-motorized transportation infrastructure and pedestrian access along the roadway MDOT plans to rehabilitate. The Township seeks to also work in partnership with MDOT to reduce conflict points of curb cuts located within this portion of US-41 to ensure safer and more efficient access to adjacent businesses. Furthermore, Marquette Township aims to coordinate the expansion of street lighting and installation of median rain gardens within this project area.

- 2023: US-41 WEST OF BRICKYARD ROAD NORTHERLY TO IROQUOIS DRIVE
  Project consists of 6.35 miles of US-41 roadway rehabilitation, spanning from Brickyard Road in Marquette Township to Iroquois Drive in the City of Negaunee. Marquette Township intends to work with the MDOT in local planning efforts for non-motorized infrastructure implementation at every feasible opportunity.

The MDOT will be adding maintenance projects to their five-year program that are not shown in the published plan. Routine maintenance, performed on an annual basis, includes pavement repairs, pavement patching, catch basin maintenance, and other types of preventative maintenance. MDOT will continue to be a key participant in the Corridor Advisory Group. They are committed to using every opportunity that becomes available to make continued access and safety improvements along the corridor.

7.2 MARQUETTE COUNTY ROAD COMMISSION

The Marquette County Road Commission is responsible for the design, construction and maintenance of all local County roads. Currently, the Road Commission is planning to conduct an engineering study with regard to the intersection of Forestville Road and County Road HQ with the intent of enhancing the roads geometry and stormwater transmittance. The Township aims to continue to support and work with the Marquette County Road Commission to maintain and upgrade the Township road network.

7.3 MARQUETTE TOWNSHIP

Marquette Township-Preventative Maintenance

In 2014, Marquette Township residents approved a 1.5 mill tax levy for a period of fifteen years (2015-2030). Within the first three years of the millage period, all local roads within Marquette Township were repaired. The Marquette Township Board, Road Committee, and staff utilize an asset management program to identify preventative maintenance of local roads. Asset management-based maintenance prioritizes repair based P.A.S.E.R. (road surface condition) ratings, safety, traffic volumes, road function, school bus routing, emergency routing, and non-motorized transportation opportunities. The implementation of an asset management decision process allows Marquette Township to make informed decisions for the transportation network. The process enables stewardship, transparent decision processes, and measurable performance results.

Marquette Township- Proposed Road Development

Marquette Township has a Master Road Plan which identifies areas where Marquette Township's local road network could be expanded. Table 7-1 denotes areas identified by the Road Committee as desirable additions to local road facilities. Figure 7-1 illustrates the locations of proposed roads.

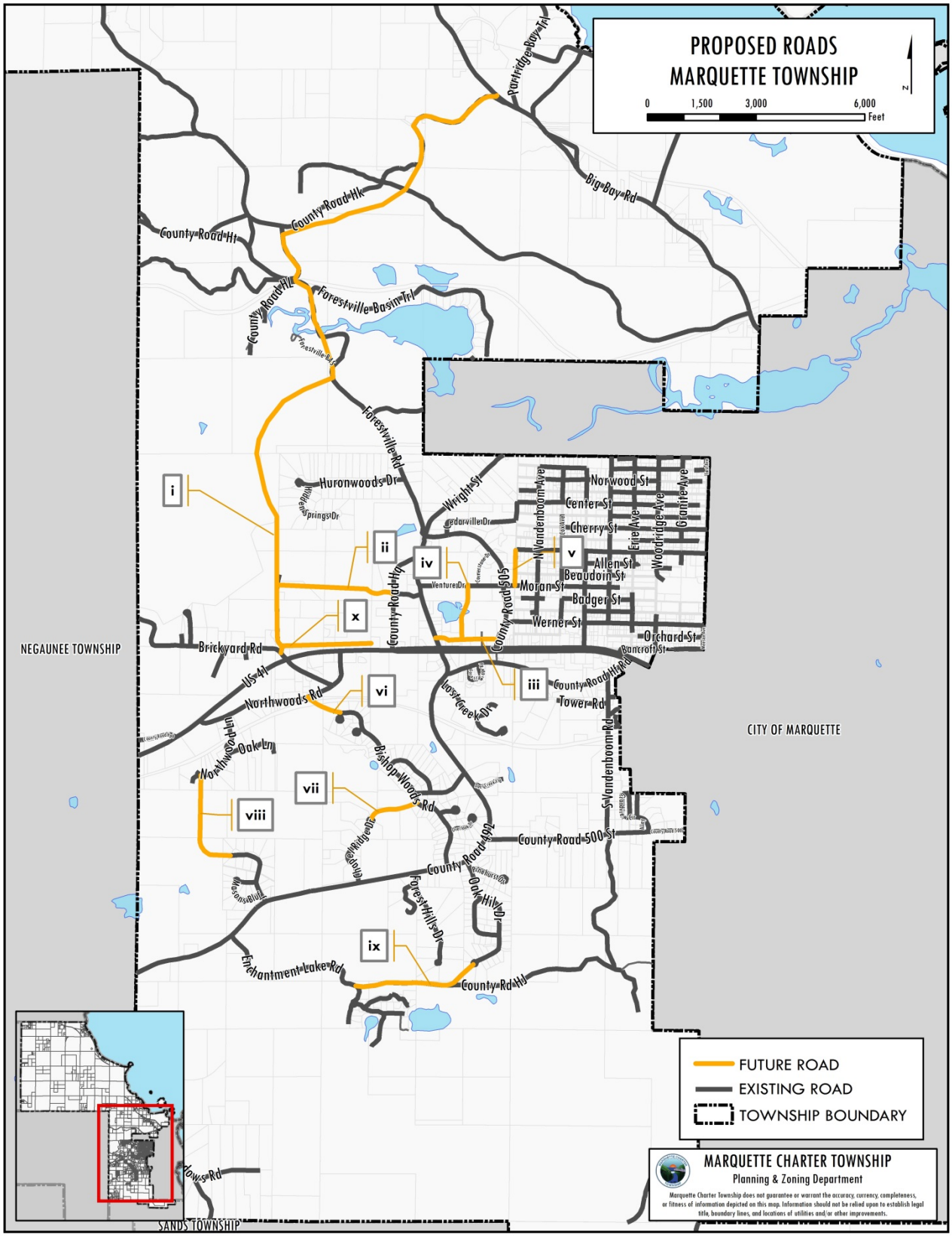
Table 7-1 Marquette Township's Proposed Road Development

Marquette Township Road Master Plan		
Item	**Description**	**Length**
i.	US 41/Brickyard Rd to Forestville and continuing north to Co. Rd. HK and then to Co. Rd. 550.	4.08 miles
ii.	Extend County Road 492 west to power line easement and south to Brickyard Road.	.62 miles
iii.	Werner Street extension to Wright Street	.33 miles
iv.	North-South connection from Venture Drive to Item iii.	.29 miles
v.	Ryan's alley extension from Center Street to Moran Street.	.18 miles
vi.	Bishop Woods Road connection to Northwoods Road	.19 miles
vii.	Chapel Ridge Drive connection to Bishop Woods Road	.26 miles
viii.	Masons Bluff connection to Northwoods Lane	.54 miles
ix.	Lake Enchantment Road Extension to Oak Hill Drive	.66 miles
x.	Brickyard Road Extension/ US-41 Frontage Road	.47 miles

*refer to *Figure 7-1* on next page for location. *Source: MCRC*

Figure 7-1 Marquette Township's Proposed Road Development

Marquette Township Complete Street Implementation



In 2012, Marquette Township embraced Complete Streets principles through the adoption of a Complete Street Ordinance. This ordinance encourages the County Road Commission and MDOT to apply these principles in all Township road projects as appropriate. The Complete Streets approach encourages people to walk or bicycle to their destinations around the community, which may help reduce vehicle trips. This will support the goal for roadways to serve many functions, including linking various parts of the community, providing surface transportation accommodating all modes of transportation, providing public access to destinations, incorporating space for underground utilities and other public infrastructure, and helping to define and create a sense of place.

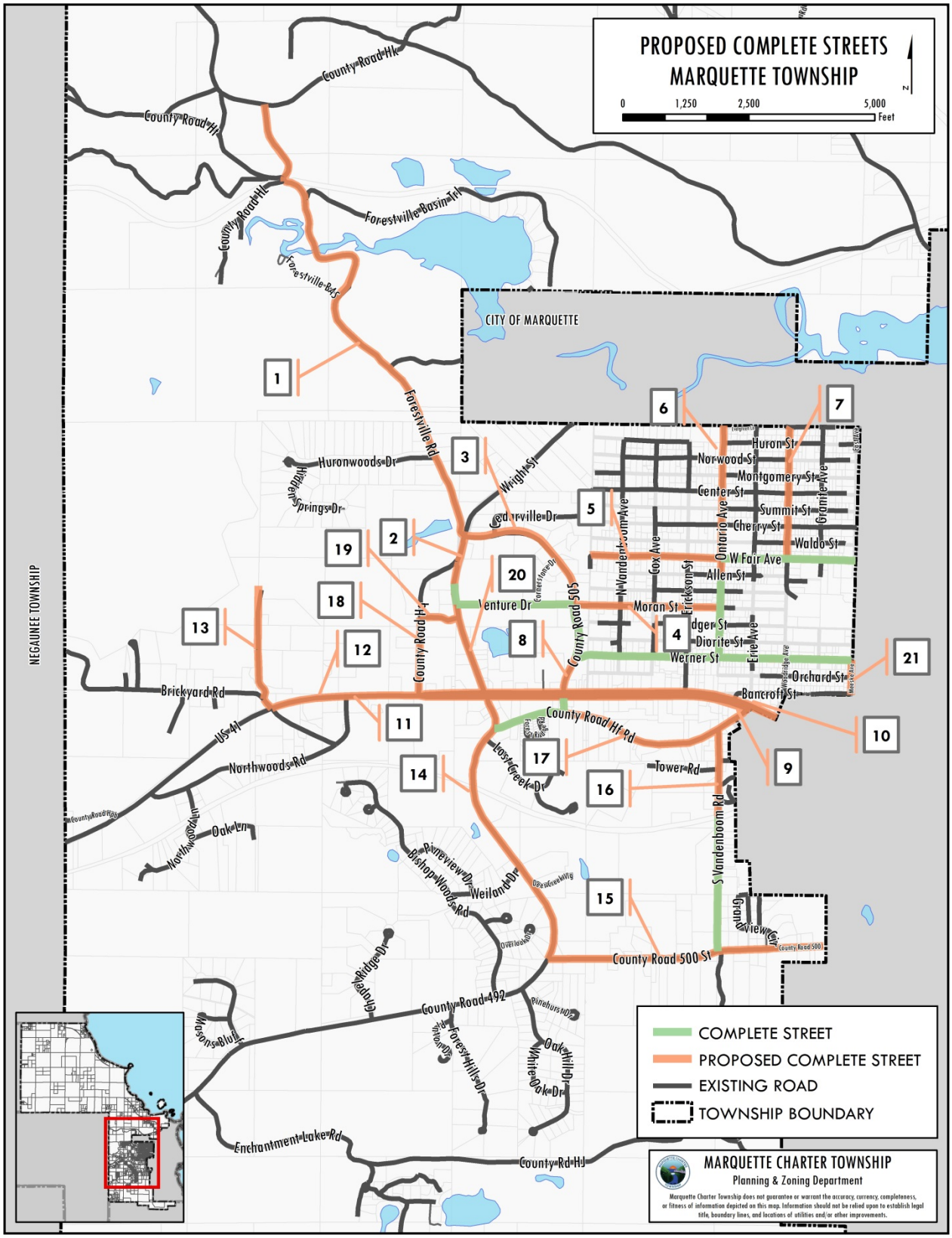
Marquette Townships Complete Streets Plan as previously described in Chapter 5 identifies areas where Complete Streets infrastructure is desirable in local right-of-way design and alteration. Table 7-2 and figure 7-2 denotes areas identified by the Marquette Township Road and Recreation Committees as desirable Complete Street locations for local road facilities.

Table 7-2 Marquette Township's Proposed Complete Streets

Marquette Township Complete Streets Plan				
Item	**Road**	**From**	**To**	**Length**
1.	Forestville Rd.	Wright St.	County Rd. HF	2.02 miles
2.	Wright St.	Venture Dr.	Commerce Dr.	.30 miles
3.	Commerce Dr.	Wright St.	Moran St.	.46 miles
4.	Moran St.	Commerce Dr.	Ontario Ave.	.51 miles
5.	W. Fair Ave.	Ryan's Alley	Ontario Ave.	.48 miles
6.	Ontario Ave.	Township Boundary	County Rd. 492	.50 miles
7.	Woodridge Ave.	Township Boundary	W. Fair Ave.	.49 miles
8	Commerce Dr.	Werner Street	US-41	.12 miles
9.	US-41 (Eastbound)	Township Boundary	County Rd. 492	1.23 miles
10.	US-41 (Westbound)	Township Boundary	County Rd. 492	1.36 miles
11.	US-41 (Eastbound)	County Rd. 492	Brickyard Rd.	.51 miles
12.	US-41 (Westbound)	County Rd. 492	Brickyard Rd.	.51 miles
13	Brickyard Rd.	US-41	End of Brickyard Rd.	.30 miles
14.	County Rd. 492	US-41	Grove St.	1.08 miles
15.	Grove St.	County Rd. 492	Township Boundary	1.04 miles
16.	S. Vandenboom Rd.	Brookton Rd.	IOHT	.30 miles
17.	Brookton Rd.	Commerce Dr.	US-41	.76 miles
18.	County Rd. 492	Venture Dr.	US-41	.28 miles
19.	Venture Dr.	County Rd. 492	Wright St.	.15 miles
20.	Wright St.	Venture Dr.	US-41	.33 miles
21.	Meeske Ave.	Werner St.	Township Boundary	.13 miles

*refer to *Figure 7-2* for location.

Figure 7-2 Marquette Township's Proposed Complete Streets



CHAPTER EIGHT | FINANCE

There are a number of potential funding sources for road development, enhancement, and repair in Marquette Township. Among these sources are the Federal Highway Administration (FHA), the Michigan Department of Transportation (MDOT), the Marquette County Road Commission (MCRC), Marquette Township, and the private sector.

8.1 FEDERAL HIGHWAY ADMINISTRATION

The Fixing America's Surface Transportation Act, or the FAST Act legislation was signed into law in December 2015. The FAST Act authorized federal transportation programs and funding for the period covering the 2016-2020 fiscal years. This legislation authorized the investment of $305 billion in federal funding in the nation's surface transportation over its duration. The FAST Act provided a modest increase in overall funding for the federal highway program. The legislation also created two new freight programs to better target investments to projects that promote efficient movement of freight. Funding for these two new programs essentially account for most of the increased funding provided by the FAST Act. Beyond the new freight programs, funding for the remaining federal highway programs grew by roughly the expected rate of inflation. It is projected that $4.3 billion in federal funding will be made available to the 2019-2023 Michigan Highway Program (Table 8-1).

8.2 MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT)

The MDOT's revenue to support its transportation program is a combination of federal and state revenues. The federal revenue is from the FAST Act legislation previously described. State revenue comes from the Michigan Transportation Fund (MTF). The MTF is supported primarily from fuel taxes (gasoline tax is 19 cents/gallon, 15 cents/gallon diesel) and vehicle registration fees. On Jan. 1, 2017, the gasoline tax increased from 18.7 to 26.3 cents per gallon, and the diesel fuel tax increased from 15.0 to 26.3 cents per gallon. The motor fuel tax was also applied to natural gas (CNG) as well. Fuel tax rates will be tied to inflation beginning in 2022 to remedy the decline in purchasing power of the fuel tax. Registration fees for most cars and trucks were also increased by 20 percent on Jan. 1, 2017. New electric car fees of $100 per year, and $30 for plug-in hybrid cars, attempt to equalize road-user fees for vehicles that use little or no taxed fuel. The user-fee increases are estimated to generate an additional $600 million per year for the Michigan

Table 8-1 MDOT Five Year Highway Program 2019-2023

Highway Investment Program FY 2019-2023

	FY 2019-2023 Annual Average (millions)	Five-Year Total (millions)
REPAIR AND REBUILD ROADS AND BRIDGES		
REPAIR AND REBUILD ROADS		
Rehabilitation and Reconstruction	$550	$2,747
Capital Preventive Maintenance	$119	$596
Freeway Lighting	$0.2	$1
Freeway Resurfacing Program	$20	$100
Non-Freeway Resurfacing Program	$47	$235
Trunkline Modernization*	$238	$1,192
TOTAL - *Repair and Rebuild Roads*	**$974**	**$4,871**
REPAIR AND REBUILD BRIDGES		
Bridge Replacement	$65	$325
Bridge Preservation	$73	$363
Big Bridges	$26	$131
Special Needs	$22	$110
Culverts-Capital	$2	$10
Blue Water Bridge-Appropriated Capital Outlay Projects	$3	$15
TOTAL - *Bridges*	**$191**	**$954**
ROUTINE MAINTENANCE	**$342**	**$1,712**
TOTAL - *REPAIR AND REBUILD ROADS AND BRIDGES*	**$1,507**	**$7,537**
SAFETY AND SYSTEM OPERATIONS	**$168**	**$842**
OTHER		
Transportation Alternatives	$10	$48
Roadside Facilities	$12	$60
Workforce Development	$9	$45
Non-Federally Funded Programs	$37	$183
TOTAL - *FIVE-YEAR TRUNKLINE PROGRAM*	**$1,743**	**$8,715**

Source: MDOT

Transportation Fund. Starting October 2018, income tax revenues were appropriated for roads, increasing from $150 million to $325 million in FY 2020 to $600 million in 2021. An estimated $600 million in income taxes are forecasted to continue to be distributed into the MTF continuing in FY 2022 and 2023.

8.3 MARQUETTE COUNTY ROAD COMMISSION

The Road Commission has four major areas of funding that support their operations. These sources are federal and state grants, local governmental unit contributions, and funds generated by Road Commission activities, such as charges for services (trunkline maintenance), license/permits, and investment earnings. The MCRC currently has one fund, the General Operation Fund. The Board of County Road Commissioners is responsible for its administration.

Primary among Road Commission funding sources is the State of Michigan. Public Act 51 of 1951 created a "user pay fund" the Michigan Transportation Fund, into which specific transportation taxes (highway user taxes, state motor fuel tax, and vehicle registration fees) are deposited. The Act further designates how the revenues are distributed and for what purposes they can be spent.

The Fiscal Year ending September 30, 2017 Audit lists the following revenue sources for that year.

Table 8-2 MCRC 2017 Audit-Program Revenue

Program	Revenue
License and Permits	**$ 32,220**
Federal Grants	**$1,452,167**
State Grants	**$8,415,525**
Contribution-Local Units	**$2,365,595**
Charges for Service	**$3,572,157**
Interest and Rents	**$224,080**
Reimbursements	**$72,223**
Other Revenue	**$273,869**
Total Revenue	**$16,183,756**

Source: *Fiscal Year 2017 Audit*. MCRC

In 2017 The Road Commission reported a net increase in infrastructure during the current year in the amount of $5,818,277. The infrastructure recorded during 2017 will be depreciated in the following year. The infrastructure is paid for by federal, state, and local dollars, as well as contributions from private sources. Federal Aid was made up of funds from the Surface Transportation Program, Economic Development "D" Funds, and the Federal Critical Bridge Program. The Federal component of the budget was approximately 13%.

The Road Commission derived approximately 46.97% of its revenue from the fuel tax collected in 2017, which included a slight increase based on the phase-in of the increase approved in 2016, and approximately 13.99% of its revenues from Federal and State grants during 2017. Charges for services, including the State Trunkline Maintenance, accounted for 14.61% of revenue, revenue received from townships of 22.33%, and an additional 1.37% relating to contributions from private sources.

While a substantial portion of Road Commission revenue comes from State and Federal sources to partially fund improvement projects, Local units of government also participate in contributing to the budget. Township millages and contributions provided revenue toward many projects and maintenance

activities in the 2017 fiscal year. Projects on local roads now require a 60/40 match ratio, 60% by townships, with the Road Commission.

8.4 MARQUETTE TOWNSHIP

In the fall of 2014 Marquette Township residents voted to approve a 1.5 mill tax levy for a period of 15 years (2015-2030). When passed, the Township repaired all local roads within the first three years of the millage period. The millage provided approximately $500,000.00 annually, costing Township taxpayers $150.00 per $100,000.00 of taxable value. The cost associated with the initial three year repair of all local roads utilized a $4.5 million bond amount. The initial bond amount will be paid within the 15-year life of the millage. The Township also budgets $55,000 annually to be used for local road maintenance. These funds for maintenance are guided by the Marquette Township Asset Management Plan, a transparent decision process with measurable performance of selected maintenance.

A second source of funding is the Township Downtown Development Authority (DDA). In June of 2018 the DDA's boundary was expanded to include all commercial businesses within Marquette Townships US-41 Highway Corridor. The DDA has the ability to levy up to 2.0 mills, which would generate $147,500. In 2019, the Marquette Township DDA has expressed interest in a pursuing a 3 year- 1 mil levy for the purpose of initiating US-41 corridor improvements including; pedestrian access, aesthetics, lighting and access management.

8.5 PRIVATE PARTICIPATION

Opportunity exists for the private sector to participate in road infrastructure improvements. In Chapter 4, there was discussion of turn lanes and reducing conflicting curb cuts for businesses along the US-41/M-28 corridor that partnered MDOT, Marquette Township, and private businesses. Also, in Chapter 4, in a discussion of Trowbridge Park, the Road Commission would allow a property developer to build or extend a road on vacant Road Commission right-of-way. Private development of roadways must meet Marquette County Road Commission construction standards. In addition to participating in road construction funding, developers should be reserving sufficient land to accommodate the scale of their proposed development.

CHAPTER NINE | TRANPORTATION PLAN RECOMMENDATIONS

9.1 ASSET MANAGEMENT PROGRAM

	RECOMMENDATION	RESPONSIBLE PARTY	TIME FRAME
I.	Utilize Asset Management programs and PASER surface condition results to aid in determining road projects.	Planning Commission, MCRC, Road Committee	On-going
II.	Implement a "mix of fixes" approach to road improvements.	Planning Commission, MCRC, Road Committee	Short-Term
III.	Apply Capital Preventive Maintenance techniques to protect the pavement structure, slow the rate of deterioration, and/or correct pavement surface deficiencies.	MCRC, Planning Commission, Road Committee	On-going
IV.	Monitor MCRC bridge ratings and prioritization/application process.	Planning Commission	On-going

9.2 CORRIDOR IMPROVEMENT

	RECOMMENDATION	RESPONSIBLE PARTY	TIME FRAME
I.	Create alternative access options to establishments on the corridor to reduce the amount of local trips on the corridor.	Planning Commission, Zoning Administrator, Business Association,	Short-Term, On-going
II.	Evaluate under-utilized parking lots along transit routes as potential park-n-ride lots, where people could transfer from private vehicles to transit.	MARQ-TRAN, Business Association, MDOT	Short-Term
III.	Continue to play an active role on the US41/M28 Corridor Advisory Group.	Zoning Administrator, Township Manager, Township Supervisor	On-going
IV.	Encourage local businesses to collaborate with the MDOT and contribute to funding access and aesthetic improvements directly influencing their property.	Business Association, Private Developer, DDA	On-going
V.	Promote access sharing by local businesses and connect parking lots.	Planning Commission, Business Association, US 41/M28 Corridor	Short-Term, On-going
VI.	Continue thorough review of proposed site plans by the Zoning Administrator and Planning Commission to assure that access management regulations are adhered to.	Planning Commission, Zoning Administrator	On-going

VII.	Encourage parking lots to be located behind or beside buildings, rather than in front. When possible, support shared parking between businesses and institutions that are open at different hours of the day or days of the week.	Planning Commission, Zoning Administrator, Business Association	On-going
VIII.	Utilize land use control powers to enhance the Township's visual quality, through requiring greenspace, sign restrictions, etc. Work with the MDOT to define and apply for Transportation Alternatives Program.	Planning Commission, MCRC, Beautification Committee, Road Committee, DDA	On-going

9.3 EDUCATION

	RECOMMENDATION	**RESPONSIBLE PARTY**	**TIME FRAME**
I.	Educate the public about an asset management "mix of fixes" approach to road maintenance.	Town Hall Forums, Consultants, MCRC	Short-Term, On-going
II.	Educate the public about how access management techniques reduce crashes and provide for a safer community.	MDOT, US41/M28 Corridor Group, Consultants	Short-Term, On-going
III.	Educate businesses in the Township about the economic benefits of shared access.	MDOT, Planning Commission, Consultants	Short-Term, On-going
IV.	Educate the public about other modes of transportation, such as non-motorized and public transit.	MARQ-TRAN, MDOT, Recreation Committee	Short-Term, On-going
V.	Educate the public about the function of directional crossovers.	MDOT, information at hotels and local businesses	Short-Term, On-going
VI.	Encourage driver education programs as a method to reduce driver confusion. Make reducing driver confusion a priority when making improvements to or developing an area.	Driver's Education Programs, NMU, High Schools	Short-Term, On-going

9.4 FINANCE

	RECOMMENDATION	**RESPONSIBLE PARTY**	**TIME FRAME**
I.	Allocate Township resources for transportation enhancement and maintenance in geographic areas that can affect a large number of residents.	Township Board	On-going
II.	Annually evaluate Township Road Millage funding.	Township Board	Short-Term

III.	Encourage developers and local businesses to fund transportation improvements necessary to maintain or increase safety and aesthetic quality.	MDOT, Business Association, Private Developer	On-going

9.5 PRIVATE ROAD ORDINANCE

	RECOMMENDATION	**RESPONSIBLE PARTY**	**TIME FRAME**
I.	Assess private road ordinance, clearly defining road standards to safeguard against future local expense.	Planning Commission	Short-Term
II.	Consider future connectivity associated with cul-de-sac type subdivisions.	Planning Commission	On-going

9.6 TRANSIT

	RECOMMENDATION	**RESPONSIBLE PARTY**	**TIME FRAME**
I.	Work closely with MARQ-TRAN and MDOT representatives to accommodate changing transit needs into the future.	MDOT, MARQ- TRAN, US 41/M-28 Corridor Group, Assisted Living Communities	On-going
II.	Support the utilization of transit service as an essential piece of maintaining the corridor's level of service, elderly mobility, and reducing automobile emissions.	MARQ-TRAN, Assisted Living Communities, County Department on Aging	On-going
III.	Require developers to make accommodations for transit movement within sites when designing subdivisions regardless if transit service exists in the nearby area.	Planning Commission, Zoning Administrator, Private	On-going
IV.	Encourage new residential and commercial developments to cater to transit and pedestrian movement rather than automobile convenience.	Planning Commission, Zoning Administrator, Private	On-going

9.7 TROWBRIDGE PARK RIGHTS-OF-WAY

	RECOMMENDATION	RESPONSIBLE PARTY	TIME FRAME
I.	Maintain all Marquette Township undeveloped rights-of-way for future motorized or non-motorized development, utility and road placement.	Township Board, Planning Commission, Zoning Administrator	On-going, Long-Term
II.	Annually update and evaluate Complete Street Map and Plans.	Township Board, Planning Commission, Rec. Committee	On-going, Long-Term

9.8 PLANNING

	RECOMMENDATION	RESPONSIBLE PARTY	TIME FRAME
I.	A more thorough analysis of anticipated future development and improvements to the road network should be conducted in order to maintain a cohesive balance between movement and access.	Planning Commission, MCRC	On-going
II.	The impacts on transportation facilities should be considered carefully when developing the Township Future Land Use Plan and zoning districts.	Planning Commission, Zoning Administrator	On-going
III.	Maintain Township Access Management Regulations to promote safe and efficient travel within Marquette Township.	Planning Commission, Zoning Administrator	Short-Term
IV.	Consider trip generation of developments during site plan reviews.	Planning Commission, Zoning	On-going

APPENDIX A

2018 Community Survey

Marquette Township, Michigan

August 15, 2018

Prepared by the Marquette Township Planning and Zoning Department.

Introduction

In November of 2017, the Marquette Township Planning Commission began efforts to update the community's Master Plan. In order to better understand and provide for the needs of our residents, the Planning Commission tasked the Planning & Zoning Department with conducting a community survey. The 2018 Community Survey (conducted in June/July 2018) included questions regarding quality of life, growth management, transit planning, park and recreation planning, and economic development.

The 2018 citizen survey was distributed by mail to approximately 750 households within the township. These residences were chosen by a random selection, and accounted for just over 40% of all Marquette Township households.

To ensure statistical relevance, staff's goal was to obtain a minimum of 145 completed surveys from Marquette Township residences. This goal was achieved, with approximately 248 surveys having been completed and recorded. The resulting 248 completed surveys have a 95% level of confidence with a precision of +/- 6%.

Survey Findings- Overview

- **Most Important Issues Facing Marquette Township.** The top three issues indicated by respondents in the sum of their three most important choices were: maintaining a low tax rate (40%), managing future growth (14%) and parks, recreation and open space (9%). Rental housing availability and population growth were indicated as the least important (0%).

- **Satisfaction of Marquette Township Services.** Overall quality of customer service from Township employees (86%), overall quality of fire services (87%), overall quality of garbage collection (87%) were indicated as the most satisfactory Township services by respondents. Overall effectiveness of traffic and congestion management (50%) was the least satisfactory.

- **Most Important Actions Marquette Township Can Make.** Based on what respondents felt is very important, improving snow plowing efforts (52%), improving safety efforts by police (39%) and improving fire protection (38%) were the most important actions Marquette Township can make. Improving maintenance of parks (17%) was indicated as the least important action.

Survey Findings- Overview

- **Maximum Millage Increase Respondents Would Invest.** Twenty-seven percent (27%) of respondents indicated a 1mill investment for the types of improvements they indicated as most important. Twenty percent (20%) of respondents indicated a 1.5-2.5 mill investment for desired improvements. Twenty-five (25%) were in favor of a ½ mill investment in improvements. Twenty-eight (28%) of respondents noted that they were in favor of no increased investment in Township improvements.

- **Support of Maintaining Current Police Services if Funded by Millage.** Fifty-five percent (55%) of respondents were either supportive or very supportive of maintaining current levels of police services if funded by millage. Twenty-three percent (23%) of respondents were not supportive, and twenty-two (22%) were "not sure" of maintaining current police services, if funded by millage.

- **Support of Millage Dedicated to the Future Replacement of Fire Department Apparatus.** Fifty-one (51%) of respondents indicated support of a ½ mill investment dedicated to the future replacement of fire department apparatus. Fifteen percent (15%) of respondents indicated support of a 1.5-2 mill investment dedicated to the future replacement of fire department apparatus. Thirty-four (34%) of respondents noted that they were in favor of no increased investment dedicated to the future replacement of fire department apparatus .

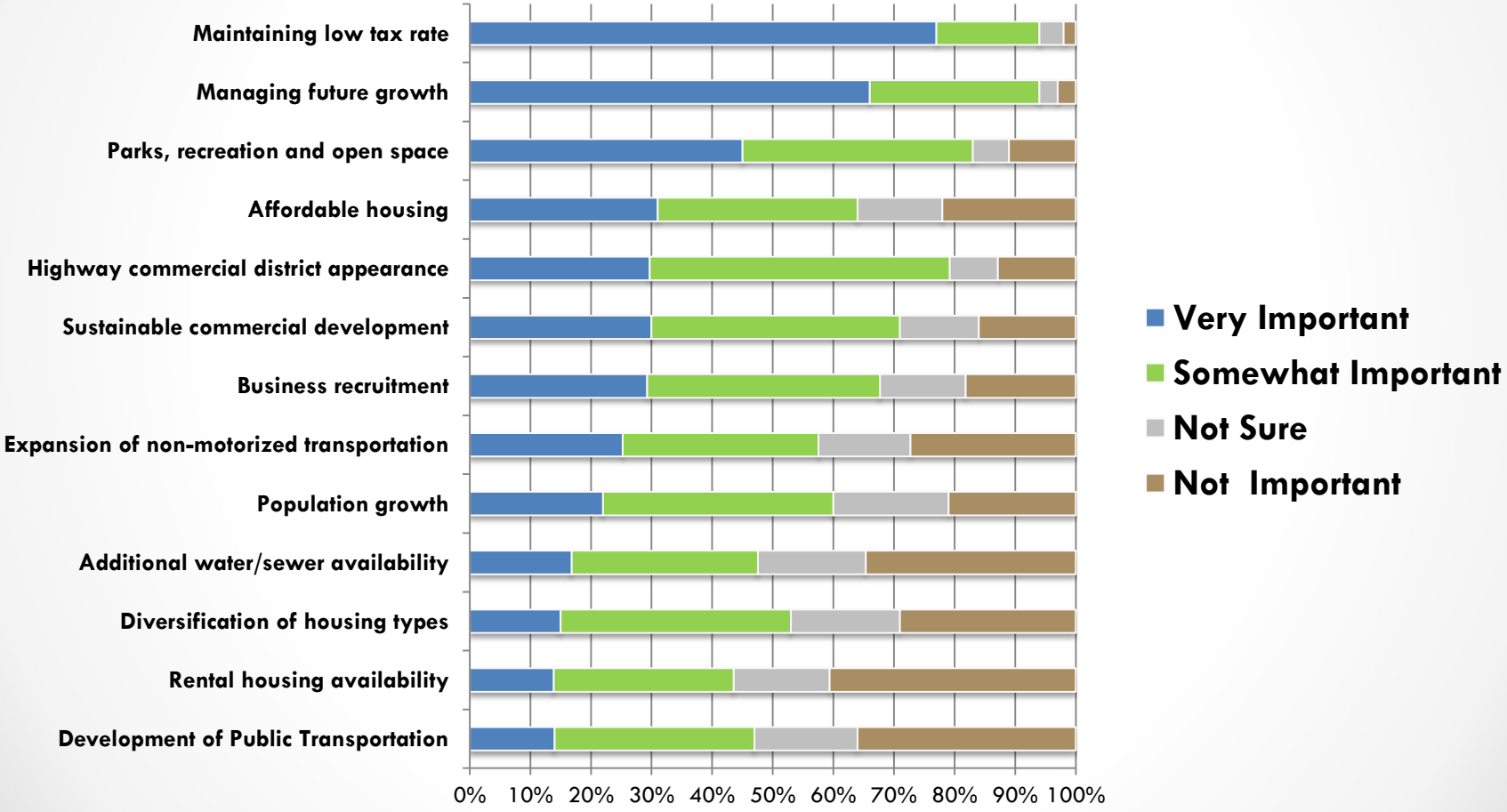
Survey Findings- Overview

- **Support of Township Pursuing Land Acquisition Opportunities.** Fifty-eight percent (58%) of respondents indicated that they are either very supportive (29%) or somewhat supportive (29%) of Marquette Township pursuing opportunities to acquire additional land with key scenic assets and for parks, trails, and recreation usage. It should also be mentioned that thirty percent (30%) of respondents indicated that they are not supportive of the Township pursuing opportunities to acquire additional land, while twelve (12%) indicated "not sure."

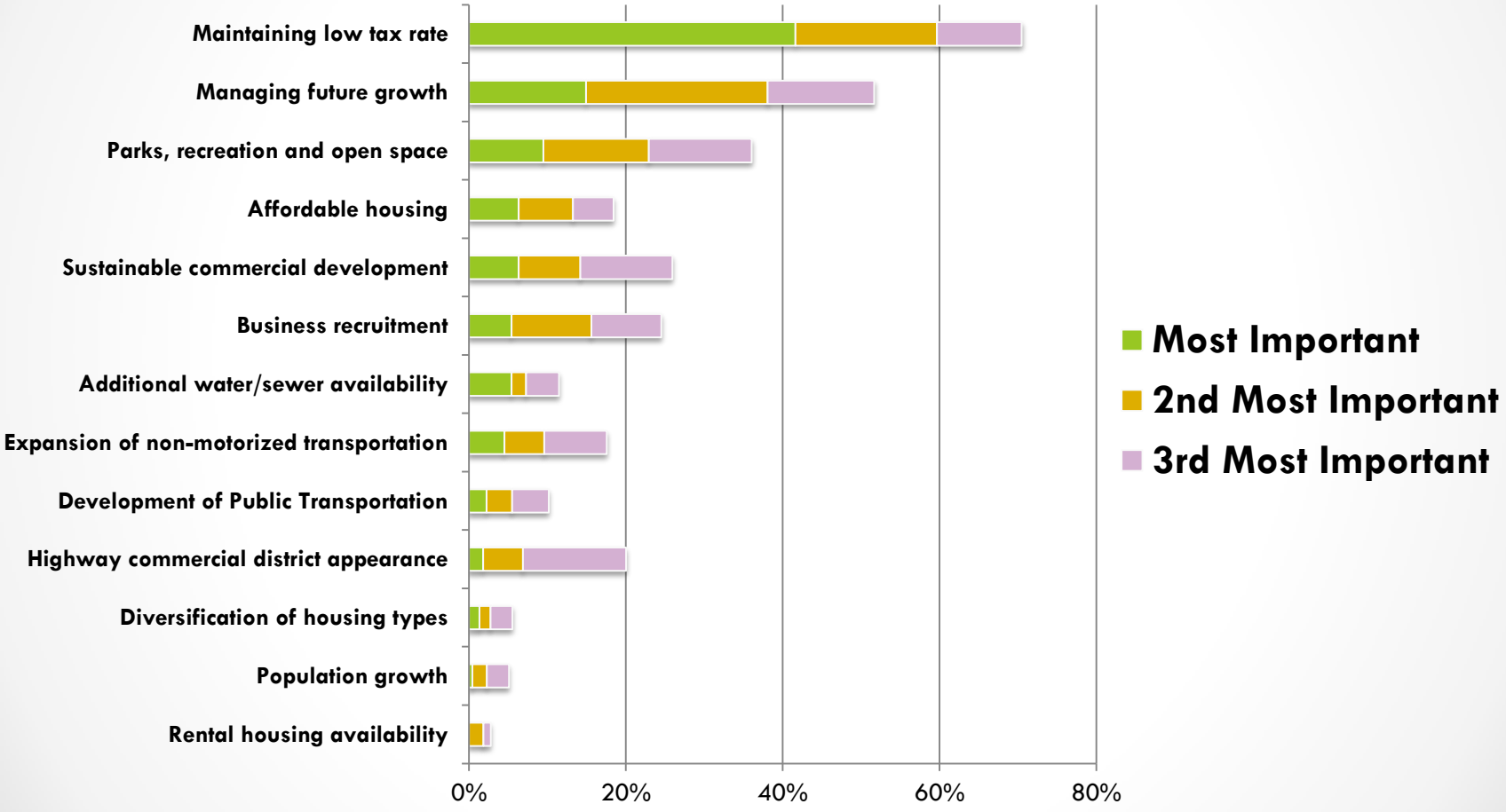
- **Support of Township Pursuing Shared Services.** Seventy-four percent (74%) of respondents indicated they feel it is either very important (42%) or somewhat important (32%) for Marquette Township to pursue sharing of services with neighboring communities. Eight percent (8%) of respondents feel that it is not important and the remaining eighteen percent (18%) indicated they are "not sure".

- **Desired Future Growth Within Marquette Township.** Commercial/Retail growth was the most desired land use indicated by respondents (31%). Twenty-eight percent (28%) of respondents noted that residential development was desirable, and twenty-eight percent (28%) indicated that parks and recreation growth was most desired. Industrial/ manufacturing (13%) growth was the least desirable land use pursuit.

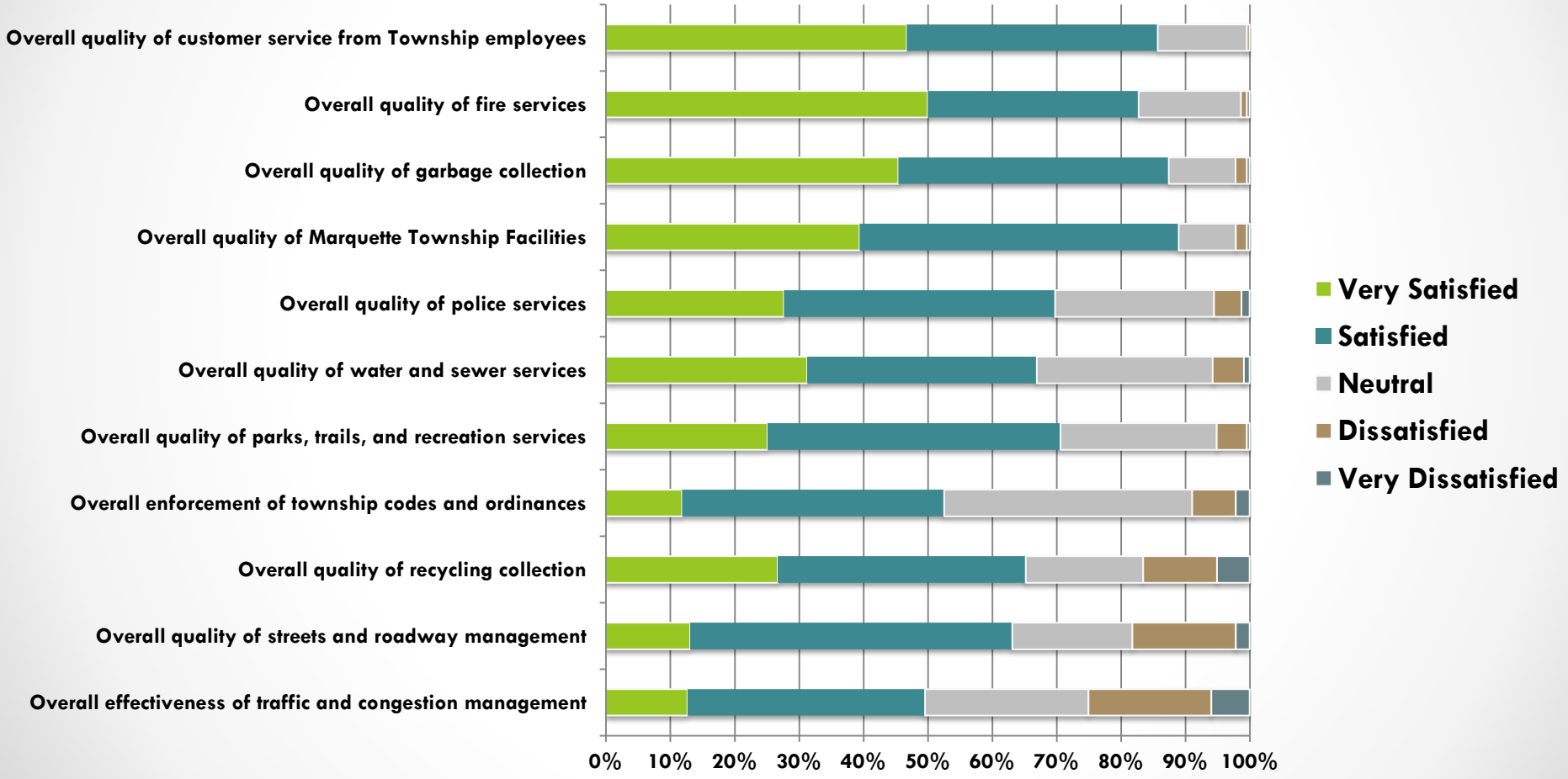
1. For each of the following issues facing Marquette Township, please rate them based on your opinion of importance by checking the appropriate box.



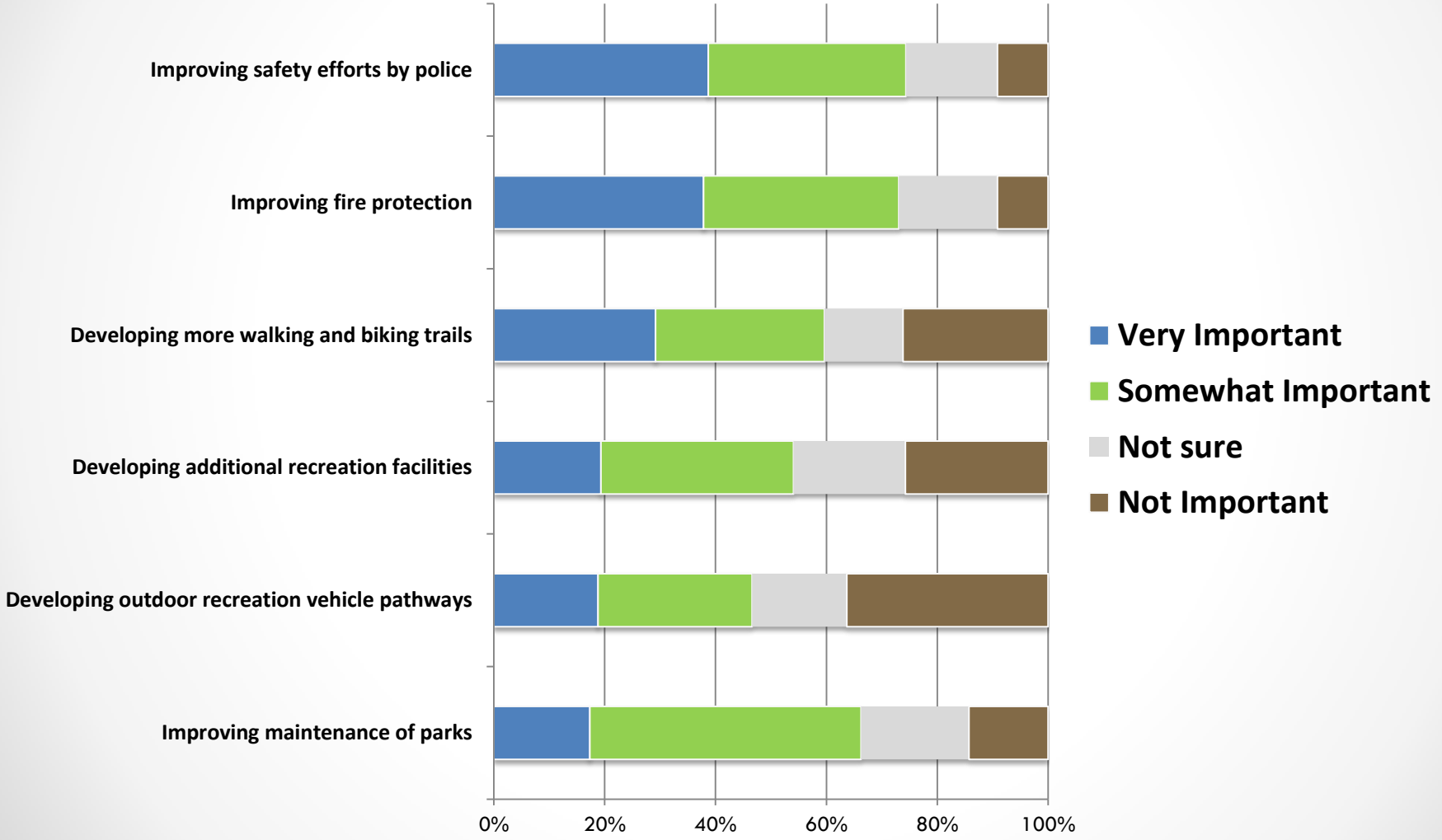
2. Which THREE of the statements regarding Marquette Township's future from the list in Question #1 do you feel are most important?



3. Of the major services Marquette Township provides, please rate your level of satisfaction with each.



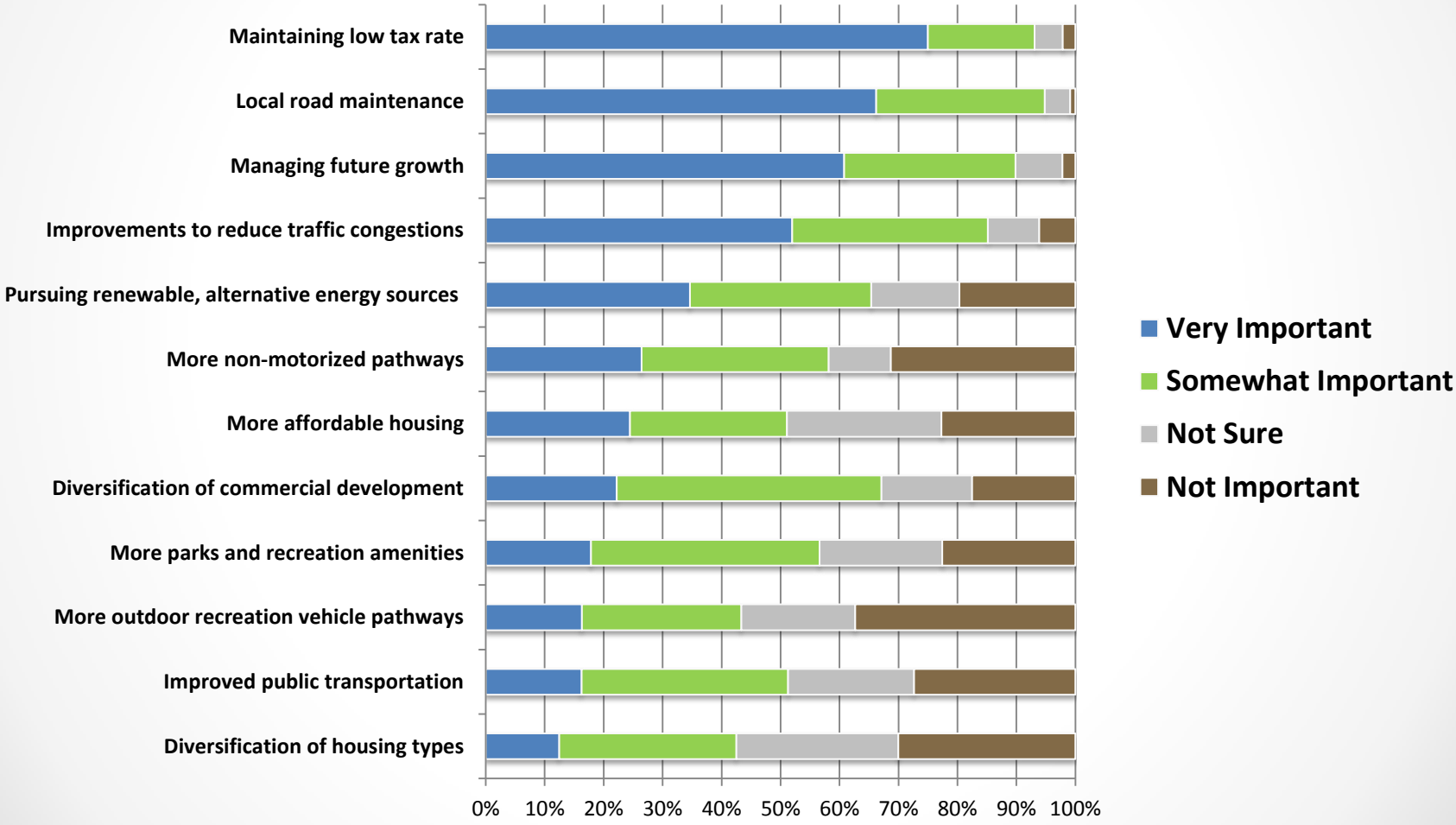
4. For each of the following actions Marquette Township can take, please rate whether you feel the action is very important, somewhat important, not sure, or not important.



Other Actions Indicated by Respondents:

- Red lights & 25 mph signs
- Less development
- US-41 illumination
- Junk car enforcement
- Leave natural places natural
- Transfer station in township
- Deal with traffic problem
- Rewriting noise ordinance
- Road repair
- 2 person fire hall staff, remove siren
- Less trails and rec, more infrastructure
- Preserving natural environment
- Use less salt on roads
- Back road to Lowes
- Developing more residential areas
- Improve street clean up/ collection of leaves
- Provide spring leaf pickup
- Improving yard restoration after paving
- Community gardens
- Protect outdoor rec. opportunities

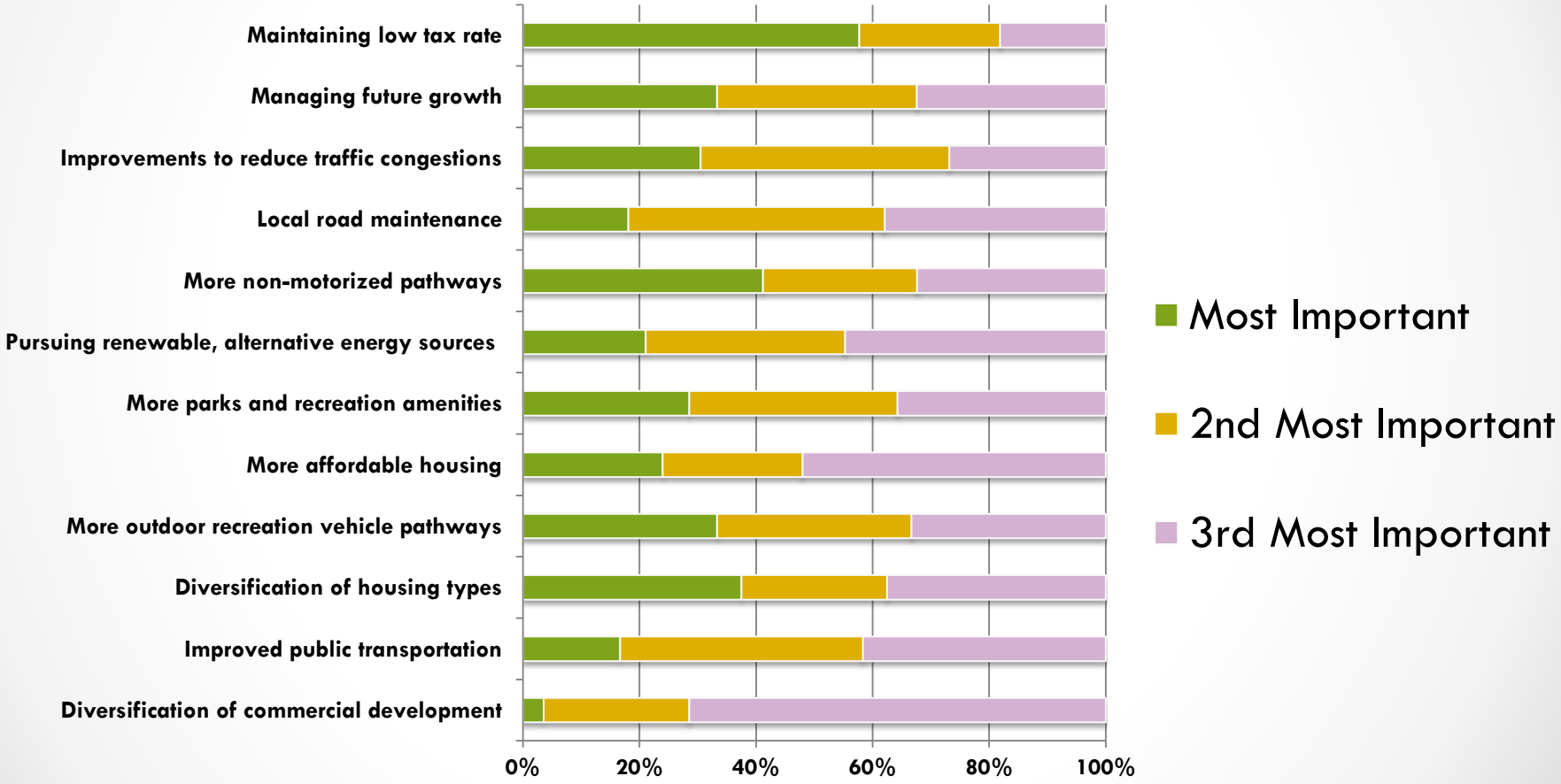
5. For each of the following statements regarding Marquette Township's future, please rate whether you feel the statement is very important, somewhat important, not sure, or not important.



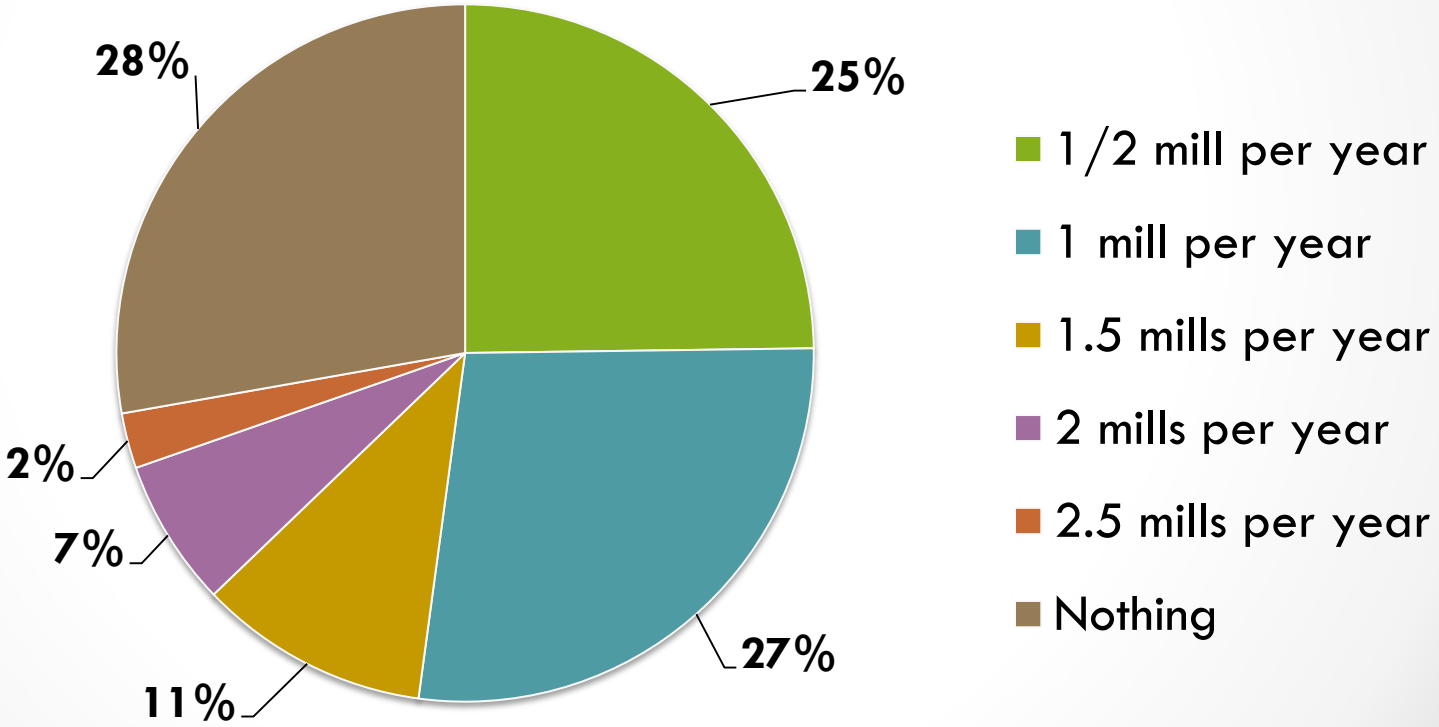
Other Issues Indicated by Respondents:

- US-41 Illumination
- Leaf pickup
- Houses with garages
- Senior Activities
- Limiting commercial development
- Sand clean-up after winter
- Work within your budget
- Sidewalks
- Less commercial development
- Motorized Trails
- Getting rid of junk cars
- US 41 corridor has dangerous traffic patterns
- Promote Natural Gas Expansion for home heating
- Street lighting
- Commercial property tax breaks
- Preserving natural environment
- Return envelope for Township Payment
- Fast internet and good phone coverage
- Safe Access to Businesses
- Better Lighting on Highway
- Back road to Meijers/Lowes
- Plan Roads/ Manage Traffic
- Convenient location for leaf drop off
- Homelessness
- Need service roads

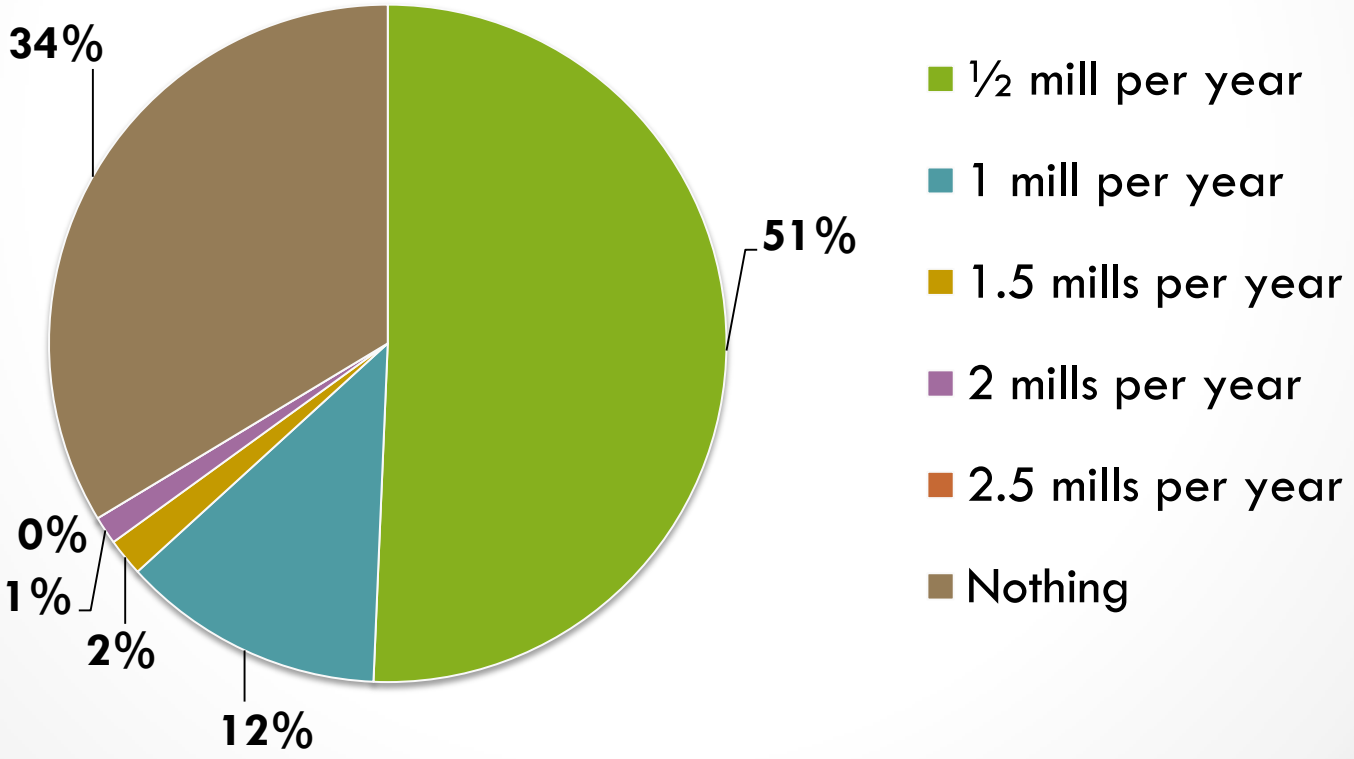
6. Which THREE of the statements regarding Marquette Township's future from the list in question #5 do you feel are most important?



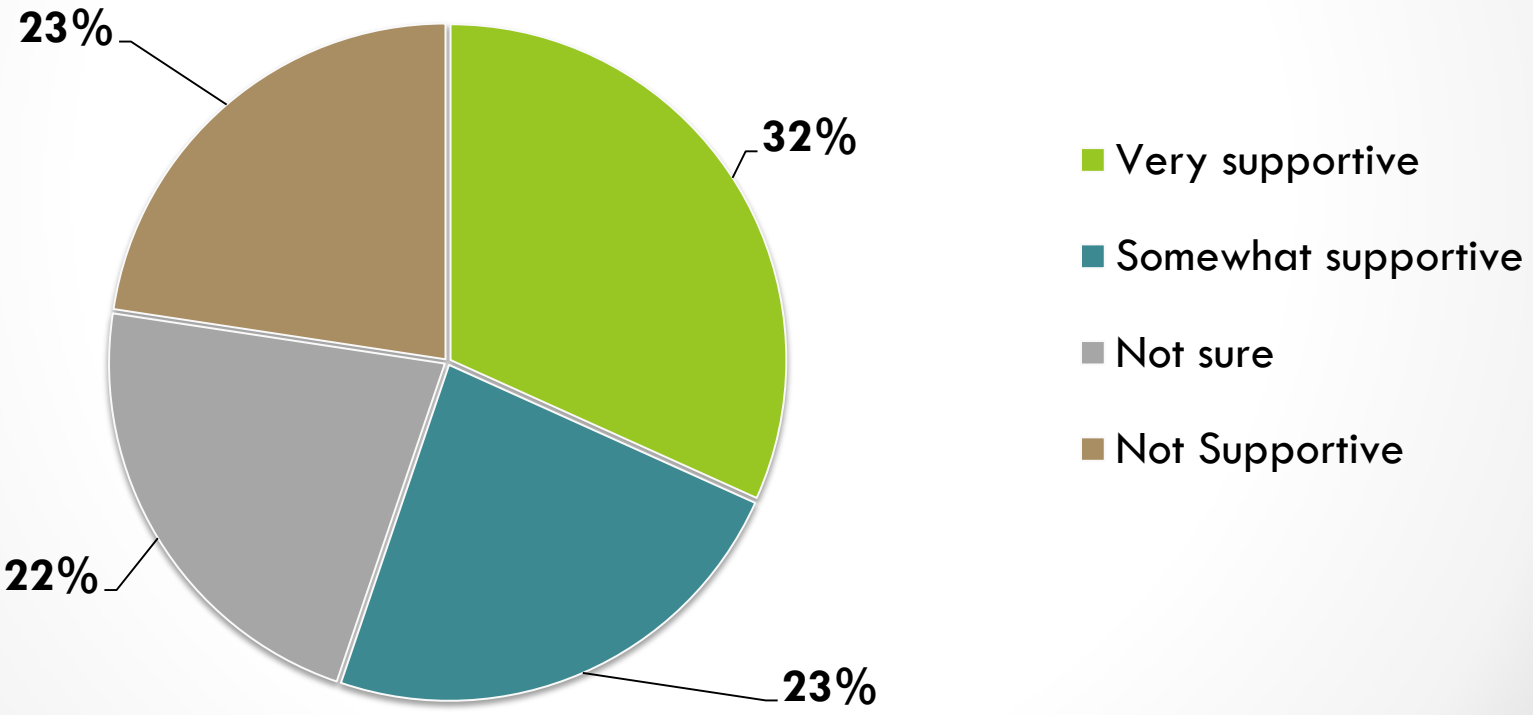
7. What is the maximum additional mill increase you would be willing to invest for the types of Township improvements you indicated are most important to you in Questions #4 and #5?



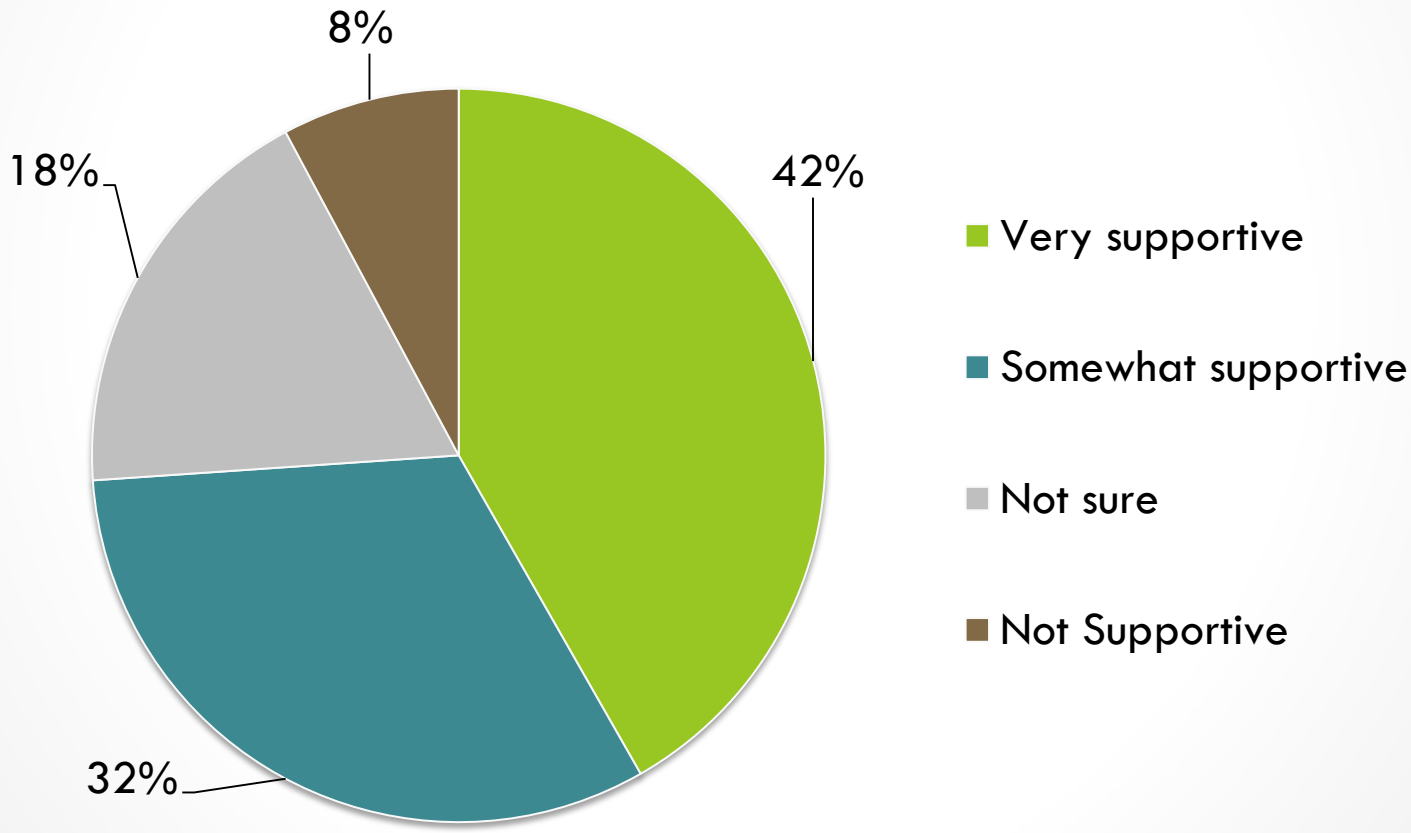
8. In the fall of 2017, a one year special assessment of .25 mills was dedicated to the purchase of an ambulance utilized by the Marquette Township Fire Department. In order to protect the investments of Marquette Township Fire Department assets, would you be in support of a millage dedicated to the future replacement of Fire Department apparatus? If so, what is the maximum additional millage increase you would be in favor of?



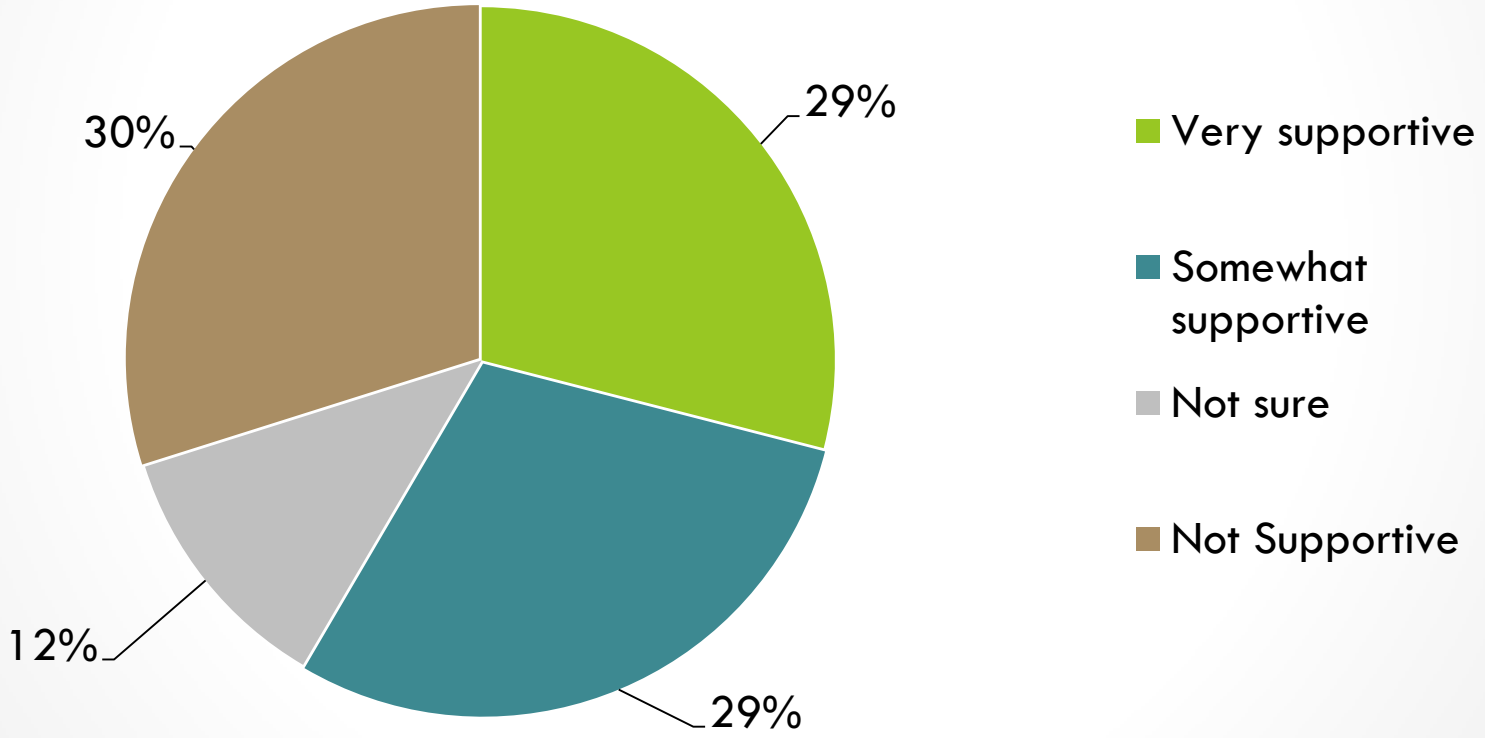
9. Currently, Marquette Township police services are provided by the Marquette County Sheriff's Department under a contract funded for 80 hours per week of additional patrol coverage. How supportive are you of Marquette Township maintaining the current Marquette County Sheriff's Department contract hours if funded by additional millage?



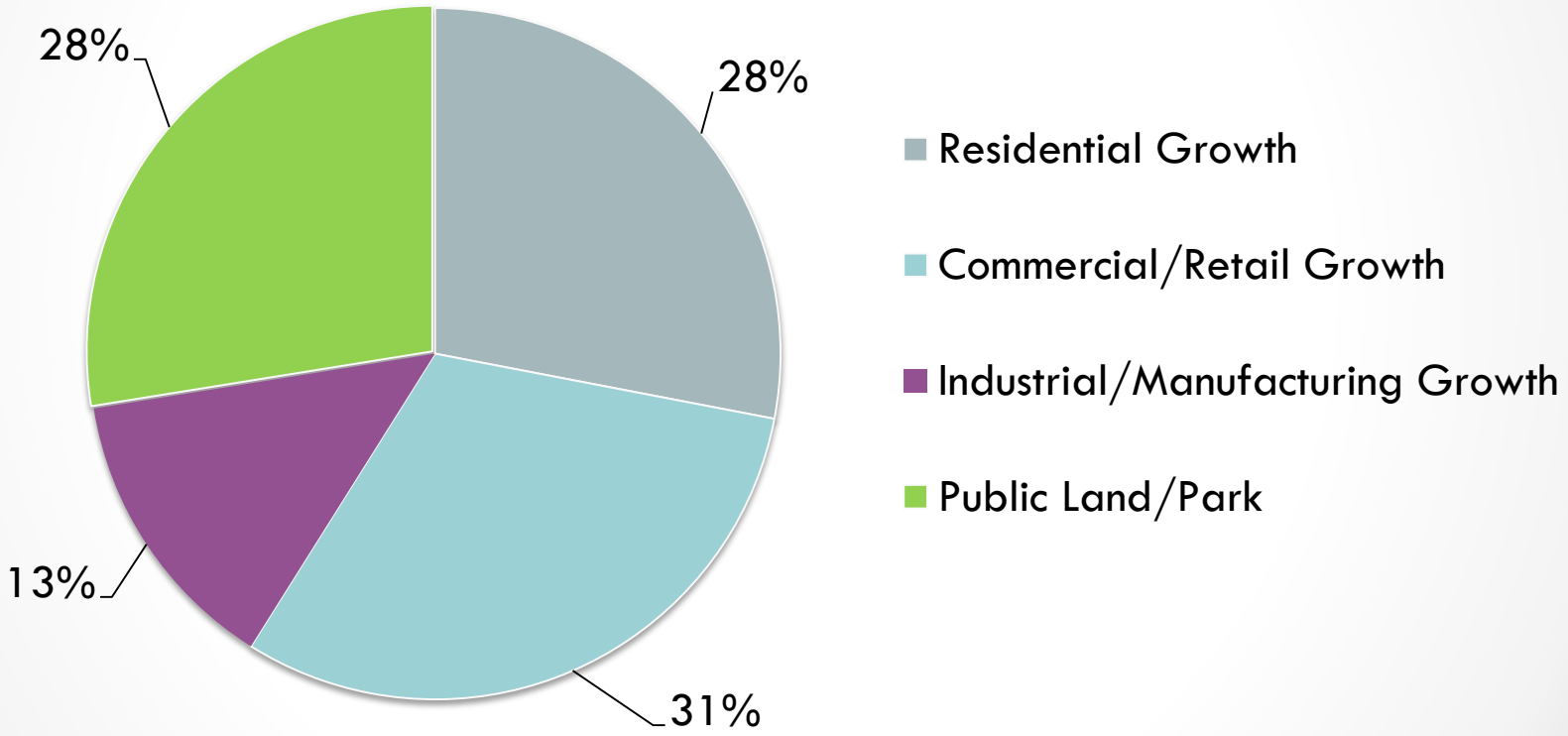
10. How important do you feel it is for Marquette Township to pursue sharing of various services with neighboring communities? (Example: Sands Township, Ishpeming Township, Negaunee Township, Powell Township, Chocolay Township.)



11. How supportive would you be of Marquette Township purchasing additional land within the Heartwood Forest or similar locations with key scenic assets which could be used for preservation, parks, trails, and recreation purposes?

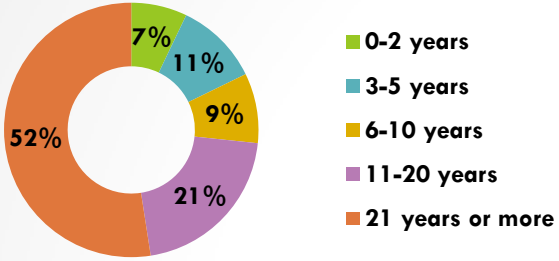


12. What type of development do you most support regarding future growth of Marquette Township?

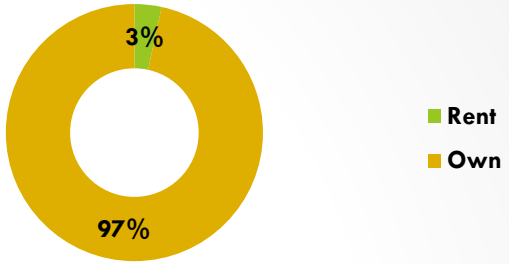


Respondent Demographics

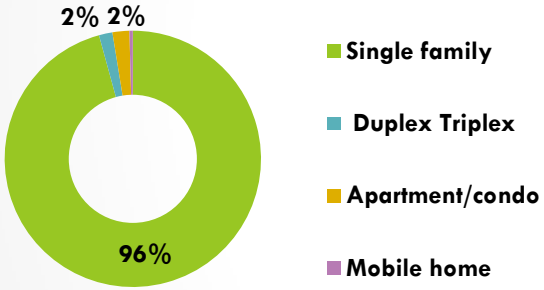
Length of Marquette Township residence



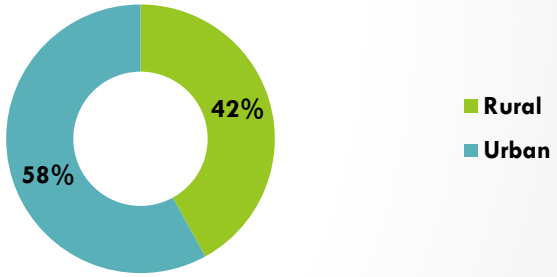
Rental vs Home Ownership



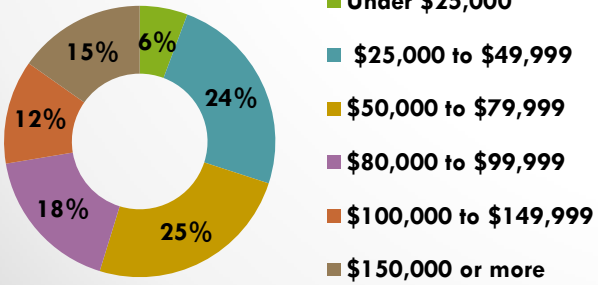
Home Description



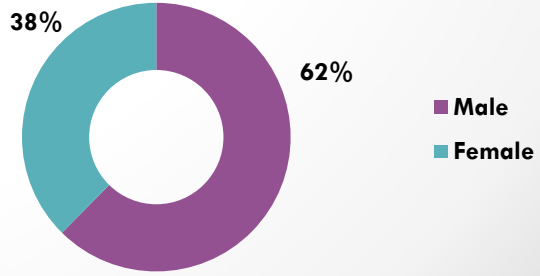
Location of Home



Household Income



Gender



MDOT State Long-Range Transportation 2005 – 2030 Plan Goals, Objectives, and Performance Measures Report; pages 17 - 20

6.2 Recommended Goals and Associated Objectives

The remainder of this chapter presents the four recommended goals and associated objectives.

Goal Area 1: Stewardship. ***Preserve transportation system investments, protect the environment, and utilize public resources in a responsible manner.*** The Stewardship Goal focuses on MDOT's roles and responsibilities associated with being good stewards of Michigan's resources. The goal is based on a holistic view of resources, to include funding, physical transportation assets (e.g., highways, transit systems, and airports), the physical and human environment, and the Michigan economy. The objectives under the Stewardship Goal incorporate issues and topics that were addressed in the following current MDOT SLRP goal areas: Preservation, Strengthening the State's Economy, Transportation Services Coordination, Environment and Aesthetic**s,** and Land Use Coordination.

Objective Category	Objectives
Integration	1.1 Preserve the quality and condition of all transportation system elements.
Economic Benefit	1.2 Conduct sound asset management practices to optimize the benefits of preservation investments.
	1.3 Leverage transportation funding to maximize transportation investment.
	1.4 Maximize the benefits of transportation investment to the Michigan economy.
Quality of Life	1.5 Minimize negative externalities and maximize the positive impacts that transportation has on the physical and human environment.
	1.6 Improve coordination between transportation decision-making and land use planning.

Goal Area 2: Safety and Security. ***Continue to improve transportation safety and ensure the security of the transportation system.*** The Safety and Security Goal continues MDOT's long- standing commitment to build, maintain, and operate the safest transportation system possible. The objectives under the Safety and Security Goal emphasize both traditional safety initiatives aimed at reducing fatalities, injuries, and crashes/incidents, as well as efforts to address new transportation system security needs in the wake of 9/11 and increased threat from terrorism.

Objective Category	Objectives
Integration	2.1 Reduce fatality, injury, and crash/incident rates on all modes.
	2.2 Reduce the vulnerability of transportation facilities and its users to terrorist attacks, natural disasters and other risks.

Economic Benefit	2.3 Reduce economic losses due to transportation crashes and incidents.
	2.4 Manage risks and responsiveness to ensure transportation system and border crossing continuity for passengers and freight.
Quality of Life	2.5 Provide a safe environment for transportation users through engineering, enforcement, and education activities.

Goal Area 3: System Improvement. ***Modernize and enhance the transportation system to improve mobility and accessibility.*** The System Improvement Goal emphasizes the various areas where MDOT can either make direct investments or support and encourage investments by other entities to improve the efficiency and effectiveness of Michigan's transportation system. The recommended objectives under the System Improvement Goal focus on improvements to modernize, expand, and connect the system to support economic growth and better facilitate the movement of goods, people, and services. The goal area also identifies the importance of considering local values during the planning, design and implementation of system improvements.

Objective Category	Objectives
Integration	3.1 Expand intermodal connectivity and the number of modal options for freight and passengers.
	3.2 Address system bottlenecks and weaknesses to reduce congestion, enhance continuity, and improve modal connections.
Economic Benefit	3.3 Improve travel time reliability and predictability for passengers and freight.
	3.4 Modernize facilities to accommodate the efficient movement of people, goods, and services.
	3.5 Address congestion to reduce its cost to businesses and the state's economy.
	3.6 Respond to the unique transportation needs of economic development opportunities.
Quality of Life	3.7 Expand transportation system access.
	3.8 Reduce delay.
	3.9 Employ context sensitive solutions to respond to the values that the public places on aesthetics, cultural resources, and natural landscapes.

Goal Area 4: Efficient and Effective Operations. ***Improve the efficiency and effectiveness of the transportation system and transportation services, and expand MDOT's coordination and collaboration with***

MDOT State Long-Range Transportation 2005 – 2030 Plan Goals, Objectives, and Performance Measures Report; pages 17 - 20

partners. The Efficient and Effective Operations Goal reflects MDOT's desire to get the greatest possible performance from Michigan's existing transportation assets and future system improvements. The goal area also addresses the importance of operating a transportation system and providing services to ensure citizens and stakeholders have modal choices. The recommended objectives under this area focus on the application of technology, stronger coordination and cooperation with public and private sector partners, and improved intermodal transfers.

Objective Category	Objectives
Integration	4.1 Improve existing system capacity through the application of new technologies and strategies.
	4.2 Coordinate transportation services supplied by both public and private sector providers.
	4.3 Address institutional barriers to inter-jurisdictional cooperation.
Economic Benefit	4.4 Collaborate with providers to deliver programs and services better, cheaper, and faster.
	4.5 Manage highway access to balance capacity and development considerations.
	4.6 Collaborate with private sector to improve the efficiency of intermodal freight and passenger transfers.
Quality of Life	4.7 Enhance the transportation experience through better, timelier traveler information.
	4.8 Operate systems to ensure the public has an adequate set of transportation choices.