



October 2014

Nonmotorized Plan for Southeast Michigan: A Plan for SEMCOG and MDOT's Southeast Michigan Regions



SEMCOG

Southeast Michigan Council of Governments

Developing Regional Solutions

SEMCOG . . . Developing Regional Solutions

Mission

SEMCOG, the Southeast Michigan Council of Governments, is the only organization in Southeast Michigan that brings together all governments to develop regional solutions for both now and in the future. SEMCOG:

- Promotes informed decision making to improve Southeast Michigan and its local governments by providing insightful data analysis and direct assistance to member governments;
- Promotes the efficient use of tax dollars for infrastructure investment and governmental effectiveness;
- Develops regional solutions that go beyond the boundaries of individual local governments; and
- Advocates on behalf of Southeast Michigan in Lansing and Washington



Mission

Providing the highest quality integrated transportation services for economic benefit and improved quality of life.

Nonmotorized Plan for Southeast Michigan: A Plan for SEMCOG and MDOT's Southeast Michigan Regions

© SEMCOG 2014

Abstract

The *Nonmotorized Plan for Southeast Michigan* ties all the components of the region's nonmotorized system together into an identified system and benchmarks the nonmotorized system that we have, identifies deficiencies, visions where we want to go, and provides strategies and actions on how to get there.

Preparation of this document was financed in part through grants from and in cooperation with the Michigan Department of Transportation with the assistance of the U.S. Department of Transportation's Federal Highway Administration and Federal Transit Administration; the Michigan Department of Natural Resources with the assistance of the U.S. Environmental Protection Agency; the Michigan State Police Office of Highway Safety Planning; and local membership contributions.

Permission is granted to cite portions of this publication, with proper attribution. The first source attribution must be "SEMCOG, the Southeast Michigan Council of Governments." Subsequently, "SEMCOG" is sufficient. Reprinting in any form must include the publication's full title page. SEMCOG documents and information are available in a variety of formats. Contact SEMCOG Information Services to discuss your format needs.

SEMCOG

Southeast Michigan Council of Governments
Information Center
1001 Woodward Avenue, Suite 1400
Detroit, MI 48226-1904
313-961-4266 • fax 313-961-4869
www.semco.org • infocenter@semco.org

Table of Contents

List of Data Displays	iv
Executive Summary	1
Benchmarking the Regional System.....	2
Identifying Deficiencies and Visioning the Future.....	3
Regional Strategies Focused on Implementation	4
Chapter 1: Introduction	5
How is the Plan Organized?	5
Connection to Other Regional Plans	6
Chapter 2: Benchmarking the Pedestrian System	8
Pedestrian Travel Characteristics	8
Pedestrian Safety	9
Types of Pedestrian Facilities.....	11
Benchmarking the Pedestrian System	13
Chapter 3: Benchmarking the Bicycling System	23
Trends in Bicycling in Southeast Michigan	23
Economic Benefits of Bicycling.....	25
Bicycling Challenges.....	26
Types of Bicycling Facilities.....	27
Benchmarking the Bicycling Network	29
Chapter 4: Visioning the Future	41
Deficiencies in the Nonmotorized System	41
Analysis and Tools Available to Address Deficiencies.....	45
Regional Corridors and Gaps in the Network.....	49
Chapter 5: Moving Toward Implementation	71
Connecting the System	71
Meeting Multiple Outcomes.....	71
Partnerships and Collaborations	72
Financing.....	72
Timing	73
Maintenance	74
Appendix A. Summary of Online Nonmotorized Survey	81
Appendix B. Advantages and Disadvantages of Bicycling Facilities	82
Appendix C: Public Comments on Local and Regional Corridors	83

List of Data Displays

Tables

Table 1 Nonmotorized Facilities by County (miles)	2
Table 2 Types of Pedestrian Facilities	12
Table 3 Existing and Planned Pedestrian Facilities by County (miles)	14
Table 4 Economic Value of Bicycling	26
Table 5 Bicycle Facility Descriptions	27
Table 6 Existing and Planned Bicycle Facilities by County	30
Table 7 Difference in Comfort Levels of Experienced vs. Casual Bicyclists	31
Table 8 Bicycling Comfort Level Descriptions	32
Table 9 Population with Access to Pedestrian and Bicycle Facilities by County	41
Table 10 Opportunities for Increased Nonmotorized Trips by County	46

Figures

Figure 1 The Five Es as a Basis for Actions	6
Figure 2 Pedestrian Trips by County, 2005	9
Figure 3 Pedestrian Crashes by County, 2009-2013	10
Figure 4 Trends in Pedestrian Crashes, 2009-2013	11
Figure 5 Livingston County Existing and Planned Regional Pedestrian Facilities	15
Figure 6 Macomb County Existing and Planned Regional Pedestrian Facilities	16
Figure 7 Monroe County Existing and Planned Regional Pedestrian Facilities	17
Figure 8 Oakland County Existing and Planned Regional Pedestrian Facilities	18
Figure 9 St. Clair County Existing and Planned Regional Pedestrian Facilities	19
Figure 10 Washtenaw County Existing and Planned Regional Pedestrian Facilities	20
Figure 11 Wayne County Existing and Planned Regional Pedestrian Facilities	21
Figure 12 City of Detroit Existing and Planned Regional Pedestrian Facilities	22
Figure 13 Bike Commute Trips, 1994 and 2005	24
Figure 14 Livingston County Existing and Planned Bicycle Facilities	33
Figure 15 Macomb County Existing and Planned Bicycle Facilities	34
Figure 16 Monroe County Existing and Planned Bicycle Facilities	35
Figure 17 Oakland County Existing and Planned Bicycle Facilities	36
Figure 18 St. Clair County Existing and Planned Bicycle Facilities	37
Figure 19 Washtenaw County Existing and Planned Bicycle Facilities	38

Figure 20 Wayne County Existing and Planned Bicycle Facilities	39
Figure 21 City of Detroit Existing and Planned Bicycle Facilities	40
Figure 22 Areas Likely to Have Sidewalks	42
Figure 23 Pavement Rating of Shared Roadways by Bicycle Comfort Level	43
Figure 24 Areas of Opportunity for Increased Nonmotorized Trips	47
Figure 25 Regional Nonmotorized Network Compared to Recreation and Walking and Biking Supportive Areas	48
Figure 26 Regional Nonmotorized Corridors and Gaps, Livingston County	63
Figure 27 Regional Nonmotorized Corridors and Gaps, Macomb County	64
Figure 28 Regional Nonmotorized Corridors and Gaps, Monroe County	65
Figure 29 Regional Nonmotorized Corridors and Gaps, Oakland County	66
Figure 30 Regional Nonmotorized Corridors and Gaps, St. Clair County	67
Figure 31 Regional Nonmotorized Corridors and Gaps, Washtenaw County	68
Figure 32 Regional Nonmotorized Corridors and Gaps, Wayne County	69
Figure 33 Regional Nonmotorized Corridors and Gaps, Detroit	70
Figure 34 Opportunity for Stakeholder Input over Time of Project	73

Executive Summary

The nonmotorized plan is comprised of facilities that support pedestrian and bicycle travel. It includes both on-road facilities such as bike lanes and wide shoulders, as well as off-road facilities such as sidewalks, shared use side paths, and independent shared-use paths (trails). Nonmotorized transportation can contribute to increased mobility, safety, transportation choices, recreation, placemaking opportunities, economic development, and health of residents – things that are vitally important to individual communities and the Southeast Michigan region.

The *Nonmotorized Plan for Southeast Michigan* ties all the components of the region’s nonmotorized system together into an identified system and benchmarks the nonmotorized system that we have, identifies deficiencies, visions where we want to go, and provides strategies and actions on how to get there.

Why Create a Regional Plan?

Community leaders, residents, and businesses are seeing benefits to bicycle and pedestrian travel and are looking for ways to better accommodate people who chose to travel this way. A 2014 Michigan Department of Transportation (MDOT) study showed that 39 percent of households in Michigan reported someone in their home using a bike for transportation in the last year.



In order to provide for nonmotorized travel, many communities have adopted nonmotorized and complete streets plans. These incorporate nonmotorized elements into planning documents, such as recreation, transportation, corridor, or master plans. These plans also come at every scale, starting at the neighborhood level, progressing to community or county level, and even up to the state and national level.

This plan is focused on the regional level. SEMCOG has worked in partnership with MDOT to enhance the planning of both entities to better identify the needs of bicycle and pedestrian travel. For SEMCOG, this document will be incorporated into its comprehensive Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP), and provide more details to its regional analysis that identifies assets, deficiencies, and opportunities for enhancements. For MDOT, this document serves as a critical piece for context-sensitive planning and development along with guidance on filling gaps along MDOT-owned trunklines. At the community level, this plan provides tools, actions, and recommendations to assist in identifying and improving key corridors that serve both a local and regional need within the nonmotorized network.

How Was the Plan Developed?

The plan’s development was guided by a Plan Advisory Team comprised of MDOT, county and local government agencies, and various interest groups to provide input into the process. In addition, 18 public meetings were held throughout the region, and an online survey was available. A summary of the online survey results is in Appendix A.

Benchmarking the Regional System

The nonmotorized system includes both pedestrian and bicycling facilities and users; the needs for each user type are not always the same. For example, most pedestrian trips are very short and sidewalks are the majority of the pedestrian system. However, inventories of the sidewalk network throughout Southeast Michigan have not been systematically collected by local communities, likely due to cost and varying age of the system.

The bicycling network includes some of the same elements from the pedestrian system, such as shared-use side paths and wide paved shoulders. These elements, along with the rest of the bicycling network, including bike lanes, have been benchmarked for the region. This includes over 2,600 miles of existing bikeways and shared-use pathways and another 1,500 more miles planned for the future. Table 1 summarizes the current and planned regional system.

Table 1
Nonmotorized Facilities by County (miles)

Facility Type	Region	Livingston	Macomb	Monroe	Oakland	St. Clair	Washtenaw	Wayne, Excluding Detroit	Detroit
Bike Lanes	271	0	1	7	11	2	109	1	139
Wide Paved Shoulders	379	30	90	5	69	101	50	33	0
Marked Shared Lanes (Sharrows)	7	0	0	0	1	0	7	0	0
Independent Shared Use Paths	414	28	65	11	125	30	34	98	23
Shared Use Side Paths	682	12	19	8	527	26	72	14	4
Bike Routes	889	8	0	4	259	85	464	41	27
Total Existing	2,642	78	175	35	993	244	736	187	194
Planned Bike Lanes	534	7	6	29	246	32	154	0	59
Planned Shared Use Side Paths	141	18	0	1	87	9	9	4	14
Planned Shared Lane Markings	69	0	0	0	61	0	8	0	0
Planned Independent Shared Use Paths	410	9	87	5	147	56	40	39	29
Unusable Independent Shared Use Paths	12	0	0	9	3	0	0	0	0
Planned Independent Shared Use Paths	422	9	87	14	150	56	40	39	29
Planned Shared Use Side Paths	141	18	0	1	87	9	9	4	14
Planned Bike Routes	326	0	0	0	240	54	22	7	3
Total Planned	1,492	34	93	44	783	151	233	50	104
Existing & Planned Total	4,134	112	268	78	1,776	396	968	238	297

Identifying Deficiencies and Visioning the Future

An essential component of the plan is identifying deficiencies in the nonmotorized system and visioning the future. Nonmotorized deficiencies include three main areas – access and pavement quality; safety and education; and connectivity.

Access to the Nonmotorized System

Access to the nonmotorized system for pedestrian and bicycling use is paramount. Over 23 percent of the region's population is within ¼ mile of a regional pedestrian facility (not including sidewalks). Approximately 52 percent of the region's population is within ½ mile of a bicycle facility. These numbers will increase to 30 percent for the pedestrian system and 60 percent for the bicycling network when planned facilities are developed.



Some geographic areas have more opportunity for bicycle and pedestrian facilities. These areas might be able to shift some automobile trips to walking, biking, or transit. Typically, these areas have a large portion of short-distance pedestrian and bicycling trips, close proximity to population and commercial centers, access to transit, etc. While these areas include a small portion of Southeast Michigan (12 percent of total acres), it accounts for the majority of population and employment (61 percent and 58 percent respectively).

Pavement Quality Impacts Bicycling and Pedestrian Users

Road pavement quality is another deficiency type that is very important to bicyclists and pedestrians. Poor pavement conditions can lead to injuries. Since 84 percent of the Southeast Michigan's roads have poor or fair pavement quality, nonmotorized travel on roadways is less favorable.

Further analysis of bicycle-friendly roadways show that pavement condition is even more problematic. Most roads that have lower traffic volumes and offer less stress to the bicyclist are in fair or poor condition.



Safety

Safety is another deficiency for both the pedestrian and bicyclist. For example, while crashes involving pedestrians make up only one percent of the region's total crashes, pedestrians account for 22 percent of fatalities. A combination of engineering solutions to solve safety problems, as well as education, enforcement, and encouragement activities is needed.



Education

Lack of education on the "Rules of the Road" is a deficiency in both the pedestrian and bicycle system. Bicyclists and pedestrians, as well as drivers and law enforcement, need to be informed about the safest ways to share the road. Opportunities to educate these stakeholders include informational materials and programs such as online videos and social media, and public awareness campaigns, such as [bike to work day](#).

Connectivity

The connectivity of the nonmotorized system includes the ability to use the system without gaps in the network. It also includes the connectivity of the nonmotorized system to other important assets in the region, such as other transportation modes (e.g., transit, rail) and linking to regional parks and downtowns.

Deficiencies within the network itself can be divided into areas for local connectivity and areas for county or regional connectivity. While this plan documents both gaps, the plan's priority is to identify the regional gaps in the system. Through the stakeholder meetings, major corridors for regional nonmotorized travel were identified and serve as the primary arteries for the region that connect the other more local routes. Chapter 4 summarizes these major corridors.

Regional Strategies Focused on Implementation

The following strategies were developed to assist in guiding implementation of the nonmotorized plan:

1. Reduce the number and severity of pedestrian and bicycle crashes.
2. Better accommodate bicycles and pedestrians on roads that do not restrict bicycles/pedestrians and that link the nonmotorized system.
3. Enhance connectivity and reduce conflicts between automobile, transit, rail, and nonmotorized modes of travel.
4. Educate bicyclists, pedestrians, motorists, transportation and planning professionals, and elected officials regarding nonmotorized issues.
5. Provide technical assistance to communities in assessing the walkability and bikeability of their roadway network.
6. Increase connectivity of the nonmotorized system, linking local and regional facilities to better connect the public to essential services, national and state bicycle routes, downtowns, and Southeast Michigan's green infrastructure network.
7. Coordinate bicycling and pedestrian facilities with other regional and community goals, including green streets, community and economic development strategies, public transit, and placemaking.
8. Focus on enhancing the regional nonmotorized network through use of limited transportation funding, such as the Transportation Alternatives Program (TAP).
9. Evaluate the nonmotorized system to ensure connectivity and determine its impact for community and regional placemaking and economic vitality.
10. Coordinate with other stakeholders, including local government, road agencies, advocacy groups, and others as appropriate, to ensure the physical and operational sustainability of the nonmotorized network.



Chapter 1: Introduction

The Importance of Walking and Biking

Nonmotorized transportation, commonly referred to as bicycle and pedestrian travel, is vitally important to Southeast Michigan residents. Walking and biking serve as both a means of transportation, getting people to important places in their daily lives, and as a means of recreation, and better connecting residents to nature and their community. Essentially, nonmotorized transportation is important to the region because it contributes to increased mobility, safety, transportation choices, recreation, placemaking opportunities, economic development, and the health of our residents.

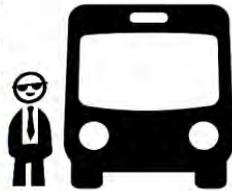


1 out of 3 Michigan residents is unable to drive due to physical or financial limitations.

Increased mobility. It's important to highlight a few of these benefits in more detail. For example, ensuring mobility options for seniors or those physically or financially unable to drive is paramount. Based on SEMCOG's Household Travel Survey data, eight percent of Southeast Michigan households do not have an automobile and, thus, rely on transit, bicycles, and walking to move about. A connected nonmotorized network provides an opportunity to meet multiple mobility needs.

Economic development and talent attraction. Nonmotorized transportation contributes to continued economic growth. For example, in order to maintain and enhance economic viability, communities are seeking to attract millennials and knowledge-based workers. According to research by the Rockefeller Institute, more than 50 percent of millennials surveyed said they would consider moving to another city if it had more and better transportation options.

More than 1/2 of Millennials would consider moving to another city if it had more and better options for getting around



Recreation. While some Southeast Michigan residents use the nonmotorized system as a way to increase mobility, many use the system for recreational and health benefits. The [green infrastructure network](#) and the nonmotorized network are intricately connected. Many of the region's trails pass through and

connect recreation areas, waterways, parks, and other significant resources. In fact, during development of the *Green Infrastructure Vision for Southeast Michigan*, hike/bike trails were noted as one of the most important green infrastructure elements the public and stakeholders would like to see more of in their area.

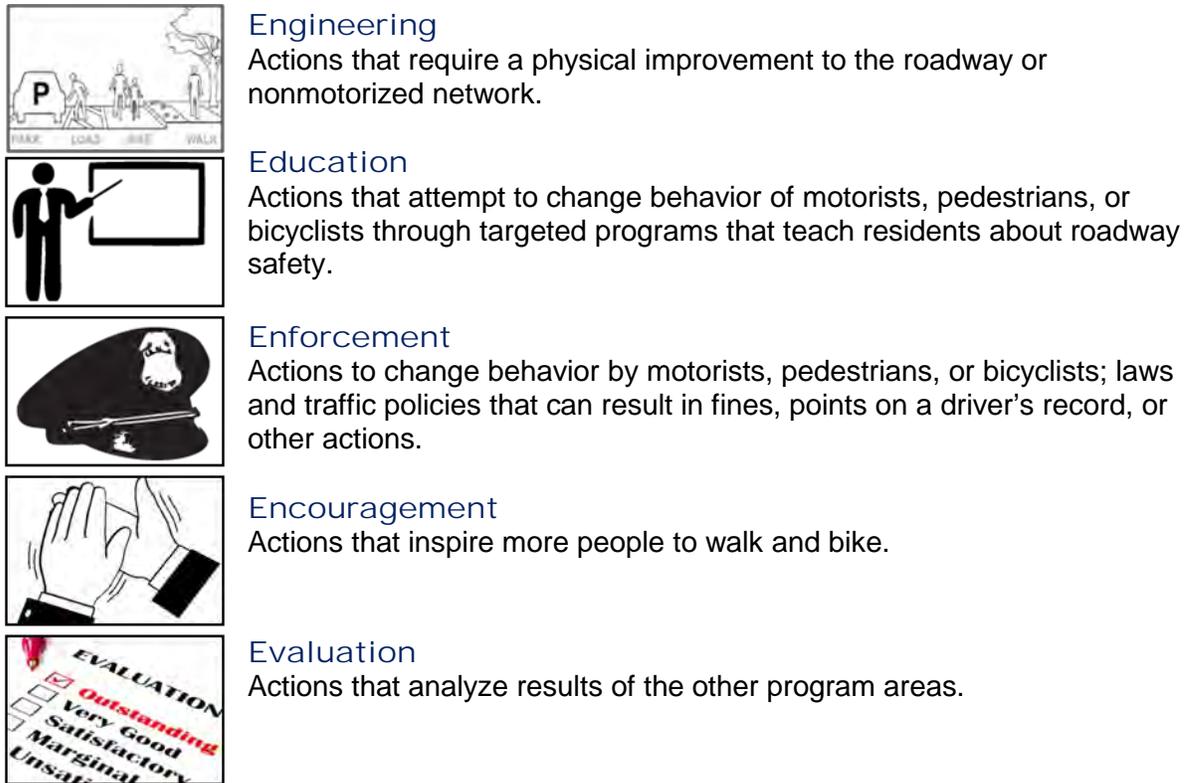
How is the Plan Organized?

The plan focuses on:

- **Benchmarking the pedestrian and bicycle networks.** Chapters 2 and 3 summarize the existing and planned pedestrian and bicycle network. While these networks overlap, there are unique elements of each.
- **Identifying deficiencies and visioning the future.** Chapter 4 highlights nonmotorized deficiencies in three main areas – access and pavement quality; safety and education; and connectivity. The chapter also identifies regional corridors and visions for future connections.
- **Developing strategies and actions to address these needs.** Chapter 5 highlights the sustainability of the network, including developing strategies and actions for

implementation. The strategies fall into one of the “Five Es” (Figure 1). The right mix of these activities is needed to properly address the deficiencies in both the physical and operational aspects of the system.

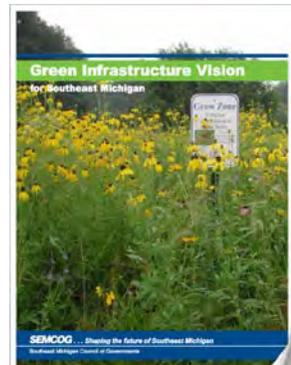
Figure 1
The Five Es as a Basis for Actions



Connection to Other Regional Plans

The plan will be adopted as a component of the *Long-Range Regional Transportation Plan for Southeast Michigan*. In addition, other regional plans directly link to the issue of nonmotorized transportation, including:

- *Regional Transit Plan* – Transit and nonmotorized travel have a reciprocal relationship. Both [SEMCOG’s transit plan](#) and the plan from the [Regional Transit Coordinating Council \(RTCC\)](#) include nonmotorized elements.
- *Green Infrastructure Vision for Southeast Michigan* – Green infrastructure includes both natural areas such as wetlands and woodlands often found in parks, as well as constructed green infrastructure including rain gardens and bioswales. The [Green Infrastructure Vision for Southeast Michigan](#) is a regional plan that benchmarks the region’s green infrastructure, visions the region’s future, and includes regional policies to implement the vision.



- *Increasing Jobs and Prosperity in Southeast Michigan* – The region’s [Comprehensive Economic Development Strategy \(CEDS\)](#) includes among its 11 broad-based strategies one that is focused on placemaking. Walking and biking are integral parts of Southeast Michigan’s quality of life and the area’s desirability as a place to live and conduct business. The nonmotorized plan contributes to the strategy on Strengthening Quality of Place by setting the stage for expanding walking and biking opportunities that can connect people with a variety of destinations throughout the region and in their local community.
- *MDOT Regional Nonmotorized Plans* – MDOT divides its state transportation planning and operational activities based on [planning regions](#). It is the intent of MDOT to have a nonmotorized plan for each of its planning regions. As such, this plan affects and relates to the following other MDOT plans:
 - *Metro Region Nonmotorized Transportation Plan* – Serving Macomb, Oakland, St. Clair, and Wayne Counties, the [MDOT Metro Region](#) is entirely within SEMCOG’s jurisdiction. *The Nonmotorized Plan for Southeast Michigan* serves as the MDOT Metro Region Plan and was developed jointly by SEMCOG and MDOT Metro Region staff.
 - *University Region Nonmotorized Master Plan* – While the *Nonmotorized Plan for Southeast Michigan* serves as the plan for three of [MDOT’s University Region](#) counties – Livingston, Monroe, and Washtenaw County – the remaining counties will be part of MDOT’s [2015 University Region Nonmotorized Master Plan](#). SEMCOG and MDOT University Region staff work jointly on both planning efforts to ensure plans coordinate and provide connectivity across regional boundaries.
 - *Bay Region Nonmotorized Transportation Plan, Connecting our communities* – Genessee, Lapeer, and Sanilac Counties, which all border the SEMCOG region, are part of MDOT’s planning region known as the [Bay Region](#). This region has a [Nonmotorized Transportation Plan](#) that includes roads and paths that enter the SEMCOG region.

Chapter 2: Benchmarking the Pedestrian System

While bicyclists and pedestrians share many of the same issues, such as being vulnerable roadway users, their needs are not identical. This chapter addresses needs and issues specific to pedestrians:

- Pedestrian travel characteristics,
- Pedestrian safety issues,
- A snapshot of different types of pedestrian facilities, and
- Benchmarking the regional pedestrian facilities.

Pedestrian Travel Characteristics

Walking and biking trips are characterized by both shorter periods of time and distance, compared to motor vehicles. Typical pedestrian trips in Southeast Michigan are around 20 minutes and under one mile in distance.

Where and why people chose to walk

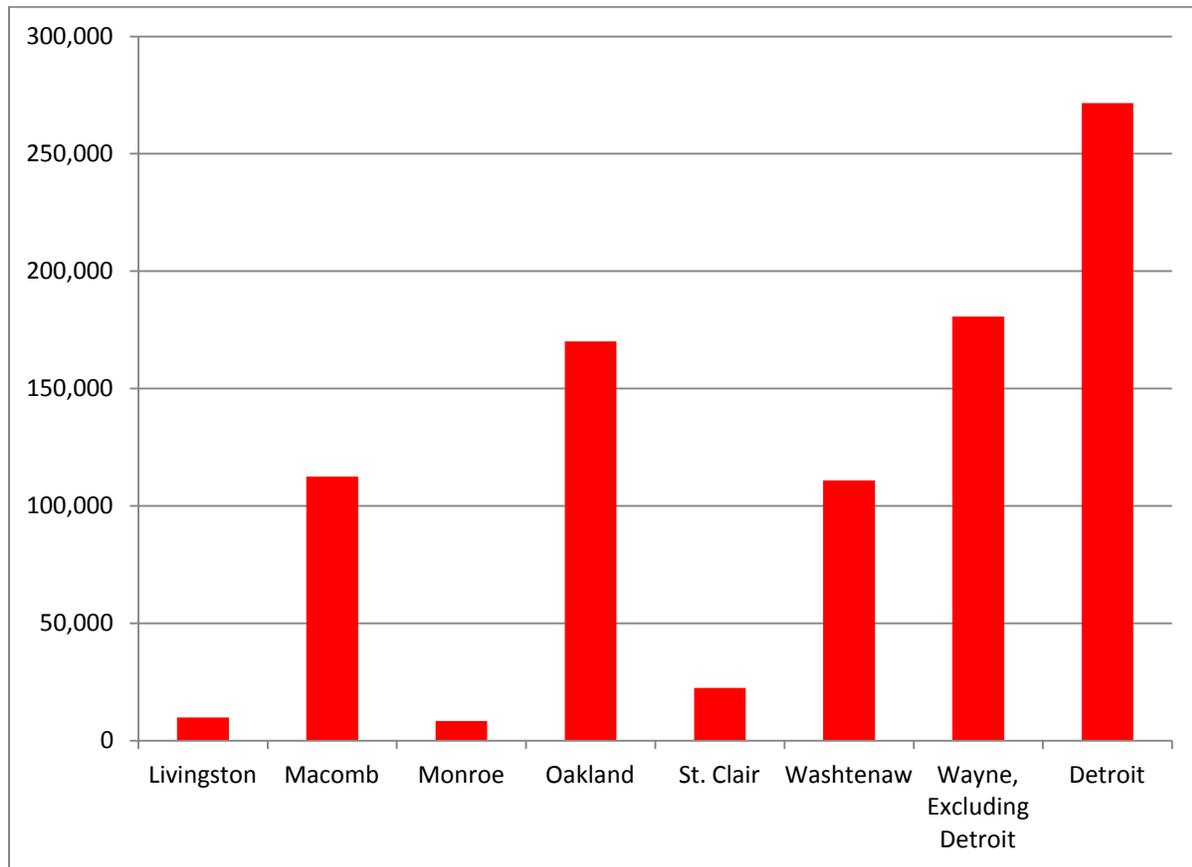
SEMCOG periodically conducts surveys to analyze trends in residents' travel behavior. The most recent survey was conducted in 2005. Overall, the number of pedestrian trips and trip purposes vary by geographic area and tend to be higher in urban areas, where there is mix of land uses and the infrastructure to support pedestrian travel. In order to gain a better understanding of any changes since 2005, SEMCOG is in the process of conducting a new 2014-2015 survey.

The 2005 data showed relatively few trips made using nonmotorized modes, accounting for approximately five percent of all trips made in the region each day and about 1.5 percent of all home-to-work trips. The City of Detroit has the highest number of pedestrian trips. Macomb, Oakland, and Wayne Counties also have high numbers of total pedestrian trips. Yet it is important to note that the percentage of residents who walk for some of their trips is actually higher in Washtenaw County compared to Macomb, Oakland, and Wayne Counties. Only the City of Detroit has a higher percentage. Figure 2 summarizes pedestrian trips by county.

Regionally, only six percent of all pedestrian trips are for commuting purposes, meaning most trips are made for discretionary purposes, which are generally less time sensitive. In some cases, like in Washtenaw County, pedestrian commute trips are increasing. The updated survey will give us more information on trends, especially in growing areas.



Figure 2
Pedestrian Trips by County, 2005



Source: SEMCOG 2005 Regional Household Survey

Pedestrian travel is connected to other transportation modes

SEMCOG expects the trend of increased commuting trips to continue in many parts of the region. This is due to an increase in mixed-use development near employment centers and universities, as well as constructing more pedestrian facilities. Additionally, many transit improvements are planned. Approximately 85 percent of all transit trips are accessed by walking. More information on transit trips and means of access is available via the SEMCOG's [Regional Onboard Transit Survey](#).

Pedestrian and bicycle trips need to be viewed as part of an interconnected and intermodal transportation system. Nonmotorized travel can be extended by transit service, making it a more practical alternative. An important outcome of the plan is to enhance connectivity and reduce conflicts between automobile, transit, rail, and nonmotorized modes of travel.

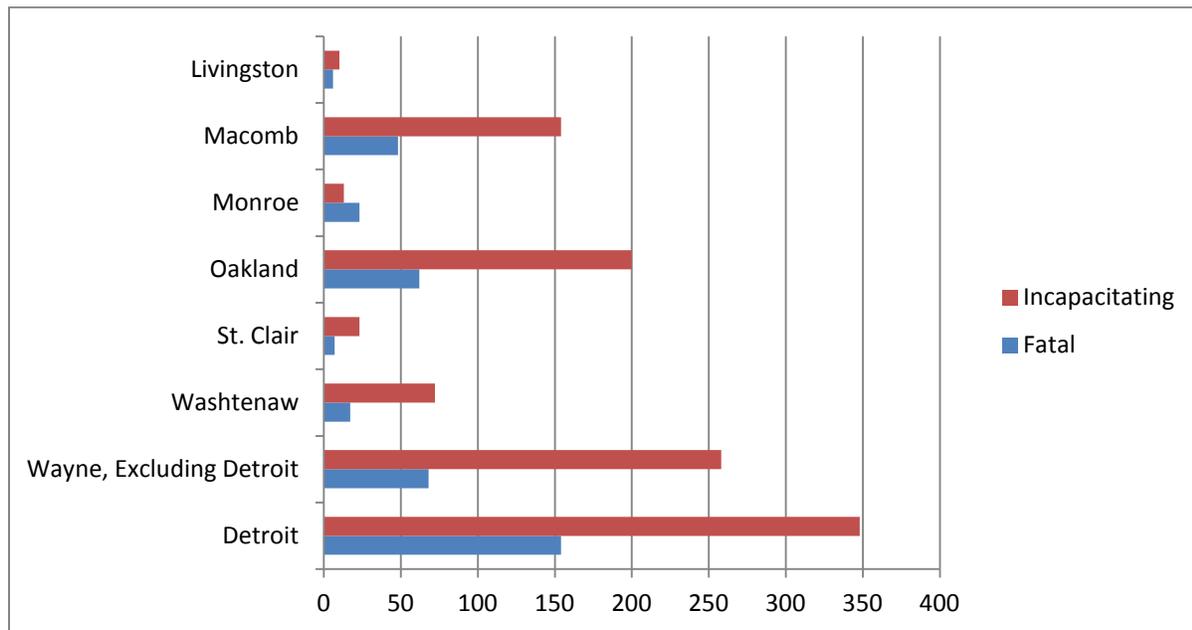
Pedestrian Safety

Pedestrians are the most vulnerable roadway users. Because of their slower travel speed, pedestrians are also more sensitive to delays and detours in their typical commute. Unlike motor vehicles and bicycles, pedestrians can easily bypass curbs and other typical roadway geometry, designed to deter roadway users from existing roads at undefined spots. This means a pedestrian can cross a street in almost any spot, potentially taking on more risk by crossing in locations where motorists might not expecting them. Slow

travel speed, generally three miles per hour, also compounds risky crossing behavior, as pedestrians are exposed to traffic longer. One solution may be to design clear pedestrian facilities that encourage predictable behavior and alert motorists to their presence.

While crashes involving pedestrians make up only one percent of the region's total crashes, pedestrians account for 22 percent of fatalities. SEMCOG's latest crash analysis shows a breakdown of the nearly 6,300 pedestrian-related crashes that occurred from 2009 to 2013. During this time period, the region had 1,078 incapacitating and 385 fatal crashes. Figure 3 summarizes these crashes by county.

Figure 3
Pedestrian Crashes by County, 2009-2013



Source: SEMCOG

Wayne County has the most crashes, followed by Oakland and Macomb Counties. In fact, according to the [Michigan Pedestrian and Bicycle Safety Action Plan](#), these three counties, along with Genesee and Kent Counties, account for 60 percent of pedestrian crashes in the State of Michigan. According to SEMCOG data, the City of Detroit has the most pedestrian crashes at 2,357 (154 fatalities), accounting for 38 percent of the regional total. Further, 69 percent of Wayne County's pedestrian fatalities and 40 percent of the region's pedestrian fatalities occur in Detroit. Due to the number of fatalities, the City of Detroit has been identified by the Federal Highway Administration as a [pedestrian focus city](#), which involves ongoing discussions and analysis via city, county, state, federal, and SEMCOG officials in order to focus resources on efforts to reduce fatalities and improve safety for residents through a variety of measures. Figure 4 highlights specific pedestrian crash trends.

SEMCOG data also show that it is much more dangerous to cross the street midblock, when there are no midblock crossing improvements. While similar numbers of crashes occur at intersections vs. midblock, pedestrians are three times more likely to be killed and almost 1.5 times more likely to be severely injured by crossing midblock. In rural areas where the street network is less dense and there are higher speeds, more fatalities occur (13 percent rural vs. three percent urban).

Figure 4
Trends in Pedestrian Crashes, 2009-2013

- The number of pedestrian-related crashes and fatalities has increased.
- Pedestrian crashes account for only one percent of all crashes, but 22 percent of all fatalities.
- Males have a much higher probability than females to be killed in a pedestrian crash.
- Pedestrians between the ages of 44-54 have the highest probability of a fatality when involved in a crash.
- 50 percent of all pedestrian crashes occur in commercial areas.
- While most crashes occur in urban areas, the probability of a fatality is much higher in a rural area.
- November is the highest month for pedestrian crashes.
- Pedestrians are more likely to be killed in a crash between 10 p.m. and 11 p.m. on Saturday.
- With regard to posted speed limits, the higher the posted speed limit, the higher the probability of a pedestrian fatality. A crash, at any speed, can cause great harm, but the risk of a fatality drastically increases in crashes where a motor vehicle is traveling at speeds greater than 30 mph.
- Pedestrians have a higher probability to be killed in a crash under dark conditions than under other light conditions.
- As a pedestrian's blood-alcohol concentration (BAC) increases, the probability of a pedestrian getting killed in a crash increases.

SEMCOG and MDOT are actively engaged in addressing the growing trends in pedestrian safety. Both agencies are active with the Governor's Traffic Safety Advisory Commission, Pedestrian and Bicycle Safety Action Team, which looks to save lives through actions listed in its [2013-2016 Pedestrian and Bicycle Safety Action Plan](#).

Additionally, MDOT plans on creating Local Road Safety Plans, based on [State Planning and Development Regions](#) (SPDR), which may include pedestrian emphasis areas. The SEMCOG area is one of these SPDRs and will serve as a pilot project. The SEMCOG area plan will be a partnership between SEMCOG and MDOT, and will include input from various traffic safety committees, local officials, and any other interested parties. Systemic recommendations based on the 4Es of safety will be included in the plan. Site specific engineering suggestions will be in the form of a Local Safety Initiative (LSI) review and will be provided directly to each requesting agency by MDOT and SEMCOG. Systemic engineering recommendations based on regional trend data and risk, high-crash lists, etc., will be included in the RSP appendix.

Types of Pedestrian Facilities

The pedestrian network is complex and needs to serve multiple types of users. The bulk of the pedestrian system is made up of sidewalks, but they are not typically conducive to regional travel and are difficult to benchmark. Table 2 summarizes the types of pedestrian facilities and the advantages and disadvantages of these facilities. More detailed definitions and information about pedestrian facilities in Michigan is available in [MDOT's Bicycle and Pedestrian Terminology](#) booklet as well as the American Association of State Highway and Transportation Offices (AASHTO) Guide for the Planning, Design, and Operation of Pedestrian Facilities.

Table 2
 Types of Pedestrian Facilities

Facility	Description	Advantages	Disadvantages
Wide Paved Shoulder	Portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, bicyclists, and pedestrians, generally four feet or greater in width.	Separates pedestrian and motor vehicle traffic; less room required for project; potentially least costly pedestrian project; generally cleared of snow quicker than other pedestrian facilities.	Generally a more stressful and less pleasant travel option – high traffic speeds and minimum separation can cause wind gusts; shoulders can accumulate roadway debris; vehicles may be parked on shoulder.
Attached Sidewalk	Paved pedestrian accessway, joined with the curb or travel lane, generally has little to no edge or furnishing zone.	Separates pedestrian and motor vehicle traffic; less room required for project, potentially less vegetation maintenance.	Parked cars on sidewalk space; lack of space to store snow; inadequate driveway curb cuts.
Detached Sidewalk	Paved pedestrian accessway, typically four-to-five feet wide, parallel to but detached from the roadway, usually by a planting strip in the furnishings zone.	Provides buffer space between pedestrians and roadway traffic; provides space for vegetation, street furniture, utilities, doors of parallel-parked cars, stored snow, and stormwater.	Parked cars on sidewalk space; inadequate driveway curb cuts; snow frequently plowed from roadway onto a portion or all of the sidewalk.
Wide Sidewalk or Safety Path	Paved pedestrian accessway, greater than five feet wide, designed for areas with high pedestrian activity.	Generally has more room for streetscaping elements, snow storage, and potentially slow moving bicyclists.	Sight distance issues are exacerbated by frequent curb cuts and intersections, making bicycle riding and other faster modes of travel less safe.
Shared Use Side Path	A wide paved pedestrian accessway, designed for multiple types of nonmotorized users; is physically separated, but immediately adjacent and parallel to a roadway and is at minimum 8-10 feet wide.	Space separated nonmotorized travel from motor vehicle travel; more space for pedestrians, joggers, skateboarders, rollerbladers, and slower moving bicyclists.	Where there is a high intensity of intersections and/or driveways, faster moving traffic may be at more risk of collisions with motor vehicles; such facilities can provide a false sense of security leading to faster, less safe travel.
Independent Shared Use Path	A paved or crushed limestone pedestrian access way, designed for multiple types of nonmotorized use that is physically separated from motor vehicle traffic, typically in its own independent right of way.	Generally one of the most pleasant and stress-free travel options with scenic views of natural features; can be used by bicyclists, skaters, wheelchair users, joggers, and other nonmotorized users.	AASHTO guidelines require a 10-foot-wide path with two-foot shoulders on either side, resulting in a very large foot print and costly right-of-way acquisition.
Unimproved Path/Trail	An unpaved, independent facility, physically separated from the road, most located in parks, recreation areas, and rail corridors.	trails can provide links to major roads, activity centers, and/or other modes of transportation.	Most allow for other uses which frequently cause safety problems; may follow a meandering and/or circular pattern; many do not connect to activity centers; most developed for recreational purposes.

Benchmarking the Pedestrian System

Most pedestrian trips are very short. Small trips, such as walking from an automobile to employment or visiting a nearby store, generally use local sidewalks. Some pedestrian trips are longer and one of many travel choices that also include bicycles, transit, and private motor vehicles.

While the bulk of the pedestrian system is made up of sidewalks, these facilities are not generally considered to be regional. Unlike shared-use paths, sidewalks are designed for single-use pedestrian trips, which, as previously mentioned, are very short. In areas where there are higher numbers of pedestrian trips, communities and road agencies are likely to construct shared-use paths and side paths instead. Additionally, accurate sidewalk data is harder to obtain. Most communities do not have readily available databases on the geographic locations and conditions of sidewalks. Furthermore, there are likely many gaps within these local sidewalk networks. For these reasons, this regional plan has focused, in the near term, on only benchmarking pathway and roadways.

SEMCOG and MDOT encourage local communities to create, maintain, and share databases on the location and condition of sidewalks and will continue to explore opportunities to cost-effectively inventory and benchmark sidewalk data. In the meantime, communities can ensure road agencies have access to their plans for future sidewalks by including their plans in [the SEMCOG Community Nonmotorized Plan Database](#).

[The SEMCOG Community Nonmotorized Plan Database](#) is a web-based tool for summarizing the various plans, across the region, that include bicycle and pedestrian travel for a given geographic area – whether it is a neighborhood, community, or county. Included in this database are nonmotorized and complete streets plans, master plans, and other documents. When possible, a link to a PDF version of the plan has been provided. SEMCOG and MDOT used this database as reference for creating its inventory of existing and planned regional nonmotorized facilities.

Based on this inventory, Southeast Michigan has approximately 1,500 miles of regional pedestrian facilities, with plans for an additional 500 miles. Oakland County has the most regional pedestrian facilities, with the majority being shared-use side paths and over 25 percent of the region's independent shared-use paths. Table 3 summarizes existing and planned pedestrian facilities by county. Figures 5-12 highlight the existing and planned pedestrian facilities on maps. Readers can also visit SEMCOG's website for larger, more detailed versions of the maps at www.semcog.org/NoMoPlan.aspx

Table 3
Existing and Planned Pedestrian Facilities by County (miles)

Pedestrian Facility	Region	Livingston	Macomb	Monroe	Oakland	St. Clair	Washtenaw	Wayne, Excluding Detroit	Detroit
Independent Shared Use Paths	414	28	65	11	125	30	34	98	23
Shared Use Side Paths	673	12	19	2	524	26	72	13	3
Paved Shoulders	379	30	90	5	69	101	50	34	0
Total Existing	1,466	70	174	18	718	157	156	145	26
Planned Independent Shared Use Paths	422	9	87	14	150	56	40	39	29
Planned Shared Use Side Paths	141	18	0	1	87	9	9	4	14
Total Planned	563	27	87	15	237	65	49	43	43
Total Facilities	2,029	97	261	33	955	222	205	188	69

Source: SEMCOG

Since the summary table and maps do not include sidewalks, additional analysis indicates the likely location of most sidewalks within the region, using the density of street intersections as a proxy. This analysis showed the City of Detroit, its inner-ring suburbs, and outer-lying satellite cities, such as Ann Arbor, Howell, Monroe, Mt. Clemens, Pontiac, and Port Huron being areas likely to have sidewalks.

Finally, as communities and road agencies look to provide additional pedestrian facilities, analysis tools highlighting areas where there is likely more demand for walking and biking facilities, have been developed as part of this plan. (Chapter 4.)

Figure 5
Livingston County Existing and Planned Regional Pedestrian Facilities

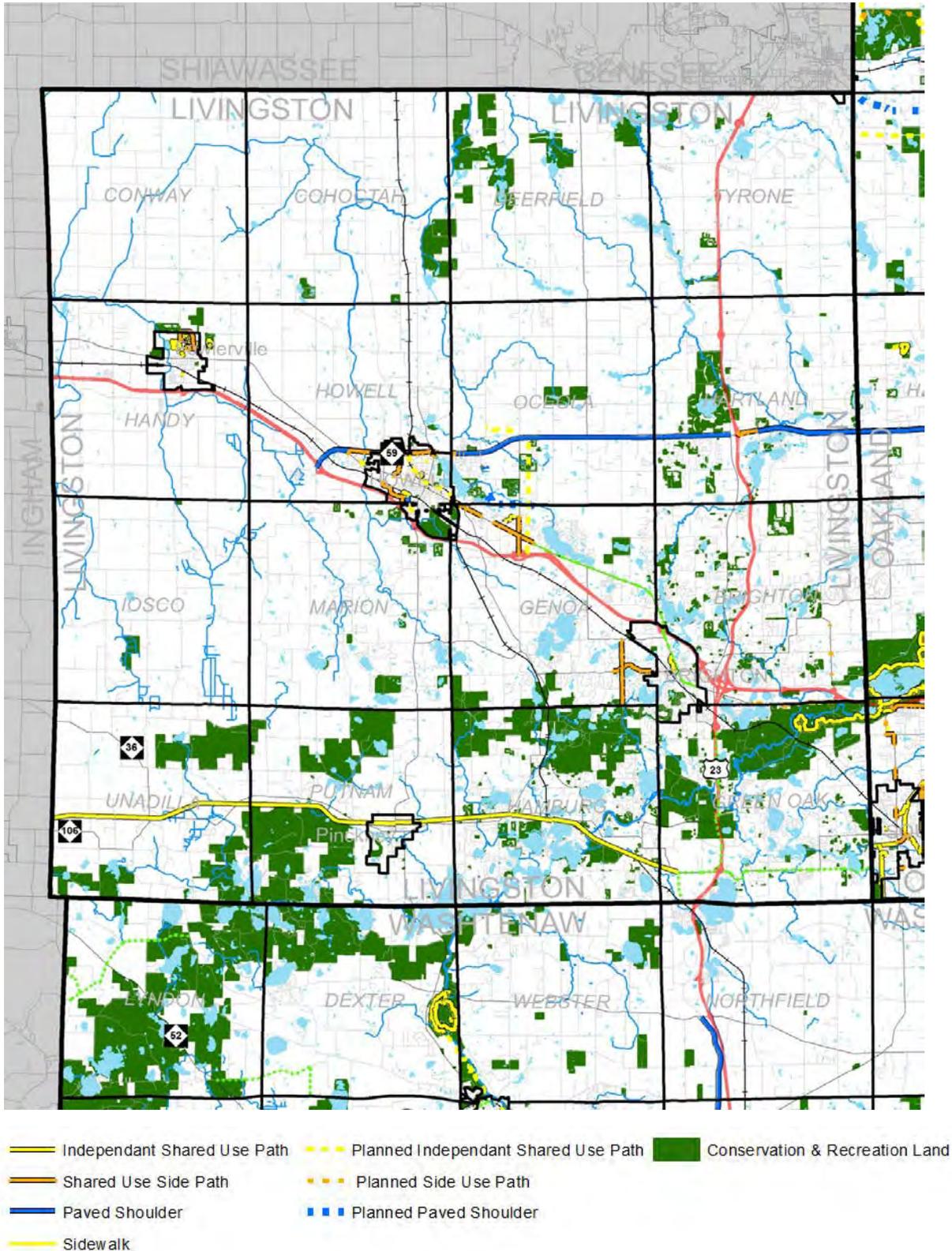
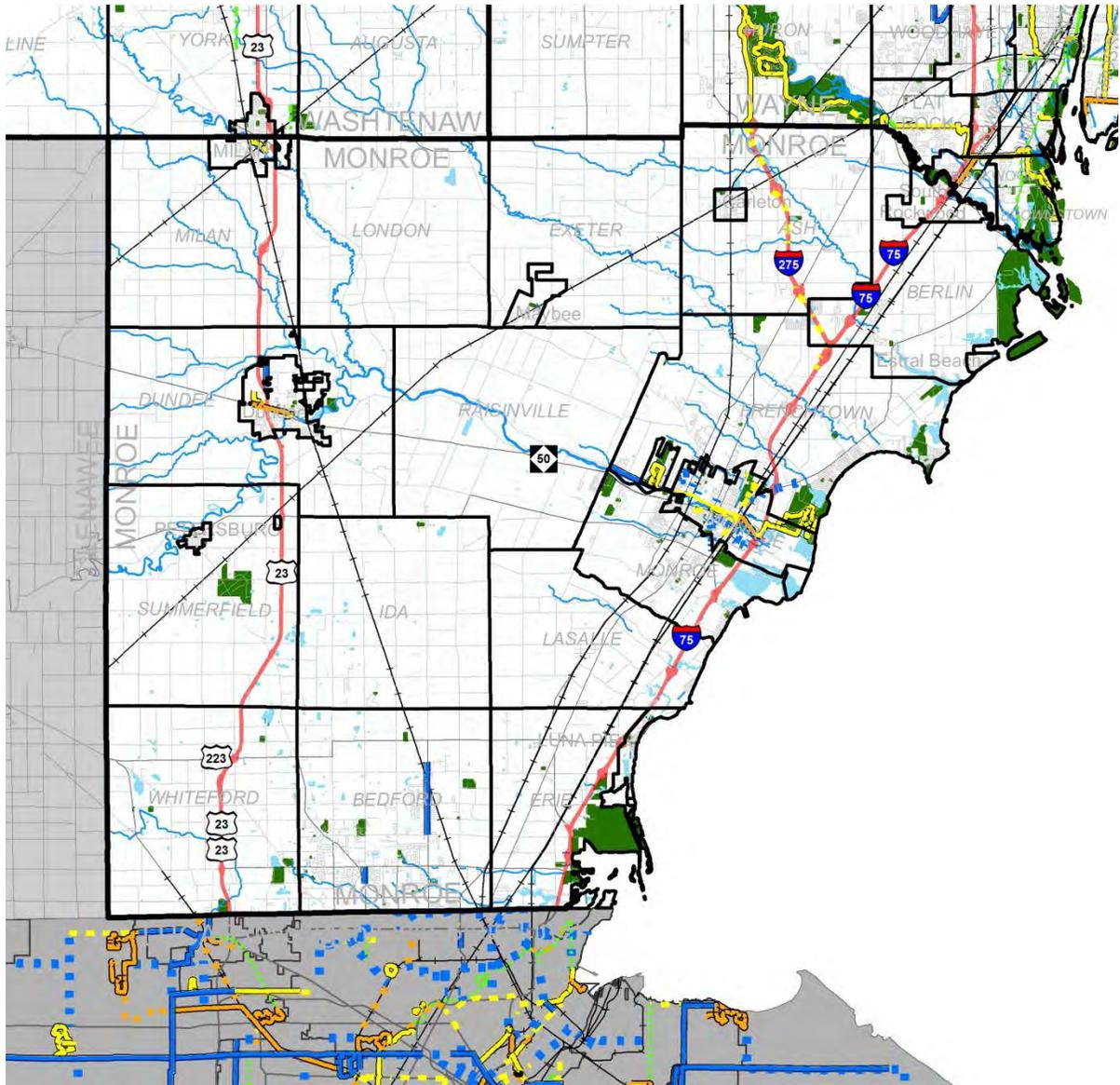


Figure 7
Monroe County Existing and Planned Regional Pedestrian Facilities



- Independent Shared Use Path
- Shared Use Side Path
- Paved Shoulder
- Sidewalk
- - - Planned Independent Shared Use Path
- - - Planned Side Use Path
- - - Planned Paved Shoulder
- Conservation & Recreation Land

Figure 8
Oakland County Existing and Planned Regional Pedestrian Facilities

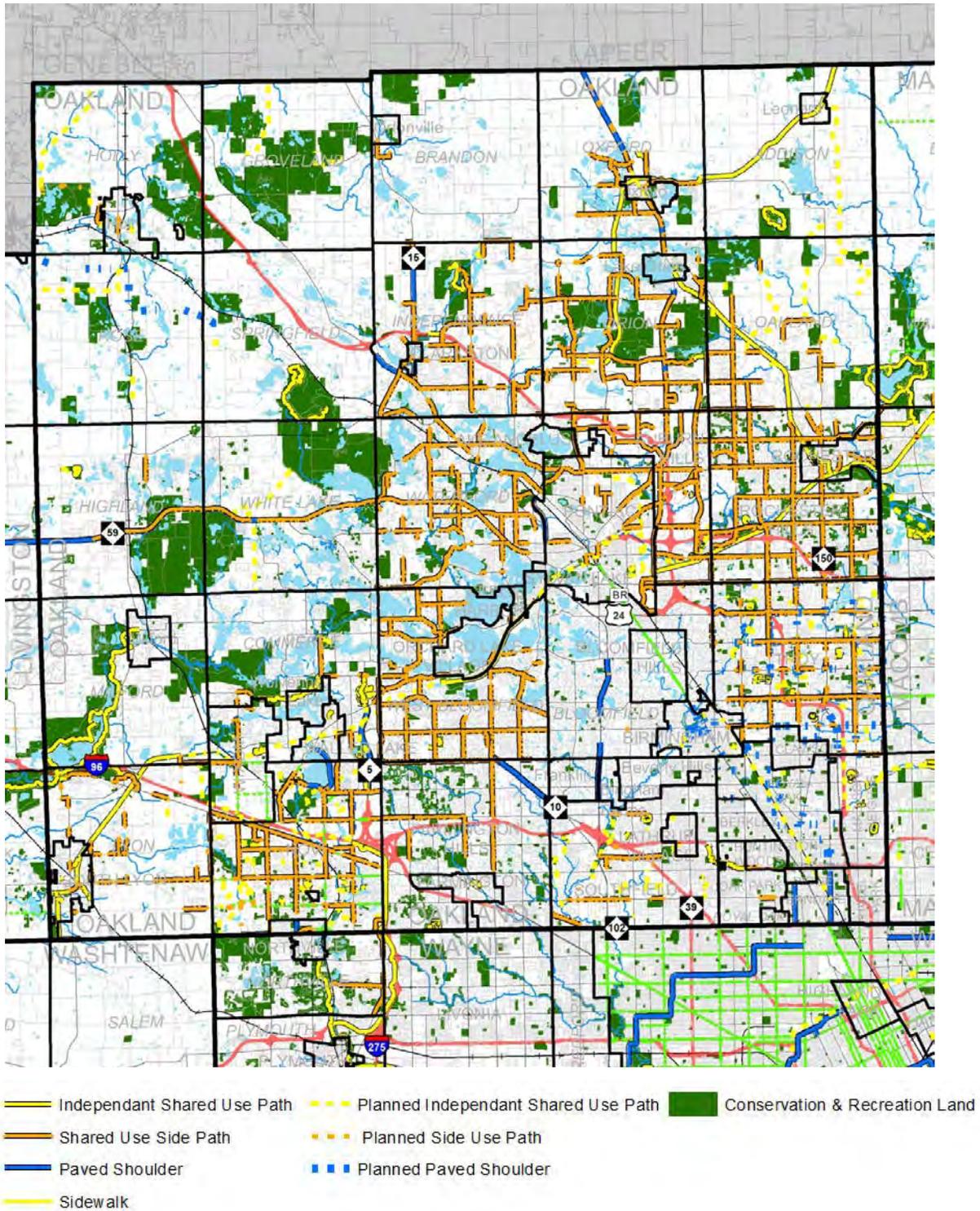


Figure 9
St. Clair County Existing and Planned Regional Pedestrian Facilities

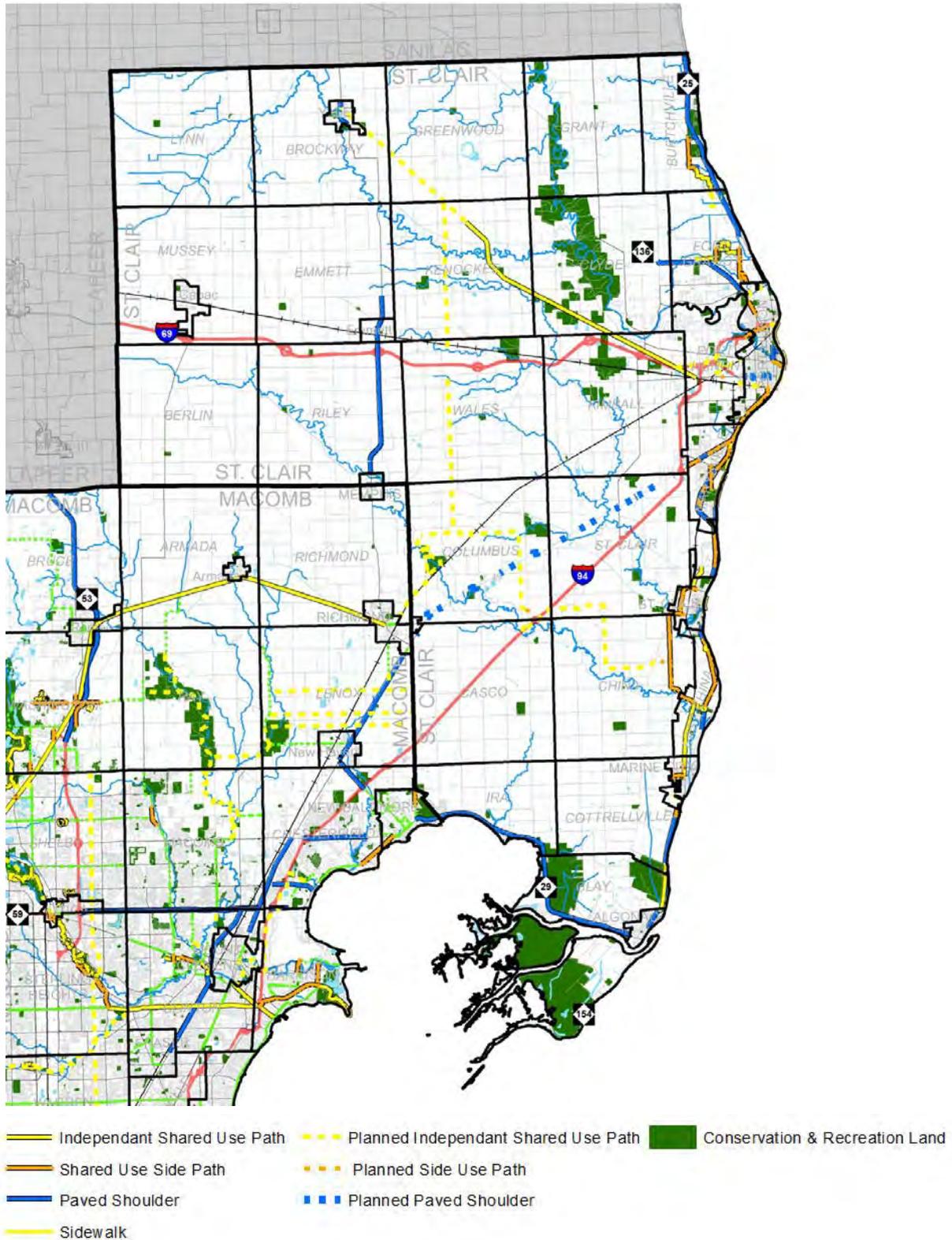
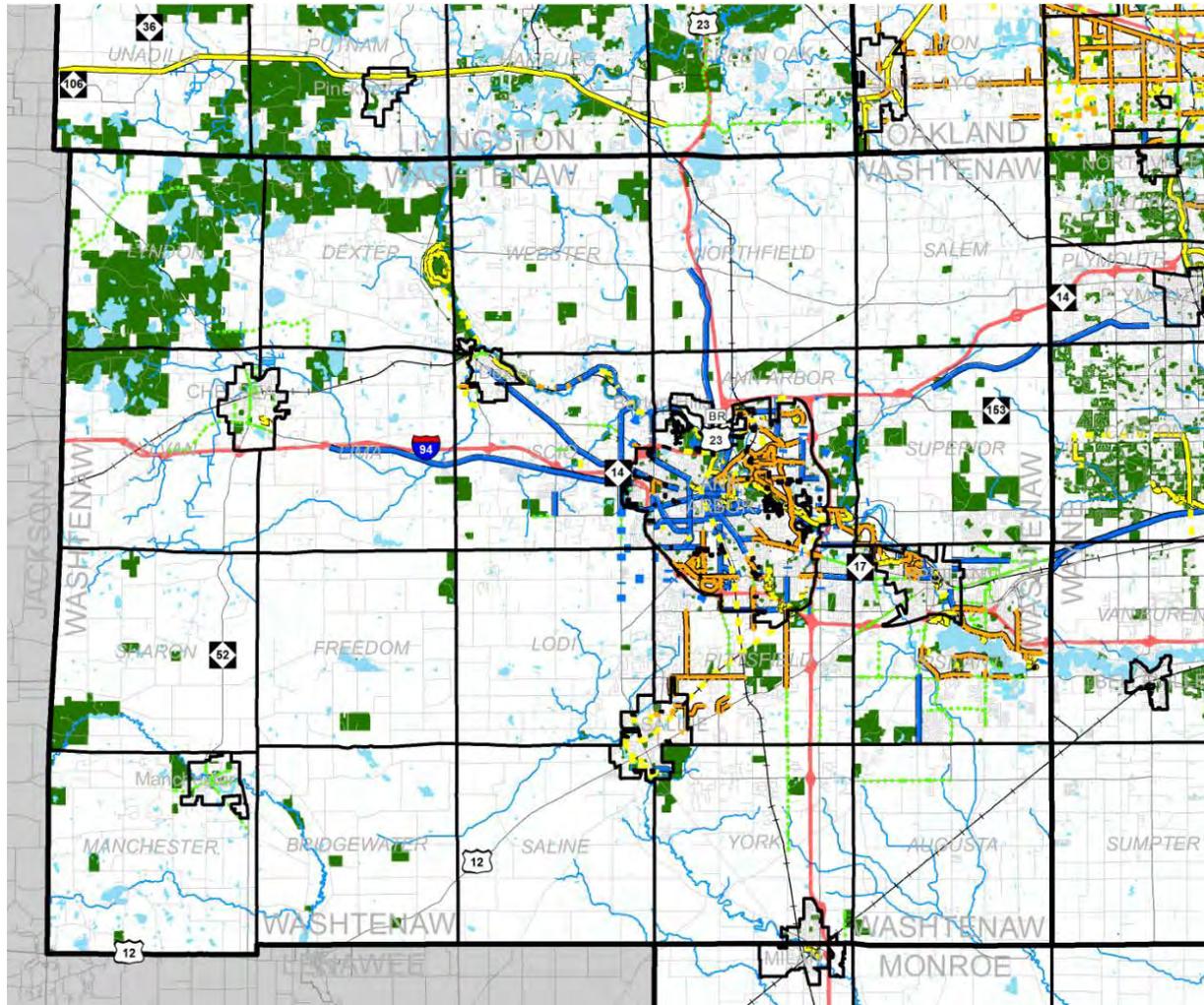


Figure 10
Washtenaw County Existing and Planned Regional Pedestrian Facilities



- Independent Shared Use Path - - - Planned Independent Shared Use Path ■ Conservation & Recreation Land
- Shared Use Side Path - - - Planned Side Use Path
- Paved Shoulder - - - Planned Paved Shoulder
- Sidewalk

Figure 11
Wayne County Existing and Planned Regional Pedestrian Facilities

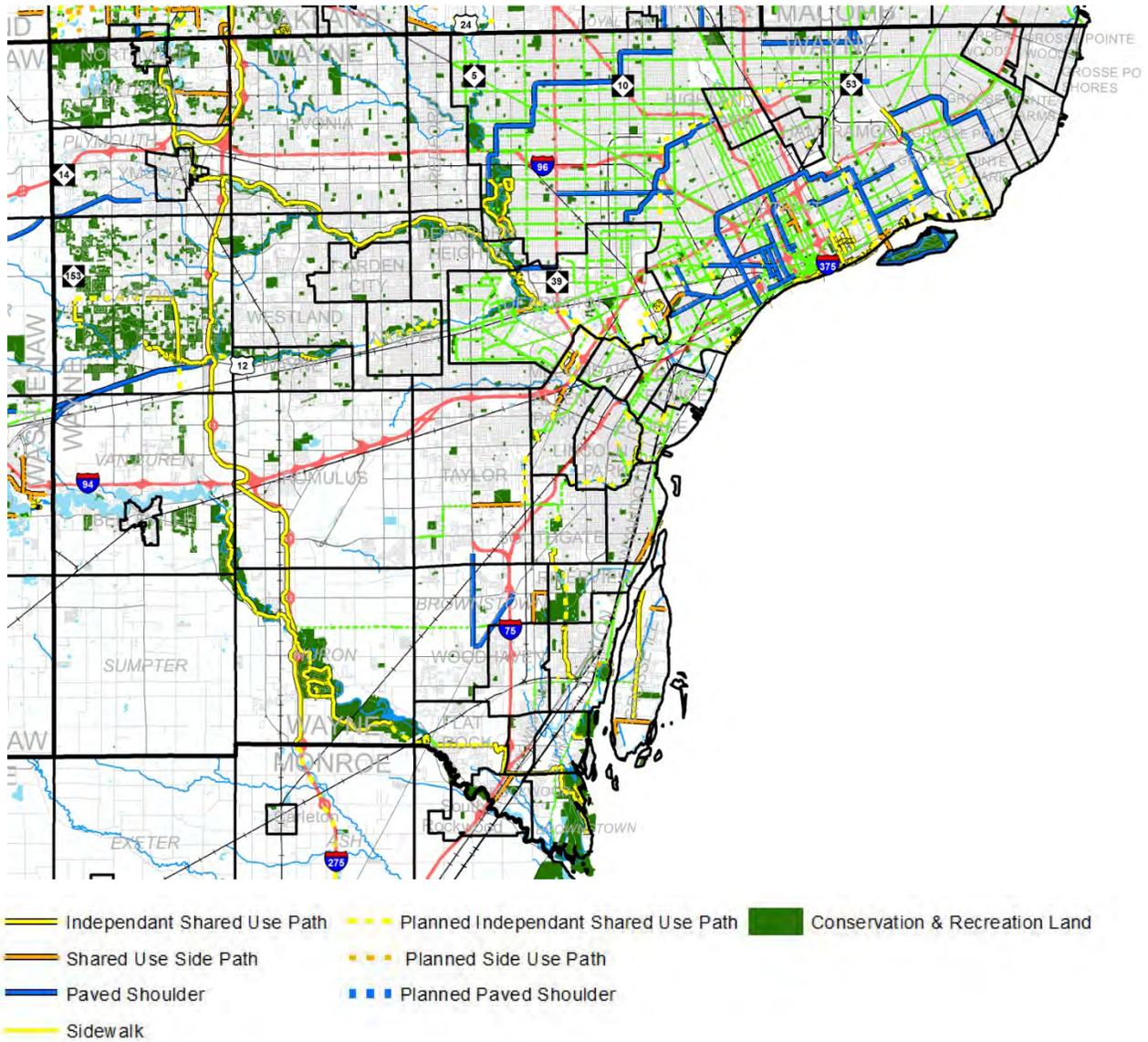
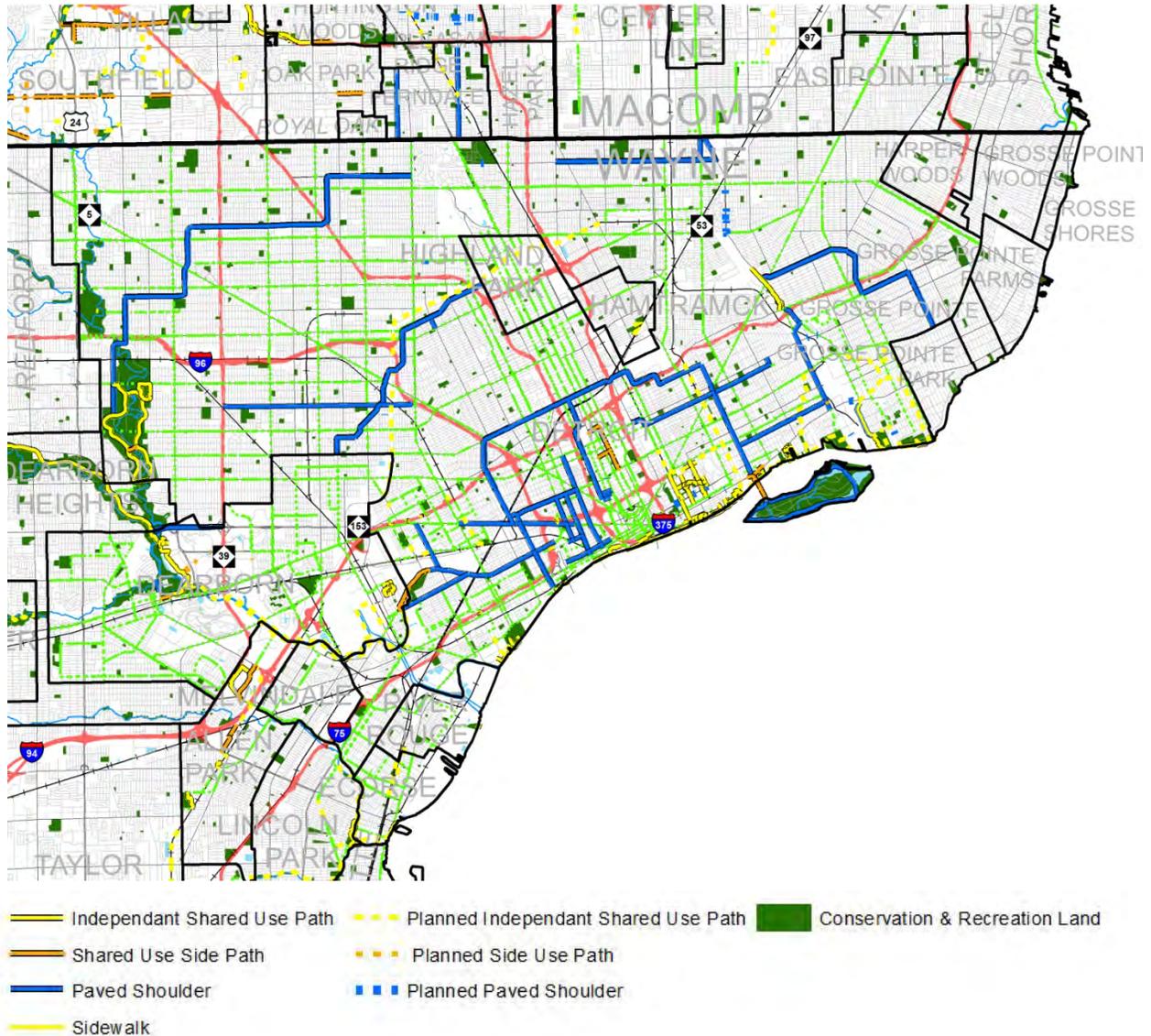


Figure 12

City of Detroit Existing and Planned Regional Pedestrian Facilities



Chapter 3: Benchmarking the Bicycling System

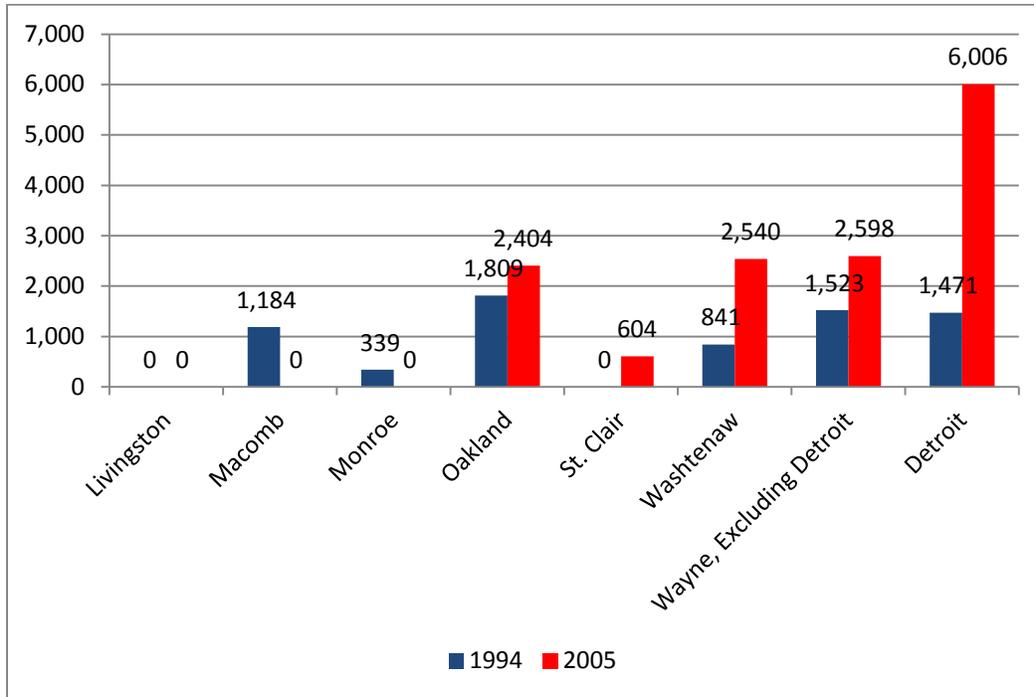
The bicycling system in Southeast Michigan includes both on-road and off-road facilities. Facilities within the Regional Road Network are bike lanes, wide paved shoulders, marked shared lanes (sharrows) signed bicycle routes, bicycle boulevards, and other shared roadways. Off-road facilities, often recognized as the Regional Trail Network, include shared use side paths and independent shared use paths (trails). Southeast Michigan currently has over 2,600 miles of existing bicycling facilities and close to 1,500 additional miles of planned facilities. This chapter highlights trends in bicycling in Southeast Michigan, economic benefits of bicycling, bicycling challenges, and types of bicycling facilities.

Trends in Bicycling in Southeast Michigan

According to a 2002 U.S. Department of Transportation study, over a quarter of the population in the United States (16 years +) rides bicycles. Many ride for recreation, but an increasing number of people use their bikes for various commuting purposes. Figure 13 highlights that between 1994 and 2005 most counties in the region experienced an increase in bicycling trips. Bicycling commute trips grew the most. While Detroit experienced the largest increase in biking-to-work trips (rising from 1,500 to 6,000), Oakland, St. Clair, Washtenaw, and Wayne Counties also had growth in both the number and percentage of bicycling commute trips. This trend has continued with a 50 percent increase in bicycling commute trips across Southeast Michigan between 2000 and 2010. SEMCOG is presently conducting a 2014-2015 Household Travel Survey to further understand details about typical bicycling trips, such as commuting patterns, time of day, and other purposes. This information will further support decision-making regarding nonmotorized opportunities in the region.



Figure 13
Bike Commute Trips, 1994 and 2005



Source: SEMCOG

Bicycling Trip Purposes

Southeast Michigan's biking network presents extensive opportunities for bicycling. SEMCOG's bicyclists' survey (Appendix A) demonstrated that people bike for a variety of reasons, including:

- Recreation,
- Exercise, and
- Commuting/transportation to destination.

Depending on the trip purposes, there are varying considerations for the biking network. Commuting or transportation-related bicycling typically involves the shortest and easiest route to the destination and likely within roadway corridors, since existing roads provide the quickest and most direct route to retail, employment, medical, or other types of activity centers.

Other bicycling trips are recreation related and center on leisure activities. Whether for exercise or entertainment, these trips more likely involve scenic routes with varied topography. There is value to providing biking access to the green infrastructure network, including waterways, forested areas, and other natural areas. These types of trips occur more frequently on off-road facilities and often during off-peak times and weekends.

“What better way to enjoy the scenic beauty than a bike ride or a pleasant walk.”

- Brian Loftus, Supervisor, Grosse Ile Township

The green infrastructure network and the nonmotorized network are intricately connected. Many of the region's trails pass through and connect recreation areas, waterways, parks, and other significant resources. In fact, hike/bike trails were noted as one of the most important green infrastructure elements the public and stakeholders would like to see more of in their area. In response, the *Green Infrastructure Vision for Southeast Michigan* contains the following regional policy – *additional public green infrastructure should focus on connecting the public network*

Economic Benefits of Bicycling

Bicycling also supports state and local economies. Local businesses such as bicycle sales and repair, sporting goods stores, and big box retail establishments benefit from the increase in bicycling activities. Bicycle manufacturing, tourism, and group rides also benefit Michigan's economy. In fact, a [2014 MDOT study](#) estimated the total overall impact to be approximately \$668 million in bicycle-related activity across the state. Two of the specific study areas within the region, Ann Arbor and Detroit, described the economic benefits related to the increase in bicycling. Table 4 details the economic benefits in Ann Arbor and two Detroit neighborhoods that contribute to the state's economy.

While these numbers are conservative estimates, MDOT is currently studying other aspects of the economic benefits of bicycling, and will have additional data available in 2015.

Table 4
Economic Value of Bicycling

Economic Category	Ann Arbor	Detroit Neighborhoods
Household spending on bicycling-related items	\$9.1 million;	\$3.5 million
Manufacturing	Not applicable	\$5.2 million;
Avoided health -are costs	\$7.2 million	\$6.5 million;
Reduced absenteeism	\$5.7 million	\$3.9 million;
Event and tourism spending	\$3.4 million	\$1.6 million.
Total impact	\$25.5 million	\$20.7 million

Source: *Community and Economic Benefits of Bicycling in Michigan*, MDOT, 2014.

Bicycling Challenges

This growth in bicycling also presents new local and regional challenges. While safety for all modes of travel is a priority at the local, regional, and state levels, there are a number of specific challenges associated with increasing bicycling trips that should be considered.

Bicycling Network Maintenance

A system must be in place to ensure ongoing, long-term maintenance of the system. As part of a local or regional program, the jurisdiction responsible for maintenance should be defined, and general maintenance plans should be budgeted for on an annual basis. Issues such as winter use with plowing/salting, in addition to cutting overhanging vegetation and repairing degraded pavement must be included in a maintenance program. The [AASHTO Guide for the Development of Bicycle Facilities](#) provides further information on maintenance of bicycle facilities’.

Lack of Public Awareness

Enhancing public awareness about increased use of bicycles within existing roadways will inform travelers about common bicycling facilities across the region. Using a variety of methods to educate bicyclists and motorists will also lead to increased safety on roadways.

Crashes

The likelihood of a crash between a bicyclist and a motor vehicle can vary depending on roadway and land-use context, bicyclist and driver behavior, and other conditions. Many bicyclists have little training on [best safety practices](#) or are unaware that they must comply with all traffic laws when riding in the road. While bicyclists make up less than one percent of all reported crashes, they account for over four percent of fatalities and incapacitating injuries. Given the recent growth in bicycling and bicycling-related infrastructure, there could likely be a growth in bicycling-related crashes in the near future.

MDOT and SEMCOG’s ongoing [bicycle safety work](#) will include additional analysis to better understand trends in bicycling crashes and how to best address bicycling safety issues throughout the region.

Bicycle Parking Availability

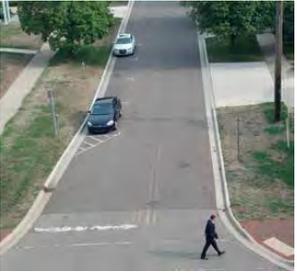
As the network expands and use of bicycles grows, so will the need to provide adequate bicycle storage at various destinations. The Association for Pedestrian and Bicycle Professionals offers a [comprehensive guide to bicycle parking](#) options. Bike parking provides other local advantages, such as:

- Increases business revenue,
- Demonstrates sustainable approaches,
- Enhances appearance of buildings and streetscapes,
- Keeps bikes from falling over and blocking pedestrian space,
- Protects trees and street furniture from bicycle-parking-related damage, and
- Supports bicycling as a mode of transportation.

Types of Bicycling Facilities

The region has many different types of bicycling facilities. Table 5 summarizes the most common facilities in the region. Appendix B provides information on the advantages and disadvantages of each facility type. More detailed definitions and information about biking facilities in Michigan is available in [MDOT's Bicycle and Pedestrian Terminology](#) booklet.

Table 5
Bicycle Facility Descriptions

Facility	Description	
<i>The Regional Road Network</i>		
Shared Roadways	A roadway open to both bicycle and motor vehicle travel.	
Signed Bicycle Route	A segment of road or path with appropriate directional and informational markers, but without striping, signing and pavement markings for the preferential or exclusive use of bicyclists.	

<p>Bicycle Boulevards</p>	<p>A segment of street, or series of contiguous street segments, that has been modified to accommodate through-bicycle traffic and minimize through-motor traffic.</p>	
<p>Wide Outside/Curb Lane</p>	<p>A travel lane at least 14-feet-wide, adjacent to a curb, which allows bicyclists and motorists to travel side-by-side within the same traffic lane.</p>	
<p>Marked Shared Lane or "Sharrow"</p>	<p>A lane shared with motor vehicles that includes a pavement marking symbol that assists bicyclists with lateral positioning; often used when lanes are too narrow for a motor vehicle and a bicycle to travel side-by-side within the same traffic lane.</p>	
<p>Paved Shoulder</p>	<p>Portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, bicyclists, and pedestrians, generally four feet or greater in width</p>	
<p>Dedicated Bicycle Lane</p>	<p>A portion of roadway that has been designated for preferential or exclusive use by bicyclists with pavement markings and signs, generally four to six feet in width.</p>	

<p>Cycle Track</p>	<p>A bicycle facility separated from motor vehicle travel lanes, as well as sidewalks and pedestrians, by a physical barrier, such as on-street parking, a curb, or is grade-separated.</p>	
<p>Off-Road Facilities/ <i>The Regional Trail Network</i></p>		
<p>Shared-Use Side Path</p>	<p>A wide paved pathway, designed for multiple types of nonmotorized users; is physically separated, but immediately adjacent and parallel to a roadway and is at minimum 8-10 feet wide.</p>	
<p>Independent Shared-Use Path (Trail)</p>	<p>A paved or crushed limestone pathway, designed for multiple types of nonmotorized use that is physically separated from motor vehicle traffic, typically in its own independent right of way, Often located in parks, recreation areas and/or former rail corridors.</p>	
<p>Unimproved Path/Trail</p>	<p>An unimproved, independent facility, ranging from one to ten feet wide, that is physically separated from the road, often located in parks, recreation areas, and rail corridors and is generally used for mountain biking or other recreational riding</p>	

Source: SEMCOG

Benchmarking the Bicycling Network

The regional bicycling network has been growing tremendously. Until recently, SEMCOG identified only 600 miles of bikeways for Southeast Michigan. Via the nonmotorized plans collected by SEMCOG, the region now boasts over 2,600 miles of existing bicycle facilities and almost 1,500 additional miles of planned facilities. Table 6 summarizes the bicycle facilities by county.

Table 6
Existing and Planned Bicycle Facilities by County

Facility Type	Region	Livingston	Macomb	Monroe	Oakland	St. Clair	Washtenaw	Wayne, Excluding Detroit	Detroit
Bike Lanes	271	0	1	7	11	2	109	1	139
Wide Paved Shoulders	379	30	90	5	69	101	50	33	0
Marked Shared Lanes (Sharrows)	7	0	0	0	1	0	7	0	0
Independent Shared Use Paths	414	28	65	11	125	30	34	98	23
Shared Use Side Paths	682	12	19	8	527	26	72	14	4
Bike Routes	889	8	0	4	259	85	464	41	27
Total Existing	2,642	78	175	35	993	244	736	187	194
Planned Bike Lanes	534	7	6	29	246	32	154	0	59
Planned Shared Use Side Paths	141	18	0	1	87	9	9	4	14
Planned Shared Lane Markings	69	0	0	0	61	0	8	0	0
Planned Independent Shared Use Paths	410	9	87	5	147	56	40	39	29
Unusable Independent Shared Use Paths	12	0	0	9	3	0	0	0	0
Planned Independent Shared Use Paths	422	9	87	14	150	56	40	39	29
Planned Shared Use Side Paths	141	18	0	1	87	9	9	4	14
Planned Bike Routes	326	0	0	0	240	54	22	7	3
Total Planned	1,492	34	93	44	783	151	233	50	104
Existing & Planned Total	4,134	112	268	78	1,776	396	968	238	297

Source: SEMCOG

The existing and planned data, along with the corresponding maps (Figures 14-21), show only a snapshot of the data collected (Readers can also visit SEMCOG's website for larger more detailed versions of the maps at <http://www.semco.org/NoMoPlan.aspx>.) Through SEMCOG and MDOT public meetings, we learned about new, forthcoming community plans. SEMCOG will maintain and update this database to ensure it can be used by communities and road agencies to learn about the most recent plans for bicycle and pedestrian facilities across Southeast Michigan.

Bicycling Comfort Level

As part of benchmarking the system, categorizing bicycling routes according to bicyclist comfort level will work to create bicycle and pedestrian circulation plans at the local, county, and regional level that are geared towards enhancing public safety. At one end of the continuum are people who are comfortable riding on most any street, with or without dedicated facilities. On the other end, are people who will ride only on dedicated facilities, like shared-use paths. Table 7 from the AASHTO Bike Guide, differentiates the two ends of this continuum.

Table 7

Difference in Comfort Levels of Experienced vs. Casual Bicyclists

Experienced/Confident	Casual/Less Confident Riders
Most are comfortable riding with vehicles on streets, and are able to navigate streets like a motor vehicle, including using the full width of a narrow travel lane when appropriate and using left-turn lanes.	Prefer shared-use paths, bicycle boulevards, or bike lanes along low-volume, low-speed streets.
While comfortable on most streets, some prefer on-street bike lanes, paved shoulders, or shared-use paths when available.	May have difficulty gauging traffic and may be unfamiliar with rules of the road as they pertain to bicyclists; may walk bike across intersections.
Prefer a more direct route.	May use less direct route to avoid arterials with heavy traffic volumes.
Avoid riding on sidewalks. Ride with the flow of traffic on streets.	If no on-street facility is available, may ride on sidewalks.
May ride at speeds up to 25 mph on level grades, up to 45 mph on steep descents.	May ride at speeds around 8 to 12 mph.
May cycle longer distances.	Cycle shorter distances: 1 to 5 miles is a typical trip distance.

Source: AASHTO *Guide for the Development of Bicycle Facilities*, 2012

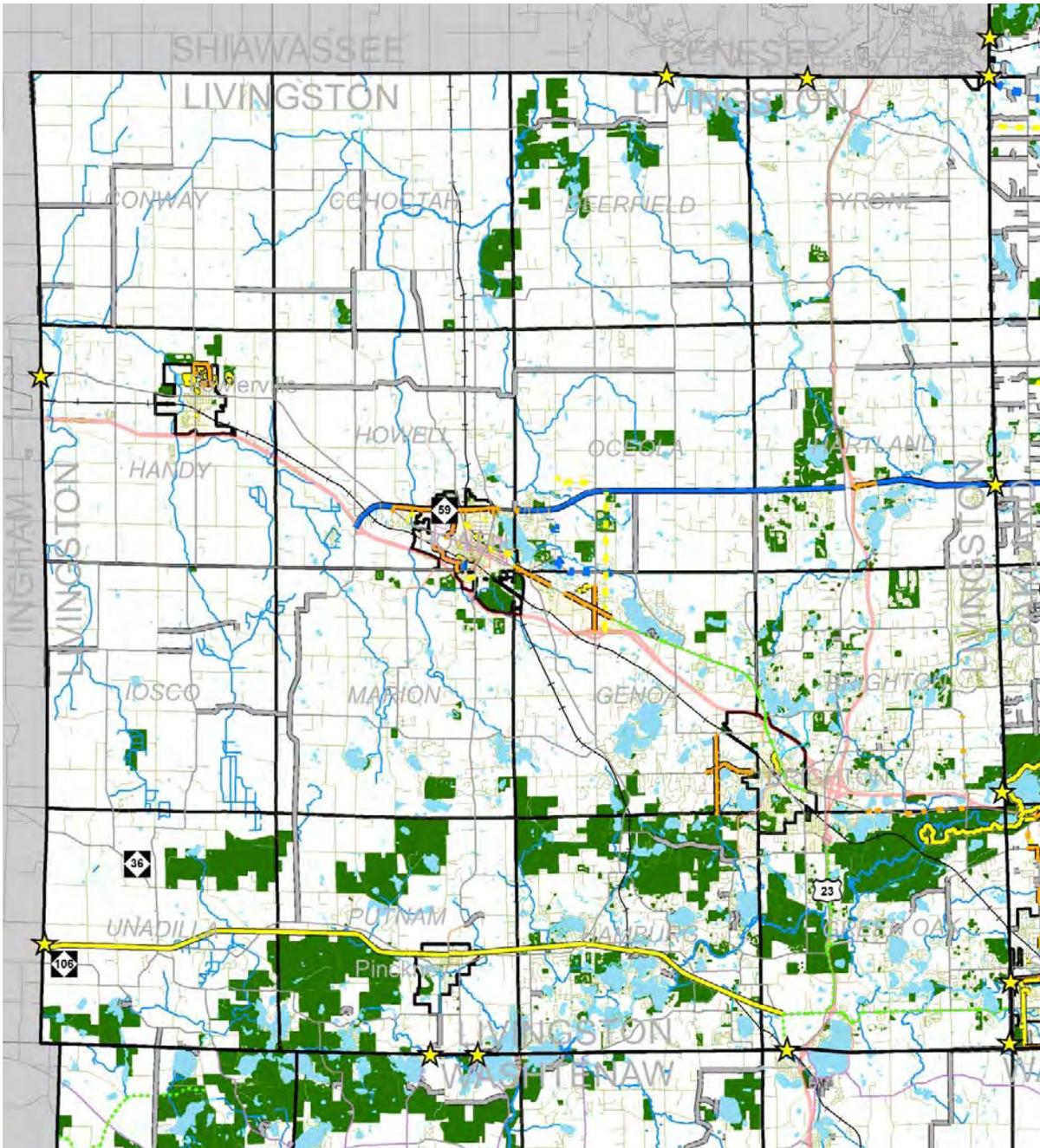
This plan categorizes the relative levels of comfort of Southeast Michigan’s roadways based on the amount of motor vehicle traffic, the posted speed limit of the roadway, and the presence of different bicycling facilities to create a tiered network of bicycling comfort level. Table 8 defines the four tiers of comfort level for roadways in the region, based on moderately experienced bicyclists.

Table 8
Bicycling Comfort Level Descriptions

Bicycling Comfort Level	Description
Tier I – No Stress and High Comfort	<p>Pathways and roadways where the user will not often encounter a motor vehicle. When encounters do happen, automobiles will be traveling slowly, resulting in a situation where it is easy to “share the road.”</p> <p>These are roads and paths that a person would use when learning how to ride a bike or traveling at a slow pace and might be shared with pedestrians.</p> <p>More experienced bicyclists may look for alternative roads, in order to maintain speed and secure the most direct route to a destination.</p> <p>Most local residential streets fall into this category.</p>
Tier II – Low Stress and High Comfort	<p>Roads with light traffic and low posted speeds, 35 mph or less, resulting in a situation where it is easy to “share the road.”</p> <p>Most bicyclists who have some experience riding in the road will feel comfortable and should easily be able to “share the road.”</p> <p>Facilities such as marked shared lanes, bike lanes or paved shoulders may or not be beneficial depending on local roadway and land use context.</p> <p>Many collector roadways fall into this category.</p>
Tier III – Moderate Stress and Comfort	<p>Roads that have moderate traffic and speeds less than 35mph.</p> <p>Bicyclists who have experience riding in the road may feel comfortable, but will need to be more alert when attempting to “share the road,” since there are more motor-vehicles on the roadway than in tier II.</p> <p>These roadways may likely be in commercial areas and have on-street parking or loading zones for bicyclists to contend with.</p> <p>Facilities such as marked shared lanes, bike lanes or paved shoulders are likely beneficial depending on local roadway and land use context.</p>
Tier IV – High Stress and Low Comfort	<p>Roadways with high traffic volumes and/or high posted speeds.</p> <p>Some experienced bicyclists may feel comfortable riding in the road, if they can keep up with traffic, but many others will feel very stressed and will only use this road if there is no other convenient alternative.</p> <p>Dedicated space, such as bike lanes or paved shoulders is needed to decrease stress and increase comfort on these roadways.</p> <p>Major trunk line roads such as Woodward Washtenaw, or Gratiot Avenue fall into this category.</p>

Source: SEMCOG

Figure 14
Livingston County Existing and Planned Bicycle Facilities



- ★ Potential or Existing Regional Connection
- Independent Shared Use Path
- Shared Use Side Path
- Paved Shoulder
- Sidewalk
- Signed Bike Route
- National or Regional Route
- Mapped Only Bike Route
- Planned Independent Shared Use Path
- Planned Side Use Path
- Planned Paved Shoulder
- Planned Bike Route
- Planned Corridor - Preliminary Concept
- High Comfort, No Stress Road
- High Comfort, Low Stress Road
- Moderate Comfort, Moderate Stress Road
- Less Comfortable, High Stress Road
- Gravel Road
- Conservation & Recreation Land
- Highly Supportive Areas of Opportunity
- Moderately Supportive Areas of Opportunity

Figure 15
Macomb County Existing and Planned Bicycle Facilities

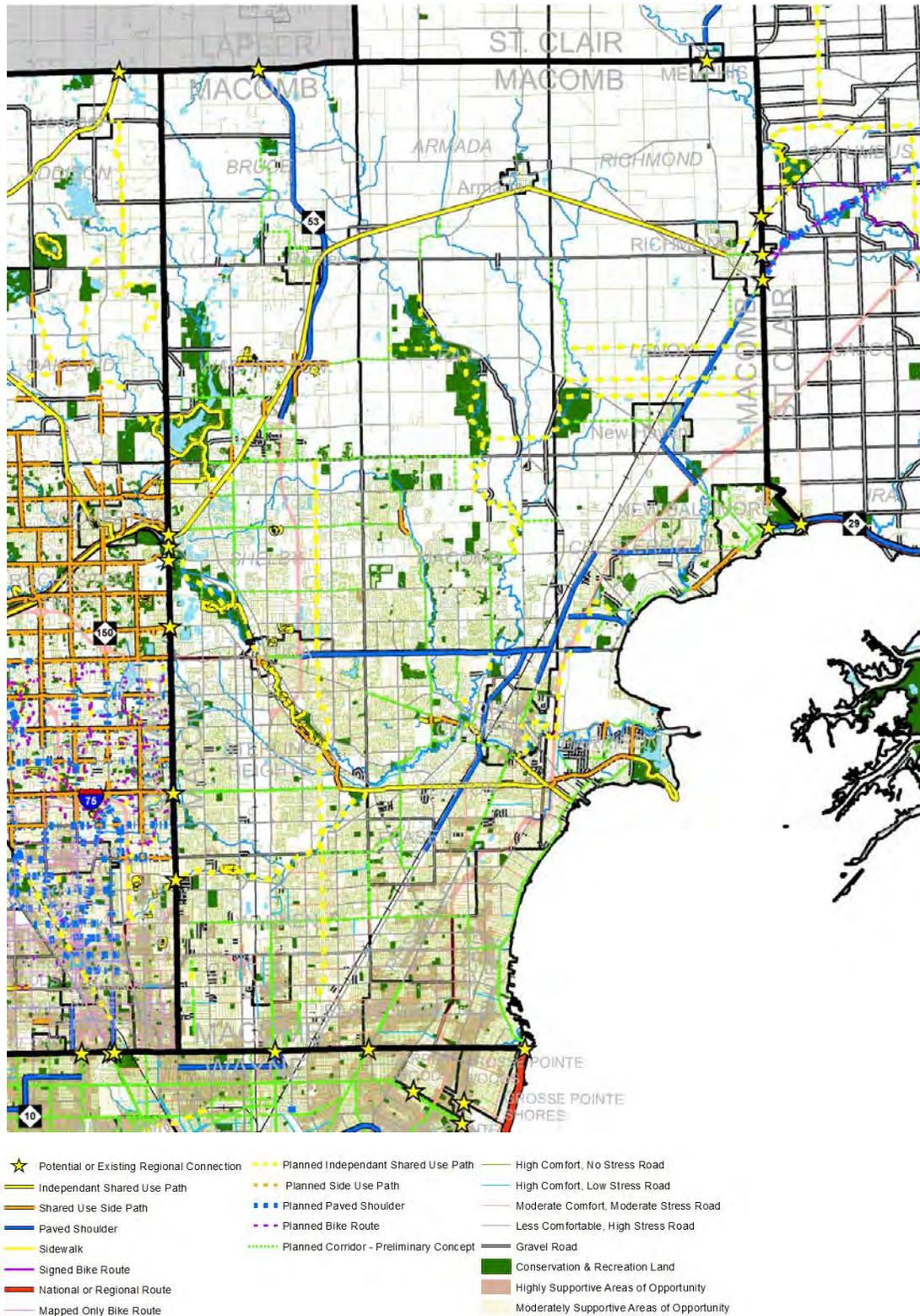
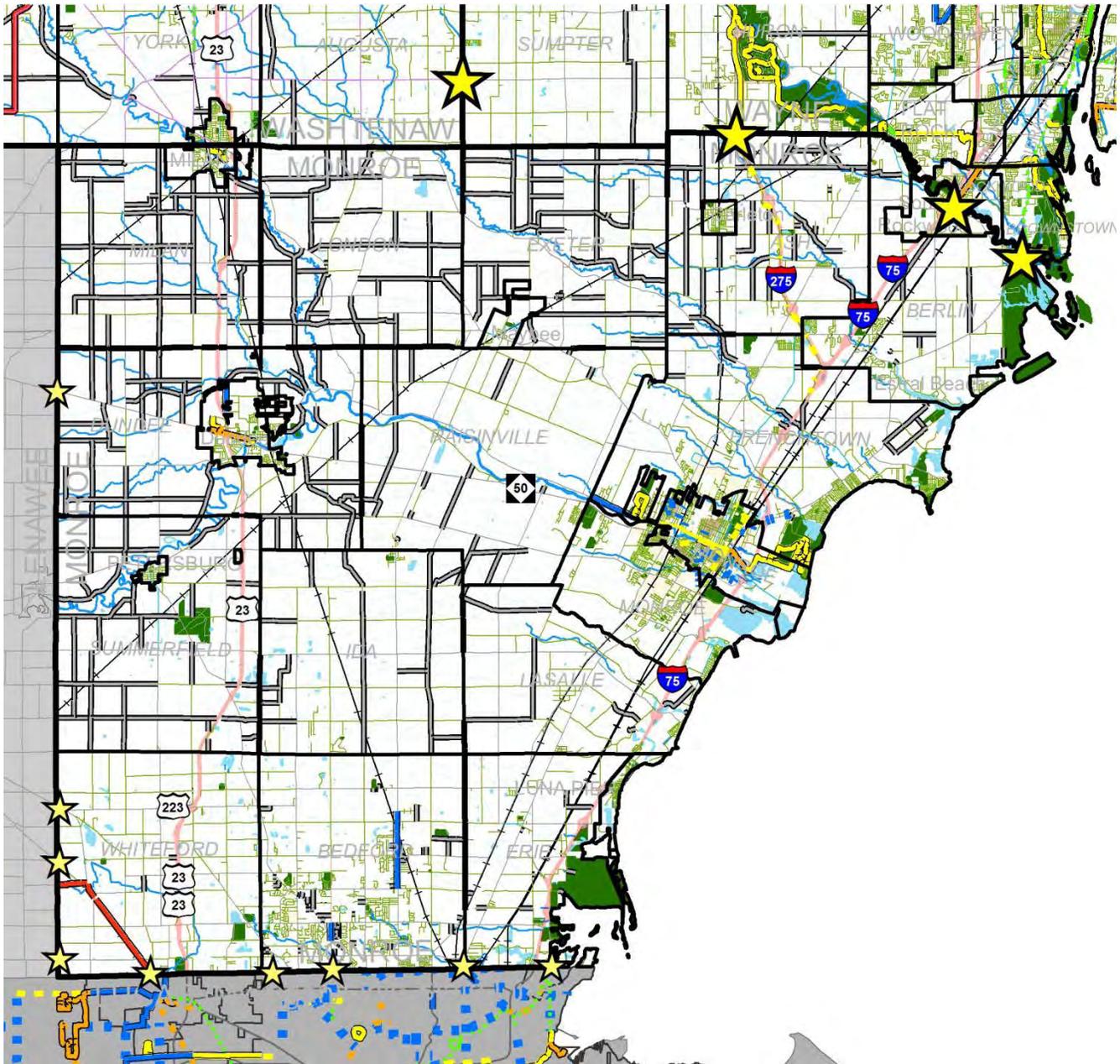
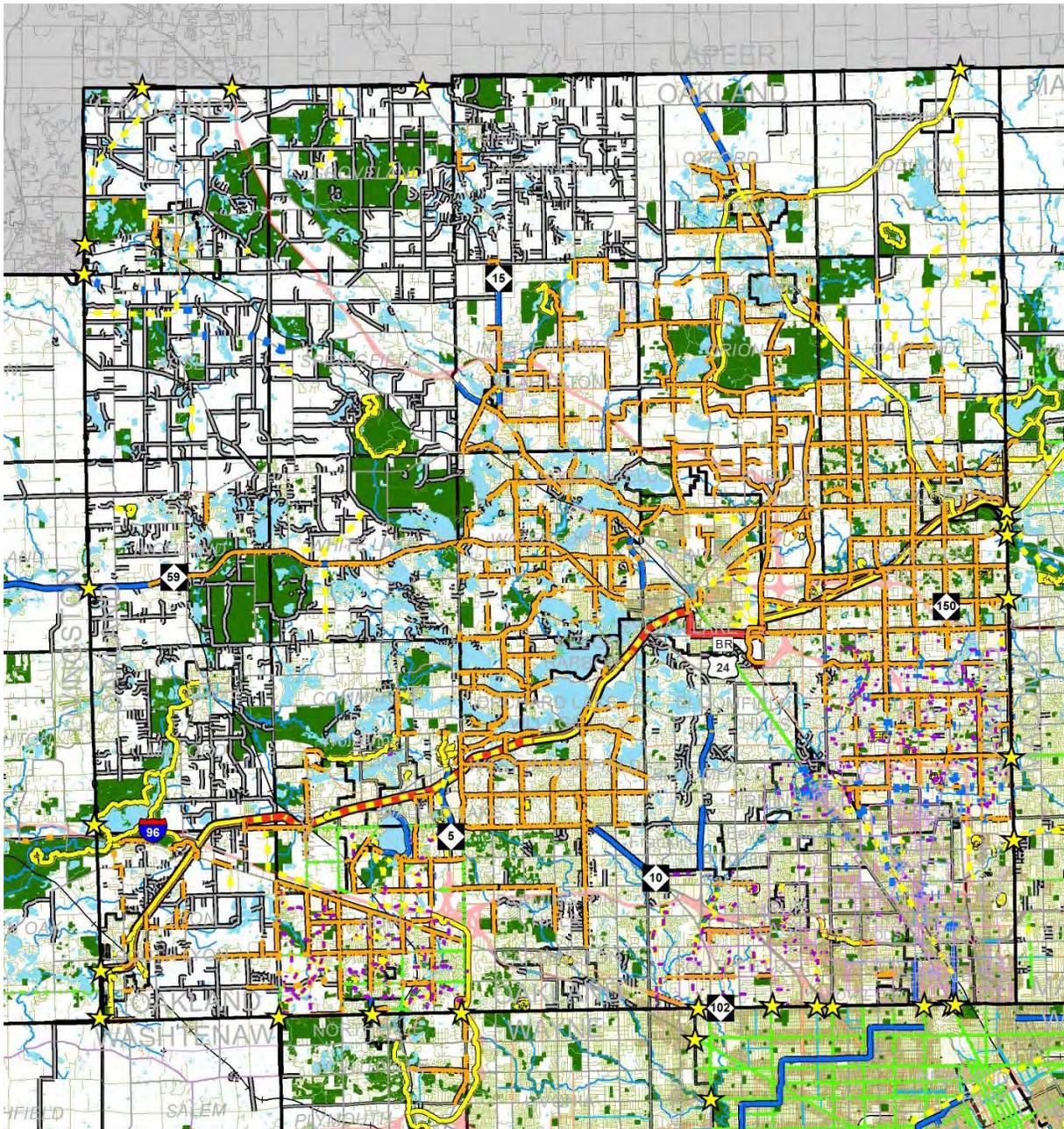


Figure 16
 Monroe County Existing and Planned Bicycle Facilities



- ★ Potential or Existing Regional Connection
- Independent Shared Use Path
- Shared Use Side Path
- Paved Shoulder
- Sidewalk
- Signed Bike Route
- National or Regional Route
- Mapped Only Bike Route
- Planned Independent Shared Use Path
- Planned Side Use Path
- Planned Paved Shoulder
- Planned Bike Route
- Planned Corridor - Preliminary Concept
- High Comfort, No Stress Road
- High Comfort, Low Stress Road
- Moderate Comfort, Moderate Stress Road
- Less Comfortable, High Stress Road
- Gravel Road
- Conservation & Recreation Land
- Highly Supportive Areas of Opportunity
- Moderately Supportive Areas of Opportunity

Figure 17
Oakland County Existing and Planned Bicycle Facilities



- ★ Potential or Existing Regional Connection
- Independent Shared Use Path
- Shared Use Side Path
- Paved Shoulder
- Sidewalk
- Signed Bike Route
- National or Regional Route
- Mapped Only Bike Route
- Planned Independent Shared Use Path
- Planned Side Use Path
- Planned Paved Shoulder
- Planned Bike Route
- Planned Corridor - Preliminary Concept
- High Comfort, No Stress Road
- High Comfort, Low Stress Road
- Moderate Comfort, Moderate Stress Road
- Less Comfortable, High Stress Road
- Gravel Road
- Conservation & Recreation Land
- Highly Supportive Areas of Opportunity
- Moderately Supportive Areas of Opportunity

Figure 18
St. Clair County Existing and Planned Bicycle Facilities

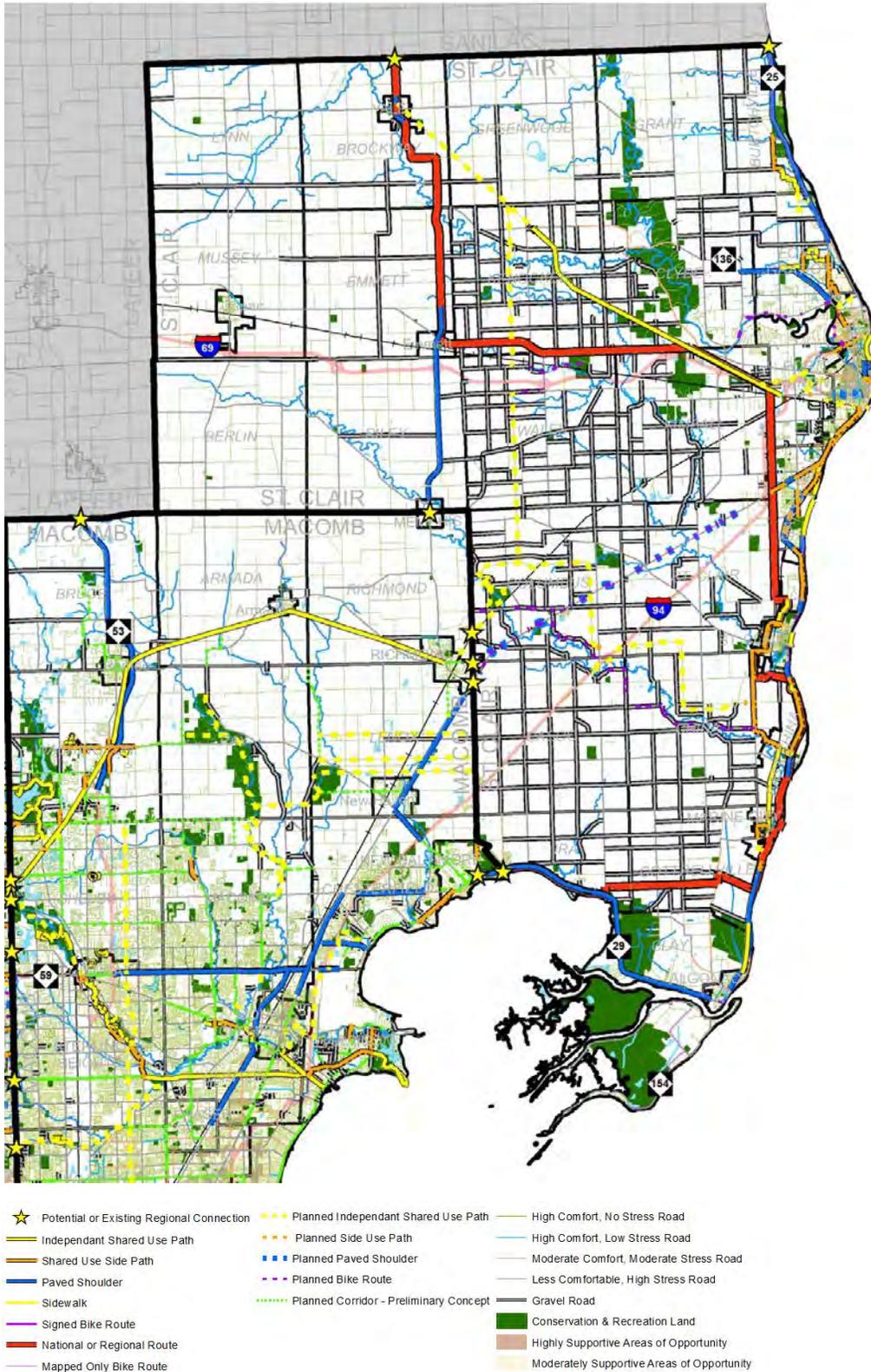
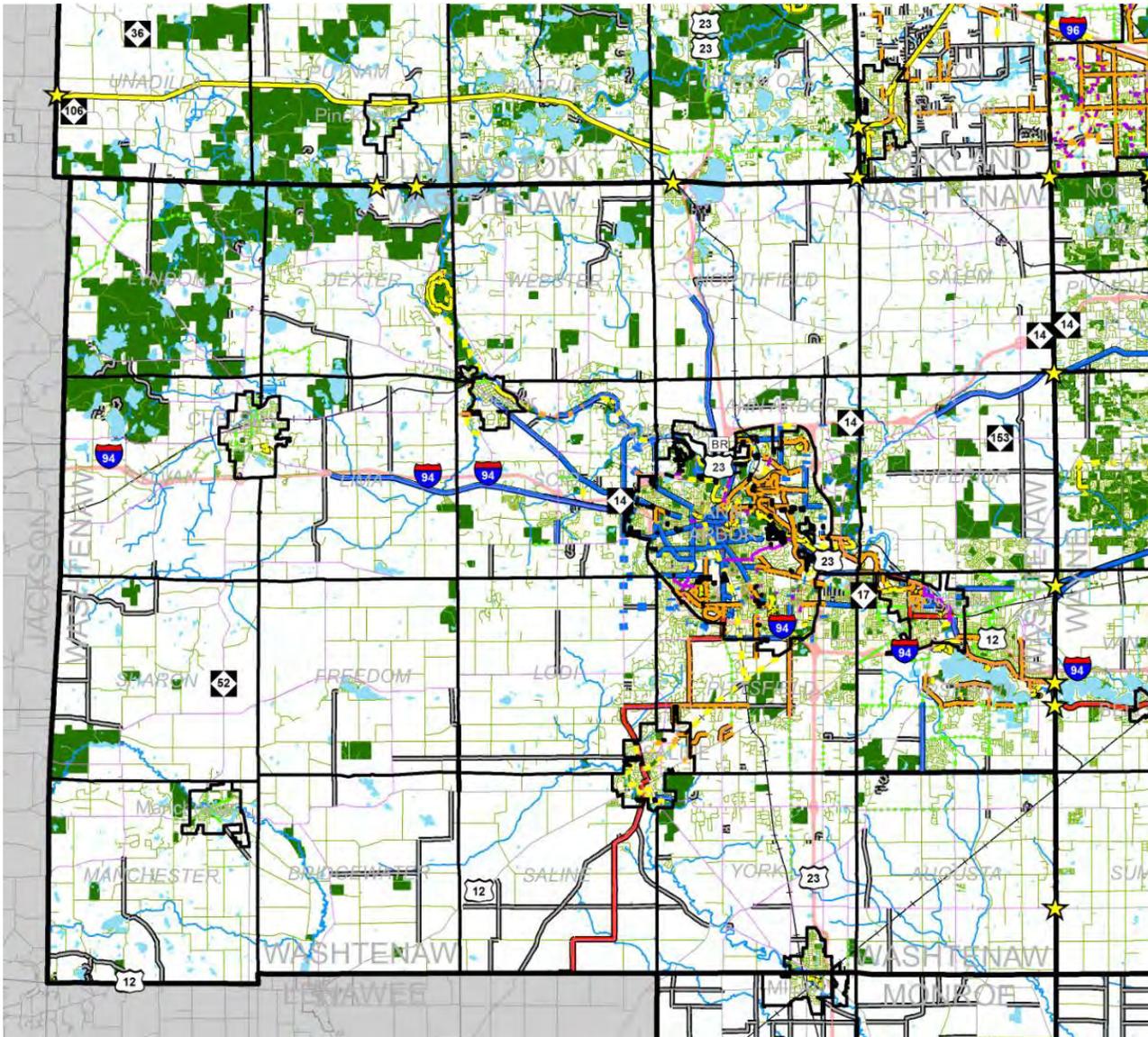


Figure 19
Washtenaw County Existing and Planned Bicycle Facilities



- | | | |
|---|--|--|
| ★ Potential or Existing Regional Connection | ◆◆◆◆◆ Planned Independent Shared Use Path | — High Comfort, No Stress Road |
| — Independent Shared Use Path | ◆◆◆◆◆ Planned Side Use Path | — High Comfort, Low Stress Road |
| — Shared Use Side Path | ■ ■ ■ ■ Planned Paved Shoulder | — Moderate Comfort, Moderate Stress Road |
| — Paved Shoulder | — Planned Bike Route | — Less Comfortable, High Stress Road |
| — Sidewalk | ◆◆◆◆◆ Planned Corridor - Preliminary Concept | — Gravel Road |
| — Signed Bike Route | ■ Conservation & Recreation Land | ■ Highly Supportive Areas of Opportunity |
| — National or Regional Route | ■ Moderately Supportive Areas of Opportunity | |
| — Mapped Only Bike Route | | |

Figure 20
Wayne County Existing and Planned Bicycle Facilities

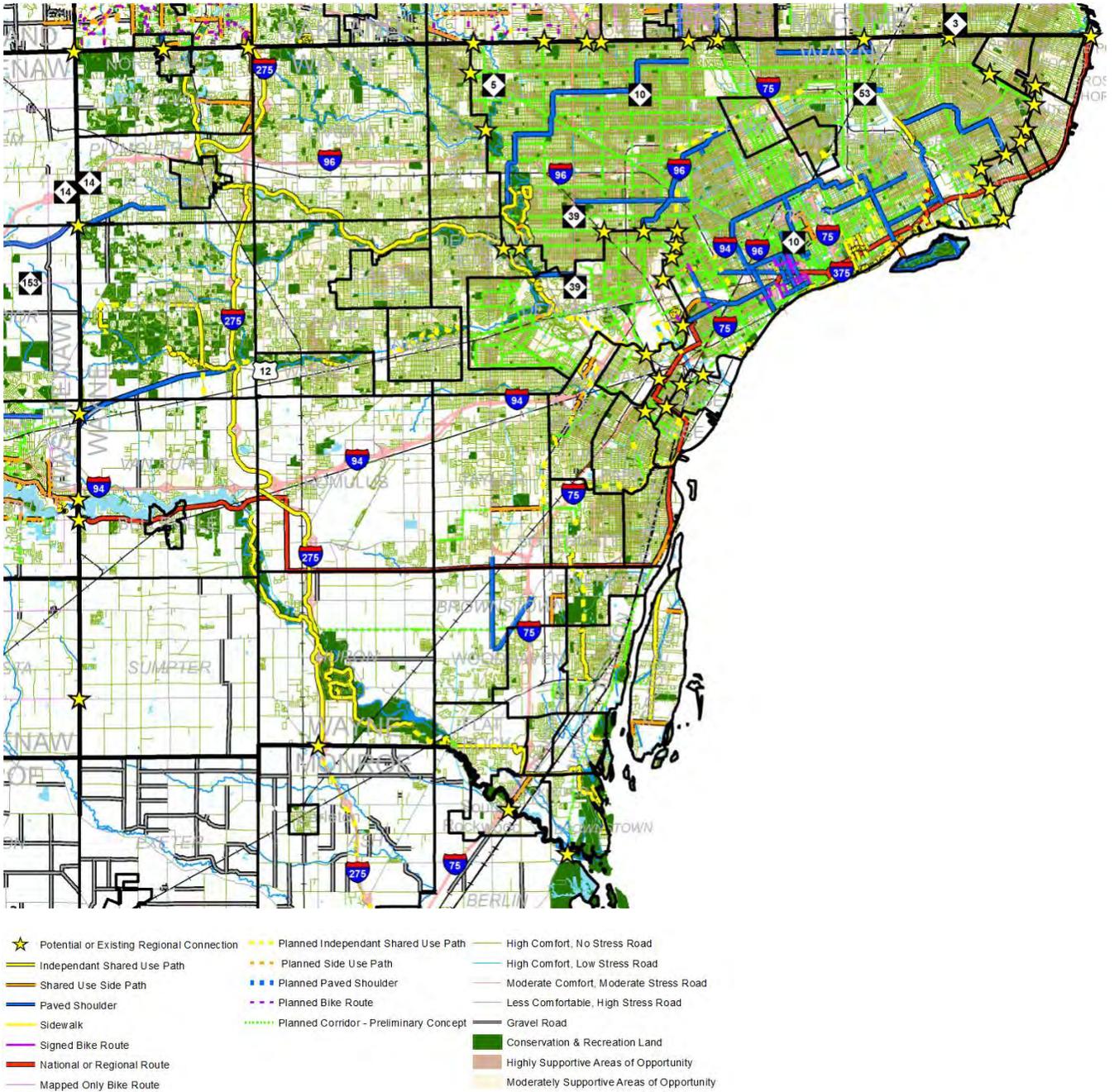
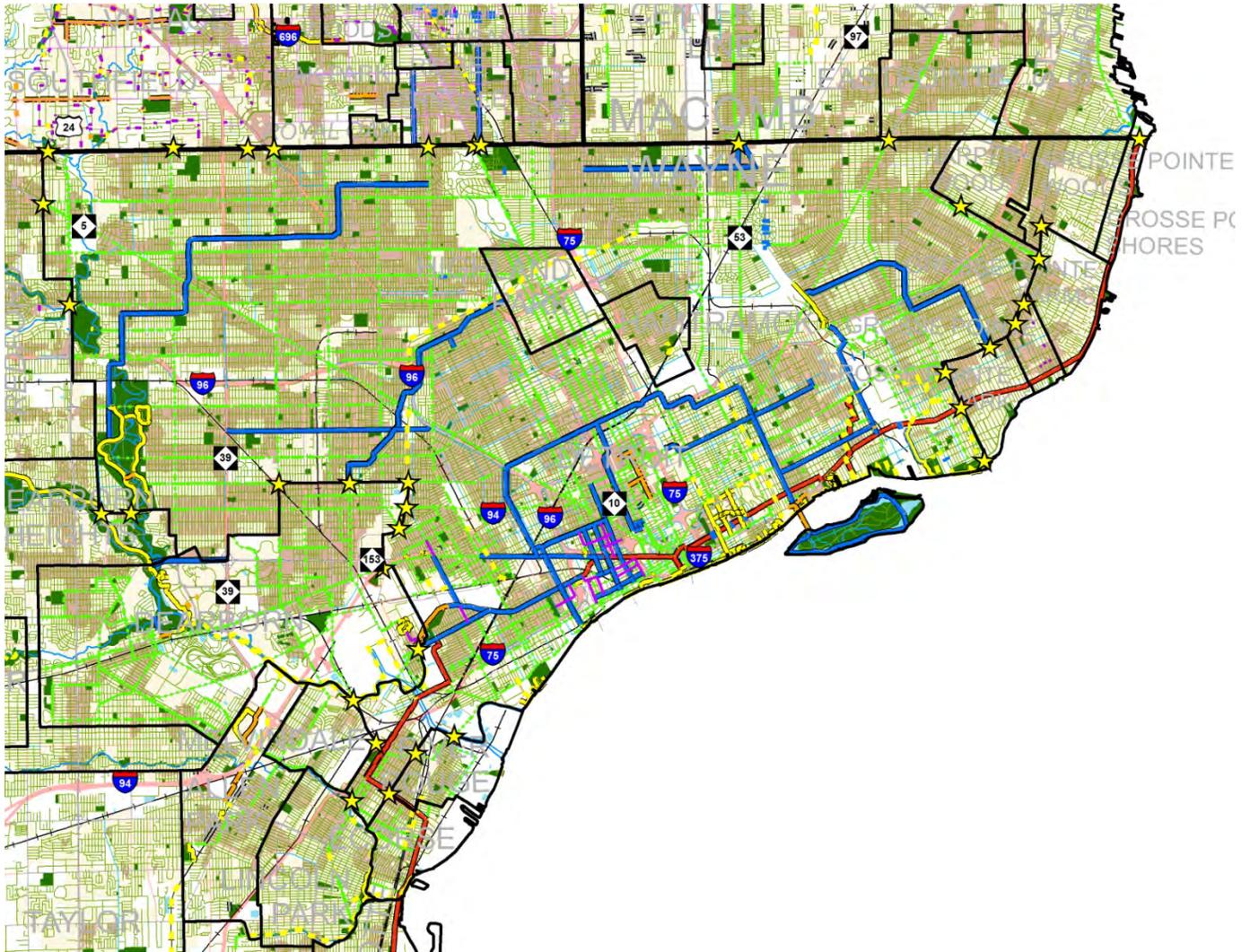


Figure 21
City of Detroit Existing and Planned Bicycle Facilities



- ★ Potential or Existing Regional Connection
- Independent Shared Use Path
- Shared Use Side Path
- Paved Shoulder
- Sidewalk
- Signed Bike Route
- National or Regional Route
- Mapped Only Bike Route
- Planned Independent Shared Use Path
- Planned Side Use Path
- Planned Paved Shoulder
- Planned Bike Route
- Planned Corridor - Preliminary Concept
- High Comfort, No Stress Road
- High Comfort, Low Stress Road
- Moderate Comfort, Moderate Stress Road
- Less Comfortable, High Stress Road
- Gravel Road
- Conservation & Recreation Land
- Highly Supportive Areas of Opportunity
- Moderately Supportive Areas of Opportunity

Chapter 4: Visioning the Future

A critical component of the nonmotorized plan is to vision the future nonmotorized system. This visioning was completed through identifying deficiencies in the system and engaging stakeholders in the visioning process. This chapter focuses on:

- Deficiencies in the nonmotorized system,
- Analyses and tools created to assist communities, roadway agencies, foundations, and others as they seek to target their investments, and
- Regional corridors and gaps in the network.

Deficiencies in the Nonmotorized System

Nonmotorized deficiencies include three main areas – access and pavement quality, safety and education, and connectivity.

Access

Access to the nonmotorized system for pedestrian and bicycling use is paramount. Over 23 percent of the region’s population is within ¼ mile of a regional pedestrian facility (not including sidewalks). Approximately 52 percent of the region’s population is within ½ mile of a bicycle facility. These numbers will increase to 30 percent for the pedestrian system and 60 percent for the bicycling network when including planned facilities. Table 9 summarizes the population with access to a pedestrian and bicycle facility by county.

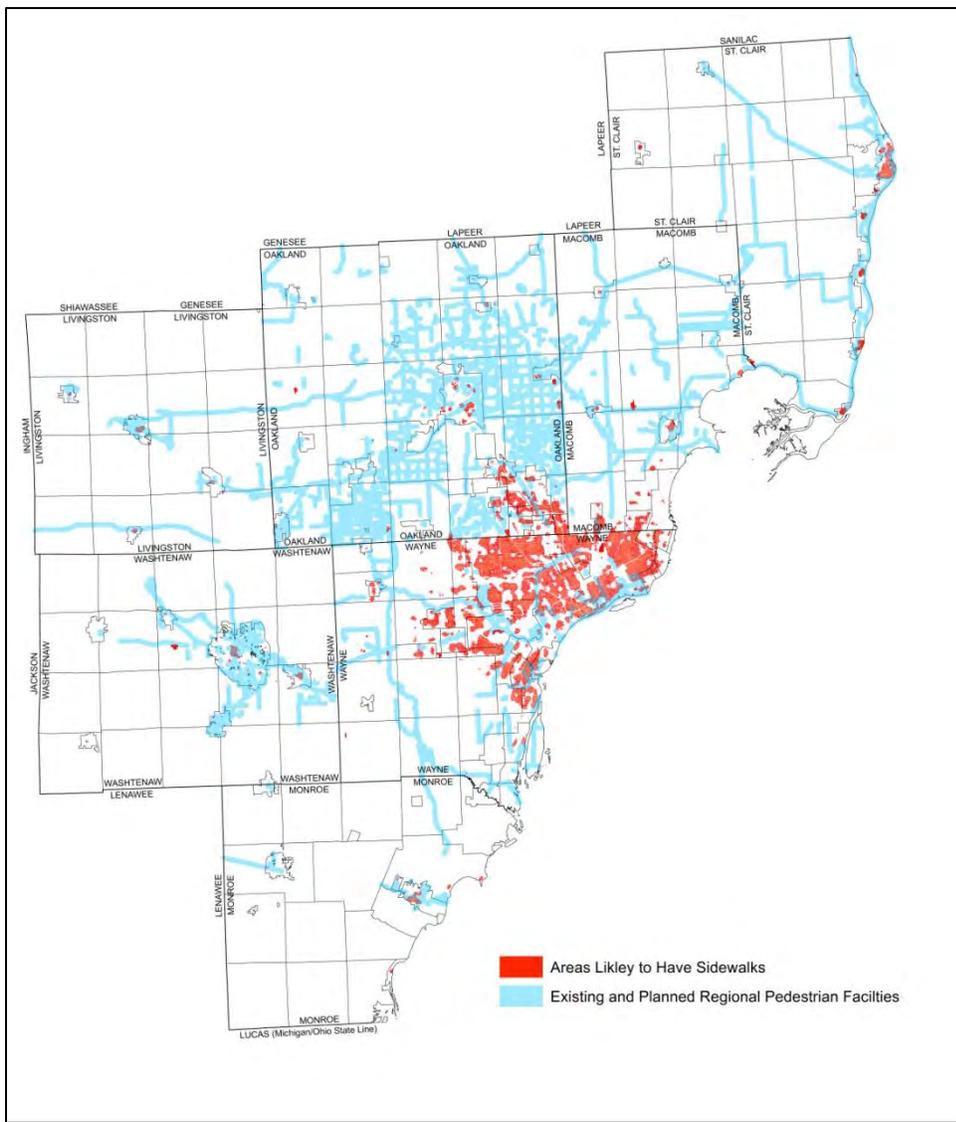
Table 9

Population with Access to Pedestrian and Bicycle Facilities by County

County	Existing Regional Pedestrian Access	Planned Regional Pedestrian Access	Existing Bicycle Access	Planned Bicycle Access
Livingston	32,766 18%	41,359 23%	51,627 29%	63,126 35%
Macomb	135,371 16%	196,539 23%	254,411 30%	366,312 44%
Monroe	11,739 8%	20,613 14%	33,433 22%	51,497 34%
Oakland	524,074 44%	637,418 53%	981,998 82%	1,046,452 87%
St. Clair	50,846 31%	59,294 36%	87,034 53%	106,227 65%
Washtenaw	128,474 37%	157,551 46%	299,177 87%	304,719 88%
Wayne	189,498 10%	301,722 17%	718,215 39%	932,298 51%
Detroit	54,854 8%	104,163 15%	383,677 54%	463,754 65%

It should be noted that since sidewalk information has not been collected, portions of the region, such as Wayne County and the City of Detroit, are underrepresented in the pedestrian analysis. While the regional inventory focuses on shared-use side paths, SEMCOG and MDOT conducted a conservative analysis, based on a street density index to approximate some areas likely to have sidewalks. Figure 22 shows these areas as well as regional pedestrian facilities. The areas are likely town centers and denser residential or commercial areas and are primarily located in the City of Detroit, southeastern Oakland County, and the downriver communities of southern Wayne County. MDOT and SEMCOG encourage local agencies, especially in these areas, to document the presence/absence of sidewalks and their condition to ensure local connectivity.

Figure 22
Areas Likely to Have Sidewalks



Source: SEMCOG

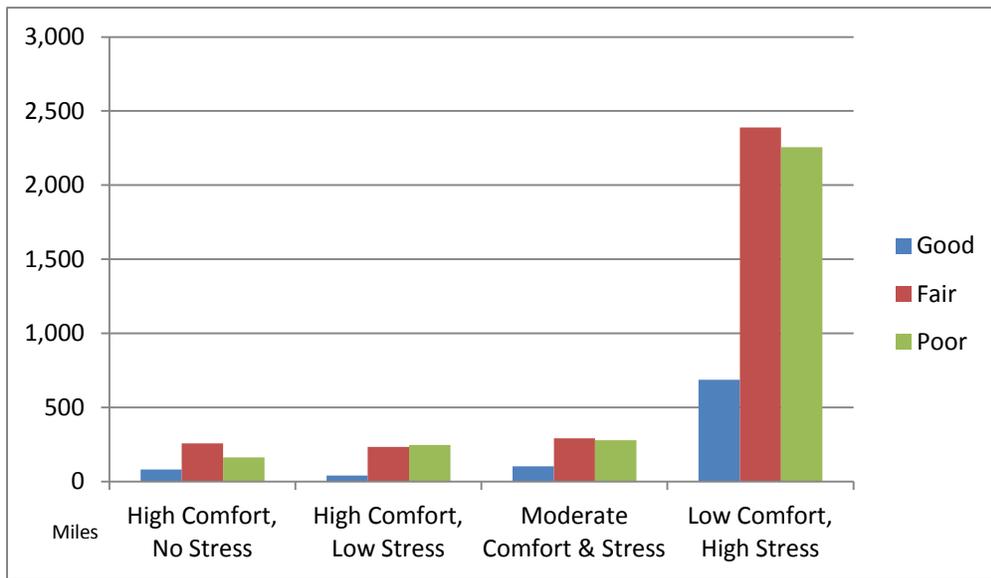
Pavement Quality Impacts Bicycling and Pedestrian Users

Road pavement quality is another deficiency type that is very important to bicyclists and pedestrians. Poor pavement conditions can lead to pedestrian and bicyclist injuries. Since 84 percent of the Southeast Michigan’s roads have poor or fair pavement quality, nonmotorized travel in roadways is less favorable. This data was supported through both the online survey and stakeholder public meetings.



Further analysis of bicycle friendly roadways show that pavement condition is even more problematic than high-volume roads. Most of the roads that have lower traffic volumes and offer less stress to the bicyclist are in fair or poor condition (Figure 23).

Figure 23
Pavement Rating of Shared Roadways by Bicycle Comfort Level

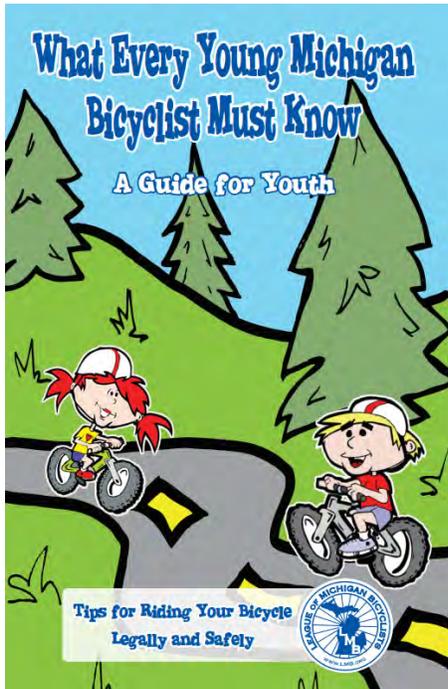


Source: SEMCOG

Since maintenance of pavement facilities plays an important role in bicycle and pedestrian travel, SEMCOG and MDOT encourage communities and local agencies to use [asset management](#) best practices for sidewalks, shared-use paths, and roadways. Agencies can also refer to the Federal Highway Administration’s [Guide for Maintaining Pedestrian Facilities for Enhanced Safety](#).

Safety – Analysis, Education, Enforcement, and Encouragement

Safety is another deficiency for both the pedestrian and bicyclist. For example, while crashes involving pedestrians make up only one percent of the region’s total crashes, pedestrians account for 22 percent of fatalities. Chapters 2 and 3 document the case of bicycle and pedestrian vulnerabilities and safety issues. After careful analysis, SEMCOG, MDOT, and other agencies will not only need to consider engineering solutions to solve safety problems, but also education, enforcement, and encouragement activities.



Education

Lack of education on the “Rules of the Road” is a deficiency in both the pedestrian and bicycle systems. Bicyclists and pedestrians, as well as drivers and law enforcement, need to be informed about the safest ways to share the road. Opportunities to educate these stakeholders include informational materials and programs such as online videos and social media, as well as public awareness campaigns, such as [bike to work day](#).

Education starts young. Programs like Safe Routes to School and Safety Towns can help teach kids the rules of the road. These programs continue through adulthood and include efforts by MDOT, including production of several [videos](#) that provide clear, concise guidance to bicyclists, pedestrians, and drivers on how to safely share the transportation system. SEMCOG has created a [simple tri-fold brochure on sharing the road](#) that it distributes at many local events.

The League of Michigan Bicyclists also continues to help [educate law enforcement officers](#) and others on bicyclists’ legal rights to the road. Law enforcement can participate in targeted

outreach campaigns to focus on areas with problems, new types of infrastructure, newer policies, or student populations in schools and universities.

SHARE MI ROADS

Bicyclists are involved in less than 1% of all traffic crashes. Proportionally, however, they represent a greater number of fatalities than any other group of roadway users. This is why it is especially important for drivers to always pass bicyclists at a safe distance and yield to them before making turns.

Each year approximately **2000 bicyclists** are injured in crashes in Michigan, with approximately 25 of these crashes resulting in fatalities. While engineering improvements implemented as a result of **Complete Streets** will help create a safer environment for bicyclists who use Michigan roads, more must be done in regards to education to help drivers better understand how to safely interact with bicyclists.

Due to time constraints within the existing drivers education curriculum, young drivers currently receive limited training



Encouragement campaigns like the [Commuter Challenge](#), Dump the Pump, Safe Routes to School, and group rides like Slow Roll Detroit and the Tour De Troit can help get more people riding, which helps everyone be more aware that bicycles and pedestrians are on our roadways.

Connectivity

The connectivity of the nonmotorized system includes the ability to use the system without gaps in the network. It also includes connectivity of the nonmotorized system to other important assets of the region, such as other transportation modes (e.g., transit, rail) and linking to regional parks and downtowns.

Deficiencies within the network itself can be divided into areas for local, county, and regional connectivity. While this plan documents gaps from the three different levels, the plan's priority is to identify regional gaps in the system. Through stakeholder meetings, major corridors for regional nonmotorized travel were identified, and serve as primary regional arteries that connect to other more local routes. It includes major projects that counties and communities have prioritized, as well as corridors MDOT and SEMCOG believe provide greater regional connectivity. Regional corridors account for approximately 1,000 miles of the system of which, approximately 440 or 44 percent is a gap. Maps of these corridors can be viewed starting on page 64 of this chapter.

Analysis and Tools Available to Address Deficiencies

In order to address deficiencies in the network and prioritize investment, analysis and tools were developed to assist at the regional, county, and local levels.

Some geographic areas have more opportunity for bicycle and pedestrian facilities. These areas might be able to shift more automobile trips to walking, biking, or transit. This analysis was based on the following:

- **Short trips.** SEMCOG's Bicycle User Survey and other research show most bicycle trips are around 3-5 miles. Pedestrian trips are typically less than one mile. Areas with a higher number of short trips will likely have more potential bicycle or pedestrian trips. Although this plan also targets commuters, the majority of people use nonmotorized travel for purposes other than commuting.
 - 80 percent of all trips in region are under 10 miles
 - 60 percent of all trips are five miles or less
 - 42 percent of all trips are three miles or less
 - 14 percent of trips are one mile or less
- **Proximity to population centers.** People will bike or walk to visit other people.
- **Proximity to commercial centers.** People like to walk or bike to stores and other business or service establishments.
- **Density of street intersections.** The more street intersections in the area, the smaller the neighborhood blocks are, leading to more direct routes of travel, which helps makes bicycle and pedestrian travel a more viable option for travel.
- **Access to transit.** Transit and nonmotorized trips are complementary modes of travel, helping extend the range of each. Areas with transit service and high passenger stop locations are more likely to have a need for adequate walking and biking infrastructure.
- **Target populations.** Certain characteristics of people are good indicators of how likely they are to walk or bike for trip making and not just recreation. Those who tend to use this mode include seniors, millennials, knowledge-based workers, low-income households, and households with no or limited access to an automobile.

While these areas include a small portion of Southeast Michigan (12 percent of total acres), it accounts for the majority of population and employment (61 percent and 58 percent respectively). Table 10 highlights these opportunity areas by county. Figure 24 shows that counties with lower amounts of areas of opportunities still need to connect to larger recreational facilities. Readers can also visit SEMCOG's website for larger more detailed versions of the map at <http://www.semco.org/NoMoPlan.aspx>

Table 10

Opportunities for Increased Nonmotorized Trips by County

County	Total Acres	Total Opportunity Acres	Opportunity Areas Percent
Detroit	89,092	59,397	66.7%
Livingston	374,635	3,186	0.9%
Macomb	309,725	73,370	23.7%
Monroe	356,799	7,255	2.0%
Oakland	580,504	80,499	13.9%
St. Clair	464,482	9,373	2.0%
Washtenaw	462,324	21,449	4.6%
Out-Wayne	306,621	87,658	28.6%
Wayne	395,712	147,055	37.2%
Total	2,944,182	342,187	11.6%

Source: SEMCOG

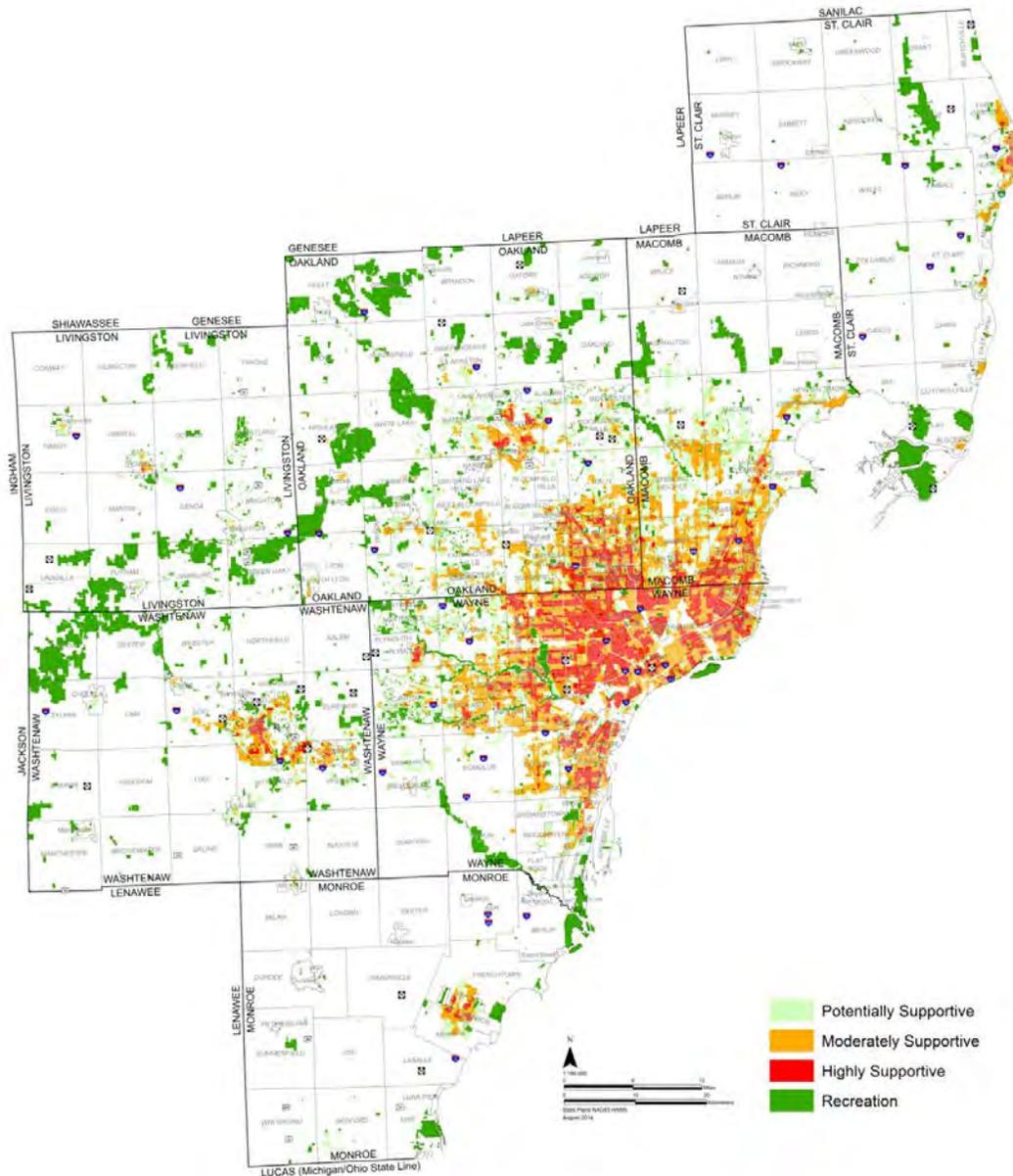
Based on SEMCOG analysis, only 65 percent of the total supportive areas are accessible to an existing or planned nonmotorized facility. While many of these areas are accessible to pedestrians via the sidewalk network, this is not conducive for bicycle travel. Figure 25 shows that while there has been sufficient effort and planning centered on connecting the nonmotorized network to recreation areas and cross county connections, there has been less attention given to accessibility within these supportive areas.

Bicycling access can be increased in these supportive areas by creating bicycle circulation plans that use Southeast Michigan's shared roadway network (most roads, with the exception of freeways). Many of these roads can be highly comfortable for bicycle travel. Communities can use SEMCOG's bicycling comfort level analysis as one tool for identifying these roadways. This tool can also be used to identify roadways that could use improvements. Together with SEMCOG's regional nonmotorized facility database and its Areas of Opportunity analysis, the bicycle friendly roadways database can help provide greater access and connectivity between population/employment/commercial centers and the larger regional nonmotorized network. SEMCOG can help communities use these tools through its technical assistance programs.

Where there is a need for dedicated space along roadways, communities could look at the possibility of road diets, as documented in the Regional Transportation Plan and [Green Infrastructure Vision for Southeast Michigan](#), which identify roadways with potential excess capacity. In such a situation, there would be little to no negative effects on automobile travel. In fact, road diets are a [FHWA proven safety countermeasure](#) and studies have shown an actual safety increase for automobiles, bicycles, and

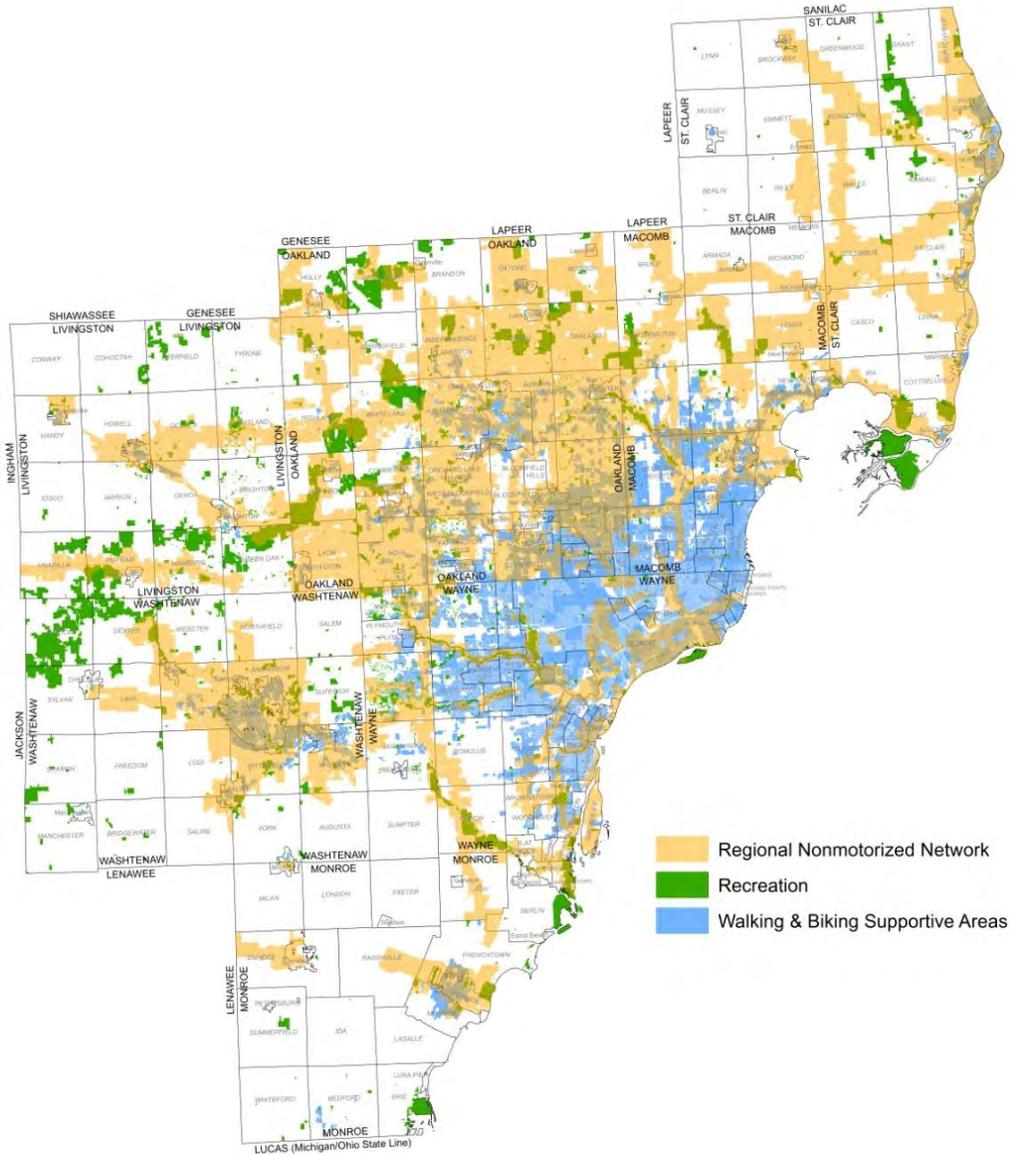
pedestrians. Additionally, through a road diet there may be room for rain gardens or other elements of green streets.

Figure 24
Areas of Opportunity for Increased Nonmotorized Trips



Source: SEMCOG

Figure 25
Regional Nonmotorized Network Compared to Recreation and Walking and Biking Supportive Areas



Source: SEMCOG

Regional Corridors and Gaps in the Network

This plan sets up a comprehensive, but targeted approach to connecting the region's nonmotorized system. It involved three areas of emphasis – local, county, and regional connectivity.

Through data analysis and a series of outreach and stakeholder meetings, SEMCOG and MDOT identified major corridors for regional nonmotorized travel. These corridors were mentioned often in meetings and serve as the primary arteries that connect to other more local corridors. They are often an aggregation of county corridors (e.g., Bridge to Bay Trail, Macomb Orchard Trail, and the Clinton River Trail). Sometimes they use parks, local community facilities, or bicycle friendly roadways to provide regional connectivity. Some of these regional corridors could also serve as the route for state and national interests, such as the Showcase Trail, Great Lake to Lake Trail, or the U.S. Bicycle Route System.

The following list identifies Southeast Michigan's regional corridors as well as some of the major gaps within them. Maps have been created that show these corridors and their relationship to the rest of the network. Readers can also visit SEMCOG's website for larger more detailed versions of the maps at: <http://www.semocog.org/NoMoPlan.aspx>. This list and the maps should be considered part of a living document that will be updated periodically. SEMCOG and MDOT anticipate that there will be changes in these corridors over time. Facilities may need upgrading to accommodate more users. Portions of a corridor may change if other routes prove more feasible. Regional corridors may be added. Communities are encouraged to coordinate their bicycle and pedestrian planning efforts with this document, strengthening local, county and regional efforts.

Livingston County

1. **Grand River Corridor** (Kensington Road to Wallace Road)
 - Fill gaps with some form of facility-shared use path, shoulder, bike lane, sidewalk, etc
 - Connection to Ingham & Oakland Counties
 - Howell prioritizes segment between Highlander Way and VG's grocery store
2. **9 Mile (M-136) Corridor** (Lakelands Trail to US-23 Corridor & US-23 to Dixboro Road)
 - Connects Lakelands Trail to Island Lake, via US-23 Corridor
 - Part of Great Lake to Lake Trail
 - Connects to Lakelands Trail to South Lyon Trail
 - Connects Washtenaw County (and Village of Whitmore Lake) via existing facility on Lemen
 - Potentially connects to Ann Arbor via Dixboro Road Corridor in Washtenaw County
3. **US-23 Corridor** (Whitmore Lake—9 Mile to Silver Lake; Fieldcrest—Silver Lake to Lee Road)
 - Green Oak Township is improving corridor for bike/ped access with shared use side path
 - Connects to Island Lake Recreation Area via Lee Road Sidewalk
 - Connects to Kensington Metropark and Oakland County via Island Lake path
 - Connects to Great Lake to Lake Trail
 - Need safer crossing over US-23
 - Ideally at Silver Lake
 - No bicycle or pedestrian access via roundabouts at Lee Road Interchange
4. **High Ridge Road & Kensington Road** (Kensington Metropark to Grand River; Grand River to Island Lake)
 - Uses existing bike/pedestrian bridge over I-96 on Kensington
 - Connects Grand River to Kensington Metropark

- Provides connection to park for northern side of Brighton Area
 - Provides connection from north Brighton area to southern Brighton Area
 - Connects to Great Lake to Lake Trail
- 5. Maltby Road Corridor (US-23 Corridor to Bauer Road)**
- Good corridor for connecting of Island Lake, Brighton State Recreation Area, and other activity centers
 - Via connection to Bauer Road, would connect to downtown Brighton and Challis Road
 - Would benefit from a bike/pedestrian bridge over I-96
 - Would connect to Great Lake to Lake Trail
- 6. Chilson Road Corridor (Cunningham Lake Road to Latson Road)**
- Connects Howell to Brighton State Recreation Area
 - Use Latson Road paths and crossing of I-96
 - Potential to extend Latson Road path to M-59 Cross Town Trail
- 7. Pickney Road Corridor**
- Connects Howell to:
 - Pickney
 - Lakelands Trail
 - Dexter & Border to Border Trail
- 8. Crosstown Trail (Grand River to Latson Road)**
- Fill gaps in trail
 - Connects to Grand River via multiple options:
 - Michigan (better because of existing path on M-59)
 - Eager (better because of proposed path on M-59)
 - Latson (would require extension of path on M-59 & Latson Road)
 - Utility Corridor, just east of Latson (would require extension of path on M-59 & utility permit)
- 9. Argentine and Whitaker Roads**
- Existing and planned routes in Genesee County could be brought into Livingston County via these roads
- 10. I-96 (west of Howell)**
- Lack of facilities and good crossings

Macomb County

1. 70 Mile Loop System

- **Macomb Orchard Trail** (City of Richmond)
 - Extend trail further into Richmond
 - At least to Oak Street
 - Find connection to County Line Road
 - Potentially via Memphis Ridge Road
 - Part of Great Lake to Lake Trail
- **County Line Road** (City of Richmond to New Baltimore)
 - Connects Macomb Orchard Trail to Bridge to Bay Trail
 - County is looking at building a side path along road
 - Bridge over I-94 at 27 Mile is not bike/ped friendly
 - Connects to Jefferson Corridor
 - Part of Great Lake to Lake Trail
 - Significant gap at I-94
 - Gratiot Corridor could serve as a connection between Richmond and New Baltimore, until gap could be filled
 - Gratiot Avenue-New Haven Road-Baker Road-Hobarth Road-County Line Road
- **Northern Jefferson Corridor** (Metropolitan Parkway to County Line Road)
 - Connects Mt. Clemens to Anchor Bay
 - Connection to Salt River Blue Way
 - Connection to Bridge to Bay Trail
 - Part of Great Lake to Lake Trail
 - Part of Route of Underground Railroad Bike Route
 - Likely part of U.S. Bicycle Route 25
 - Large gap near Selfridge Air Force Base
 - Will likely rely on Gratiot Corridor, in the short-term, to get around the base
- **Freedom Trail** (Dequindre to Hayes)
 - Extend via Metropolitan Parkway into Troy and Oakland County
 - Find connection to Conner Creek Greenway in Detroit
 - Likely part of Showcase Trail
- **Dodge Park Complex:** Parks and roads along Clinton River (Dequindre to Metropolitan Parkway)
 - Connection of Clinton River Trail & Freedom Trail via parks along Clinton River
 - Part of Showcase Trail

2. Van Dyke Corridor (8 Mile to 14 Mile or Red Run)

- Connect Conner Creek Greenway and Detroit via Van Dyke through Warren and Centerline and connect to 70 Mile Loop System
 - Part of Showcase Trail
 - Potentially use Red Run for last part of route

3. Red Run (Van Dyke to Metropolitan Parkway)

- Connect Van Dyke Corridor and Freedom Trail

- Could use 14 Mile and Schoenherr, in short term
 - Part of Showcase Trail
- 4. Southern Jefferson Corridor** (8 Mile to Metropolitan Parkway)
- Connects Macomb County to Grosse Pointes & Detroit
 - Connection to 70 Mile Loop System
 - Uses Clinton River Spill way for connection to Metro Parkway
 - Route of Underground Railroad Bike Route
 - Likely part of U.S. Bicycle Route 25
- 5. Gratiot Corridor** (8 Mile to Mount Clemens and Richmond)
- Many communities desire better bikeability and walkability
 - Eastpointe, Roseville, Clinton Township, Mount Clemens, and New Haven
 - Can connect the southern and northern Jefferson Corridors until the gap by Selfridge Air Force Base is filled
 - Can connect Richmond and New Baltimore and help complete the 70 Mile Loop until gaps on County Line Road are filled
 - Gratiot Avenue-New Haven Road-Baker Road-Hobarth Road-County Line Road
 - Connections will complement potential Bus Rapid Transit
- 6. Clinton Township**
- Has many planned projects to provide connectivity into major routes, including:
 - Connect Fraser Center to Partridge Creek
 - Garfield, Clinton River, Canal, Romeo Plank,
 - Connect Mount Clemens to Partridge Creek and Hall Road Corridor
 - Cass Avenue to Romeo Plank
 - Little Mack Corridor could connect Freedom Trail to 14 Mile and the Jefferson Corridor
- 7. M-19 Memphis Ridge Road** (Division Road to Northern Memphis Village Limits)
- Connects 70 Mile Loop System to U.S. Bicycle Route 20
 - Connects Richmond, Memphis, Emmet, and Yale

Monroe County

1. **Dixie Highway** (Waterworks Road to the Huron River/County Border)
 - Frenchtown Township has bike lane and paved shoulder projects
 - Connects Downriver Linked Greenways and I-275 Metro Trail to City of Monroe, Sterling State Park and River Raisin Heritage Trail
 - Alternative Route to costly renovation of I-275 Metro Trail in Monroe County
 - Part of potential U.S. Bicycle Route 25
2. **M-50 Corridor** (North County Line Hwy to Rasinville Road)
 - Connects the City of Monroe to Village of Dundee & Lenawee County
 - Potentially upgrade shoulders to bike lanes or add signage
3. **River Raisin Heritage Trail**
 - Connect Monroe County Community College to Existing Trail
 - Circle route back to town
 - Rasinville, Dunbar, Herr, and 7th Street
 - Trail not wide enough for shared use in some parts
 - Upgrade or provide on-street route for bicycles
4. **I-75 at Laplaignance Road and Albain Road**
 - Not bike/ped friendly because of free flow ramps
 - Township plans could be used to connect Monroe to Luna Pier
5. **I-75 at Newport Road**
 - Should have accommodations for bikes
 - Connects Dixie to Nike Park and I-275 Metro Trail
6. **U.S. Bicycle Route 25** (south of City of Monroe to Toledo, Ohio)
 - M-125 to Lakeside; Lakeside to Lewis; Lewis to Dean; Dean to Douglass
 - Many connections in Bedford Township
7. **Luna Pier Road Corridor** (M-125 to Harold or Lakeside Drive)
 - Connects Luna Pier to U.S. Bicycle Route 25
 - Connects Luna Pier with Toledo, Monroe, and Downriver Linked Greenways
8. **LaSalle, Monroe, Frenchtown Townships**
 - All have plans for nonmotorized travel (working with City of Monroe)
9. **Memorial Hwy** (Ohio-Michigan State Line to US 223)
 - Connect Sylvania, Ohio, Whiteford Township, and Lenawee County
10. **I-275 Metro Trail** (Post Road to Wayne County Border)
 - Consider rebuilding if contiguous segment in Wayne County, south of Willow Metropark, is rebuilt and funding situation changes

Oakland County

1. Polly Ann Trail Corridor

- Connection to Paint Creek Trail
- Part of Showcase Trail

2. Clinton River Trail (Rochester Area)

- Better bicycle connections Downtown Rochester
- Part of Showcase Trail
- Part of Great Lake to Lake Trail

3. Paint Creek Trail

- Connection to Polly Ann Trail
- Better bicycle connections to Downtown Rochester and Clinton River Trail
- Part of Showcase Trail

4. West Bloomfield Trail

- Fill gaps
- Part of Great Lake to Lake Trail

5. Airline Trail

- Significant gap with major activity
- Part of Great Lake to Lake Trail

6. Huron Valley Trail

- Fill gaps
- Part of Great Lake to Lake Trail

7. South Lyon Trail

- Connected to Great Lake to Lake Trail
- Can provide connections to southern Livingston County and Lakelands Trail via 9 Mile in Livingston County

8. Kensington Metro Park (High Ridge Road-Path to Kensington Road)

- Connects Huron Valley Trail to Grand River Corridor in Livingston County via bike/ped bridge over I-96 on Kensington Road
- Lakelands Trail is accessible via Kensington Road
- Part of Great Lake to Lake Trail

9. M-5 Metro Trail

- Fill gaps
- Connects to Great Lake to Lake Trail

10. Woodward Avenue Corridor (8 Mile to Woodward Loop)

- Detailed Complete Streets study underway
- Coordinates with proposed Bus Rapid Transit
- Connects Detroit to Pontiac & potentially Great Lake to Lake Trail

11. Grand River Corridor (8 Mile to Orchard Lake)

- Provide connections from Redford/Old Redford to Farmington-Farmington Hills Corridor Improvement Area

12. 10 Mile Corridor

- Fill gaps
- Links South Lyon, Lyon Township, Novi
- Connects to Great Lake to Lake Trail
- Potential connection to Livingston County & Lakelands Trail

13. Several communities asking for help with major gap filling as part of their nonmotorized plans

- City of Pontiac
 - Connect existing paths & trails into the city
- City of Troy
- City of Novi

14. Connections to Detroit from:

- Ferndale
- Southfield

15. M-15 Corridor

- Potential Connection from Lapeer County (Village of Goodrich) to Clarkston
- Considered a Regional Corridor by MDOT Bay Region

St. Clair County

1. **County Line Road** (City of Richmond to New Baltimore)
 - Connects Macomb Orchard Trail to Bridge to Bay Trail
 - County is looking at building a side path along road
 - Bridge over I-94 at 27 Mile is not bike/ped friendly
 - Connects to Jefferson Corridor
 - Part of Great Lake to Lake Trail
2. **Bridge to Bay Trail** (County Line Road to Blue Water Bridge)
 - Fill small gaps and upgrade facilities
 - Wayfinding
 - Need for better crossing into Canada
 - Part of Great Lake to Lake Trail
 - Part of U.S. Bicycle Route 20
 - Potentially part of U.S. Bicycle Route 25
3. **Wadhams to Avoca Trail** (Yale Road to Bridge to Bay Trail)
 - Continue to Yale & Sanilac County
 - Could be part of U.S. Bicycle Route 20 in future
 - Could connect to Bridge to Bay Trail via Griswold
4. **U.S. Bicycle Route 20** (Marine City/Sarnia Ferry to Fisher Road)
 - Need for signage throughout county and beyond
 - Better circulation in Marine City
5. **M-25 Corridor** (Blue Water Bridge to Fisher Road)
 - Connect Bridge to Bay Trail to Sanilac County
6. **Fred Moore Hwy Corridor** (County Line Road to King Road)
 - Can be more direct connection of Macomb Orchard Trail to City of St. Clair and northern section of Bridge to Bay Trail.
7. **Underground Railroad Bicycle Route**
 - Uses the following roads:
 - Dixie Hwy, Shea Road, Marsh Road, and Broadbridge Road
 - Uses Bridge to Bay Trail
 - Could potentially benefit from more bicycle improvements

Washtenaw County

1. **Border to Border Trail** (Lakelands Trail to Wayne County Border)
 - Multiple road and trail corridors to be used
 - Northwest Section (Lakelands Trail to Ann Arbor)
 - Lakeview, Dexter –Pinckney, Dexter-Ann Arbor, and Dexter Road
 - Uses paved shoulders and bike routes
 - Paths in Hudson Mills and other parks along Huron River
 - Many gaps to fill
 - Southeast Section (Ann Arbor to Rawsonville and Huron River Road)
 - Paths and bike routes along Fuller Road; paths in Gallup Park and along Huron River Road, McAuley Road, Spurline Road; multiple routes through Ypsilanti; path along Grove Road, Rawsonville Road
 - Wayfinding signage needed in Ann Arbor and Ypsilanti as to direction on the Border to Border Trail
 - Could use on-road bike routes until gaps in paths are completed
 - I-94 crossing issues at Huron and Grove Roads
 - Pavement issues and lack of pedestrian facilities on Huron River Road in Wayne County
 - Connects Great Lake to Lake Trail to Dexter, Ann Arbor, and Ypsilanti area
 - Connects Washtenaw with Livingston and Wayne Counties
 - Connects to metro parks, I-275 Metro Trail and Downriver Linked Greenways System
 - Part of Showcase Trail
2. **Underground Railroad Bicycle Route**
 - Uses the following roads:
 - Jordan, Macon, Michigan, Ann Arbor, Ann Arbor-Saline, Extile, Lohr, Ellsworth, State, and Fuller
 - Uses the Border to Border Trail
 - Could potentially benefit from more bicycle improvements
 - Connects Ann Arbor with City of Saline and Lenawee and Monroe Counties
3. **Whitmore Lake Road Corridor**
 - Whitmore Lake Road-Barton Road to Kearny
 - Existing County Bike Route
 - Coyle and 6 Mile Road (Whitmore Lake Road to Main Street)
 - MDOT putting in roundabout interchange
 - Main Street (6 Mile Road to 8 Mile Road)
 - Existing County Bike Route
 - Connects Ann Arbor Area to Whitmore Lake and Livingston County
 - Connects Lakeland Trial to Border to Border Trail
 - Connects to potential WALLY Station
4. **Plymouth Road Corridor** (Depot Road to Wayne County border)
 - Existing County Bike Route
 - Connects Ann Arbor with Plymouth
 - Connects Border to Border Trail with Hines Drive Bikeway and I-275 Metro Trail

5. **US 12/Michigan Avenue Corridor** (Lenawee County Line to Napier Road)
 - Connects Saline, Pittsfield Township, and Ypsilanti with Canton Township
 - Connects Lenawee, Washtenaw, and Wayne Counties
 - Connects to Underground Railroad Bicycle Route, Border to Border Trail, and I-275 Metro Trail
 - Potentially part of U.S. Bicycle Route 36

6. **Jackson Road Corridor** (Jackson County Line to Huron Street)
 - Existing County Bike Route
 - Connects Chelsea with Ann Arbor

7. **M-52 Road Corridor** (Lenawee County Line to Jackson Road)
 - Existing County Bike Route
 - Connects Manchester with Chelsea

Wayne County

1. **Lower Rouge River Corridor** (Hines Drive to Jefferson)
 - Connects Dearborn to Downriver Delta, Downriver Linked Greenways, and Detroit Greenways Projects
 - Extension of Lower Rouge Gateway to Southwest Detroit along Outer Drive
2. **Inner Circle Greenway**
 - Connects to planned Dearborn network to Detroit
 - Via Lonyo and/or Tireman
3. **Outer Drive Corridor** (Warren to Jefferson)
 - Connects Lower Rouge River Corridor to Downriver Delta Communities
 - Links Hines Drive Bikeway and Rouge Park
 - Potential to connect to Green Infrastructure work in Northwest Detroit
4. **Hines Drive Bikeway**
 - More access points needed to communities
5. **Downriver Linked Greenways**
 - Made of several corridors:
 - **East-West Connector** (Lower Huron Metropark to Lake Erie Metropark)
 - Wayfinding signage in Flat Rock, Gibraltar, and to Monroe
 - Part of Showcase Trail
 - **Old Fort/Dixie Hwy Corridor**
 - Connects East-West Connector to Dixie Hwy and City of Monroe
 - Part of Potential U.S. Bicycle Route 25
 - **North-South Connector-Jefferson Corridor** (East-West Connector to Detroit)
 - Connects East West Connector, Metro Parks, and I-275 Metro Trail to Detroit River International Wildlife Refuge, Grosse Ile, Trenton, Wyandotte, Downriver Delta Communities and Detroit
 - Part of Showcase Trail
 - Part of Potential U.S. Bicycle Route 25
 - **Grosse Ile Parkway, East River and West River Corridors**
 - Connects Grosse Ile to North-South Connector
 - Part of Showcase Trail
 - **Downriver Delta Greenways**
 - Connects Rouge River, Southwest Detroit and Downriver Linked Greenways
 - In addition to Fort, Jefferson and Outer Drive, it includes
 - Visger, Schaefer, and other east/west connections to both river corridors
6. **I-275 Metro Trail** (Huron River Road to I-94)
 - Connects metroparks, and other Downriver Linked Greenways to refurbished trail in Western Wayne County
 - Part of Showcase Trail
 - Consider rebuilding segment south of Huron River Road if funding situation changes
7. **Connection between Border to Border Trail & I-275 Metro Trail**

- Likely via Huron River Road (pavement in bad shape)
 - Connect to Textile or Grove via Rawsonville
 - Connect to Haggerty & Lower Huron Metro Park for connection to I-275
 - Part of Underground Railroad Bike Route
 - Part of Showcase Trail
- Can also use Michigan Avenue
 - Connects Saline, Pittsfield Township, and Ypsilanti with Canton Township
 - Connects Lenawee, Washtenaw, and Wayne Counties
 - Connects to Underground Railroad Bicycle Route, Border to Border Trail, and I-275 Metro Trail
 - Potentially part of U.S. Bicycle Route 36

8. Western Wayne Nonmotorized Group

- Many communities identifying extensive routes, not in plans, but connecting into adjacent communities; potential for collaborative planning.
 - **Redford Township**
 - Desires connections to Hines Drive Bikeway, Detroit, Southfield and Livonia via wayfinding signage, routing, and neighborhood greenways
 - **Livonia**
 - N-S route connecting Livonia to Hines Drive Bikeway and Farmington Hills
 - Farmington or Merriman makes sense since they connect path in Farmington Hills
 - **Garden City**
 - Plan in development, connecting parks & activity centers to Hines Drive via
 - Venoy, Henry Ruff, , Helen (onroad)
 - Meriman, Middlebelt, Warren, and Cherry Hill (offroad)
 - **Plymouth Township**
 - North Territorial Road
 - Could also include Wayne, Westland, Inkster, and Dearborn Heights
 - Connections to surrounding trails and intermodal stations

9. Underground Railroad Bicycle Route

- Uses the following roads:
 - Huron River Drive, Pennsylvania Road, and Jefferson Avenue
- Could potentially benefit from more bicycle improvements

10. Michigan Avenue Corridor (Washtenaw County Border to City of Detroit)

- Provides connections to many town centers across Southeast Michigan including Greater Downtown Detroit, Dearborn, Inkster, and Wayne in Wayne County; Ypsilanti and Saline in Washtenaw County
- Coordinates with proposed Bus Rapid Transit Study
- Coordinates with proposed Ann Arbor-Detroit Commuter Rail Project
- Could coordinate with plans for local community bike sharing programs in Detroit and Dearborn
- Potentially part of U.S. Bicycle Route 36

Detroit**1. Inner Circle Greenway**

- Composed of:
 - Detroit River Walk
 - Dequindre Cut
 - Hamtramck Connector
 - Conrail Railroad acquisition
 - Southwest Detroit Greenway
- Connects Detroit to Hamtramck, Highland Park, and Dearborn
 - Via planned Dearborn system, connects to Hines Drive Bikeways, I-275 Metro Trail,
 - Via Southwest Detroit, connects to Downriver Communities

2. Conner Creek Greenway Corridor (Jefferson Avenue to 8 Mile Road)

- Connects Macomb County to Belle Isle
- Part of the Showcase Trail

3. East Jefferson Corridor (Detroit River Walk to 8 Mile Road)

- Connects Downtown Detroit to Belle Isle, the Grosse Pointes, Macomb and St. Clair County
- Part of the Showcase Trail
- Part of the Underground Railroad Bicycle Route
- Part of potential U.S. Bicycle Route 25

4. Cass Corridor (West Congress to Grand Boulevard)

- Connects New Center Area to River Walks
- Accommodates bicycles traveling the lower Woodward Corridor
 - Links to Amtrak/Ann Arbor-Detroit Commuter Rail Station and Rosa Parks Transit Center, M-1 Rail, and Woodward Bus Rapid Transit Projects
 - Extends Midtown Loop and Link Detroit Projects

5. Michigan Avenue Corridor (City limits to Cass Avenue)

- Connects Detroit to Dearborn
- Connects to Rosa Parks Transit Center
- Connects to Southwest Detroit via Central/Dix Vernor
- Potentially part of U.S. Bicycle Route 36
- Coordinates with proposed Bus Rapid Transit Study

6. Fort Street/West Jefferson Corridor (City Limits to Southwest Detroit)

- Connects Downriver Delta and Downriver Greenways Communities to Greater Downtown Detroit
- Connects to proposed Downriver Linked Greenways North-South Connector
- Connects to Historic Fort Wayne
- Part of the Showcase Trail
- Part of the Underground Railroad Bicycle Route
- Part of potential U.S. Bicycle Route 25
- Rouge River bridges could use better accommodations for bicyclist

7. **Gratiot Corridor** (Woodward to 8 Mile Road)
 - Connect Greater Downtown Detroit to Macomb County
 - Walkability assessment shows great need for consistent treatments and wayfinding
 - Coordinates with proposed Gratiot Bus Rapid Transit Study
8. **Detroit River Walk** (Existing River Walk to Belle Isle)
 - Connects downtown Detroit to Belle Isle
 - Part of the Showcase Trail
9. **Connections to Canada** desired on:
 - New International Trade Crossing (NITC)
 - Ferry
 - Others like Ambassador Bridge or tunnel
 - Part of potential U.S. Bicycle Route 25
10. **Woodward Avenue Corridor** (Riverfront to 8 Mile)
 - Detailed Complete Streets study underway
 - Coordinates with proposed Bus Rapid Transit
 - Connects to Oakland County and Great Lake to Lake Trail
11. **Outer Drive Corridor** (Warren to Van Dyke)
 - Links Hines Drive Bikeway to Conner Creek Greenway
 - Connects to Downriver Delta, Downriver Linked Greenways, with large sections of Detroit
 - Potential to connect to green infrastructure work in Northwest Detroit
12. **Underground Railroad Bicycle Route**
 - Uses the following roads:
 - Jefferson Avenue, Visger Road, Fort Street, Woodmere, Vernor, Michigan Avenue, Woodward Avenue, Lafayette Street, East Jefferson Avenue, and Lake Shore Drive
 - Could potentially benefit from more bicycle improvements
13. **Grand River Avenue Corridor** (8 Mile to Cass Avenue)
 - Connects Detroit to Redford and Oakland County
14. **Other issues related to connectivity:**
 - Parking for all types of bicycles
 - Greater Downtown Bike Sharing Program
 - Connections to Ferndale and Southfield
 - Showers
 - Maintenance
 - Link nonmotorized system to green infrastructure work

Figure 26
Regional Nonmotorized Corridors and Gaps, Livingston County

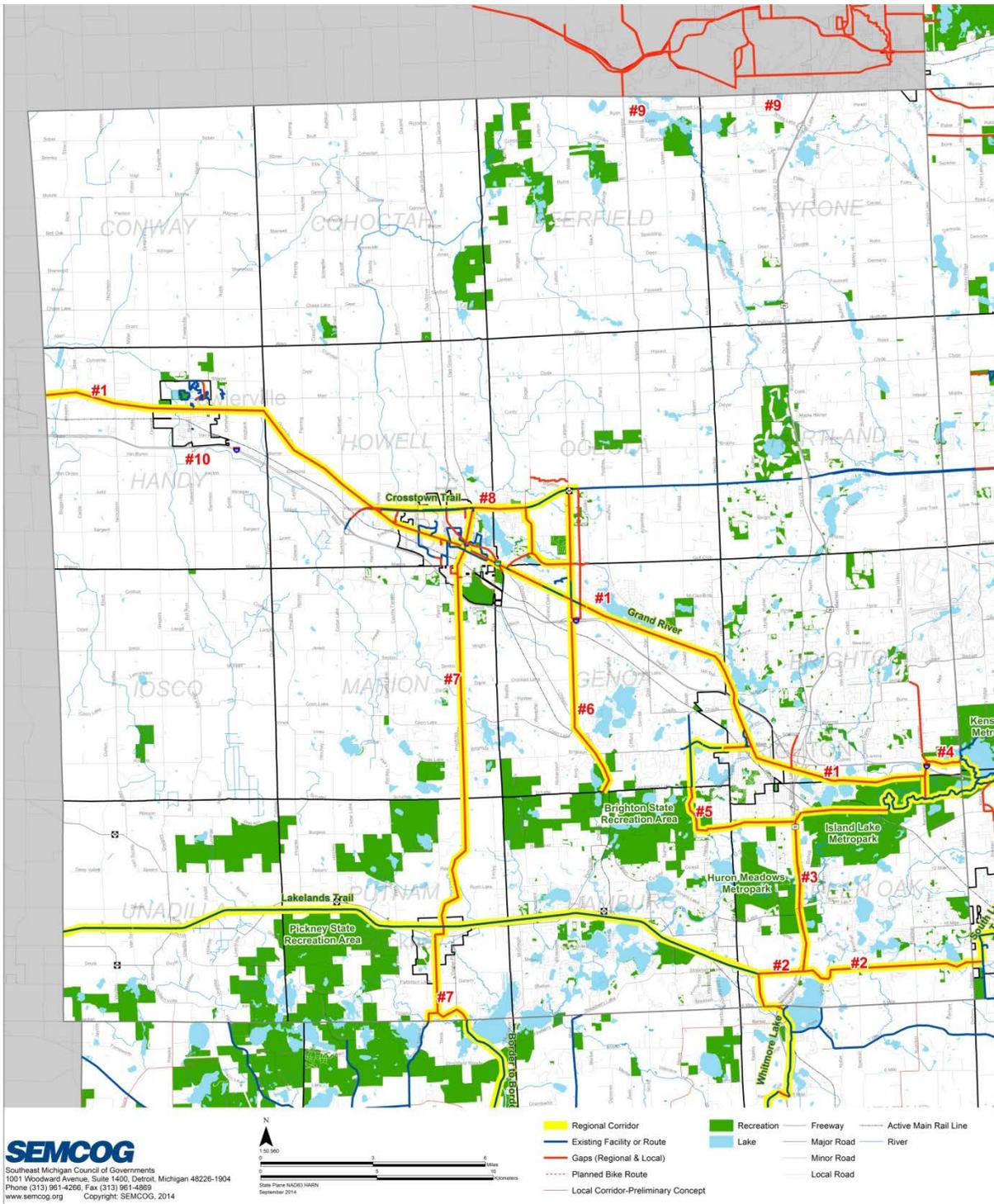


Figure 27

Regional Nonmotorized Corridors and Gaps, Macomb County

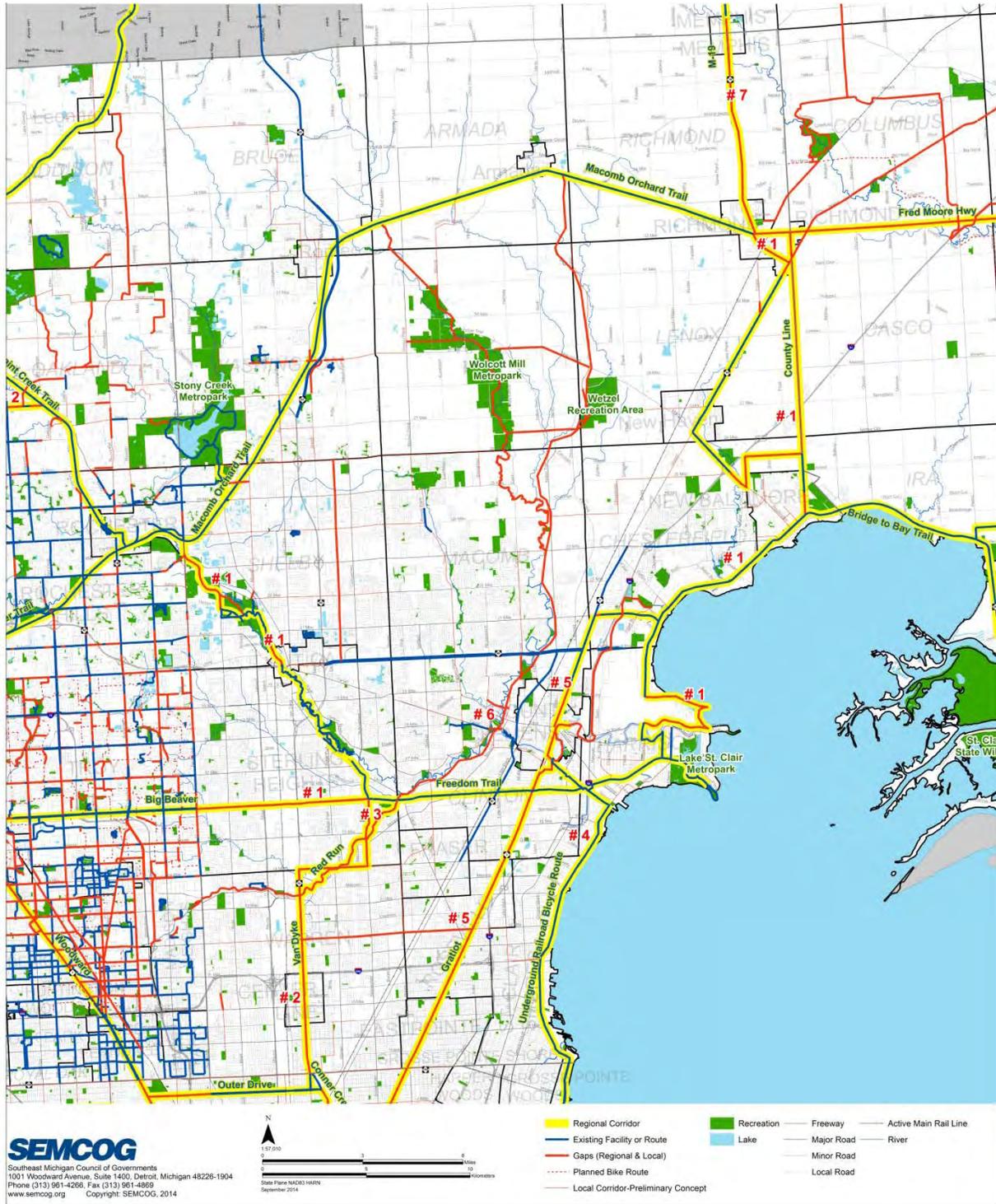


Figure 28
Regional Nonmotorized Corridors and Gaps, Monroe County

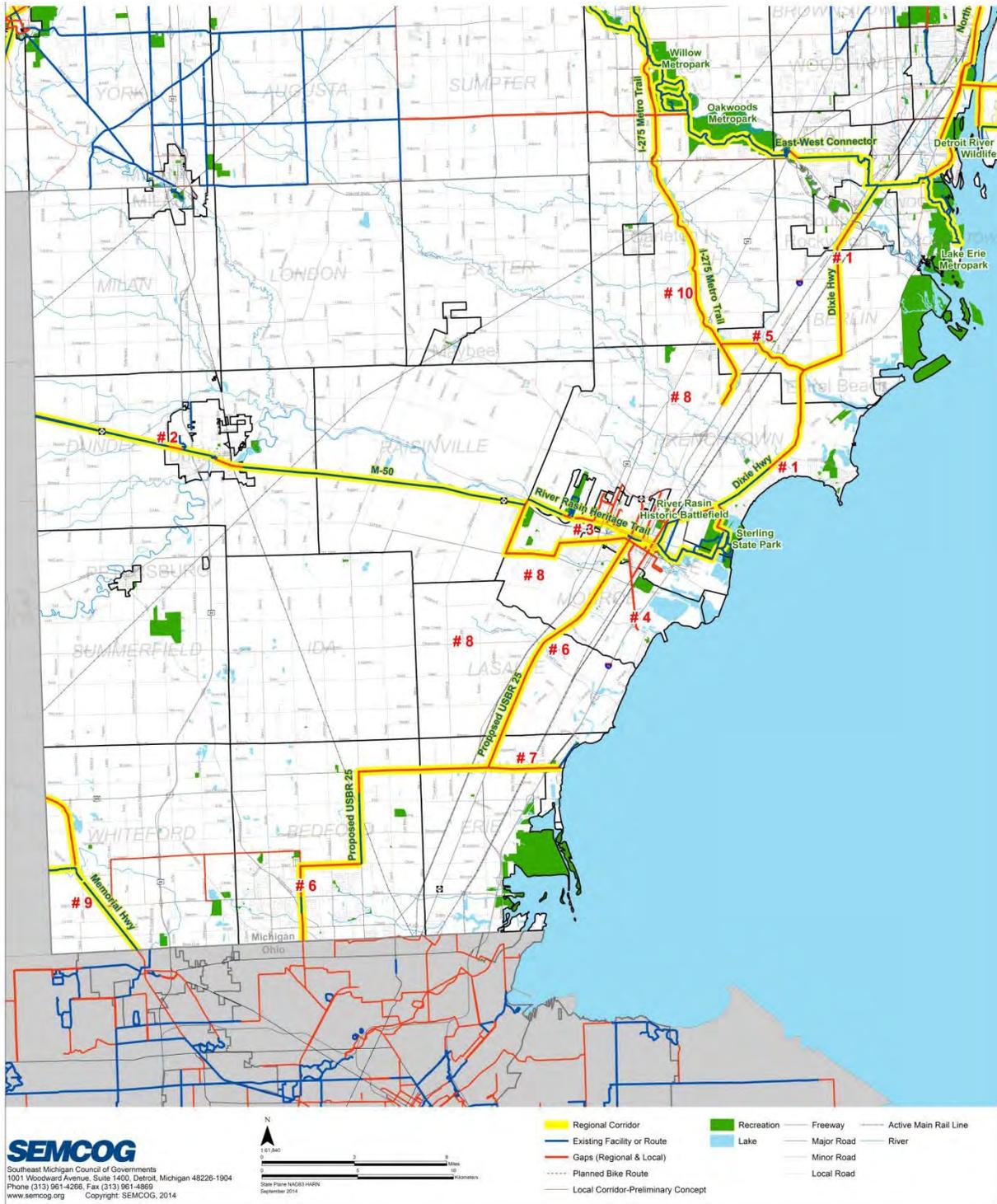


Figure 29
Regional Nonmotorized Corridors and Gaps, Oakland County

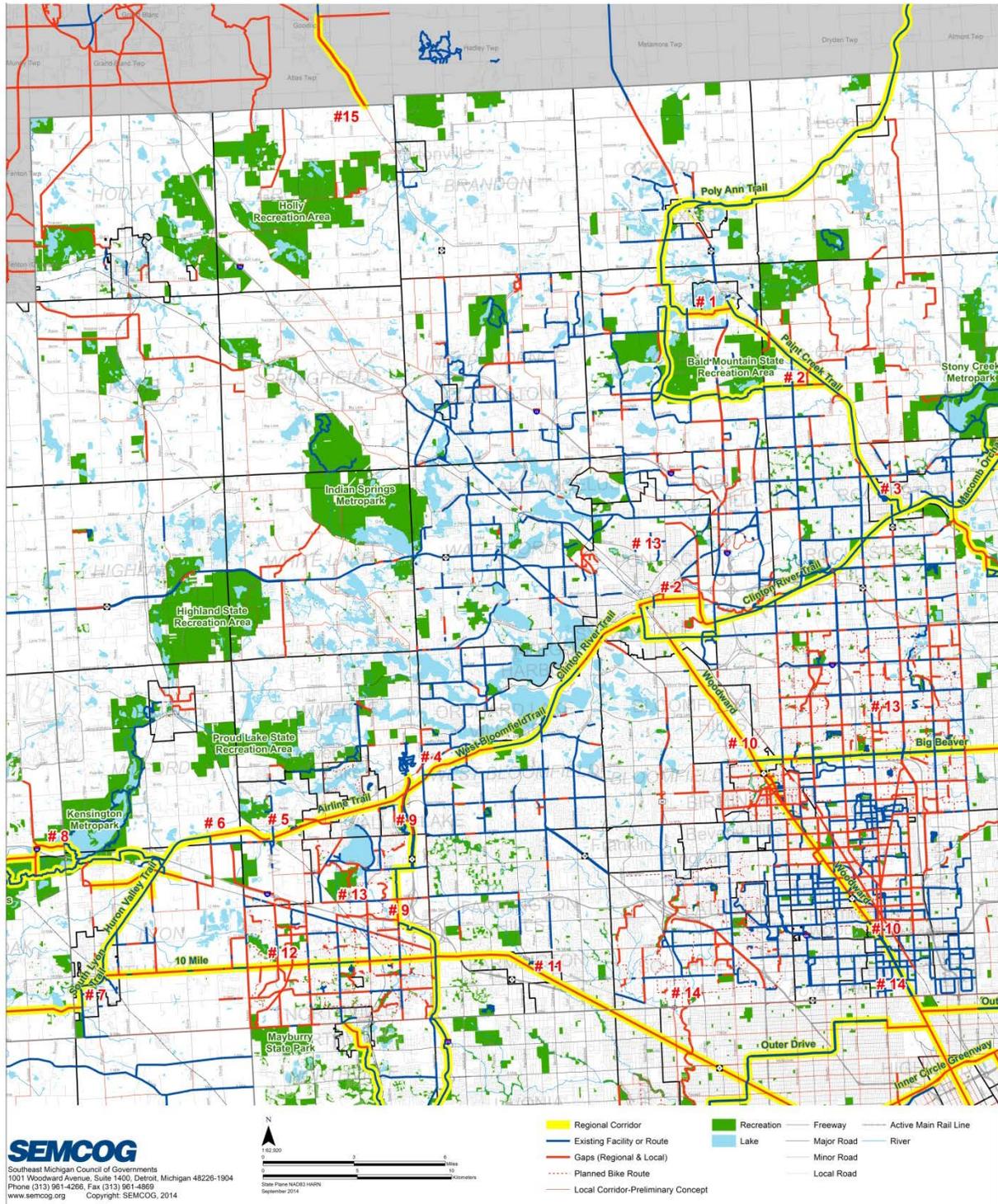


Figure 30
Regional Nonmotorized Corridors and Gaps, St. Clair County

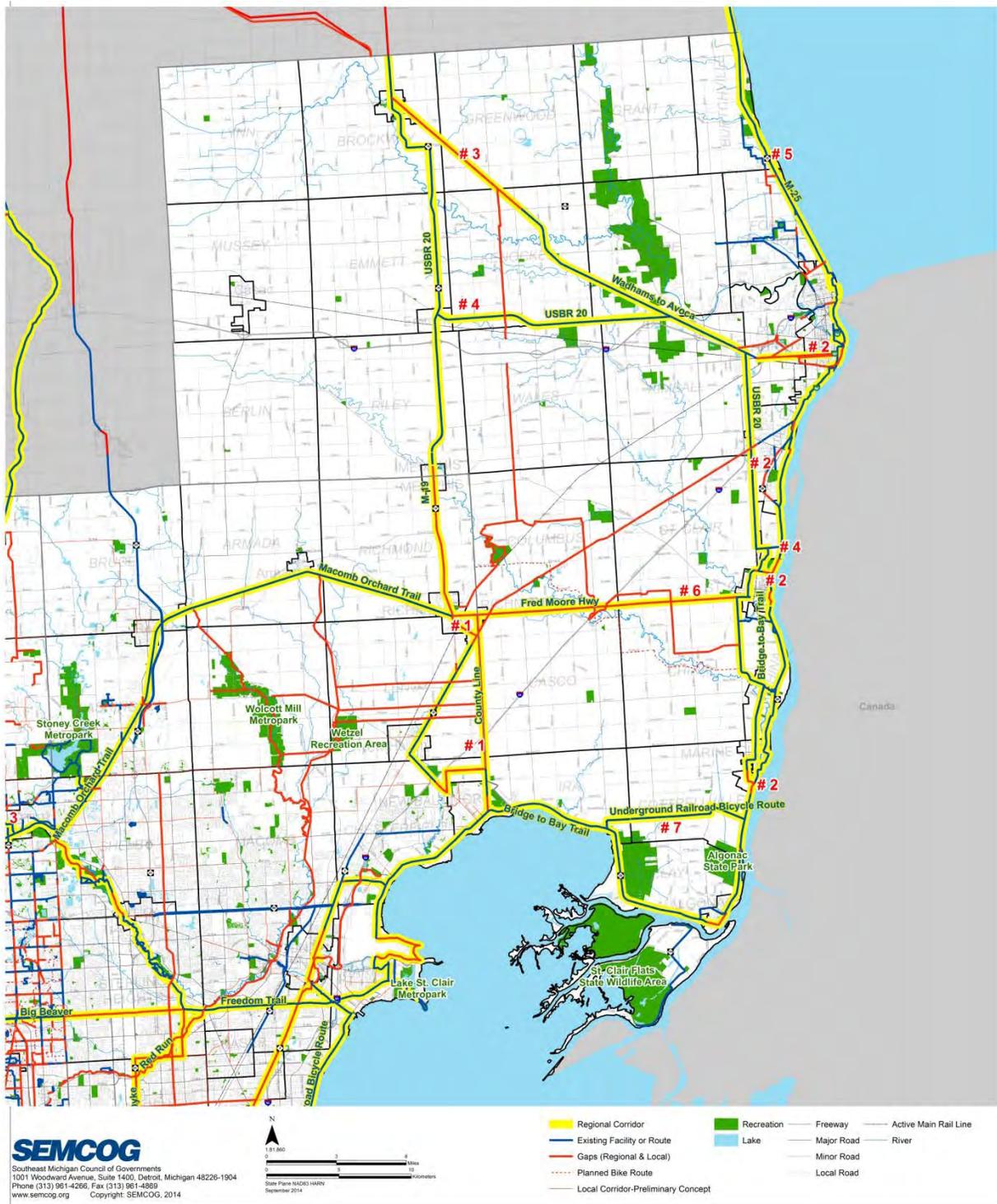


Figure 31
Regional Nonmotorized Corridors and Gaps, Washtenaw County

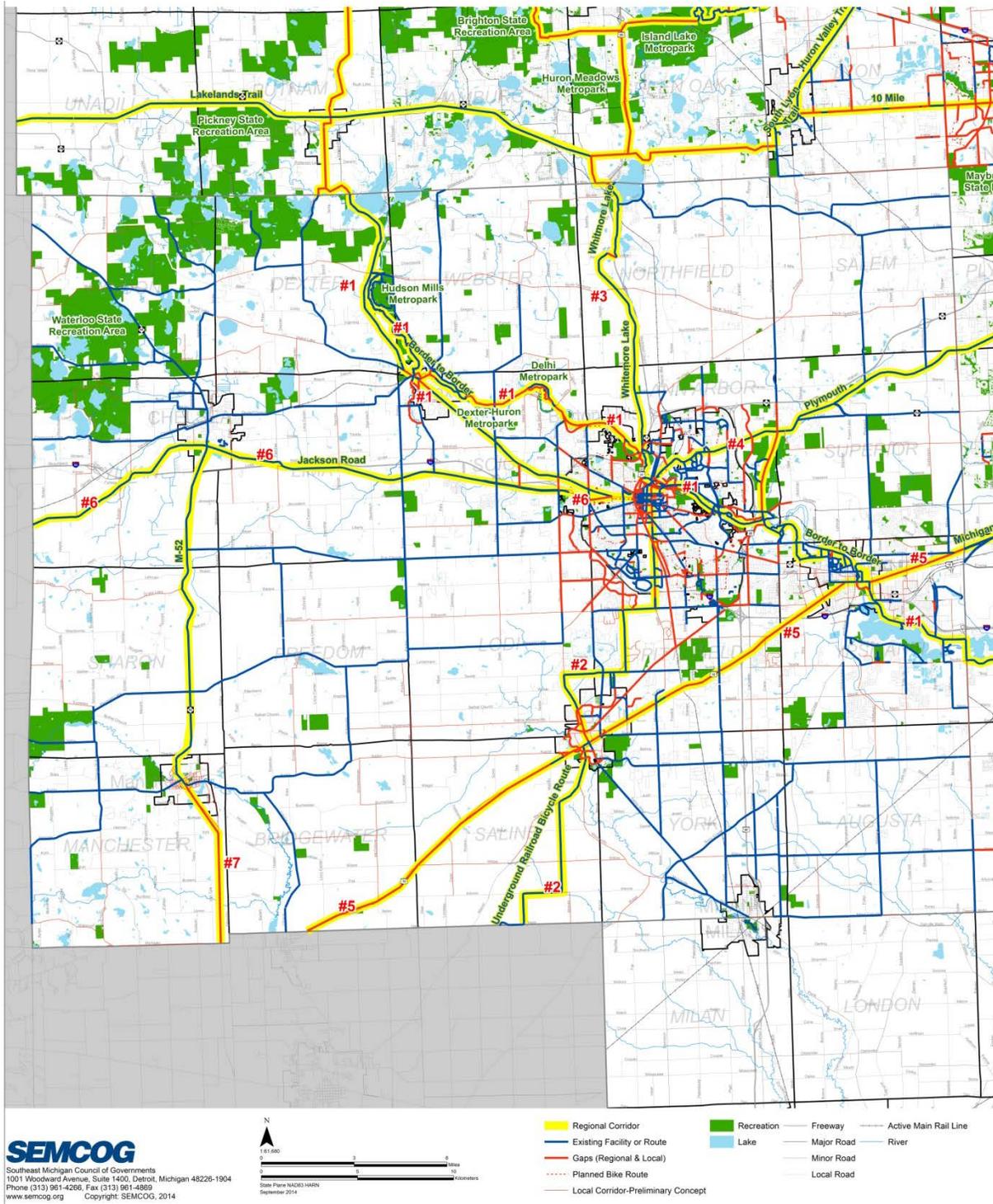


Figure 32
Regional Nonmotorized Corridors and Gaps, Wayne County

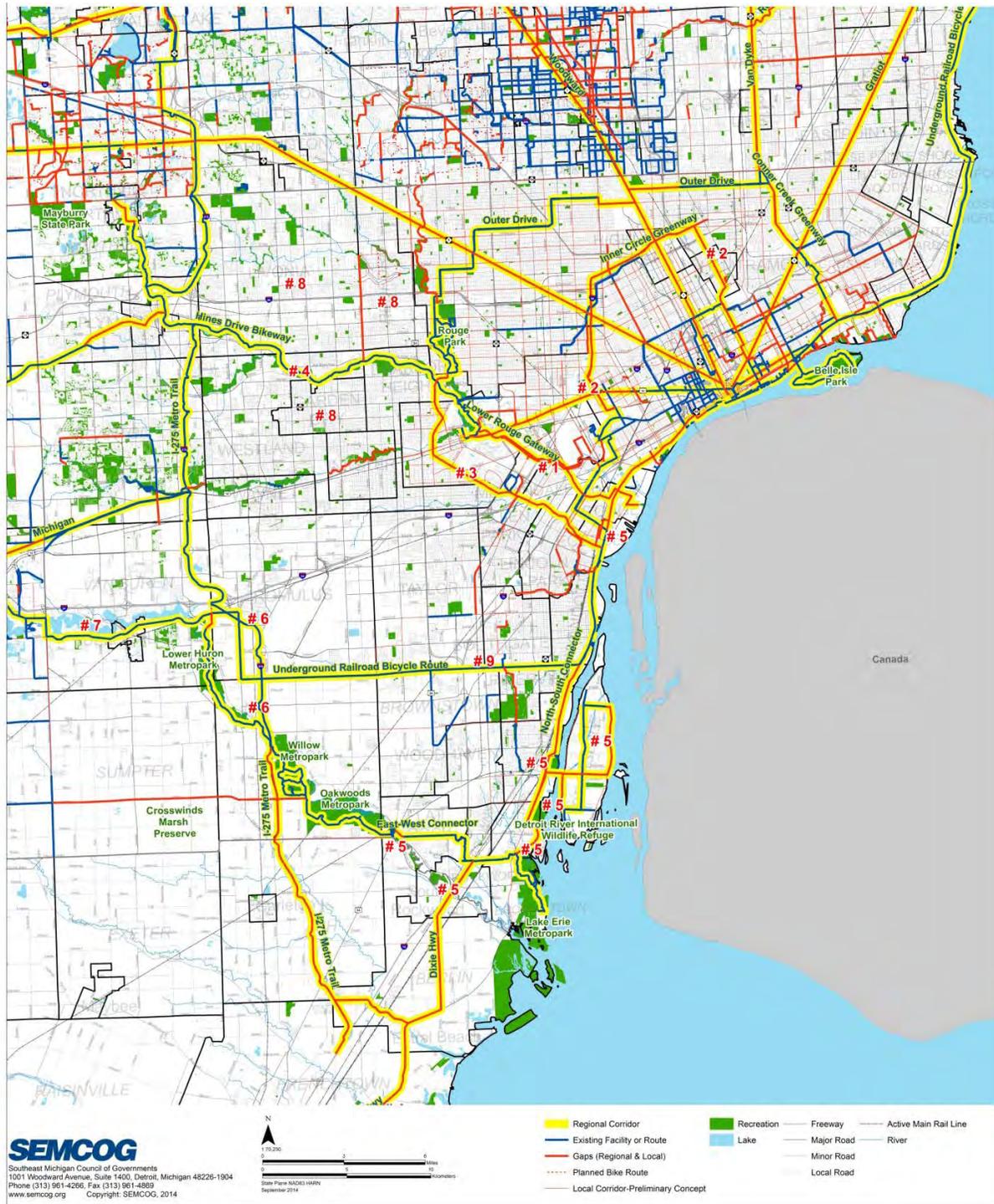
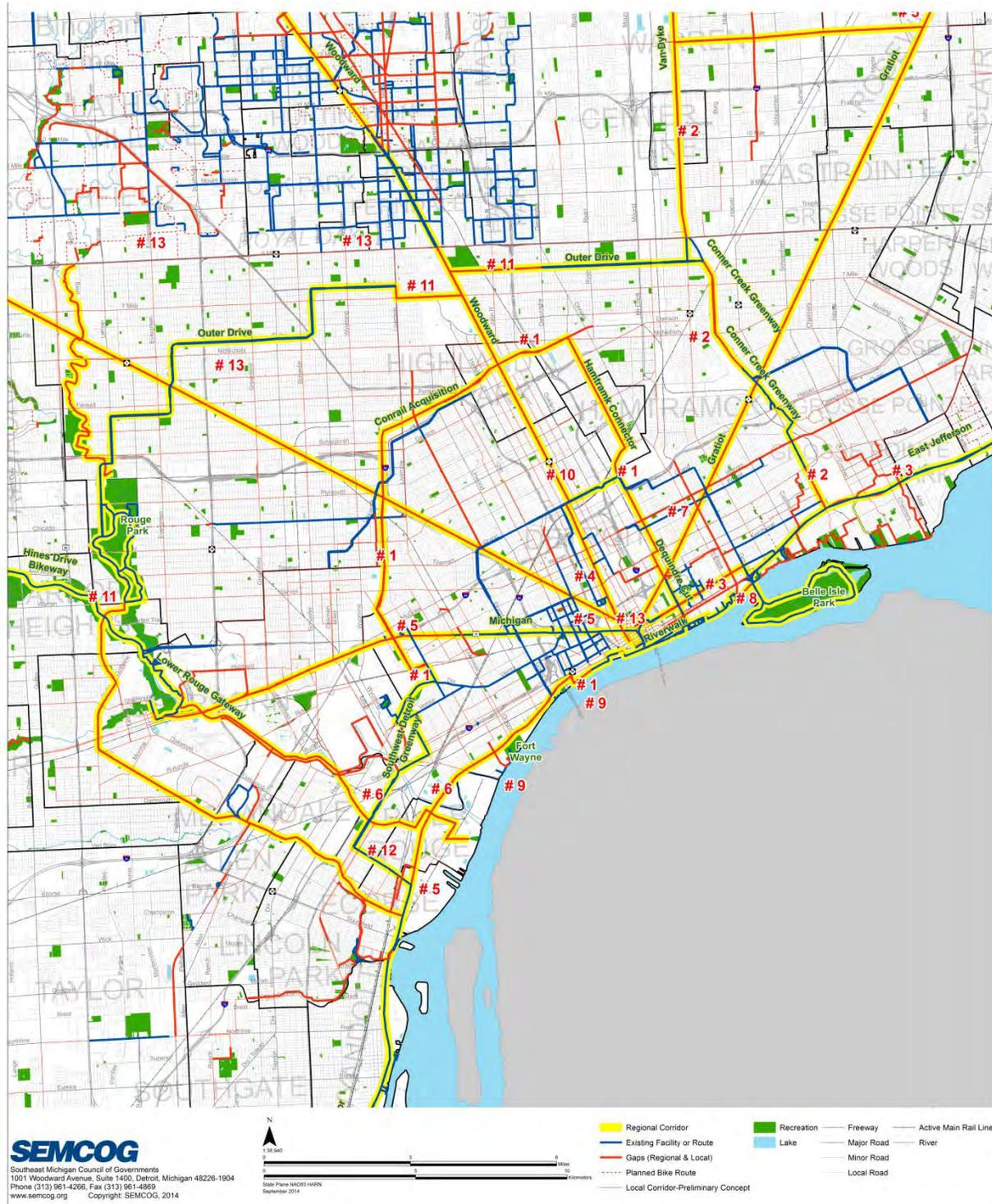


Figure 33
Regional Nonmotorized Corridors and Gaps, Detroit



Chapter 5: Moving Toward Implementation

While the plan benchmarks the pedestrian and bicycling networks and identifies deficiencies and gaps in the system, the final step is ensuring the sustainability of the system by developing strategies and actions to implement it.

Sustaining the network is dependent on various elements, including connectivity of the system; meeting multiple stakeholder outcomes; partnerships; and collaboration, financing, and maintenance.

Connecting the System

Connectivity of the system is one of the paramount considerations in sustaining the network. This connectivity includes:

- **Connectivity of the nonmotorized system.** The connection of the system itself includes the various types of facilities – off-road trails, side paths, and bike lanes. This connection is essential to ensure ultimate use of the system for both transportation and recreation needs. Chapter 4 highlights the gaps and deficiencies in the nonmotorized network.
- **Relationship of nonmotorized travel to other modes of travel, i.e., automobile, transit, and rail.** This can include ensuring locations for automobile parking near nonmotorized facilities, ensuring rail and transit allow for the transport of bicycles, and evaluating the location of transit stops near nonmotorized facilities.
- **Linking the nonmotorized system to important places in the region, including downtowns and regional parks, as well as national and state bicycle routes.** In addition to filling gaps in the regional network, the system should also connect to important places in the region. Done in conjunction with placemaking activities (such as Trail Towns), such strategic gap-filling can increase use of the system and enhance economic development within the region.



Green streets are roadways that achieve multiple benefits, with a focus on managing stormwater runoff close to the source through the use of bioswales, bioretention, porous pavements, tree trenches, and unique streetscape designs. They reduce the amount of water piped directly to local streams, in addition to providing local temperature mitigation and air-quality improvements. Using these types of features can enhance nonmotorized opportunities working towards economic vitality and providing a higher quality of life for residents.

Meeting Multiple Outcomes

Successful implementation and sustainability of the nonmotorized network is enhanced when the system is also helps meet other regional and community goals. These outcomes include all elements of sustainability – economic, environmental, and social.

While many of the economic and social benefits are discussed in the sections of the plan describing Placemaking, the environmental outcomes can include linking to important environmental assets (e.g., regional parks, conservation areas), as well as incorporating green streets into the design of bike lanes.

Partnerships and Collaborations

The nonmotorized network transcends multiple disciplines, agencies, and jurisdictions. Whether it is a single community, a county, or the Southeast Michigan region, the nonmotorized network requires cooperation and participation by a cross-section of entities. Efforts toward these outcomes include data analysis, planning, engineering, funding, and outreach and encouragement activities. These activities can be more effectively accomplished through the use of partnerships and collaborations. Potential partners include road agencies, local and state government, nonprofit organizations, advocacy groups, healthcare facilities, Downtown Development Authorities, and the private sector.

Financing

Financing the acquisition, development, and maintenance of the nonmotorized system is essential to sustaining the system. Numerous opportunities exist to fund acquisition and development of the nonmotorized system. Within the local government structure, understanding how the nonmotorized system benefits multiple departments within one community, as well as multiple governmental agencies opens up opportunities for cost-sharing, thereby reducing the financial burden on one entity.

One source of funding available to enhance the regional nonmotorized system is the Transportation Alternatives Program (TAP). TAP is a competitive grant program that offers funding opportunities to help expand transportation choices and enhance the transportation experience through implementing a number of transportation improvements, including pedestrian and bicycle infrastructure and safety paths and facilities. Additionally, investments made through TAP support place-based economic development by offering transportation choices, promoting walkability, and improving quality of life.

Under Moving Ahead for Progress in the 21st Century (MAP-21), the federal transportation law, the seven-county Southeast Michigan region receives between \$4.8 and \$5 million annually (dependent upon federal appropriations) in TAP funding. SEMCOG is responsible for selecting TAP projects in Southeast Michigan. Additional information on TAP is available at <http://www.semcog.org/TAPCall.aspx>.

Another major source of funding for bicycle and pedestrian projects is the [Michigan Natural Resources Trust Fund](#) (MNRTF), which provides grants to local governments and other agencies to secure and develop lands for recreational purposes. Trail projects within and connecting to parks are routinely awarded grants through the MNRTF. Additionally, since the MNRTF is a state source of funds, it can be used as match for TAP or other federal grant projects. SEMCOG can [provide data and services to assist communities](#) in their MNRTF grant applications.

Communities and road agencies can also use many traditional sources of funds for bicycle and pedestrian projects. In fact, in 2010 Michigan passed [Complete Streets](#) legislation that encourages development of Complete Streets as appropriate to the context and cost of a project. This complements State Act 51, which obligates communities and road agencies to spend a minimum of one percent of their transportation funding on essential nonmotorized transportation projects. Additional information on federal transportation funding sources for bicycle and pedestrian projects can be found on the [Federal Highway Administration's website](#).

It should also be noted that non-traditional sources of funding can also be used for bicycle and pedestrian projects such as local millages, tax increment financing (TIF) district funds, and state and local philanthropic organizations, including the Community Foundation for Southeast Michigan, which sponsored the [Southeast Michigan Greenways Initiative](#).

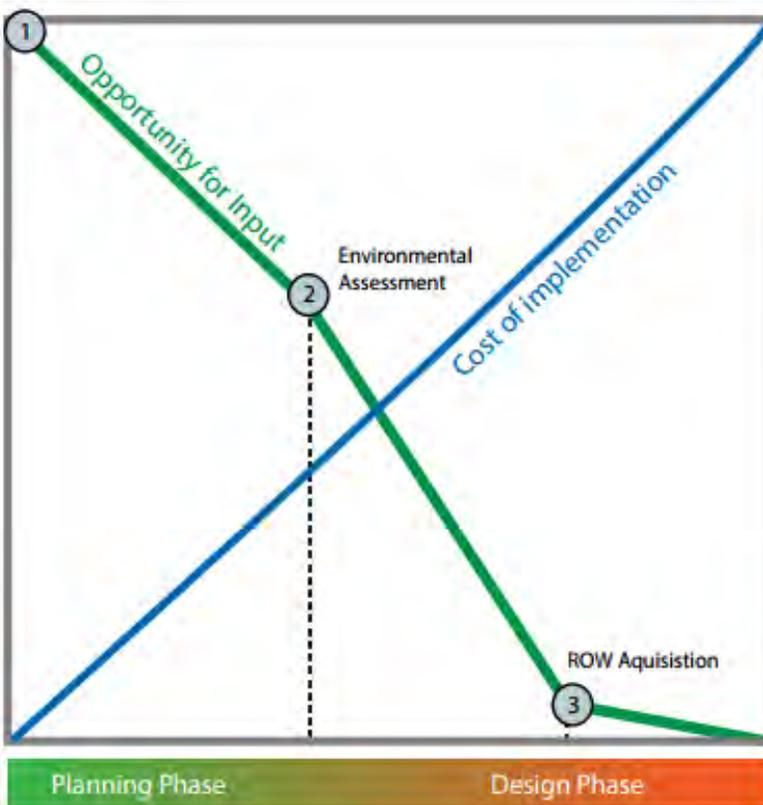
Timing

Regardless of the source of funding, it is optimal for bicycle and pedestrian projects to be coordinated with other road and infrastructure projects. If included early in the planning and design phases of roadway projects, there is potentially more design flexibility and economies of scale.

Figure 26, an excerpt from The Road Commission for Oakland County's [Complete Streets General Guidelines](#), provides an illustration of how the opportunity for input into a roadway design (e.g., bicycle and pedestrian facilities) diminishes over time of the project. Essentially, costs are low and opportunity for input is high during the planning phase of a project (Circle 1). After the project's Environmental Assessment (Circle 2), costs escalate and opportunities for changes to the document decrease. Once the detailed design phase (Circle 3) begins, road right-of-way (ROW) is acquired and there is little opportunity for input and the costs are very high.

Figure 34

Opportunity for Stakeholder Input over Time of Project



Source: *Complete Streets General Guidelines*, Road Commission for Oakland County, 2012.

The City of Detroit Department of Public Works (DPW) takes a similar approach to its traffic engineering program. During the planning stages of any significant roadway project such as repaving, restoration, or reconstruction, the city considers complete streets and nonmotorized principles, systematically looking at the needs of the roadway/street system and available right-of-way to accommodate improvements like bike lanes, ADA ramps, or bus pads. Using this approach, the City of Detroit has quickly become a leader in on-road bicycle facilities without increasing its road budget.

SEMCOG and MDOT encourage communities to create formal plans for bicycle and pedestrian facilities and submit them to SEMCOG, so they can be part of the nonmotorized plan and facility databases, which are available to communities and road agencies across Southeast Michigan. This will ensure road agencies know about plans for bicycle and pedestrian facilities and partnerships can be created early on in hopes of decreasing the price tag of these important projects.

Maintenance

Whether it is an off-road trail or an on-road bike lane, maintaining the nonmotorized system is critical. Often, financing is available for the initial acquisition and development of these facilities, but not for ongoing operation and maintenance. To ensure sustainability of the system, maintenance requirements (both fiscal and staff time) need to be included in a maintenance plan for the facility.

Innovative alternatives for maintaining the system can include using community volunteers; partnering with businesses, nearby residents, or healthcare facilities; or seeking sponsorships from private-sector sponsors for events; or even offering sponsoring opportunities for segments of the system.

Regional Strategies and Actions

The regional strategies and actions were developed to specifically move the plan into implementation. These strategies and actions can be implemented by various stakeholders, including MDOT, SEMCOG, local governments, nonprofit organizations, and the business community. These strategies and action steps fall into one of the following areas, referred to as the five Es: Engineering, Education, Enforcement, Encouragement, and Evaluation. A mix of these activities is needed in all areas to properly address the deficiencies in both the physical and operational aspects of the nonmotorized system.

1. Reduce the number and severity of pedestrian and bicycle crashes.

Action 1: Analyze annual crash data to identify areas of concern for bicycles and pedestrians and determine which of these crashes can be corrected by engineering, education, enforcement, or other measures.

Action 2: Support initiatives and projects that work toward correcting safety concerns such as: regional safety audits, Safe Routes to School programs, materials for law enforcement officials, public outreach campaigns, engineering best practices, bicycle training programs, and targeted enforcement.

Action 3: Explore new evaluation tools for implementing safety projects such as the [United States Road Assessment Program](#) (USRAP) and [BIKESAFE/PEDSAFE](#).

Action 4: Ensure new bicycle and pedestrian facilities meet federal guidelines.

Action 5: Encourage universal design on all pedestrian projects.

Action 6: Develop and participate in activities that encourage/promote the public to walk and bike more often (safety in numbers).

2. Better accommodate bicycles and pedestrians on roads that do not restrict bicycles/pedestrians and that link the nonmotorized system.

Action 1: Encourage and provide assistance to communities in aligning, developing, and implementing local plans and Complete Streets policies, as appropriate.

Action 2: Coordinate development and enhancement of nonmotorized transportation networks in collaboration with capital improvement projects and routine infrastructure maintenance.

Action 3: Refer to MDOT/SEMCOG's Regional Nonmotorized Plan and databases and other community plans to identify the official planned nonmotorized system and mode shift supportive areas.

Action 4: Road agencies should contact local communities and SEMCOG/MDOT to learn about newer plans that might not be reflected in official planning documents.



Action 5: In the spirit of the region's Asset Management strategy, continue efforts toward capital preventive maintenance activities in order to provide fair or good pavement quality on the region's roadways, especially on identified bikeways.

Action 6: Consider the use of wide paved shoulders, 4' or greater, when possible, on roadway projects, where bicycle and pedestrian usage is predicted to be light or is unknown in order to meet long-range needs.

Action 7: Work with communities, counties, and other stakeholders on the logistics of providing regular maintenance activities on the region's bikeways, pathways, and sidewalks, such as street sweeping or snow removal. Partnerships between various agencies should be considered for these activities.

Action 8: Provide some form of facility for bicyclists and pedestrians over obstacles, such as freeways and rivers, as appropriate, either directly along a roadway or via a nearby parallel corridor.

Action 9: When designing freeway interchanges, consider the needs of all roadway users. Special attention should be given to nonmotorized corridors and areas supportive of bicycle and pedestrian travel (Figure 24). Some interchange designs can limit bicycle and pedestrian travel.

Action 10: Increase bicycle and pedestrian facilities such as sidewalks, shared-use side paths, bike lanes, and marked shared lanes (sharrows) where there is evidence of higher pedestrian and/or bicycle trips are likely to occur.

Action 11: Ensure new construction and alterations of sidewalks and crosswalks meet the guidelines set by the Americans with Disabilities Act (ADA).

3. Enhance connectivity and reduce conflicts between automobile, transit, rail, and nonmotorized modes of travel.

Action 1: Encourage implementation of access management plans to reduce the number of conflicts between motorized and nonmotorized users.

Action 2: Encourage the use of best practices, as identified by FHWA, MDOT, and AASHTO to better manage nonmotorized crossings of urban thoroughfares, such as road diets, medians, crossing islands, roundabouts, curb extensions, and pedestrian signals/beacons, as appropriate.

Action 3: Consider walking and bicycling access to all transit improvements, specifically at transit stops, to downtowns and regional assets.

Action 4: Encourage use of bike sharing systems as part of coordinated transit and other multi-modal circulation planning efforts.

Action 5: Encourage transit agencies to allow boarding bicycles on transit vehicles, where appropriate.



Action 6: Encourage strategic placement of appropriate bicycle parking facilities along transit routes and major activity centers.

Action 7: Ensure roadway agencies are aware of and using, as appropriate, the newest publications for guidance on how best to accommodate bicycles and pedestrians on their projects, including:

- [*AASHTO Guide for the Development of Bicycle Facilities*](#), fourth edition
- [*AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities*](#) (second edition will be out in approximately one year)
- ITE's [*Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*](#)
- The United States Access Board [*Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way \(PROWAG\)*](#)
- National Association of City Transportation Officials' [*Urban Bikeway Design Guide*](#)
- The Federal Highway Administration's table on [*Bicycle Facilities and the Manual on Uniform Traffic Control Devices*](#)
- The Federal Highway Administration's [*Guide for Maintaining Pedestrian Facilities for Enhanced Safety*](#)
- [*The Michigan Manual of Uniform Traffic Control Devices \(MMUTCD\)*](#)
- MDOT's [*Design Manual Standards and Guidelines*](#)

4. Educate bicyclists, pedestrians, motorists, transportation and planning professionals, and elected officials regarding nonmotorized issues.

Action 1: Promote the importance to transportation and planning professionals of designing facilities to meet national and state guidelines, including the American Association of State Highway and Transportation Officials, National Association of City Transportation Officials, the Institute of Transportation Engineers, the United States Access Board, and the Michigan Department of Transportation.

Action 2: Work with state and local governments and pedestrian/bicycling groups to educate drivers, and walkers/bikers on best practices, including more information during driver's training, Safe Routes to School programs, and targeted public information campaigns.

Action 3: Identify underused mediums for coordinated stakeholder implementation of education and public outreach materials, such as websites, community cable TV, movie theatre previews, gas station televisions, and billboards.

Action 3: Educate local officials on the benefits of the pedestrian and bicycling system and opportunities to link these programs with economic vitality.



Action 4: Program bicycle and pedestrian topics into upcoming events such as SEMCOG Universities.

Action 5: Provide bicyclists and local agencies with more options for planning routes that meet their unique needs, such as SEMCOG's Bicycle Travel Information Maps, smart phone apps, or other mapping efforts.

Action 6: Explore better ways to integrate pedestrian and bicycle mapping and wayfinding efforts with other multimodal activities such as those of the Regional Transit Authority for Southeast Michigan, as well as intercity rail/bus and carpooling.

5. Provide technical assistance to communities in assessing the walkability and bikeability of their roadway network.

Action 1: Encourage counties, cities, and other agencies to perform a local level traffic stress analysis of roadways as a means of identifying nonmotorized network connectivity and targeted locations for low-cost improvements as a part of bicycle and pedestrian circulation plans.

Action 2: Encourage communities to use other bicycle and pedestrian assessment programs, such as the Michigan Fitness Foundation's [Promoting Active Communities \(PAC\) program](#), or the League of American Bicyclists' [Bicycle Friendly Community Program](#).

Action 3: Encourage communities and agencies to conduct routine inventories of their nonmotorized system including sidewalks, shared-use paths, side paths, paved shoulders, and bike lanes. Such information can also be used by SEMCOG to improve its databases.

Action 4: Encourage use of programs that assess roadways for safety, walkability, and bikability, including SEMCOG’s corridor assessments, MDOT’s Walkability and Training Wheels programs, and Wayne State University’s pedestrian safety program.

Action 5: Maintain SEMCOG’s Community Nonmotorized Plan database on SEMCOG’s website and consider future enhancement opportunities.

Action 6: Maintain MDOT/SEMCOG’s regional bikeway database and consider enhancements such as sidewalks.

Action 7: Continue to publish and share SEMCOG’s and MDOT’s Bicycle Travel Information Maps.

Action 8: Investigate new ways to share bikeway database information with stakeholder groups and the public.

6. Increase connectivity of the nonmotorized system, linking local and regional facilities, to better connect the public to essential services, the national and state bicycle routes, downtowns, and Southeast Michigan’s green infrastructure network.

Action 1: Conduct an analysis of nonmotorized connectivity in areas with essential services.

Action 2: Integrate the linkage of health and transportation into nonmotorized planning activities.

Action 3: Explore further partnerships with other health-related organizations on nonmotorized planning issues, such as the Michigan Fitness Foundation and regional agencies on aging.

Action 4: Coordinate efforts with local, regional, and statewide nonmotorized groups to fill essential gaps for such routes as the Great Lake to Lake Trail, the Showcase Trail, I-275 Metro Trail, Border to Border Trail, Bridge to Bay Trail, and other state and regional priority trails.

Action 5: Work with road agencies, communities, park agencies, and business districts to implement additional U.S. Bicycle Routes.

Action 6: Improve national and state recreational and touring bicycle routes through coordinated signage along routes and at border crossings.

Action 7: Encourage local communities to connect their nonmotorized network across jurisdictional boundaries and link to the regional, state, and national system.



7. Coordinate bicycling and pedestrian facilities with other regional and community goals, including green streets, community and economic development strategies, public transit, and placemaking.

Action 1: Work with other agencies to better identify bicycle and pedestrian travel impacts on economic development.

Action 2: Work with communities to better promote more mixed use, walkable urban places, and trail towns that provide for greater quality of life, tourism, and economic development opportunities.

Action 3: Encourage communities to develop site plan review standards that provide better bicycle and pedestrian circulation in parking lots.

Action 4: Align infrastructure priorities, including roads, utilities, nonmotorized, and green infrastructure for multiple benefits.

Action 5: Coordinate efforts with other planning agencies to ensure Southeast Michigan is connected to adjacent regions's nonmotorized networks.

Action 6: Integrate green streets policies into complete streets best practices, community master plans, and corridor improvement plans.

Action 7: When implementing road diets, use the available space for nonmotorized improvements, on-street parking, and constructed green infrastructure.

Action 8: Seek opportunities to construct linear streetscape enhancements that include constructed green infrastructure for benefits.



Miller Road Green Street in the City of Ann Arbor.

8. Focus on enhancing the regional nonmotorized network through use of limited transportation funding such as the Transportation Alternatives Program (TAP).

Action 1: Encourage Metropolitan Planning Organizations (MPOs), state and federal agencies to support and continue funding for nonmotorized facilities.

Action 2: Work with communities to help guide them through the TAP process.

Action 3: Provide communities with a prompt list for developing highly competitive nonmotorized projects.

9. Evaluate the nonmotorized system to ensure connectivity and determine its impact for community and regional placemaking and economic vitality.

Action 1: Periodically review and evaluate routes for safety, access, and mobility.

Action 2: Encourage the routine collection of bicycle and pedestrian count data in bicycle and pedestrian supportive areas and along major trails.

Action 3: Coordinate bicycle and pedestrian performance measures with those identified by FHWA such as safety, transit, and congestion mitigation to ensure a coordinated and efficient system.



Action 4: Evaluate the economic and social impacts of the nonmotorized system.

10. Coordinate with other stakeholders, including communities, county road agencies, advocacy groups, and others, as appropriate, to ensure the physical and operational sustainability of the nonmotorized network.

Action 1: Encourage partnerships between road agencies, communities, and advocacy organizations that result in maintenance agreements specifying each stakeholder’s role in sustaining nonmotorized projects.

Action 2: Explore the feasibility of asset management tools and processes to track pavement quality of the nonmotorized system

Action 3: Encourage communities to use an ADA transition plan for all pedestrian and shared-use facilities.



Action 4: Assist communities in identifying all potential sources of funding for maintaining nonmotorized facilities, including non-traditional sources such as public-private partnerships and sponsorships.

Action 5: Include bicycle and pedestrian planning and implementation needs as part of any initiative for increases in transportation funding at the local, state, and national level.

Appendix A. Summary of Online Nonmotorized Survey

Results of the online nonmotorized survey are available online at <http://www.semco.org/NoMoPlan.aspx> or [via this link](#).

Appendix B. Advantages and Disadvantages of Bicycling Facilities

Appendix B is available online at <http://www.semcog.org/NoMoPlan.aspx>

Appendix C: Public Comments on Local and Regional Corridors

Appendix C is available online at <http://www.semcog.org/NoMoPlan.aspx>