BICYCLE AND PEDESTRIAN PLAN

Wausau Area Metropolitan Planning Organization

WAUSAU MPO

This page intentionally left blank.

Bicycle and Pedestrian Plan for the Wausau Area Metropolitan Planning Organization

WAUSAU MPO

Adopted
August 2015
Revised 2021

This page intentionally left blank.

Acknowledgements

The development of the Wausau MPO Area Bicycle and Pedestrian Plan involved a diverse group of individuals with a wide range of expertise. The Bicycle and Pedestrian Plan was identified by the MPO as a priority for continuing the programming and planning for bicycling and walking in the area based on the growing popularity of bicycling and the continued concerns over the safety and ability for people of all ages and abilities to utilize these modes of transportation in the Wausau Metropolitan Area. As part of the process, a group of stakeholders provided key recommendations to address the concerns identified. Their input, as well as the continued work of the Bicycle and Pedestrian Committee of the MPO, played an integral role in the preparation of this plan. Thank you to everyone who helped in this planning process.

Marathon County Metropolitan Planning Commission

Mayor Jim Tipple – Chairman

George Peterson – Vice Chairman

MPO Bicycle and Pedestrian Committee

Phil Valitchka – Chairman

Judy Burrows – Vice-Chair

Aaron Ruff – Marathon County Health Department

Marathon County Conservation, Planning, and Zoning \MPO Staff

Rebecca Frisch – Director

David Mack – MPO Director

Andrew Lynch – Transportation Planner

Preston Vande Voort – GIS Specialist

Loretta Schultz – Administrative Coordinator

Stakeholders

Brad Karger – Marathon County Administrator; Brad Lenz – City of Wausau; Dave Meurett – WisDOT; Gaylene Rhoden, Scott Turner, Gerry Klein – Town of Rib Mountian; Greg Seubert – Metro Ride; Jean Tehan – Community Foundation of Central Wisconsin; Jim Greisbach – Marathon County Highway Commissioner; John Nowaczyk – Trek Bike Store; Randy Lackman – Rib Mountain Cycling; Keith Draham – Wausau Area Transit Commission; Larry Cihlar – Wausau School District; Matt Block – CWOCC; Randy Fifrick and Duane Gau – Village of Kronenwetter; Tim Vergara – Village of Rothschild.

Consultants

Adam Wood, AICP, Spencer Gardner, Tom Huber – Toole Design Group, LLC

Peter Flucke – WE BIKE, ETC

Table of Contents

Chapter 6: Enforcement

Chapter 7: Implementation

Appendix A: Summaries of Relevant Plans and Policies

Appendix B: Traffic Stress Analysis Background and Methodology

Appendix C: Law Enforcement Continuum of Training

This page intentionally left blank.

Chapter 1
Plan Overview

Bicycle and Pedestrian Plan for the
Wausau Area Metropolitan Planning Organization

WAUSAU MPO

Introduction

In urban areas throughout the U.S. and especially in Wisconsin, there is growing interest in improving transportation infrastructure to support biking and walking. Individual communities and government agencies at all levels recognize a need to provide diverse transportation networks to meet safety, mobility, livability, environmental, and economic goals. Biking and walking are proven strategies to meet these goals and they provide the added benefits of being healthy and enjoyable options for people to get to work, school, and to other destinations. Many people in the Wausau metro area have actively embraced biking and walking for transportation and recreational purposes and many more are likely to be interested in biking and walking should facilities be improved or constructed to meet their needs.

"Cedar Creek Trail, Rothschild" by Dennis Helke.

The Wausau area is a regional trade center, a regional hospital and health center, and home to a University of Wisconsin two-year campus, a technical college, major manufacturers, and a national insurance company. All of these employers have impacts on biking and walking as they are major destinations and potential supporters of the biking and walking network. It is clear there is a keen interest in biking and walking in the Wausau area. From a regional perspective, the Wausau area is ideally located in the transition to "Up North" where biking goes into a much more active phase during the summer and early fall. The area's proximity to the Wisconsin River–one of the main long distance biking corridors in the state connecting Wausau with the Wisconsin lake district–yields a significant amount of untapped potential.

This plan provides a coordinated, multi-jurisdictional strategy for enhancing conditions and providing inter-city links for biking and walking in support of the Wausau area's transportation, quality of life, and tourism goals. It does this by addressing all types of biking and walking trips—from a short walk across the street, to a longer bike trip to rural Marathon County or Rib Mountain or across the Wisconsin River.


"Fit for Two: Easy As Riding a Bike" by Dan Young/Daily Herald Media.

Role of Marathon County and the Wausau MPO in Bicycle and Pedestrian Mobility

The Wausau Area Metropolitan Planning Organization (Wausau MPO) is the federally-designated transportation planning agency for the Wausau metro area. It is closely aligned with Marathon County and is staffed by Marathon County employees. With the formation of the Wausau MPO Bicycle & Pedestrian Sub-Committee in 2006, the Wausau Area MPO has made a continued commitment to improving biking and walking throughout the metro area. The Bicycle & Pedestrian Sub-Committee has linked transportation planners, city planners, public works directors, park and recreation directors, law enforcement officials, and public health educators with local bike clubs, bike shop owners, and area bicycle enthusiasts.

The Wausau MPO has also demonstrated its support for biking and walking through its development of the 2009 Wausau Area MPO Bicycle and Pedestrian Plan and the support of various implementation measures taken by the MPO itself and jurisdictions within the metro area. The 2009 Plan identified several general policies and a 105-mile metropolitan bicycle route network and signage system that spans across the entire Wausau metro area. Now, with over 600 custom bicycle route signs that are color-coded and numbered by route, the Marathon County Bicycle Route System is a prominent, visible representation of the community's investment in biking. The new bicycle route signage system has not only produced increased awareness for biking, it has transformed the Wausau metro area into a bicycle-friendly community.

Bike Fixtations (top) and the 105-mile metropolitan bicycle route system (above) are two of the Wausau MPO's more visible contributions to walking and biking in the Wausau metro area. Photos by Aaron Ruff.

Purpose of this Plan

Since 2009, the tool box of engineering best practices to retrofit roadways to improve biking conditions has expanded significantly to include treatments such as shared lane markings, buffered bike lanes, green bike lanes, left turn bike boxes, and bicycle boulevards, among others. As such, there is a need to conduct a thorough assessment of the 2009 network within the context of the existing and future transportation system.

The Wausau MPO Bicycle and Pedestrian Sub-Committee, Marathon County staff, and a team of consultants specializing in bicycle and pedestrian planning developed this new plan, which has a broader reach and emphasizes pedestrian mobility and biking for transportation purposes.

With this Plan, the Wausau area is taking a holistic approach to community well-being and quality of life. This Plan will reinforce these values and be designed to serve all users, including children, the elderly, persons with disabilities, and those wishing to use non-motorized travel modes for commuting. To ensure implementation, the recommendations made by this Plan provide details describing the type of improvement to be made, the method of implementation, and the probable cost of construction.

The "Five E's"

This Plan—from the process followed to the organization of this document—is based on the "Five E's" of bicycle and pedestrian planning. Considering each of the "Five E's" results in a thorough understanding of the issues at hand and leads to the development of comprehensive strategies to improve safety, enhance mobility, and increase the number of people walking and biking. The "Five E's" are described below.

Evaluation efforts, which seek to quantify the impact of the other "E's," occur at the beginning of the planning process and during implementation. Evaluation efforts may include:

- Measuring the growth of bicycle and pedestrian facilities in a region
- Measuring the rate of biking in an area or the number of users on a specific facility
- Evaluating crash data for patterns or frequency

Engineering refers to physical infrastructure. This is the category that is typically thought of when people think about bicycle and pedestrian plans. Engineering recommendations are typically divided into short-term, medium-term, and long-term priorities based on cost, ease of implementation, and other factors. Engineering recommendations may include:

- On-street facilities such as bike lanes and paved shoulders
- Off-street paths, sidewalks, and crosswalk improvements
- Directional and wayfinding signage
- Anything physical in nature

Encouragement activities focus on increasing biking and walking through fun and interesting activities. Encouragement efforts seek to demonstrate that biking and walking are valid modes of transportation. Encouragement activities may include:

- Bike to Work Week and Bike and Walk to School Day activities
- Ciclovias (closing a street for a few hours and allowing biking, walking, skating, etc.)
- Community bike rides
- Bike share systems
- Maps, brochures, and other ways of providing information to users

Education efforts typically focus on teaching all transportation users (drivers, bicyclists, and pedestrians) how to safely interact. Education may focus on teaching bicyclists, particularly children, how to properly interact with motorists and how to avoid the most dangerous situations that commonly occur for bicyclists. Motorist education typically focuses on reminding motorists of the rules of the road and how to properly interact with bicyclists and pedestrians. Education efforts may include:

- Bike rodeos and helmet fairs
- Public Service Announcements (PSAs)
- Driver's education

Enforcement activities focus on enforcing the rules of the road for all users (motorists, bicyclists and pedestrians). Enforcement also prioritizes having links between the law enforcement community and the biking community. Enforcement activities may include:

- Efforts to reduce speeding
- Efforts to increase yielding to pedestrians
- Efforts to reduce leading bicycle/pedestrian crash types
- Efforts to reduce red light/stop sign running
- New training programs for law enforcement officers

Vision, Goals, and Objectives

Vision Statement

A vision statement describes an ideal future scenario that can be realized if the proper actions are effectively implemented. The following vision statement has been developed to provide focus to the multiple agencies, organizations, and individuals working to enhance biking and walking in the Wausau area over the next ten to twenty years.

Vision Statement

The Wausau area will be a place in which each community and major destination is connected via low-stress on-street bikeways, rural roads, shared-use paths, and sidewalks. The active transportation system will foster a culture of health, safety, and mutual-respect, in which biking and walking are viable, desirable options for people of all ages and abilities.

Several actions to enhance the Wausau area for biking and walking have been initiated in the past, including previous regional and local bicycle and pedestrian planning efforts, the construction of paths and bike lanes, and the recent development of the metropolitan bicycle route system. This plan represents a major step forward in achieving this vision.

Goals & Objectives

The goals of this plan closely follow and build upon the goals of the 2009 Bicycle and Pedestrian Plan. While the objectives needed to be updated due to changing conditions and the partial implementation of the 2009 plan, the goals themselves are still relevant.

(Numerical listing for reference purposes only, ordering does not suggest order of importance.)

Goal #1

Develop a well-connected bicycle and pedestrian network that links a variety of facilities together into a cohesive transportation system that accommodates users of all ages and abilities, including those with disabilities and those that cannot drive.

Objectives

a. To continue the development of the newly-established 105-mile metropolitan bicycle route network by determining and providing appropriate low-stress bicycle accommodations along each route.
b. To link the Mountain-Bay Trail in eastern Marathon County to Rib Mountain and central Wausau via shared-use paths and regional bikeways.
c. To capitalize on the availability of easements and access corridors to enhance the existing regional trail network throughout and beyond Marathon County.

Goal #2

Increase the utilization, availability, and demand for funding to improve bicycle and pedestrian facilities.

Objectives

a. To target resources for bicycle and pedestrian improvements to areas of greatest transportation need.
b. To cooperatively identify and successfully pursue available grants.

Goal #3

Design roads to be compatible with surrounding uses and be pedestrian, bicycle, and transit friendly.

Objectives

a. To adopt regional and local Complete Streets policies that require adequate accommodation of bicyclists and pedestrians when a street is constructed or reconstructed.
b. To identify appropriate bicycle accommodations for streets and roads based on motor vehicle traffic volumes and speeds, available pavement and right-of-way width, and potential bicycle use.
c. To adopt uniform bicycle facility design standards across the region to provide consistent and continuous accommodations.
d. To provide continuous, safe, and accessible sidewalks and street crossings along all streets in cities and villages and along key rural roads to connect destinations.

Goal #4

Reduce the number and severity of crashes with particular emphasis on reducing motor vehicle-bicycle and motor vehicle-pedestrian conflicts and crashes.

Objectives

a. To increase reporting and tracking of motor vehicle-bicycle and motor vehicle-pedestrian crashes throughout the Wausau metro area.
b. To reduce speeding, red light and stop sign running, and failure to yield right-of-way by motorists and bicyclists alike.
c. To increase the media attention given to bicycle, pedestrian, and automobile responsibilities.
d. To identify countermeasures to improve safety and minimize common crash types and high-crash areas.

Goal #5

Provide adequate education, encouragement, evaluation, and enforcement programs to supplement facilities improvements.

Objectives

a. To increase educational opportunities to educate pedestrians, bicyclists, and motorists about rights and responsibilities on roadways and shared-use facilities.
b. To encourage healthy lifestyles and reduce obesity rates, promote active transportation, and create advocates.
c. To increase the safety of transportation facilities by identifying and implementing key enforcement strategies.
d. To measure the performance of programs and outcomes of actions in order to redirect implementation as needed.

Goal #6

Enhance intergovernmental cooperation and coordination for improving multimodal transportation.

Objectives

a. To work jointly with multiple jurisdictions in planning, funding, and designing regional trail and on-street bikeway facilities.
b. To increase political buy-in by engaging elected officials and residents in the development and utilization of bicycle and pedestrian facilities.
c. To work cooperatively in developing grant-writing workshops, maintenance seminars, and training sessions.
d. To integrate the bicycle and pedestrian transportation network with linkages to mass transit facilities and automobile modes of travel.

Goal #7

Produce bicycle- and pedestrian-friendly development standard supplements to include in the development review process for local communities reviewing new developments.

Objectives

a. To ensure Complete Streets are built when transportation facilities are originally installed to prevent costly retrofitting.
b. To promote connectivity to destinations and promote alternative methods of transportation within neighborhoods.
c. To require secure bicycle parking at all new employment centers with 30 or more employees and encourage adequate bicycle parking outside existing structures.

Goal #8

Enhance the livability of the Wausau area by improving quality-of-life issues related to transportation throughout the region by a variety of users.

Objectives

a. To showcase the natural and scenic beauty of the Wausau area through appropriate placement and development of multimodal transportation resources.
b. To build on the current multimodal transportation system to provide viable transportation choices and increase the desirability of the Wausau area.
c. To promote economic vitality by utilizing and preserving access to natural features within the region.
d. To increase the amount of facilities along routes and trails (including benches, rest areas, trailheads).

Goal #9

Increase the numbers of people who walk or ride a bicycle to work or school, for shopping and utilitarian trips, and for recreation purposes.

Objectives

a. To work with the Bicycle Federation of Wisconsin, local certified instructors, or other groups to increase bicycle education.
b. To encourage provision of ample secure bicycle parking in commercial areas that is convenient to business entrances and visible from the street.
c. To improve walking conditions in area business districts and school neighborhoods by restriping crosswalks, installing crosswalk signals, and slowing traffic.
d. To create a more enticing walking environment by maintaining paths and sidewalks and providing separation (terraces or barriers) between these facilities and automobile traffic.
e. To engage workplaces and schools in encouraging walking and biking through events, incentives, and appropriate end-of-trip amenities for bicycle and pedestrian commuters.

Policy Statements

The following policy statements reflect the position of the Wausau MPO and indicate the agency's primary implementation roles. The following policy statements are lettered for easy reference.

A. The Wausau MPO will adopt and implement a Complete Streets policy and encourages individual communities to do the same.

Ideally, bicycle and pedestrian facilities and infrastructure should be included with all street projects when they are initially constructed, or when streets are reconstructed. Including bicycle and pedestrian facilities at this time is less expensive than retrofitting facilities as stand-alone projects. This approach is known as "Complete Streets," which is a process, not a specific outcome, and is therefore sensitive to the context in which the project occurs. For example, a low to moderate traffic rural road might not need sidewalks and bike lanes, but adding paved shoulders to accommodate bicyclists may be warranted.

B. The Wausau MPO will prioritize funding and assistance toward projects that:

1. **Reduce gaps created by physical barriers, including the Wisconsin River, major highways, and railroads.** The Wisconsin River and its tributaries, US-51/IH-39, WIS-29, various railroads, and other transportation facilities pose significant barriers to bicyclists and pedestrians. It is important to provide crossings for bicyclists and pedestrians (either as part of a street crossing or as a standalone overpass/underpass) where needed to improve connectivity and increase access. Whenever a limited-access road is being constructed or reconstructed, the Wausau MPO, the Wisconsin Department of Transportation (WisDOT), and local jurisdictions should assess cross-access needs and build overpasses and underpasses accordingly (as part of the larger project). In general, a crossing of some sort (street or bicycle and pedestrian overpass/underpass) should be provided at least every one-half mile in developed areas.

2. **Expand the connected, low-stress bicycle and pedestrian network to increase access and improve safety.** The bicycle and pedestrian system should be expanded—with a focus on reducing gaps in the system—to provide adequate connectivity for bicycle and pedestrian needs. Priority will be given to projects that align with the recommendations in Chapter 3. The provision of on-street bikeways and the selection of accommodation type should be based on traffic volumes and speeds to reduce stress levels for bicyclists.

3. **Are designed based on state and national best practices.** All bicycle and pedestrian infrastructure provided by municipalities should be designed based on the various guidelines provided by WisDOT, as well as the 2012 AASHTO Guide for the Development of Bicycle Facilities (AASHTO Guide). While it is recommended that the AASHTO Guide serve as a set of minimum standards, the NACTO Urban Bikeway Design Guide (NACTO Guide) may also be used to design innovative bicycle infrastructure that surpasses the AASHTO minimum standards.

C. The Wausau MPO will support the efforts of cities, villages, and towns by sharing knowledge, facilitating communication, and providing guidance.

Numerous organizations are responsible for making the Wausau metro area a better place to walk and bike, including municipalities, Marathon County and the Wausau MPO, WisDOT, and non-profit groups. The Wausau MPO will continue to develop and support such relationships by supporting training efforts geared toward regional, county, and local planners and engineers; providing technical assistance to local planners and engineers, as capable; and encouraging communication between adjacent communities.

D. The Wausau MPO will coordinate education and encouragement efforts with partners to reach broader audiences.

It is important that all users—bicyclists, pedestrians, and drivers alike—understand how to safely interact with each other on the area's roads and streets. There are many organizations and groups other than the Wausau MPO that come into contact with bicyclists and other road users, such as the Wausau Wheelers Bike Club, the Central Wisconsin Offroad Cycling Coalition (CWOCC), schools, and law enforcement agencies. Leveraging the contacts made by these groups is a good

opportunity to further spread the education and encouragement messages. Marathon County and the Wausau MPO will continue to maintain, update, and expand the BicycleWausau.org website, which serves as a regional resource for information regarding biking.

E. The Wausau MPO will support encouragement, education, and enforcement efforts by developing and distributing materials via the media and online.

Marathon County and the Wausau MPO have produced multiple public service announcements and other media items over the last few years that provide bicycle and pedestrian safety information. These items have been distributed via television, radio, print media, and the BicycleWausau.org website. Marathon County and the Wausau MPO will continue to produce such materials in coordination with the encouragement, education, and enforcement activities outlined in this plan and possibly additional activities developed by others.

F. The Wausau MPO will support the provision of training for law enforcement officers and local planners and engineers.

Most law enforcement officers across the country, as well as in the Wausau metro area, have never received training related to bicycle and pedestrian safety. Furthermore, local planners and engineers may be unfamiliar with state and national best practices pertaining to the planning and design of bicycle and pedestrian infrastructure. The Wausau MPO will support the provision of training for law enforcement officers, planners, and engineers as needed, such as by coordinating trainers, suggesting training topics, and serving as a general resource.

G. The Wausau MPO will support communities applying for bicycle friendly and walk friendly community status.

The League of American Bicyclists ranks applicant communities on their level of "bicycle friendliness" on a scale from "Honorable Mention" through "Platinum." Similarly, the Pedestrian and Bicycle Information Center (PBIC) awards communities that improve and prioritize pedestrian safety, access, mobility and comfort with either a bronze, silver or gold designation. Both programs provide a roadmap to enhance conditions for active transportation in a community. The application processes helps communities recognize their strengths and weaknesses regarding biking and walking, and the responses from the League of American Bicyclists and PBIC help guide each community in improving conditions for biking and walking. In 2014, the Wausau MPO applied for bicycle friendly community status and received an honorable mention. The Wausau MPO encourages communities—whether individually or collectively—to work toward and apply for both awards and provide support for communities that wish to apply, such as by reviewing applications and providing suggestions for minor improvements.

H. The Wausau MPO will seek opportunities to increase funding allocated to bicycle and pedestrian programs.

Numerous policy recommendations in this plan necessitate additional funding in order to be implemented—including allocating staff time to prepare outreach materials, staff training, and the development and implementation of a broad-reaching education program. In addition, the availability of program funding should be increased to support school districts and communities that wish to develop Safe Routes to School plans and programs.

I. The Wausau MPO will review this plan on a regular basis and update it as needed.

This plan will be reviewed on an annual basis in order to track implementation. As major projects are implemented, new priorities should be identified. The Plan as a whole should be updated every five to ten years as projects are implemented, travel patterns changes, and the Wausau area continues to evolve.

This page intentionally left blank.

Chapter 2
Evaluation

Bicycle and Pedestrian Plan for the
Wausau Area Metropolitan Planning Organization

WAUSAU MPO

The Role of Evaluation

The development of concepts, strategies, and priorities as part of the Bicycle and Pedestrian Plan for the Wausau Area Metropolitan Planning Organization (MPO) is dependent on a thorough evaluation and understanding of the context in which the planning occurs as well as the existing conditions in terms of infrastructure, demand, safety, and other factors.

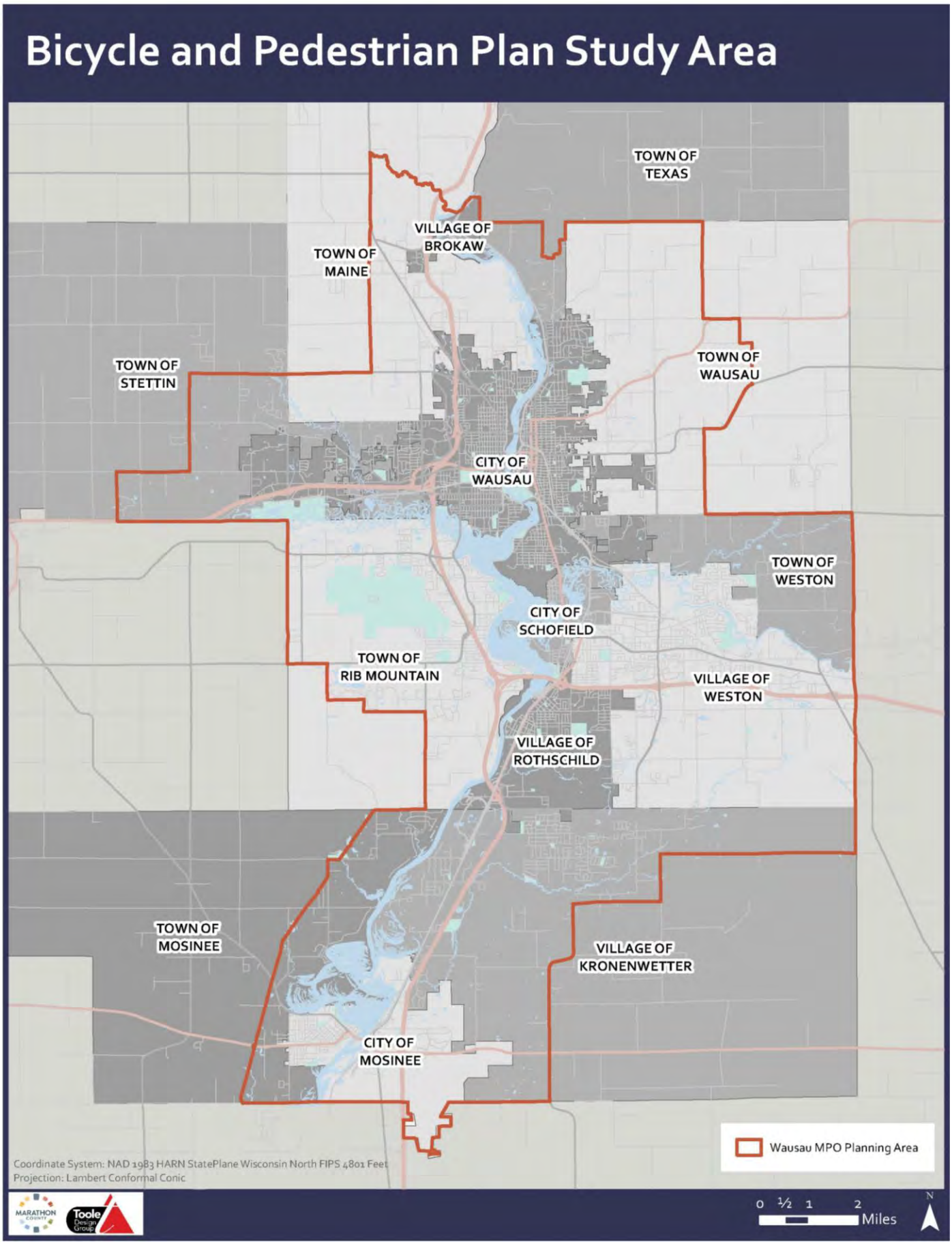
This chapter includes a review of context (population characteristics and summary of existing plans and policies), an analysis of current conditions (demand analysis and overview of crash history), and a summary of opportunities and constraints in the Wausau metro area.

Members of the planning team measuring street width as part of its field work performed in September 2014.

Study Area

The Wisconsin Department of Transportation (WisDOT) defines Metropolitan Planning Areas (MPA) for purposes of transportation planning in metro areas. By definition, MPA boundaries are the same as the boundaries within which MPOs operate. These boundaries change over time as the urban area grows. Therefore, this geographic area will be referred to hereafter as the MPO. Figure 1 shows the study area for this plan, including the communities that fall wholly or partially within the study area.

Figure 1


Bicycle and Pedestrian Plan Study Area
TOWN OF TEXAS
VILLAGE OF BROKAW
TOWN OF MAINE
TOWN OF STETTIN
TOWN OF WAUSAU
CITY OF WAUSAU
TOWN OF WESTON
CITY OF SCHOFIELD
TOWN OF RIB MOUNTAIN
VILLAGE OF WESTON
VILLAGE OF ROTHSCHILD
TOWN OF MOSINEE
VILLAGE OF KRONENWETTER
CITY OF MOSINEE
Wausau MPO Planning Area
Coordinate System: NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet
Projection: Lambert Conformal Conic
MARATHON COUNTY
Toole Design Group
0 ½ 1 2
Miles
N

Population Characteristics

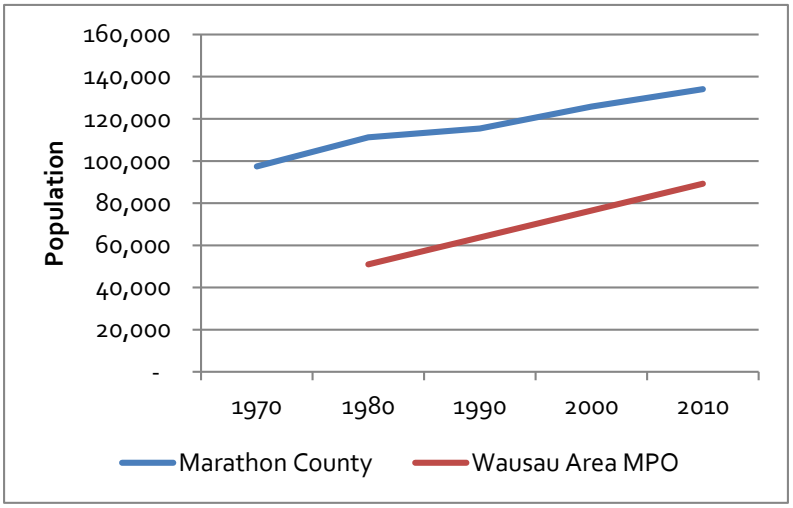
This section describes the demographics of the Wausau MPO area. For each category, a chart or table is provided along with an explanation of the data and its importance to bicycle and/or pedestrian issues. Unless otherwise noted, all data are from the 2012 American Community Survey (ACS) for the Wausau Metropolitan Statistical Area (Wausau MSA) administered by the US Census Bureau and were accessed through the Census Reporter project at www.censusreporter.org.

Current and Historic Population

The Wausau urbanized area surpassed a population of 50,000 by the 1980 Census, triggering the designation of the area as an MPA and the creation of the MPO (which was formally established in 1983). In 2010, the population of the MPO had grown to 89,261.[1] However, data for the exact population of the MPO in 1980, 1990, and 2000 are not readily available. Therefore, it is helpful to consider county-level data for historic trends.

Table 1: Marathon County and Wausau Area MPO Population by Census Year

Year	Marathon County		Wausau Area MPO
	Total Population	Annualized Growth	Total Population
2012	134,735	0.25%	
2010*	134,063	0.64%	89,261
2000*	125,834	0.87%	
1990*	115,400	0.37%	
1980*	111,270	1.33%	50,000+
1970*	97,457		



*Decennial Census figures for Marathon County from 2010 Wisconsin State Profile published by the Census Bureau (accessed at http://www.census.gov/prod/cen2010/cph-2-51.pdf)

The Wausau area has seen a stable population base in recent decades. 2012 Census estimates place the total Marathon County population at 134,735. Since 1980 the region's annual growth rate has not been above 1 percent (see Table 2).

Although there is some variation in growth rates among the municipalities that comprise the MPO area, no municipality experienced sustained growth or decline greater than 2 percent per year. The highest growth rate in the MPO area from 2000 to 2012 was in the village of Kronenwetter at about 1.88 percent annually.

Table 2: Population by MPO Municipality

		2000*	2010*	2012*	Annualized Growth
Cities	Mosinee	4,063	3,988	4,000	-0.13%
	Schofield	2,117	2,169	2,224	0.39%
	Wausau	38,426	39,106	39,122	0.15%
Villages	Kronenwetter	5,369	7,210	7,163	1.88%
	Rothschild	4,970	5,269	5,254	0.44%
	Weston	12,079	14,868	14,786	1.41%
Towns	Bergen	615	641	616	0.01%
	Maine	2,407	2,179	2,019	-1.76%
	Mosinee	2,146	2,069	2,123	-0.09%
	Rib Mountain	7,556	6,964	6,874	-0.87%
	Stettin	2,191	2,477	2,527	1.05%
	Texas	1,703	1,759	1,768	0.30%
	Wausau	2,214	2,190	2,441	0.74%
	Weston	514	592	559	0.65%

* 2000 figures from decennial census; 2010 figures for cities and villages from decennial census; 2010 figures for towns and all 2012 figures from 2010 and 2012 ACS respectively.

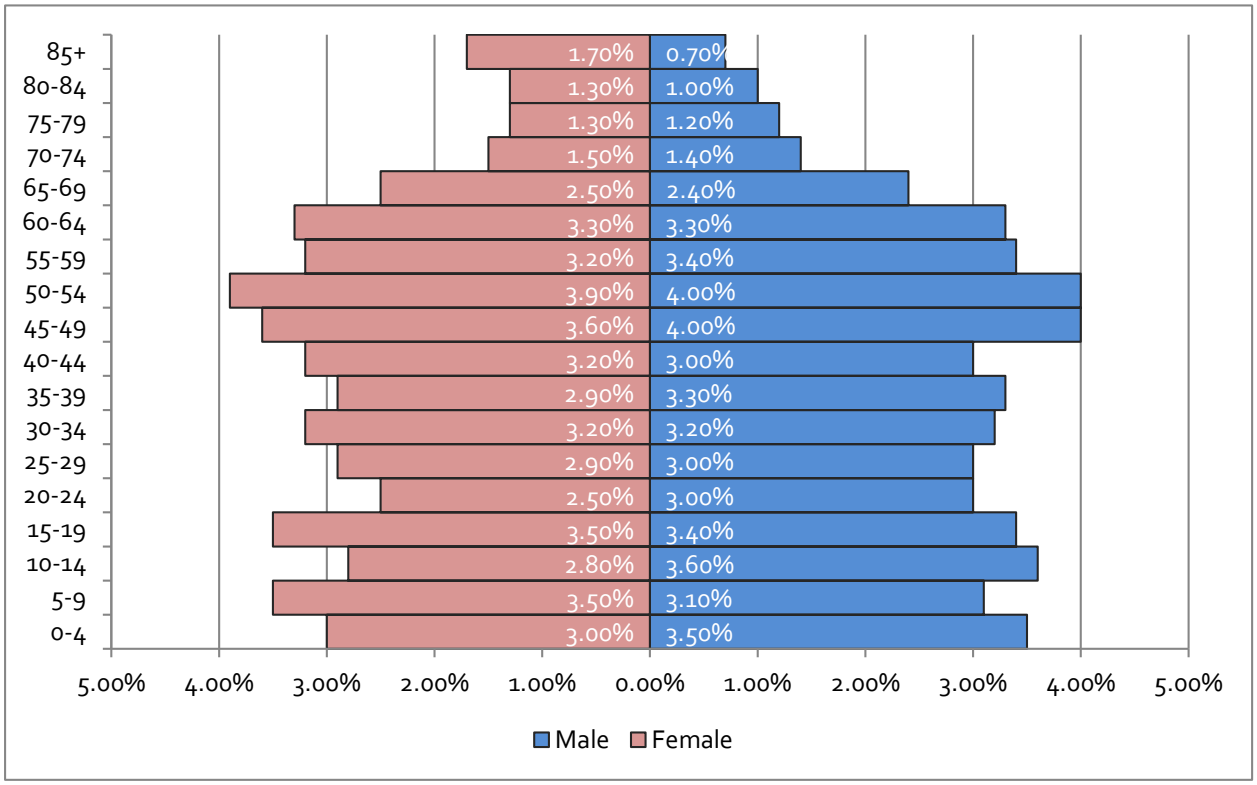
[1] According to the Federal Highway Administration's MPO Database, http://www.planning.dot.gov/Summary.asp?ID=55198300

Age and Gender

Population by age is a useful set of statistics to consider when analyzing biking and walking trips and computing rates. For example, knowing the age pyramid for the study area is helpful in analyzing bicyclist and pedestrian crashes. Understanding the share of the population held by each age and gender group allows the analysis to identify which age ranges experience a disproportionate share of crashes.

Figure 2 illustrates how Marathon County's population is divided between age and gender groups. The length of the bar (and label on each bar) indicates the percentage of the total population that falls in that group. For example, the bar on the left that is fourth from the bottom shows that 3.5 percent of the population is female and between the ages of 15 and 19. The bar on the right that is second from the top shows that 1 percent of the population is male age 80 to 84.

Figure 2: Wausau MSA Population by Age and Gender



Data source: 2012 American Community Survey (ACS)

Bicycle & Pedestrian Mode Share

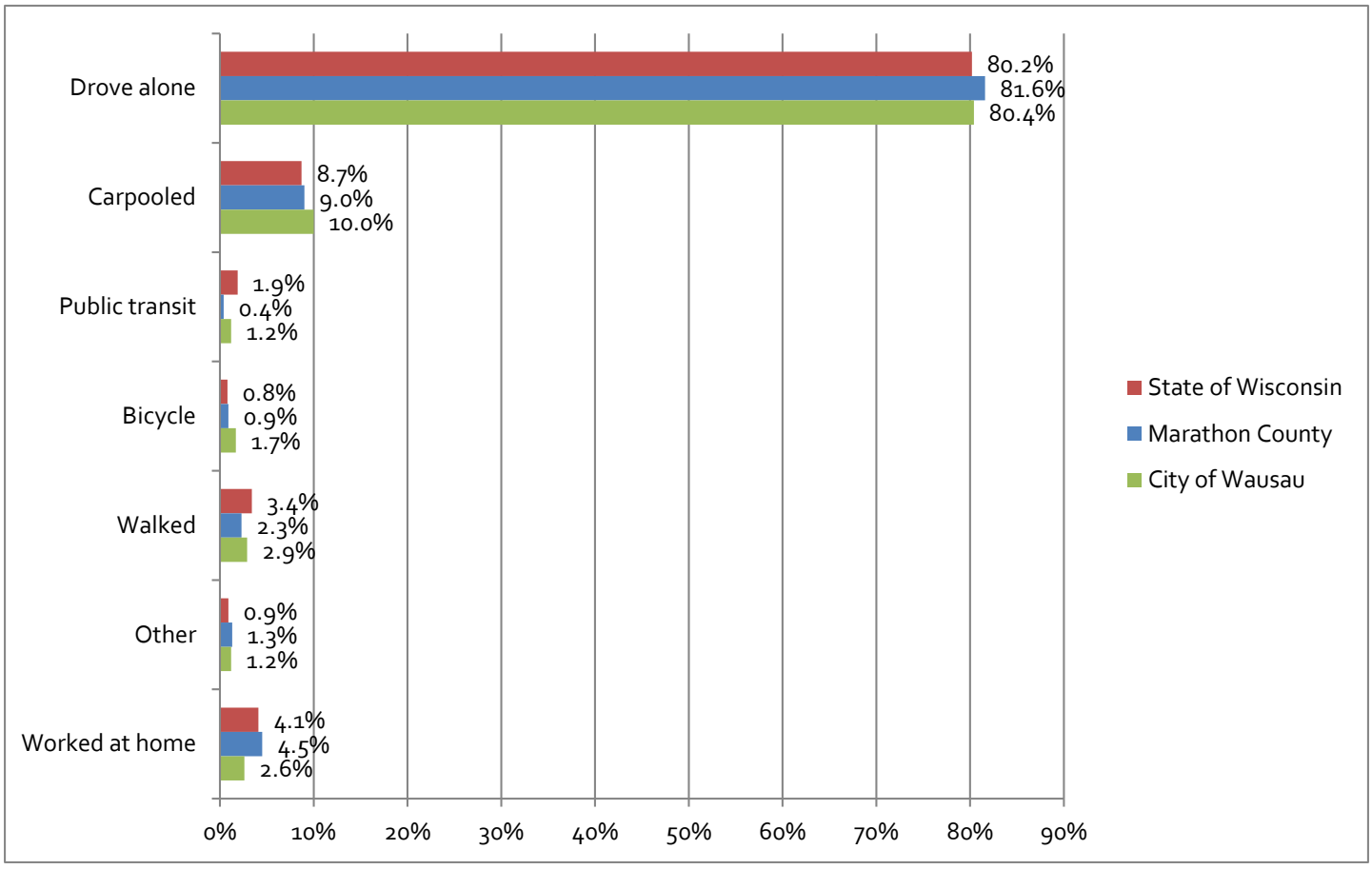
The American Community Survey (ACS) is the best and most reliable dataset relating to how people commute to work in Wausau. The survey includes questions about the modes of transportation that people use to get around. The results indicate the relative magnitude of walking and biking trips made in the region (that is, their mode share).

There are, however, some limitations to the ACS data. The survey asks "thinking about the previous week, what was your primary mode of transportation to work?" The narrow scope of this question presents some issues for accurately determining mode share:

- If someone drove to work three days out of the week and biked the other two days, they are recorded only as driving to work.
- The weather at the time the survey was administered can strongly impact results from year to year.
- The data only represent trips to work, which are a small percentage of the total number of trips people typically make in a week. The survey ignores trips to a restaurant, park, playground, or school, as well as recreational trips.

Despite these drawbacks, ACS data is one of the best resources available for determining mode share because the survey is carried in the same format for all municipalities from year to year. Figure 3 compares the commute mode share of Marathon County and the State of Wisconsin as a whole.

Figure 3: Commute Mode, Wausau MSA and State of Wisconsin



Data source: 2012 American Community Survey (ACS)

Non-motorized transportation currently comprises roughly 3.2 percent of commute-related travel in Marathon County. Data at this level is not available for the MPO. However, the City of Wausau (whose population composes roughly 44 percent of the MPO's population) has a rate of biking that is more than twice the state average (1.7 percent versus 0.8 percent). This suggests the presence of a relatively healthy culture of biking as a means of transportation, at least in the center of the MPO area. The rate of walking in the City is slightly lower than that of the state (2.9 percent versus 3.4 percent).

Summary of Existing Plans and Policies

Numerous background plans and policy documents relevant to this Plan were reviewed in preparation of this Existing Conditions analysis. In the appendix is a summary of these previous and on-going planning efforts affecting biking and walking in and around the Wausau Area MPO. The summary identifies issues that may impact the findings and ultimate recommendations of this project. The review focuses on plans and studies prepared by the Wisconsin Department of Transportation (WisDOT), regional plans, and local plans.

The following plans were reviewed for this analysis:

Statewide Documents

- Connections 2030 (2009)
- Wisconsin State Bicycle Transportation Plan 2020 (1998)
- Wisconsin Pedestrian Policy Plan 2020 (2002)
- Advisory on Installation of Bicyclist Compatible Rumble Strips (2011)
- Wisconsin Department of Transportation Guide for Path/Street Crossings (2011)
- Bicycle Crash Analysis for Wisconsin Using a Crash Typing Tool (PBCAT) and Geographic Information Systems (2006)
- Wisconsin Bicycle Planning Guidance (2003)
- Wisconsin Bicycle Facility Design Handbook (2004)
- Wisconsin Guide to Pedestrian Best Practices (2010)
- Wisconsin Rural Bicycle Planning Guide (2006)

Regional Documents

- Wausau MPO Bicycle and Pedestrian Plan (2009)
- Wausau Metropolitan Area Long-Range Transportation Plan (2016)
- Bicycle & Pedestrian Plan for the Non-Urbanized Area of Marathon County, Wisconsin (1996)
- Marathon County Comprehensive Plan (2006)
- North Central Wisconsin Regional Bicycle Facilities Network Plan (2017)

Local City, Town, and Village Planning Documents

- Rivers Edge Master Plan (2020) - City of Wausau
- South Riverfront Area Master Plan (2020) - City of Wausau
- Towers Area Master Plan (2020) - City of Wausau
- Urban Design & Transportation Master Plan (2019) - City of Wausau
- Unlocking Our Potential (2020) - Wausau Center Mall
- Schofield Ave Corridor Plan (2021) - Village of Weston
- Weston Ave Corridor Plan (2021) - Village of Weston
- The Village of Weston Comprehensive Outdoor Recreation Plan – 2013-2017 Plan Overview
- Rib Mountain Area Bike and Pedestrian Routes Long Range Plan (2013)
- Schofield Bicycle and Pedestrian Plan (2014)
- Kronenwetter Master Non-Motorized Pedestrian Facilities Plan

Municipal Codes

- City of Wausau
- City of Schofield
- Village of Rothschild
- Village of Weston
- City of Mosinee

Demand Analysis

A bicycle and pedestrian demand analysis was conducted in order to assess the probable demand for non-motorized transportation infrastructure in various parts of the study area. Probable demand is not based on existing bicycle and pedestrian infrastructure, conditions, or use; rather, it is based on the destinations and origins of trips for which people might choose to bike or walk if infrastructure conditions were desirable or even simply adequate. Evaluating demand will allow the Wausau Area MPO and member jurisdictions to focus investments in locations that have the greatest potential for increased walking and biking.

Methodology

The demand factors were chosen to estimate demand for utilitarian, commuting, and recreational trips based on potential growth for each trip type. Population density is the primary demand determinant for all three types of trips as it indicates the origin of a large portion of biking and walking trips. For commuting trips, employment density is the best additional proxy. For recreational trips, parks (with emphasis on Rib Mountain State Park and the Mountain-Bay Trail) were added to the analysis. Finally, for utilitarian trips (going out to eat, dropping children off at school, shopping, etc.) the primary proxy is intersection density, which is an indicator of the density of development patterns and street network connectivity. Areas with high levels of intersection density tend to have high densities and diversities of utilitarian destinations and are therefore locations in which utilitarian trips are more likely to occur. Schools and libraries were also included in the analysis to supplement the intersection density proxy for utility trips.

Table 3 shows the types of generators used to determine demand and the weight assigned to each. The weighting of intersection density higher than employment density reflects the fact that more trips (whether by car, bike, or on foot) are taken for utilitarian purposes than for commuting purposes.

Table 3: Demand Map Factors

Factor	Radius	Weight
Population Density	None (contiguous polygons)	40
Intersection Density	0.25 (points)	22
Employment Density	0.5 (points)	18
Schools, Libraries, County/Local Parks	0.5 (points)	12
Rib Mountain State Park and Mountain-Bay Trail	1 (polygon)	8

This methodology does not attempt to capture demand for the type of recreational biking that occurs on low-traffic rural roads. Such demand is better captured by learning from stakeholders. It can also be argued that this is opportunity-driven, based on the availability and accessibility of low-traffic rural roads. Such roads have been identified in the following section.

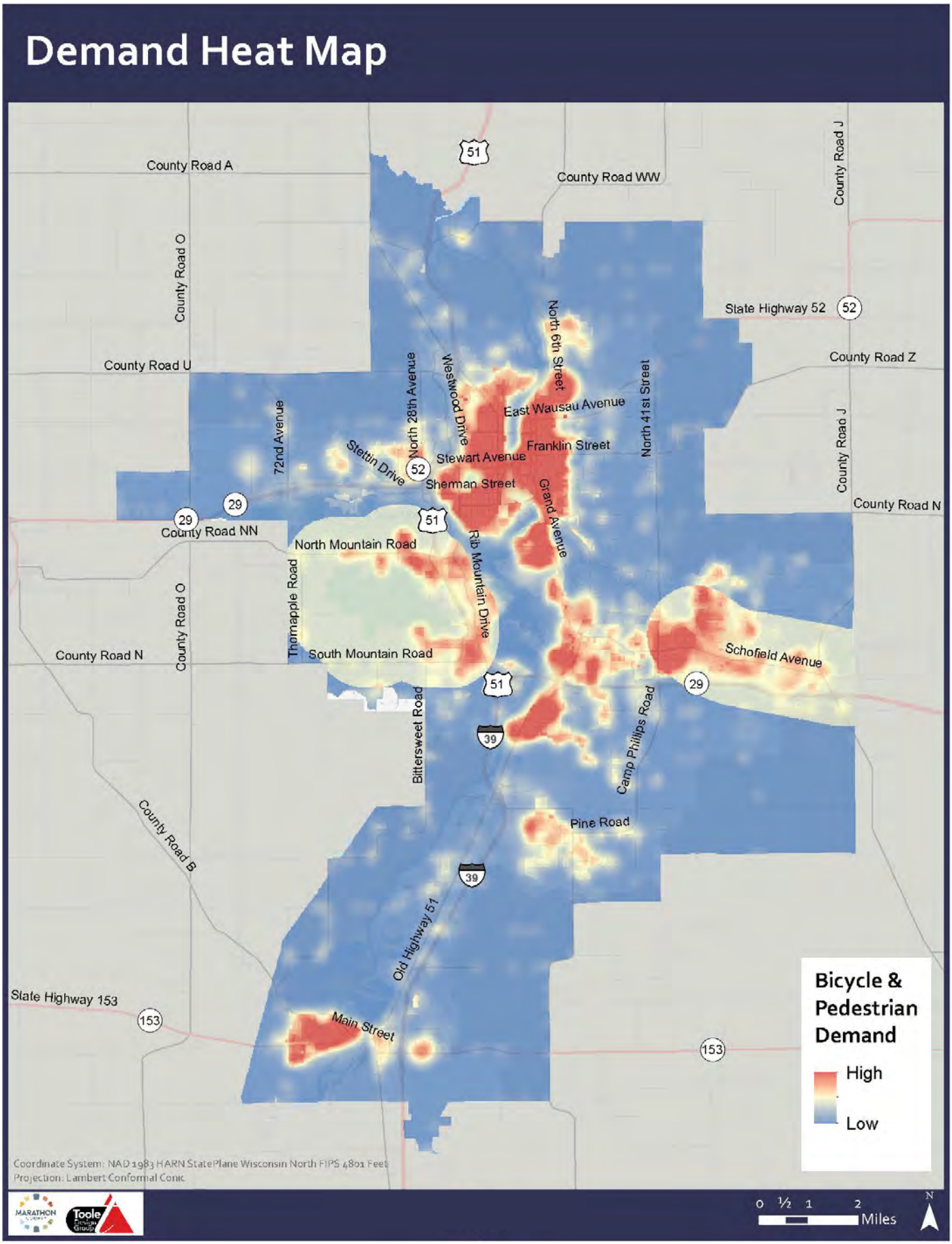
Figure 4 shows the result of the demand analysis. Areas with higher scores, i.e., greater demand, considered "hot spots", are shown as the red areas on the map. Two large yellow areas appear on the map, as a result of the weighting applied to Rib Mountain State Park (the western yellow area) and the Mountain-Bay Trail (the eastern yellow corridor).

Findings

The primary hotspots appearing on the demand map unsurprisingly include downtown Wausau, central Wausau on the west side of the river (near Eastbay, UW Marathon County, and numerous small businesses), and the area near the Kolbe & Kolbe plant. Other hot spots include downtown Mosinee (which has relatively high population and intersection densities), the Business 51 and Weston Avenue area of Rothschild (which has high employment and population densities), and the Schofield Avenue corridor between Schofield and Weston.

Connecting these hotspots via low-stress bikeways and ensuring adequate pedestrian accommodations within each hotspot are priorities of this plan.

Figure 4


Demand Heat Map
County Road A
County Road WW
County Road J
County Road O
State Highway 52
County Road U
County Road Z
72nd Avenue
North 28th Avenue
Westwood Drive
North 6th Street
North 41st Street
East Wausau Avenue
Franklin Street
Stettin Drive
Stewart Avenue
Sherman Street
Grand Avenue
County Road NN
North Mountain Road
Rib Mountain Drive
Thornapple Road
South Mountain Road
Schofield Avenue
Bittersweet Road
Camp Phillips Road
Pine Road
County Road B
Old Highway 51
State Highway 153
Main Street
Bicycle & Pedestrian Demand
High
Low
Coordinate System: NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet
Projection: Lambert Conformal Conic
0 ½ 1 2 Miles
N

Traffic Stress Analysis

Analyzing the traffic stress in the study area is helpful in determining the suitability of individual streets and roads for biking. Furthermore, this analysis indicates what portion of the street and road system within the study area is suitable as-is for biking, and helps to identify pockets or islands of low-stress streets surrounded by high-stress street and road barriers. The primary factor that determines traffic stress is interaction between bicyclists and motor vehicles.

Methodology

Since different types of bicyclists have different levels of comfort interacting with motor vehicle traffic, it is important to define the "typical bicyclist" for this analysis. Anecdotal experience[2] supplemented with survey-based research[3] indicates that people (whether or not they regularly ride a bicycle) can be described based on their traffic stress tolerance or comfort, confidence, and willingness to interact with motor vehicle traffic. The findings are that the majority of people (classified as "interested but concerned") have little tolerance for interacting with motor vehicle traffic and most are very worried about being struck by a motor vehicle while biking. As part of the public participation process that was performed for this plan, a short survey was administered in order to ascertain the traffic stress tolerance of people in the Wausau metro area. After accounting for unintentional bias on the part of the participants, the results generally show similar preference for separation from motor vehicles. In other words, the majority of the population is interested in biking but does not currently do so because of fear of interacting with motor vehicle traffic.

Based on available data (including speed limits, traffic volumes, pavement width, presence of on-street parking, and presence of bike lanes), traffic stress was analyzed for all streets and roads in the study area using a combination of the Level of Traffic Stress (LTS) model (developed by the Mineta Transportation Institute) and the Bicycling Conditions for Rural Roadways model (developed by WisDOT). As a result, all streets and roads are classified as shown in Table 4.

The methodology used in this analysis is described in greater detail in the appendix.

Table 4: Traffic Stress Analysis Categories

Level of Traffic Stress Rating	Bicycling Conditions for Rural Roadways Rating	Description
LTS 1	n/a	Little to no traffic stress. Generally suitable for the entire population.
LTS 2	Good	Little traffic stress. Suitable for most adults, even those with little confidence or experience interacting with motor vehicles.
LTS 3	Moderate	Moderate traffic stress. Uncomfortable and unappealing for some, but suitable for more experienced bicyclists.
LTS 4	Poor	High traffic stress. Only suitable for very skilled bicyclists.

Findings

The map in Figure 5 shows the result of the Traffic Stress Analysis. The map in Figure 6 shows only the LTS 1 and LTS 2 streets and roads. This demonstrates that while the majority of streets and roads in the MPO are low to moderate stress, there are significant gaps between these low-stress pockets. Due to geographical challenges (such as the Wisconsin River) as well as past infrastructure decisions, there are significant gaps between many of these pockets. Significant gaps include:

- Between Mosinee and the rest of the study area (along the County Highway KK and Old Highway 51/IH-39 corridors)
- Between Kronenwetter and Weston (along the Camp Phillips Road / County Highway X corridor)
- Between Wausau and Schofield (along the Grand Avenue corridor)
- From one side of the Wisconsin River to the other in Wausau

[2] Geller, R. "Four Types of Cyclists." Portland Office of Transportation. (https://www.portlandoregon.gov/transportation/article/264746)

[3] Dill, J. and N. McNeil. (2013, January) "Four Types of Cyclists? Examining a Typology to Better Understand Bicycling Behavior and Potential." Paper presented at the Annual Meeting of the Transportation Research Board.

Figure 5

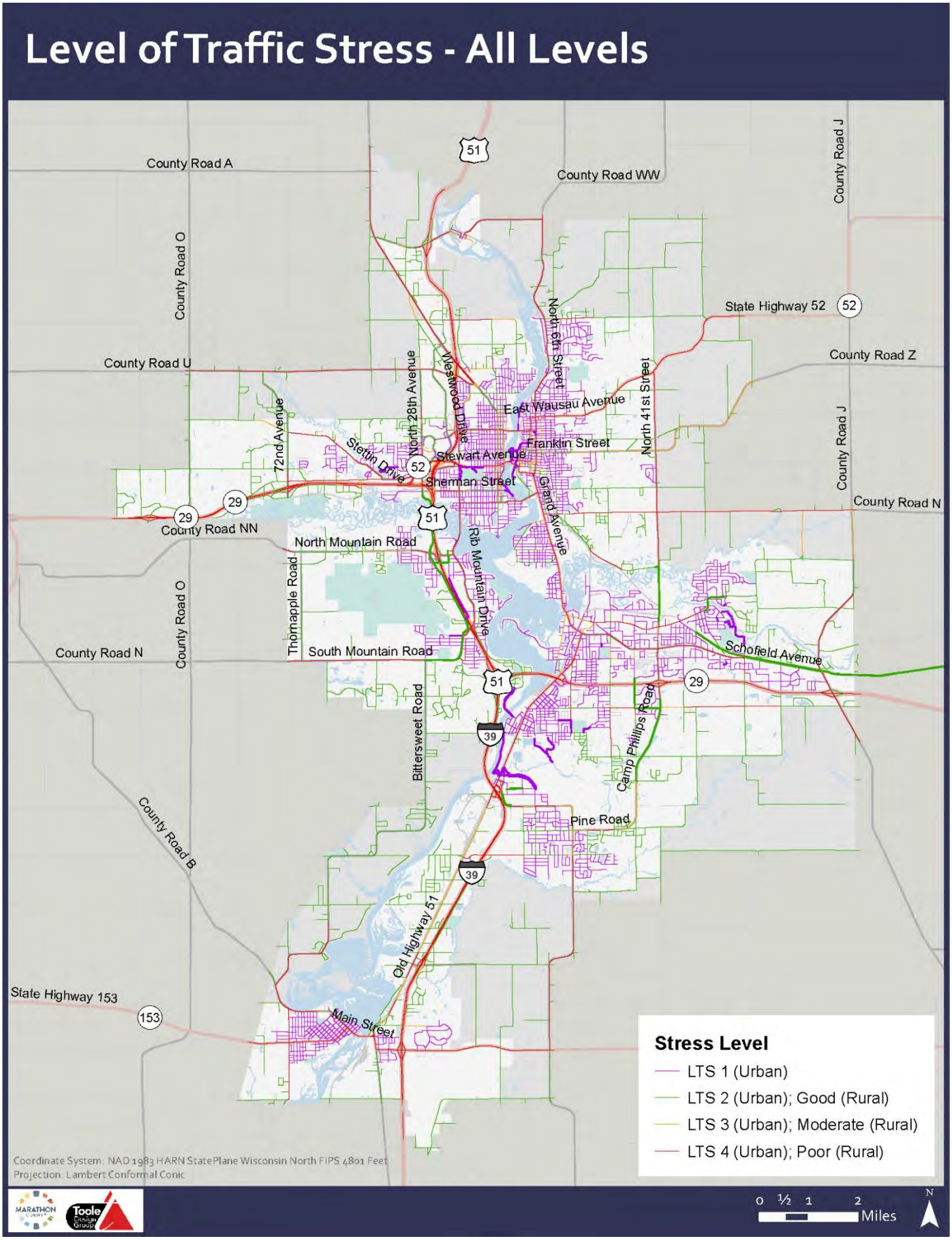
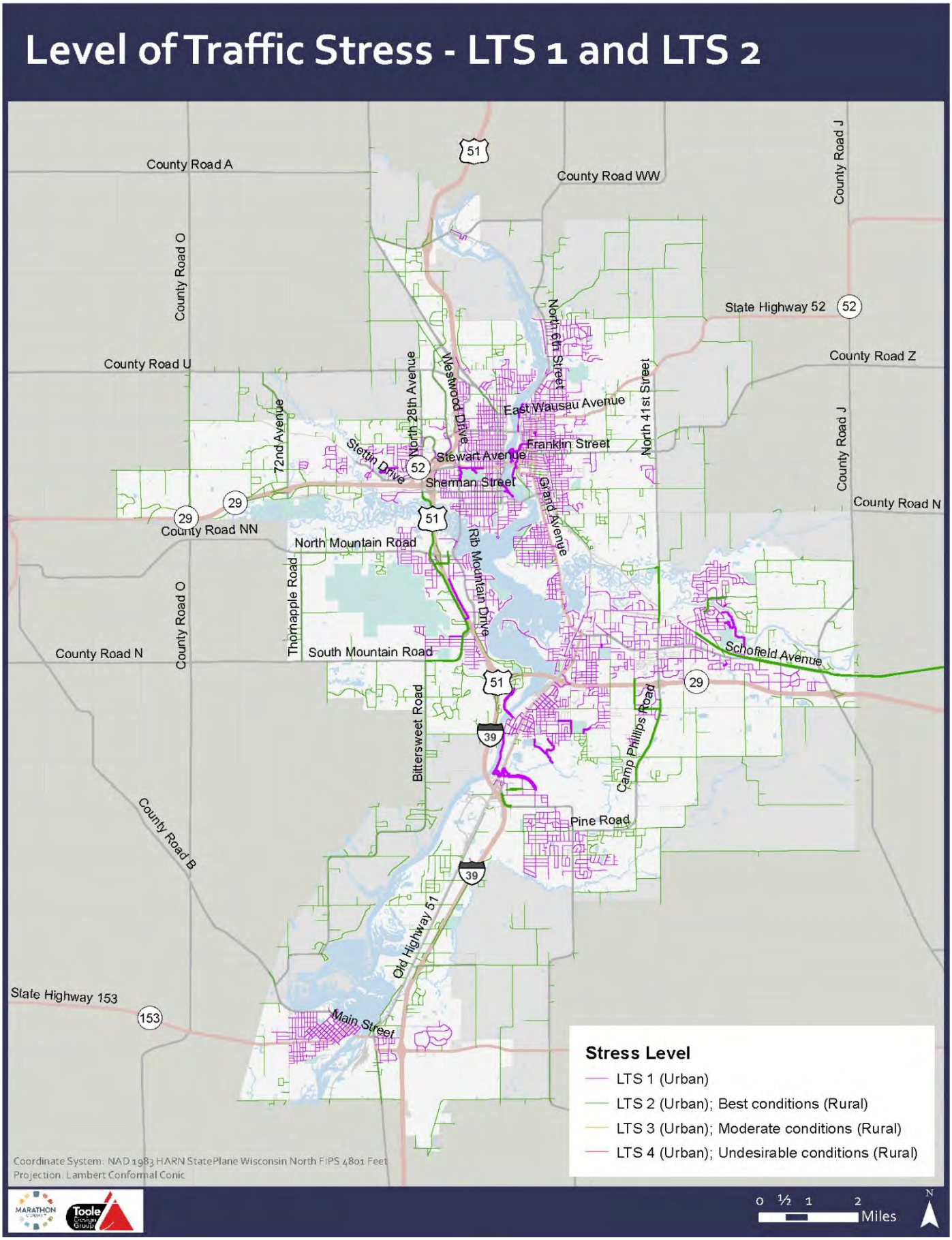

Level of Traffic Stress - All Levels
County Road A
County Road WW
County Road J
County Road O
State Highway 52
County Road U
County Road Z
North 6th Street
Westwood Drive
North 28th Avenue
72nd Avenue
East Wausau Avenue
North 41st Street
Stettin Drive
Franklin Street
Stewart Avenue
Sherman Street
Grand Avenue
County Road NN
North Mountain Road
Rib Mountain Drive
Thornapple Road
South Mountain Road
Schofield Avenue
Bittersweet Road
Camp Phillips Road
Pine Road
County Road B
Old Highway 51
State Highway 153
Main Street
Stress Level
LTS 1 (Urban)
LTS 2 (Urban); Good (Rural)
LTS 3 (Urban); Moderate (Rural)
LTS 4 (Urban); Poor (Rural)
Coordinate System: NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet
Projection: Lambert Conformal Conic
0 ½ 1 2
Miles
N

Figure 6


Level of Traffic Stress - LTS 1 and LTS 2
County Road A
County Road WW
County Road J
County Road O
State Highway 52
52
County Road U
County Road Z
North 6th Street
Westwood Drive
North 28th Avenue
East Wausau Avenue
North 41st Street
72nd Avenue
Stettin Drive
Franklin Street
Stewart Avenue
Sherman Street
Grand Avenue
29
County Road NN
County Road N
North Mountain Road
Rib Mountain Drive
Thornapple Road
South Mountain Road
Schofield Avenue
Bittersweet Road
Camp Phillips Road
39
Pine Road
County Road B
Old Highway 51
State Highway 153
153
Main Street
Stress Level
LTS 1 (Urban)
LTS 2 (Urban); Best conditions (Rural)
LTS 3 (Urban); Moderate conditions (Rural)
LTS 4 (Urban); Undesirable conditions (Rural)
Coordinate System: NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet
Projection: Lambert Conformal Conic
0 ½ 1 2
Miles
N

Traffic Safety Analysis

"This is the safest time for transportation in history, except for pedestrians and bicyclists."

– U.S. Secretary of Transportation Anthony Foxx

While crashes are an unfortunate reality associated with all modes of transportation, bicyclists and pedestrians are especially vulnerable. Pedestrians and bicyclists involved in crashes with motor vehicles are far more likely to be seriously injured or killed than are drivers. Across the U.S., more than 5,000 people are killed while biking or walking and more than 100,000 are seriously injured. Worldwide, more than 270,000 people are killed while walking each year. While in the past Americans have generally accepted traffic fatalities as unavoidable, many communities across the country are adopting "Vision Zero" campaigns to end traffic deaths. Studying the location, characteristics, and contributing factors of crashes allows planners, engineers, and advocates a better understanding of why crashes occur and how they might be prevented though engineering, education, and enforcement efforts.

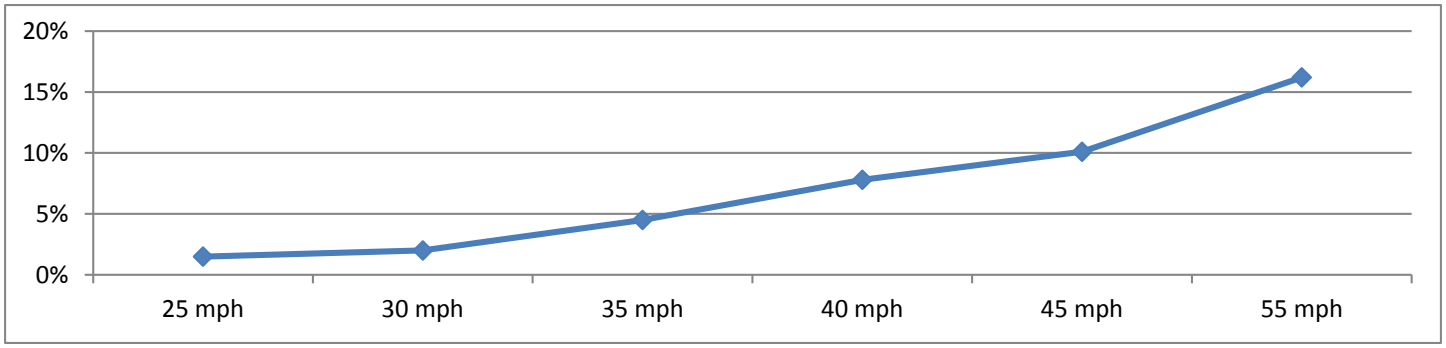
In 2006, WisDOT conducted a research project to examine the relationship between road and intersection conditions and incidences of bicycle crashes. The resulting report[4] includes several key findings:

- Reported crashes between bicyclists and motorists in the State of Wisconsin have continued to decrease annually since the 1998 State Bicycle Transportation Plan was adopted.
- Four of the top five crash types most frequently reported indicated that the motorist made the critical error that contributed to the crash.
- There were far more reported urban crashes than rural crashes (94 percent of the total compared to 6 percent).
- The majority of reported crashes occurred at intersections (66 percent compared to 34 percent).
- There was a high frequency of reported sidewalk/crosswalk-type crashes (28 percent of all crashes).
- Reported crash rates were lower on wider roadways for both local roads and state highways.
- While urban streets had a much higher crash rate, rural highways had a much higher rate of fatalities.

In 2002, a similar analysis for pedestrian crashes was conducted as part of the *Wisconsin Pedestrian Policy Plan 2020.* This analysis looked at crash reports from 1996 to 1999 and included several key findings:

- The majority of crashes occur when the pedestrian is in the crosswalk (25.3 percent) or in the roadway (56.7 percent).
- Most crashes occur at either intersections (37 percent) or midblock (30 percent). However, intersection crashes occur for only 12 percent of fatalities while midblock crashes account for nearly 35 percent.
- There are a variety of crash types, but the two most common involve vehicles turning/merging at intersections and colliding with a pedestrian (13 percent) and pedestrians dashing into the roadway in front of a vehicle (12 percent).
- Injury rates increase with motor vehicle speed (see Figure 7). A pedestrian struck by a motor vehicle travelling at 35 mph is three times more likely to die than a pedestrian struck by a motor vehicle travelling at 25 mph.

Figure 7: Posted Speed Limits and Pedestrian Fatality Rates in Wisconsin (1996-1998)



Data source: Wisconsin Pedestrian Policy Plan 2020

[4] Bicycle Crash Analysis for Wisconsin Using a Crash Typing Tool (PBCAT) and Geographic Information System (GIS)

Overview of Findings

The Wisconsin Transportation Operations and Safety Laboratory (TOPS)—a partnership between the University of Wisconsin-Madison and WisDOT—maintains a database of all crashes occurring in Wisconsin on public streets and roads that involve motor vehicles. While the database does not include crashes between two bicyclists or between a bicyclist and a pedestrian, it does include crashes between these users and motor vehicles. Crashes occurring in the study area were downloaded and analyzed using GIS.

For this plan's study area, the location of all crashes occurring between 2009 and 2014 were identified. A total of 225 pedestrian and bicyclist crashes occurred during this time period—76 pedestrian crashes and 149 bicyclist crashes. Three crashes resulted in fatalities (two bicyclists and one pedestrian), 22 resulted in incapacitating injuries (seven bicyclists and 15 pedestrians), and 116 resulted in non-incapacitating injuries (79 bicyclists and 37 pedestrians). Figure 8 illustrates the location of crashes involving bicyclists from 2009 to 2014. Figure 9 illustrates the location of crashes involving pedestrians from 2009 to 2014.

For bicycle and pedestrian crashes alike, the results of this analysis are consistent with both state and national crash trends and did not show any areas of unique concern. This implies that existing countermeasures that have been used in the areas of engineering, education, and enforcement to reduce bicycle and pedestrian crashes at the state and national levels should be effective in the study area as well.

Summary of Bicycle Crashes in the Wausau Metro Area

There was an average of 24.8 reported bicycle crashes per year with a high of 35 in 2012 and a low of 13 in 2014. During this time, population growth in the study area remained relatively flat. If the decline in crashes observed over the past three years were to continue, this would indicate a positive trend. Most bicycle crashes happened in the months of May through September. Most bicycle crashes occurred during the afternoon rush hour (2:00 and 6:00 pm). A slight rise in crashes was also seen during the morning rush hour and around lunch time. Inclement weather did not appear to be a significant crash factor with 95 percent of crashes occurring under clear or cloudy conditions.

Additional bicycle crash analysis findings include:

- Bicycle crashes occurred predominantly at intersections (81 percent). The majority of crashes happened on roads with a posted speed of 25 to35 miles per hour.
- 71 percent of the bicyclists involved in crashes were male. The greatest concentration of bicyclist crashes by age was between 12-28 years of age. There were smaller concentrations of bicycle crashes among riders in their mid-40s and early 50s. The characteristics of motorists involved in bicycle-related crashes were evenly distributed by sex and age.
- Injuries were generally non-incapacitating (56 percent). One percent of the crashes resulted in death, 5 percent were incapacitating and 38 percent were reported as possible injuries.
- Alcohol involvement (pedestrian or motorist) was reported as "unknown" in 99 percent of bicycle crashes for the study area. For the state as a whole, in 2013, 30 percent of the fatal bicycle crashes and 3 percent of injury crashes involved either an impaired bicyclist or motorist.
- Areas with the highest concentration of bicycle crashes are Grand Avenue (between Thomas Street and the Eau Claire River crossing) and 1st and 3rd Avenues (between Bridge Street and Stewart Avenue). It is probable that a significant factor leading to these concentrations is exposure—more bicyclists ride along these streets than other streets in the region with similar traffic speeds and volumes.

The most common types of bicycle crashes with motor vehicles on a national and statewide basis, common contributing factors, and effective countermeasures are shown in Table 5.

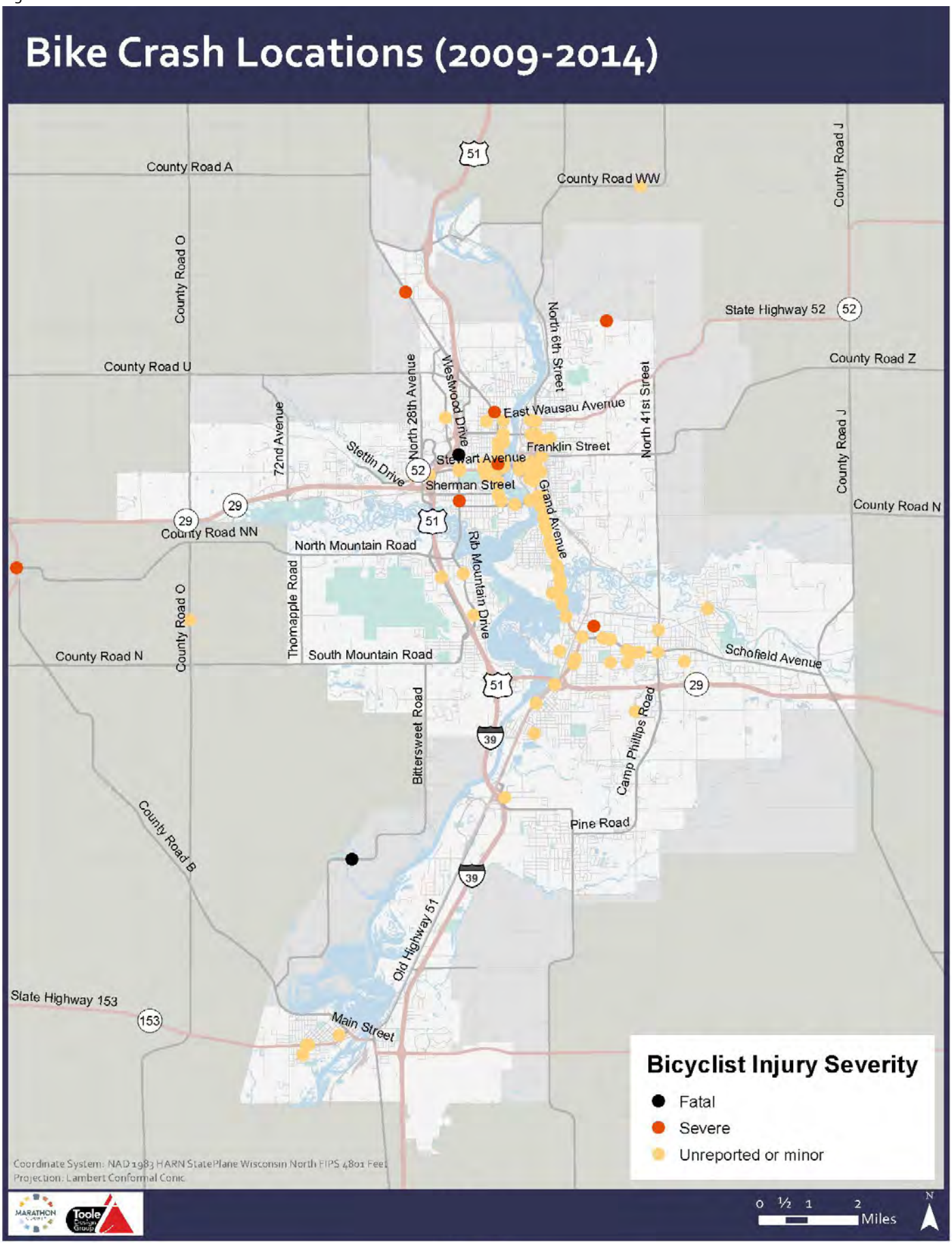
Table 5: Common Bicycle Crash Types

Crash Type	Contributing Factors*	Countermeasures
Child bicyclists		
Bicyclist stop sign/red signal violation	Bicyclist failed to stop at stop sign	Bicyclist/motorist education and enforcement
Bicyclist turn/merge into path of motorist	Bicyclist failed to check behind for traffic and signal turn	Bicyclist/motorist education
Driveway rideout	Bicyclist failed to stop before entering roadway and yield the right of way	Bicyclist/motorist education
Adult bicyclists		
Motorist turn/merge	Motorist failed to yield right of way to bicyclist while turning left or right	Motorist/bicyclist education and enforcement
Motorist driveout – stop sign/red signal	Motorist failed to yield right of way to bicyclist after stopping for stop sign	Motorist education and enforcement
Motorist overtaking bicyclist	Motorist strikes bicyclist, legally in lane, from behind – bicyclist may not have been using lights and reflectors	Motorist/bicyclist education and enforcement

*Although not generally identified as crash types in and of themselves, wrong way riding and riding at night without lights and retro-reflective material are contributing factors in a significant number of bicycle crashes.

In addition to enforcement and engineering strategies, education (such as the Bicycle Wausau Rodeo and Safety Day) is an important strategy to reduce crashes involving bicyclists. Photo by Andrew Plath Photography.

Figure 8


Bike Crash Locations (2009-2014)
County Road A
County Road WW
County Road J
County Road O
State Highway 52
County Road U
County Road Z
North 6th Street
North 41st Street
Westwood Drive
North 26th Avenue
72nd Avenue
East Wausau Avenue
Franklin Street
Stettin Drive
Stewart Avenue
Sherman Street
Grand Avenue
County Road NN
North Mountain Road
Rib Mountain Drive
Thomapple Road
South Mountain Road
Schofield Avenue
Bittersweet Road
Camp Phillips Road
Pine Road
County Road B
Old Highway 51
State Highway 153
Main Street
Bicyclist Injury Severity
Fatal
Severe
Unreported or minor
Coordinate System: NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet
Projection: Lambert Conformal Conic
0 ½ 1 2 Miles
N

Summary of Pedestrian Crashes in the Wausau Metro Area

There was an average of 12.6 reported pedestrian crashes per year with a high of 18 in 2011 and a low of 8 in 2009. During this time, population growth in the study area remained relatively flat. Meanwhile, crashes rose and then fell by 9 percent between each of the last three years. If this trend continues, it would indicate a relatively stable crash rate. The months with the most crashes were July, September, October, and November. Most pedestrian crashes happened between 11:00 am and 11:00 pm, with a slight rise in crashes between 6:00 and 9:00 am. Inclement weather did not appear to be a significant crash factor with 86 percent of crashes occurring under clear or cloudy conditions.

Additional pedestrian crash analysis findings include:

- The location of pedestrian crashes was evenly split between intersection and non-intersection, with slightly more crashes occurring at non-intersections (54 percent). The majority of crashes happened on roads with a posted speed limit of 25 miles per hour.
- 62 percent of the pedestrians involved in crashes were male. The greatest concentration of pedestrian crashes by age was between 10-18 years of age. The rest of the crashes were fairly evenly distributed among the other age groups. The characteristics of motorists involved in pedestrian crashes were evenly distributed by sex and age.
- Injuries were generally non-incapacitating (49 percent). One percent of the crashes resulted in death, 20 percent were incapacitating and 17 percent were reported as possible injuries.
- Alcohol involvement (pedestrian or motorist) was reported as "unknown" in 86 percent of pedestrian crashes for the study area. For the state as a whole, in 2013, 54 percent of the fatal pedestrian crashes and 9 percent of injury crashes involved either an impaired pedestrian or motorist.
- The area with the highest concentration of pedestrian crashes is downtown Wausau, which has the highest level of pedestrian activity in the region. Most of these crashes resulted in unreported or minor injuries. Of the 11 crashes that occurred in the study area resulting in fatalities or severe injuries, five occurred along the State Highway 52 (Stewart Avenue/Forest Street/Scott Street) corridor from US Highway 51 to downtown Wausau (including one crash on 17th Avenue just north of Stewart Avenue).

The most common types of pedestrian crashes with motor vehicles on a national and statewide basis, common contributing factors, and effective countermeasures are shown in

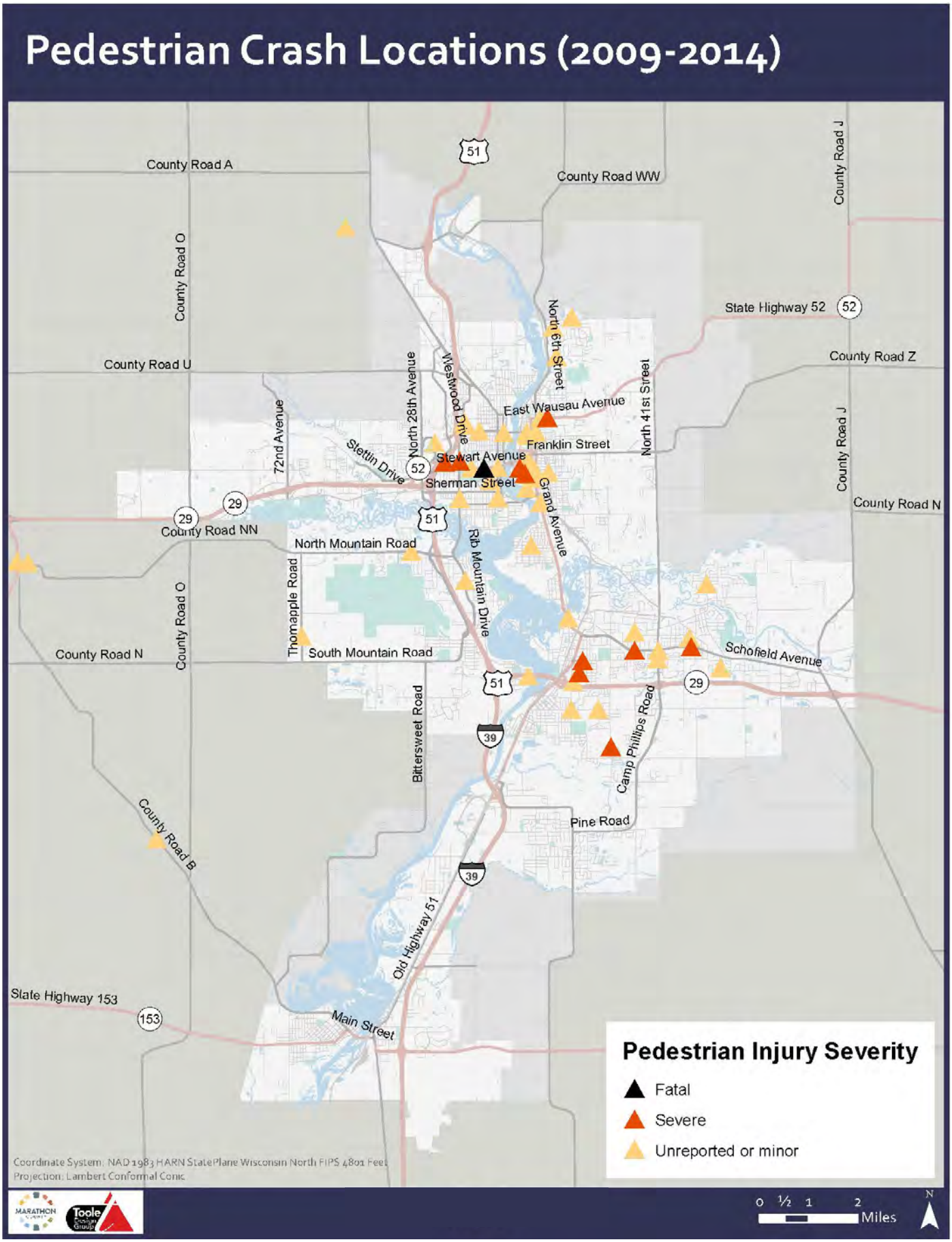
Table 6.

Table 6: Common Pedestrian Crash Types

Crash Type	Contributing Factors	Countermeasures
Intersections	Turning vehicles, Pedestrian run/dart out, Driver violations	Engineering, education, and enforcement
Midblock*	Pedestrian run/dart out, Motorist speed	Education, engineering, and enforcement
Walking along the road	Pedestrian was walking with traffic	Engineering, education, and enforcement
Motorist backing**	Motorist inattention	Education

*Nationally, children and seniors are overrepresented by this crash type **Nationally, seniors are overrepresented by this crash type. Wisconsin's crash reporting requirements do not capture crashes on private property. Therefore, this data is not available for the state.

Figure 9


Pedestrian Crash Locations (2009-2014)
County Road A
County Road WW
County Road J
County Road O
State Highway 52
County Road U
County Road Z
North 6th Street
Westwood Drive
North 28th Avenue
North 41st Street
East Wausau Avenue
72nd Avenue
Stettin Drive
Franklin Street
Stewart Avenue
Sherman Street
Grand Avenue
County Road NN
North Mountain Road
Rib Mountain Drive
Thornapple Road
South Mountain Road
Schofield Avenue
Bittersweet Road
Camp Phillips Road
Pine Road
County Road B
Old Highway 51
State Highway 153
Main Street
Pedestrian Injury Severity
Fatal
Severe
Unreported or minor
Coordinate System: NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet
Projection: Lambert Conformal Conic
0 ½ 1 2 Miles
N

Summary of Opportunities and Challenges

There are a number of factors present in the Wausau Area MPO that present opportunities and/or challenges. A summary of the most significant opportunities and challenges observed in the study area is shown below.

Wisconsin River – One of the area's most valuable natural resources, the Wisconsin River creates significant challenges for all modes of transportation due to the limited number of bridges existing. Some of these bridges, such as the path bridge at River Street in Rothschild, create useful low-stress connections for biking and walking. However, most of the bridges that cross the river in the MPO are not very comfortable or convenient for biking or walking across. In terms of biking, none of the three street crossings (Thomas Street, Stewart Avenue, and Bridge Street) have bicycle accommodations. Each of these bridges has sidewalks, but only Thomas Street has a separation from motor vehicle traffic. The other two have sidewalks placed immediately adjacent to travel lanes, which—especially when coupled with the steepness and length of the bridges—can be uncomfortable for pedestrians.

Street Grid – Most of the communities in the study area have interconnected street grids, which provide multiple low-traffic routes. A grid of streets inherently provides the shortest distance between practically all origin-destination pairs (especially compared to a suburban pattern of cul-de-sacs and meandering streets).This results in good conditions for biking in many parts of the study area. It also benefits pedestrians, especially where sidewalks are present. The value of a street grid can be seen in areas where one is not present, such as the Grand Avenue corridor (between County Road N/Townline Road and Schofield), in which Grand Avenue is the only viable route for motor vehicles, bicycles, and pedestrians (alternative routes being very circuitous by comparison[5]).

Topography – Some bicyclists enjoy riding up and down hills. However, steep topography can be very discouraging for many would-be bicyclists. It also can be extremely challenging for pedestrians—especially those with disabilities. Rib Mountain is the most well-known topographic feature in the area and many avid bicyclists regularly ride up and down Park Road as a challenge. However, there are several other areas of significant topographic change in the region. These include the west side of Wausau, near the hospital, as well as on the east side of the study area, where a series of ridges roughly follow 10th Street and Northwestern Avenue (notably, this line also marks the general extent of the urbanized area).

[5] The length of the closest parallel route, using neighborhood streets, is 40% longer and still requires riding along Grand Avenue near the airport.

Railroads – In some ways, railroads can be opportunities. If a railroad ceases to operate, a shared-use path can be constructed in its alignment. However, they also pose challenges, especially where they cross sidewalks and streets. It is very challenging to build a sidewalk/railroad crossing that meets federal accessibility requirements and does so with longevity. For bicyclists, riding over railroad tracks creates the risk of having one's wheel caught in the flangeway. This problem is exacerbated when the railroad crosses the street at a skew. There are several railroads that pass through the Wausau Area MPO. Several of these converge near downtown Wausau, creating multiple skewed crossings.

Excess Street Capacity – There are many streets in the Wausau Area MPO that are wider than they need to be to accommodate the levels of traffic that they convey. This creates the opportunity to perform "road diets" (where an extra lane is replaced with a bike lane) or "lane diets" (where all lanes are kept, but are narrowed slightly to allow a bike lane to be added). While there are opportunities for both treatments in the study area, there are more opportunities for lane diets than for road diets. For example, 28th Avenue (between Sherman Street and State Trunk Highway 52) and Sherman Street (between 28th Avenue and 17th Avenue) both have wide lanes that could be narrowed to allow bike lanes or urban shoulders to be retrofitted via striping.

Excess capactiy on 3rd Avenue in Wausau allowed a "road diet" to be performed to convert the right-most travel lane to a wide bike lane. Photo by Pat Peckham, City Pages.

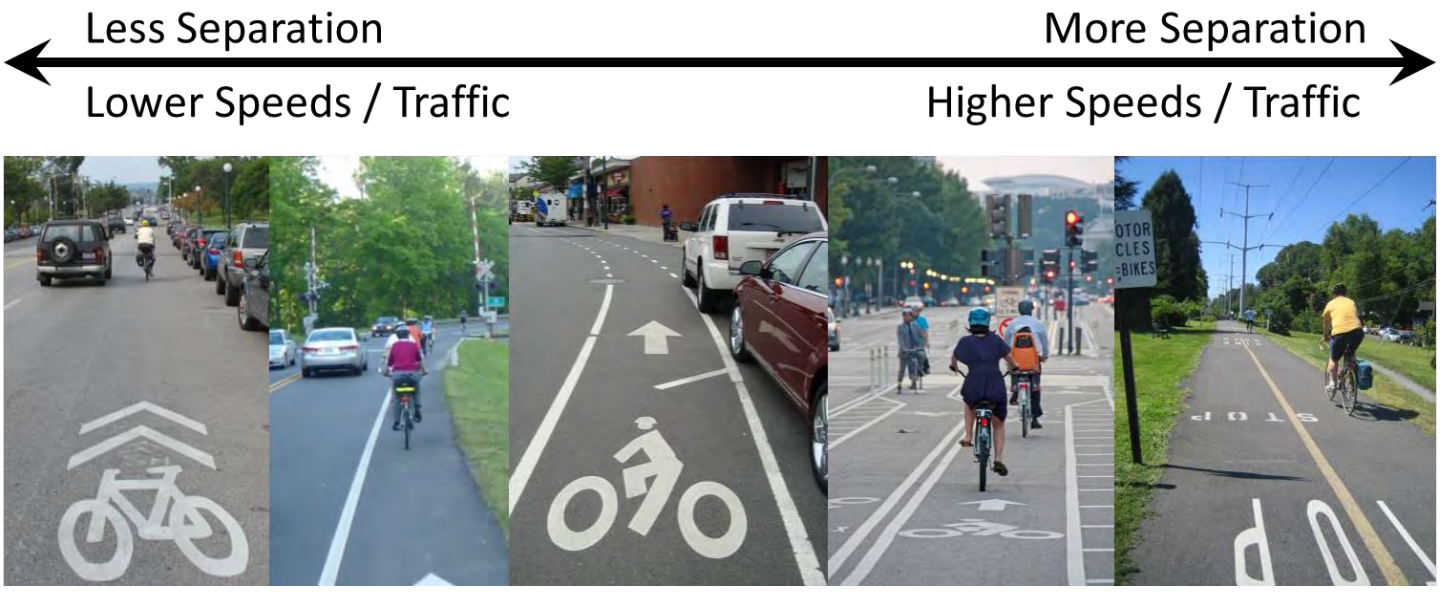
Conclusion & Initial Observations

In general, the underlying conditions are favorable for biking and walking in Wausau. There is measurable and distributed demand for biking and walking, there is a well-connected network of low-traffic streets, and there are a number of shared-use paths and other elements of bicycle infrastructure that attract a good amount of use. The analysis performed indicates that enhancing a few key routes (which largely align with the MPO's recently-established 105-mile metropolitan bicycle route system) could greatly increase the amount of biking in the area.

Chapter 3
Engineering

The Role of Engineering

The term "engineering" is used to reference the physical infrastructure (paths, bike lanes, sidewalks, paved shoulders, etc.) and traffic control devices (signals, signs, crosswalks, pavement markings, etc.) that people use for self-propelled travel. Of the "Five E's," engineering is the most visible and is widely recognized as being the most impactful in terms of making walking and bicycling safer. While law enforcement and proper education for bicyclists, pedestrians, and motorists alike are both vital, safely-engineered infrastructure is the first and biggest step toward increasing safety. Failing to provide bicycle infrastructure appropriate to the context (for example, sharrows on a very busy street instead of more appropriate bike lanes) not only increases the potential for conflicts between bicyclists and motorists, it also discourages people that are wary of bicycling around cars from traveling in that area. For that reason, engineering plays a vital role in making walking and bicycling more appealing to the broader population.



There is a spectrum of facility types (especially in terms of bicycle infrastructure) that should be applied based on the traffic context in order to provide low-stress environments for people less comfortable interacting with motor vehicle traffic.

The increase in people bicycling along streets that are part of the Wausau area's recently-implemented bicycle route network is a primary example of the impact of engineering activities.

Inventory of Current Bicycle Routes & Infrastructure

The foundation of the Wausau area's regional bicycle system is its recently-established 105-mile metropolitan bicycle route network and signage system that spans across the entire metro area. Wayfinding for the bicycle route system is provided by over 600 custom bicycle route signs that are color-coded and numbered by route. There are approximately 3.5 miles of bike lanes (Bike Route 6 utilizes 2 miles of these) and 4.3 miles of shared lanes with shared lane markings (also known as "Sharrows") within Wausau's city limits (this includes the wide outside lanes with shared lane markings recently added to Grand Avenue between Kent Street and Division Street). Furthermore, it is estimated (based on roadway width) that there are approximately 24 miles of paved shoulders in the urban area.

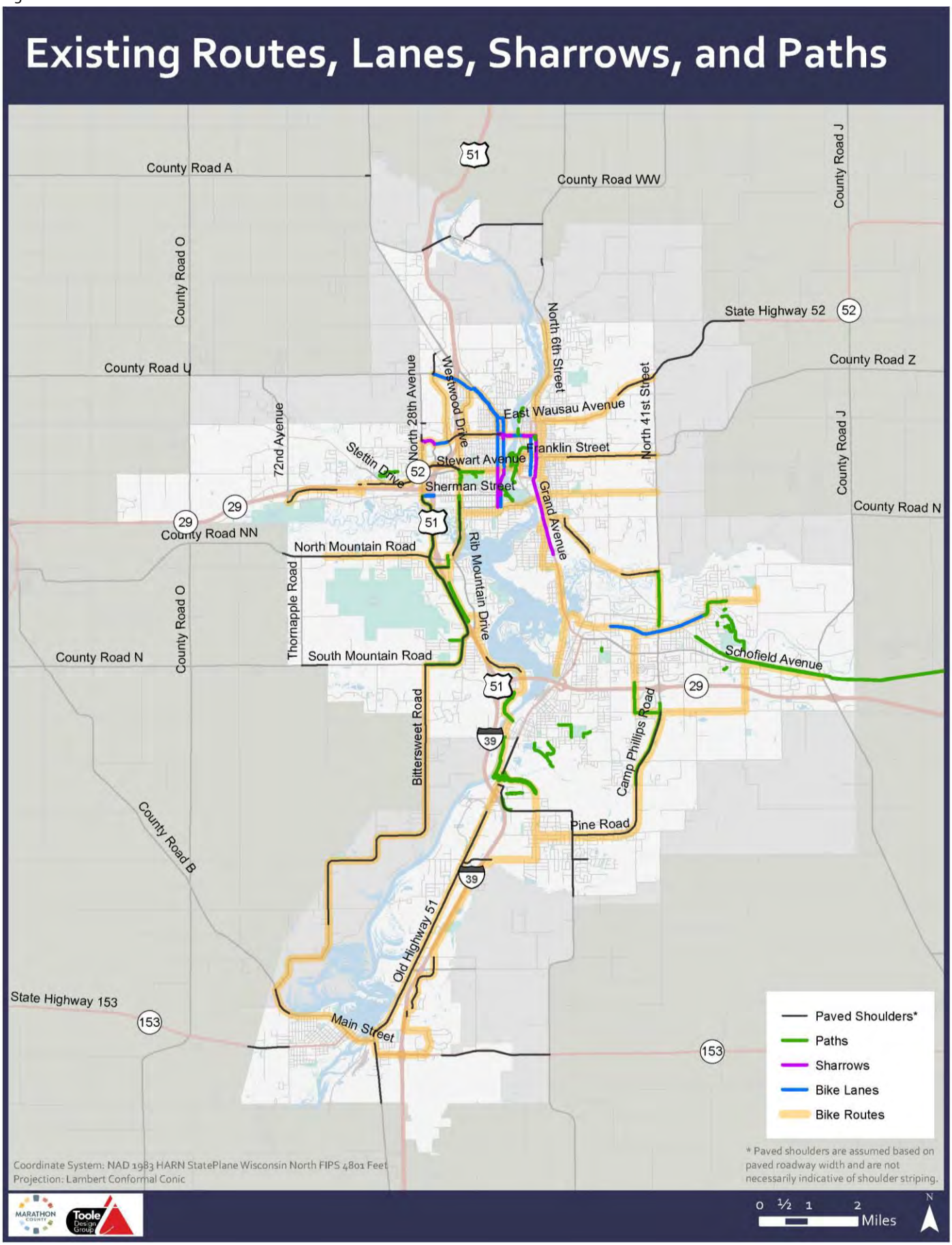
There are numerous shared-use paths in the metro area totaling approximately 26 miles. This includes 3.5 miles of the Mountain-Bay Trail, which extends an additional 76 miles to Green Bay. Approximately 8 of the 26 miles exist as sidepaths along high-traffic streets and roads; these sidepaths help overcome several connectivity challenges posed by freeways and the Wisconsin River. In addition, shared-use path bridges over the Wisconsin River at Rothschild (Cedar Creek Trail) and over Highway 29 at Birch Street in Weston further improve regional connectivity. Most of the shared-use paths are paved, and most are 10 feet wide (the current state and national standard).

The presence of sidewalk infrastructure in the area varies from one community to the next. Wausau generally has sidewalks on both sides of all streets; however, there are some neighborhoods within the city with sidewalks on only one side of streets or with no sidewalks along any streets. Rothschild has sidewalks along most of its arterial and collector streets as well as about half of its neighborhood streets. Mosinee, Schofield, and Weston are constructing sidewalks concurrent with street and road projects and generally have sidewalks along at least one side of all arterial and collector streets, but not residential streets. In Rib Mountain, sidewalks exist along Rib Mountain Drive and Robin Lane.

Examples of existing bicycle and pedestrian infrastructure—paths, kiosks, and bridges—in the Wausau metro area. Photos by Denis Helke.

Figure 1 shows the location of existing bike lanes, streets with shared lane markings (sharrows), paths, and paved shoulders overlaid atop the current metropolitan bike route network.

Figure 1


Existing Routes, Lanes, Sharrows, and Paths
County Road A
County Road WW
County Road J
County Road O
State Highway 52
County Road U
County Road Z
North 6th Street
Westwood Drive
North 28th Avenue
East Wausau Avenue
North 41st Street
72nd Avenue
Stettin Drive
Franklin Street
Stewart Avenue
Sherman Street
Grand Avenue
County Road NN
North Mountain Road
Rib Mountain Drive
Thornapple Road
South Mountain Road
Schofield Avenue
Bittersweet Road
Camp Phillips Road
Pine Road
County Road B
Old Highway 51
State Highway 153
Main Street
Paved Shoulders*
Paths
Sharrows
Bike Lanes
Bike Routes
* Paved shoulders are assumed based on paved roadway width and are not necessarily indicative of shoulder striping.
Coordinate System: NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet
Projection: Lambert Conformal Conic
0 ½ 1 2 Miles
N

Bicycle Network Recommendations

The Wausau metro area has a comprehensive network of mapped and signed bicycle routes. These routes largely exist on low to moderate traffic streets and form a connected network across the region. However, the majority of the signed metropolitan bicycle route network does not have dedicated bicycle infrastructure (such as bike lanes or paths), and therefore often has higher levels of traffic stress, as identified previously in this document. In order to expand access and connectivity for bicyclists (especially the "interested but concerned" portion of the population), it is therefore important to identify opportunities to lower traffic stress along existing bike routes and potential new connections through the provision of dedicated bicycle infrastructure.

Analysis and Field Work

A Bicycle Study Network was identified that includes the entirety of the existing metropolitan bicycle route network as well as additional streets that make important local and regional connections. The streets and routes that comprise the Bicycle Study Network were then analyzed in greater detail than the rest of the region's street and road system. This includes on-the-ground field review of each corridor to record speed limits, roadway configuration, potential hazards, occupancy of on-street parking, etc. On September 3-4, 2014, the consultants and Marathon County staff performed field work to study existing conditions. The team traveled the entire bicycle study network (including approximately 30 miles by bicycle) as well as other streets and roads in the region.

Approach

In general, recommendations for bicycle facilities were developed with the goal of accommodating the "interested but concerned" portion of the population referenced in Chapter 2. Due to this focus, some recommendations include lower-stress facilities on streets that already have bicycle infrastructure because the existing facilities (typically shared-lane markings or sharrows) do not ensure an appropriate level of traffic stress. The types of bicycle facilities recommended vary based on factors such as a roadway's traffic context, planned upcoming roadway projects, existing conditions, and facilities needed to improve a road's stress level.

Methodology

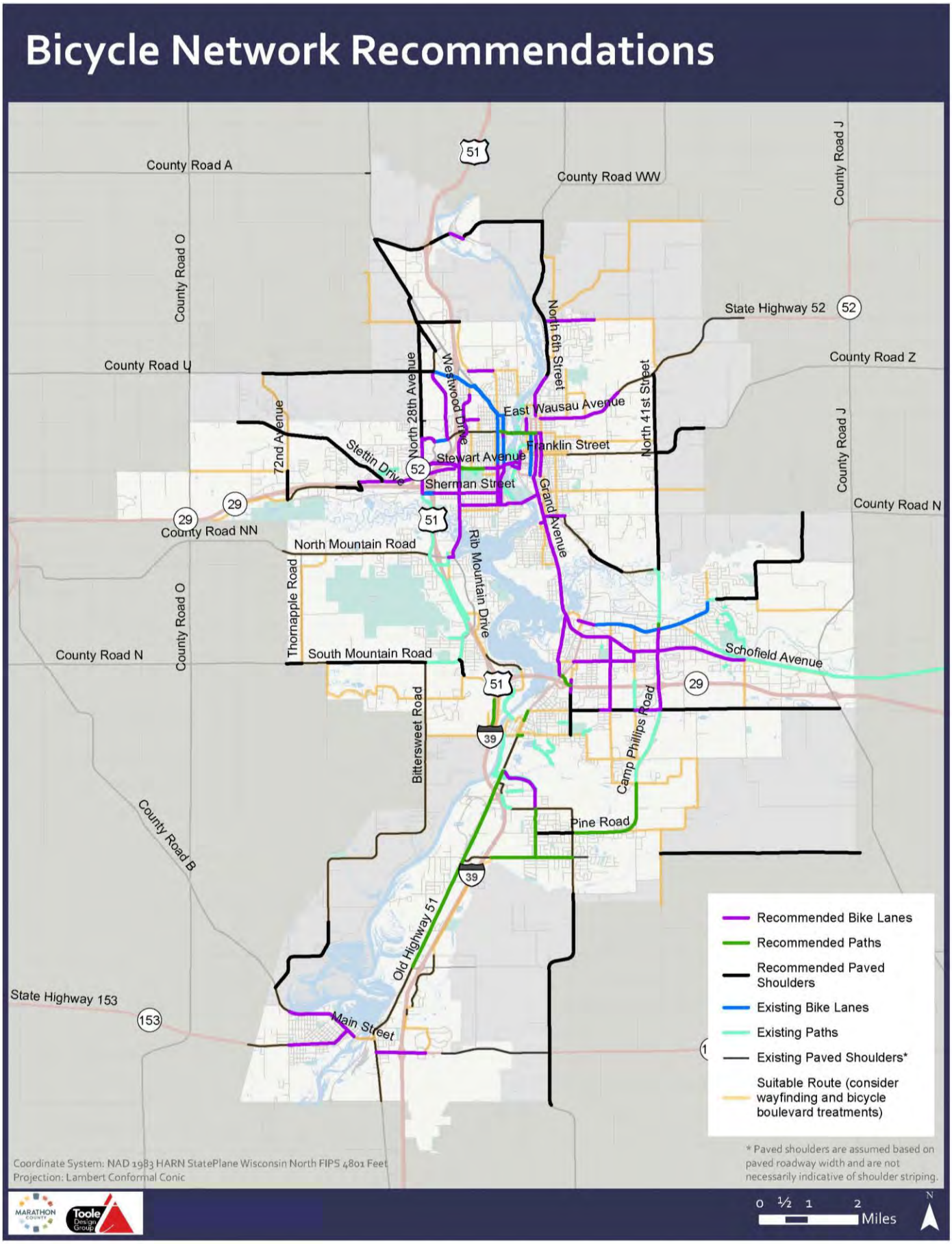
Recommendations were developed using a methodology that combines GIS-based calculations with manual assessments using field notes and available imagery. Recommendations were developed using the following methodology:

1. Urban street segments with a stress rating of 1 (suitable for all people) or 2 (suitable for most adults) were not given a recommendation. Rural road segments rated as 1 ("good" or suitable for most adults) under the rural rating scheme were also not given a recommendation. These segments are considered acceptable as-is.
2. Paved shoulders are recommended for rural roadways with a rating of 2 (moderate) or 3 (poor).
3. The width and configuration of urban road segments were examined. Where the roadway width (according to the GIS data) indicated that space could be dedicated to bike lanes without removing existing travel or auxiliary lanes, bike lanes were recommended.
4. The traffic level of multilane roadways was considered in several instances to further evaluate the streets for bike lanes if none were recommended in Step 3. Removal of a travel lane (commonly referred to as a "road diet" to make space for bike lanes) was recommended initially for several roads with less than 15,000 ADT.[1]
5. The Traffic level for multilane roadways was again examined. Roads with more than 15,000 but less than 20,000 ADT were also identified as potential road diet candidates, although they were flagged as higher volume than those with less than 15,000 ADT.

Bicycle network recommendations are shown on Figure 2. Detail regarding the various recommended facility types can be found on the following pages. Additional detail on individual recommendations is provided in Chapter 7.

[1] Average Daily Trips (ADT) is a measure of typical daily motor vehicle traffic volume on a street or road. The FHWA's "Road Diet Informational Guide" lists a number of studies that identify thresholds for road die feasibility. The lowest threshold given was 15,000 ADT, which was the basis for using 15,000 as the initial cutoff in developing recommendations. Other studies showed successful outcomes at volumes as high as 24,000.

Figure 2


Bicycle Network Recommendations
County Road A
County Road WW
County Road J
County Road O
State Highway 52
County Road U
County Road Z
North 6th Street
Westwood Drive
North 28th Avenue
East Wausau Avenue
North 41st Street
72nd Avenue
Stettin Drive
Franklin Street
Stewart Avenue
Sherman Street
Grand Avenue
County Road NN
North Mountain Road
Rib Mountain Drive
Thornapple Road
South Mountain Road
Schofield Avenue
Bittersweet Road
Camp Phillips Road
Pine Road
County Road B
Old Highway 51
State Highway 153
Main Street
Recommended Bike Lanes
Recommended Paths
Recommended Paved Shoulders
Existing Bike Lanes
Existing Paths
Existing Paved Shoulders*
Suitable Route (consider wayfinding and bicycle boulevard treatments)
* Paved shoulders are assumed based on paved roadway width and are not necessarily indicative of shoulder striping.
Coordinate System: NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet
Projection: Lambert Conformal Conic
0 ½ 1 2 Miles
N

Bicycle Facility Types

Bikeway recommendations can be categorized into four primary types:

Bike lanes that are recommended include standard bike lanes, wide bike lanes, buffered bike lanes, and separated bike lanes. In general, a bike lane recommendation indicates a standard 4- to 5-foot wide bike lane unless otherwise noted. However, the appropriate facility type should be investigated in more detail during the development of a specific project. In cases where a lower-stress facility, such as a wider or buffered bike lane, is feasible, it should be considered even if the Plan recommendation only calls for standard bike lanes. The feasibility of separated bike lanes (also known as a "cycletracks") should be explored for any higher-traffic arterial; note that this facility requires a higher level of analysis regarding traffic impacts, traffic control, etc. Of particular note, there are many cases where a pseudo bike lane can be created simply by striping an urban shoulder where parking is rarely utilized. Although not officially considered a bike lane by the standard definition, such a treatment has been included under the umbrella of "bike lane" in this Plan and has been noted accordingly.

Paved shoulders are typically reserved for rural cross-sections and are more straightforward to construct than bike lanes. It is acceptable to mark paved shoulders as bike lanes on low to moderate speed roadways. However in the Wausau area, almost all of the shouldered roadways are rural moderate to high speed roadways at the edges of the metro area. Many of the recommendations for paved shoulders will require actually laying new pavement on an existing gravel shoulder. In some cases the current paved surface is wide enough as is and simply requires a striped shoulder to delineate the space. These nuances have been noted in the recommendations.

Paths provide accommodations for bicyclists and pedestrians. Recommendations for paths include short segments that connect through parks or along easements. However, most of the path recommendations in this Plan are along streets with particularly high motor vehicle traffic volumes and speeds as alternatives to on-street facilities. Paths along streets are commonly referred to as "sidepaths" and should only be considered along streets with minimal driveways and intersections (fewer than 10 to 15 per mile) to reduce conflicts with motor vehicle traffic. Many of the path recommendations align with paths planned or programmed by individual communities.

Suitable routes are identified along urban streets and rural roads that are already low-stress due to relatively low volumes of motor vehicle traffic. Various individual treatments may be applied to streets and roads along suitable routes. At a basic level, these routes should be identified on the regional bike map. Additional improvements may be made, such as providing route signage, applying shared-lane markings (sharrows), and developing bicycle boulevards. In higher speed areas, paved shoulders may be considered for some segments if traffic volumes increase.

"Fit for Two: Easy As Riding a Bike" by Dan Young/Daily Herald Media.

Descriptions of common treatments for these four primary facility types are included on the following pages and are color-coded to match the color scheme used on the map of recommendations (Figure 2).

Bike Lanes

Standard Bike Lane

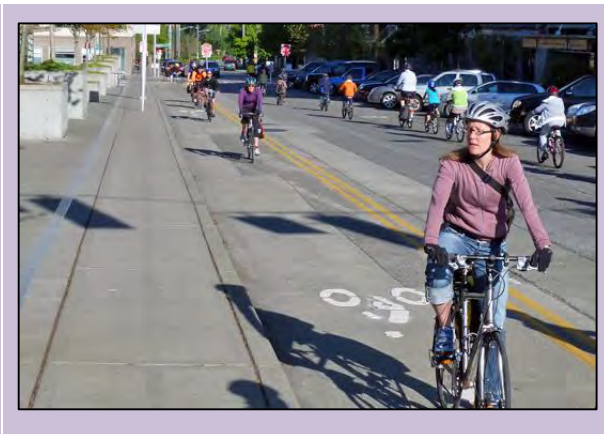
A bike lane is a pavement marking that designates a portion of a street for the preferential or exclusive use of bicycles. Bike lane markings are typically dashed where vehicles are allowed to cross the bike lane, such as for right turns or at bus stops. Bike lanes are best suited for two-way arterial and collector streets where there is enough width to accommodate a bike lane in both directions, and on one-way streets where there is enough width for a single bike lane.

Buffered Bike Lane

Buffered bike lanes are created by striping a buffer zone between a bike lane and the adjacent travel lane, between a bike lane and adjacent parking lane, or both. Buffered bike lanes should be considered at locations where there is excess pavement width or where adjacent traffic speeds are at or above 35 mph.

Contraflow Bike Lane

Contraflow bike lanes run in the opposite direction of other traffic on a one-way street. Contraflow bike lanes provide legal bike access on one-way streets where bicyclists may otherwise ride against traffic or on the sidewalk. Contraflow bike lanes may be separated from other traffic by painted lines, a painted buffer, or a physical barrier.



Climbing Bike Lane

A climbing lane is a bikeway design for a two-way street that has a steep slope and insufficient width to permit bike lanes in both directions. A bike lane (the climbing lane) is provided in the uphill direction to accommodate slow moving bicyclists in the uphill direction and a shared lane marking is provided in the downhill direction, where bicyclists can typically travel at speeds close to motor vehicles.

Separated Bike Lane (Cycletrack)

A separated bike lane, sometimes called a cycletrack, is a bicycle facility that is physically separated from both the street and the sidewalk. A separated bike lane may be constructed at street level using street space, or at the sidewalk level using space adjacent to the street. Separated bike lanes isolate bicyclists from motor vehicle traffic using a variety of methods, including curbs, raised concrete medians, bollards, on-street parking, large planting pots/boxes, landscaped buffers (trees and lawn), or other methods. Separated bike lanes designed to be level with the sidewalk should provide a vertical separation between bicyclists and pedestrians, as well as a different surface treatment to delineate the bicycle from the pedestrian space (such as asphalt vs. concrete). Separated bike lanes can be one way for bicycles on each side of a two-way road, or two-way and installed on one or both sides of the road. Separated bike lanes provide cyclists with a higher level of comfort compared to bike lanes, and are typically used on large multi-lane arterials where higher vehicle speeds exist. They may also be appropriate on high-volume but lower-speed streets.

The provision of separated bike lanes should consider the design and function of intersections, which may require adjustments to signal timing and phasing and/or modifications to pavement and curb sections.

Traffic studies should be performed before implementing separated bike lanes.

Paved Shoulders

Urban Shoulder (Paved)

An urban shoulder is a paved section of a street between the travel lanes and the curb. Urban shoulders are separated from the travel lanes by a solid white line and may include the street's gutter section. Urban shoulders can serve as a bicycle accommodation if they have at least three feet of pavement, exclusive of the gutter area. Bike lanes that are not designated as such with pavement markings and/or signage are technically an urban shoulder.

Rural Shoulder (Paved)

The shoulder is the section of the roadway outside of the travel lanes. When paved and of sufficient width, paved shoulders can serve as a bicycle accommodation. Additionally, paved shoulders provide safety and maintenance benefits. Paved shoulders should typically be 4' or wider to serve as a bicycle accommodation, although 3' may be acceptable on lower volume roads. Ideally, paved shoulders should be wider around curves. If used, rumble strip designs should be bicycle-friendly (see Bikeway Enhancements section later in this chapter).

Paths

Shared-Use Path

A shared use path is an off -street bicycle and pedestrian facility that is physically separated from motor vehicle traffic. Typically, shared use paths are located in an independent right-of-way such as in a park, stream valley greenway, along a utility corridor, or an abandoned railroad corridor. Shared-use paths are utilized by other non-motorized users including pedestrians, skaters, wheelchair users, joggers, and sometimes equestrians.

Sidepath

A sidepath is a shared use path located adjacent to a roadway. It is designed for two-way use by bicyclists and pedestrians. Sidepaths are sometimes created by designating a wide sidewalk for shared use, or they may be a segment of a longer trail. Sidepaths sometimes facilitate connections to on- and off-street bicycle facilities. A sidepath is not generally a substitute for on-street bicycle facilities, but may be considered in constrained conditions, or as a supplement to on-street facilities. Sidepaths may not be appropriate in areas of high pedestrian activity unless there is space to successfully manage conflicts. The use of sidepaths should be limited to roadways with limited points of conflict at intersections and driveways.

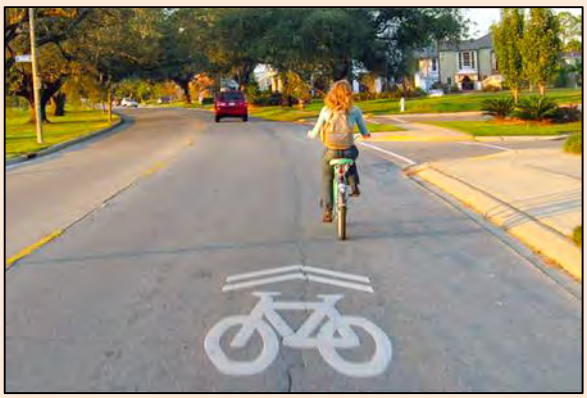
Bicycle Boulevard

A bicycle boulevard (sometimes called a "neighborhood greenway" or a "neighborway") is a street with low motorized traffic volumes and speeds designated to provide priority to bicyclists and neighborhood motor vehicle traffic. Bicycle boulevards may simply have signs and shared lane markings, or may include traffic calming elements consisting of speed humps, traffic circles, chicanes (pictured), traffic diverters, or curb extensions. Bicycle boulevards benefit neighborhoods by reducing cut-through traffic and speeding without limiting access by residents.

Shared Lane Marking (Sharrow)

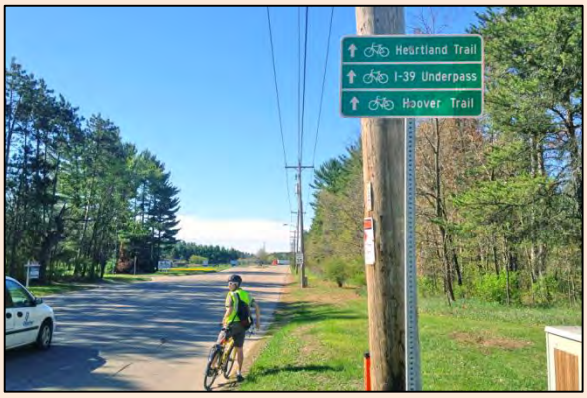
Shared lane markings (sharrows) are used on streets where bicyclists and motor vehicles share the same travel lane. The sharrow helps position bicyclists in the most appropriate location to ride. It also provides a visual cue to motorists that bicyclists have a right to use the street. Sharrows are typically used in two situations: on low-speed and low-traffic streets (including bicycle boulevards) as a wayfinding aid, and on busier streets as an interim solution until reconstruction or reconfiguration of the roadway is performed to allow bike lanes to be provided. Sharrows are not appropriate on streets with speed limits greater than 35 mph.

On a four lane street, sharrows should be placed in the outside lane. If the outside travel lane is too narrow for a motorist to comfortably pass a cyclists while staying within the travel lane (generally less than 14 feet) the sharrow marking may be centered in the lane. This encourages cyclists to "take the lane," and encourages motorists to use the left lane to pass. In a 12-14 foot lane, the marking may be offset from the curb by as little as 4 feet. For 10-12 foot lanes, the marking should be placed in the center of the lane. BIKES MAY USE FULL LANE signs (R4-11 in the MUTCD) are recommended, because drivers may not be used to sharing the road with cyclists and may not provide comfortable clearance when passing.



Signed Bike Route and Wayfinding

Signed bike routes provide distance and directional information as a wayfinding aid for bicyclists. Signed routes may be established on streets, paths, or any combination of facility types that offer a continuous bicycling environment. Signs should offer cyclists information about alternative routes and accessible destinations from their current location. They also can be used to suggest the conditions cyclists can expect on a route by referencing trails or roadways by name. Signed routes provide cyclists with greater confidence when they are exploring new routes or when they are in unfamiliar territory. Signed routes can also prevent cyclists from getting lost in residential areas with curvilinear street layouts and few through streets.



Bike Route (mapped)

A mapped bike route is only designated as a bike route on maps – there are no signs placed along the route to designate the route. Mapped bike routes indicate to users roads that are better for bicycling on and for connecting to specific destinations. Mapped bike routes should be supplemented with signed bike routes or other bicycle facilities to guide users to popular destinations, such as has been the recent practice in the Wausau metro area.

Bikeway Enhancements

The bikeway system in the Wausau area can be made substantially more comfortable, convenient, and appealing—as well as safer—for current and potential bicyclists by incorporating various enhancements, such as:

- Railings on bridges should be 48 to 54 inches in height (from the adjacent grade on which bicyclists may travel). This will inspire confidence by reducing the likelihood of a bicyclist (who has a higher center of gravity than a passenger car or a pedestrian) falling off of the bridge.
- If project budgets allow, provide a taller curb at intersections for bicyclists to place their foot on for balance while waiting. Such a feature must not impact accessibility as defined by the Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG).
- Where possible, make pedestrian signal activation buttons reachable by bicyclists at intersections.
- When rumble strips are applied to rural roads, use a bicycle-friendly design, which means shallower and narrower rumble strips placed along or close to the shoulder edge line so that bicyclists may use the full paved shoulder width. Rumble strips as narrow as 6 inches and as shallow as 0.375 inches have been proved to provide an adequate audible alert to drivers.
- At the end of a ride, a secure, accessible, and well-lit place to lock one's bike is important. Each community in the Wausau area is encouraged to adopt an ordinance or policy that requires or encourages the provision of bicycle parking at all existing and future commercial developments, civic buildings, and parks.

Pedestrian Priority Improvement Areas

Pedestrian trips are generally much shorter than trips made by bicycle. As such, an interconnected regional network is less important for pedestrians. However, identifying areas where pedestrian demand exceeds accommodations is important, as is developing replicable strategies to improve safety, access, and connectivity for pedestrians. The following pedestrian priority areas were identified and recommendations for improvements are provided for each.

Downtown Wausau

(Bordered by 1st Street, Forest Street, 6th Street, and McClellan Street)

This area has the highest demand for walking in the study area, as identified in the Demand Analysis. The Traffic Safety Analysis identified 12 pedestrian crashes (six were severe) in the area between 2009 and 2014 (see Chapter 2). In general, the area has continuous sidewalks, pedestrian signals, and marked crosswalks. The Grand Avenue/6th Street/Forest Street intersection is particularly challenging because it lacks traffic signals and the intersection geometries encourage high-speed driving.

Recommendations

- Many of the crosswalks in the downtown area (particularly those locations with brick pavers) are lacking the white transverse lines that are required by federal and state standards (Manual on Uniform Traffic Control Devices) and likely have little to no safety benefit for pedestrians as a result.
- Many of the marked crosswalks originally provided at the intersection of 1st Street, Washington Street, and River Drive are now missing due to pavement replacement and wear and tear. Furthermore, due to the complex nature of this intersection, the location of push-buttons to activate pedestrian signals should be reconsidered. In the current configuration, the layout is confusing, especially for people that are blind.
- Many of the intersections in downtown, especially Scott Street and 1st Street, have high volumes of turning traffic. Adding Leading Pedestrian Intervals (which give pedestrians the "Walk" signal three to five seconds before drivers get a green light) to signals downtown would allow pedestrians to begin crossing before any cars are allowed to make permissive left or right turns.
- Explore options to increase safety at the Grand Avenue/6th Street/Forest Street intersection. The most apparent solution is to restripe the existing crosswalks with high-visibility patterns and add Rectangular Rapid Flash Beacons (RRFB) to increase driver awareness of pedestrians crossing. An additional crosswalk and accompanying RRFBs should be placed where Division Street formerly intersected with Grand Avenue (near Integrity First Bank).
- While there are few other apparent issues in this area, it is important to ensure that crosswalk markings are kept visible by repainting them on a regular basis (every year to every three years as needed).

Bopf and West Thomas Streets

(17th Avenue to 9th Avenue)

This area has high demand for walking, as identified in the Demand Analysis. This is in part due to population density and the nearby GD Jones Elementary School. Sidewalks are lacking on approximately half of the streets in this area, including most of the cross streets. One particular challenge is that on both ends of 12th Avenue (at Bopf Street and Thomas Street) there are commercial properties whose parking lots extend to the streets, with little to no definition between street and parking lot.

Recommendations

- Add sidewalks on the south side of Thomas Street (between 12th Avenue and 17th Avenue) and on both sides of Bopf Street west of 12th Avenue.
- Improve the intersections of 12th Avenue with Bopf Street and Thomas Street for pedestrians, by clearly defining sidewalks and curb ramps around the corner commercial properties. Furthermore, provide marked crosswalks across 12th Avenue to provide safer access to GD Jones Elementary School.

- Provide crosswalks across Thomas Street at 15th Avenue to provide safer access to GD Jones Elementary School. In addition, provide sidewalks along 15th Avenue from Thomas Street to Rosecrans Street, and along Rosecrans Street from 15th Avenue to 17th Avenue.

Stewart Avenue Corridor
(7th Ave to the Wisconsin River)

Stewart Avenue is the main arterial into downtown Wausau from the west and is a high-traffic connecting state highway. The roadway passes through an area of moderate to high demand for walking and has been the location of multiple severe crashes involving pedestrians over the past several years (three crashes along Stewart Avenue and one a few blocks south between 2009 and 2014). There are continuous sidewalks along Stewart Avenue, but crossing the street is very challenging due to its width, lack of pedestrian signals, and missing or obstructed crosswalks.

Recommendations

- Stewart Avenue will be reconstructed in the near future. This project should include at a minimum high-visibility marked crosswalks and pedestrian signals at each signalized intersection. As part of the upcoming reconstruction project, pedestrian signals and push buttons will be added to the signals at the 1st and 3rd Avenue intersections.
- Opportunities for shortening crossings through curb extensions and median refuge islands should also be sought.

Schofield Avenue Corridor
(Alderson Street to Camp Philips Road/County Highway X)

An area of moderate to high demand for walking, the Schofield Avenue corridor between Alderson Street and Camp Philips Road includes several large commercial areas (including a Target and Pick 'n Save) and multi-family housing. Schofield Avenue continues to the east, connecting to an employment area in the Village of Weston. Schofield Avenue is a high-traffic roadway with significant distances between signalized pedestrian crossings. Recent roadway improvements added pedestrian signals to the intersection in front of Target, but crosswalk markings are already fading. Continuous sidewalks are present on Schofield Avenue, but are not along connecting streets. This corridor is a relative hot-spot for pedestrian crashes, with three having occurred between 2009 and 2014.

Recommendations

- Reapply crosswalk markings every one to three years to ensure their continued safety benefit. Reduced maintenance can be achieved by using more durable pavement marking materials (e.g., inlaid thermoplastic or epoxy instead of regular paint).
- Explore the feasibility of adding a pedestrian-activated signal (such as a HAWK signal or rectangular rapid flash beacon) at the intersection with Fox Street. This is within the commercial area and is roughly halfway between Birch Street and the intersection in front of Target, which are approximately 0.5 miles apart.
- Add pedestrian signals to the Birch Street intersection and consider providing pedestrian refuge islands in the medians. Currently, the crosswalks bow out toward the center of the intersection to go around the median noses.
- A crosswalk is provided on the west side of the Mt View Avenue intersection. Schofield Avenue at this location has a two-way left turn lane. Move the crosswalk to the east side of the intersection to line up with the sidewalk on the east side of Mt View Avenue and provide a raised pedestrian refuge island median. Explore the feasibility of adding a pedestrian-activated signal (such as a HAWK signal or rectangular rapid flash beacon).

WIS-153 Corridor

(Freemont Street in Mosinee, across the Wisconsin River, to the Central Wisconsin Airport)

This corridor follows the state highway through downtown Mosinee, across the Wisconsin River, through the recently-constructed roundabout, under US-51/IH-30, and on to the Central Wisconsin Airport. A sidepath is provided across the bridge and through the roundabout, where it terminates. This is the only crossing of the Wisconsin River open to pedestrians for nearly 8 miles. There is moderate demand for walking along this corridor due to population density and nearby employment centers.

Recommendations

- Due to the volume of traffic (including trucks) passing through this corridor, it is important to continue to maintain crosswalks and reapply markings as needed (every one to three years, depending on material).
- Continue the sidepath (or sidewalks) south of the roundabout to where WIS-153 turns east. Continuous sidewalks are provided on the east-west portion of WIS-153 from Expera Specialty Solutions (a major employer) to the airport (Golf Club Boulevard). However, it may be desirable to continue this as a sidepath so that it may be used by bicyclists as well (the Bicycle Network Recommendations include a recommendation for bike lanes along this portion of WIS-153).
- No crosswalks exist across WIS-153 between Edison Street and the airport entrance. Provide marked crosswalks at Cherry Street/Owen Street, West View Drive, and Golf Club Boulevard. Explore the feasibility of adding a pedestrian-activated signal (such as a rectangular rapid flash beacon) or fully signalizing these intersections if warranted by current traffic volumes.

Business 51 (Grand Avenue) Corridor in Rothschild

(From WIS-29 to Military Road)

This portion of Business 51 (Grand Avenue) separates several major employers, a small neighborhood, and the Cedar Creek Trail bicycle/pedestrian bridge over the Wisconsin River from the rest of Rothschild. This area has moderate demand for walking due to the major employers and population densities. Sidewalks are generally continuous along the east side of Grand Avenue, but do not extend quite all the way south to Military Road. A future street extension is planned between the Military Road/Grand Avenue intersection, through existing right-of-way, to the continuation of Military Road beginning approximately 500 feet east of Grand Avenue.

Recommendations

- The existing sidewalk along Grand Avenue should be extended south to the Military Road intersection and should connect to sidewalks along the planned street extension. When the street extension is constructed, the Military Road/Grand Avenue intersection will have to be signalized and should have pedestrian signals and marked crosswalks. At the same time, a sidewalk should be extended west, across the railroad, to at least Elm Street.
- Ensure the continued visibility of the crosswalks at the Hewitt Street intersection by reapplying crosswalk markings as needed (every one to three years, depending on material). Explore the feasibility of adding a pedestrian-activated signal (such as a HAWK signal or rectangular rapid flash beacon).
- Provide marked crosswalks and potentially a pedestrian- activated signal at the Brown Boulevard intersection near the LignoTech plant entrance to accommodate employees that may walk to work or wish to walk to Brown Boulevard for lunch.

Kort Street / Jelinek Street Corridor

(In Weston and Rothschild)

This corridor connects areas of moderate demand for walking and crosses the railroad and Business 51. It connects three schools (DC Everest Junior High, DC Everest High, and St Therese Catholic School), several churches, parks, aquatic centers, and several other destinations. Sidewalks are generally continuous along both sides of Kort Street and Jelinek Street, with the exception of along the north side between Volkman Street and Normandy Street. There is a significant amount of commercial development along Business 51 south of the Kort/Jelinek intersection, but a sidewalk only exists on the west side.

Recommendations

- Construct a sidewalk along the north side of Kort Street and Jelinek Street between Volkman Street (just west of Grand Avenue) and Normandy Street (in Weston).
- The Village of Rothschild has prepared a redevelopment plan for the commercial area along the east side of Business 51. As the area is redeveloped, sidewalks should be provided from the Kort/Jelinek intersection south to the Grand Avenue intersection to connect to existing sidewalks. In addition, opportunities to perform access management (consolidating the number of driveways entering Business 51) should be sought to reduce conflicts between pedestrians and motor vehicles.
- The Business 51 intersection (in Weston) is the greatest challenge for pedestrians along the Kort/Jelinek corridor. Ensure the continued visibility of the crosswalks at the Hewitt Street intersection by reapplying crosswalk markings as needed (every one to three years, depending on material).

Additional Bikeway Enhancements continued

MPO Communities must consider the installation of devices that will allow a bicycle to trigger a green light while remaining in the travel lane for any intersections that cross the MPO Bike Route system. This was successfully implemented in the City of Wausau at the intersection of Kent St and Grand Avenue.

Crossings and Paths for Future Evaluation

This Plan primarily focuses on infrastructure and program recommendations for the next five to ten years. However, it is important to consider longer-term needs so that opportunities may be effectively leveraged as they arise.

Major Path Connections

Paths along rivers, through natural areas, along railroads, and other alignments that do not follow roadways are typically expensive to construct and require substantial right-of-way acquisition. However, such paths can create impactful connections that can revolutionize access and usage for bicyclists and pedestrians. The following alignments should be studied in the future and opportunities for acquiring right-of-way should be sought starting today.

- From Junction Street, past the Wausau Curling Center, across the Eau Claire Flowage, to Alderson Street. This path connection would link the Mountain-Bay Trail to central Wausau and provide a much-needed north-south alternative to Grand Avenue.
- Connecting Trillium Lane to Buttercup Road along the existing electric easement. Along with other improvements, this could increase access to Nine Mile Recreation Area.
- Along the west side of the Wisconsin River from Foxglove Road south to Mosinee as an alternative to high-traffic County Highway KK.
- Along the northern edge of Rib Mountain/Granite Peak Ski Area connecting Whippoorwill Road to Robin Lane as an alternative to North Mountain Road.
- Alongside the railroad paralleling the Wisconsin River from Merrill to Wausau, linking to existing and planned River Edge Parkway paths.
- Along the railroads that cross through Wausau, including the east-west corridor that connects County Highway R to downtown Wausau and the north-south spur from Barkers Island north to Knox Street. Considering the active nature of these railroads and constrained right-of-way, these may only be feasible as Rail to Trail corridors in the future.
- Continue developing paths as part of the River Edge Parkway system along the Wisconsin River to link multiple communities and provide access to one of the area's most prominent natural resources.

River Crossings

Both a major asset and major challenge for transportation, the Wisconsin River has limited crossings. New crossings should be constructed in the future to improve access and connectivity for bicycling and walking. Ideal locations for new crossings include:

- Isle of Ferns Park to East Sherman Street/Riverside Park
- Barker-Stewart Island Park to the Eastbay area
- Schofield Park to Winton Street
- Crocker Street to Spring Street
- Packer Drive to CTH NN across the Big Rib River using the old railroad trestle

"Wisconsin River Bridge" by Denis Helke.

This page intentionally left blank.

Chapter 4
Encouragement

Bicycle and Pedestrian Plan for the
Wausau Area Metropolitan Planning Organization

WAUSAU MPO

The Role of Encouragement

In the context of the "Five E's" of bicycle and pedestrian transportation (engineering, education, enforcement, encouragement, and evaluation), the importance of encouragement efforts is often overlooked. In the past, engineering, education, and enforcement were viewed as the cornerstones of bicycle and pedestrian transportation. Focusing on those three "E's" can be highly effective in terms of improving safety and convenience for bicycling and walking; however, many people need to be *encouraged* to try these modes.

Giving people the opportunity to ride a bicycle and walk is a key component of improving public health, enhancing quality of life, and providing equitable transportation choices in the Wausau area. Encouraging people of all ages and abilities to walk and bicycle requires varying degrees of information, support, and persuasion. The entire community, from businesses to schools, and government agencies to citizen groups, has a role to play in inspiring the population to move by bicycle or foot. The benefits are numerous – for example, employees who bike to work are healthier and more productive, and students who walk to school are better able to stay on task.

Some typical examples of activities that are considered part of the encouragement "E" include:

- Bicycle and pedestrian advisory committees,
- Bicycle rentals and repairs,
- Bicycling and walking maps,
- Community events such as farmers' markets and festivals,
- Community leaders biking and walking,
- Financial incentives for employees who bike or walk to work, and
- Walking school buses.

This chapter explores current encouragement efforts in the Wausau area, includes recommendations for new programs, and suggests how current programs might be leveraged to more effectively entice people to try walking and bicycling for recreation and transportation purposes.

Encouragement takes many forms, including bike map kiosks (left; photo by Denis Helke), Bicycle Fixtations (center; photo by Aaron Ruff), and helmet give-away programs (right; photo by Andrew Plath Photography).

Inventory of Current Encouragement Efforts

Community organizations and government agencies in the Wausau area are already using many tools to encourage bicycling and walking. In order to develop a plan that takes encouragement efforts to the next level, it is necessary to establish a baseline of existing activities. This foundation establishes the fact that there are already dedicated and energetic players who have creative ideas and resources to make it easier for people to ride bicycles and travel by foot. Creating a common understanding of existing efforts also minimizes the potential duplication of programming that can occur when planning for new or enhanced activities. Also, a sense of comradery will be enhanced when major players see that they are part of a larger effort to inspire folks to use human powered transportation.

The following inventory outlines the known encouragement efforts that regularly occur or have occurred within the last few years, and includes efforts led by government agencies, non-profits, schools, and businesses. It also includes ideas and suggestions for how current efforts can be made more effective.

Table 1: Inventory of Current Encouragement Efforts

Encouragement Tool*	How it Looks	Major Players	Comments/Recommendations
Bike Fixtation	5 bicycle repair stations in convenient locations include an air pump, an area bike map, tools, and a work stand.	Wausau MPO	Expand the Fixtation network across the urbanized area and along key shared-use paths.
Bike Parks	2 extensive, seasonal networks of singletrack path for use by mountain bikers of all skill levels (Nine Mile County Forest, Sunny Vale County Park).	Central Wisconsin Offroad Cycling Coalition, Marathon County	A great entry point for people to experience bicycling and to attract people to visit or even relocate to the Wausau area. CWOCC (the Central Wisconsin Offroad Cycling Coalition) has recently prepared a master plan that includes developing several additional mountain biking parks/trails in the Wausau area with the ultimate goal of becoming designated as an IMBA Ride Center.
Bicycle & Pedestrian Advisory Committees	Citizen and public agency representatives serving on a Wausau MPO committee to advance bicycle and pedestrian improvements.	Wausau MPO and most of the area's municipalities	Write and post meeting minutes for websites, so that interested members of the public can be informed if they cannot attend meetings.
Bicycle & Pedestrian Advocacy Groups	Membership organizations that provide opportunities for riding bicycles and hiking or running with others, and advocating for bicycle/pedestrian trails and other related improvements.	Central Wisconsin Off Road Cycling Coalition, Friends of Mountain Bay Trail, Ice Age Trail – Marathon County Chapter, Wausau Area Striders, Wausau Wheelers Recreational Road Bike Club	Advocacy groups are often recreational clubs and therefore provide important social opportunities for bicyclists and hikers/runners. Expand to address the topic of bicycling and walking for transportation. The BicycleWausau.org website is an important source of information about advocacy groups and is the primary way people in the Wausau area get local information about bicycling.

Encouragement Tool*	How it Looks	Major Players	Comments/Recommendations
Bicycle/Pedestrian Print & Online Maps	15,000 print maps are distributed in locations such as bike shops, government buildings, health clinics, and fitness centers, showing signed bicycle routes, bike repair shops, and bicycle safety tips. Online pdf and google maps are also available.	Wausau MPO & numerous community sponsors	Informative and widely distributed. Continue to publish updated editions, including bicycle paths, bike shop names next to bike repair icons, low-stress bicycle routes, Metro Ride bike rack instructions, minor street names, one-way traffic arrows, park names, pedestrian laws and tips, pedestrian shortcut paths, and school names.
Bike Repair Shops & Rentals	6 bicycle shops in the Wausau area offer a variety of services, including repair, rental, sales, and classes.	Builer's Cycle & Fitness Center, City Bike Works, Rib Mountain Cycles, Shepherd & Schaller Sporting Goods, Trek Store of Wausau	Add information about bicycle rentals to store websites (a phone survey informed us that rentals are offered by Builer's Cycle & Fitness Center and Trek Store of Wausau). Add more bicycle rental opportunities so visitors and new residents can try bicycling in the Wausau area. Offer classes geared toward interest groups such as Hmong and women's groups.
Bicycle Rodeos	Several events are held annually geared toward children and families throughout the Wausau metro area, offering helmet giveaways, free bike inspections, bicycle safety stations, prizes, etc.	Marathon County Public Library, Marathon County Health Department, Safe Kids Wausau Area, Wausau Police Department, Town of Rib Mountain, City of Mosinee, Town of Weston, and the Everest Area Optimists.	Add bicycle rodeos to school gym curriculums.
Bicycle Tourism Information	A website contains a list of good locations to ride a bicycle outdoors in the Wausau area, along with maps and photographs.	Wausau/Central Wisconsin Convention & Visitors Bureau	Add bicycle rental locations to the "Travel Tools" page of the VisitWausau.com website (alongside car rentals). Feature a "bike and bed" option on the website for traveling bicyclists. Engage and encourage lodging establishments to participate.
Bike to Work with the Mayor	Mayor Tipple of Wausau leads an annual bicycle ride during Bike to Work Week.	Wausau Bike & Pedestrian Advisory Committee	Expand the Bike to Work event to include bike-shop-sponsored commuter pit stops along popular bicycle routes, offering free bicycle tune-ups, bicycle repair, refreshments, and prizes. Also add walking to work. Expand similar activities to other communities in the area, perhaps as part of a collective regional effort.

Encouragement Tool*	How it Looks	Major Players	Comments/Recommendations
Community Events	High quality parades, concerts, festivals, and other gatherings are held year round to build community and create a fun atmosphere, most of which are centered in the walkable area of Downtown Wausau.	Wausau Events, Inc.	Offer free bicycle valet parking for people that arrive by bicycle.
Farmers' Markets	Vendors sell farm products at an open air market, encouraging a pedestrian friendly atmosphere, with customers walking between vendors.	Multiple, including (but not limited to) the Farmers Market of Wausau.	Offer bicycle parking and drinking water at farmers' markets.
Television Advertisement Campaign	A 30-second ad touts the Marathon County bike route system.	The Marshfield Clinic	Informative and wide-reaching. Continuing airing and updating the ad as needed, along with developing additional ads to provide broad-reaching education messages.
Walking Clubs	Several walking clubs exist in the Wausau area geared toward various populations (youth, women, and Hmong elders).	Boys & Girls Club of the Wausau Area; Hmong Area Hmong Mutual Association	Build upon the success of these programs by adding bicycling clubs, especially for youth.
Walking School Bus	An adult leader gathers and walks with children walking to Jones Elementary School on Walking Wednesday's.	Marathon County Public Health Department, Jones Elementary School, Safe Kids Wausau Area	Hire a staff person to organize walking school buses at additional schools. Address liability concerns by creating a comprehensive Safe Routes to School plan. Add information to school transportation websites which encourage walking and bicycling. Publish maps showing walking and biking routes to individual schools.
Walking Tour	Escorted or self-guided walking tours of Downtown Wausau and the Andrew Warren Historic District are offered.	Marathon County Historical Society	
Wheels Again	Donated bicycles are repaired and given to adults who have no transportation to get to work.	The Neighbor's Place	Create a website for the program or add information to the BicycleWausau.org website.
YMCA Fitness Classes	Indoor cycling for adults and summer mountain biking courses for youth are offered.	Woodson YMCA, Wausau; Aspirus YMCA, Weston	Add classes teaching outdoor cycling and hiking for adults and youth.

*Encouragement tools were located by reviewing the Wausau Bicycle Friendly Community Award on the Bicycle Wausau website, the City of Wausau website, various google searches on the internet, phone interviews with local bicycle shops, and a phone conversation with Destinee Coenen at the Marathon County Department of Health.

Inventory of Current and Potential Encouragement Partners

In the previous section, a wide variety of current players were listed, including the Wausau MPO, Marathon County departments, cities, schools, parks, businesses, and non-profit organizations. It is clear that many community organizations are already invested in encouraging bicycling and walking. But there are other parts of the community that can also play a leadership role in carrying out these and other encouragement tools:

Potential Players	**Example Organizations (these are not limiting lists)**	**Types of Encouragement Activities**
K-12 School Districts	Public and private, including Wausau, Marathon, D.C. Everest, Newman Catholic, Mosinee	Bicycle rodeos, Maps, Principals/teachers leading bike rides and walks, School competitions, Walking school buses
Higher Education	The University of Wisconsin – Marathon County, Northcentral Technical College, and other institutions	Bicycling and hiking/running clubs, Bike centers, Bike parking maps of campus, Bike rentals, Bike route maps near campus, Marketing promotion of bicycling and walking to campus
Employers	Aspirus Wausau Hospital, City of Wausau, Downtown Grocery, Eastbay, Liberty Mutual Group, Red Eye Brewing Company, Wal-Mart	Bike parking, Bike and walk to work day events, Bicycle fleets for work use, Bicycle and pedestrian commuter cash and non-cash incentives (e.g., qualified transportation fringe benefits (26 U.S.C. sec. 132(f))), Sponsorships of bicycle & pedestrian advocacy groups, Top management biking and walking to work, Provision of facilities such as showers and bike racks
Non-profit Organizations	Aging & Disability Resource Center, American Indian Resource Center of Marathon County, Marathon Residential & Counseling Services, Wausau Area Hmong Mutual Association	Bicycle giveaways, Bicycle repair, Earn-a-bike programs, Field classes/trips using bicycle and foot transportation, Marketing promotion of using bicycles and foot transportation for trips

Opportunities to involve these types of organizations in encouragement efforts should be sought in order to broaden encouragement outreach to more people and groups, especially those that are historically under-served.

Target Encouragement Audience

Determining who comprises the audience is an important component of developing encouragement tools for bicycling and walking. Many people will act upon intriguing opportunities or information that opens new possibilities. But intrigue and possibility are not "one size fits all" propositions. An attractive bicycling or walking opportunity to one person may look like a task filled with drudgery to another. Furthermore, a way of living for one person may look like a pure impossibility for another. Getting to know a group or groups of people is essential to successfully encouraging their experimentation with bicycling and walking. One way in which to do this is to consider the various ways in which different people relate to bicycling and walking, which may fall into one or more of the following categories.

"My Experience with Bicycling" – e.g. bike commuting, biking to school, not being on a bicycle since childhood, not knowing how to bicycle, recreational riding.

"My Experience with Walking" – e.g. crossing a busy street, hiking in the woods, mall walking, pushing a stroller, running marathons, shopping, using a motorized wheelchair, walking to/from bus stops.

"My Interests" – e.g. achieving academically, community building, getting by day-to-day, going on adventures, having fun, improving the environment, losing weight, saving money, staying active, staying safe, taking part in sports competition.

"My Lack of Ability or Inclination to Bicycle or Walk" – e.g. being in a rush, being worried about safety/liability, growing frail, living a far distance from town, living with a physical disability, traveling with children in tow.

"My Profession" – e.g. bicycle mechanic, health care professional, human service provider, law enforcement official, school principal, teacher, top level executive.

"My Relationship to Government" – e.g. bike/pedestrian advocate, bureaucrat, citizen, elected official, taxpayer.

"My Social Identity" – e.g. adult seeking financial assistance, college student, employer, environmentalist, immigrant, Native American, non-English speaker, parent, patient, person with a mental disability, mountain biker, road biker, teenager, tourist.

In some cases, there may be limited value in encouraging a group of people to bicycle or walk. But in others, it will be easy to meet an enthusiastic audience. Oftentimes though, there is a large group of people in the middle, who would enjoy biking and/or walking, but need to overcome real or perceived barriers to participate in active transportation. Encouragement tools can play a prominent role in helping these "people in the middle" to overcome barriers.

For the Wausau area, the primary target audiences for encouragement are school-aged children, people that work and/or shop within a few miles of their home, people looking to improve their health and well-being, and people that are considering trying biking or walking (especially those that are new to the area). However, there are likely other groups that can and should be encouraged and the above categories should be considered when preparing encouragement messages and activities.

Encouragement Themes

A theme is a way of organizing various efforts into easy-to-understand categories that will help to align and focus the efforts of multiple organizations. Based on the current encouragement activities in the Wausau area; the vision, goals, and objectives of this plan; and the target audience for encouragement; three major encouragement themes have been developed, as outlined below. These themes are intended to provide the greatest impact for the amount of effort invested.

Newcomers are the bread and butter of the effort to increase bicycling and walking. One type of newcomer is a person that is inexperienced with walking or bicycling yet has some level of interest in trying these activities. There is a significant opportunity to attract newcomers by encouraging biking and walking—instead of driving—for short trips. This opportunity is wrapped in a challenge however, because it is of course difficult to change engrained travel habits. Speaking to newcomers requires a gentle approach, with an eye toward finding a comfortable entry point such as recreational bike riding or going for a stroll through a nearby park.

Newcomers can also include people who are new to the Wausau area (such as college students, a Midwest transplant, or an immigrant from a different country). Tourists and visitors are yet another category of newcomers. These latter groups can be easier to reach, in the respect that they have just arrived in a new locale. Thus, their habitual ways of traveling are either open to change, or just beginning to take shape.

Healthy Communities/Healthy Kids is a way to talk about bicycling and walking in relation to one of the greatest challenges of our time. With the recent precipitous rise of obesity and health care spending, bicycling and walking can be illustrated as an opportunity for Wausau area residents to build improved health into daily life. Incorporating education related to walking and biking into the physical education and health curricula of public and private elementary and middle schools is an opportunity to incorporate biking and walking in to the daily exercise ritual of families who live close to schools. Safe Routes to School plans and programs often result in neighborhood infrastructure improvements that increase safety for children walking or biking to school while also enhancing quality of life for families going to, for example, a park or a local store.

The public health sector is eager to play a positive role in helping communities increase physical activity, in a way that is fun, practical, and safe—for people of all ages and abilities. Insurance and healthcare providers can encourage biking and walking for recreation and utilitarian purposes. This effort takes advantage of the fact that people already know that exercise is lacking in our culture, and they see opportunities for physical activity as a way to improve life.

Active Transportation refers to the means of getting around by bicycle and on foot. Existing trips by human powered transport are typically short trips, which by bicycle is less than three miles, and by foot is less than one mile. Because such a high percentage of travel in the Wausau area is short in nature, these types of trips are the ones to target for active transportation. Furthermore, the vast majority of trips taken, such as the trip to work, out to restaurants, visiting friends, and shopping, are utilitarian in purpose (even driving trips to the gym or hiking trails could be targeted). People are oftentimes open to trying out some of these trips by bicycle or foot, especially if they already bicycle or walk for recreation and fitness.

These themes have the potential to be inter-related. For example, a 5th grade child who used to be driven to school by her parent, and now walks to school and bikes to her friend's house, is a newcomer who is improving her health by using active transportation.

Recommendations for Encouragement Initiatives

Because there is such a wide variety of encouragement tools, carried out by such a diverse array of stakeholders, it is important to have an encouragement program that is inclusive with grassroots energy. Yet there is still the need for organization and partnership, in order to understand how the various parts fit into the whole. Therefore, this Plan recommends an encouragement program be developed at the MPO level, building off of the current "Bicycle Wausau" efforts. This program would benefit from a staff person who has the responsibility of engaging existing and potential partners (such as bike clubs, schools, cities, etc.), in order to carry encouragement to the next level. A good way to kick off this effort would be a summit on encouraging bicycle and pedestrian movement, where organizations would be convened to learn about Wausau-area-based activities, and make a plan to expand on existing programs.

This Plan recommends that new encouragement efforts focus on three priority initiatives which are aligned with the previously mentioned themes of Newcomers, Healthy Communities/Healthy Kids, and Active Transportation:

1. **Expand bike to work week efforts and activities.** Encouraging more people to bike to work is a very real possibility, especially for the many area residents who live within three miles of their workplace. Existing efforts such as the "Bike to Work with the Mayor" should be expanded to include activities like commuter stations (offering free bicycle tune-ups, bicycle repair, and refreshments), employer programs (with bicycle fleets, contests, events, group rides/walks, and incentives), and media campaigns (featuring advertisements, information, and stories). With nearly 1 out of 20 Wausau-area residents already biking or walking to work on a regular basis, targets should be set to directly reach 1,000 participants and institute employer programs at 5% of workplaces by the year 2020.

2. **Encourage biking and walking to school.** These efforts will reach the most important segment of newcomers to active transportation: children and young adults. All public and private schools should have Safe Routes to School plans (backed by SRTS committees) that detail the routes and changes needed to increase the percentage of youth biking and walking. Walking school buses and bike trains are great encouragement tools, and special events such as "Winter Walk Day" and "International Walk to School Day" get parents and children talking about how they get to school. Contests between classrooms and schools can build momentum and pride about biking and walking to school. Physical education curriculum that teaches safe walking and bicycling practices is especially important to increase safety and empower children to engage in active transportation. High schools and higher education institutions can take similar but more advanced steps to increase bicycling and walking, with students taking a greater level of responsibility. Bicycling and hiking/running clubs, bike centers, bike rentals, and marketing promotion of bicycling and walking can all be led by young adults.

3. **Hold Open Streets events.** These events (also known as ciclovías) can build upon the numerous events and festivals held in the area each year. With over 40 events held annually, such as Concerts on the Square and Marketplace Thursdays, Open Streets events can leverage these popular activities. By closing down a corridor to automobile traffic on a pre-determined day, bicyclists and pedestrians can move safely and easily. Open Streets events take on the quality of a community celebration, where classes, booths, storefronts, and activities provide areas to interact. These days can provide a great opportunity for people to get out and discover what biking and walking looks like. Most importantly, they demonstrate to participants the possibilities associated with walking and biking and hopefully entice people to continue biking and walking after these special events.

4. **Explore bike rental or bike share programs.** Pioneered in Europe in the 1970s, bike sharing systems have existed in the United States since Portland's Yellow Bike Project began in 1994. In recent years, new programs have been rapidly expanding across the country and feature membership systems and the ability to find a bike to rent via the internet. These systems are recognized as effective tools for introducing people to cycling, supporting tourism, and increasing pedestrian activity in walkable retail areas as bike share systems help to connect walkable districts. This Plan does not specifically examine the feasibility of a bike share system; however, interest has been expressed by communities in the area in exploring the possibility of a small bike rental or bike share program. A feasibility analysis should be conducted to determine if such a system could work and how it would be funded. This analysis would determine

whether a single-point bike rental program or a multi-point bike share program would be more feasible. Consideration should also be given to which type of system is more compatible with the area's tourism objectives, such as whether the ability to cheaply borrow a utilitarian bike for quick transportation trips is more desirable than the ability to rent for more money a purpose-built mountain bike or road bike for longer periods of time.

Chapter 5
Education

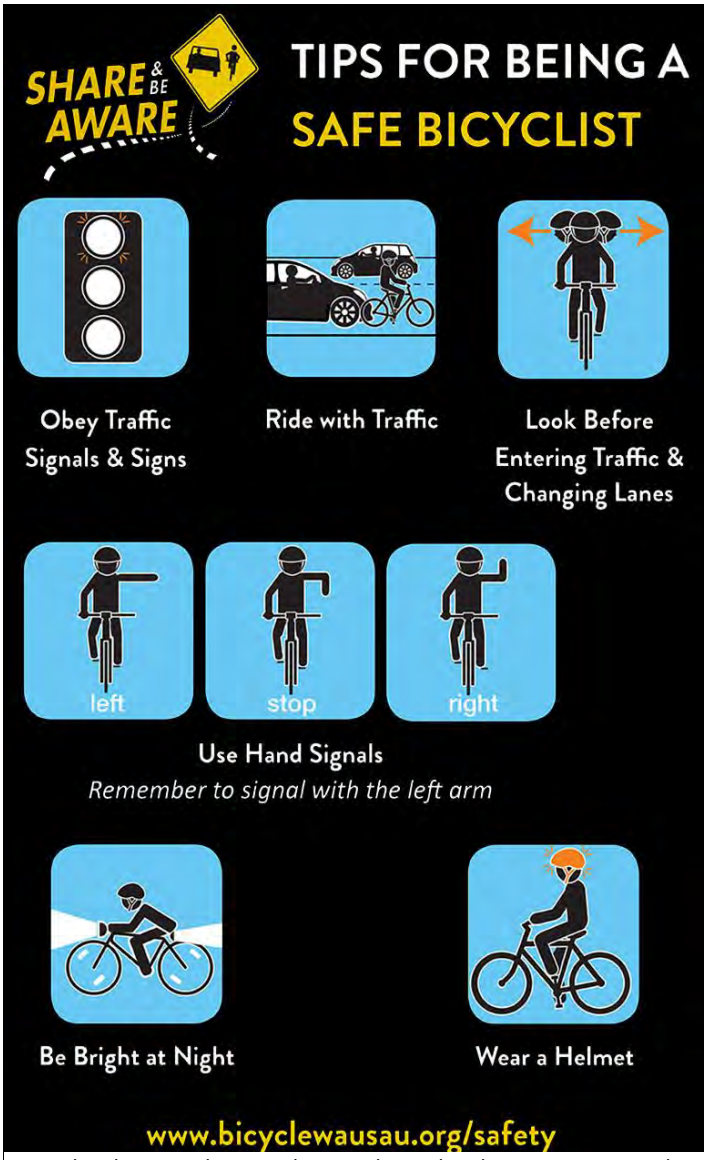
Bicycle and Pedestrian Plan for the
Wausau Area Metropolitan Planning Organization

WAUSAU MPO

The Role of Education

Education is an important component of improving the safety of bicyclists, pedestrians, and motorists alike. Along with engineering and enforcement, it is one of the three pillars of traffic safety. Most bicycle and pedestrian crashes are predictable and therefore preventable. However, without proper knowledge and skills regarding how to interact with different types of road users, people may behave in ways that put themselves or others at unnecessary risk (e.g. failing to yield to pedestrians in crosswalks, bicycling against traffic, walking with traffic). Furthermore, poorly-trained road users may not use otherwise safe facilities as intended and can create resource-consuming enforcement issues. Education can provide all users of the traffic environment with the knowledge and skills they need to negotiate traffic safely and enjoyably.

In addition to directly teaching skills and rules, education has a role in increasing awareness of the rights of and challenges experienced by other users. While all users of the traffic environment share responsibility for safe behavior, the actions of some users are more impactful than those of others. Children, people with disabilities, and older adults, because of their physical and mental characteristics, are particularly vulnerable as pedestrians and bicyclists and pose little risk to others. Conversely, motorists are at little risk in crashes with pedestrians and bicyclists and are almost exclusively capable of causing the greatest harm (regardless of fault). It is for this reason that in the Netherlands fault is always placed on the motorist if he or she collides with a bicyclist or pedestrian unless he can prove he was overpowered by circumstances beyond his control. While this Plan cannot change the law in this way, education efforts in the Wausau area should be targeted to make drivers more aware of the effects of their actions while assuming a greater level of responsibility, while making vulnerable users—bicyclists and pedestrians of all ages—more aware of how to interact safely with motor vehicle traffic.



Example educational material currently used in the Wausau Area. The "Share and Be Aware" message is used across the State of Wisconsin to promote safe interaction between bicyclists, pedestrians, and motorists.

Education is also an important way to encourage people to try walking and bicycling. The benefits of walking and bicycling are tremendous. In fact, studies have found that the health benefits of bicycling and walking (reduced rates of obesity and diabetes as well as increased life span) greatly outweigh the risks associated with interacting with motor vehicle traffic.

Inventory of Current Education Efforts

There are several common formal and informal ways in which people receive bicycle and pedestrian safety information, including:

- Informal
  - Self-taught using information found in books, brochures, and online resources
  - Peers or parents based on their own knowledge and experience (some of which may be dubious)
- Formal
  - School classes or events, such as physical education classes or bicycle rodeos
  - Law enforcement classes or events, as well as one-on-one targeted messaging as part of on-the-street interactions with people exhibiting poor traffic skills
  - Bicycle and pedestrian safety experts, such as League Cycling Instructors (LCI)

Each of these learning methods has positive and negative aspects. For example, while parents may have the best interests of their children in mind, they may not have the skills to teach them how to bicycle safely in traffic.



Bicycle Wausau Rodeo and Safety Day. Photos by Andrew Plath Photography.

The following inventory (Table 1) outlines the known formal education efforts that regularly occur or have occurred within the last few years, and includes efforts led by government agencies, non-profits, schools, and businesses. It also includes ideas and suggestions for how current efforts can be made more effective.

Table 1: Inventory of Current Education Efforts

Education Tool*	How it Looks	Major Players	Comments/Recommendations
PSA/Commercial	Formerly released a PSA/Commercial about new metropolitan bike route system, currently developing one on how to use Sharrows on Grand Ave.	Marathon County Health Department/ Local TV Station	Funded by Marshfield Clinic. Explore more partnerships of this type.
Weekly News Articles	Year round safety articles in local newspapers focusing on bicycle and pedestrian safety in spring.	Wausau Police Department/Everest Metropolitan Police Department	Articles have been published for many years and seem to be well received.
Website	www.BicycleWausau.org	Marathon County Health Department	Uses information provided mainly by the Bicycle Federation of Wisconsin and Wisconsin DOT.

Education Tool*	How it Looks	Major Players	Comments/Recommendations
Safe Routes to School (SRTS)	Limited numbers of schools are embracing the concepts but it is not wide spread in the school districts.	Marathon County Health Department	A Safe Routes to School Plan with champions is needed to help grow SRTS activities. Schools and principals have a lot of autonomy for implementation. Individualized SRTS plans should be developed for each school in the Wausau area.
Local Media	Local media willingly runs stories on bicycling and walking topics.	Marathon County Health Department/ Local Media	Continue to take full advantage of media's interest by providing them with regular material and opportunities.
Point of purchase outlets for distribution of bicycle education	Bicycle shops have expressed an interest in educating their customers.	Local bicycle shops	Partner with bicycle shops to disseminate bicycle education information.
Bicycle Clubs	Both clubs provide bicycle education.	Wausau Wheelers (road cyclists) and Central Wisconsin Off-road Cycling Coalition (CWOCC)	There has been a growth in both on and off road bicycling facilities. Clubs present a great opportunity for peer to peer training and education. Look for opportunities to partner with these clubs.
Marathon County Bicycle Route System	Signs have raised awareness and possibly increased comfort for bicyclists.	Marathon County	Maintain and enhance as recommended in this plan.
Bicycle Maps	The maps provide way - finding and education.	Marathon County	Look for opportunities to add additional education components in association with the maps.
Share & Be Aware Ambassadors	Regional Bicycle Ambassadors to assist with local education efforts.	Wisconsin Bicycle Federation	Continue to take advantage of this program as available.
Maintenance and Cycling 101 Seminars	Bicycle shops are beginning to offer basic maintenance and cycling 101 seminars.	Local bicycle shops	Bicycle shops are already places people come to maintain their bikes, so it is good to combine service with education.
Community Service Officer (CSO) Initiatives	CSOs patrol by bicycle, interacting with the public and distributing bicycle and pedestrian safety materials.	Wausau Police Department	Patrols are currently focusing on the downtown area which experiences high bike/Ped. volumes and crashes. Continue these patrols but consider expanding them to other locations and times with high bike/Ped. volumes (e.g. special events).
Safety City	Officer leads 2-week safety camp for 4-5th graders. Camp includes bicycle and pedestrian safety.	Wausau Police Department	Continue Safety City and look for opportunities to coordinate safety messages with other educational initiatives. Develop similar programs with other area law enforcement agencies.

Education Tool*	How it Looks	Major Players	Comments/Recommendations
Bicycle Rodeos	Hands on bicycle safety activities for children.	Most communities	Some law enforcement agencies provide an officer to assist with these activities. Continue to provide a law enforcement presence, as practical, to enhance the credibility of these events.
Bicycle and Skateboard Enforcement in Downtown Area	Officers educate on, then enforce, sidewalk riding violations in downtown area to decrease conflicts with pedestrians.	Wausau Police Department	Continue to educate bicyclists and skateboarders about pedestrian safety in high conflict areas. Enforce sidewalk riding laws as necessary to decrease conflicts and protect pedestrians.
Walking School Buses	Several schools are currently doing Walking School Buses.	Local schools/Marathon County Health Department	Support expansion of this program.
Wausau School District Bicycles	The school district owns approximately 1,000 bicycles.	Wausau School District	Take full advantage of this resource to provide on-bicycle training to as many students and community members as possible.
Safety Assemblies	County Health Department Educator provides safety assemblies upon request.	Marathon County Health Department/ Schools	Formalize and advertise presentations and availability.
School Safety Patrols	Patrollers assist other students in crossing the street safely.	All elementary schools	Provide training to Safety Patrollers to be able to support and reinforce messages students are already receiving.
Crossing Guards	Help children cross the streets.	Municipalities	Provide additional advanced training on child pedestrian safety to be able to support and reinforce messages students are already receiving.
Physical Education Grants (PEP)	Funding made available to upgrade PE curriculum –walking and bicycling (life skills) could be added as approved activities.	Schools distinct	Continue to look for grants to include walking and bicycling activities in curriculum.
Bike to Work Week Activities	Multiple events held during the week including: Ride with the Mayor, Police Basic Education sessions, Bike and Walk for the Health of It Event, Wausau Family Bike Safety Day.	Area promoters and educators	Continue to provide education as part of Bike to Work Week.

*Education tools were located by reviewing the Wausau Bicycle Friendly Community Award on the Bicycle Wausau website, the City of Wausau website, various google searches on the internet and phone interviews with stakeholders.

Inventory of Current and Potential Education Partners

In the previous section, a wide variety of current players were listed, including the Wausau School District, Marathon County departments, cities, schools, businesses, and non-profit organizations. It is clear that many community organizations are already invested in educating about bicycling and walking. But there are other segments of the community that can also play a leadership role in carrying out these and other education tools as identified in Table 2.

Table 2: Inventory of Current and Potential Education Partners

Potential Players	Example Organizations (these are not limiting lists)	Types of Education Activities
Planners and Engineers	Municipalities and private contractors	Facilitate training for planners and engineers on best practices for improving pedestrian and bicycle safety and accommodation through the built environment.
School Districts	Public and private	Promote and support Safe Routes to School programs that teach key players in the educational system (e.g., students, teachers, staff, parents) about safe walking and bicycling practices and the associated benefits.
Public Health Educators	Marathon County Health Department	Support the Marathon County Health Department's education efforts and coordination of other area bicycle and pedestrian safety and encouragement activities (e.g., education through rodeos, bicycle clubs and shops).
Government Staff	All local and county government staff	Coordinate various department activities related to bicycle and pedestrian safety and accommodation.
Elected Officials	All local and county elected officials	Guide municipal staff towards improving bicycle and pedestrian safety and accommodation by providing training on accommodating bicyclists and pedestrians in their jurisdictions.
Media	Local newspapers, radio, and TV stations	Encourage the local media to publicize bicycle and pedestrian safety and accommodation initiatives.
Law Enforcement Agencies and Officers	Study area law enforcement agencies	Facilitate, or otherwise support, "Pedestrian & Bicycle Law Enforcement Training" for officers to enhance bicycle and pedestrian safety and accommodation through "Routine" patrol, bicycle rodeos, etc.
Motorists	MPO, Marathon County Health Department, AAA	Promote motorist awareness of bicycle and pedestrian safety. Produce PSAs and other PR materials to target aggressive and inattentive driving.
National/State Advocacy Organizations	League of American Bicyclists, Bicycle Federation of Wisconsin, Pedestrian and Bicycle Information Center	Provide a connection to national and state level bicycle and pedestrian information.

Opportunities to involve these types of organizations in education efforts should be sought in order to broaden education outreach to more people and groups, especially those that are historically under-served.

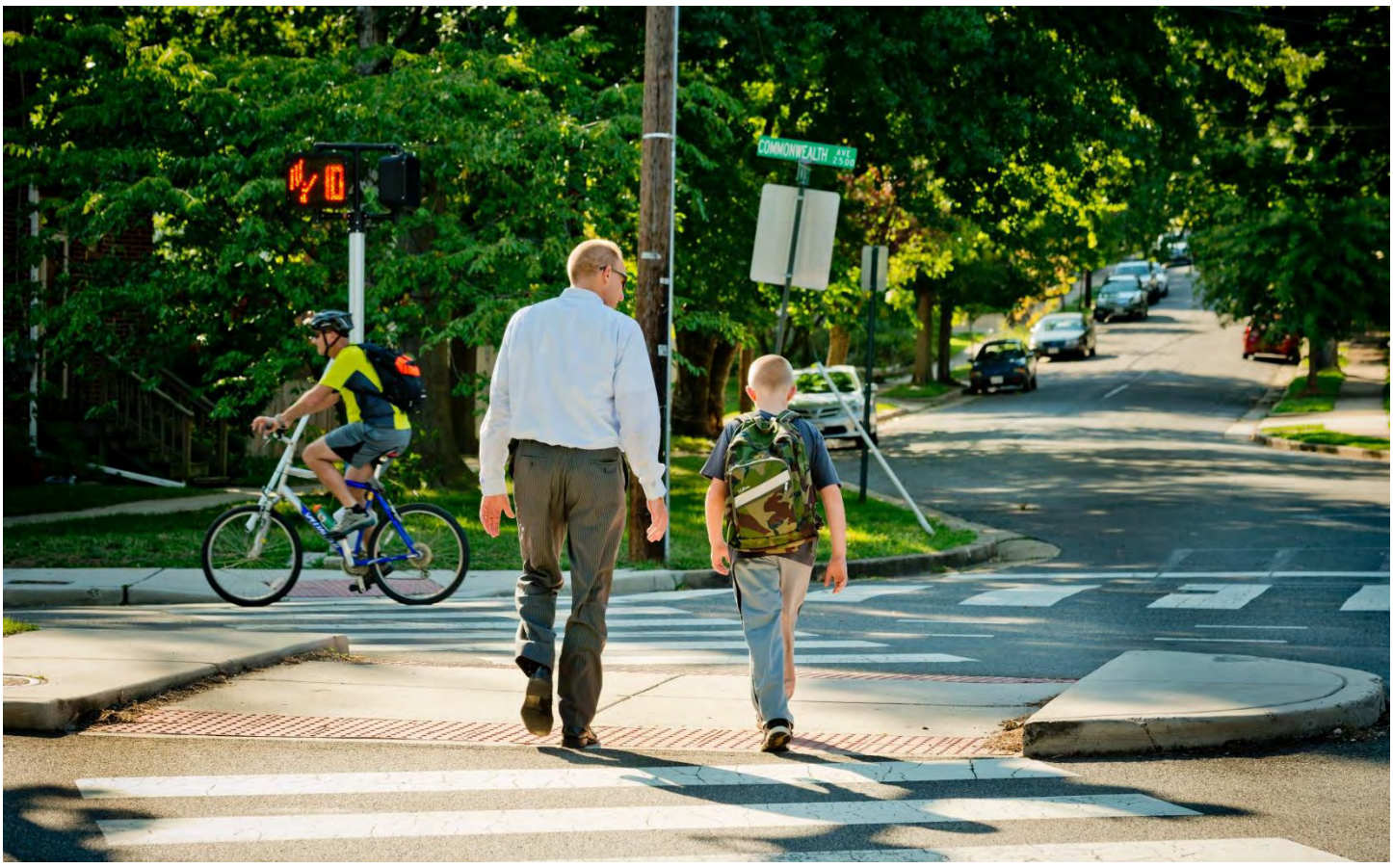
Target Education Audience

Determining who comprises the target audience for education efforts is an important component of developing education programs and activities to improve roadway safety. While all road users—from experienced bicyclists to new teenage drivers—will benefit from education, there are certain audiences that should be especially targeted in order to have the greatest effect on reducing the number and severity of crashes involving drivers, bicyclists, and pedestrians. With this in mind, the primary target audiences for education are school-aged children (especially those in third, fourth, and fifth grade), drivers (since they are capable of causing the greatest harm to vulnerable users), and people new to biking (especially those that are new to the area).

Bicycle and pedestrian safety education is particularly important for children. Children (up to age 15) have several cognitive and physical limitations that affect their ability to safely interact with motor vehicle traffic, including:

- Having one-third less peripheral vision than adults.
- Not being able to perceive danger until they are nine or 10 years old.
- Not being able to easily judge a car's speed and distance.
- Being easily distracted.
- Often having difficulty determining the direction of sound.
- Being impatient and impulsive.
- Assuming that if they can see a car, its driver can see them.

Children, along with the elderly and disabled, are among our most vulnerable users of the traffic environment. For these and other reasons, our education efforts must be geared to protect them. If our educational efforts are geared to keep our most vulnerable users safe, they should work well for the more traffic savvy and capable.



In a multi-modal transportation system, education is equally important for motorists, bicyclists, and pedestrians—and for adults as well as children.

Recommended Education Messages

There are only a few violations of the law which lead to the majority of bicycle and pedestrian crashes. Educational messages should be targeted at preventing these and, to a lesser extent, decreasing perceived safety issues and encouraging courteous road and trail usage.

Share & Be Aware

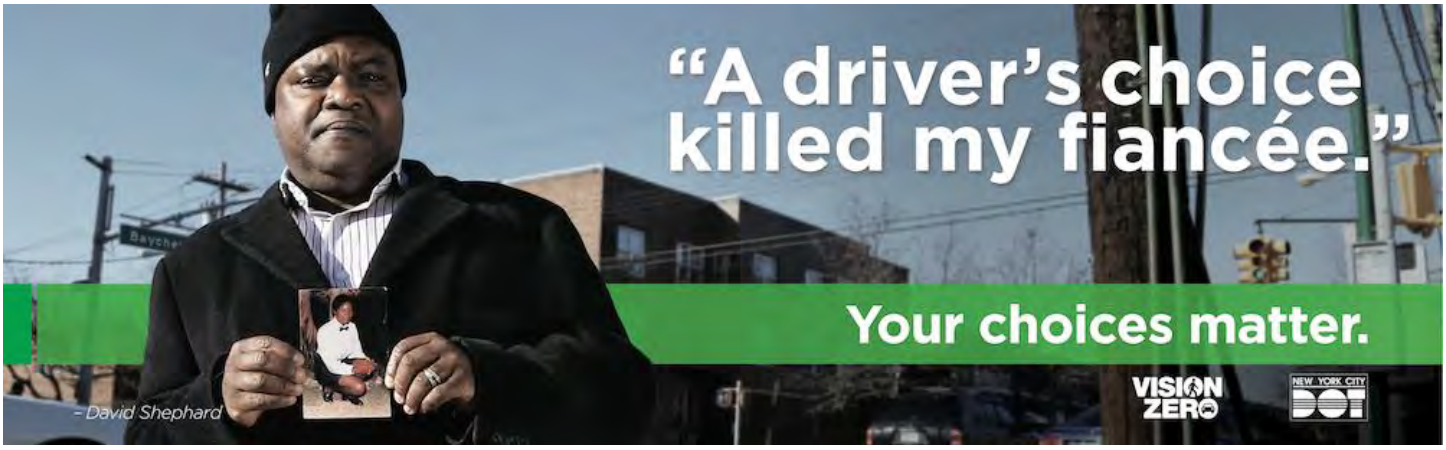
The Wausau MPO, Marathon County, Wausau-area communities, advocates, and others should continue conveying the statewide Share & Be Aware message, which contains a broad array of sub-messages and applies to bicyclists, pedestrians, and motorists:

- **Bicyclists** – As the operators of vehicles (as defined by state statute) bicyclists have the same rights and responsibilities as the operators of other vehicles.
    - Always wear a helmet
    - Yield the right-of-way when entering the road (*applies to motorists, as well*)
    - Ride in the same direction as other vehicular traffic
    - Stop, and then yield the right-of-way, at stop signs and red signals (*applies to motorists, as well*)
    - When making turns, yield to road users that have the right-of-way (*applies to motorists, as well*)
    - Use proper lane position
    - Signal turns in advance and show clear intent (*applies to motorists, as well*)
    - Use lights and reflectors at night
- **Pedestrians**
    - Use sidewalks and trails when available
    - Walk facing traffic
    - Cross the street at intersections in crosswalks (show clear intent to cross and pay attention when crossing)
    - Yield the right-of-way when crossing mid-block
    - Be aware of dangerous situations and poor motorist visibility, especially at night and during inclement weather.
- **Motorists**
    - Share the road with bicyclists
    - Yield the right-of-way when entering the road (*applies to bicyclists, as well*)
    - Stop, and then yield the right-of-way, at stop signs and red signals (*applies to bicyclists, as well*)
    - When making turns, yield to road users that have the right-of-way(*applies to bicyclists, as well*)
    - Pass bicycles with a minimum of 3 feet
    - Signal turns in advance and show clear intent (*applies to bicyclists, as well*)
    - Yield to pedestrians in crosswalks

Example quick reference "Safety Cards" provided on the BicycleWausau.org website based on the Share & Be Aware message.

Your Choices Matter.

Excessive speed and aggressive and inattentive driving should especially be targeted with the phrase "Your choices matter," which points out that it is a choice whether one drives inattentively, recklessly, under the influence, or safely and courteously. This message can be modified to target certain behaviors. For example, "Slow down. Your choices matter" specifically targets speeding and encourages people to drive at or below the posted speed limit. This is important because motor vehicle speed is the primary determinant of the severity of a crash with a pedestrian or bicyclist—the higher the speed in a crash, the greater the likelihood of death or serious injury.



As part of its "Vision Zero" campaign to eliminate traffic deaths, New York City uses the "Your choices matter" message with powerful, if graphic, imagery. Source: New York City Department of Transportation.

Another version especially important for Wausau is "Watch for pedestrians. Your choices matter." Pedestrians are the most vulnerable road users and crashes involving pedestrians typically occur when a person is crossing the street and either the pedestrian or the motorist failed to yield. In communities throughout the Wausau area, many people fail to yield to pedestrians in crosswalks. This message should be used alongside information that conveys to motorists that state law requires drivers to yield to pedestrians in crosswalks, whether marked or unmarked. Although the issue that this version of the message targets is motorist failure to yield, it will also reach pedestrians who can ensure their personal safety by being alert to inattentive drivers.

Recommendations for Education Initiatives

This Plan recommends that education efforts focus on the core set of messages for bicyclists, pedestrians, and motorists outlined on the previous page that are then distributed through a wide variety of meetings, classes, events, and individual interactions. This will raise awareness of the educational messages and develop broad based support for changing the culture. Collectively, the stakeholders in the Wausau area should develop an education program that begins with broad awareness of the education messages and works down to deeper levels of individual training. This program should including the following elements:

1. Adopt a set of educational messages (see previous section)
2. Create an education marketing plan and identify and fund an education coordinator
3. Review existing bicycle and pedestrian safety materials (including BicycleWausau.org and bicycle rodeo materials) and update and create new as needed
4. Continue developing public service announcements (PSAs) for television and radio and consider producing billboards, posters, bumper stickers, etc.
5. Coordinate PSAs with enforcement activities to target aggressive and inattentive driving
6. Certify a base group of League Cycling Instructors (LCIs)
7. Offer bicycle and pedestrian training for area planners and engineers
8. Include bicycle and pedestrian safety information in Driver's Education courses
9. Provide bicycle and pedestrian safety training to school crossing guards and school patrollers
10. Provide bicycle and pedestrian safety training to law enforcement officers
11. Promote weekly family bicycle rides with trained leaders
12. Encourage the development of Safe Routes to School programs
13. Promote bicycle and pedestrian safety through existing community events

Model Education Program

Arthur Ross, the Bicycle/Pedestrian Coordinator for the City of Madison, has developed a table (Table 3) which describes an ongoing program of traffic safety starting at the youngest ages and progressing through driver's education. This table identifies developmental ability groups and what each needs to hear, see, and practice. It can be very helpful when developing evaluating bicycle safety programs.

Table 3: Model Education Program (City of Madison)

Target Audience	Secondary Audience	Educational Goals
Kids 0-4 (preschool)	Parents Day Care Providers Preschool Teachers Motorists Police Officers	Directed at parents: How to safely bike with children in a child seat or bike trailer. Riding toy safety (big wheels, etc.); driveway and sidewalk issues; stay out of street (boundaries); helmets.
Kids 5-7 (Grades K-2)	Parents Preschool Teachers Teachers Motorists Police Officers	General focus on pedestrian safety. How to cross a street safely; mid-block crossing; curb/edge of road as boundary. Look left-right-left for traffic. Visibility issues (e.g., parked car as a visual screen); make own decision when it is safe to cross, do not just follow the leader. Note: These lessons apply to bicycle safety as well.

Target Audience	Secondary Audience	Educational Goals
Kids 8-10 (Grades 3-5)	Parents Teachers After School Programs Motorists Police Officers	Beginning bicycling on the street; how to enter the street safely (reemphasis of previous age group lessons); which side of the road to ride on; checking for traffic from behind before turning or changing roadway position; stop signs; hazard awareness and avoidance; communicating with other road users; helmets. Learning should take place on-bike as much as possible.
Kids 11-14 (Grades 6-9)	Parents Teachers Motorists Police Officers	Continuation of previous age group skills and move on to more advanced skills: emergency stop; rock dodge; instant turn; lane position in traffic when turning; multi-geared bikes (cadence); route selection; bike and helmet selection, fit, and adjustment; how to fix a flat tire; nutrition for bicycling (eating and drinking); teaching bicycling as a life-long activity.
Kids 15-18 (Grades 10-12)	Parents Teachers Driver's Ed Instructors Motorists Police Officers	There are two tracks to follow at this age group: continuation of advanced bicycling skills (operating a bicycle in traffic as a vehicle) and, in driver's education, teaching how motorists safely interact with bicyclists (and pedestrians) in traffic.
Adult Bicyclists	Motorists Police Officers	Operating a bicycle as a vehicle in traffic; everything listed above.
Motorists	Police Officers	How to safely share the road with bicyclists. Bicyclists' and motorists' rights and responsibilities vis-à-vis each other.
Parents	Day Care Providers Preschool Teachers After School Programs Youth Group Leaders Police Officers	Proper bike and helmet size, fit, and adjustment; encourage parents to ride with their children, observe their abilities, and grant independence/responsibility as each child is ready. Most parents will need all the information listed above for adult bicyclists as well as the specific information for their children's age groups.
Police Officers		All of the above as well as the importance of enforcement (of both bicycle and motorist violations) as part of the overall traffic safety program.

This page intentionally left blank.

Chapter 6
Enforcement

The Role of Enforcement

Of the three of the "Five E's" that traditionally pertain to traffic safety (engineering, education, and enforcement), active enforcement is generally the "last defense" in avoiding crashes, following properly-engineered infrastructure and properly-educated road users. However, enforcement plays a vital role in correcting improper and unsafe behavior by bicyclists, pedestrians, and motorists. Enforcement can, and should support other bicycle and pedestrian safety efforts. In addition to its punitive roll, for example, enforcement has the ability to educate. In fact, most law enforcement officers spend the majority of their time educating as opposed to writing tickets.

While all road users should be educated on the rules of the road and how to safely interact with each other, and transportation infrastructure must be designed to be safe and understandable, enforcement is important to ensure that people are properly using the transportation system.

This chapter explores current enforcement efforts in the Wausau area, includes recommendations for new programs, and suggests how current programs might be leveraged to more effectively entice people to try walking and bicycling for recreation and transportation purposes.

Goals of Enforcement

The main goals of law enforcement are often stated as follows:

- Improve voluntary compliance with the law
- Identify and correct violator and repeat violator behavior
- Reinforce education efforts
- Affect a behavioral change in the community
- Reduce the number of crashes
- Reduce the consequences resulting from these crashes

There is considerable overlap between enforcement and education activities. The most visible indication of this overlap is the involvement of law enforcement officers in education courses and programs, such as the bicycle rodeo shown in this image.

Enforcement Options

It is important to understand that law enforcement officers are trained to use the lowest level of enforcement possible to effectuate the desired change. A range of options are available from positive reinforcement to highly-punitive actions:

- Positive reinforcement programs (least punitive)
- Verbal warnings
- Written warnings
- Citations
- Arrests (most punitive)

Enforcement Challenges

While there are roles for citizens (such as neighborhood pace cars, reporting unsafe drivers, citizen radar, crime watch, etc.), law enforcement officers are the only ones that can enforce laws. Unfortunately, most law enforcement officers have never received any bicycle- or pedestrian-specific training and officers may find it challenging to enforce laws that they do not know or cannot defend. Nationwide, there is a relatively low level of enforcement activity for bicycle and pedestrian safety taking place. Based on interviews with several law enforcement agencies in the area, this appears to be true within the Wausau metro area as well. Simply stated, the levels of enforcement for bicycle and pedestrian safety are not what they could be.

There is a need for coordination of enforcement activities between law enforcement agencies. For any given trip, most bicyclists and pedestrians, like motorists, are not concerned with what city, village, town, or county they are in. Instead, they are more concerned with getting from place to place in the most efficient way possible. For this reason it is important to provide non-motorized travelers with a consistent set of laws and expectations, just like motorists. For example, if sidewalk riding is

permitted in one city, but prohibited in an adjacent one, a bicyclist traveling between these two cities may be unaware that he is breaking that law.

Target Enforcement Violations

How bicycle and pedestrian crashes happen is largely predictable and, therefore, preventable. The vast majority of crashes are related to a very small number of violations of the law, as discussed in Chapter 2. If these violations can be reduced or eliminated, there should be a significant improvement in pedestrian and bicycle safety. By enforcing key violations, law enforcement can literally stop crashes before they happen.

According to the Wisconsin Department of Transportation brochure, Enforcement for Pedestrian & Bicycle Safety: Are You Prepared?, more than 80% of pedestrian and bicycle crashes with motor vehicles involve the following violations (Wisconsin State Statute references are in *italics*):

Motorist

- Failure to yield right-of-way to pedestrian/bicyclist (in crosswalk) – controlled/uncontrolled intersection or crosswalk (*346.23(1)/346.24(1)*)
- Improper Turn (such as turning from the wrong lane or failing to signal) (*346.34(1)*)
- Failure to obey stop sign/signal (*346.46(1)/346.37*)
- Failure to stop for school bus – flashing lights (*346.48(1)*)
- Passing vehicle stopped for pedestrian (*346.24(3)*)
- Operating While Intoxicated (OWI) (*346.63*)

Bicyclist

- Riding facing traffic (*346.05*)
- Failure to obey stop sign/signal (*346.46(1)/346.37*)
- Improper Turn (such as turning from the wrong lane or failing to signal) (*346.34(1)*)
- Failure to use required lights and reflectors (on-road, sidewalks) (*347.489(1)*)
- Failure to yield right-of-way to pedestrian (in crosswalk) – controlled/uncontrolled intersection or crosswalk (*346.23(1)/346.24(2)*)
- Failure to yield right-of-way to vehicle – non-crosswalk (*346.25*)

Pedestrian

- Failure to yield right-of-way to motor vehicle when crossing the street – controlled/uncontrolled intersection or crosswalk (*346.23(1)/346.24(2)*)
- Failure to yield right-of-way to vehicle – non-crosswalk (*346.25*)
- Failure to obey pedestrian control signal (*346.38*)
- Unsafe crossing against red light/arrow (*346.37*)
- Failure to walk facing traffic when walking on the roadway (*346.28(1)*)

Inventory of Current Enforcement Efforts

Enforcement is a longstanding component of overall community safety. As such, it is important to look at current enforcement efforts related to bicycle and pedestrian safety. There are already a number of enforcement initiatives being undertaken by several law enforcement agencies which contribute directly to bicycle and pedestrian safety. It is important to acknowledge, build upon, and coordinate these efforts across political boundaries.

The inventory that follows highlights the known bicycle and pedestrian enforcement efforts which occur regularly or have occurred within the past few years. It also includes ideas and suggestions for how current efforts can be made more effective.

Table 1: Inventory of Current Enforcement Efforts

Education Tool*	How it Looks	Major Players	Comments/Recommendations
Weekly News Articles	Year-round safety articles in local newspapers – focusing on bicycle and pedestrian safety in spring.	Wausau Police Department	Articles have been done for many years and seem to be well received.
Community Service Officer (CSO) Initiatives	CSOs patrol by bicycle, interacting with the public and distributing bicycle and pedestrian safety materials.	Wausau police Department	Patrols are currently focusing on the downtown area which has high bike/pedestrian volumes and crashes. Continue these patrols but consider expanding them to other locations and times with high bike/pedestrian volumes (e.g. special events).
Safety City	Officer leads 2-week safety camp for 4-5th graders. Camp includes bicycle and pedestrian safety.	Wausau Police Department	Continue Safety City and look for opportunities to coordinate safety messages with other educational initiatives. Develop similar programs with other area law enforcement agencies.
"Routine" Patrol	Officers have the opportunity to "routinely" enforce laws related to bicycle and pedestrian safety.	All Law Enforcement Agencies	All officers on patrol should continue to look for opportunities to improve bicycle and pedestrian safety through the enforcement of laws. Increased bicycle and pedestrian safety training for officers should increase these opportunities.
Bicycle Rodeos	Hands on bicycle safety activities for children.	Most communities	Some law enforcement agencies provide an officer to assist with these activities. Continue to provide a law enforcement presence, as practical, to enhance the credibility of these events.
Community Partnerships	In general, law enforcement agencies work with, and provide credibility to, community education/enforcement efforts.	All Law Enforcement Agencies	Continue to honor requests by community organizations to participate in activities which promote the enforcement message.
Bicycle and Skateboard Enforcement in Downtown Area	Officers educate on, then enforce, sidewalk riding violations in downtown area to decrease conflicts with pedestrians.	Wausau Police Department	Continue to educate bicyclists and skateboarders about pedestrian safety in high conflict areas. Enforce sidewalk riding laws as necessary to decrease conflicts and protect pedestrians.

*Enforcement efforts were located by reviewing the Wausau Bicycle Friendly Community Award on the Bicycle Wausau website, the City of Wausau website, various google searches on the internet, and phone interviews with Lieutenant Nathan Pekarske, Wausau Police Department, Captain

Randall Hillmann and Lieutenant Shawn McCarthy, Marathon County Sheriff's Department and Chief Wally Sparks, Everest Metro Police Department.

Area law enforcement agencies have limited dedicated resources in terms of budgets and manpower for addressing bicycle and pedestrian safety issues, however, they have expressed a desire to increase enforcement efforts and receive specialized training. Furthermore, many law enforcement agencies are lending their support to educational efforts lead by other agencies and organizations.

Target Enforcement Behaviors

This Plan recommends a targeted approach to enforcement for pedestrian and bicycle safety. This approach focuses on law violations which lead to the most common crash types (which are listed at the beginning of this chapter). Of these, failure to yield right-of-way to a pedestrian or bicyclist in the crosswalk, failure to obey stop sign/signal, and riding without lights or reflectors should be especially targeted. These targeted behaviors inform the development of enforcement strategies and activities to improve roadway safety.

Special attention should be given to enforcement relating to typically under-represented user groups, including children, women, people of color, and the Hmong community. Officers should exercise additional sensitivity when interacting with these groups, using the least punitive means possible, in order to not discourage individuals from continuing to walk and bike.

Primary Enforcement Messages

There are three main reasons why a person would choose to change their traffic-related behavior from something that is unsafe and illegal to something that is safer and legal (i.e. riding against the flow of traffic). The first reason is safety. Some people simply need to be taught that a certain behavior is unsafe and given an alternative and they will change that behavior. Others are motivated by the desire to be a good person and adhere to the social norms. If they are told that their actions are not courteous and given an acceptable alternative, they will change their behavior. Education and awareness efforts, such as public service announcements, are the primary ways to change behavior related to these first two reasons. However, a small group of individuals will only respond to the threat of enforcement.

Messages for enforcement should mirror the education messages identified in Chapter 5—"Share & Be Aware" and "Your Choices Matter." Any public outreach efforts based on these messages should convey the possibility of punitive action, especially as it relates to the target enforcement behaviors described above.

Recommendations for Enforcement Initiatives

Law enforcement officers are the only ones who can enforce laws for pedestrians, bicyclists, and motorists yet law enforcement agencies have limited budgets and manpower. Therefore, it is vitally important that officers be provided with training specific to enforcement for pedestrian and bicycle safety in order to most efficiently and equitably enforce the law. This training should be designed to raise police awareness of bicycle and pedestrian issues, identify the most important laws to enforce, budget limited resources, and help them gain support from the public for their enforcement efforts.

A single training effort, however, is not adequate to institutionalize knowledge pertaining to bicycle and pedestrian safety. Instead, a multi-faceted continuum of training implemented over time has proven to be more effective. In such a continuum, all officers are provided with basic bicycle and pedestrian safety information, via a tool like a brochure. Over a period of months officers are provided with more advanced training through tools such as safety materials available to the general public, roll call videos, computer-based training, and instructor-led training. The latter stages of the continuum are more labor intensive but are targeted at only a few officers who will become the bicycle and pedestrian expert resources for their departments.

As a way of strengthening law enforcement's role in improving bicycle and pedestrian safety and comfort in the study area, this Plan recommends the following:

1. **Start an Enforcement for Bicycle and Pedestrian Safety program within each agency.** This program should revolve around the leading causes of bicycle and pedestrian crashes and develop a department strategy for reducing these crashes. This program will focus much needed attention on enforcement for bicycle and pedestrian safety issues. Designating an officer to be in charge of the program is the first step.
2. **Implement a Continuum of Training in Pedestrian and Bicycle Safety Training for Law Enforcement program.** The continuum approach includes multiple types of media (written, video, interactive computerized-based training) and personalized classroom instruction to appeal to a broad cross section of officers with different learning styles. It consists of the following tools:
    - "Enforcement for Pedestrian & Bicycle Safety" brochure
    - National and local pedestrian and bicycle safety materials
    - Pedestrian and bicycle safety videos to be shown at roll call
    - Computer-based pedestrian and bicycle safety training
    - Instructor-led, two-day, Pedestrian & Bicycle Safety for Law Enforcement course

    These tools are implemented over a period of time and have been shown throughout Wisconsin and across the country to be effective in raising officers' knowledge base about enforcement for bicycle and pedestrian safety and to increase the likelihood that they will take enforcement action when necessary.

    Additional information is provided in the appendix.
3. **Conduct targeted enforcement operations.** Targeted enforcement operations like red light running and failure to yield to pedestrians at crosswalks raise the general public's knowledge about bicycle and pedestrian safety and the need to comply with relevant laws.
4. **Work more closely with engineering, education, encouragement, and evaluation efforts.** Each law enforcement agency should deepen relationships with municipal public works and planning departments, as well as the Marathon County Health Department, in order to identify shared goals and objectives and develop a deeper understanding of the strengths, weaknesses, and needs for support of each "E." Example activities include presenting new infrastructure and traffic control designs to law enforcement officers prior to construction. Better communication between the Five E's will strengthen each, leading to a more comprehensive solution to bicycle and pedestrian safety problems.

Chapter 7
Implementation

Infrastructure Implementation Strategies

There are many ways to implement bicycle and pedestrian infrastructure projects. The following section outlines the most common and practical strategies that will be used to implement the recommendations of this plan. However, this list is not exclusive and unique opportunities or approaches that fall outside of these strategies should be considered if they will produce the same results.

Modify Roadway Configurations to Utilize Existing Pavement

One of the most significant opportunities for providing bicycle facilities in the Wausau metro area is the excess pavement width found along many streets. This opportunity allows rapid implementation of this Plan in a very cost-effective manner. This strategy can be enacted in three ways:

Stripe bike lanes on existing pavement. Several streets in the study area have ample pavement width for a bike lane to simply be added without changing the configuration of travel lanes. Generally, on-street parking is not common on streets within this category, or if it is ample pavement width exists to stripe bike lanes and retain on-street parking as well. In some cases, however, it may be necessary to prohibit on-street parking at all times or during peak periods.

Reconfigure On-Street Parking. Some streets in the area have striped or unstriped on-street parking lanes that see relatively little use. These are opportunities for adding bike lanes, either through removing on-street parking or striping wide (10 to 12 feet) combination lanes to accommodate bicycling and parking. Thomas Street is an example of this type of opportunity.

Road Diets and Lane Diets. Quite a few streets in the area, such as Sherman Street (between 17th Avenue and 28th Avenue) have more travel lanes than are needed for the traffic volume carried by the street. Other streets have lanes that are wider than necessary. In these locations, performing "road diets" (where unnecessary lanes are removed) and "lane diets" (where existing lanes are simply narrowed) can provide adequate space for the provision of bike lanes. In some cases, road diets involve converting a 4-lane street to a 3-lane configuration with a center turn lane, a travel lane in each direction, and a bike lane in each direction. The lane diet approach has the greatest feasibility where wider lanes exist in the first place or enough space exists in the parking and the travel lanes to repurpose space to mark bicycle lanes. This strategy most often employs the use of 11 foot travel lanes and requires other considerations such as the presence of truck routes.

Example of a "4 to 3" road diet, in which a four-lane street was converted to two lanes with a two-way left turn lane and bike lanes on each side. Evidence of pavement marking and stripe eradication can be seen.

The cost for pavement marking, road diet, and lane diet projects can be relatively quite small, especially if coordinated with communities' regular striping programs, so funding will primarily come from each individual community. However, these projects may be eligible for funding from the Transportation Alternatives Program and other grant programs.

Enhance Suitable Bicycle Routes with Wayfinding and Regulatory Signs and Markings

Many streets and roads in the study area are suitable for bicycling without dedicated accommodations (such as bike lanes, paved shoulders, or paths). However, many could benefit substantially from additional treatments that enhance the routes for bicycling. Such treatments include bicycle boulevards, shared lane markings (sharrows), bike route and wayfinding signs, and route maps (see Chapter 3 for guidance on when each of these treatments are appropriate). Simple, low-cost treatments—such as sharrows and signs—can provide considerable benefit to the user simply by confirming that they are on a designated bikeway. Other, more costly treatments like traffic calming along a bicycle boulevard can improve user comfort by lowering motor vehicle traffic speeds and potentially reducing traffic volumes.

The cost for treatments such as these can be relatively quite small, so funding will primarily come from each individual community. However, these projects may be eligible for funding from the Transportation Alternatives Program and other grant programs.

Coordinate Bikeway, Path, and Sidewalk Implementation with Upcoming Roadway Projects

The most cost-effective and coordinated way to provide bicycle and pedestrian infrastructure (bike lanes, sidepaths, sidewalks, curb extensions, etc.) is to do so as part of a larger roadway reconstruction, rehabilitation, or repaving project. Conversely, it is not typically cost-effective or even feasible to widen roadways as a stand-alone project solely intended to accommodate bicycle infrastructure (especially in urban areas with curbs and gutters, storm sewer inlets, and constrained rights-of-way). The Wausau MPO and each individual community can implement this strategy by adopting Complete Streets policies (see Chapter 1) that apply to new construction, reconstruction, and 3R (resurfacing, restoration, or rehabilitation) projects on all streets and roads in the area.

Providing bicycle accommodations as part of a larger roadway project often means simply adding a few additional feet of pavement. Depending on right-of-way constraints, the impact on a street project's cost can be very minimal—often resulting in a cost increase between two and 10 percent. The source of funding for bicycle and pedestrian accommodations provided in this manner should be that of the larger roadway project.

Prioritize Stand-Alone Projects that Provide High-Value Connections

In some instances, stand-alone projects will be necessary in order to provide bicycle and pedestrian infrastructure—this is especially true for paths and bicycle/pedestrian bridges. These projects tend to be the most costly and local, state, and federal funding dedicated for bicycle and pedestrian infrastructure is very limited. One mile of path can cost as much as 5 to ten miles of road diet projects. Therefore, stand-alone projects should be prioritized based on their ability to provide high-value connections to destinations and other low-stress bikeways.

Funding for stand-alone projects may come from a variety of local, regional, state, and federal sources. Example sources include the federal Surface Transportation Urban Program (STP Urban) administered locally by the Wausau MPO, municipal general funds, and federal Transportation Alternatives Program (TAP) grants. For path projects, the federal Recreational Trails Program can be a source of funding.

Committed Projects

Six street and road projects are considered "committed" at the time of this writing. This means that funding for the project has been identified and set aside for these projects, for which municipalities or the County may begin engineering and/or acquiring right-of-way. Each project will include some form of bicycle and accommodation, as outlined below. These projects will likely be built prior to many of the other infrastructure recommendations included in this Plan. However, minor projects such as restriping may occur prior to these committed projects.

2016 Projects

- **Grand Avenue** (from Kort Street, past the Wausau Country Club, to Business 51 on the north end)
    - Location: City of Schofield
    - Description: This project will be a full reconstruction resulting in an urban cross section with curb and gutter, sidewalks, and bike lanes.

2018 Projects

- **Townline Road** (from Grand Avenue east to the city limits, located approximately at Easthill Drive)
    - Location: City of Wausau
    - Description: This project is anticipated to be a full reconstruction of the urban cross section, and is anticipated to include bike lanes and sidewalks.
- **Townline Road** (from the Wausau city limits east to County Highway X)
    - Location: Marathon County, east of the City of Wausau
    - Description: This project is anticipated to be a minor reconstruction or mill and overlay of the existing rural cross section with the addition of wide paved shoulders.
- **1st Avenue** (from Thomas Street to Stewart Avenue)
    - Location: City of Wausau
    - Description: This project is anticipated to be a full reconstruction of the one-way urban cross section including the addition of a bike lane.
- **Rib Mountain Drive** (from Morning Glory Lane to Cloverland Lane; and from Oriole Lane to Robin Lane)
    - Location: Town of Rib Mountain
    - Description: This project is anticipated to include partial reconstruction of two non-continuous segments of Rib Mountain Drive. It will include the addition of sidewalks and may include some bicycle accommodation.
- **Old Highway 51** (from Kowalkski Road to Village Way).
    - Location: Village of Kronenwetter
    - Description: This project is anticipated to be a partial reconstruction including wide paved shoulders.

Bicycle Network Action Plan

Implementation of the Bicycle Network Recommendations can be very rapid due to the extensive opportunities provided by excess pavement width throughout the study area. To indicate the relative ease of implementation and phasing, projects have been grouped into three categories:

- Top Priority – Projects that, when implemented, will make substantial improvements to the existing bicycle system by overcoming barriers and/or closing gaps in the existing path and bikeway networks. These projects generally match the description of the "Near Term" projects discussed below.
- Near Term – Projects that are relatively easy to implement right now (assuming funding is available). These recommendations involve simple treatments such as striping/restriping the roadway. Near Term projects are those that are essentially "shovel-read" and satisfy at least one of three criteria. First, a project is considered Near Term if it does not require expansion of a roadway where curbs and gutters are present. These are retrofit projects that generally involve simply adding new stripes or modifying lane configurations. Second, a project is considered Near Term if it is reflected in an adopted plan from a local jurisdiction with a timeframe of less than five years. Third, a project is considered Near Term if the roadway is scheduled for upcoming major construction work.
- Build Out – Projects that are more challenging that will have to wait until a street is reconstructed, a traffic study is performed, etc. Build Out projects are remaining projects which do not satisfy any of the Near Term criteria. Typically, these are recommendations for highly-constrained roadways with no feasible solution for repurposing existing roadway space and no immediate plans for reconstruction. In other words, these recommendations are those that are likely only feasible as part of a larger street or road reconstruction project or those that would need to be verified by way of an individual traffic study.

Some streets have both a Top Priority or Near Term and a Build Out recommendation. In these cases, the Top Priority or Near Term recommendation is an interim solution that will provide some level of improvement but will not yield the desired level of comfort for bicyclists. The Build Out recommendation is then what is really needed (but likely cannot be accomplished immediately) to accommodate bicyclists of various abilities and levels of comfort.

Top Priority projects are identified on the following pages. Tables and maps of Near Term (including Top Priority) and Build Out projects are provided at the end of this chapter.

Top Priority Project Overview

Projects were assigned to the Top Priority category because of their ability to quickly make substantial improvements to the Wausau area's bicycle system. The majority of these projects are along moderate- to high-stress street segments that comprise portions of current metropolitan bike routes, and the recommended improvements will improve the segment's stress score by at least one order of magnitude (for example, adding bike lanes would increase Sherman Avenue's stress rating from LTS 4 to LTS 2). Top Priority projects are summarized in Table 1 and are also included in the more detailed Near Term projects table at the end of this chapter.

Table 1: Top Priority Bicycle Network Projects

ID*	Project Description			Primary Jurisdiction & Comments
1	**Kowalski Rd** from Kronenwetter Dr to Tower Rd			**V. of Kronenwetter**
	Recommendation Path	**Stand-Alone Project Cost** $143,192	**Coordinated Project Cost** $143,192	Part of Kronenwetter Master Non-Motorized Pedestrian Facilities Plan
16	**Volkman St** from Military Rd to Lili Ln			**V. of Rothschild**
	Recommendation Paved shoulder	**Stand-Alone Project Cost** $97,461	**Coordinated Project Cost** $80,120	Paths exist along portions of this segment, but right-of-way and drainage constraints preclude a continuous path.
28	**Northwestern Ave** from Gold Ridge Way to Meuret Ln			**C. of Wausau / V. of Weston**
	Recommendation Paved shoulder	**Stand-Alone Project Cost** $89,305	**Coordinated Project Cost** $73,415	This is a critical gap in an otherwise lower-stress alternative to Grand Avenue and is a route connecting to the Mountain-Bay Trail.
29	**South 1st Ave** from Stewart Ave to Thomas St			**C. of Wausau / WisDOT**
	Recommendation Bike lane	**Stand-Alone Project Cost** $41,123	**Coordinated Project Cost** $32,878	Road diet. Road slated for reconstruction in 2018.
30	**Sherman St** from 17th Ave to 24th Ave			**C. of Wausau**
	Recommendation Bike lane	**Stand-Alone Project Cost** $25,221	**Coordinated Project Cost** $20,164	"4 to 3" road diet to provide a travel lane in each direction, two-way left-turn lane, and bike lanes.
41	**48th Ave** from Packer Dr to Stewart Ave			**C. of Wausau / T. of Stettin**
	Recommendation Paved shoulder	**Stand-Alone Project Cost** $9,776	**Coordinated Project Cost** $8,036	One shoulder partially paved already. Complete 4 ft shoulders on both sides.
45	**28th Ave** from Westhill Dr to Highway 52			**C. of Wausau**
	Recommendation Bike lane	**Stand-Alone Project Cost** $29,050	**Coordinated Project Cost** $23,226	Road diet.
46	**28th Ave** from Highway 52 to Sherman St			**C. of Wausau**
	Recommendation Bike lane	**Stand-Alone Project Cost** $18,756	**Coordinated Project Cost** $18,042	Stripe 4 ft bike lanes next to curb.
63	**Camp Phillips Rd** from Bernard Ave to Ross Ave			**V. of Weston**
	Recommendation Path	**Stand-Alone Project Cost** $23,009	**Coordinated Project Cost** $23,009	Closes a significant gap, linking existing path to the north to Ross Ave bike lanes. Right-of-way acquisition costs not included.
67	**Thomas St** from Grand Ave to River Dr			**C. of Wausau**
	Recommendation Bike lane	**Stand-Alone Project Cost** $9,404	**Coordinated Project Cost** $7,518	Perform a road diet by removing a travel lane in each direction and striping wide/buffered bike lane. Shorten the eastbound right turn lane so it begins after the bridge over the railroad while still providing adequate queuing room. Shift eastbound left-turn lane to allow space for eastbound bike lane through the intersection.
68	**Thomas St** from McCleary St to 3rd Ave			**C. of Wausau**
	Recommendation Bike lane	**Stand-Alone Project Cost** $20,767	**Coordinated Project Cost** $17,250	Remove parking on one side of street (if not already prohibited). Stripe parking lane on one side and bike lane on opposite side.
72	**1st Ave** from Oak St to Bridge St			**C. of Wausau**
	Recommendation Bike lane	**Stand-Alone Project Cost** $4,065	**Coordinated Project Cost** $3,250	Consolidate straight and left/straight lanes to make room for bike lane through the Bridge St intersection.
76	**7th St** from Forest St to Bridge St			**C. of Wausau**
	Recommendation Bike lane	**Stand-Alone Project Cost** $36,789	**Coordinated Project Cost** $30,559	Remove parking on one side of street. Stripe wide parking lane, travel lanes, and bike lane on other side.
98	**South 3rd Ave** from Stewart Ave to Thomas St			**C. of Wausau**
	Recommendation Bike lane	**Stand-Alone Project Cost** $37,558	**Coordinated Project Cost** $30,028	Road diet may allow for parking-separated bike lane. Alternative is to remove parking from one side and retain travel lanes.
102	**Thomas St** from River Dr to McCleary St			**C. of Wausau**
	Recommendation Bike lane	**Stand-Alone Project Cost** $7,777	**Coordinated Project Cost** $6,460	Current bridge width is adequate for 5 ft bike lanes in each direction. Alternatively, provide on/off ramps to the sidewalk for westbound bikes and a buffered bike lane for eastbound bikes.
108	**Military Road Street Extension** from Grand Ave to existing Military Rd			**V. of Rothschild**
	Recommendation Bike lanes	**Stand-Alone Project Cost** N/A	**Coordinated Project Cost** $21,336	Build planned street extension with sidewalks and bike lanes.
117	**Utility Easement Path** from Trillium Ln to Foxglove Rd			**T. of Rib Mountain**
	Recommendation Path	**Stand-Alone Project Cost** $159,469	**Coordinated Project Cost** $159,469	Construct path along existing utility easement.
	Total:	**$774,058**	**$697,952**	

Planning-Level Cost Estimates

Planning-level cost estimates for the projects recommended by this Plan are based on typical per-mile cost estimates (see Table 2) for various treatments multiplied by the project's length. Unique situations (such as drainage crossings or complex intersection treatments) were not directly considered in the development of these cost estimates, but a 25 percent contingency was included in order to account for such situations.

Per-mile cost estimates were developed conservatively and are based on the cost of a stand-alone project. The per-mile estimates include excavation, grading, milling, pavement marking eradication, base course, surface course, new pavement markings, signs, construction zone traffic control, and the aforementioned 25 percent contingency. In some cases, per-mile estimates also include landscaping, drainage, and utility adjustments. In addition, it is important to note that the cost for pavement markings and striping is based on epoxy, which is more durable and longer lasting—but more costly—than regular waterborne paint. Since many of the projects recommended simply involve striping, the cost of each project could be less if cheaper (but less durable) pavement marking materials were used.

If built as part of a larger roadway project, the marginal cost of bikeway improvements would be substantially less. Road diets, lane diets, and other striping projects performed as part of regular repaving projects would negate the need for eradication and additional mobilization. To account for this, "coordinated project" cost estimates were provided. However, even these marginal costs could be less depending on the type of pavement marking materials used and other efficiencies that could be found during construction.

Table 2: Typical Cost per Mile for Bicycle Facilities

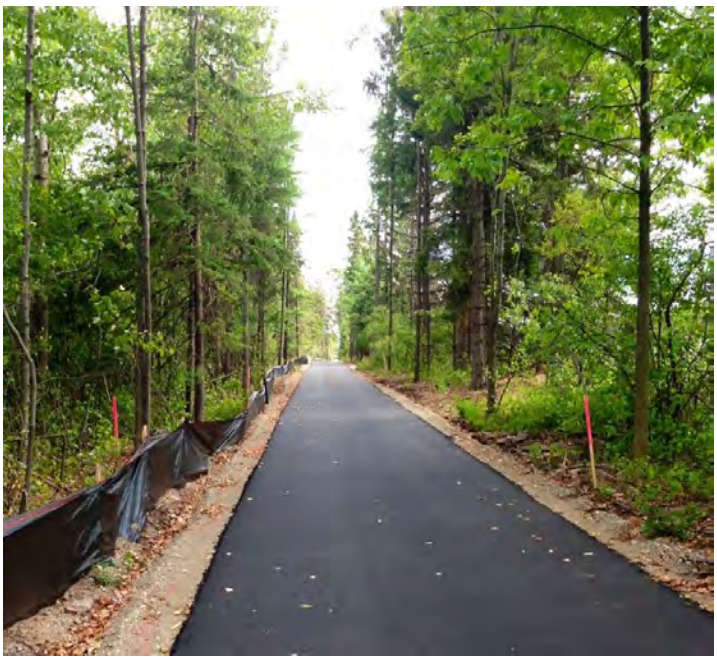
Facility Type and Implementation Method	Stand-Alone Project Typical Cost per Mile (2015 Dollars)	Coordinated Project Typical Cost per Mile (2015 Dollars)
Bike Lanes		
Add Striping and Markings	$34,700	$33,379
Lane Diet	$41,900	$34,804
Road Diet	$49,800	$39,816
Widen Roadway	$228,800	$132,311
Buffered Bike Lanes		
Lane Diet/Road Diet	$73,700	$54,393
Paved and Striped Shoulder		
Add Striping and Markings	$12,500	$10,778
Lane Diet	$25,000	$13,050
Road Diet	$48,800	$37,492
Pave Existing Granular/Earth Shoulder	$111,000	$91,250
Widen Roadway	$270,400	$201,340
Suitable Routes		
Add Shared Lane Marking (Sharrow)	$4,600	(same)
Add Bike Route Signage	$1,900	(same)
Add Bicycle Boulevard Treatments (Sharrows and signs only; traffic calming such as curb extensions and road humps increase costs substantially)	$6,500	(same)
Shared Use Path		
Widen Existing Path (by 4 feet)	$86,200	(same)
Construct New (10 feet)	$215,400	(same)

These typical costs were developed in part using Wisconsin Department of Transportation Average Unit Price data located at: http://roadwaystandards.dot.wi.gov/hcci/contracting-information/average-unit-price.pdf (accessed June 5, 2015) as well as historical average costs observed by Toole Design Group.

The total cost, by phase, of the bicycle network recommendations of this Plan are shown in Table 3. Estimated costs for each individual project are provided in the implementation tables provided at the end of this chapter.

Table 3: Bicycle Network Recommendations Planning-Level Cost Estimates by Phase (2015 dollars)

Phase	Bike Lanes		Paths	Paved Shoulders		Total	
	Stand-Alone	Coordinated	Stand-Alone	Stand-Alone	Coordinated	Stand-Alone	Coordinated
Near Term (including Top Priority)	34.5 miles		6.3 miles	42.1 miles		83 miles	
	$1.8 m	$1.5 m	$1.3 m	$4.7 m	$3.9 m	$7.9 m	$6.7 m
Build Out	14.0 miles		4.3 miles	5.9 miles		24.2 miles	
	$2.7 m	$1.7 m	$0.9 m	$0.7 m	$0.5 m	$4.3 m	$3.1 m



The recently-constructed "51-29 Trail" is a project that has substantially increased regional connectivity for bicyclists in the Wausau area. Photos by Denis Helke.

Pedestrian Improvement Action Plan

As discussed in Chapter 3, the primary infrastructure-related needs for pedestrians in the Wausau area include increased crosswalk maintenance and improved crossings of arterial streets. However, each of the shared use paths proposed in the Bicycle Network Action Plan will also serve pedestrians. Furthermore, paved shoulders are often used by pedestrians, even though they do not meet national accessibility requirements based on the Americans with Disabilities Act.

Crosswalk Design and Maintenance Programs

Pedestrians are the most vulnerable of road users and face the greatest exposure to motor vehicles when crossing the street. While enforcement and education strategies are essential, the design and continual maintenance of crosswalks is perhaps the most important engineering strategy for improving pedestrian safety. The following design elements should be adopted throughout the Wausau area:

- Crosswalks should preferably be at least 10 feet wide or approximately twice the width of the sidewalks or paths they connect.
- High-visibility crosswalk designs (continental, ladder, and zebra) should be used when crosswalks are applied or replied to multi-lane streets, streets with speed limits of 35 miles per hour or greater, and streets with 12,000 or greater ADT. These designs are significantly more visible than standard crosswalks.
- Whenever possible, apply crosswalks using more durable materials, such as epoxy or thermoplastic, which will lengthen maintenance cycles. In order to avoid damage from snowplows, thermoplastic markings can be inlaid into milled pavement.
- Provide pedestrian signals at all signalized intersections. Include countdown timers and leading pedestrian intervals to improve crosswalk safety and compliance.

In addition to utilizing enhanced crosswalk designs, WisDOT, the County Highway Department, and each municipality should develop crosswalk maintenance programs so that marked crosswalks are repainted or reapplied every one to three years or as needed in order to remain effective at increasing pedestrian safety.

Top Priority Infrastructure Actions

Chapter 3 contains recommendations for pedestrian infrastructure actions within seven pedestrian priority improvement areas. While each of these recommendations are considered important and should be implemented as opportunities arise, the actions listed in Table 3 are considered the highest priority. Additional project recommendations are shown in Chapter 3.

Table 4: Top Priority Actions by Priority Improvement Area (see Chapter 3 for additional actions)

Action	Project Cost Estimate (2015 dollars)	Primary Jurisdiction
Downtown Wausau		
Add white transverse lines to crosswalks at five intersections along Jefferson Street (1st Street to 5th Street)	$10,000	C. of Wausau
Reapply all crosswalks and consider relocated pedestrian push-buttons at the intersection of 1st Street, Washington Street, and River Drive	$3,000 to $20,000	C. of Wausau, WisDOT
Bopf and West Thomas Streets		
Add sidewalks on the south side of Thomas Street (between 12th Avenue and 17th Avenue) and on both sides of Bopf Street west of 12th Avenue.	$150,000 to $175,000	C. of Wausau
Improve the intersections of 12th Avenue with Bopf Street and Thomas Street for pedestrians, by clearly defining sidewalks and curb ramps around the corner commercial properties. Furthermore, provide marked crosswalks across 12th Avenue to provide safer access to GD Jones Elementary School.	TBD	C. of Wausau
Provide crosswalks across Thomas Street at 15th Avenue to provide safer access to GD Jones Elementary School.	$5,000	C. of Wausau

Table 4 (continued)

Action	Project Cost Estimate (2015 dollars)	Primary Jurisdiction
Stewart Avenue Corridor		
Along with the upcoming reconstruction of Stewart Avenue, include high-visibility crosswalks (ladder, zebra, or continental design) and pedestrian signals, preferable with leading pedestrian intervals. Construct curb extensions and median refuge islands to reduce crossing distances, if budget allows, otherwise locate utilities and storm water inlets such that they do not preclude future retrofitting of such features.	TBD	C. of Wausau, WisDOT
Schofield Avenue Corridor		
Reapply crosswalk pavement markings at the Alderson Street, Birch Street, and Camp Phillips Road intersections as well as crosswalks that cross Schofield Avenue at Mt View Avenue, Edward Street, Gordon Street, and Fox Street with a high-visibility design (ladder, zebra, or continental) in epoxy.	$25,000 to $35,000	V. of Weston
Add pedestrian signals with countdown timers and leading pedestrian intervals to the Birch Street intersection, ideally as part of a comprehensive signal modernization project at this intersection.	TBD	V. of Weston
Install Rectangular Rapid Flash Beacons (RRFB) to the Fox Street crossing.	$10,000 to $15,000	V. of Weston
Business 51 (Grand Avenue) Corridor in Rothschild		
When the Military Road street extension is constructed, the intersection with Grand Avenue will be signalized. This should include high-visibility crosswalks (ladder, zebra, or continental design), pedestrian signals with leading pedestrian intervals, and sidewalks extended north to the existing sidewalk on Grand Avenue and west across the railroad to Elm Street.	TBD	V. of Rothschild, WisDOT

Program Action Plan

Numerous policy and non-infrastructure recommendations are made throughout this plan. Chapter 1 contains policy statements for the Wausau Area MPO and Marathon County while Chapters 4, 5, and 6 contain recommendations for encouragement, education, and enforcement initiatives. Many of the recommendations in this Plan can be most effectively implemented by being formed into programs or activities that relate to two or more of the "Five E's." The following program recommendations are considered the highest-priority non-infrastructure recommendations to be completed or initiated over the next few years following the adoption of this plan.

Crosswalk Safety Program

One of the most significant and stressful challenges for pedestrians in the Wausau area is the low level of crosswalk compliance by motorists. While state law requires motorists to yield to pedestrians in crosswalks (346.24), it is generally perceived that compliance with this statute is generally low in the Wausau area. The Wausau MPO, Marathon County Health Department, local advocacy organizations and bike clubs, and area law enforcement agencies should work together to develop a crosswalk enforcement program that includes patrolling high-use crosswalks (such as near schools), aggressively enforcing existing state law, and public service announcements that warn area residents about the enforcement effort coupled with the "Your Choices Matter" education message. Crosswalk "sting" operations (where plainclothes officers use the crosswalk and nearby patrol cars can be dispatched to pull over violators) can also be effective. In some communities, officers have dressed up in conspicuous costumes or worn high-visibility materials and flashing lights in order to rule out the "I didn't see you in the crosswalk" excuse. In addition to issuing citations, law enforcement officers can be given small educational pamphlets or cards explaining the law and vulnerability of pedestrians to distribute to people that violate the law.

Public Service Announcements

The Wausau MPO and Marathon County Health Department should continue producing and distributing educational outreach materials for bicycle and pedestrian safety, using the education and enforcement messages: Share & Be Aware and Your Choices Matter (see Chapters 5 and 6). In addition to reviewing and updating (as needed) the educational materials on the BicycleWausau.org website, the MPO and Health Department should produce additional public service announcements for television and radio that focus on:

- Crosswalk compliance (see the Crosswalk Safety Program section, above)
- Combatting distracted driving and speeding
- Encouraging safe biking practices
- Explaining the rights and responsibilities of motorists, bicyclists, and pedestrians while highlighting the challenges experienced by vulnerable road users

Safe Routes to School Programs

Walking and biking to school increases physical activity, combats obesity, improves focus in the classroom, and has many other benefits. However, many students do not walk or bike to school due to lack of infrastructure, motivation, or parental approval. Safe Routes to School (SRTS) Programs seek to identify ways to make walking and biking to school not only safer but also more appealing. SRTS programs should be established or reestablished at the County and school district levels with a programmed staff position. This staff person should help to establish SRTS programs and individual schools (in part by identifying volunteers and serving as a resource) and assist in acquiring funding for SRTS plans, program materials, and infrastructure projects. The ultimate goal for the Wausau area should be for each school in the area to have an up-to-date SRTS plan and active SRTS committee.

ADA Compliance

Title II of the Americans with Disabilities Act (ADA) relates to the accessibility of transportation systems, including sidewalks and paths. Two major implications of this law are that new pedestrian infrastructure must be constructed to be accessible and that government agencies should develop plans for making existing infrastructure accessible.

- **Design Standards –** New pedestrian infrastructure (including sidewalks, curb ramps, and paths) must be constructed in accordance with accepted design standards. The current minimum standards to follow are the *2010 ADA Standards for Accessible Design*. However, infrastructure along streets and roads should be designed in accordance with the *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way* (PROWAG). The design of paths and built outside of the public right-of-way will soon be required to adhere to PROWAG.
- **Transition Plans** – Local government agencies with 50 or more employees are required to develop written transition plans outlining the manner in which and timeline for modifying its network of sidewalks and walkways to be accessible. The plan must include an identification of accessibility barriers, a schedule for providing curb ramps, identity physical obstacles that limit accessibility, describe methods that will be used to improve accessibility, and schedule for making modifications in order to achieve compliance. While only required of agencies with 50 or more employees, it is recommended that all municipalities in the Wausau area identify barriers and develop strategies for improving accessibility.

Modify MPO Policy and Funding Practices

Chapter 1 contains multiple policy statements for the Wausau Area MPO and Marathon County. The first non-infrastructure actions taken by the MPO should be to expand on Policy Statements A and B by developing and adopting an MPO Complete Streets Policy based on the model policy developed by the National Complete Streets Coalition. In conjunction with adopting this policy, the MPO should modify its project funding process for its entire funding program (including STP Urban and TAP funds) to prioritize Complete Streets projects and projects that reduce gaps and expand the connected, low-stress bicycle and pedestrian network.

Present and Publicize this Plan

In order to facilitate implementation, staff from the Wausau Area MPO and Marathon County as well as members of the MPO Bicycle and Pedestrian Sub-Committee should present an overview this Plan to staff and officials from each municipality in the planning area to increase awareness and support. Presentations could be given to each municipality individually or as part of a larger meeting that includes multiple municipalities. The goal is to present an overview of the Plan to each municipality within six months of the plan's adoption.

MPO/County staff and Sub-Committee members should also provide input and assistance to municipal staff seeking to implement elements of this plan.

Near Term Bicycle Network Project Recommendations -- additional 2021 update projects listed in appended table

Project Complete	Project ID	Project Street	From Street	To Street	Facility Recommendation	Road Diet	Lane Diet	Length (miles)	Stand-Alone Project Cost Estimate	Coordinated Project Cost Estimate	Primary Jurisdiction	Comments
	1	Kowalski Rd	Kronenwetter Dr	Tower Rd	Path			0.7	$ 143,192	$ 143,192	V. of Kronenwetter	Part of Kronenwetter Master Non-Motorized Pedestrian Facilities Plan
	2	County X	Maple Ridge Rd	Wood Rd	Paved shoulder			1.8	$ 202,323	$ 166,324	Marathon County	Part of Kronenwetter Master Non-Motorized Pedestrian Facilities Plan. Match paved shoulders on County X from Kowalski Rd to Wood Rd.
	3	County X	County XX	Pleasant Dr	Path			1.4	$ 295,400	$ 295,400	Marathon County	Part of Kronenwetter Master Non-Motorized Pedestrian Facilities Plan
	5	Pine Rd	Tower Rd	County X	Paved shoulder			0.8	$ 84,259	$ 69,267	V. of Kronenwetter	Part of Kronenwetter Master Non-Motorized Pedestrian Facilities Plan
	* 7	South Mountain Rd	Bittersweet Rd	Town of Rib Mountain Boundary	Paved shoulder			2.3	$ 386,166	$ 317,457	T. of Rib Mountain	Add 6 ft paved shoulders.
	10	Trillium Ln	South Mountain Rd	Clover Rd	Paved shoulder			0.3	$ 19,183	$ 15,770	T. of Rib Mountain	Add 4 ft paved shoulder to east side of road to complement existing shoulder on opposite side.
	12	County X	Maple Ridge Rd	South Rd	Paved shoulder			2.8	$ 314,647	$ 258,663	Marathon County	
	14	County KK	Shurwood Ln	County B	Paved shoulder			2.1	$ 346,465	$ 284,819	Marathon County	Add 6 ft paved shoulders. Additional width recommended due to curviness of roadway and history of past fatalities.
	15	Tesch Ln/Eagle Nest Blvd	County XX	Grand Ave	Bike lane	Yes		1.2	$ 60,307	$ 48,217	V. of Rothschild	Road diet. Bicycling rates as comfortable currently. Increases in ADT would degrade stress to a 3, while a dieted road could accommodate five times the traffic and retain the low stress level for cyclists.
	16	Volkman St	Military Rd	Lili Ln	Paved shoulder			0.9	$ 97,461	$ 80,120	V. of Rothschild	Paths exist along portions of this segment, but right-of-way and drainage constraints preclude a continuous path.
	17	Volkman St	Lili Ln	Heuss Ave	Bike lane	Yes		0.3	$ 12,705	$ 10,158	V. of Rothschild / WisDOT	Road diet, including on bridge over WIS-29
	18	Alderson St	Weston Ave	Jelinek Ave	Bike lane	Yes		1.0	$ 49,800	$ 39,816	V. of Rothschild / V. of Weston / WisDOT	Road diet, including on bridge over WIS-29
	* 19	Weston Ave	Alderson St	Birch St	Paved shoulder			0.5	$ 56,951	$ 46,817	V. of Rothschild / V. of Weston	At minimum paved shoulder/bike lane should be provided in the uphill direction. In the long term, a path with boardwalk sections should be considered.
	20	Weston Ave	Birch St	Camp Phillips Rd	Bike lane	Yes		0.5	$ 25,815	$ 20,639	V. of Weston	Road diet
	* 21	Weston Ave	Camp Phillips Rd	Zinser St	Bike lane			2.5	$ 274,136	$ 225,360	V. of Weston	
	* 23	Schofield Ave	Grand Ave	Camp Phillips Rd	Bike lane	Yes		1.6	$ 81,453	$ 65,123	V. of Weston	Traffic levels are within reach of a road diet. If road diet proves infeasible recommend narrowing lanes to yield enough space for bike lanes. WISLR indicates 52 ft for travel lanes. 11 ft travel lanes leaves 8 ft for bike lanes.
	24	Jelinek Ave	Hwy 51	Birch St	Bike lane			1.2	$ 51,740	$ 42,978	V. of Weston	Bike lanes would require removal of parking on one side of the street. Recommend a wide striped parking lane on one side of street, two travel lanes, and striped bike lane on other side of street.
	25	Alderson St	Jelinek Ave	Schofield Ave	Bike lane			0.5	$ 16,390	$ 15,767	V. of Weston	
	26	Birch St	Jelinek Ave	Schofield Ave	Bike lane			0.2	$ 6,730	$ 6,474	V. of Weston	
	27	Ross St	Foundry St	Pine St	Bike lane			0.3	$ 13,824	$ 11,483	C. of Schofield	Remove parking on one side of street. Stripe wide parking lane on one side of street, travel lanes, and bike lane on other side.

Top Priority Projects are Highlighted in Green (see Table 1)

* = recommendation revised in 2021 update. See appended table.

Project Complete	Project ID	Project Street	From Street	To Street	Facility Recommendation	Road Diet	Lane Diet	Length (miles)	Stand-Alone Project Cost Estimate	Coordinated Project Cost Estimate	Primary Jurisdiction	Comments
	28	Northwestern Ave	Gold Ridge Way	Meuret Ln	Paved shoulder			0.8	$ 89,305	$ 73,415	C. of Wausau / T. of Weston	This is a critical gap in an otherwise lower-stress alternative to Grand Avenue ande is a route connecting to the Mountain-Bay Trail.
	29	South 1st Ave	Stewart Ave	Thomas St	Bike lane	Yes		0.8	$ 41,123	$ 32,878	C. of Wausau / WisDOT	Road diet. Road slated for reconstruction in 2018.
	30	Sherman St	17th Ave	24th Ave	Bike lane	Yes		0.5	$ 25,221	$ 20,164	C. of Wausau	"4 to 3" road diet to provide a travel lane in each direction, two-way left-turn lane, and bike lanes.
	* 31	Sherman St	1st Ave	17th Ave	Bike lane			0.8	$ 29,456	$ 28,334	C. of Wausau	Unclear whether parking is allowed. WISLR indicates no but that appears to be incorrect. If no parking there is easily room for bike lanes. If parking, may be possible to stripe parking lanes as de facto bike lanes. Also could restrict to one side of the road.
	32	Townline Rd	Grand Ave	12th St	Bike lane			0.4	$ 100,317	$ 58,011	C. of Wausau / WisDOT	Reconstruction scheduled for 2016 - add bike lanes. Alternative could be to remove parking on one side and shift lanes to make room for bike lanes.
	34	County X	County Z	Northwestern Ave	Paved shoulder			2.4	$ 264,277	$ 217,254	Marathon County	
	35	County X	County Z	Highway 52	Paved shoulder			1.6	$ 178,903	$ 147,071	Marathon County	
	36	County Z	County X	57th St	Paved shoulder			1.3	$ 146,381	$ 120,336	Marathon County	
	37	Ross Ave/Kramer Ln/Kersten Rd/Lester St	Schoonover Rd	County N	Paved shoulder			3.5	$ 384,485	$ 316,074	V. of Weston / T. of Weston	
	39	72nd Ave	Highland Dr	Packer Dr	Paved shoulder		Yes	0.6	$ 14,536	$ 7,588	C. of Wausau	There appears to be room to stripe 4 ft shoulders if travel lanes are narrowed to 10 ft.
	40	Packer Dr	48th Ave	56th Ave	Paved shoulder			0.5	$ 6,634	$ 5,720	C. of Wausau / T. of Stettin	Roadway is already wide enough - only striping needed.
	41	48th Ave	Packer Dr	Stewart Ave	Paved shoulder			0.2	$ 9,776	$ 8,036	C. of Wausau / T. of Stettin	One shoulder partially paved already. Complete 4 ft shoulders on both sides.
	* 42	Stettin Dr	Stewart Ave	72nd Ave	Paved shoulder			2.3	$ 251,243	$ 206,540	C. of Wausau /T. of Stettin	
	43	28th Ave	Westhill Dr	County U	Paved shoulder			1.4	$ 153,003	$ 125,780	C. of Wausau / T. of Maine	At minimum, a climbing lane/shoulder is needed in uphill direction. Requires additional pavement north of Madonna Dr.
	44	Pine Ridge Blvd/Westhill Dr	Bridge St	28th Ave	Bike lane			0.3	$ 10,456	$ 10,058	C. of Wausau	
	45	28th Ave	Westhill Dr	Highway 52	Bike lane	Yes		0.6	$ 29,050	$ 23,226	C. of Wausau	Road diet
	* 46	28th Ave	Highway 52	Sherman St	Bike lane			0.5	$ 18,756	$ 18,042	C. of Wausau	Stripe 4 ft bike lanes next to curb.
	47	Wausau Ave	Stevens Dr	10th Ave	Bike lane			0.3	$ 12,403	$ 10,303	C. of Wausau	Stripe wide parking lane on south side. Stripe bike lane on north side where parking is prohibited. Requries shifting of center line.
	48	Stevens Dr	Randolph St	Bridge St	Bike lane			0.8	$ 28,371	$ 27,291	C. of Wausau	Stripe parking lane as de facto bike lane on one side of street. Parking is already prohibited on other side - stripe bike lane. Pavement width is 40 ft according to WISLR. Stripe as: 12ft parking, 11 ft travel, 11 ft travel, 4 ft bike lane.

* = recommendation revised in 2021 update. See appended table.

Project Complete	Project ID	Project Street	From Street	To Street	Facility Recommendation	Road Diet	Lane Diet	Length (miles)	Stand-Alone Project Cost Estimate	Coordinated Project Cost Estimate	Primary Jurisdiction	Comments
	49	Westwood Dr	County U	Bridge St	Bike lane	Yes		1.5	$ 73,719	$ 58,940	C. of Wausau	At minimum provide bike lane in uphill direction - requires narrowing of lanes. Extremely low levels of traffic for four lanes - road diet with bike lanes at edges is recommended.
	50	Campus Dr	14th Ave	4th Ave	Bike lane	Yes		0.5	$ 24,872	$ 19,885	C. of Wausau	At a minimum there may be room for lane narrowing and striped bike lanes at the edges. Ideal candidate for road diet - less than 10,000 ADT. Would allow for buffered bike lanes and TWLTL.
	51	Evergreen Rd	19th St	21st St	Bike lane			0.2	$ 17,449	$ 14,344	C. of Wausau / T. of Wausau	At a minimum stripe bike lanes or paved shoulder in uphill direction.
	52	6th St	Riverview Ct	County WW	Paved shoulder			3.3	$ 361,234	$ 296,960	C. of Wausau / T. of Texas	
	53	County WW	Highway 51 SB Ramp	County K	Paved shoulder			1.0	$ 110,727	$ 91,025	Marathon County	
	54	County K	County WW	Emery Dr	Paved shoulder			1.4	$ 233,794	$ 192,195	Marathon County	Add 6 ft paved shoulders
	55	County U	Westwood Dr	Sunnyvale Ln	Paved shoulder			3.5	$ 386,818	$ 317,992	Marathon County	
	56	28th Ave	County U	Merrill Ave	Paved shoulder			0.9	$ 103,894	$ 85,409	T. of Maine	At a minimum provide paved shoulder/bike lane in the uphill direction.
	57	Merrill Ave	County K	Westwood Dr	Paved shoulder			1.2	$ 138,266	$ 113,665	T. of Maine	At a minimum provide paved shoulder/bike lane in the uphill direction.
	58	Decator Dr	Merrill Ave	14th Ave	Paved shoulder			0.9	$ 97,251	$ 79,947	T. of Maine / WisDOT	May include modifications to or near the bridge over US-51
	59	4th St/Western Ave	Main St	Range Line Rd	Bike lane			1.3	$ 45,524	$ 43,791	C. of Mosinee	Stripe parking lane to create de facto bike lane. Repaving scheduled for 2018-2020.
	60	Main St	Water St	Range Line Rd	Bike lane			1.5	$ 63,667	$ 52,885	C. of Mosinee	Stripe wide parking lanes and narrow travel lanes. Provides space for cyclists and slows traffic through commercial area.
	62	Grand Ave	Hewitt St	Weston Ave	Path			0.2	$ 44,467	$ 44,467	V. of Rothschild	
	63	Camp Phillips Rd	Bernard Ave	Ross Ave	Path			0.1	$ 23,009	$ 23,009	V. of Weston	Closes a significant gap, linking existing path to the north to Ross Ave bike lanes. Right-of-way acquisition costs not included.
	64	Grand Ave	Kort St	Jacoby St	Bike lane		Yes	1.1	$ 45,106	$ 37,467	C. of Schofield	May require narrowing of travel lanes
	65	Rib Mountain Dr	North Mountain Rd	Goose Ln	Paved shoulder			0.1	$ 10,091	$ 8,295	Marathon County	Stripe shoulder to match cross section to the north
	66	Sturgeon Eddy Rd	Fairmount St	Grand Ave	Bike lane			0.1	$ 436	$ 436	C. of Wausau	Right-of-way is too constrained to add conventional bike lanes in the near term. Recommend advisory bike lanes as potential solution.
	67	Thomas St	Grand Ave	River Drive	Bike lane	Yes		0.2	$ 9,404	$ 7,518	C. of Wausau	Perform a road diet by removing a travel lane in each direction and striping wide/buffered bike lane. Shorten the eastbound right turn lane so it begins after the bridge over the railroad while still providing adequate queuing room. Shift eastbound left-turn lane to allow space for eastbound bike lane through the intersection.
	68	Thomas St	McCleary Street	3rd Ave	Bike lane			0.5	$ 20,767	$ 17,250	C. of Wausau	Remove parking on one side of street (may already be prohibited). Stripe wide parking lane, travel lanes, and bike lane on opposite side.
	69	Stewart Ave	Highway 52	48th Ave	Bike lane		Yes	1.0	$ 41,075	$ 34,118	C. of Wausau / WisDOT	Existing paved shoulder could be widened to a full bike lane by narrowing travel lanes to 11 ft

Project Complete	Project ID	Project Street	From Street	To Street	Facility Recommendation	Road Diet	Lane Diet	Length (miles)	Stand-Alone Project Cost Estimate	Coordinated Project Cost Estimate	Primary Jurisdiction	Comments
	70	Stewart Ave	1st Ave	3rd Ave	Bike lane	Yes	Yes	0.1	$ 6,885	$ 5,505	C. of Wausau / WisDOT	Road diet - remove third travel lane in eastbound direction to match capacity in the westbound direction. Stripe separated bike lane in both directions.
	71	Stewart Ave	8th Ave	12th Ave	Bike lane		Yes	0.3	$ 10,515	$ 8,734	C. of Wausau / WisDOT	Stripe wide parking lanes on westbound side as de facto bike lanes. Narrow travel lanes if necessary.
	72	1st Ave	Oak St	Bridge St	Bike lane	Yes		0.1	$ 4,065	$ 3,250	C. of Wausau	Consolidate straight and left/straight lanes to make room for bike lane.
	73	1st St	Washington St	Grant St	Bike lane	Yes		0.2	$ 11,592	$ 9,268	C. of Wausau	Road diet
	74	1st St	Franklin St	McIndoe St	Bike lane			0.1	$ 2,024	$ 1,947	C. of Wausau	
	75	6th St	Forest St	Bridge St	Bike lane	Yes		0.9	$ 43,679	$ 34,922	C. of Wausau	Road diet 3->2. This will match northbound capacity with southbound capacity on 5th Street and affords room for a buffered bike lane to match the southbound bike lane on 5th.
	76	7th St	Forest St	Bridge St	Bike lane			0.9	$ 36,789	$ 30,559	C. of Wausau	Remove parking on one side of street. Stripe wide parking lane, travel lanes, and bike lane on other side.
	77	Bridge St	7th St	6th St	Bike lane			0.1	$ 3,595	$ 3,458	C. of Wausau	Stripe 10 ft travel lanes and wide parking lanes to make de facto bike lanes and calm traffic.
	78	3rd St	Bridge St	Wausau Ave	Bike lane			0.3	$ 12,173	$ 10,112	C. of Wausau	Remove parking on one side of street. Stripe street with wide parking lane, travel lanes, and bike lane on other side.
	79	Wausau Ave	7th St	29th St	Bike lane			1.8	$ 74,634	$ 61,995	C. of Wausau	Remove parking on one side of street. Stripe parking lane, travel lanes, and bike lane.
	80	6th St	Union Ave	Riverview Ct	Bike lane			0.9	$ 31,401	$ 30,205	C. of Wausau	There may be room for parking, travel lanes, and bike lanes. At minimum, stripe parking lanes to create de facto bike lanes.
	81	County WW	4th St	2nd St	Bike lane			0.3	$ 12,157	$ 10,098	Marathon County	Requires parking removal on both sides (if not already prohibited)
	96	Schofield Ave	Camp Phillips Rd	Ryan St	Bike lane	Yes		1.8	$ 90,357	$ 72,242	V. of Weston	Road diet
	98	South 3rd Ave	Stewart Ave	Thomas St	Bike lane	Yes		0.8	$ 37,558	$ 30,028	C. of Wausau	Road diet may allow for parking-separated bike lane. Alternative is to remove parking from one side and retain travel lanes.
	100	Stettin Dr	72nd Ave	88th Ave	Paved shoulder			1.1	$ 118,694	$ 97,575	Town of Stettin	
	101	Evergreen Rd	6th St	19th St	Bike lane		Yes	0.9	$ 35,893	$ 29,814	C. of Wausau	Remove parking from one side of street. Stripe wide parking lane, travel lanes, and bike lane on other side.
	102	Thomas St	River Drive	McCleary Street	Bike lane		Yes	0.2	$ 7,777	$ 6,460	C. of Wausau	Current bridge width is 32 ft between railings. Striping 11 ft lanes leaves room for 5 ft bike lanes in each direction. Alternatively, provide on/off ramps to the sidewalk for westbound bikes and a buffered bike lane for eastbound bikes.
	103	Stewart Ave	3rd Ave	8th Ave	Bike lane		Yes	0.3	$ 12,205	$ 10,138	C. of Wausau / WisDOT	Stripe separated bike lanes adjacent curb. Remove parking if currently allowed. Residential parking can occur on side street frontages.
	104	West Grand Ave	Kort St	Grand Ave	Bike lane			0.3	$ 10,883	$ 10,469	C. of Schofield / WisDOT	Add bike lanes when street is resurfaced in 2017.
	105	Off-street path	Grand Ave	Volkman St	Path			0.3	$ 61,316	$ 61,316	V. of Rothschild	New off-street path identified in Rothschild plan
	106	County WW	4th St	Ramp	Paved shoulder			0.4	$ 24,439	$ 20,091	Marathon County	Expand paved shoulders to minimum of 5 ft when bridge is redecked in 2018.

Top Priority Projects are Highlighted in Green (see Table 1)

Project Complete	Project ID	Project Street	From Street	To Street	Facility Recommendation	Road Diet	Lane Diet	Length (miles)	Stand-Alone Project Cost Estimate	Coordinated Project Cost Estimate	Primary Jurisdiction	Comments
	107	Highway 51	Village Way	Maple Ridge Rd	Path			3.5	$ 760,183	$ 760,183	V. of Kronenwetter	Side path
	108	Military Road	Grand Ave	Existing Military Road to the east	Bike lane			0.1	N/A	$ 10,995	V. of Rothschild	Build planned street extension with sidewalks and bike lanes.
	109	County WW	County WN	East St	Paved shoulder			1.7	$ 95,180	$ 78,245	Marathon County	Existing paved shoulder on one side of road. Pave other shoulder.
	110	Thomas St	3rd Ave	17th Ave	Bike lane		Yes	0.8	$ 36,789	$ 30,559	C. of Wausau	Remove parking on one side of street (may already be prohibited). Stripe wide parking lane, travel lanes, and bike lane on opposite side.
	* 111	Weston Ave	Volkman St	Wall St	Paved shoulder			0.6	$ 31,303	$ 25,733	V. of Rothschild	Add 2 ft paved shoulder to existing 2 ft paved shoulder to make 4 ft shoulders on each side.
	* 112	Weston Ave	Wall St	Alderson St	Bike lane			0.2	$ 10,081	$ 9,698	V. of Rothschild	Add bike lane striping. Consider restricting on-street parking during peak periods.
	113	Stewart Ave	18th Ave	STH 52	Bike lane		Yes	0.9	$ 74,634	$ 61,995	C. of Wausau	Narrow urban shoulders (approximately 3 ft) exist west of the US 51 overpass but could potentially be widened to 4 ft wide bike lanes along with a lane diet.
	115	Stewart Ave	12th Ave	17th Ave	Bike lane			0.3	$ 8,813	$ 8,478	C. of Wausau / WisDOT	Upcoming reconstruction will include narrow (3-foot) paved shoulders or bike lanes. Access to the existing path through the Marathon County Fairgrounds should be improved for bicycling (intersection improvements at 8th Avenue, 12th Avenue, and 17th Avenue including new curb ramps and signage).
	117	Off-Street Path	Trillium Ln	Foxglove Rd	Path			0.7	$ 159,469	$ 159,469	T. of Rib Mountain	Construct path along existing utility easement.

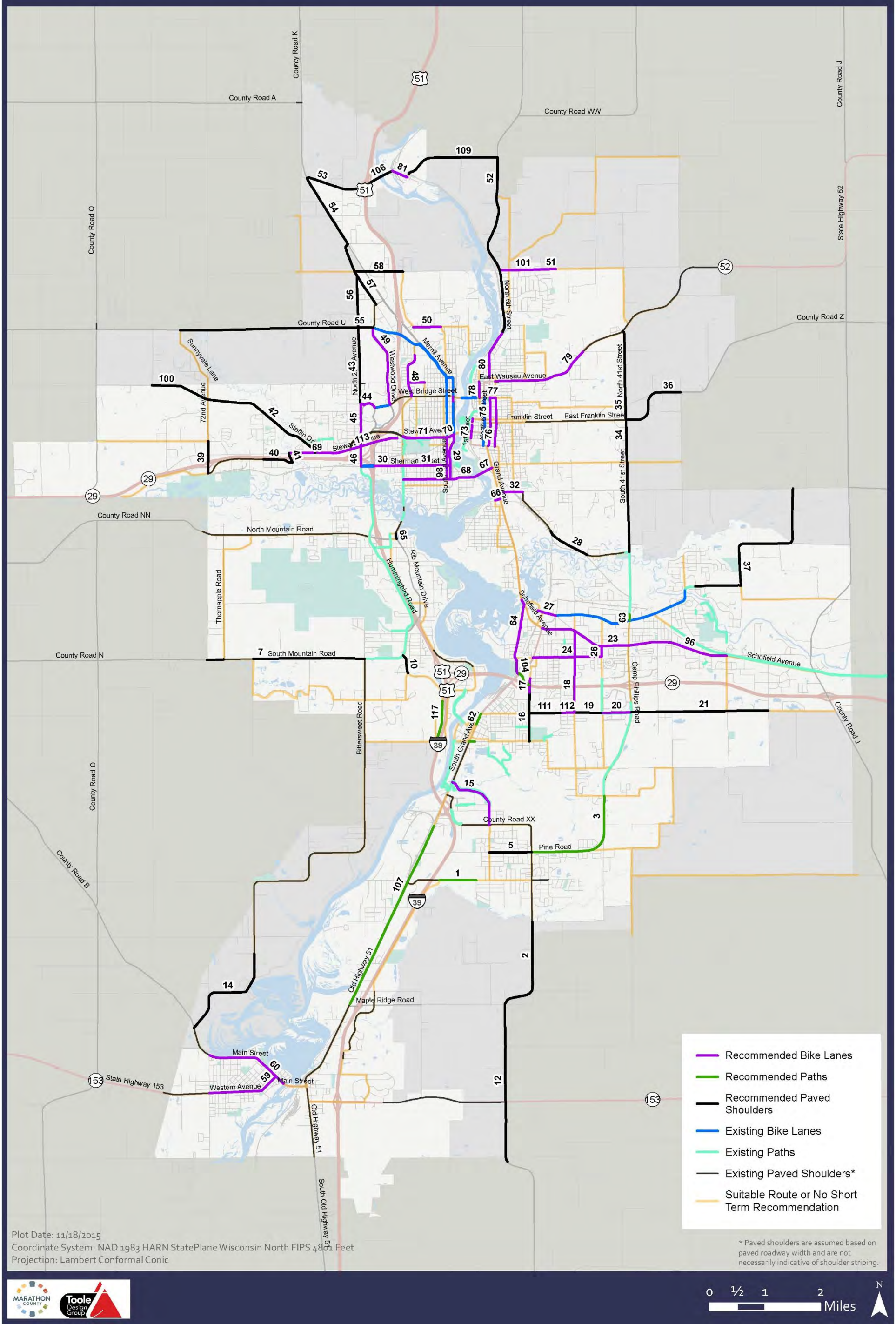
* = recommendation revised in 2021 update. See appended table.

Build Out Bicycle Network Project Recommendations -- additional 2021 update projects listed in appended table

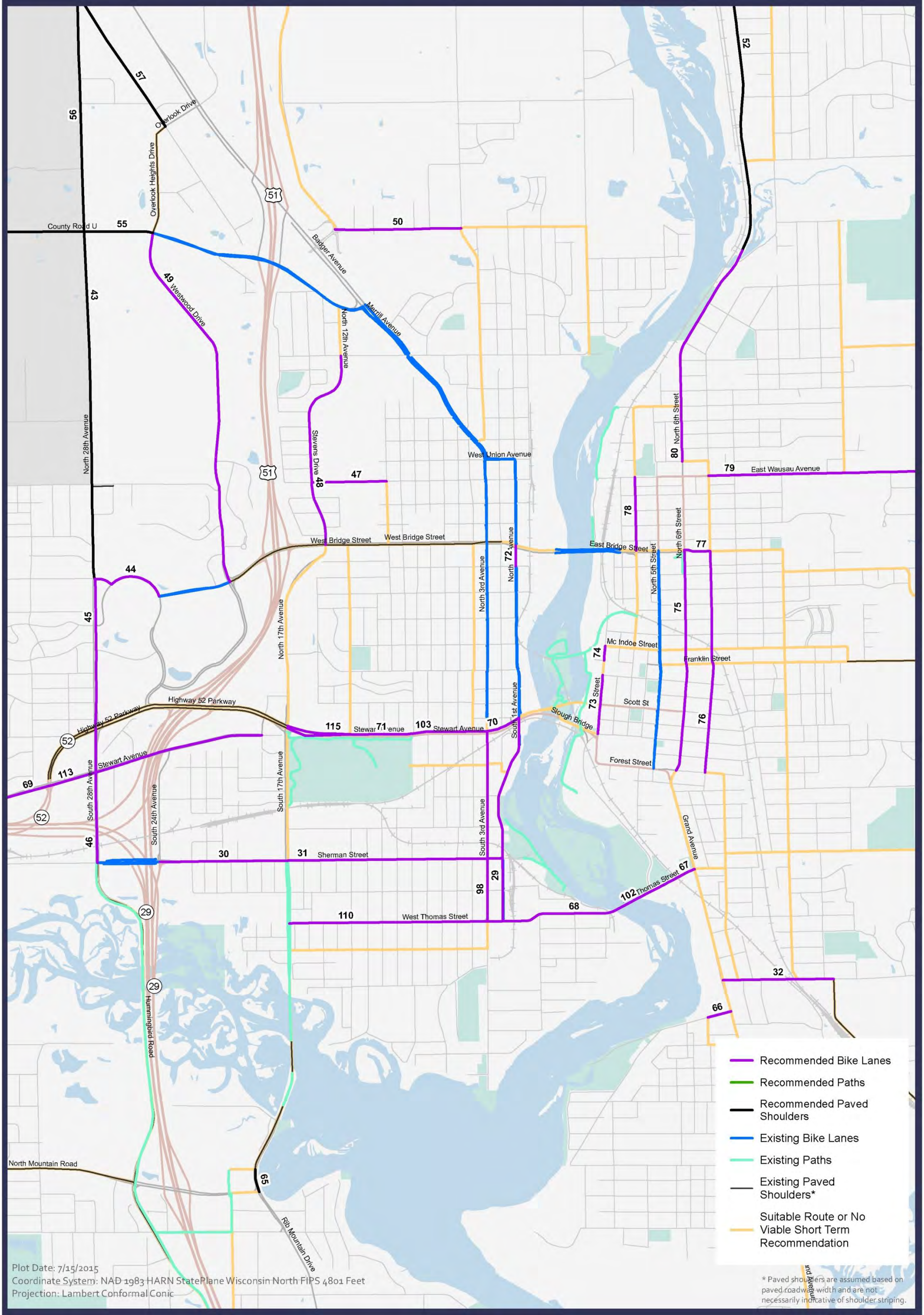
Project ID	Project Street	From Street	To Street	Facility Recommendation	Length (miles)	Stand-Alone Project Cost Estimate	Coordinated Project Cost Estimate	Primary Jurisdiction	Comments
4	Tower Rd	Kowalski Rd	County XX	Path	1.0	$ 215,318	$ 215,318	V. of Kronenwetter	Part of Kronenwetter Master Non-Motorized Pedestrian Facilities Plan
6	Martin Rd	Creek Rd	County J	Paved shoulder	4.1	$ 453,145	$ 372,518	V. of Kronenwetter	Part of Kronenwetter Master Non-Motorized Pedestrian Facilities Plan
61	Grand Ave	Village Way	Eagle Nest Blvd	Path	0.9	$ 183,906	$ 183,906	V. of Rothschild	
82	Camp Phillips Rd	Weston Ave	Ross Ave	Bike lane	1.7	$ 377,823	$ 218,489	Marathon County	Existing cross section is too tight for accommodations and there are too many driveways to continue side path. Add facilities when roadway is reconstructed.
83 *	Grand Ave	Schofield Ave	Forest St	Bike lane	3.4	$ 783,033	$ 452,814	C. of Wausau / WisDOT	Existing right-of-way is too constrained. There may be room to squeeze lanes in at the edges, but there are concerns about a seam developing where asphalt has been poured over the gutter pan. Recommend adding bike lanes, buffered bike lanes, separated bike lanes, or a parallel path when road is reconstructed.
84	Rib Mountain Dr	North Mountain Rd	Bridge St	Bike lane	2.7	$ 607,403	$ 351,251	Marathon County / C. of Wausau	Existing cross-section is too constrained to add bike facilities. Recommend adding bike lanes when the road is reconstructed.
85	Stewart Ave	17th Ave	8th Ave	Path	0.8	$ 162,937	$ 130,350	C. of Wausau / WisDOT	Widen the path through the Marathon County Fairgrounds to 10 feet and construct a complementary sidepath on the north side of Stewart Ave.
86	3rd Ave	Stewart Ave	Clark St	Bike lane	0.5	$ 117,607	$ 68,010	C. of Wausau	Existing cross-section is too constrained to add bike facilties. Recommend studying consolidation of queue lanes or adding bike lanes when reconstructed.
87 *	Highway 52 Pkwy	17th	Stewart Ave	Bike lane	2.2	$ 495,647	$ 286,624	C. of Wausau / WisDOT	Existing paved shoulder. Widen to full bike lanes when reconstructed.
88	Stewart Ave	44th Ave	Roberta Ln	Bike lane	0.1	$ -	$ 17,942	C. of Wausau	Bridge is not wide enough for bike accommodations. Recommend bike lanes when reconstructed.
89	Bridge St	2nd Ave	6th St	Path	0.7	$ 157,307	$ 157,307		Existing cross-section too tight. Relatively few driveways on north side may make a side path feasible.
90	1st St	Grant St	Franklin St	Bike lane	0.1	$ 13,433	$ 7,768	C. of Wausau	Right-of-way is too constrained to add facilities. Recommend bike lane when reconstructed.
91 *	Stewart Ave	1st Ave	1st St	Bike lane	0.6	$ -	$ 78,986	C. of Wausau / WisDOT	Existing bridge is too narrow to add bike lanes. Recommend adding when reconstructed. Alternatively, perform road diet.
92	North Mountain Rd	Eagle Ave	Rib Mountain Dr	Bike lane	0.1	$ 25,263	$ 14,609	T. of Rib Mountain	Existing cross-section is too constrained to add bike facilities. Recommend add bike lanes when reconstructed.
93	Highway 153	Old Highway 51	Golf Club Blvd	Bike lane	1.0	$ 232,093	$ 134,215	WisDOT	Existing cross-section is too constrained to add bike facilities. Recommend bike lanes when reconstructed.
94	Kowalski Rd	Tower Rd	County X	Path	1.0	$ 214,747	$ 214,747	V. of Kronenwetter	
95	Weston Ave	Zinser St	County J	Paved shoulder	1.2	$ 133,242	$ 109,535	V. of Weston	
97 *	Schofield Ave	Grand Ave	Camp Phillips Rd	Bike lane	1.6	$ 81,453	$ 65,123	V. of Weston	Traffic levels are still within reach of a road diet, although study would be needed to assess potential impacts. Reductions in lane width could yield enough space for bike lanes. WISLR indicates 52 ft for travel lanes. 11 ft travel lanes leaves 8 ft for bike lanes.
99	72nd Ave	Highland Dr	Packer Dr	Paved shoulder	0.6	$ 64,540	$ 53,056	C. of Wausau	Add shoulders where not already striped. Widen roadway through the underpass.

* = recommendation revised in 2021 update. See appended table.

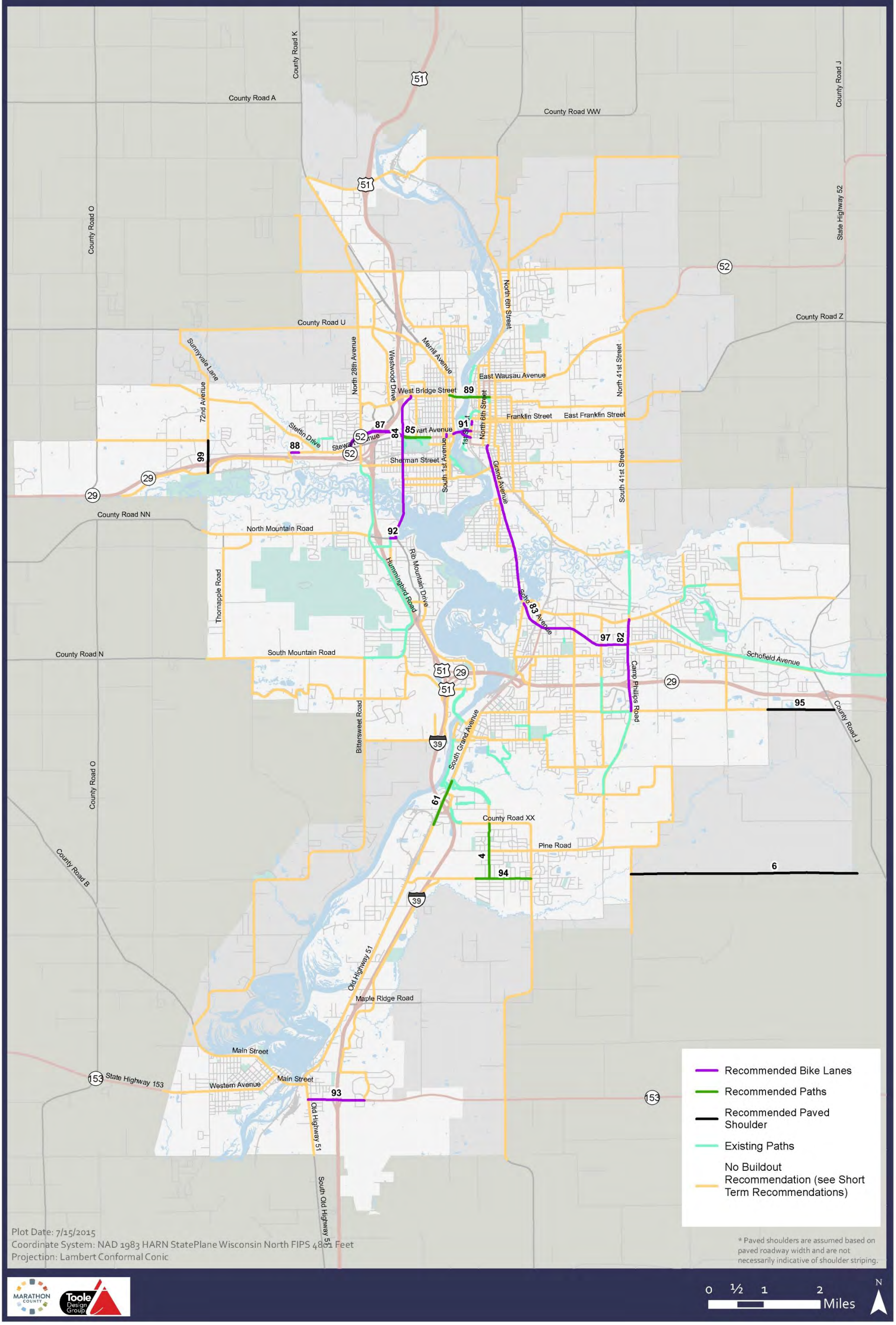
Projects - Near Term



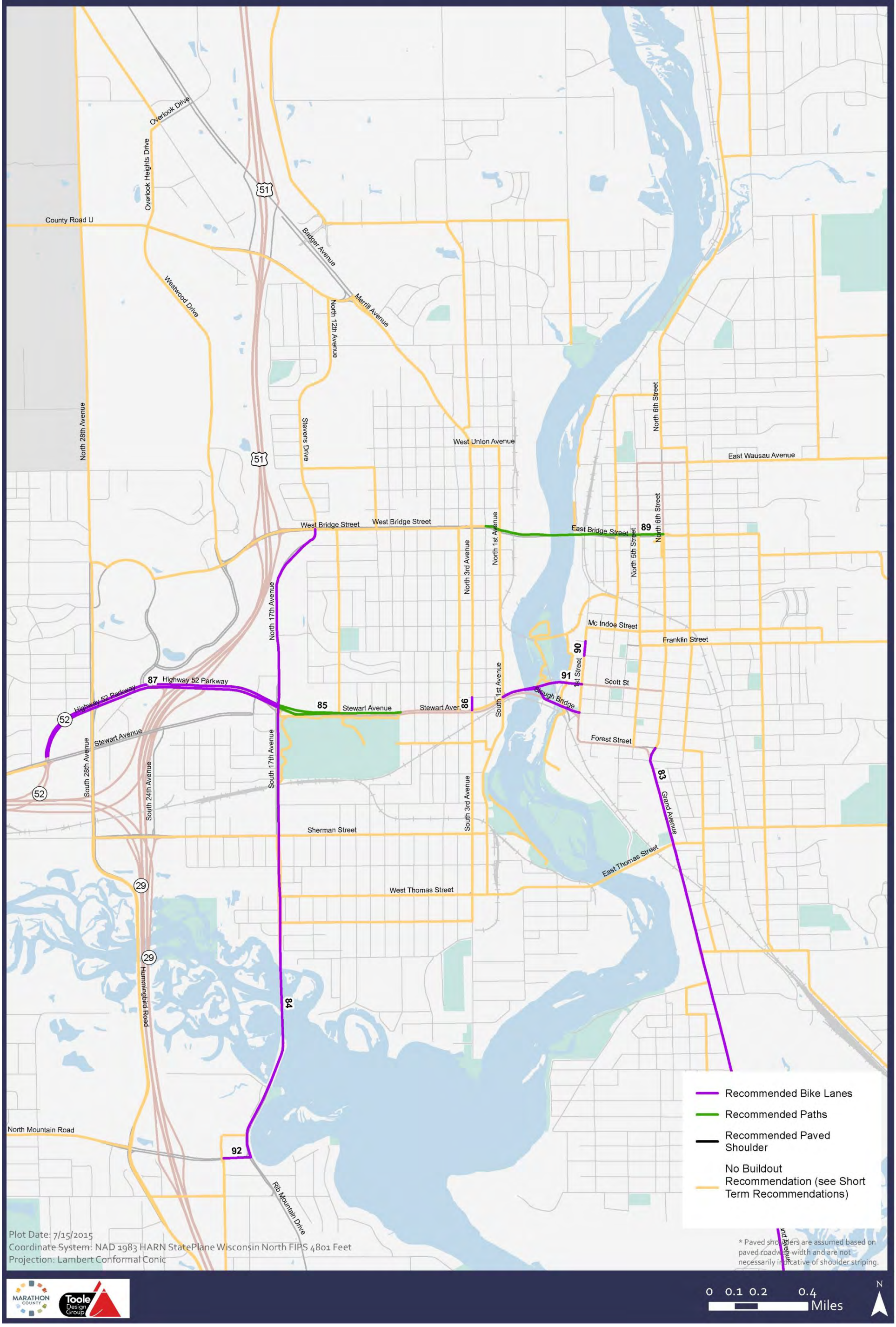
Projects - Near Term (Wausau Focus)



Projects - Build Out



Projects- Build Out (Wausau Focus)



Bicycle and Pedestrian Plan for the Wausau Area Metropolitan Planning Organization - 2021 Updates

Project Complete	Project ID	Project Street	From Street	To Street	Facility Recommendation	Road Diet	Lane Diet	Length (miles)	Length (feet)	Stand-Alone Project Cost Estimate	Coordinated Project Cost Estimate	Primary Jurisdiction	Comments
Following projects are 2021 revisions to the Master Plan.													
	7	County Hwy N	County Hwy KK	Red Bud Road	Path							T. of Rib Mountain	*Extend Path along Cty N corridor to Red Bud as development allows. Connect with trails to Nine Mile and Rib Mountain State Park.*
	19	Weston Ave	Alderson St	Birch St	Path							V. of Rothschild / V. of Weston	*Off-street Path between Volkman and Camp Phillips*
	21	Weston Ave	Camp Phillips Rd	CTH J	Path							V. of Weston	*Path east of Camp Phillips connecting to new developments. See Weston Ave Corridor Plan.*
	23	Schofield Ave	Grand Ave	Camp Phillips Rd	Path							V. of Weston	*Add bike lanes during repaving and utilize temporary physical delineators to train road users. Study for feasbility of road diet. Study feasibility of off-street path during reconstruction.*
	97	Schofield Ave	Grand Ave	Camp Phillips Rd								V. of Weston	*Duplicate entry - remove*
	111	Weston Ave	Volkman St	Wall St	Path							V. of Rothschild	*Off-street Path between Volkman and Camp Phillips*
	112	Weston Ave	Wall St	Alderson St	Path							V. of Rothschild	*Off-street Path between Volkman and Camp Phillips*
	31	Sherman St	1st Ave	17th Ave	Sharrows							C. of Wausau	*Sharrows*
	42	Stettin Dr	Stewart Ave	72nd Ave	Path							C. of Wausau / T. of Stettin	*Off-Street path between Brockmeyer Park and Stettin Elementary.*
	46	28th Ave	Highway 52	Stewart Ave	Path							C. of Wausau	*Consider trail facility between Stewart and Hwy 52.*
	83	Grand Ave	Schofield Ave	Forest St	Path							C. of Wausau /WisDOT	*Implement bicycle and pedestrain infrastructure that uses maximum physical protection available for vulnerable uers. This includes off-street paths, physically seperated on-street lanes, or alternate routes. Reduce conflict points created by driveways where possible.*
	87	Highway 52 Pkwy	17th	Stewart Ave	Path							C. of Wausau /WisDOT	*Off street path on at least one side.*
	91	Stewart Ave	1st Ave	1st St	Bike lane	Yes						C. of Wausau /WisDOT	*Reduce bridge from 3 to 2 lanes for extension of sidewalk or buffered bike lane. Should also include improvements to intersection at 1st Street.*
Following projects are new to the Master Plan.													
	1001	Path	CTH WW	Marshall Hill Road	Path							V. of Maine	*Path along RR tracks in WPS trolley ROW. Provides connection to Brokaw area.*
	1002	Path	CTH WW	Merrill	Path							V. of Maine	*Short section of path in MPO planning area would provide connection from Wausau to recreation area in V. of Maine and beyond to Merrill.*
	1003	Bridge	Packer Drive	CTH NN	Path							Marathon County	*Improving unused RR bridge across the Rib River and connecting with path from Wausau/Stettin to Rib Mountain. This is located outside of MPO planning area but would provide vital connection for communities.*
	1004	Bridge	Grossmann Ave	Northwestern Ave	Path							C. of Schofield	*Bridge would extend path from the end of Grossman St to the north side of Eau Claire River and connect to Northwestern Avenue and/or Kent St. Could provide alternate route to Grand Avenue.*
	1005	Path	72nd Ave	CTH O	Path							C. of Wausau	*Off Street path through the Business Park that connects north-south path on 72nd Ave to CTH O. Direct route that avoids roads with heavy trucks.*
	1006	Path	Eau Claire River	Kent St	Path							C. of Wausau	*Path through the Eau Claire Conservency area located between the river and Kent Street. This would connect to the Schofield bridge and serve as an alternate to Grand Ave.*
	1007	Path	River Street	Old Hwy 51 Trail	Path							C. of Mosinee	*Provide crucial link between new Kronenwetter path and access to Mosinee.*
	1009	Trillium Trail	Buttercup Lane	Aster Road	Path							T. of Rib Mountain	*Continues Trillium Trail path south to Water Treatment plant on Aster Road. Lies outside of current MPO planning boundary. Would connect Route 5, 7, and MB.*
	1010	Stewart Ave	Washington St	Forest St	Intersection							C. of Wausau	*Complete rebuild of intersection of Stewart, Washington, 1st St, and Forest St. as detailed in the Urban Design & Transportation Plan 2019.*
	1011	Forest St	Washington St	Grand Ave	Path							C. of Wausau	*Change Forest St to a two way with a seperated two way bike path on the south side. Detailed in the Urban Design & Transportation Plan 2019.*
	1012	Forest St	Grand Ave	6th St	Intersection							C. of Wausau	*Convert intersection to better accommodate bicycle, pedestrain, and vehicle movements. Detailed in the Urban Design & Transportation Plan 2019.*
	1013	5th St	Forest St	Washington St	Bike lane	Yes						C. of Wausau	*Create two way buffered bike lane to allow access into downtown area. Reduce car lanes to two from three.*
	1014	Azalea Rd	Foxglove Rd	Carnation Ave	Paved Shoulders							T. of Rib Mountain	*Pave shoulders to create connection between Trillium Trial and Wisconsin River Bridge.*

Wausau MPO Bicycle Infrastructure - Plan Update

1002
1001
1005
42
87
46
91
1011
31
1003
38
1006
1004
23
7
1014
111
19
1009
100-1

Legend

- Existing Infrastructure
- Update Projects
- Planning Boundary

Appendix A
Summaries of Relevant Plans and Policies

Bicycle and Pedestrian Plan for the
Wausau Area Metropolitan Planning Organization

WAUSAU MPO

Multiple existing plans and policy documents shaped and provided guidance to the development of the Wausau MPO Bicycle and Pedestrian Plan. This appendix summarizes the most relevant and impactful of these documents and identifies issues that may affect or provide guidance for the implementation of this plan's recommendations.

The following plans were reviewed for this analysis:

Statewide Documents

- Connections 2030 (2009; comprehensive statewide transportation plan)
- Wisconsin State Bicycle Transportation Plan 2020 (1998)
- Wisconsin Pedestrian Policy Plan 2020 (2002)
- Advisory on Installation of Bicyclist Compatible Rumble Strips (2011)
- Wisconsin Department of Transportation Guide for Path/Street Crossings (2011)
- Bicycle Crash Analysis for Wisconsin Using a Crash Typing Tool (PBCAT) and Geographic Information Systems (2006)
- Wisconsin Bicycle Planning Guidance (2003)
- Wisconsin Bicycle Facility Design Handbook (2004)
- Wisconsin Guide to Pedestrian Best Practices (2010)
- Wisconsin Rural Bicycle Planning Guide (2006)

Regional Documents

- Wausau MPO Bicycle and Pedestrian Plan (2009)
- Wausau Metropolitan Area Long-Range Transportation Plan, 2035 (2006 and 2011 update)
- Bicycle & Pedestrian Plan for the Non-Urbanized Area of Marathon County, Wisconsin (1996)
- Marathon County Comprehensive Plan (2006)
- North Central Wisconsin Regional Bicycle Facilities Network Plan (2004)

Local City, Town, and Village Planning Documents

- Rivers Edge Master Plan (1995)
- The Village of Weston Comprehensive Outdoor Recreation Plan – 2013-2017 Plan Overview
- Rib Mountain Area Bike and Pedestrian Routes Long Range Plan (2013)
- Schofield Bicycle and Pedestrian Plan (2014)
- Kronenwetter Master Non-Motorized Pedestrian Facilities Plan

Municipal Codes

- City of Wausau
- City of Schofield
- Village of Rothschild
- Village of Weston
- City of Mosinee

Statewide Documents

Connections 2030 (2009)

WisDOT's comprehensive transportation plan (Connections 2030) not only supports the recommendations of Wisconsin's State Bicycle Transportation Plan 2020 and Pedestrian Policy Plan 2020, but calls for the incorporation of bicycle and pedestrian accommodations into projects now widely known as "complete streets". The plan states that WisDOT and other agencies should "include bicycle and pedestrian facilities on state and federally funded projects, following the federal 'Complete Streets' policy." The plan specifically calls on WisDOT to evaluate and work to expand opportunities to include bicycle and pedestrian accommodations on urban state trunk highway projects. The plan goes on to recommend changes to policies, practices, and standards to fully implement complete streets. The plan also lends support for the use ADA design guidelines and the community sensitive design solutions. A state law was passed in 2009 that made complete streets a requirement for new and reconstructed streets.

Wisconsin State Bicycle Transportation Plan 2020 (1998)

This plan provides guidance on the state-owned and state-supported transportation systems in Wisconsin. Policies are divided into urban and intercity (rural) geographies. Policies from both categories apply to the Wausau area.

Urban:

- "Bicycle provisions on urban arterial streets (i.e., wide curb lanes, bicycle lanes or paved shoulders) should be made in accordance with Metropolitan Planning Organization (MPO) and community bicycle plans."
- "On Urban State Trunk Highways, where suitable accommodations for bicyclists now exist, new highway improvements will be planned to continue an acceptable level of service and safety for bicyclists."
- "WisDOT will cooperate with local jurisdictions to help develop "stand alone" bikeway projects, including bicycle path facilities, when they are consistent with an approved plan and provide important bicycle transportation improvements."
- "Safe crossings should be maintained or created when bikeways and streets intersect highways. Crossing controls or grade separations should be considered where there are inadequate gaps in traffic for safe bicycle path crossing."
- "Intersection design should consider the needs of bicyclists. All intersections should be wide enough for safe bicyclist crossing."

Rural:

- "Suitability of highways for bicycling is most affected by traffic volumes and widths. Therefore, the following three actions should be considered, especially when roadways are reconstructed:
    - "On all higher-volume rural roadways (generally with motor vehicles volumes exceeding 1,000 per day), paved shoulders should be provided.
    - "On higher-volume roadways (exceeding 1,000 vehicles per day) with a moderate number of bicyclists currently using or anticipated to use the roadway, wider paved shoulders should be provided. Most of the State Trunk Highways on the plan's Priority Corridors and Key Linkages meet this criterion.
    - "On lower-volume roadways (under 1,000 vehicles per day), generally no special improvements are necessary to accommodate bicyclists. These lower-volume roadways should be identified and mapped to provide bicyclists with appropriate information to help them make connections between communities and rural recreation and commercial areas/sites."
- "When improvements are being considered on County Trunk Highways, counties should strongly consider the recommendations of county bicycle plans."
- "Multi-use paths (separated, primarily two-way bikeway facilities often referred to as trails) should be considered when: 1) bicyclists cannot be safely accommodated with on-street facilities; or, 2) an opportunity exists to improve the

transportation aspects of bicycling by locating a rural bicycle path within an abandoned rail corridor, utility corridor, or river grade"

- "Safe crossings should be maintained when paths (trails) intersect highways. Additionally, crossing controls or grade separations (overpasses or underpasses) should be considered where gaps in traffic are inadequate for safe crossing."

Wisconsin Pedestrian Policy Plan 2020 (2002)

The Policy Plan encourages local governments, MPOs and Regional Planning Commissions (RPCs) to devote attention to meeting pedestrian needs on roadways in their areas. This guide is WisDOT's primary method to accommodate pedestrians and other interested groups.

Key WisDOT policy statements and actions include:

- WisDOT will review all state trunk highway projects for pedestrian needs using scoping criteria and guidelines.
- WisDOT supports stand-alone sidewalk projects through such programs as the Transportation Enhancement Program for sidewalk retrofit projects to fill in gaps.
- WisDOT commits to minimizing the "barrier effect" to walking. This is sometimes posed by state trunk highways or by joining local sidewalks to state trunk highway sidewalks. Particular attention will be paid to needs near high traffic generators such as schools and commercial areas.

Advisory on Installation of Bicyclist Compatible Rumble Strips (2011)

The purpose of this advisory is two-fold: 1) to alert highway officials and engineers in Wisconsin of the potential problems and hazards posed to bicyclists when rumble strips are improperly designed and/or constructed and 2) to act as a limited resource for guidance and standards currently available on rumble strips, especially as they pertain to making rumble strips bicycle compatible. This advisory is intended for all non-interstate and non-freeway rural roadways in Wisconsin regardless of ownership of the roadway or source of funding for highway improvements.

The advisory states that "Shoulder rumble strips should not be used for the sole purpose of improving safety for bicyclists; their presence is more likely to create a hazard for bicyclists." Regarding transverse rumble strips, it states that "Where state or federal funds are being used for the installation, a rumble free shoulder and passage shall be provided as specified above." "If a paved shoulder is not present, the passage width should be 3 feet from the right edge of the paved roadway. Where state or federal funds are being used for the installation, this 3-foot wide passage shall be provided."

Wisconsin Department of Transportation Guide for Path/Street Crossings (2011)

This document prepared by WisDOT identifies and clarifies intersection right-of-way rules at the intersection of bicycle multi-use paths with streets and highways. The document differentiates between bicyclists using a mid-block crossing and those using a crosswalk at a traditional intersection. Generally:

- Bicyclists should obey traffic controls as they encounter them on the path, and proceed through crossings in a manner that is consistent with the safe use of the crosswalk by pedestrians.
- Drivers must yield to pedestrians and bicyclists in the crosswalk, and do everything they can to keep from hitting a pedestrian or bicyclists even if they have failed to meet their obligations.

Bicycle Crash Analysis for Wisconsin Using a Crash Typing Tool (PBCAT) and Geographic Information System (GIS) (2006)

This document is a based on a WisDOT research project which discusses the method and results of evaluating the relationship between road and intersection conditions and incidences of bicycle crashes. The results are used to support safety improvements and countermeasure design for inclusion in future plans and projects. Key findings include:

- Reported crashes between bicyclists and motorists in the State of Wisconsin have continued to decrease annually since the 1998 State Bicycle Transportation Plan was adopted.
- Four of the top five crash types most frequently reported indicated that the motorist made the critical error that contributed to the crash.
- There were far more reported urban crashes than rural crashes (94% compared 6%).
- The majority of reported crashes occurred at intersections (66% compared to 34%).
- There was a high frequency of reported sidewalk/crosswalk-type crashes (28% of all crashes).
- Reported crash rates were lower on wider roadways for both local roads and state highways.
- While urban streets had a much higher crash rate, rural highways had a much higher rate of fatalities.

Wisconsin Bicycle Planning Guidance (2003)

This document is a reference for Metropolitan Planning Organizations (MPOs) responsible for planning in urbanized areas of Wisconsin. It discusses the importance of bicycling for transportation and outlines and describes the bicycle planning process and content requirements. The focus of this guide is also on the utilitarian and transportation aspects of bicycling and less on recreational uses.

Wisconsin Bicycle Facility Design Handbook (2004)

This handbook is the primary source for facility design guidance in the state of Wisconsin. It discusses the operating characteristics and needs of bicyclists, and presents the wide range of design options for enhancing a community's bicycle transportation system. The guide covers basic roadway improvements for shared streets, details for on-street bicycle lanes, and the design of shared-use paths. Shared Lane Markings (SLMs), introduced into the 2009 edition of the FHWA Manual on Uniform Traffic Control Devices and in common use around the country, are not included in this guide.

Wisconsin Guide to Pedestrian Best Practices (2010)

The Wisconsin Guide to Pedestrian Best Practices provides detailed design, planning and program information for improving all aspects of the pedestrian environment. The guide serves as a companion document to the Wisconsin Pedestrian Policy Plan 2020 to assist in the implementation of the goals, objectives and actions of the plan and serve as a reference or guidebook for state and local officials.

Wisconsin Rural Bicycle Planning Guide (2006)

This guide, like the Wisconsin Bicycle Planning Guidance, focuses primarily on "the utilitarian and transportation aspects of bicycling". Its stated purpose is to provide general guidelines for planning and developing bicycle facilities in the counties and smaller communities of Wisconsin. Some limited design guidance is provided, but the emphasis is mostly on the planning process.

Regional Documents

Wausau MPO Bicycle and Pedestrian Plan (2009)

The purpose of this plan was to identify key bicycle and pedestrian improvements in Wausau and the surrounding communities. The plan includes the following components:

- Review of related plans
- Survey of existing conditions
- Public meetings and comment gathering
- Values and goals discussion
- Review of best practices
- Recommendations and Implementation

One key recommendation of the plan is the development of a system of signed bike routes which identify corridors that should receive special attention from each community with regards to on- and off-road bicycle treatments. These routes would represent corridors along which a bicyclist of any skill level could comfortably travel. In recent years such a system has been developed, totaling 105 miles in length, and more than 600 bike route signs have been placed around the region. These signs are numbered and color-coded to provide wayfinding assistance while being unique to each community.

Wausau Metropolitan Area Long-Range Transportation Plan, 2035 (2006 and 2011 update)

The Long-Range Transportation Plan (LRTP) includes sections that address pedestrian and bicycle travel. Recommended general pedestrian improvements are as follows:

- The River Edge Parkway improvements.
- New bridges should be built with adequate pedestrian accommodations.
- New and existing urban and suburban streets should be provided with sidewalks and shoulders. WisDOT guidelines for installing sidewalks calls for sidewalks on both sides of all streets except where residential densities are lower than one unit per acre, in which case a sidewalk on one side of the street is recommended.
- New and existing rural roads should be provided with wide shoulders.

A number of specific recommendations in the Transportation Improvement Recommendations section explicitly call for accommodation of bicycle and pedestrian users. These improvements are:

- State Highway 153 – Pine Street to Old 51
- Business US Highway 51 – Imperial Avenue to Military Avenue
- 72nd Avenue – Stewart Avenue to State Highway 29 ramps
- County Highway X – County Highway XX to Howland Avenue

Bicycle & Pedestrian Plan for the Non-Urbanized Area of Marathon County, Wisconsin (1996)

The purpose of this plan was to provide ways in which bicycling and walking could become more appealing methods of transportation in the non-urbanized area of Marathon County, as well as providing recreational, health, and fitness benefits, though the focus rests on transportation. This plan followed the lead that was set by the US Department of Transportation to increase the levels of use in addition to safety for bicyclists and pedestrians. The initial work on this plan started in September of 1995 and the final draft was completed in June of 1996. In August of 1996, the final draft plan was presented for public comment and review. It recommends the following:

- Bicyclist and pedestrian travel needs should be accommodated.
- Resources allocated to bicycle and pedestrian improvements should be targeted to areas of greatest transportation need.
- Coordination between multiple jurisdictions is needed to ensure results.
- Education, encouragement and enforcement programs are needed to supplement facilities improvements.

In addition to these general goals, the plan offers a number of specific physical infrastructure improvements to be considered. These recommendations are divided into categories for each type of bicycle facility:

Paved Shoulders

- State Highway 97, Athens south to County Highway M.
- State Highway 153, Mosinee west to County Highway O.
- County Highway H, State Highway 29 south to County Highway N.
- County Highway N, County Highway H east to County Highway S.
- County Highway NN, Marathon City to Rib Mountain.
- County Highway B, Mosinee northwest to County Highway KK.
- County Highway XX, Rothschild east/south to County Highway X.

Bike Lanes

- 8th Street, Marathon City.

Wide Curb Lanes

- State Highway 13, Marshfield north to Abbotsford.
- State Highway 107, State Highway 29 south to Marathon City.

Multi-Use Trails (Shared Use Paths)

- Mountain to Bay Trail, Schofield east to county line, continuing on to Green Bay.
- Continuation of Mountain to Bay Trail into Wausau, current terminus near County Highway JJ northwest into urban area.
- Rail-with-trail, Wausau north along CMSTP&P Line, east side of the Wisconsin River.

Marathon County Comprehensive Plan (2006)

The comprehensive plan, like the LRTP, recommends better accommodation of bicycles and pedestrians as part of any new roadway construction. The plan includes mention of three specific projects under consideration at the time the plan was written:

- Bicycle tunnel under I-39.
- Bicycle path along Hummingbird Lane.
- Bridge over the Wisconsin River connecting Rothschild with Rib Mountain

Each of these projects has since been completed, significantly improving connectivity for bicyclists and pedestrians in the area.

The plan also lists two potential rail-trail conversions:

- Eau Claire River Bicycle/Pedestrian Trail – proposed in the Town of Weston on CNW Railroad right-of-way.
- CNW Trail – A potential linkage between the City of Wausau and the Mountain-Bay Trail. The railroad continues to be active.

Local Planning Documents

River Edge Master Plan (1995)

The River Edge Master Plan was adopted in 1995 by the City of Wausau Common Council. This plan focuses on various aspects of the Wisconsin River corridor within the City of Wausau, including land development patterns, recreational use, environmental management, and bicycle and pedestrian connections for transportation and recreation purposes. The plan envisions bicycle and pedestrian connections (in the form of shared-use paths, sidewalks, and on-street accommodations) roughly from the intersection of North 6th Street and Horseshoe Spring Road all the way south to the Wausau Municipal Airport (on both sides of the river). It also envisions a bicycle and pedestrian bridge crossing the Wisconsin River in Downtown.

The Village of Weston Comprehensive Outdoor Recreation Plan – 2013-2017 Plan Overview

The Village of Weston does not have a plan specific to bikes and pedestrians, though it has a more general outdoor recreation plan. This plan serves as a guide for the Village when it comes to decision making with regards to existing and new recreational facilities.

This plan includes a number of goals for trails and paths, including:

- The Village of Weston would like to "provide residents with multi-purpose trail systems that utilize environmental corridors and provide linkages between parks and other appropriate features within and outside of the Village."
- A strong emphasis is placed on the development of multi-use trails that are barrier free.
- This plan encourages neighboring communities to work together in an effort to create a walking trail system that connects multiple municipalities.
- The Eau Claire River Trail should be developed to connect parks and surrounding communities while providing support facilities along the route.

Rib Mountain Area Bike and Pedestrian Routes Long Range Plan (2013)

The Town of Rib Mountain does not have traditional bicycle and pedestrian plan document. Rather, it maintains a map that illustrates a number of short and long-term path and on-road bikeway improvements, including:

- Existing off road facilities
- Existing on road shoulders
- Suggested bike routes on low-volume roads
- Planned off road facilities
- Bike/pedestrian facilities that are not yet funded

The plan identifies areas where additional connections are needed. These areas of often accompanied by dates indicating when the project was or is expected to be completed. The plan shows both existing and proposed facilities, which in some cases includes segments that have not yet been funded. One of these non-funded segments is a route on Mountain Road with the addition of an off-road bike path that would connect down to Foxglove Road. Another non-funded plan would provide a connection between the school and the County Highway R Trail, which would allow safe access to the school. The plan illustrates recent improvements, including the State Park off-road pedestrian paths and the bike shoulders added to Park Road in 2010.

Schofield Bicycle and Pedestrian Plan (2014)

The purpose of this document is to plan for bicycle and pedestrian accommodations that are both safe and convenient for transportation and recreation, as well as healthy lifestyle activities. Schofield is located in the center of the other 15 member municipalities that comprise the Wausau Area MPO. This plan recognizes that Schofield's central location makes it important in the creation of bike routes that will connect these neighboring municipalities to one another and ultimately provide alternative forms of transportation and recreation. The plan includes the following components:

- Existing conditions, local bike routes, and related transportation links
- Corridors for off-street trails
- Planning activities
- Streets to designate as bike routes and recommended improvements
- Off-street paths
- Recommendations

Key recommendations include:

- "Inventory and prepare a Metro Route signs maintenance/replacement plan to comply with the Wausau MPO Memorandum of Understanding."
- "Add shared use lane markings—sharrows—and share the road signs to Grand Avenue and Metro Route 9."
- "Request the Marathon County Metropolitan Planning Commission to coordinate the development of a network of trails within and through member municipalities."
- "Begin consultation with Marathon County Transportation Planner, Wisconsin Department of Natural Resources State Trail Coordinator and Marathon County Parks Department Director on obtaining public access for Schofield Trail-Mountain Bay Trail connections."

The first two of these have been completed recently.

Kronenwetter Master Non-Motorized Pedestrian Facilities Plan

Kronenwetter does not have an official plan document, though they do provide a list of planned projects as well as their anticipated dates of completion. Their plan includes a list of ten recommendations, six of which are off-street paths that have a total cost of $1,633,000, and four of which are on-street accommodations or paths totaling $980,000. Kronenwetter also provided a list of funding opportunities for these recommendations. It is important to note that for two of the recommendations, Marathon County is listed as a partner implementation agency while WisDOT is listed as a partner agency on one of the recommendations.

Kronenwetter Master Non-Motorized Pedestrian Facilites Plan

Complete Project By	Street Name	Limits	Recommendation	Implementing Agency	Length (in feet)	Total Cost	Funding Opportunities
2014	Old Highway 51/Bus 51	Maple Ridge Rd to Kowalaski Rd	Off-street path	V Kronenwetter / WisDOT	13,000	$448,000	TE, Local
2018	Kowalski Rd	Tower Rd to Kronenwetter Drive	Off-street path	Village of Kronenwetter	3,100	$100,000	BPFP, RWJF, TE, WisDOT, Local
2020	Old Highway 51/Bus 51	Village Way Dr to Kowalaski Rd	Off-street path	Village of Kronenwetter	6,000	$200,000	BPFP, RWJF, TE, SRTS, STP-Urban, Local
2021	County Hwy X	County Hwy XX to Kronenwetter Village limits	Off-street path	Village of Kronenwetter / Marathon County	8,500	$300,000	BPFP, RWJF, TE, Local
2023	Tower	Kowalski Rd to County Hwy XX	Off-street path	Village of Kronenwetter	5,250	$185,000	BPFP, RWJF, TE, SRTS, STP-Urban, Local
2025	Maple Ridge Rd	Kronenwetter Dr to County Hwy X	On-Street striped bicycle accommodations	Village of Kronenwetter	12,500	$215,000	BPFP, RWJF, TE, SRTS, STP-Urban, Local
2025	Pine	Tower Rd to CTH X	On-Street striped bicycle accommodations	Village of Kronenwetter	5,300	$185,000	BPFP, RWJF, TE, SRTS, STP-Urban, Local
2027	County Hwy X	Maple Ridge Rd to County Highway XX	On-Street striped bicycle accommodations	Village of Kronenwetter / Marathon County	16,400	$280,000	BPFP, RWJF, TE, SRTS, STP-Urban, Local
2030	Kowalski Rd	Tower Rd to Pleasant Drive	Off-street path	Village of Kronenwetter	12,000	$400,000	BPFP, RWJF, TE, WisDOT, Local
2030	Martin Rd	Pleasant Drive to Village Limits	on-street path	Village of Kronenwetter	17,000	$300,000	BPFP, RWJF, TE, WisDOT, Local

Municipal Codes

The following are policies extracted from the codes of municipalities within the MPO area. They specifically relate to bicycle issues within each jurisdiction. Where needed, commentary has been added in *red italic type*. According to Wisconsin state law, local authorities may adopt traffic regulations in strict conformity with state law. For subjects addressed by state law, local authorities may not adopt regulations that are stricter or substantially different from the state law. For example, municipalities may not prohibit riding two abreast, which is allowed by state law as long as the cyclists are not impeding traffic.

City of Wausau Municipal Code

Sec. 10.40.010 Registration required.

No person shall operate a bicycle or motor bicycle upon any street, alley, public highway, sidewalk, bicycle lane, bicycle route, bicycle way or other public right-of-way in the city unless the bicycle or motor bicycle is registered as provided in this chapter. This chapter shall apply to all permanent and temporary residents of the city and to such nonresidents who operate bicycles or motor bicycles upon the streets of the city habitually or frequently, either in going to or from school, or to or from work, or for other purposes; but shall not apply to casual travelers or tourists passing through the city on their bicycles or motor bicycles, nor to those residents of cities, villages and townships adjacent to the city who are validly and currently registered within their respective jurisdictions. (Ord. 61-5573 '1(part), 2013; Ord. 61-4776 '1(part), 1992.)

Sec. 10.40.020 Registration.

(a) Registration shall be made with the Wausau police department who shall provide the appropriate forms therefor. Upon registration the bicycle or motor bicycle which shall be permitted to be operated within the city as provided in this chapter.

(b) The registration shall be permanent from the date of registration; provided that the bicycle or motor bicycle remains with the owner/owners' family and at the registered address. (Ord. 61-5573 '3 & 4 (part), 2013; Ord. 61-5573 '2(part), 2013; Ord. 61-4776 '1(part), 1992; Ord. 61-4776 '1(part), 1992; Ord. 61-4776 '1(part), 1992.)

Sec. 10.40.050 Rules of the road.

(a) The rules of the road for bicycles as enacted by the state of Wisconsin have been adopted elsewhere in this code as part of the Wausau motor vehicle rules of the road.

(b) Except as in subsection (c) of this section, the parking and traffic committee is the delegated authority to recommend to the common council rules restricting bicycle operation within the city. After adoption by the council and publication, the parking and traffic committee shall post the signs bearing the restrictions at appropriate places upon the streets.

(c) Bicycles shall not be operated on the following streets except upon the sidewalks:

(1) Forest Street, from the east boundary of Sixth Street to the west boundary of Fifth Street.

(d) Bicycles shall be permitted on the sidewalks on the following bridges:

(1) Bridge Street bridge;

(2) Thomas Street bridge.

(3) Scott Street and W. Washington Street bridge.

City of Schofield Municipal Code

Sec. 49-211. Registration, tag required.

It shall be unlawful for any person to operate a bicycle upon any street in the city unless said bicycle is registered and tagged, as herein provided. This article shall apply to all residents of the city and to such nonresidents who operate bicycles upon the streets of the city habitually or frequently either in going to or from school or to or from work or for other purposes; but shall not apply to casual travelers or tourists passing through the city on their bicycles, or to bicycles registered and tagged in any other municipality in the state pursuant to ordinances thereof requiring such registration.

Sec. 49-212. Registration procedure, fee.

Registration shall be made by filing with the police department the name and address of the owner, together with a complete description of the bicycle on forms provided by said department and paying a registration fee of $1.50. Registrations shall be serially numbered and kept on file in the police department as a public record. Upon such registration, the police department shall cause an identification tag to be affixed to the bicycle registered, serially numbered to correspond to the registration number. Such tag shall remain affixed to the bicycle unless removed by the police department for cause or for retagging upon registration. In case of theft or loss, a duplicate tag shall be issued for a fee of $1.50.

Sec. 49-213. Registrations shall be permanent.

The identification tag shall remain with the bicycle upon any transfer by the registered owner. Upon transfer, if the new owner is a resident of the city, the bicycle shall be reregistered for a fee of $0.55.

Sec. 49-214. Destruction of tag prohibited.

No person shall willfully remove, deface or destroy any such identification tag.

Sec. 49-215. Interfering with rights of other persons prohibited.

No person shall ride or propel any bicycle upon any part of any public street, highway, boulevard or alley in such a manner as to unlawfully interfere with the rights of other persons using such street, highway, boulevard or alley. *This provision is vague since other provisions (such as requirements to yield right-of-way) should account for intrusions on the rights of others. It may also be inconsistent with state law.*

Sec. 49-216. Carrying passengers prohibited.

No person shall ride or propel a bicycle upon any public street, highway, boulevard or alley except in a careful and prudent manner, nor shall any person propel or operate a bicycle upon any public street, highway, boulevard or alley while carrying thereon another person upon such bicycle. *This provision is inconsistent with state law, as it effectively prohibits the use of tandem bicycles and pedicabs (state statute says that "no bicycle may be used to carry or transport more persons at one time than the number for which it is designed"), as well as prohibiting parents from carrying children (statute says that "a bicycle otherwise designed to carry only the operator may be used to carry or transport a child seated in an auxiliary child's seat or trailer designed for attachment to a bicycle if the seat or trailer is securely attached to the bicycle according to the directions of the manufacturer of the seat or trailer.")*

Sec. 49-217. Speeding prohibited.

No bicycle shall be ridden upon any public street, highway, boulevard or alley at a speed faster than is reasonable and proper under traffic conditions at the time, and every bicycle shall be operated with due regard to the safety of the operator and other persons upon the streets, highways, boulevards and alleys of the city.

Sec. 49-218. Traffic signs, signals to be observed.

Persons riding or propelling bicycles shall observe traffic signs and signals and stop when and as required by such signals and signs.

Sec. 49-219. Lamps required.

Every bicycle operated upon a public highway in the city between one-half hour after sunset until one-half hour before sunrise, shall be equipped with a lamp on the front, exhibiting a white light visible for a distance of at least 500 feet to the front, and with a lamp on the rear, exhibiting a red light visible from a distance of 500 feet to the rear, except that a red reflector approved by the state department of transportation may be used in lieu of a rear light.

Sec. 49-220. Time restriction for riders under 12 years old.

No person under the age of 12 years shall operate a bicycle upon any public street, highway, boulevard or alley between the hours of 9:00 p.m. and 5:00 a.m. *This provision may be inconsistent with state law, which considers a bicycle to be a vehicle, and which does not place a curfew on the operation of any vehicle (motorized or not).*

Sec. 49-221. Riding abreast prohibited.

No persons shall operate a bicycle upon any public street, highway, boulevard or alley abreast of or to the left of another person operating a bicycle except while passing such bicycle. *This provision is inconsistent with state law, which allows side-by-side riding as long as the cyclists are not impeding traffic.*

Sec. 49-222. Traffic rules to be followed; trick riding.

Every person riding a bicycle upon any public street, highway, boulevard or alley shall observe all traffic rules and regulations of the city and shall turn only at intersections as permitted by such rules and regulations, signal for all turns and stops, ride at the right-hand side of the street or highway as near as may be to the street curb, pass to the left when passing vehicles or bicycles that are slower moving and on the right side when meeting. It shall be unlawful to do any trick riding on any street, highway, boulevard or alley or to operate a bicycle without both hands on the handlebars. *Two elements of this provision are inconsistent with state law and impractical. First, the requirement to ride "as near as may be to the street curb" does not account for the three exceptions specified in state statute (when overtaking, when preparing to make a left turn or U-turn, and to avoid "unsafe conditions, including fixed or moving objects, parked or moving vehicles, pedestrians, animals, surface hazards or substandard width lanes that make it unsafe to ride along the right-hand edge or curb"). Second, prohibiting bicyclists from operating without both hands on the handlebars precludes bicyclists from signaling turns, which requires removing one hand from the handlebars.*

Sec. 49-223. Grand Avenue.

Bicycles shall be ridden on the sidewalk along Grand Avenue from the north city limits to the intersection with Holt Street south of the Eau Claire River bridge. *As with the similar provision in the Wausau Municipal Code, this restriction is problematic considering the recent addition of shared-lane markings ("sharrows") to Grand Avenue.*

Village of Rothschild

Sec. 217-1. Registration required.

It shall be unlawful for any person to operate a bicycle upon any street in the Village of Rothschild unless said bicycle is registered and tagged as herein provided.

Sec. 217-2. Application for registration; identification tag

Registration shall be made by filing with the Police Department the name and address of the owner, together with a complete description of the bicycle, on forms provided by said Department and paying a registration fee set by the Village Board. Registration shall be serially numbered and kept on file in said Department as a public record. Upon such registration, said Department shall cause an identification tag to be affixed to the bicycle registered, serially numbered to correspond to the registration number. Such tag shall remain affixed to the bicycle unless removed by said Department for cause. In case of theft or loss, a duplicate tag shall be issued for a fee of set by the Village Board.

Sec. 217-3. Transfer of ownership.

The identification tag shall remain with the bicycle upon any transfer by the registered owner. Upon transfer, if the new owner is a resident of the Village of Rothschild, the bicycle shall be reregistered for a fee set by the Village Board.

Sec. 217-4. Suspension of registration.

No bicycle shall be registered which is in unsafe mechanical condition. The Village Chief of Police shall have the authority to suspend the registration of and remove the identification tag from any bicycle operated contrary to any state law or Village ordinance or operated while in an unsafe mechanical condition, such suspension and removal to continue for a period not to exceed 10 days, provided that such registration shall not be reinstated or such identification tag be replaced while such bicycle is in an unsafe mechanical condition. Such suspension and removal shall be in addition to the other penalties provided hereunder.

Sec. 217-5. Removing, defacing or destroying identification tag.

No person shall willfully remove, deface or destroy any such identification tag.

Sec. 217-6. Report of change of ownership or dismantling.

Within 10 days after any bicycle registered hereunder shall have changed ownership or been dismantled and taken out of operation, the person in whose name the bicycle has been registered shall report such information to the Police Department. In case of change of ownership, the registration shall thereupon be changed to show the name of the new owner. In case of dismantling and taking out of operation, the registration shall be cancelled and identification returned to the Police Department.

Sec. 217-7. Standards for operation.

A. No person shall ride or propel any bicycle upon any public sidewalk or thoroughfare of the Village set apart for pedestrians, except within the Village limits on U.S. Business 51 where bicycles must be ridden on the sidewalk if available. No person shall ride or propel any bicycle upon any public street, alley, boulevard or sidewalk of the Village in such manner as to interfere with the rights of other persons using such street, alley, boulevard, or sidewalk. *The second part of this provision ("interfere with the rights of others") is vague since other provisions (such as requirements to yield right-of-way) should account for intrusions on the rights of others. It may also be inconsistent with state law.*

B. No person shall ride or propel a bicycle upon any public street, highway, boulevard or alley except in a careful and prudent manner, nor shall any person propel or operate a bicycle upon any public street, highway, boulevard or alley while carrying thereon another person upon such bicycle. *This provision is inconsistent with state law, as it effectively prohibits the use of tandem bicycles and pedicabs (state statute says that "no bicycle may be used to carry or transport more persons at one time than the number for which it is designed"), as well as prohibiting parents from carrying children (statute says that "a bicycle otherwise designed to carry only the operator may be used to carry or transport a child seated in an auxiliary child's seat or trailer designed for attachment to a bicycle if the seat or trailer is securely attached to the bicycle according to the directions of the manufacturer of the seat or trailer.")*

C. No bicycle shall be ridden upon any public street, highway, boulevard or alley at a speed faster than is reasonable and proper under traffic conditions at the time, and every bicycle shall be operated with due regard to the safety of the operator and other persons upon the streets, highways and alleys of the Village.

D. Persons riding or propelling bicycles shall observe all traffic signs and signals and stop when and as required by such signals and signs.

E. Every bicycle operated upon a public highway during any of the time between 1/2 hour after sunset and 1/2 hour before sunrise shall be equipped with a lamp on the front, exhibiting a white light visible from a distance of at least 500 feet to the front, and with a lamp on the rear, exhibiting a red light visible from a distance of 500 feet to the rear, except that a red reflector approved by the Motor Vehicle Department may be used in lieu of a rear light.

F. No person shall operate a bicycle upon any public street, highway, boulevard or alley abreast of or to the left of another person operating a bicycle except while passing such bicycle. *This provision is inconsistent with state law, which allows side-by-side riding as long as the cyclists are not impeding traffic.*

G. Every person riding a bicycle upon any public street, highway, boulevard or alley shall observe all traffic rules and regulations of the Village and shall turn only at intersections as permitted by such rules and regulations, signal for all turns and stops, ride at the right-hand side of the street or highway as near as may be to the street curb, and pass to the left when passing vehicles or bicycles that are slower moving and on the right side when meeting. It shall be unlawful to do any trick riding on any street, highway, boulevard or alley or to operate a bicycle without both hands on the handlebars. *Two elements of this provision are inconsistent with state law and impractical. First, the requirement to ride "as near as may be to the street curb" does not account for the three exceptions specified in state statute (when overtaking, when preparing to make a left turn or U-turn, and to avoid "unsafe conditions, including fixed or moving objects, parked or moving vehicles, pedestrians, animals, surface hazards or substandard width lanes that make it unsafe to ride along the right-hand edge or curb"). Second, prohibiting bicyclists from operating without both hands on the handlebars precludes bicyclists from signaling turns, which requires removing one hand from the handlebars.*

Sec. 217-8. Violations and penalties.

Any person who shall violate any of the provisions of this chapter shall forfeit not more than $25 and in default of such forfeiture shall be imprisoned in the county jail for a period of not more than 30 days.

Village of Weston

Sec. 82.114. Registration required.

(a) No person shall operate a bicycle upon any street, alley, public highway, sidewalk, bicycle lane, bicycle route, bicycle way or other public right-of-way in the village unless the bicycle is registered and has affixed a registration plate as provided in this article.

(b) This article shall apply to all permanent and temporary residents of the village and to such nonresidents who operate bicycles upon the streets of the village habitually or frequently, either in going to or from school, or to and from work, or for other purposes, but shall not apply to casual travelers or tourists passing through the village on their bicycles, nor to those residents of cities, villages and townships adjacent to the village who are validly and currently registered within their respective jurisdictions.

Sec. 82.115. Registration; fee; inspection.

(a) Registration shall be made with the police department, who shall provide the appropriate forms. Upon payment of a registration fee provided in the village fee schedule, the police department shall issue a registration plate for the bicycle, which shall permit the bicycle to be operated within the village as provided in this article.

(b) The registration shall be permanent from the date of issuance provided the bicycle remains with the registered owner and at the registered address. In the event of a sale or other transfer of the bicycle to a new owner, a transfer of registration must be completed in conformity with the provisions of section 82.117.

(c) No person shall be entitled to register a bicycle when that person is believed by the Everest Metro Police Department to have no claim to, or evidence of, ownership of the bicycle or have no right to possession of such bicycle.

(d) The Everest Metro Police Department may inspect each bicycle before registering it, and the department may refuse to register any bicycle that the registering officer believes to be in an unsafe mechanical condition.

Sec. 82.116. Display of registration plate.

(a) No bicycle shall be considered registered until a registration plate, which shall remain legible at all times is affixed to the bicycle, which shall remain so affixed until the bicycle is either dismantled, destroyed or removed by the Everest Metro Police Department for cause. Such license shall be attached securely to the rear of the operator's seat or to the rear fender of the bicycle.

(b) No person shall intentionally destroy, mutilate or alter the identification plate affixed to any bicycle or remove, without the permission of the owner, any identification plate from any bicycle. If a replacement plate must be issued, the fee shall be as provided in the village fee schedule.

Sec. 82.117. Transfer and cancellation of registration.

Within ten days after any bicycle registered under this article changes ownership, is transferred or dismantled and/or taken out of operation, the person in whose name the bicycle has been registered shall report such information to the Everest Metro Police Department. In the event of a change of ownership or other transfer of the bicycle wherein the bicycle remains in use in the village, the license plate will remain with the bicycle. Every such person who transfers the title of any bicycle shall endorse upon the

City of Mosinee

Sec. 42-1042. Block design.

(c) Pedestrian pathways. Pedestrian pathways, not less than ten feet wide, may be required by the plan commission through the center of a block more than 900 feet long, where deemed essential to provide circulation or access to schools, playgrounds, shopping centers, transportation and other community facilities.

Sec. 78-352. Manner of operation.

No bicycle shall be allowed to proceed in any street in the city by inertia or momentum with the feet of the rider removed from the bicycle pedals. No rider of a bicycle shall remove both hands from the handlebars or practice any trick or fancy riding in any street in the city, nor shall any bicycle rider carry or ride any other person so that two persons are on the bicycle at one time, unless a seat is provided for a second person.

Sec. 78-353. Lighting equipment.

No person shall operate a bicycle upon a highway during the hours of darkness unless equipped as required in Wis. Stats. §347.489.

Sec. 78-354. Warning signal required.

No bicycle shall be operated on the streets of the city unless equipped with either a warning bell or horn.

Sec. 78-355. Parking a bicycle.

No person shall leave a bicycle at such a place or in such a way as to create a hazard to pedestrians, automobile operators or to anyone else.

Sec. 78-356. Riding abreast.

Persons riding or using bicycles or other similar vehicles along or upon any public street, avenue, lane, alley or other public road, ground or way within the city shall not ride more than two abreast excepting in a general parade or public demonstration. *This provision is inconsistent with state law, which allows side-by-side riding as long as the cyclists are not impeding traffic.*

Sec. 78-357. Rules of the road.

The provisions of Wis. Stats. ch. 346 shall be applicable to the operation of bicycles, where appropriate.

Sec. 78-381. Required registration.

No person shall operate a bicycle upon any street, alley, public highway, sidewalk, bicycle lane, bicycle route, bicycle way or other public right-of-way in the city unless the bicycle is registered and has affixed thereto a registration plate as provided in this division. This division shall apply to all permanent and temporary residents of the city and to such nonresidents who operate bicycles upon the streets of the city habitually or frequently, either in going to or from school, or to and from work, or for other purposes; but shall not apply to casual travelers or tourists passing through the city on their bicycles, nor to those residents of other cities, villages and townships who are validly and currently registered with their respective jurisdictions.

Sec. 78-382. Fee; inspection.

(a) Registration shall be made with the police department who shall provide the appropriate forms. Upon payment of a registration fee set by the council from time to time, the police department shall issue a registration plate for the bicycle which shall permit the bicycle to be operated within the city as provided in this article. Registration shall be nonexpiring.

(b) The registration shall be permanent from the date of issuance; provided, however, that the bicycle remains with the registered owner and at the registered address. In the event of a sale or other transfer of such bicycle to a new owner, a transfer of registration must be completed in conformity with the provisions of section 78-384.

(c) No person shall be entitled to register a bicycle when that person is believed by the police department to have no claim to, or evidence of, ownership of the bicycle or have no right to possession of such bicycle.

(d) The police department may inspect each bicycle before registering it, and may refuse to register any bicycle that the registering officer believes to be in an unsafe mechanical condition.

Sec. 78-383. Display of registration plate.

(a) No bicycle shall be displayed, used or considered registered until a registration plate, which shall remain legible at all times, is affixed to the bicycle. It shall remain so affixed until the bicycle is either dismantled or destroyed. Such registration plate may be removed from the bicycle by the police department for cause. The registration plate shall be securely attached to the stem of the operator's seat facing the front of the bicycle.

(b) No person shall intentionally destroy, mutilate or alter the registration plate affixed to any bicycle or remove, without the permission of the owner, any registration plate from any bicycle. If a replacement plate must be issued, the fee shall be set by the council from time to time.

Sec. 78-384. Transfer and cancellation.

Within ten days after any bicycle registered under this article changes ownership, is transferred or dismantled and/or taken out of operation, the person in whose name the bicycle has been registered shall report such information to the police department. In the event of a change of ownership or other transfer of the bicycle wherein the bicycle remains in use in the city, the license plate will remain with the bicycle. If a bicycle is dismantled and/or taken out of operation, the license plate will not remain with the bicycle, but shall be immediately destroyed by the person disposing of or dismantling the bicycle.

Sec. 78-385. Buying or selling bicycles.

Every person in the business of buying, selling or exchanging bicycles in the city shall maintain for three years from the date of the transaction a record containing the brand name, color, type and serial number of each bicycle bought, sold or exchanged and shall record the name and address of the person buying, selling or exchanging a bicycle. This record shall be open to inspection by a representative of the city police department during reasonable business hours.

Appendix B
Traffic Stress Analysis
Background and Methodology

Bicycle and Pedestrian Plan for the
Wausau Area Metropolitan Planning Organization

As part of assessing existing conditions for bicycling in the Wausau area (see Chapter 2), an evaluation of the area's urban street and rural road networks was performed. The intent of this evaluation was to classify each segment of roadway with regard to the level of stress, based on interactions with motor vehicles that a casual adult bicyclist should expect to encounter. This appendix provides additional detail regarding the methodology used to perform that analysis.

Typical Methods for Calculating Level of Service

Multiple methodologies to determine the suitability of streets for bicycling have been developed over the past few decades. The most common models used over the past few years (such as the Bicycle Compatibility Index and Bicycle Level of Service models) are very quantitative and scientific, being developed based on the feedback of users riding along various study segments of streets in selected locations in the United States. One critique is that these methods estimate and are based on the *perception* of safety afforded by various factors, as opposed to being based on proven crash reduction strategies. As such, the traditional methods arguably overestimate the effects of some factors (such as the presence of a striped bike lane) and underestimate the effects of others (most notably traffic volumes and speeds). While these models may be adequate for determining suitability for highly-skilled and confident bicyclists, they may not be adequate for determining suitability for the entire population (including people that do not currently ride a bicycle but have interest in doing so).

Types of Bicyclists and the New "Typical Bicyclist"

Anecdotal experience[1] supplemented with survey-based research[2] indicates that people (whether or not they regularly ride a bicycle) fall into one of the four categories shown in

[1] Geller, R. "Four Types of Cyclists." Portland Office of Transportation. (https://www.portlandoregon.gov/transportation/article/264746)

[2] Dill, J. and N. McNeil. (2013, January) "Four Types of Cyclists? Examining a Typology to Better Understand Bicycling Behavior and Potential." Paper presented at the Annual Meeting of the Transportation Research Board.

Table 1, based on their traffic stress tolerance or comfort, confidence, and willingness to interact with motor vehicle traffic. As can be seen, the majority (56%) of people are "Interested but Concerned" about bicycling.

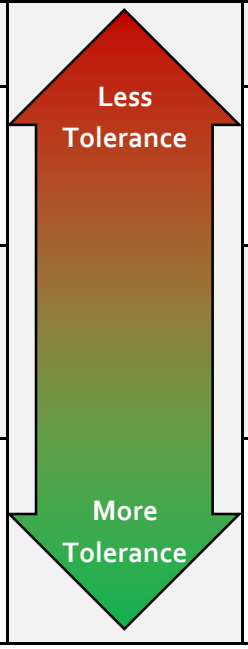
The research and thinking surrounding this method for classifying the general population by traffic stress tolerance posits that the "Interested but Concerned" portion of the population is not bicycling very often, at least not on streets with little separation between bicycles and cars.

Table 1 illustrates that the majority of the population that currently or might bicycle (the "Interested but Concerned" and "Enthused and Confident" categories) are concerned about interactions with motor vehicles, which indicates that separation from motor vehicle traffic may be the most important factor to consider in order to encourage more people to bicycle.

As part of the WikiMap public participation exercise that was performed for this Bicycle and Pedestrian Plan for the Wausau Area MPO, a short survey was administered in order to classify each participant according to a similar method (see Table 2**Error! Reference source not found.**). The results show that a significant portion of the WikiMap participants are willing or somewhat willing to mix with motor vehicle traffic. It is likely that these results are skewed due to the intentional participation of people that are already avid bicyclists (local cycling clubs and groups were strongly encouraged to participate in the exercise) and low participation of would-be bicyclists due to lack of awareness of this planning effort. Interestingly, half of the people that stated they are willing to ride in mixed traffic on almost any type of street stated that separated paths are one of their most desired bicycle facility type.

Nonetheless, it is important to note that 64% of the respondents stated that they prefer some level of separation from motor vehicle traffic.

Table 1: General Population Broken Down by Interest in Bicycling

Category Description*	Traffic Stress Tolerance	Characteristics** The red bars indicate the percent of this group that strongly or somewhat agrees that being hit by a motor vehicle when bicycling is a concern of theirs.	Percent of Population**
No Way, No How		Not interested in riding a bicycle for transportation. 87%	31%
Interested but Concerned		Little tolerance for traffic stress with major concerns for safety. Strongly prefer separation from traffic on arterials by way of protected bike lanes and paths. 84%	56%
Enthused and Confident		Some tolerance for traffic stress. Confident riders who will share lanes with cars, especially on rural roads, but prefer separated bike lanes, paths, or paved shoulders on roads with higher traffic levels. 52%	9%
Strong and Fearless		High tolerance for traffic stress. Experienced riders who are comfortable sharing lanes on higher speed and volume arterials. These riders are less interested in protected bike lanes and paths than the general population. 39%	4%

*These category names were developed by Roger Geller of the City of Portland Office of Transportation. They have become the standard names, but some advocates and industry professionals feel they cast a negative tone on certain types of bicyclists.

**Percent of people concerned about being hit by a motor vehicle and percent of total population are from Dill, J. and N. McNeil. (2013, January).

Table 2: WikiMap Participant Response to the Question "How would you describe your biking habits and comfort level?"

Response	Corresponding Geller Category Description*	Expected Response Rate**	Actual Participant Response Rate
I do not ride a bicycle and am unlikely to ever do so.	No Way, No How	31%	5%
I would like to bicycle more, but I prefer not to ride in traffic.	Interested but Concerned	56%	28%
I am willing to ride in traffic, but I prefer dedicated bicycle lanes and routes.	Enthused and Confident	9%	36%
I am willing to ride in mixed traffic with automobiles on almost any type of street.	Strong and Fearless	4%	31%

* See Table 1. Geller, R. "Four Types of Cyclists." Portland Office of Transportation.

** Based on Dill, J. and N. McNeil. (2013, January).

Level of Traffic Stress Methodology

Since the categorization methodology used by Geller, Dill, and others (Table 1) posits that people can be classified based on their willingness or aversion to bicycle with or alongside motor vehicle traffic, determining the "traffic stress" of a street segment may be the most appropriate way to determine the segment's suitability for bicycling. The Mineta Transportation Institute (a California-based research institution) developed the Level of Traffic Stress (LTS) model to do this, and it loosely correlates with the categories outlined in Table 1. Generally speaking, LTS 4 is only suitable for "Strong and Fearless" bicyclists, LTS 3 is suitable for that group as well as "Enthused and Confident" bicyclists, LTS 2 is suitable for almost everyone other than children, and LTS 1 is suitable for the entire population (with the exception of very young children). The LTS definitions are shown in Table 3.

Table 3: Level of Traffic Stress (LTS) Definitions

LTS 1	Presenting little traffic stress and demanding little attention from cyclists, and attractive enough for a relaxing bike ride. Suitable for almost all cyclists, including children trained to safely cross intersections. On links, cyclists are either physically separated from traffic, or are in an exclusive bicycling zone next to a slow traffic stream with no more than one lane per direction, or are on a shared road where they interact with only occasional motor vehicles (as opposed to a stream of traffic) with a low speed differential. Where cyclists ride alongside a parking lane, they have ample operating space outside the zone into which car doors are opened. Intersections are easy to approach and cross.
LTS 2	Presenting little traffic stress and therefore suitable to most adult cyclists but demanding more attention than might be expected from children. On links, cyclists are either physically separated from traffic, or are in an exclusive bicycling zone next to a well-confined traffic stream with adequate clearance from a parking lane, or are on a shared road where they interact with only occasional motor vehicles (as opposed to a stream of traffic) with a low speed differential. Where a bike lane lies between a through lane and a right-turn lane, it is configured to give cyclists unambiguous priority where cars cross the bike lane and to keep car speed in the right-turn lane comparable to bicycling speeds. Crossings are not difficult for most adults.
LTS 3	More traffic stress than LTS 2, yet markedly less than the stress of integrating with multilane traffic, and therefore welcome to many people currently riding bikes in American cities. Offering cyclists either an exclusive riding zone (lane) next to moderate-speed traffic or shared lanes on streets that are not multilane and have moderately low speed. Crossings may be longer or across higher-speed roads than allowed by LTS 2, but are still considered acceptably safe to most adult pedestrians.
LTS 4	A level of stress beyond LTS3.

Source: Mekuria, Furth, and Nixon. "Low-Stress Bicycling and Network Connectivity." Report 11-19. May 2012. Mineta Transportation Institute. San Jose State University, San Jose, California.

As opposed to other suitability methods (mentioned on the previous page), this method provides a much greater weight to motor vehicle traffic speeds and volumes. While most people are comfortable bicycling on quiet streets, the LTS method requires physical separation between bicycles and cars when traffic volumes and speeds exceed certain thresholds. The model can factor traffic stress along street segments, intersection approaches, and street crossings in determining an overall score for a segment.[3] The method uses several base criteria for determining traffic stress (street width, motor vehicle speed, and presence of on-street parking) as well as additional criteria depending on facility type (bike lane width, traffic volume when streets do not have bike lanes, and number of driveway/street crossings for paths).

Table 4 illustrates how LTS is calculated for various types of streets. The factors included in this table have been tailored specifically for this project.

In the end, this model helps communities and regions identify the traffic stress that may be experienced along each part of their street and road system. It also serves as a tool to help develop interconnected systems of low-stress bikeways that will appeal to the majority of the population (the "Interested but Concerned" and "Enthused and Confident" groups). A similar approach has been taken by the Dutch for decades, resulting in approximately 80% of the population riding a bicycle at least once per week and 25-50% of the population in larger cities biking to work on a daily basis.

[3] Due to data limitations, only street segment traffic stress was calculated for this project's analysis.

Table 4: Level of Traffic Stress (Tailored for the Wausau Area MPO)

Level of Traffic Stress	Shared Streets*	Bike Lanes* not Alongside a Parking Lane	Bike Lanes* Alongside a Parking Lane	Shared-Use Paths*
LTS 1	≤ 25 MPH ≤ 2,000 ADT**	≤ 30 MPH 1 lane† Bike lane ≥ 6 feet	≤ 25 MPH 1 lane† Bike lane ≥ 7 feet	Completely separated from car traffic ≥ 10 feet wide
LTS 2	≤ 30 MPH 2,000 – 4,000 ADT	≤ 30 MPH 2 lanes Bike lane 4-6 feet	≤ 30 MPH 1 lane Bike lane 6-7 feet	Along streets with few driveway/street crossings ≥ 10 feet wide
LTS 3	≤ 30 MPH 4,000 – 6,000 ADT	≤ 35 MPH > 2 lanes Bike lane 4-6 feet	≤ 35 MPH ≥ 2 lanes Bike lane 5-6 feet	Along streets with many driveway/street crossings 8 feet wide
LTS 4	> 35 MPH > 6,000 ADT	≥ 40 MPH > 2 lanes Bike lane < 4 feet	≥ 40 MPH ≥ 2 lanes Bike lane < 5 feet	n/a

* Shared streets include Sharrows, neighborhood streets, and any street without a dedicated bicycle facility. Bike lanes may include paved urban shoulders. The LTS model developed by Mineta does not consider shared-use paths; however, the LTS was tailored for this plan to account for assessment of shared-use paths.

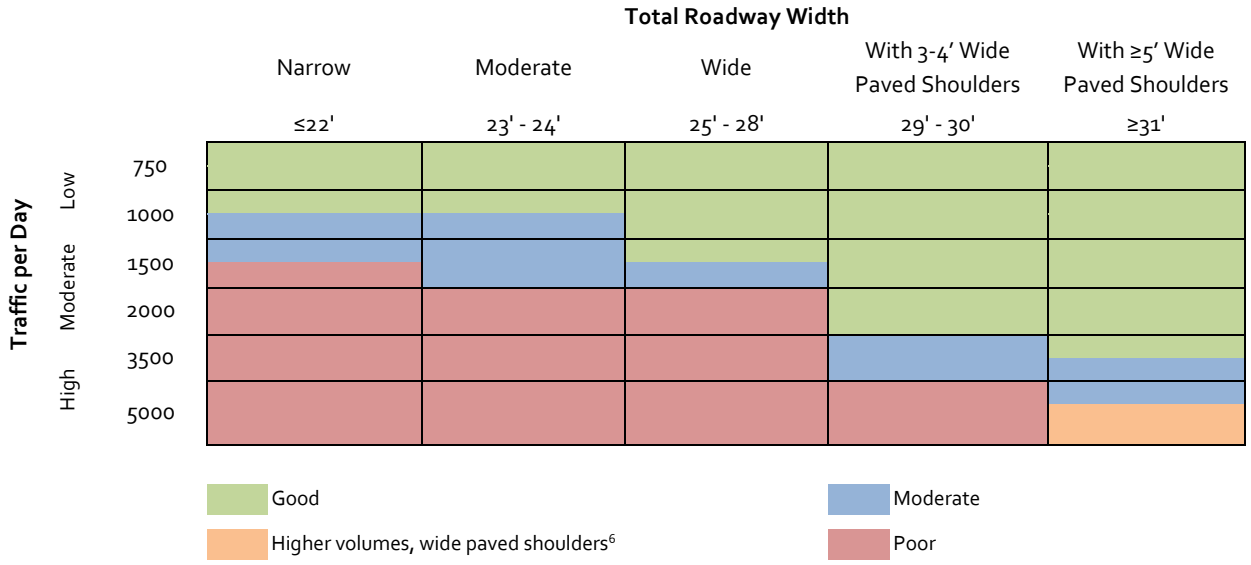
** ADT stands for Average Daily Traffic, a measure of motor vehicle traffic volume.

† Travel lanes in each direction (does not including bike or parking lanes).

Rating Rural Roads

The LTS model is based on urban and suburban contexts and cannot be applied to rural roads for this reason. However, the Wisconsin Department of Transportation (WisDOT) has a methodology for calculating bicycle compatibility for rural roads, which has been used for several decades in Wisconsin as well as other states. The model was designed to be sensitive to the conditions of low and moderate volume rural roadways and was based on the probability of a conflict between bicyclists and passing vehicles, based on research performed as part of a National Cooperative Highway Research Program (NCHRP) study.[4] Very few rural roads with low volumes of traffic have enough width to allow three vehicles (two passing motorists and a bicyclist) to comfortably share the same linear space. The statistical probability of motor vehicle/bicycle conflict has a major impact on the suitability of a roadway for shared use and overall safety. The model was made sensitive to volumes based on earlier research conducted for warranting passing lanes on highways. The model uses factors including average daily traffic volume, roadway width, percent solid yellow center line, and percent truck traffic. Based on a combination of these factors, roadway segments are rated "good", "moderate," or "poor." A generalized explanation of the methodology is displayed in Table 5.

Table 5: Generalized Bicycling Conditions for Rural Roadways[5]



For purposes of analyzing the suitability of the Wausau Area MPO's transportation system for bicycling, the categories shown in Table 5 were correlated with Level of Traffic Stress ratings, as shown in Table 6. Because of the higher traffic speeds experienced along rural roadways, it was decided that the "Best conditions" category should correlate with LTS 2. This indicates that while most adult bicyclists should be comfortable using a "Best conditions" rural road, this type of road would likely not be appropriate for younger children.

Table 6: Correlation between Urban and Rural Traffic Stress Ratings

Level of Traffic Stress Rating	Wisconsin Bicycling Conditions for Rural Roads Rating
LTS 1	n/a
LTS 2	Best conditions
LTS 3	Moderate conditions
LTS 4	Undesirable conditions

[4] Glennon, John C. Design and traffic control guidelines for low-volume rural roads. Washington, D.C.: Transportation Research Board, National Research Council, 1979. Print.

[5] *Wisconsin Rural Bicycle Planning Guide*. Wisconsin Department of Transportation. April 2006. 15.

[6] Not used for this analysis.

Appendix C
Law Enforcement Continuum of Training

Bicycle and Pedestrian Plan for the
Wausau Area Metropolitan Planning Organization

WAUSAU MPO

Background

The Highway Safety Triangle model for improving traffic safety has proven itself to be effective for many years. Engineering, education, and enforcement (the 3 E's) are the main components of the model. All three contribute directly to traffic safety, including that of pedestrians and bicyclists.

Enforcement is a critical element of any successful pedestrian and bicycle program. Law enforcement officers are the only members of the community who can enforce laws to improve pedestrian and bicycle safety, so they must be at the forefront of this effort and lead by example. Unfortunately, most law enforcement officers have never received any pedestrian- or bicycle-specific training. Without this training it is difficult, if not impossible, for most officers to do their part and therefore these programs cannot reach their full potential.

Approach

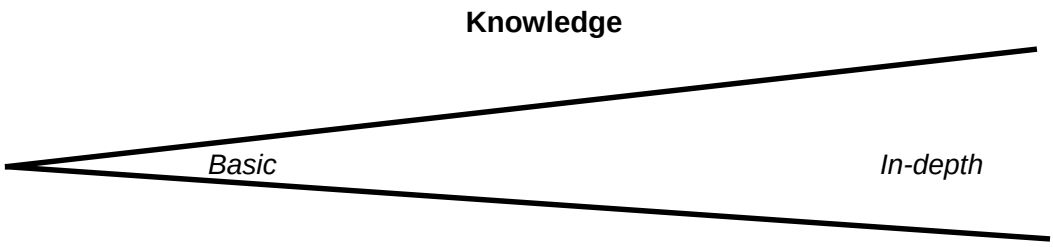
WE BIKE, etc., LLC developed a law enforcement training model with essential pedestrian and bicycle safety educational materials and multi-faceted training through a planned succession of information, from basic to in-depth knowledge. This manner of delivery and level of content is the Continuum of Training in Pedestrian & Bicycle Safety for Law Enforcement.

Because we know that law enforcement officers typically do not receive specific pedestrian and bicycle safety training in school or after they enter the force, the Continuum of Training in Pedestrian & Bicycle Safety for Law Enforcement was developed to meet the needs of law enforcement officers who have no prior training. But it also includes components that even certified bicycle patrol officers will appreciate.

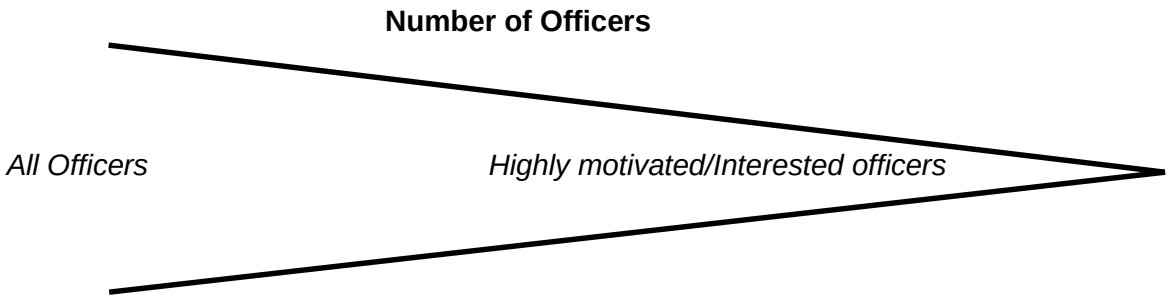
This approach to pedestrian and bicycle law enforcement training was originally developed and tested by WE BIKE as part of the federally funded Sheboygan County, Wis., Non-Motorized Transportation Pilot Project in 2006-09. It has since been implemented in Green Bay, Wis., New Orleans, La., Albany, N.Y., Minneapolis and St. Paul, Minn., and across the state of Idaho.

The continuum has proven to be very successful at increasing officers' pedestrian and bicycle safety knowledge and has resulted in increased pedestrian and bicycle safety enforcement activity and a greater sense of security for pedestrians and bicyclists of all ages and abilities.

The continuum starts with a very low-cost and minimal time commitment element that contains basic knowledge of pedestrian and bicycle safety targeted to law enforcement officers. It continues with increasingly informative pieces with the culmination being a two-day training session with in-depth classroom and on-the-road activities.



The information provided in the continuum is pertinent for all law enforcement personnel, but not all officers will specialize in bicycle and pedestrian safety, just as in other areas of enforcement like crash investigation or narcotics. As the information increases and becomes more in-depth, fewer officers will likely participate. The ones that do participate are naturally interested in pedestrian and bicycle safety and will become the experts and advocates in their departments.



Components

The *Continuum of Training in Pedestrian & Bicycle Safety for Law Enforcement* approach includes multiple types of media – written, video, interactive computerized-based training, and personalized classroom instruction to appeal to a broad cross section of officers with different learning styles. It consists of the following tools:

1. "Enforcement for Pedestrian & Bicycle Safety" brochure
2. National and local pedestrian and bicycle safety materials
3. Pedestrian and bicycle safety videos to be shown at roll call
4. Computer-based pedestrian and bicycle safety training
5. Instructor-led, two-day, *Pedestrian & Bicycle Safety for Law Enforcement* course
6. Community enforcement activity

1. The "Enforcement for Pedestrian & Bicycle Safety" brochure contains basic knowledge of pedestrian and bicycle safety and pertinent state statutes. It will be distributed (print or electronic) to all officers in a department or region. It requires minimal effort on the part of the department and officer and is a very cost effective training tool.

2. There are many national, state and local pedestrian and bicycle safety materials available. The *Continuum of Training in Pedestrian & Bicycle Safety for Law Enforcement* will include a selection of materials that are the best of what is available nationally and locally. This could include brochures, posters, pocket guides, coloring books, bumper stickers, safety check lists, flyers, etc. for children, adults, commuters and leisure bicyclists and pedestrians. It will also include instructions on ordering the materials (most are free or at nominal cost) and suggestions on which key items officers should have on hand to assist them when making traffic stops, school visits, or interacting with the walking, bicycling and motoring public.

3. The National Highway Traffic Safety Administration (NHTSA) and other agencies have created short, informative videos about bicycle and pedestrian safety targeted to law enforcement. They are designed to raise awareness and to give officers perspective about the role they play. When shown at roll call, they can be very effective for opening dialogue among officers about pedestrian and bicycle safety in their community.

4. The next step in the continuum is two, self-paced, two-hour, interactive instructional DVDs "NHTSA Pedestrian Safety Training for Law Enforcement" and "Enhancing Bicycle Safety: Law Enforcement's Role." Officers can perform these trainings on their down time and completion of the final evaluations prompts certificates of completion and the achieved scores.

5. The two-day instructor-led training is a complete pedestrian and bicycle safety educational experience with classroom and on-the-road activities. The course contains information in the following areas: What, Where, When, How, Who & Why of walking and bicycling; components of the Highway Safety Triangle; bicycle environment audit; how pedestrian & bicycle crashes happen; pedestrian & bicycle laws; pedestrian crosswalk enforcement operations; crash investigating & reporting; potential law enforcement partners; and more.

6. The last component of the continuum is a community enforcement activity. Following the completion of the prior steps, departments may choose to implement a community enforcement activity which would provide them with the opportunity to put their newfound skills and knowledge into practice, and make the community aware of their activities. Examples of community enforcement activities include a pedestrian crosswalk enforcement operation (enforcement and media activity to educate motorists and pedestrians about crosswalk safety) and a bike light giveaway activity (officers stop bicyclists riding at night without a light and install one free of charge).

Continuum of Training in Pedestrian & Bicycle Safety for Law Enforcement

Timeline	Resource	Target Audience	Application	Value	Outcome
January	Brochure	All officers	General knowledge	Critical quick-reference resource of relevant bike/ped and motorist statutes	Officers incorporate bike/ped enforcement into all patrol work
February	Safety/Education Resources	Patrol, training, school liaison, FTO, neighbor-hood, shift commanders, bike patrol officers	Traffic stops, school visits, interacting with walkers, bikers, and motorists	Officer and general public education	Increased general bike/ped safety awareness
March	Roll Call Videos	All officers	Internal training	National perspective of best practices of bike/ped enforcement	PD makes strategic enforcement decisions that officers apply on the street
April	Computer-Based Training	Select officers	Internal training	Intermediate training in bike/ped enforcement	Creates mid-level departmental expertise
May/June	Workshop	Select officers	Internal training	Advanced training in bike/ped enforcement	Creates advanced departmental expertise