



JULY 2021

CITY OF MANITOWOC

# **Bicycle and Pedestrian Master Plan**

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# Chapter 1: Introduction

The purpose of the City of Manitowoc Bicycle and Pedestrian Master Plan is to create a seamless and interconnected multi-modal transportation and recreation system for residents and visitors. By creating a network that works to make walking and bicycling more convenient, safe, and accessible in the city, residents and visitors will have better access to open spaces, shops, employment opportunities, public transit options, and schools.

This plan includes recommendations to expand and enhance the existing bicycle and pedestrian network to create an updated city-wide network of facilities for all ages and abilities. Improving the existing bicycle and pedestrian network in the City of Manitowoc will improve public health, increase economic development opportunities, reduce environmental impacts, and improve the overall quality of life for residents.

With bicycle and pedestrian travel becoming more common modes of transportation for everyday activities, communities at the local, state, and national level are increasingly implementing improvements to accommodate bicycle and pedestrian transportation. Existing planning documents, as well as feedback from community leaders, bicycle advocates, school districts, healthcare professionals, and others show evidence of broad support for bicycle and pedestrian improvements within the city.

By implementing the policy, program, and network recommendations outlined in this document, this plan will function as a tool to guide the City of Manitowoc in their efforts towards becoming a more bicycle- and pedestrian-friendly community.



## Plan Development and Outreach

The Bay-Lake Regional Planning Commission (BLRPC) assisted the City of Manitowoc with the development of the City of Manitowoc Bicycle and Pedestrian Master Plan. The plan incorporates community goals and priorities driven by public involvement and feedback from all parts of the community to establish short and long-range transportation recommendations.

To assist with the development of the plan and provide feedback on milestones and draft chapters, an advisory committee was formed, comprised of members of the public with an interest in bicycling or walking, including local law enforcement staff, downtown business owners, local school staff, city staff, county staff, and others. A list of advisory committee members can be found in the acknowledgments. Additional information about the committee can be found in Chapter 3: Public Outreach.

Development of this plan included a variety of innovative outreach methods to ensure the public had ample opportunity to participate in the planning process and provide feedback. Outreach methods included online and in-person platforms to help build community support and maximize opportunities for participation. The information gathered from residents informed the recommendations for network improvements and recommendations for programs to encourage alternative modes of transportation among citizens and educate them on how to do so safely. Additional details about the outreach methods used and their results can be found in Chapter 3: Public Outreach.

## Benefits

The creation and improvement of facilities that are safe and convenient for pedestrians and bicyclists has important health and economic benefits. Communities throughout the country are embracing bicycling and walking as a viable transportation mode and in doing so are experiencing social, economic, and environmental benefits. Some of the major benefits are described on the next page.



## **Economic**

The recommended bicycle and pedestrian network is dependent on future funding. Once implemented, it will provide economic benefits to residents, users, business owners, and the city as a whole.

A plan with a detailed implementation element, such as this one, increases the city's eligibility when looking to secure federal or state grant funding for bicycle and pedestrian related improvement projects. Without an approved bicycle and pedestrian plan, many funding agencies will overlook applications and funding requests. The implementation of the bicycle and pedestrian network recommended is dependent on the city's ability to successfully apply for and receive funding.

One of the largest economic benefits that can be seen in just about every bicycle friendly community is the resulting increase of tourism and direct consumer spending. According to an economic impact study completed by the Outdoor Industry Association (OIA) in 2017, consumer spending on bicycling contributed \$1.4 billion to our state and provided more than 13,000 jobs. Creating a network that connects destinations of interest, such as downtown Manitowoc, city parks, and the ferry, can attract bicyclists and visitors to the city, resulting in a positive impact on the city's economy. Increased spending on food and drink, lodging, event fees, and more will benefit business owners, increase tax revenues, and support jobs. Additionally, research shows that proximity to bike paths tends to increase property values. By attracting bicyclists from around the state, the city will see a massive generator of positive economic activity through increased tourism. In addition, numerous studies show that amenities that attract bicyclists, like bike racks, can increase foot traffic and monthly spending in stores.

Economic benefits of bicycling and walking extend to those living within the city. For residents, walking and bicycling is a low-cost alternative to driving and can reduce or eliminate the costs associated with operating a vehicle. The costs to own, operate, and maintain an automobile are increasing and when traveling short distances, driving is more costly than walking or bicycling. Residents without access to a vehicle will benefit from improving the current network by giving

them increased access to stores and services. These people will have access to commercial areas including downtown, where they are able to shop, dine, recreate, and explore.

## **Public Health**

Research shows that walking and bicycling can have positive health benefits to individuals and entire communities. According to the Center for Disease Control (CDC), 32% of Wisconsin adults in 2017 were obese. In 2016, 71% of adults in Manitowoc County were classified as being overweight while 42% of adults were classified as being obese. Obesity rates can be reduced by engaging in at least 60 minutes of physical activity five days a week. In 2016, 51% of adults and 69% of children in Manitowoc County reported engaging in physical activity for 60 minutes at least five days out of the week. By encouraging residents to walk or bike instead of drive, physical activity levels will increase, which can reduce the risk of developing personal health problems such as heart disease, high blood pressure, diabetes, and cancer. Studies are increasingly showing that physical activity and increased time outdoors is linked to a reduction in anxiety, depression, and other mental health issues.

## **Environment**

Environmental benefits of bicycling and walking as modes of transportation include improved air quality and reduced greenhouse gas emissions. Commuting via bicycling and walking is also beneficial because automobile exhaust contributes to ozone and particle pollution, posing health risks.

Over the last 60 years, sprawling land use patterns have been the primary method of development in the United States, resulting in automobile dependency. Replacing motor vehicle trips with bicycle or pedestrian trips can accumulate to make meaningful contributions to solving environmental issues like air pollution and climate change.

## **Quality of Life**

By connecting areas of interest, the public will see increased opportunities for recreation and social interaction. Walking and bicycling both encourage people to spend more time outdoors and more time in their neighborhood. By spending more time in their

community, residents often get to know their neighbors better. When people are more active in their neighborhood, they can begin to feel more of a sense of place in their community. This improved sense of place and increased social interaction can improve the overall quality of life for residents.

## Consistency With Existing Plans

This plan is consistent with several planning documents and studies at the federal, state, regional, or local level. The recommendations from these documents have been considered during the planning process, specifically when identifying the recommended network. Below is a collection of local and regional documents that contributed to this planning process.

### **City of Manitowoc Downtown Master Plan**

The plan identifies six incremental enhancements to the existing multimodal transportation network to improve mobility. Many of the recommended improvements focus on enhancing the safety and comfort of the multimodal network to expand transportation options for residents and visitors of all ages and abilities. The incremental strategies of this plan include the following:

- Pursue 9th St Bike Boulevard
- Improve Maritime Drive/10th St Intersection
- Improve Maritime Drive/5th St Intersection
- Enhance Pedestrian Crossings
- Improve Accessibility Throughout Downtown
- Improve the Bus System in Downtown

While the bus improvement strategy may seem unrelated, bicycle and pedestrian facilities and bus systems are closely related and benefits of one can cause benefits to the other.

### **City of Manitowoc Comprehensive Parks and Recreation Plan**

This plan provides an overall picture of park and open space needs for the City of Manitowoc. This plan includes recommended actions for future trail connections to implement from 2017 - 2022 and identifies gaps and opportunities for increased connection. Some of the proposed actions include: development of this plan, new trail development along the lakeshore, various parks, additional bike lane improvements along city streets, upgrades to Mariners Trail, purchases of bike storage, and improvements to sidewalks.

## Existing Plans, Policies And Programs

### **Federal**

- [Guide for the Development of Bicycle Facilities](#) by the American Association of State Highway and Transportation Officials (AASHTO)
- The [Manual on Uniform Traffic Control Devices \(MUTCD\)](#) by the US Department of Transportation (USDOT) Federal Highway Administration (FHWA)

### **State**

- [Wisconsin Bicycle Transportation Plan 2020](#)
- [Wisconsin Pedestrian Policy Plan 2020](#)
- [Wisconsin Bicycle Planning Guidance: Guidelines for MPOs and Communities in Planning Bicycle Facilities](#)
- The [Wisconsin Bicycle Facility Design Handbook](#)

### **Regional**

- [Connect: Regional Bike and Pedestrian Plan for Northeast Wisconsin](#)

### **Local**

- City of Manitowoc Complete Streets Resolution No. 084 (approved in 2012)
- City of Manitowoc Municipal Code: Section 10.830 Bicycles. This section contains information about bicycle rules established by the city, including rules pertaining to bicycle registration, allowable bicycle usage and locations, bicycle establishments, and more.

### **City of Manitowoc Comprehensive Plan**

This plan, adopted in 2009, makes transportation recommendations to enhance Manitowoc as a walkable, bikeable city. By developing an interconnected sidewalk and trail network that carefully considers the needs of the users in road design and requires design of new development. The plan recommends the city develop a system that makes connections to major regional trails. The key elements of the proposed system include the following:

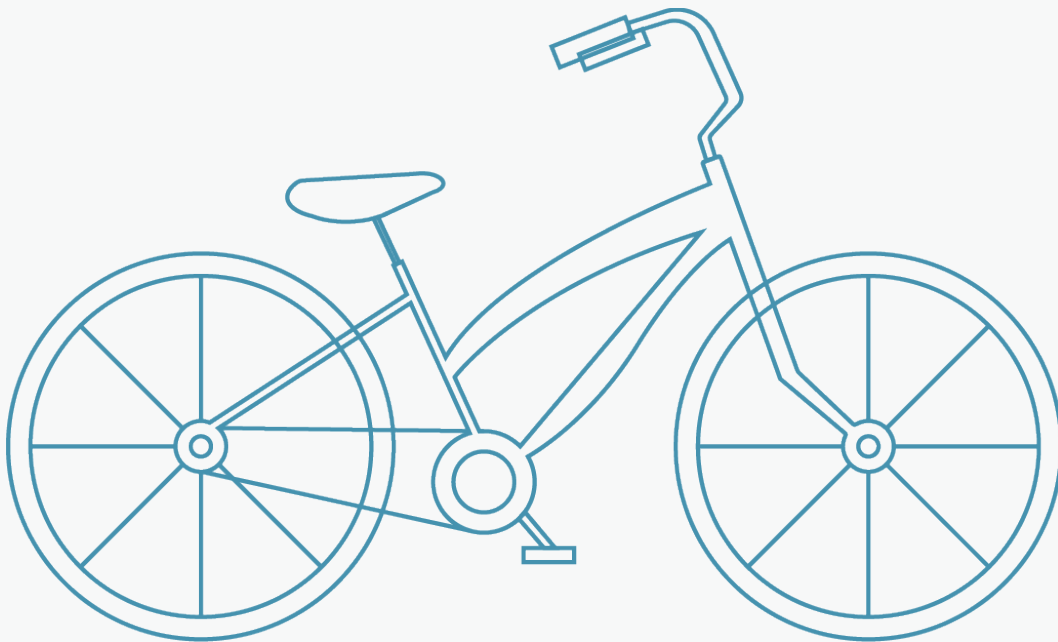
- S. Lakeshore Trail (Silver Creek Park to 8th St Bridge)
- Mariners Trail
- Manitowoc River Trail (Downtown to Henry Schuette Park/Manitou Park)
- Little Manitowoc River Trail (Lincoln Park to N. 18th St)
- Upper Silver Creek Trail (I-Tec Park)

### **Devil's River State Trail Master Plan**

The Devil's River State Trail consists of 14 miles of shared use rail-trail located in both Brown County and Manitowoc County. This section of the trail, known as the north branch, is the only useable segment of the Devil's River State Trail. There are plans to develop the southern branch located in southeastern Manitowoc County.

The Devil's River State Trail Master Plan was developed in 2019 as a guide to Manitowoc County for the development, use, operation, and maintenance of the Devil's River State Trail. The plan includes specific information about the trail itself and identifies recommendations for the maintenance and improvement of the existing trail as well as recommendations for future trail connections and development of the south branch.

The plan recommends the connection of the northern and southern branches through an extension of on—and off-street bicycle infrastructure. A large portion of the recommended extension would be in the City of Manitowoc and aligns with network recommendations made later in Chapter 6: Network Recommendations of this plan.





### **Connect: Regional Bike and Pedestrian Plan for Northeast Wisconsin**

This plan maintains and expands the ongoing progress of bicycle and pedestrian planning that has occurred at all levels of government over the past several years within the Bay-Lake Regional Planning Commission's defined region (Brown, Door, Kewaunee, Florence, Manitowoc, Marinette, Oconto, and Sheboygan counties). It inventories and evaluates existing facilities and identifies strategies to increase the use of walking and bicycling as viable transportation options in the eight northeast Wisconsin counties.





# Chapter 2: Existing Conditions

## Demographics

**Population: 32,798**

**Under 18: 6,890**

**65 and older: 6,759**

**Median Household Income: \$45,485**

**Employment Rate: 59%**

**Poverty Rate: 15%**

**Median Age: 43**

**Population with Disability: 14.7%**

**Occupied Housing Units: 14,704**

**Occupied Housing Units with No Vehicle  
Available: 9.6%**

**Occupied Housing Units with 1 Vehicle  
Available: 36%**

Source: U.S. Census Bureau, American Community Survey (ACS) 2014-2018  
5-Year Estimates

## Transportation Overview

### Commuting Patterns

Commuting to work by bicycle is a great way to get exercise, reduce greenhouse gas emissions, and save money. Unfortunately, safety concerns, weather conditions and existing roadway and traffic conditions are factors that create barriers or challenges for those looking to commute by bicycle in the City of Manitowoc.

Commuting by driving takes significantly less time than by bicycling, especially for those working outside city limits. According to 2018 ACS data, nearly 85% of city residents work within Manitowoc County and 70% of city residents work within city limits. With this high percentage of residents living and working in the same location, it is no surprise that the average commute time is 15.5 minutes, with most residents traveling less than 15 minutes.

Despite the short commute time, 91% of City of Manitowoc residents drive to work, while only 4% walked or biked, and roughly 2% utilized public transportation, taxi, or other means to get work. A commute of 2-5 miles is generally considered within bicycling distance. By enhancing the existing network and creating more connections between housing, and workplaces, residents will gain access to other commuting options.

### Public Transportation

Maritime Metro Transit is the public transportation provider in the cities of Manitowoc and Two Rivers. Maritime Metro operates fixed-route transit services, with six routes throughout the two cities. It offers citizens an inexpensive transportation option to get to work, school, and everywhere in between. Every Maritime Metro Transit bus is equipped with a bike rack, allowing residents to combine transportation options. When combined with transit systems, bicycle and pedestrian infrastructure becomes more effective by expanding opportunities and overcoming physical and perceived barriers that often deter people from pursuing alternate modes of transportation.



## Existing Bicycle And Pedestrian Facilities

### Existing Network Overview






The following inventory of existing bicycle and pedestrian facilities in the City of Manitowoc establishes options for the current and future network. This network includes both on- and off-street bicycle facilities which are most commonly found near downtown Manitowoc. Sidewalks are located throughout the city and can be accessed by pedestrians and, in some cases, bicyclists.

Map 2.1 shows the existing bicycle and pedestrian facilities located within the City of Manitowoc. Map 2.2 displays the city's sidewalk network.

### On-Street Bicycle Facility Types

Different types of on-street bicycle facilities can be incorporated into new construction or retrofitted to existing roadways. Options generally range in levels of separation between bicyclists and motorists. An inventory of commonly used bicycle and pedestrian facilities is included below and on the following pages. Facilities shown in Table 2.1 follow national and state design guidelines and standards.

**Table 2.1. On-Street Bicycle Facility Types**

	Facility Type	Description
	<b>Conventional Bike Lane</b>	Located adjacent to motor vehicle travel lanes and flows in the same direction as motor vehicle traffic
	<b>Buffered Bike Lanes</b>	Contains a designated buffer space separating the bike lane from the adjacent motor vehicle travel lane and/or parking lane
	<b>Sharrow</b>	Street markings that remind drivers that bicyclists and vehicles share the street
	<b>Bicycle Boulevard</b>	Street designated to provide priority to bicyclists and neighborhood motor vehicle traffic.
	<b>Paved Shoulder</b>	Paved section of a street between the travel lanes and the curb that are separated from the travel lanes

Source: Bay-Lake RPC, 2020

## Off-Street Bicycle Facility Types And Infrastructure



Off-street bicycle facilities are separate from the roadway and generally require new construction. Some examples of these facilities are sidepaths and shared-use paths. Shared-use paths are often used by both bicyclists and pedestrians while sidepaths are predominantly used by bicyclists since they are often located adjacent to sidewalks. These facilities are favored by many and can be used by all ages and abilities. Off-street facilities are more expensive to construct when compared to other bicycle accommodations and must be maintained.

There is one conventional bike lane within the City of Manitowoc located on the far-right side of the right lane on N. 11th St. Sharrows were developed downtown in 2017 and 2018. Sharrows on Maritime Drive and Quay St remind drivers that bicycles have every right to operate on the roadway. A signed bicycle route to the Devil's River State Trail can be found on N. 8th St. There are various existing mountain bike trails located within city-owned parks. The Mariners Trail is a shared-use path that connects the City of Manitowoc to the City of Two Rivers along the lakeshore.

Thanks in part to a Knowles-Nelson Stewardship Grant, the city is currently developing a shared-use trail system, called the Bayshore Trail, connecting the Lincoln Park Zoo to Lake Michigan via the site of the former Elks Club property. This system is currently under development and will include a pedestrian bridge over the Little Manitowoc River.



Table 2.2. Off-Street Bicycle Facility Types

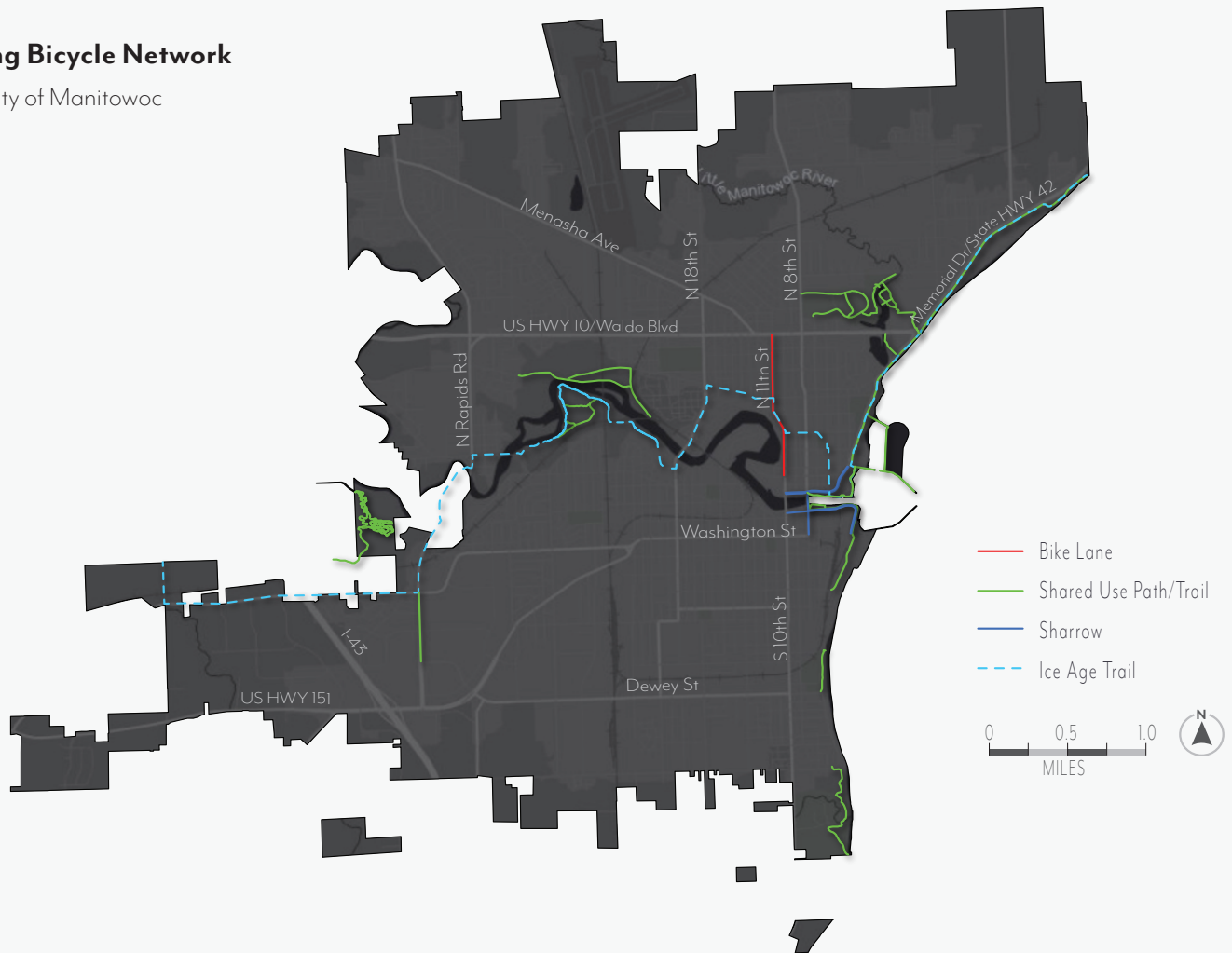
	Facility Type	Description
	Sidepath	A sidepath is an off-street paved path that is located adjacent to a roadway.
	Shared-Use Path	A shared-use path is an off-street facility that is physically separated from motor vehicle traffic

Source: Bay-Lake RPC, 2020

**Map 2.1. Existing Bicycle Network**

## Existing Bicycle Network

City of Manitowoc



## Pedestrian Facilities

### Sidewalks

Sidewalks are the primary pedestrian facility in most cities and provide a dedicated space for pedestrians removed from motor vehicle traffic. A well-designed and maintained sidewalk network can reduce vehicle-induced crashes, as well as encourage more people to walk by increasing their access to places of interest. Sidewalks are commonly installed along urban roadways with a curb and gutter but can also be installed along rural roadways. They should be located strategically to connect centers of activity, including residential and commercial areas, schools, libraries, places of worship, and recreation areas.

Sidewalks should be constructed at a minimum of five feet in width to accommodate two adult pedestrians walking side-by-side. The Americans with Disabilities Act (ADA) requires a minimum width of three feet of unobstructed sidewalk passageway but also stipulates that if a sidewalk is under 5 feet in width, passing spaces, where the sidewalk width would be increased to 5 feet, must be constructed every 200 feet.

Map 2.2 inventories the city's current sidewalk network. As can be seen, the network is fairly comprehensive and priorities should focus on filling in gaps in the network.

### Trails

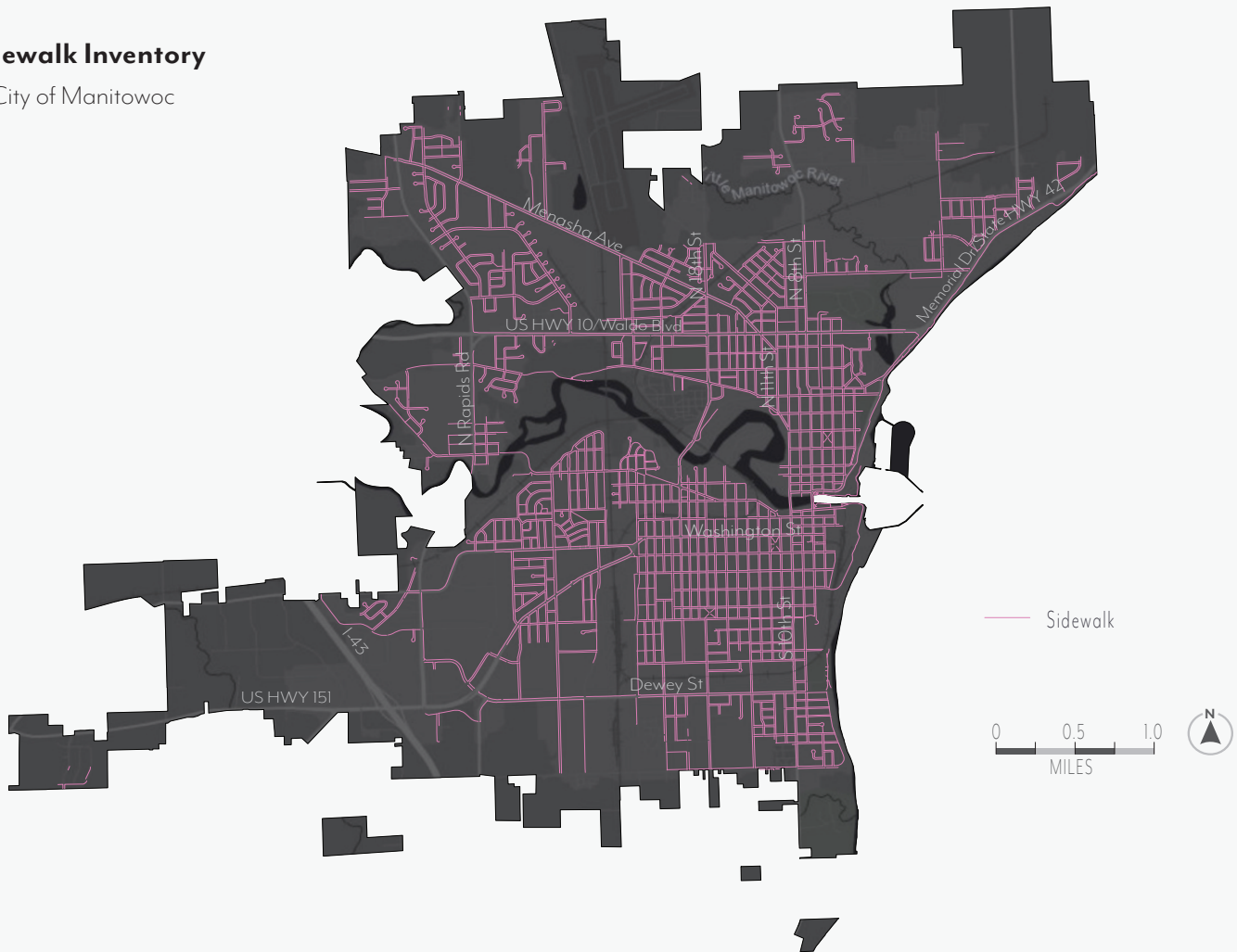
There are various existing mountain bike trails located within city-owned parks. Camp Vits, located on the west side of the city, contains several mountain bike trails. The trails range in levels of maintenance.



## Map 2.2. Sidewalk Inventory

### Sidewalk Inventory

City of Manitowoc



The Mariners Trail connects the City of Manitowoc to the City of Two Rivers along the lakeshore. The trail is a 6-mile shared-use path that allows for both pedestrian and bicycle use. The surface is paved to accommodate all users, including walkers, joggers, bikers, rollerbladers, and skaters. The southern trailhead is at the Manitowoc Marina, while the northern trail terminus is the Lighthouse Inn in Two Rivers. There is no usage fee; the trail is free to all users. The trail can be accessed nearly anywhere along its length, as the trail parallels major roads. Parking is available at both ends of the trail and at numerous waysides.

The Devil's River State Trail is a 14-mile shared-use rail-trail located in both Brown and Manitowoc counties. The trail begins in Denmark, WI in Brown County and travels southeast through small communities and scenic landscape to where it ends in the Town of Kossuth in Manitowoc County. This section of the trail, known as the north branch, is currently the only usable portion of the Devil's River State Trail. The south branch has not been developed yet, but represents a future connection to the south side of the city. This trail presents a great opportunity for north-south regional connectivity in the City of Manitowoc.

The Ice Age National Scenic Trail is a thousand-mile footpath that highlights landscape features as it travels through some of the state's most beautiful natural areas. The trail is entirely within Wisconsin and is one of only eleven National Scenic Trails. The City of Manitowoc contains a 7.3-mile segment of the urban Ice Age Trail. Access and parking can be found at Rapids Rd and Broadway St and at STH 42 at Taylor St. Additional parking can be found in Henry Schuette Park, near the Mariners Trail along Maritime Drive and Memorial Drive, and west of the Lake Gardens. The Ice Age Trail presents a regional connection to the City of Manitowoc pedestrian network.

## Support Facilities

### Crosswalks

The City of Manitowoc contains crosswalks in areas of high traffic and high pedestrian use. Crosswalks identify pedestrian crossings to motorists and direct pedestrians to cross streets at safe locations. Factors such as the number of pedestrians likely to cross the street and area locations (downtowns, neighborhoods, etc.) determine the width and marking of crosswalks. There are various types of crosswalks that can be added or retrofitted to existing roadways.

### Wayfinding

A successful bicycle and pedestrian environment requires a comprehensive network of wayfinding elements to create a quality navigation system. Wayfinding is signage and other measures that allow residents and visitors to navigate their way through a city. Signage can be found within the city near the Mariners Trail in addition to a signed route leading to the Devil's Rivers State Trail. Bicycle wayfinding measures in the City of Manitowoc include signage and pavement markings that guide bicyclists to their destinations along the bicycle infrastructure in place.

Pedestrian wayfinding signs are usually one of two types: directional or maps. Directional signs are usually simple signs with an arrow indicating direction, a destination name, and sometimes distance to the destination. Maps usually show the pedestrian their location, and the surrounding streets and destinations. The nature of being a pedestrian in contrast to a motorist or bicyclist, means that the pedestrian can approach the sign more closely, and take as much time as they want to read it. Therefore, pedestrian signs can contain more detail than a sign for motorists or bicyclists. Pedestrian signs and maps may serve as educational opportunities to inform residents and visitors about the history of a place as has been done in many cities across the country and worldwide.

### Bicycle Parking

A facility type necessary for bicyclists is bicycle parking. Bicycle parking locations, (namely bicycle racks), provide a secure location for patrons to leave their bicycles while conducting other activities. Their placement can also highlight specific areas of town that communities want to encourage bicyclists to visit. Bicycle racks can have designs ranging from standard rows to artistic creations. Many urban areas are embracing specialty racks that function as street art. These racks not only provide beautification to the neighborhood but are functional by creating bicycle parking along busy or congested automobile corridors. Bicycle racks are primarily found on school grounds, in urban centers, and at transit stations.



# Chapter 3: Public Outreach

## Bicycle And Pedestrian Advisory Committee

The Bicycle and Pedestrian Advisory Committee (BPAC) was established to oversee the development of the plan and provide feedback during project milestones. The BPAC was comprised of members of the public with an interest in bicycling or walking, including local law enforcement staff, downtown business owners, local school staff, city and county staff, and others. The BPAC met five times throughout the development of the plan. A list of BPAC members and affiliated organizations is in the acknowledgments.

## Public Participation

The planning process included many opportunities for city residents to share their experiences and knowledge of bicycling and walking in the city. During early stages of plan development, public input provided necessary information on connectivity gaps, barriers, challenges, opportunities, and needs of existing bicycle and pedestrian infrastructure. During later stages of plan development, public input helped determine preference on facility type and identify priority network segments for improvement.

Members of the public were made aware of upcoming public outreach events through the project website, email, newspaper, and social media. Table 3.1 shows the dates of the events and opportunities that were offered to the public.

Table 3.1: Summary Table of Public Engagement

Event	Date
Public Workshop	3/10/2020
Survey and Interactive Map 1	3/10/2020-4/30/2020
Survey and Interactive Map 2	7/15/2020-8/15/2020
Survey and Interactive Map 3	8/28/2020-9/28/2020
Public Open House	6/12/2021

Source: Bay-Lake RPC, 2020

## Public Workshop

The public had their first opportunity to participate in the planning process and learn more about the project during a public workshop held at the Senior Center on Tuesday, March 10th at 5:30 PM. About 40 people attended the public workshop.





Before introducing the project, attendees were asked to visit interactive stations set up around the room. The stations were designed to engage participants while gathering input on infrastructure preferences and existing conditions. Attendees had the opportunity to take an online survey and place points and lines on an interactive map released earlier that day.

The workshop continued with a presentation about the project. The presentation described the purpose of the plan, the planning process, public participation opportunities, and the anticipated final product. Following the presentation, the audience broke out into groups to discuss infrastructure, program and policy needs, and improvement strategies for those needs. The workshop concluded with time for attendees to voice concerns about the plan and ask questions. Comment/question cards were placed near the sign-in area for those who did not want to publicly ask questions or voice concerns. The rest of this chapter will highlight the results of these public engagement efforts.

### Activity 1: Facility Photo Activity

Attendees were given 5 green and 5 red dots to vote for pictures of facilities that they would or would not like to see in the City of Manitowoc. Photos included bicycle and pedestrian facilities and support facilities differing in type and design. Table 3.2 shows the number of votes for each facility pictured.

The most popular facility was shared-use paths, with buffered bike lanes and side paths garnering moderate favor from the participants. Buffered bike lanes and wide shoulders were the least favorite facility types, with sharrows also showing moderate opposition.

### Activity 2: Favorite/Least Favorite Street

Attendees recorded their favorite and least favorite street and/or street segments for walking or bicycling in the City of Manitowoc and why that street or segment was their favorite or least favorite.

Participants identified Memorial Dr as their favorite street to walk/bike in the city. Participants noted feeling safe and enjoying the view of Lake Michigan on this street. The three least favorite streets for walking and bicycling were 8th St, 10th St, and Calumet Ave. Traffic and safety concerns were the top reasons why these, and other concerning streets, were not favored.

### Activity 3: What Type of Rider are You?

Participants were asked to view the poster titled “Which type of rider are you?” and rank their level of comfort for each scenario. Results of this station were used to determine the type of users in the City of Manitowoc and their preference for facilities. Table 3.3 displays the level of comfort ranked by participants for each scenario. Scenarios A-G are pictured and described in Figure 3.1.

**Table 3.2. Support for Various Infrastructure Types**

What would you like to see in the City of Manitowoc?		
Photo	No	Yes
Conventional Bike Lane	3	7
Buffered Bike Lane	13	8
Bike Lane with Right Turn Pocket	4	1
Sharrow	9	2
Shared-Use Path	3	26
Side Path	3	8
Wide Shoulder	12	0
Bump Out	0	2
Flashing Pedestrian Crosswalk	0	4
Bike Share	6	0
Bike Racks - Standard	0	2
Bike Racks - Abstract	5	1
Bike Repair Station	0	7
Covered Bike Rack	2	1


Source: Bay-Lake RPC, 2020

**Figure 3.1. Images of Different Infrastructure Scenarios**

**What type of rider are you?**


Please view the following scenarios and rank your level of comfort on the provided handout.

**A**



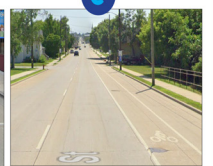
A path or trail separate from the street  
Example: Mariners Trail

**B**



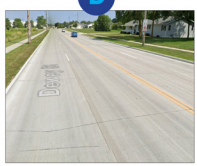
A two-lane street with traffic speeds of 25-30 MPH, on-street car parking, and no bike lane  
Example: Downtown N. 8th

**C**




A two-lane street with traffic speeds of 25-30 MPH, on-street car parking, and a bike lane  
Example: N. 10th Street

**D**



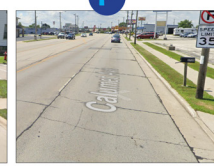
A four-lane street with traffic speeds of 30-35 MPH, on-street car parking, and no bike lane  
Example: Dewey Street

**E**




A four-lane street with traffic speeds of 30-35 MPH, on-street car parking, and a bike lane

**F**



A major four-lane street with traffic in each direction, a center divider, traffic speeds of 35-40 MPH, and no bike lane  
Example: Calumet Avenue

**G**



A major four-lane street with traffic in each direction, a center divider, traffic speeds of 35-40 MPH, and a bike lane

Participants felt most comfortable riding their bicycle on side-paths. Riders felt somewhat comfortable riding on a street with two lanes, low traffic speed, and a designated bike lane. This comfort level decreased for scenarios with four lanes and slightly higher traffic speeds. When compared to scenarios with a designated bike lane, scenarios without bike lanes were ranked as “very uncomfortable”. Participants felt very uncomfortable on four-lane streets with high speeds of traffic and without bike lanes.

**Table 3.3. Comfort Level by Infrastructure Type**

Scenario/ Picture	What Type of Rider Are You?			
	Very Uncomfortable	Somewhat Uncomfortable	Somewhat Comfortable	Comfortable and Fearless
A	1	1	2	9
B	6	4	2	1
C	0	1	9	3
D	8	2	2	1
E	1	5	6	1
F	10	1	1	1
G	2	6	4	1

Source: Bay-Lake RPC, 2020

### Group Discussion

Attendees were asked to break into small groups to discuss infrastructure, program and policy needs, and improvement strategies. Each group was provided with a worksheet containing different questions and once complete, the groups shared their answers out loud. The results of the group discussions are summarized below. Complete results are located in the Appendix.

Key destinations for walking and bicycling in the city include: the library, parks, museums, stores, downtown Manitowoc, and schools. A list of specific points of interest and a map of these destinations with the recommended network can be found in the Appendix. Major gaps and barriers to the existing bike and pedestrian network were identified as: Calumet Ave, 8th St, and a lack of connection to the Mariners Trail. Strategies to improve the physical conditions for walking in the city include maintaining sidewalks and adding flashing crosswalks. Some identified strategies to improve the physical conditions for bicycling in the city include building wider trails, maintaining streets, increasing education, and lowering traffic speeds.

Participants described a need for additional and improved bicycle and pedestrian education in the city. Strategies to improve education and enforcement in the city included adding more signage and providing education to the public, including children, seniors, and drivers.

All groups were asked to describe what changes could be made to encourage additional walking and bicycling in the city. It was identified by nearly every group that more bike trails and connections would encourage participants to walk or bike more in the City of Manitowoc. Improved pavement and lower traffic speeds were also identified.

### Survey and Interactive Mapping

A series of online surveys and interactive mapping surveys were released during various stages of the plan's development to solicit input from community members. Surveys were promoted via the project webpage, social media outlets, and email. Surveys were further promoted at advisory committee meetings and public events. All members of the community were encouraged to participate.

#### First Online Survey and Interactive Map - Existing Network Challenges and Opportunities

An interactive online survey was developed to identify existing and desired routes, key destinations, barriers, and challenges within the existing network. The results of the survey and interactive map were used to help develop the draft network. The survey was available on the project website from March 10, 2020 to April 30, 2020.

There were 132 survey participants and 151 interactive map responses. Participants submitted a total of 56 routes that they currently walk or bike within the city. More than 40% of participants identified parks as destinations they would like to walk or bike. Restaurants and commercial destinations were each identified by 22% of respondents. Schools and other destinations identified were each chosen by 7.5% of participants. Top routes that people would like to walk/bike include Waldo Blvd, N 18th St, and Menasha Ave. Top barriers to walking/bicycling were identified as the Downtown area, the intersection of Rapids Rd & Waldo Blvd, Calumet Ave, and N 18th St.

## Second Online Survey and Interactive Map - Facility Preferences

A second survey was developed to determine public preference of the various types of bicycle facilities. Participants were asked to answer general questions about their current bicycle usage and future usage (should improvements be made). The survey laid out seven scenarios with different types of bicycle infrastructure and asked participants to rank their comfort level, perceived safety level, experience level, and potential usage for each scenario. The survey and interactive map were available on the project website from July 15, 2020 to August 15, 2020.

There were 145 survey participants. The results showed that participants preferred off-street bicycle infrastructure and buffered on-street infrastructure over on-street infrastructure. Participants agreed or strongly agreed that shared-use paths, two-way protected bike lanes, and buffered bike lanes without street parking were safe, comfortable, and something they would try. Sharrows, bike lanes with street parking, and bike lanes without street parking were perceived as unsafe and uncomfortable, and participants stated being unwilling to use this infrastructure should it be implemented. Participants have the most experience using sidepaths or shared-use paths and bike lanes with street parking. Participants have the least amount of experience with two-way protected bike lanes and buffered bike lanes. Educational programs should be implemented to inform users and drivers of the various types of infrastructure prior to implementation to ensure maximum safety.

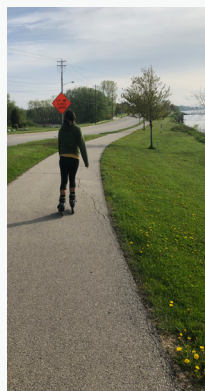
## Third Online Survey and Interactive Map - Project Prioritization

Following the creation of the draft recommended network, an additional interactive mapping survey was developed to replace planned pop-up meetings canceled due to the COVID-19 pandemic. These meetings were supposed to take place at community events located throughout the city to promote the project and solicit input from the public. The purpose of the third survey was to further refine corridor prioritization. The interactive map featured each of the proposed corridor segments and asked participants to rank the top five segments they would like to see developed first. The results were used to help establish the draft network. The survey was open from August 28, 2020 to September 28, 2020.

There were nearly 60 survey participants that ranked their top five priority segments. Results showed that 73% of participants chose the Manitowoc River Trail (proposed project 10) as a top five priority. Roughly 63% of participants selected the Mariners Rail Trail (proposed project 28) as a top five priority followed by the Mariners Trail Extension (proposed project 33), the Mariners Trail Extension to Red Arrow Park (proposed project 1), and Dewey St Corridor (proposed project 16).

## Public Open House

Following the development of the draft plan, the public open house provided an opportunity for the public to review and comment on the draft plan. The open house was held on June 12, 2021 at 9:00 AM at the Manitowoc Farmers Market. This event was promoted at other public outreach events and by email and social media. A summary of the plan recommendations was presented by BLRPC staff to any who approached. Supporting maps highlighting recommended bicycle and pedestrian routes and facilities as well as a copy of the draft plan were available at the table. Activity books for children and business cards featuring bicycle and pedestrian resources and project information were distributed to any interested. Over 70 people, including the mayor, approached the booth and asked questions or made comments about the plan.



# Chapter 4: Needs For Improvement

Staff analyzed the existing bicycle and pedestrian network within the City of Manitowoc to determine where improvements should be made by identifying gaps and barriers in the existing network. Data collected from WisDOT, such as crashes and roadway and traffic conditions, were incorporated into an online mapping application, allowing planners to quickly analyze multiple data sources at once. Information collected from the public and the BPAC through online survey and mapping activities allowed for a better idea of current conditions from those who travel the streets and roadways daily. Both quantitative and qualitative data gathered from community engagement helped address the physical gaps in the network and the policies and programs needed to fully support walking and bicycling in the city.

To determine where improvements are needed the following factors were considered:

- User needs and input
- Traffic volumes and speeds
- Connectivity and gap closures
- Overcoming barriers
- Crash Data
- Directness of routes
- Overall feasibility

## Crash Data

Safety is one of the principles used to develop this plan and is one of the most important factors to consider when implementing a city-wide bicycle and pedestrian network. Pedestrians and bicyclists can suffer from a poorly planned transportation system.

According to WisDOT, across facilities in the state of Wisconsin in 2016, one pedestrian was injured or killed every 7.1 hours, while one bicyclist was injured or killed every 10.2 hours.

To help improve safety, crashes involving bicyclists and pedestrians were inventoried and analyzed for the City of Manitowoc. Crash data for the City of Manitowoc was obtained through the Wisconsin Traffic Operations and Safety Laboratory (TOPS). TOPS maintains information on all police reported crashes in Wisconsin, including the location of each crash, vehicles involved, and general crash attributes.

Between 2014 and 2018, there were 71 total pedestrian and bicycle crashes in the City of Manitowoc. During this time, bicyclists were involved in more crashes than pedestrians. Bicycle crashes involved more serious injuries, including one fatality. Crash data for bicycle and pedestrian related accidents in the City of Manitowoc from 2014-2018 can be found in Table 4.1.

Map 4.1 displays the location and type of crash (fatality, serious injury, and minor injury) in the City of Manitowoc. Crashes were identified in areas of high activity (e.g. downtown) and along roads with higher speeds of traffic, such as S. 10th St. The most crashes occurred on S. 10th St, S. 9th St and S. 8th St.

## User Input

The second survey and interactive map asked the public to identify barriers, connectivity and gap issues, opportunities, routes they currently ride/walk and routes they would like to ride/walk should improvements be made.

### Barriers

Members of the public identified 42 barriers to walking and bicycling. These barriers fell under categories such as heavy traffic, intersection concerns, safety concerns, high vehicle speeds, and conflicts with other travelers. Downtown Manitowoc presents the greatest number of barriers for bicyclists and pedestrians. Heavy traffic was the most noted type of barrier and was most often noted in the downtown area as well as on Calumet Ave.

Planners also used information collected from the public to determine the top destinations the public would like access to via bicycling or walking as well as the barriers stopping them from doing so.





Map 4.1. 2014-2018 Bicycle and Pedestrian Crashes

## 2014 - 2018 Bicycle and Pedestrian Crashes

City of Manitowoc

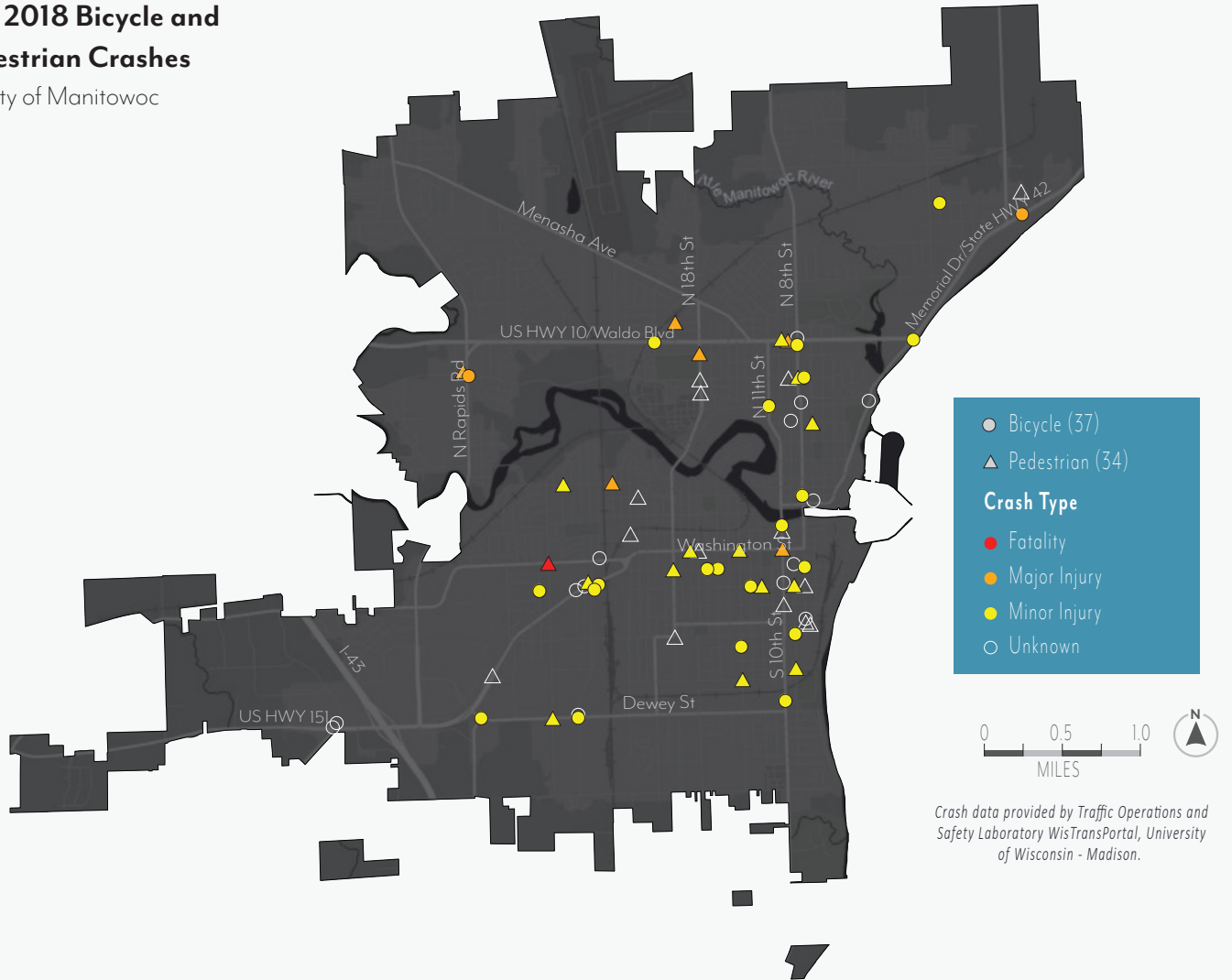


Table 4.1. 2014-2018 Bicycle and Pedestrian Crash Data

Type of Crash	Number	Fatalities	# Crashes with Suspected Major Injuries	# Crashes with Suspected Minor Injuries	# Crashes with Possible Injuries	All Injuries
Bicycle	37	0	2	21	10	35
Pedestrian	34	1	6	13	12	34
Total	71	1	8	34	22	69

Source: Traffic Operations and Safety Laboratory WisTransPortal, University of Wisconsin — Madison, 2014-2018



## Opportunities

The public identified routes that they regularly travel but are not currently part of the existing network. The results of this activity can be seen in Map 4.2. These routes typically fell on low-speed roadways where bicyclists feel comfortable.

## Connectivity

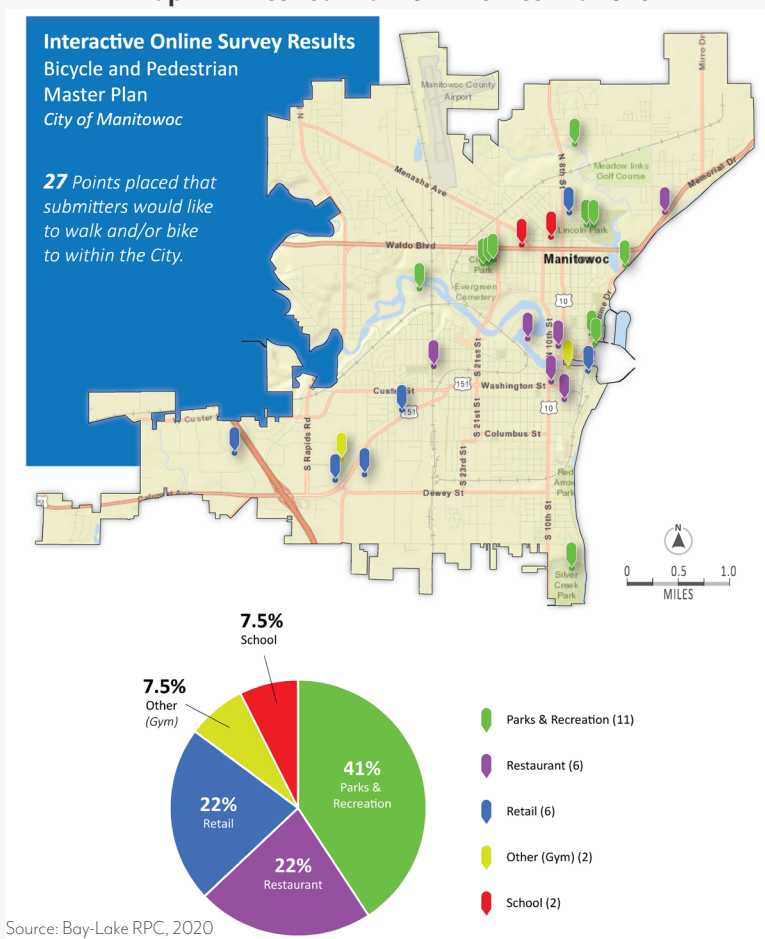
Connectivity is one of the key principles when developing a city-wide bicycle and pedestrian transportation plan. The plan works to connect local areas of interest, including downtown commercial areas, schools, existing parks and facilities, community facilities, places of employment, and more. The public had an opportunity to place points on a map of destinations they would like to walk or bike to throughout the city. These results are shown in Map 4.3.

The plan also works to connect the City of Manitowoc to places of interest located outside of the city and outside of Manitowoc County. Areas of interest outside of the City of Manitowoc include the city of Two Rivers, among others. Areas of interest located regionally may include Sheboygan County, Kewaunee County, trail connections to the Devil's River State Trail, Ice Age Trail, and Ahnapee Trail. At this moment, the existing network connects the city to the City of Two Rivers via the Mariners Trail and the Ice Age Trail. It also connects to Brown County via the Devil's River State Trail.

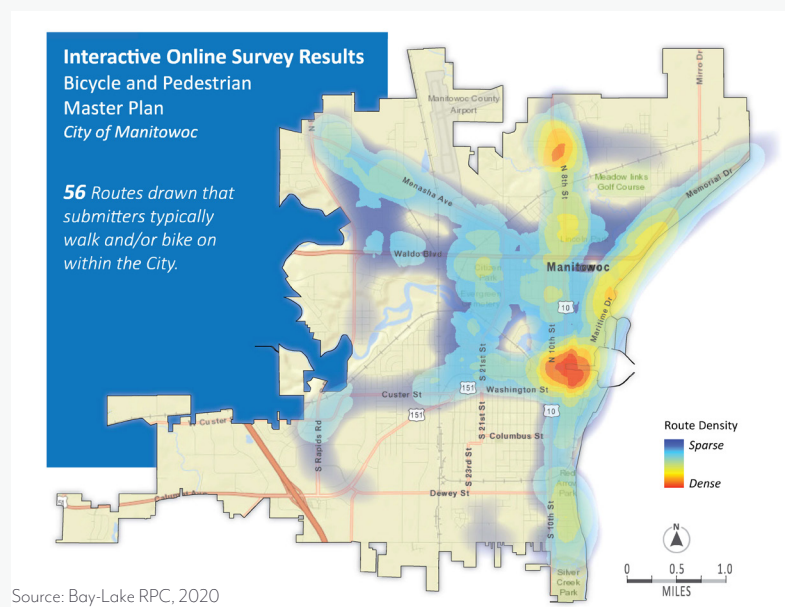
## Traffic And Roadway Conditions

In addition to crash data, planners analyzed various traffic and roadway conditions using information collected from WisDOT and the City of Manitowoc Department of Public Works. Data such as functional classification, traffic counts, traffic speeds, right-of-way width, and more were utilized in an online working map to determine where bikeways could be placed, where safety measures would have to be taken, and the overall feasibility of infrastructure improvements.

**Map 4.2. Desired Walk or Bike Destinations**



**Map 4.3. Regularly Traveled Walk or Bike Routes**



# Chapter 5: Policy Recommendations

## Vision

The vision was established early in the planning process and was inspired by a visioning activity completed by the BPAC. The vision was created to address three important principles: safety, comfort, and connectivity. The Vision for this plan is:

**“Residents, students, commuters, and visitors of all ages and abilities will be connected through an enhanced and expanded network of bicycle and pedestrian infrastructure that is accessible, efficient, and safe for all. On-street bicycle facilities, trails, greenways, and sidewalks will serve transportation and recreation purposes by creating connections to destinations within the City of Manitowoc as well as to other communities adjacent to the city.”**

## Goals

- Seek routes and corridors that will expand connectivity and ultimately create a comprehensive network that is accessible and safe for all modes of active transportation to and from key destinations
- Improve safety and comfort for all users through facility and network improvements, education, and enforcement designed to reduce the number of crashes, improve transportation practices, and eliminate preventable bicycle and pedestrian fatalities
- Increase the number of walkers and bicyclists of all ages and abilities within the city through encouragement, outreach, and education
- Identify strategies and performance measures that will guide the planning, funding, and implementation of future projects

## Objectives

- Develop a realistic bicycle and pedestrian network that can be implemented in the short-term that uses a combination of on-road, and if possible, off-road bike facilities that connects downtown to points of interest in the western part of the city
- Develop a bicycle and pedestrian network that can be completed over a longer period of time that is primarily on designated shared-use facilities that passes through existing and potential city property/easements from downtown to points of interest along the Manitowoc River and in the western part of the city
- Develop a network that can be utilized for recreation as well as daily commuting for bicyclists and pedestrians of all ages and abilities
- Ensure that existing facilities continue to be an asset to the community and provide bicyclists and pedestrians with a unique recreational experience and are properly maintained to stay in quality condition
- Ensure that major improvements and reconstruction projects are anticipated, funded, and implemented in a timely manner
- Encourage users to travel, commute, and recreate via walking and bicycling and enforce laws and policies that support this effort
- Improve connection to and encourage the use of nature-based facilities that offer a level of challenge in a more natural setting, such as mountain bicycling and hiking
- Connect key destinations and eliminate barriers that impact accessibility and connectivity to such areas as identified by the public
- Establish a user-friendly version of this plan that can be accessed by residents, commuters, and tourists to be used remotely while on the go

Table 5.1 highlights policy recommendations broken down into six categories:

- Design and Engineering
- Funding
- Planning
- Enforcement
- Encouragement
- Education

**Table 5.1. Policy Recommendations**

Recommendation	Description/Example	Departments/Organizations Involved
<b>Design and Engineering Policy Recommendations</b>		
Update/Enhance existing Complete Streets policy	This policy will require all new construction and reconstruction/retrofit projects to account for bicycle and pedestrian accommodations. Encourages private development projects to follow a Complete Streets approach.	Planning, Public Infrastructure
Update and adopt facility guidelines	These guidelines should be based off AASHTO Design Guide for the Development of Bicycle Facilities and the Wisconsin Bicycle Facility Handbook.	Public Infrastructure
Maintain facilities	Adopt guidelines to perform routine maintenance of existing and recommended bikeway infrastructure to ensure safety and usage.	Public Infrastructure
<b>Funding Policy Recommendations</b>		
Dedicate funding for the implementation of this plan and other bicycle and pedestrian related improvements at the city level	Wisconsin used less than 2% of their federal transportation funding on bicycling and walking in the last 5 fiscal years. Allocate funding for the next 5 years within the Capital Improvements Plan.	Administration, Planning, Public Infrastructure
Seek federal funding opportunities for bikeway and pedestrian accommodation improvements	Use this plan to identify various federal funding opportunities that can be secured for implementing infrastructure improvements and policy/program recommendations.	Planning, Public Infrastructure
Seek local funding opportunities for bikeway and pedestrian accommodation improvements	Use this plan to identify various state funding opportunities that can be secured for implementing infrastructure improvements and policy/program recommendations.	Planning, Public Infrastructure
Seek local funding opportunities for bikeway and pedestrian accommodation improvements	Use this plan to identify various local funding opportunities that can be secured for implementing infrastructure improvements and policy/program recommendations.	Planning, Public Infrastructure

Recommendation	Description/Example	Departments/Organizations Involved
<b>Planning Policy Recommendations</b>		
Prioritize areas that are in most need of connection	Priority recommendations should be implemented while also realizing opportunities and as they present themselves.	Planning, Public Infrastructure
Update the City of Manitowoc Bicycle and Pedestrian Master Plan	This plan should be revised in 2040, with smaller updates happening every 5 or 10 years until then.	Planning, Public Infrastructure
Update the bicycle map as new routes/segments are constructed	Bicycle and pedestrian recommendations should be incorporated into existing trail maps as they are developed and updated.	Planning, Public Infrastructure
Update plan documents to include elements of this plan	Bicycle and pedestrian recommendations should be incorporated into planning documents as they are developed and updated.	All Departments
Amend zoning and land development ordinances to include definitions for bicycle and pedestrian facilities	Zoning and subdivision and land development ordinances should be amended to include definitions for bicycle and pedestrian facilities and clarify these terms across municipal borders.	Planning
Amend official map and ordinance to identify the bicycle and pedestrian network	The official map and ordinance should be adopted or amended to identify a bicycle/pedestrian network and prioritize the areas that are most in need of connection, as may be identified in a bicycle and/or pedestrian network plan.	Planning
Establish a committee to oversee the implementation of this plan	A committee of people from various city departments should be put together to ensure the recommendations of this plan are implemented in a timely manner.	Administration, Planning, Public Infrastructure
Incorporate bicycle parking into ordinances	Create ordinances that require a certain amount of parking spaces be dedicated to bicycle parking through the installation of bike racks.	Planning, Public Infrastructure
Encourage the installation of bike racks near the entrance to a business	Create ordinances that require or encourage the installation of bike racks near the entrance to a business or use on a public sidewalk where appropriate accommodations can be made. This can be accomplished through off-street parking requirements, streetscape requirements, or incentives.	Planning, Public Infrastructure

Recommendation	Description/Example	Departments/Organizations Involved
<b>Enforcement Policy Recommendations</b>		
Establish wayfinding along recommended routes	Signage would let bicyclists know where to go while also making drivers aware of bicycle usage of the roadway.	Law Enforcement, Public Infrastructure, Planning
Create a bicycle unit within the police department or other public safety entity	Law enforcement or other public safety officers should utilize bikes when patrolling the Mariners Trail and other dedicated bicycle routes.	Law Enforcement, Community Safety
<b>Encouragement Policy Recommendations</b>		
Create a city-sponsored bicycle-sharing program for city residents and visitors to use rented bicycles for short-term transportation	Example: City of Madison Chapter 10 Ordinance 10.33 Bicycle-Sharing Facilities.	Planning, Public Infrastructure
Encourage the celebration of national bike month	Use various sources to encourage community members to commute via bike, such as bike to work days and community rides	All Departments, Schools, Places of Employment
Encourage bike groups to host major community bicycling events or rides	Work with friends groups to attract and host bicycle events	Friends Groups
Encourage walking as a viable means of transportation	Use various sources to encourage community members to commute via bike, such as bike to work days and community rides	All Departments, Schools, Places of Employment
<b>Education Policy Recommendations</b>		
Implement educational programs in schools for educating children and young adults on the rules of the road	Create programs that can used in schools for educating children and young adults for the rules of the road.	Schools, city departments
Produce educational materials for adults who drive within the City of Manitowoc	Materials should be available online, in city buildings, at local DMVs, and more.	All Departments, Law Enforcement
Create training materials for city staff who utilize city vehicles	City staff who drive city vehicles should participate in workshops or training opportunities to learn about bicycle and pedestrian safety.	All Departments
Train law enforcement staff on the rights of all road users	Materials and training should be created that must be utilized by all law enforcement employees.	Law Enforcement

Source: Bay-Lake RPC, 2020

# Chapter 6: Network Recommendations

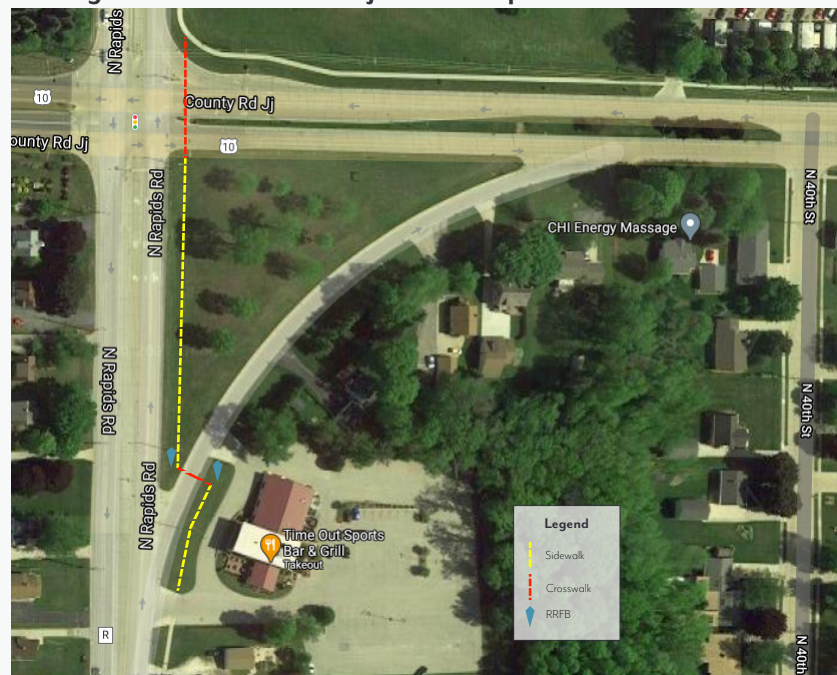
The recommended bicycle network represents a comprehensive series of interconnected bikeway improvements that work to enhance safety, comfort, and connectivity by connecting destinations of interest and closing network gaps. Recommendations are based on existing conditions, existing recommendations in city planning documents, gap analysis results, and input from the city, the BPAC, and the public.

## Pedestrian Improvements

Pedestrian improvements include improvements made to the existing network of sidewalks and trails. Additional recommendations include spot treatments and signage that will be used to increase safety by making vehicles and other users aware of pedestrians and reminding them of the rights that pedestrians have. Because the sidewalk network covers large parts of the area where citizens want to walk, large scale sidewalk projects are less of an immediate need. Preference should go toward filling gaps in the sidewalk network and maintaining the condition of current sidewalks throughout all seasons.

One pedestrian problem area is located at the intersection of N Rapids Rd and Waldo Blvd. Manitowoc Lutheran High School is located in one corner of the intersection, and there is no sidewalk connectivity to the other side of Waldo Blvd, where many houses are located. The intersection features no crosswalks and the other side of the street does not have a sidewalk until N 40th St. This forces children walking from school to dangerously run across the street or walk to Glenview Dr, where there is an unsignaled crosswalk. Figure 6.1 showcases the recommended remedy to this. The city should extend the sidewalk along the east side of N Rapids Rd to the intersection, creating a crosswalk and placing a rectangular rapid flashing beacon (RRFB) to indicate to drivers that pedestrians are crossing the off-ramp from northbound N Rapids Rd onto eastbound Waldo Blvd. A crosswalk should also be created at the intersection to allow safe passage for pedestrians crossing Waldo Blvd.

**Figure 6.1. Pedestrian Project at N Rapids Rd and Waldo Blvd**



## Recommended Bicycle Network

The recommended network contains a total of 49.79 miles of proposed improvements that will work to better connect the city and create a safe and comfortable network for all. The network was divided into three components: Priority, Medium-Term, and Long-Term. All bicycle infrastructure recommendations are identified as on- or off-street projects. Specific facility types are identified in the tables that accompany each set of network recommendations. There are 11.5 miles of recommended off-street bicycle facilities. The network contains 38.19 miles of on-street bikeway connections. Network recommendations are displayed on the following pages.



When determining if projects should be classified as off-road or on-road, planners considered perceived safety, motor vehicle speed, traffic volume, land use, and geographic barriers. In general, the preferred and recommended facility types were bike lanes for on-street projects and shared use paths for off-street projects. Bike lanes separate bicyclists from motorists and allow for feelings of safety and comfort for bicyclists when on the street. Shared use paths allow and provide ample space for both bicyclists and pedestrians. Other facility types, such as buffered bike lanes and bicycle boulevards, are also recommended, but due to their higher costs and larger spatial requirements, should be considered when funding becomes available. Sharrows and similar signage to remind drivers of bicyclists' right to be on the road are recommended, with the caveat that they should be used in partnership with other facilities such as bike lanes. Bicycle boulevards can be implemented on roadways with lower vehicle speeds and volume. Table 6.1 highlights a general rule of thumb based off traffic speeds and vehicle volume used to help partially guide facility recommendations.

**Table 6.1. Facility Recommendations by Roadway Speeds and Vehicle Volume**

Traffic Speeds	Vehicles per Day	Facility Type	Infrastructure Options
20 to 25 mph	2,000	on-street	conventional bike lane, bicycle boulevard
25 to 30 mph	3,000	on-street	conventional bike lane, buffered bike lane
30+ mph	6,000	on/off-street	separated bike lane, share-used path, sidepath

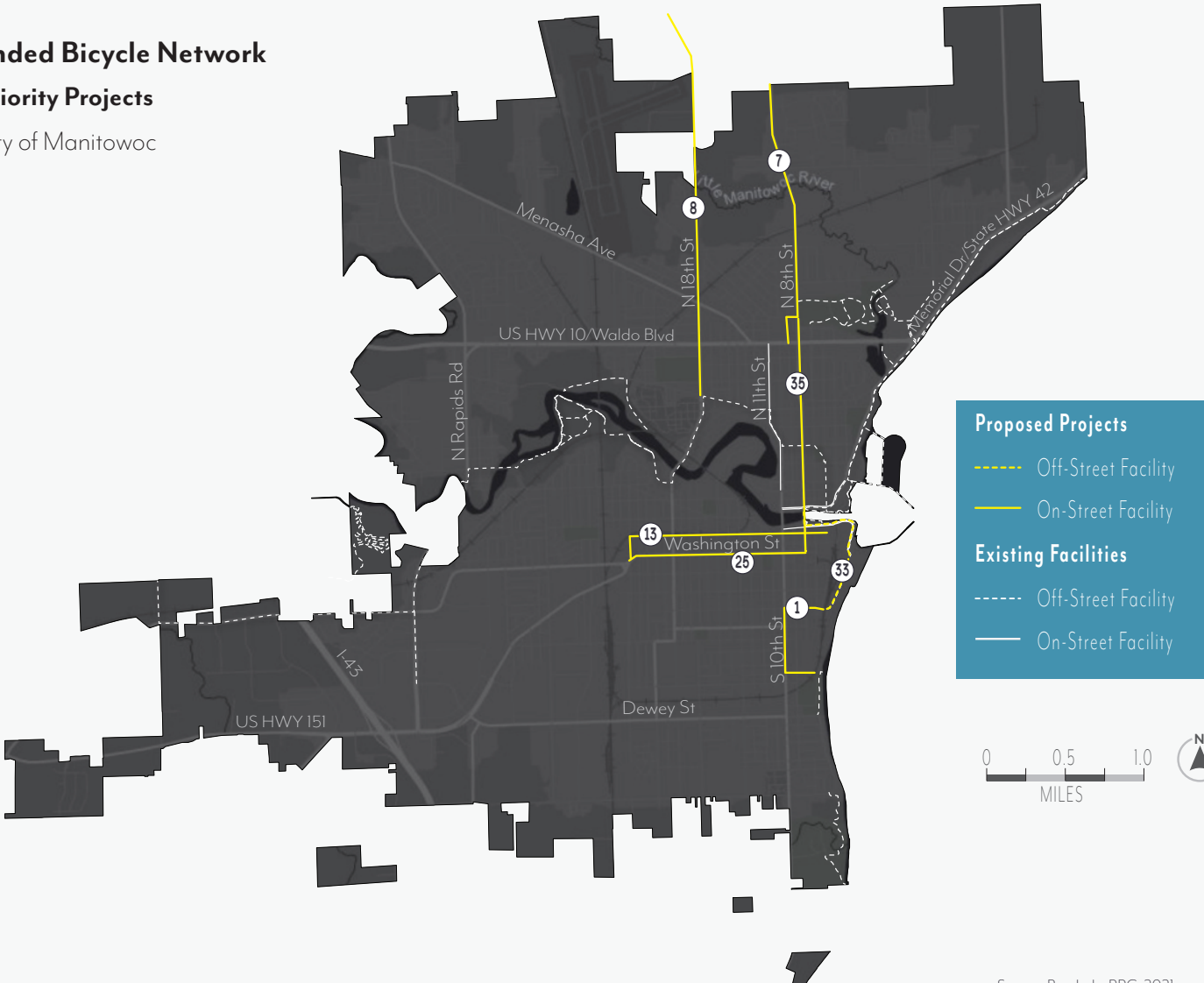
Source: Bay-Lake RPC, 2020

**Map 6.1. Priority Network Recommendations**

### Recommended Bicycle Network

#### Priority Projects

City of Manitowoc



## Priority Network

The priority network, pictured in Map 6.1, includes projects that the city will begin to implement over the next five years. The priority network was created using a process that involved scoring and ranking the recommended network based on weighted criteria and feedback from city staff, the BPAC, and the public. The priority network consists of 10.15 miles of bicycle facility recommendations with 1 mile of off-street recommendations and 9.15 miles of on-street recommendations. The projects in the priority network cover key connections and desires in the city, including projects that would allow for better east-west connectivity, a project reaching residents who live on the north side, and a project improving trail connectivity. These projects are highlighted in Table 6.2, with additional information about the the projects found in Chapter 7: Implementation. More information on the prioritization process can be found in the Appendix.

**Table 6.2 Priority Network Recommendations**

Map #	On Street	From Street	To Street	Facility Type	Facility Mileage
1	S 10th St	Madison St	Green St	Bike Lane	0.85 mi
7	N 8th St	Northern border of city	Waldo Boulevard	Bike Lane	1.74 mi
8	N 18th St	Goodwin Rd	Michigan Ave	Bike Lane	2.47 mi
13	Franklin St/S 26th St	S 6th St	Custer St	Bike Lane	1.40 mi
25	Washington St	Custer St	7th St	Bike Lane	1.18 mi
33	S Lakeview Dr & Quay St (Off-Street)	Maritime Dr	Madison St	Shared Use Path	1.00 mi
35	8th St	School St	Washington St	Bike Lane	1.51 mi

Source: Bay-Lake RPC, 2021

## Medium-Term Network

The medium-term network, shown in Map 6.2, includes projects that the city should consider when investing in bicycle infrastructure improvements in five to ten years. These projects may be implemented in tandem with roadway reconstruction. The medium-term network makes up approximately 14.08 miles of the overall network, with 0.34 miles of off-street recommendations and 13.74 miles of on-street recommendations. These projects continue work started by priority network projects to create a well connected network throughout the city. Projects include further east-west connections, and connect residential areas to shopping, dining, and recreation opportunities. Table 6.3 provides information about the recommended projects in the medium-term network.

**Table 6.3. Medium-Term Network Recommendations**

Map #	On Street	From Street	To Street	Facility Type	Facility Mileage
2	Lakeside Blvd	Dewey St	Viebahn St	Bike Lane	0.55 mi
3	Reed Ave	N 8th St	Memorial Dr	Bike Lane	1.04 mi
4	S 10th St	Quay St	Madison St	Bike Lane	0.53 mi
5	N 9th St	Waldo Blvd	Maritime Dr	Bike Lane	1.08 mi
6	Huron St	Michigan Ave	Maritime Dr	Bike Lane	0.76 mi
11	Bay Point Trail (Off-Street)	Little Manitowoc River	Memorial Dr	Shared Use Path	0.34 mi
12	Custer St	S Rapids Rd	S 26th St	Bike Lane	1.54 mi
15	W Custer St	S Alverno Rd	S Rapids Rd	Bike Lane	1.63 mi
16	Dewey St	S Rapids Rd	Lakeside Blvd	Bike Lane	2.70 mi
17	Western Ave/Clark St/ S Water St	Meadow Ln	Franklin St	Bike Lane	1.00 mi
18	Meadow Ln	Broadway St	Riverview Dr	Bike Lane	0.95 mi
21	Michigan Ave/N 23rd St	Manitowoc River	Huron St	Bike Lane	0.96 mi
29	S 10th St	Green St	Dewey St	Bike Lane	0.27 mi
38	Michigan Ave	River Bluff Dr	Indian Bluff Dr	Bike Lane	0.73 mi

Source: Bay-Lake RPC, 2021

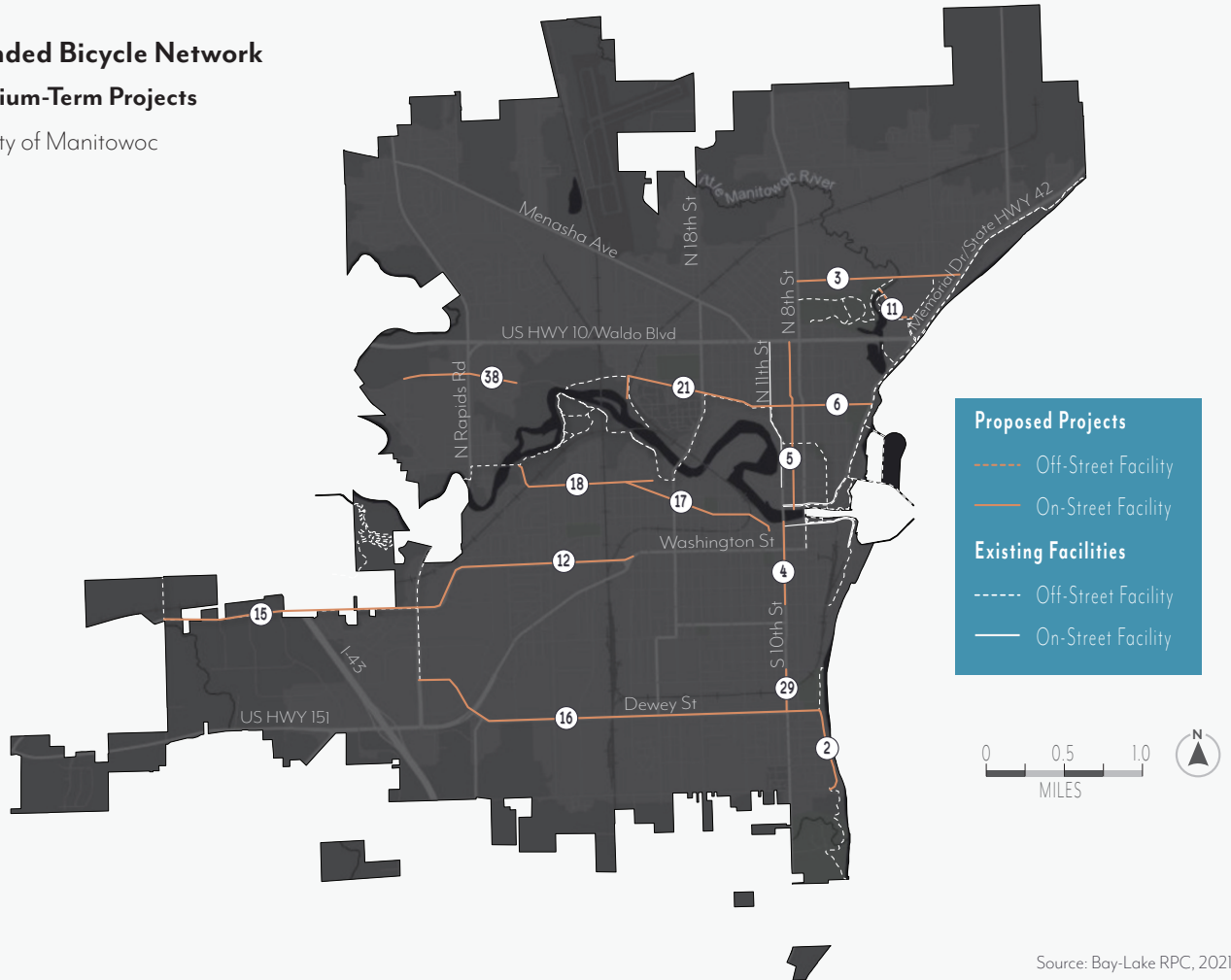


## Map 6.2. Medium-Term Network Recommendations

### Recommended Bicycle Network

#### Medium-Term Projects

City of Manitowoc



## Long-Term Network

The long-term network, shown in Map 6.3, includes projects that are more costly and would be more challenging to get off the ground. The city should consider these projects when investing in bicycle infrastructure improvements in the next 10-20 years. Project recommendations in the long-term network generally include projects that require new construction. These projects should be referenced and implemented when road reconstruction occurs on a road with a recommended project. The long-term project network constitutes approximately 25.56 miles of the overall network, with 11.06 miles of off-street recommendations and 14.50 miles of on-street recommendations. Some of these projects provide bicycle access to major roads in the city while other projects connect make connections to trail networks and parks. Project information can be found in Table 6.4.

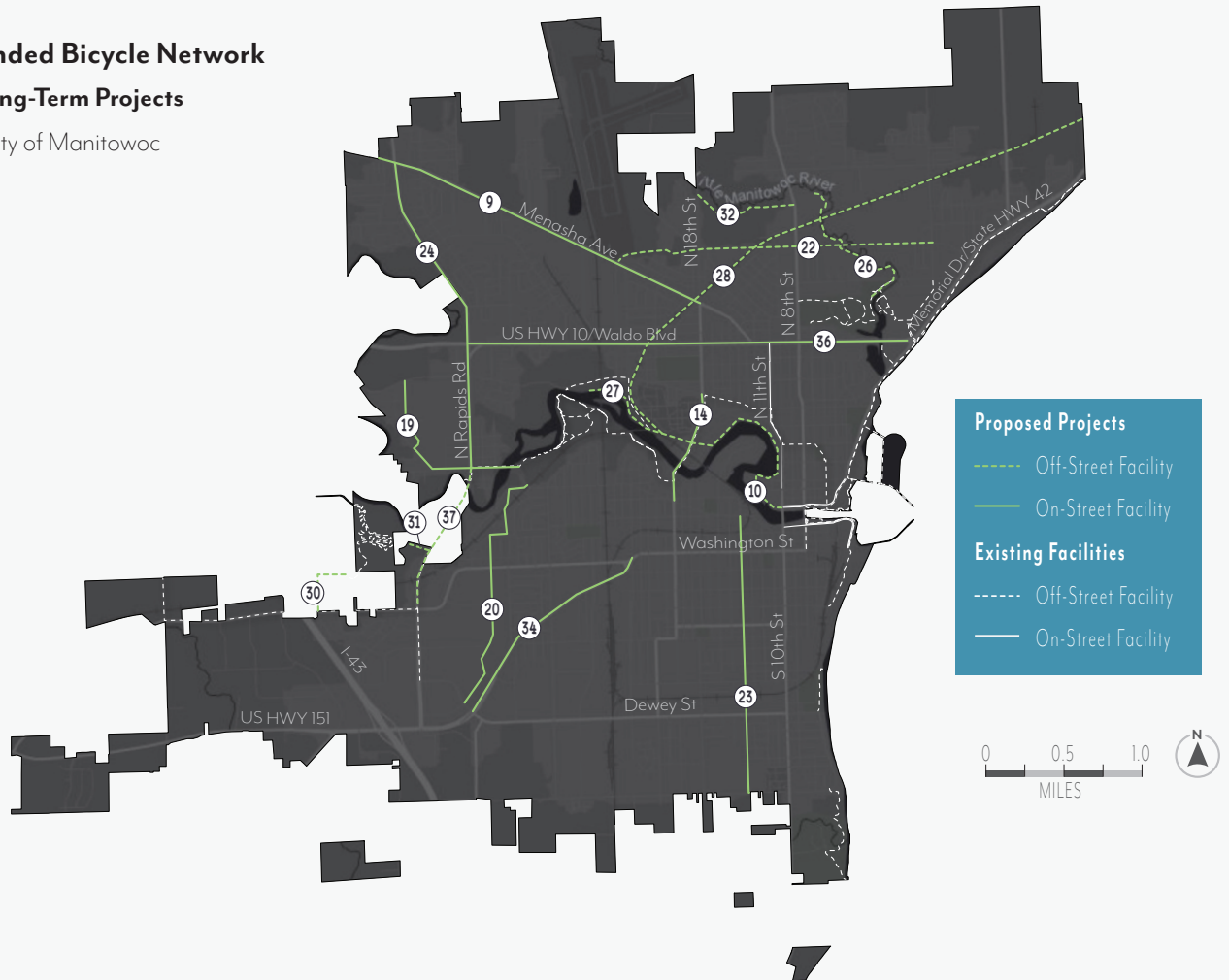
**Table 6.4. Long-Term Network Recommendations**

Map #	On Street	From Street	To Street	Facility Type	Facility Mileage
9	Menasha Ave	N Rapids St	N 18th St	Bike Lane	2.27 mi
10	Manitowoc River Trail (Off Street)	Revere Dr	N 10th St	Shared Use Path	1.36 mi
14	Revere Dr	Michigan Ave	Western Ave	Bike Lane	0.74 mi
19	River Bluff Dr/ Broadway St	Michigan Ave	Meadow Ln	Bike Lane	1.21 mi
20	Meadow Ln/ Woodlawn Dr/41st St/Harbor Town Ln	Meadow Ct	Dewey St	Bike Lane	1.67 mi
22	Magnolia Ave (Off-Street)	Menasha Ave	Johnston Dr	Shared Use Path	2.04 mi
23	S 14th St	Clark St	Viebahn St	Bike Lane	1.78 mi
24	N Rapids Rd	Menasha Ave	Broadway St	Bike Lane	2.10 mi
26	New Off-Street Path	Indian Creek Park	Lincoln Park Conservancy	Shared Use Path	1.19 mi
27	Manitowoc River Trail (Off Street)	Manitou Park	Revere Dr	Shared Use Path	0.80 mi
28	Canadian National Rail (Off-Street)	Northeast border of city	Path 27	Shared Use Path	3.87 mi
30	S Park View Rd	W Custer St	Camp Vits	Bike Lane	0.43 mi
31	New Off-Street Path	S Rapids Rd	Camp Vits	Shared Use Path	0.13 mi
32	Little Manitowoc River	N 18th St	N 8th St	Shared Use Path	0.69 mi
34	Calumet Ave	Dewey St	Custer St	Bike Lane	1.47 mi
36	Waldo Blvd	N Rapids Rd	Maritime Dr	Bike Lane	2.83 mi
37	S Rapids Rd	Custer St	Broadway St	Shared Use Path	0.98 mi

Source: Bay-Lake RPC, 2021

Map 6.3. Long-Term Network Recommendations

**Recommended Bicycle Network**  
**Long-Term Projects**  
 City of Manitowoc



Source: Bay-Lake RPC, 2021

Map 6.4 highlights the recommended bicycle network and includes all recommended projects from the priority, medium-term, and long-term networks.

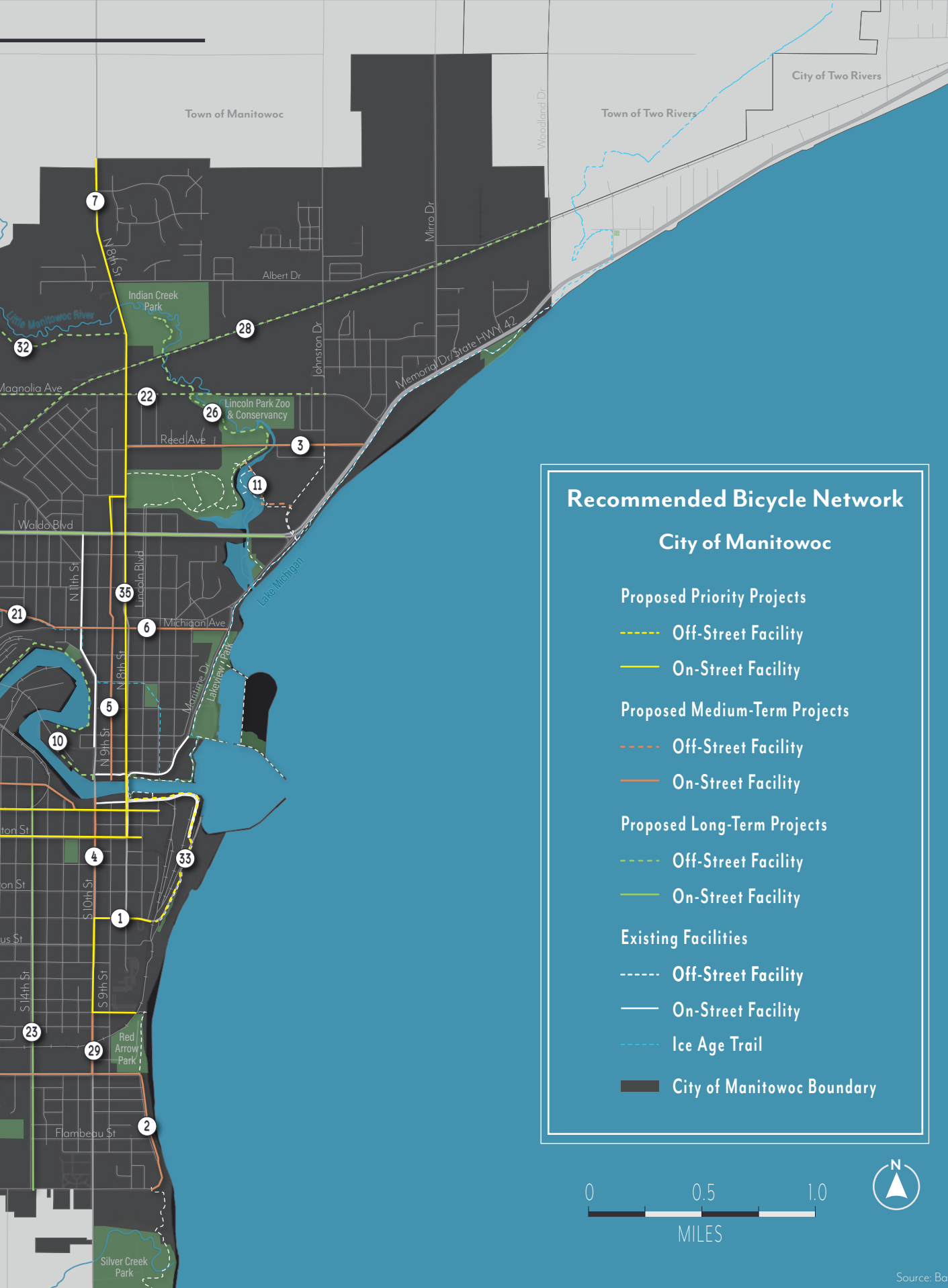




**Map 6.4. Recommended Bicycle Network**

The map displays the Town of Manitowoc Rapids and its surroundings. Key features include:

- Geographic Features:** Manitowoc River, Silver Lake, and various parks (River Heights Park, Fleetwood Park, Citizen Park, Henry Schuette Park, Riverview Drive Park, Halvorsen Park, Dewey Street Park).
- Infrastructure:** Major roads (US HWY 10, US HWY 151, S Alverno Rd, S Parkview Rd, S Rapids Rd, S 41st St, S 30th St, S 23rd St, S 21st St, S 18th St, S 15th St, S 12th St, S 9th St, S 6th St, S 3rd St, S 1st St, S Main St, S Commercial St, S Broadway St, S Michigan Ave, S Custer St, S Columbus Ave, S Dewey St, S Viebahn St, S Grand Ave, S Hamilton Ave, S Washington Ave, S 18th St, S 15th St, S 12th St, S 9th St, S 6th St, S 3rd St, S 1st St, S Main St, S Commercial St, S Broadway St, S Michigan Ave, S Custer St, S Columbus Ave, S Dewey St, S Viebahn St, S Grand Ave, S Hamilton Ave, S Washington Ave), and the Manitowoc County Airport.
- Bicycle Network:** A network of recommended bicycle routes, color-coded by type: green for local routes, orange for regional routes, and yellow for long-distance routes. The routes are numbered (e.g., 9, 8, 36, 38, 19, 37, 31, 30, 15, 20, 12, 34, 16, 13, 25, 14, 17, 27, 24).
- Town Boundaries:** The map shows the boundaries of the Town of Manitowoc Rapids, the Town of Newton, and Manitowoc County.



# Chapter 7: Implementation

## Priority Project Recommendations

The priority network consists of seven projects that received the highest-ranking score, making them the top priority for the city to consider when investing in bikeway improvements. These projects form a network that will improve safety for bicyclists while providing both regional and local connections to priority areas, such as schools, parks, employment areas, transit hubs, and community facilities. Cost and ease of implementation were included in the ranking system and may vary from project to project. The following is information about each priority project, including the recommended facility type and planning level cost estimates.

### Planning Level Cost Estimate

Planning level cost estimates were developed using the average infrastructure costs contained in a 2013 report by The University of North Carolina Highway Safety Research Center titled Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public (2013). This report, prepared for the FHWA, is frequently used in other bicycle and pedestrian plans and is often used for Wisconsin treatments. This plan contains 2012/2013 infrastructure cost estimates and are assumed to include engineering, design, mobilization, and furnish and installation costs. Actual costs should be evaluated in the planning stage of individual projects and should account for inflation. It should be noted that cost estimates include options that may not be necessary for all projects and actual costs may be lower or higher than the estimated costs used here.

### Priority Network

#### Project #1

Project #1 recommends an on-street bike lane running from the eastern end of Madison St to S 10th St, then going south on S 10th St to Green St, then continuing to the eastern end of Green St. This 0.85 mile facility would allow for safer on-street bicycle travel than taking up the full lane and competing with drivers. When implemented along with Project #33, this project makes a connection between the Mariners Trail and Red Arrow Park. It also provides a safer travel option to Lincoln High School for any staff or students who decide to bike to school and avoid the parking headaches that the school currently experiences.

#### Planning level cost estimates — \$113,195

The planning level cost estimates for this project represent the infrastructure costs associated with a 0.85 mile bike lane. Bike lane symbols were not taken into consideration, but on average cost \$180 each and should be placed at the beginning of a bicycle lane and 100 feet from the end of the lane and at periodic intervals along the bicycle lane based on engineering judgment.

#### Project #7

Project #7 proposes the construction of an on-street facility that would extend from the city's northernmost point of County Road B to Waldo Blvd. This project would create a connection to the Devil's River State Trail as well as local connections to schools and parks.

#### Planning level cost estimates — \$231,716

The planning level cost estimates for this project represent the infrastructure costs associated with a 1.74 mile bike lane. Bike lane symbols were not taken into consideration, but on average cost \$180 each and should be placed at the beginning of a bicycle lane and 100 feet from the end of the lane and at periodic intervals along the bicycle lane based on engineering judgment.

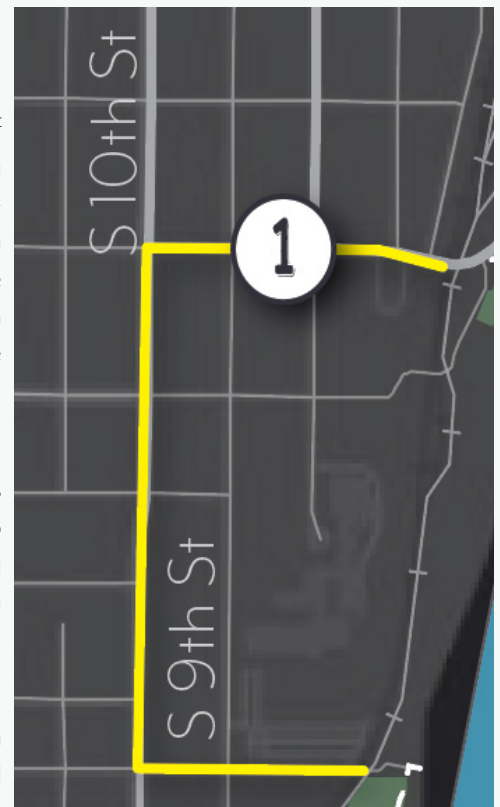
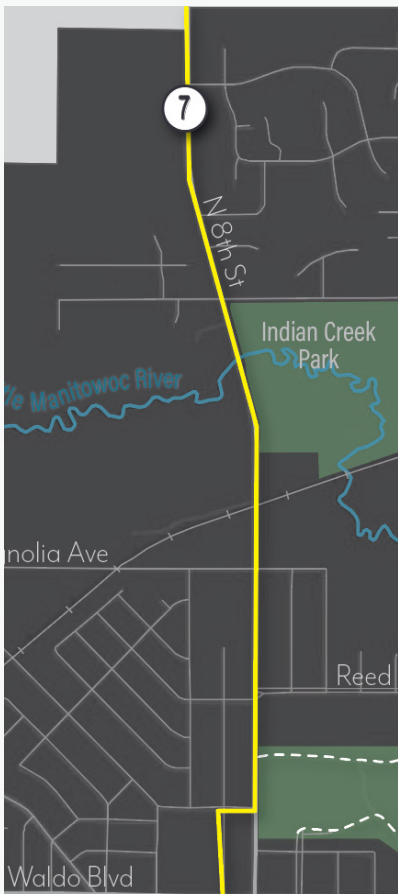


Figure 7.1. Project #1



**Figure 7.2. Project #7**

### Project #8

Project #8 proposes the construction of a bike lane from Goodwin Rd, or the northernmost point of the city on County Road Q, to Michigan Ave. This project creates a north-south connection from the northernmost point in the city to Manitou Park. This project would address safety concerns and connect the northernmost area of the city to schools, parks, and ultimately the downtown area and areas of employment.

### Planning level cost estimate — \$328,930

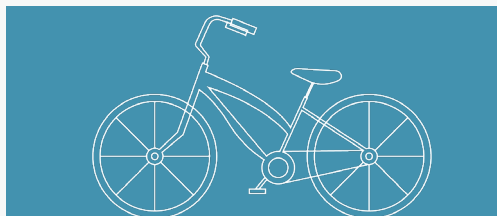
The planning level cost estimates for this project represent the infrastructure costs associated with a 2.47 mile bike lane. Bike lane symbols were not taken into consideration, but on average cost \$180 each and should be placed at the beginning of a bicycle lane and 100 feet from the end of the lane and at periodic intervals along the bicycle lane based on engineering judgment.

### Project #13

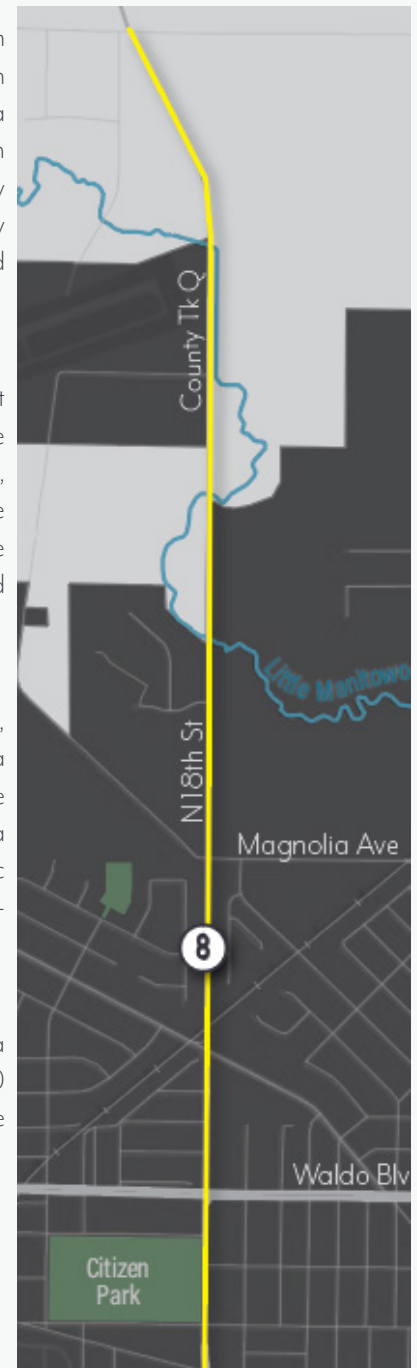
Project #13 runs along Franklin St from S 6th St to S 26th St, then runs on S 26th St to Custer St. This route provides a crucial east-west route in the city. It would also provide safe bicyclist access to downtown Manitowoc, and will start a process of better connecting the western parts of Manitowoc to downtown that will be continued in the medium and long-term networks.

### Planning level cost estimates — \$186,438

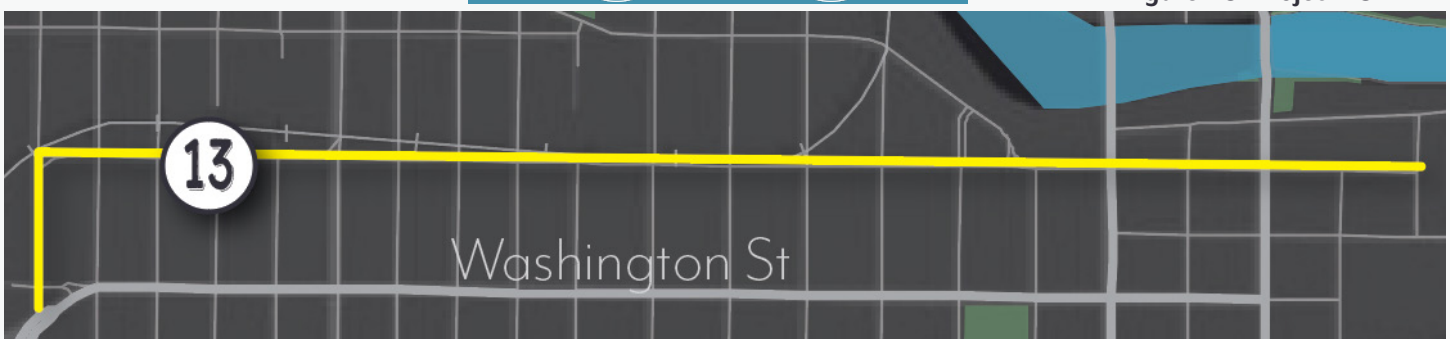
The planning level cost estimates for this project represent the infrastructure costs associated with a 1.40 mile bike lane. Bike lane symbols were not taken into consideration, but on average cost \$180 each and should be placed at the beginning of a bicycle lane and 100 feet from the end of the lane and at periodic intervals along the bicycle lane based on engineering judgment.



**Figure 7.4. Project #13**



**Figure 7.3. Project #8**



**Figure 7.5. Project #25**



### **Project #25**

Project #25 runs along Washington St from Custer St to 7th St. This route provides another crucial east-west route in the city. It would also provide safe bicyclist access to downtown Manitowoc and would provide access to many shops both downtown and along Washington St.

### **Planning level cost estimate — \$157,141**

The planning level cost estimates for this project represent the infrastructure costs associated with a 1.18 mile bike lane. Bike lane symbols were not taken into consideration, but on average cost \$180 each and should be placed at the beginning of a bicycle lane and 100 feet from the end of the lane and at periodic intervals along the bicycle lane based on engineering judgment.

### **Project #33**

Project #33 is located downtown along the lakeshore south of the Manitowoc River. The project involves constructing a shared-use path by widening the existing sidewalk to create a seamless extension of the Mariners Trail for both bicycle and pedestrian use.

### **Planning level cost estimate — \$481,140**

Planning level cost estimates for this project represent the infrastructure costs associated with a 1.00 mile new shared-use path and does not take into consideration the potential to widen the existing sidewalk. Other costs for specific actions related to preparing a site for a separated bikeway or shared use path, including excavation, grading, curb/gutter removal, and clearing and grubbing, were not included.



**Figure 7.6. Project #33**

### **Project #35**

Project #35 runs along 8th St from School St to Washington St. This route provides a crucial link from the northern part of the city to its downtown, where many events are held. The City of Manitowoc is in discussions about switching the flow of traffic on 8th St from one-way to two-way. The switch to two-way would provide an excellent opportunity for this project to be implemented.

### **Planning level cost estimate — \$201,088**

The planning level cost estimates for this project represent the infrastructure costs associated with a 1.51 mile bike lane. Bike lane symbols were not taken into consideration, but on average cost \$180 each and should be placed at the beginning of a bicycle lane and 100 feet from the end of the lane and at periodic intervals along the bicycle lane based on engineering judgment.



**Figure 7.7.  
Project #35**



## Funding Opportunities

Funding for bicycle and pedestrian planning and implementation activities are typically administered through government agencies and non-government sources, such as private not-for-profit groups and advocacy organizations. The City of Manitowoc will need to take advantage of easy wins and actively seek federal, state, and private funding opportunities as they become available. There are several funding sources available to help finance the implementation of the City of Manitowoc recommended bicycle and pedestrian network, including local, state, and federal grant programs. Information on funding agencies and programs can be found below.

### Local Programs

Funds derived from local or regional programs are common to cover costs associated with bicycle and pedestrian projects, especially because most federal or state funds require a local match. Recommended bikeway and pedestrian projects should be incorporated into the city's Capital Improvement Plan (CIP), which is the city's primary project budgeting and implementation document. The city should also take advantage of routine roadway renovation projects to implement bicycle and pedestrian infrastructure as an incidental expense, which would be less costly and more convenient than adding infrastructure at a later date. Other sources of local funding (such as business improvement districts, local bond measures, development impact fees, or tax increment financing) are options for the city to consider in addition to state and federal programs.



### Private and Non-Traditional Programs

The city should consider non-traditional and private funding sources when looking to fund projects that require federal/state match or that may not receive priority when applying for larger federal and state funding. Private funding may be offered through community foundations, memorial funds, Adapt-A-Trail/Path Programs, and more. The West Foundation is a Manitowoc-area community foundation that has provided bike trail funding in the past. Other private/non-traditional funding can be found below.

PeopleForBikes (PFB) Community Grant - The PFB Program supports bicycle infrastructure projects and targeted advocacy initiatives that make it easier and safer for people of all ages and abilities to ride. This program will fund up to \$10,000 for bicycle projects, which can be used as match for federal/state funding.

Trail Grants Program – The Rails to Trails Conservancy (RTC) awards trail grants to communities to support local and regional economic, health, social, environmental and active transportation goals. The RTC also administers the Doppelt Family Trail Development Fund, which grants awards to nonprofits and government agencies to support critical trail development work in communities. These programs generally fund around \$10,000 for bicycle projects, which can be used as match for federal /state funding.

## State Programs

The Wisconsin Department of Transportation (WisDOT) takes an active role in providing financial assistance to local units of government for the creation or improvement of bicycle and pedestrian facilities in Wisconsin. This funding is primarily available through the Transportation Alternatives Program (TAP) and the Congestion Mitigation and Air Quality Improvement Program (CMAQ).

Transportation Alternatives Program (TAP) – The TAP allocates federal funds to transportation improvement projects that expand travel choice, strengthen the local economy, improve the quality of life, and protect the environment. The TAP is a reimbursement program funded 80 percent federally, with a 20 percent local match. TAP funded projects are designed to strengthen the intermodal transportation system and are targeted toward non-motorized, daily utilitarian transportation rather than purely recreational activities. In 2020, twenty-eight Wisconsin community transportation projects received more than \$14 million in funding through TAP. The department solicits applications every other year. Safe Routes to School is a federal program but funds are largely distributed through the state's TAP project.

Congestion Mitigation and Air Quality Improvement Program (CMAQ) – The CMAQ program provides a flexible funding source to State and local governments for transportation programs to help meet the requirements of the Clean Air Act. Funds may be used enhance public transit, bicycle/pedestrian facilities, ridesharing programs and facilities, and technologies that improve traffic flow and vehicle emissions. CMAQ funds are only available in these southeastern and northeastern Wisconsin non-attainment and maintenance counties: Milwaukee, Racine, Kenosha, Waukesha, Washington, Ozaukee, Walworth, Sheboygan, Kewaunee, Manitowoc, and Door. The department solicits applications every other year.

State Infrastructure Bank Program (SIB) – The SIB program is a revolving loan program. Principal and interest payments made by loan recipients are returned to the “bank” so that funds can be made available to new applicants. Communities may apply for loans for transportation infrastructure improvements that help preserve, promote and encourage economic development and/or promote transportation efficiency, safety and mobility. Eligible uses specific to this plan include the construction of parking facilities, bicycle lanes, and pedestrian walkways to better facilitate customer traffic near retail centers and tourist attractions and installation of signal lights, turn lanes, and pedestrian walkways at a highway intersection. SIB loans can be used in conjunction with other federal or state programs, or to finance an entire project.



The Wisconsin Department of Natural Resources (DNR) – offers both state and federal funding for specific recreation-based projects. Trail creation and improvement projects located within parks and along waterways are best suited for these types of funding opportunities. Funding is primarily available through the Stewardship Program, Recreational Trails Program, and Land and Water Conservation Fund.

Recreational Trails Program (RTP) – RTP is a federal program administered in all states in which municipal governments and incorporated organizations are eligible to receive reimbursement for the development and maintenance of recreational trails and trail-related facilities for both motorized and non-motorized recreational trail uses. Eligible projects may be reimbursed for up to 50% of eligible project costs. Funds from this program may be used in conjunction with funds from the Knowles-Nelson Stewardship development projects. RTP funds may only be used on trails that have been identified in local, county, or state trail plan.

Land and Water Conservation Fund (LWCF) – LWCF is a federal program administered to all states and distributed by the DNR that encourages the creation and interpretation of high quality outdoor recreational opportunities. LWCF funds can be used for land or development of nature-based outdoor recreation trails. Grant funds can be used as match for other state funding for the acquisition and development of public parks and other outdoor recreation areas and facilities.

Other state funding that the city should consider when looking to implement recommended projects include, but are not limited to, the Community Development Block Grant – Public Infrastructure and the Wisconsin Economic Development Corporation (WEDC) Wisconsin Main Street and Connect Community Program.

### **Federal Programs**

Federal transportation funding is administered by the United States Department of Transportation (USDOT) through its modal agencies, primarily the Federal Highway Administration (FHWA). FHWA supports State and local governments in the design, construction, and maintenance of the Nation's highway system and various federally and tribal owned lands. Through financial and technical assistance to State and local governments, the FHWA is responsible for ensuring that America's roads and highways continue to be among the safest and most technologically sound in the world.

Safe Routes to School (SRTS) – The federal-aid SRTS program can be used for infrastructure and non-infrastructure projects, and to administer Safe Routes to School programs that benefit elementary and middle school children.



Highway Safety Improvement Program (HSIP) – This program funds projects designed to achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways and walkways. States may use funds under HSIP to carry out any highway safety improvement project on any public road or publicly owned bicycle or pedestrian pathway or trail or as provided under Flexible Funding for States with a Strategic Highway Safety Plan, and other safety projects

Surface Transportation Block Grants Program (STBG) –STBG funds can be used on any federal-aid highway, on bridge projects on any public road, on transit capital projects, on routes for nonmotorized transportation, and on bridge and tunnel inspection and inspection training. States and MPOs obligating these funds are to develop a competitive process for local public entities to submit projects for funding. STBG has two set-asides, including the Transportation Alternatives Set-Aside, also known as the Surface Transportation Program (STP). A portion of the set-aside is directed toward the recreational trails program, from which states may apply to opt out.

National Highway Performance Program (NHPP) – FHWA apportions funds to states for a wide range of activities, including the construction, preservation, rehabilitation or operational improvement of road segments, bridges, ferry systems, bike and pedestrian walkways and transit projects; safety improvements; resiliency and security enhancements; bridge and tunnel inspections; and the installation of vehicle-to-vehicle infrastructure.





## Maintenance Activities

Maintenance recommendations refer to specific tasks and programs performed to assure that resources and facilities are kept in good usable condition. These recommendations are based on findings in other local bicycle and pedestrian plans and state transportation plans. Some of these recommendations may already be part of the city's regular maintenance activities. A summary of maintenance activities and the frequency in which they should be performed can be found in Table 7.1.

**Table 7.1 Maintenance Activity and Frequency**

Maintenance Activity	Frequency
Seasonal Inspections	Early and late summer
Pavement sweeping/blowing	As needed, weekly in fall months
Pavement sealing, potholes	5-15 years
Culvert and drainage grate inspection	Prior to winter months and following major storm events
Pavement markings replacement	1-3 years
Signage replacement	1-3 years
Shoulder plant trimming (weeds, trees, shrubs)	late spring/early summer and early fall
Major damage response (washouts, fallen trees, flooding)	following major storm events

Source: Bay-Lake RPC, 2021



# Appendix: Group Discussion Results

The following is a record of comments and statements made during group discussions at the Public Workshop on March 10, 2020. Comments listed are taken directly from participants at the workshop.

Group Discussion Results	
Walking Infrastructure (2 Groups)	
Key Destinations for Walking in the City	<ul style="list-style-type: none"> <li>Expand Mariners Trail from Library to Silver Creek</li> <li>Library, farmers market, downtown taverns and restaurants, YMCA, elementary schools, Lincoln High School, Lincoln Park and Zoo</li> </ul>
Describe any Gaps and Barriers in the Pedestrian Network	<ul style="list-style-type: none"> <li>Crossing Calumet</li> <li>Viebahn Street, cross walks in general, 8<sup>th</sup> street and maritime drive from 8<sup>th</sup> street to the YMCA, Huron Street by Madison school, getting on the Mariners Trail from anywhere, Memorial drive</li> </ul>
Improvement Strategies	<ul style="list-style-type: none"> <li>Keep sidewalks in repair, trim shrubs and keep them clear of snow and ice, paint ramps on corners</li> <li>A flashing crosswalk by the Maritime Museum and across to the YMCA from Housing and Huron and Madison to Maritime Trail. Signs along Waldo – whatever could be done to help bicycling</li> </ul>
Bicycle Infrastructure (3 Groups)	
Key Destinations for Bicycling in the City	<ul style="list-style-type: none"> <li>Parks, Lakes shore, downtown, museum (Maritime, Rahr-West, Pinecrest, Historic, Manitowoc Historical); stores (Pick N' Save, Walmart, Festival, Meijer); Downtown Restaurants</li> <li>Downtown Manitowoc, Maritime Museum, Wharf/library/ YMCA, West of the Lake, Walmart/Festival/Expo/AMC theaters, Lincoln Park and Zoo</li> <li>Connection to Farm Discovery Center, Library, Manitou Park and Schuette Park, connection to Mariners Trail and Lincoln Park Zoo</li> </ul>
Describe any Gaps and Barriers in the Bicycle Network	<ul style="list-style-type: none"> <li>Calumet Avenue (parallel to Calumet); North Rapids Road (N. of Manitowoc Rapids (Broadway)); Viebahn Street paved through Schuette Park (Hospital to Broadway Ave.); 21<sup>st</sup>/18<sup>th</sup> street</li> <li>South end of R (Rapids Road) – by Calumet</li> <li>We have no network, MPU property needs trail/bridge to connect car ferry side to Red Arrow Park (MPU should fund), trail to replace rail from Manitowoc River to Two Rivers (track is abandoned)</li> </ul>

Group Discussion Results (Cont.)	
Bicycle Infrastructure (3 Groups) (Cont.)	
Strategies to improve education and enforcement	<ul style="list-style-type: none"> <li>Wider trails, center lanes on bike trails, street sweeping where should is used for bike lanes</li> </ul>
	<ul style="list-style-type: none"> <li>Bike racks downtown, pedestrian/biker controlled crossing light, more crossing guards, encourage parents to bike with kids</li> </ul>
	<ul style="list-style-type: none"> <li>Pedestrian bridge along 8<sup>th</sup> from library to Mariners Trail, educate the mayor and city council to invest in a museum trail network, Waldo – bike accommodation – reduce speed limit to 25 mph and enforce it, install speed ramps</li> </ul>
Education and Enforcement (2 Groups)	
Describe the need for bicycle/ pedestrian education in the City	<ul style="list-style-type: none"> <li>Without bicycle education, you have no control over car that is going to run over you; teach kids in school – they might remember something; teen program to teach car/bike rules; teach seniors both sets of rules</li> </ul>
	<ul style="list-style-type: none"> <li>Handouts to all schools as a take home flyer with info (RE: Trails and Rules)</li> </ul>
Strategies to improve education and enforcement	<ul style="list-style-type: none"> <li>Signs by Bellin Hospital might work (by 8<sup>th</sup> st. bridge), there are train tracks from Two Rivers to Manitowoc. Making this part of a rails-to-trail would make a whole loop from Manitowoc to Two River and back using the tracks and the Maritime Trail</li> </ul>
	<ul style="list-style-type: none"> <li>Better education to public and signage for trails, larger signage for Devil's River Trail</li> </ul>
Encouragement (All Groups)	
What is the most important change that could be made that would encourage you to walk or bike more?	<ul style="list-style-type: none"> <li>More bike trails, expand the ones we have!</li> </ul>
	<ul style="list-style-type: none"> <li>Designated trails, 3 ft. wider shoulder</li> </ul>
	<ul style="list-style-type: none"> <li>A good East/West North/South continued connection. Connecting the Interurban to the Devil's River Trail.</li> </ul>
	<ul style="list-style-type: none"> <li>Paved bike trails, respect each other, more to Amsterdam</li> </ul>
	<ul style="list-style-type: none"> <li>Better pavement on mariners trail and wider trail, a city wide connected network, slow down traffic and stop cars from running red lights – more police enforcement</li> </ul>

Source: Bay-Lake RPC, 2021



# Appendix: Project Prioritization

A weighted score was given to each of the criteria based on input received from city staff, the BPAC, and the public. Each proposed project within the recommended network was then ranked and given a score based off the weighted criteria. Below you will find descriptions of the criteria used to determine the priority network.

- Local Connectivity – considers whether the recommended segment connects existing facilities, creating a seamless route for bicyclists and pedestrians. Projects were ranked higher if they closed a gap and lower if they do not connect to existing facilities or close a gap.
- Regional Connectivity - considers whether the recommended segment connects or can connect to existing regional facilities, such as the Devil's River State Trail. Projects without regional connectivity scored fewer points than those that have a potential direct connection.
- Safety - considers whether the project promotes safety by looking at the prevalence of bicycle and pedestrian related crashes. Projects existing in areas where crashes have occurred scored higher in hope that immediate roadway changes will increase driver awareness and improve bicycling and walking conditions.
- Transit Connectivity - considers whether the recommended segment connects to or has the potential to connect to public transit options, including bus stops and the ferry. Segments with a transit connectivity scored higher than segments that do not connect to areas served by public transit.
- Access to Schools - considers whether the recommended network will improve commuting safely to schools. Recommended facilities that connect directly to schools scored higher than those that do not connect to schools or fall within ½-1 mile of a school.
- Access to Employment and Commercial Areas - considers connection to areas such as downtown Manitowoc and Harbor Town. Segments connecting to the city's top employers scored higher.
- Access to Other Community Facilities/Attractors - considers segments that provide access to other community facilities not covered by previous criteria, such as the library, Maritime Museum, and community centers. Segments connecting to these locations received higher scores.
- Access to Public Parks and Trails – considers whether the recommended facility connects to public parks and will promote usage at public parks. Recommended facilities scored higher if they passed through public parks, provided a direct connection to public parks, or fell within ½ mile of a park.
- Public Input – considers whether there has been positive public support for the recommended project. Segments that were desired by the public scored higher than those less desired.
- Cost – considers how costly improvements will be. Higher costs received a lower score, while less costly improvements received a higher score.
- Ease of Implementation – considers how projects could be constructed from start to finish. Projects that were considered quick to implement scored more points than projects that may require easements, project acquisition, or other hurdles.

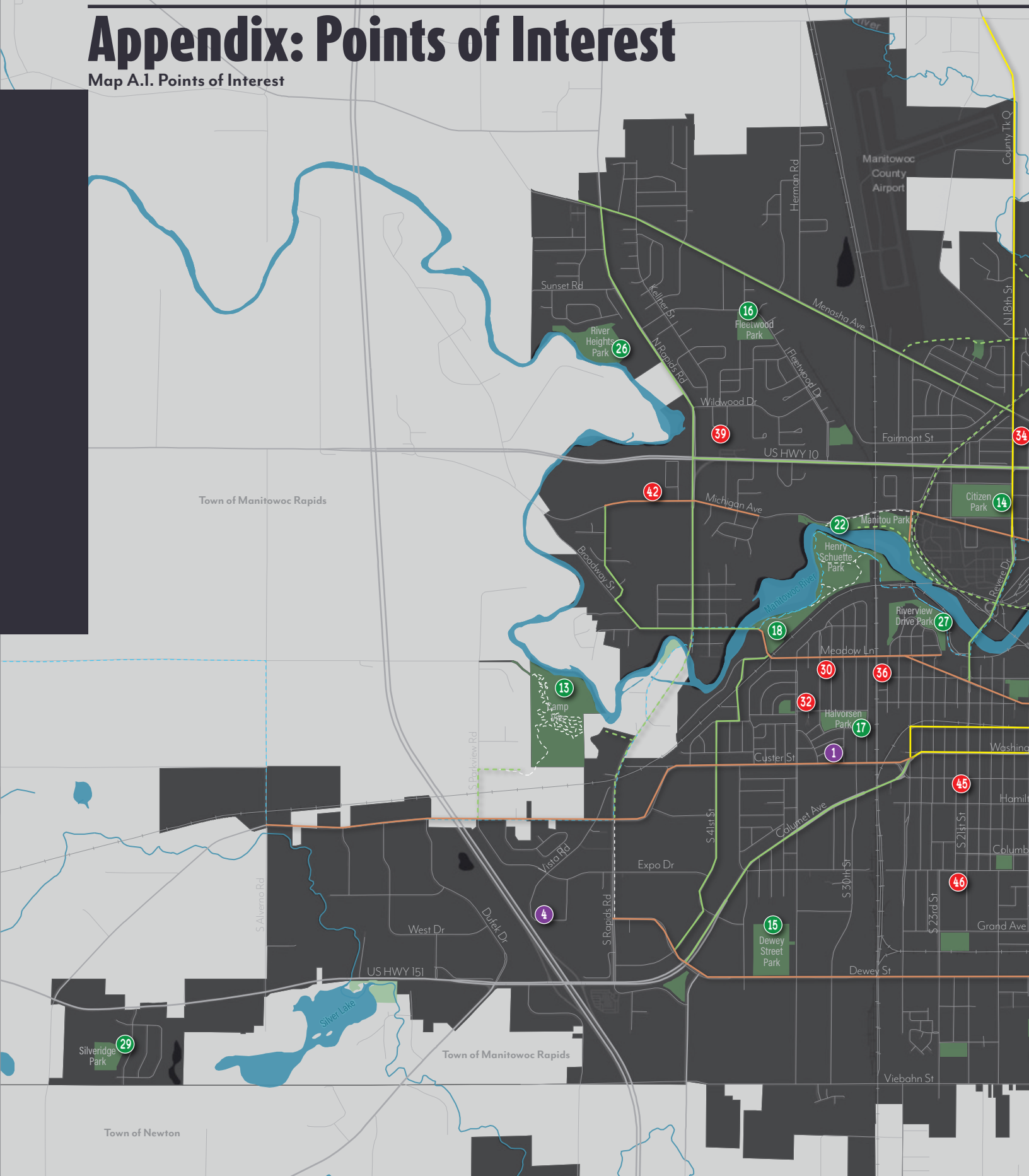
The top 7 projects that received the highest weighted score make up the priority network; projects that the city should consider first for implementation over the next 5 years. The next highest ranked projects were incorporated into the medium-term network, consisting of 14 projects that the city should focus on implementing in the next 5-10 years or once the priority projects have been completed. Projects that received the lowest scores were incorporated into the long-term network, projects that the city should implement after 10 years or once the medium-term projects have been completed. Many of these projects will need certain changes to occur before they can be considered. Some of these projects should be referred to when road reconstruction projects occur to make sure bicycle infrastructure is included and not relegated until the next reconstruction project occurs.

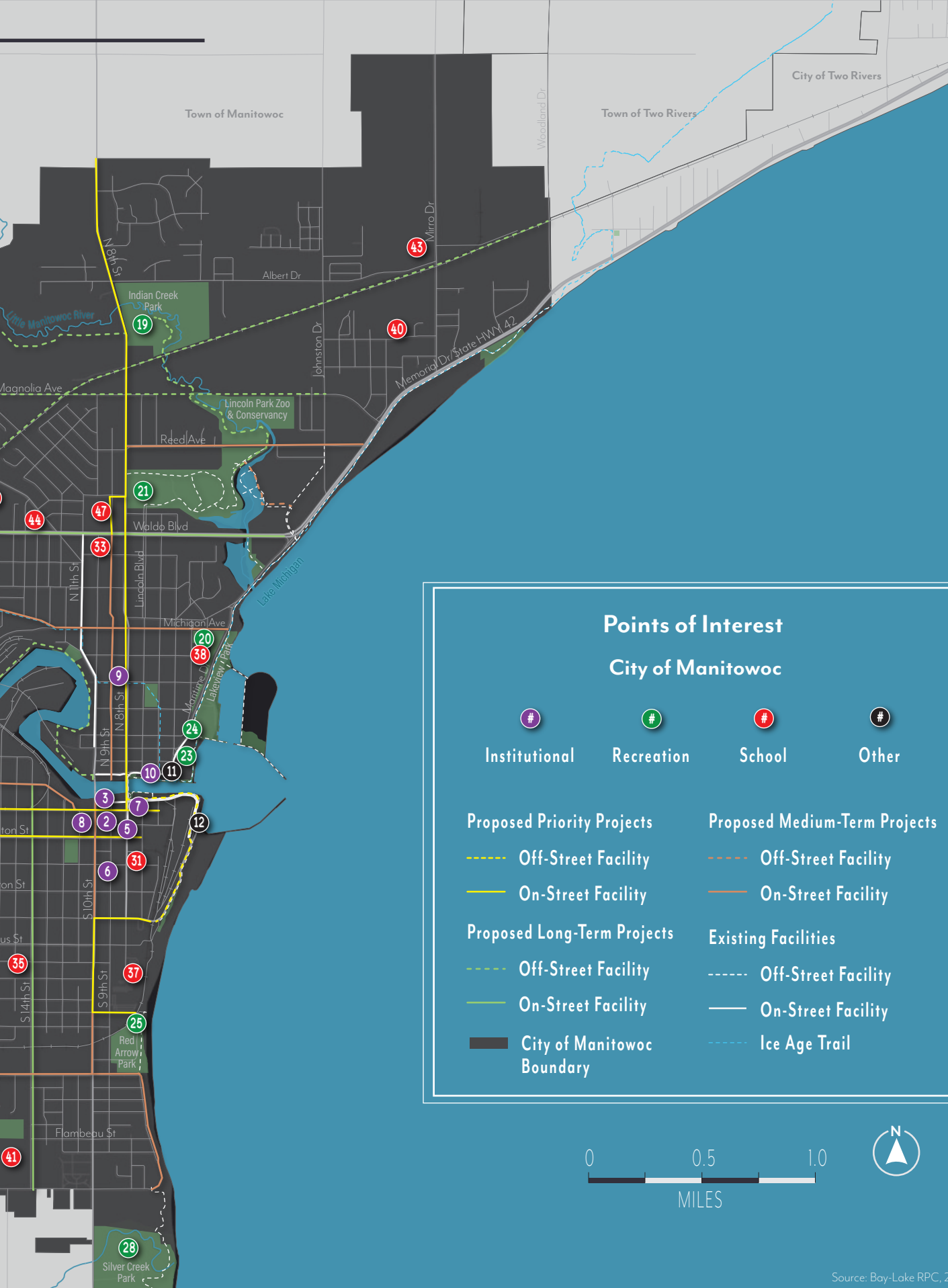
A draft of the recommended projects and networks was presented to city staff and the BPAC. Suggestions made by the groups informed adjustments to some of the routes, re-prioritization of some projects, and the addition of a few projects.

As the city moves through the project development process, some projects may be developed in a different way or location than recommended or envisioned in this plan. In any case, the city will need to develop a way to measure performance and success.

# Appendix: Points of Interest

Map A.1. Points of Interest





Source: Bay-Lake RPC, 2021

**Table A.1. Points of Interest**

Map Number	Location Name	Address
1	City of Manitowoc Parks & Recreation	3330 Custer St
2	City of Manitowoc Police Department	910 Jay St
3	Manitowoc City Hall	900 Quay St
4	Manitowoc County Expo Center	4921 Expo Dr
5	Manitowoc County Human Services	926 S 8th St
6	Manitowoc County Public Works	1110 S 9th St
7	Manitowoc Public Library	707 Quay St
8	Maritime Metro Transit	915 S 11th St
9	Rahr West Art Museum	610 N 8th St
10	Wisconsin Maritime Museum	75 Maritime Dr
11	Downtown	Manitowoc
12	S.S. Badger Carferry	900 S Lakeview Dr
13	Camp Vits	97 S Parkview Rd
14	Citizen Park	930 N 18th St
15	Dewey Street Park	1840 S 35th St
16	Fleetwood Park	1716 Fleetwood Dr
17	Halvorsen Park	3110 Mero St
18	Henry Schuette Park	3700 Broadway St
19	Indian Creek Park	701 Albert Dr
20	Lakeview Park	301 Huron St
21	Lincoln Park and Zoo	1215 N 8th St
22	Manitou Park	2901 Michigan Ave
23	Manitowoc City Paws & Play Dog Park	495 Maritime Dr
24	Manitowoc—Two Rivers YMCA	205 Maritime Dr
25	Red Arrow Park	1931 S 9th St
26	River Heights Park	1730 N Rapids Rd
27	Riverview Drive Park	514 Riverview Dr
28	Silver Creek Park	3001 S 10th St
29	Silveridge Park	2340 Crossing Meadows Dr
30	Bethany Evangelical Lutheran School	3209 Meadow Ln
31	First German Evangelical Lutheran School	1025 S 8th St

Map Number	Location Name	Address
32	Franklin Elementary	805 S 35th St
33	Immanuel Lutheran School	916 Pine St
34	Jackson Elementary	1201 N 18th St
35	Jefferson Elementary	1415 Division St
36	Life Academy	2810 Wollmer St
37	Lincoln High	1433 S 8th St
38	Madison Elementary	701 N 4th St
39	Manitowoc Lutheran High	4045 Lancer Cir
40	McKinley Academy	1002 E Cedar Ave
41	Monroe Elementary	2502 S 14th St
42	Riverview Elementary	4400 Michigan Ave
43	Roncalli High	2000 Mirro Dr
44	St. Francis of Assisi Elementary	1408 Waldo Blvd
45	St. Francis of Assisi Middle	2109 Marshall St
46	Washington Middle	2101 Division St
47	Wilson Middle	1201 N 11th St

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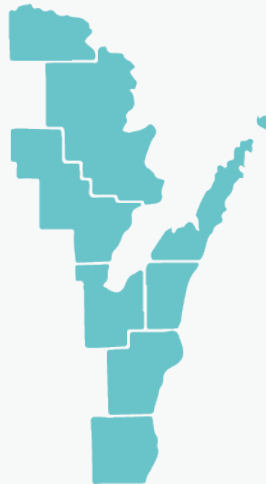
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**\*Sydney Swan,**  
Economic Development Planner



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