City of Sturgeon Bay

Bicycle Master Plan

FEBRUARY 2011

SCHREIBER | ANDERSON ASSOCIATES, INC.

PROJECT #2394

ACKNOWLEDGEMENTS

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1 INTRODUCTION

The City of Sturgeon Bay has created this Bicycle Master Plan to guide decision-making regarding facility improvement and installation, education opportunities, and funding. It is also being prepared to recommend appropriate facilities types and locations to enhance the existing transportation network for bicyclists in the City of Sturgeon Bay. The plan prioritizes and recommends a project timeline for implementation of improvements over the next 5-15 years, pending funding availability.

This chapter sets a framework for bicycle facilities development, discusses the public process and past plans, and the details the results of a bicycle audit of the community.

1.1 Why is this Plan Important?

Before the 1900's, bicycling and walking were common modes of transportation in the United States. Transportation infrastructure and land use patterns reflected the need to accommodate these travel modes. Compact communities allowed people to walk to most destinations. Interestingly, early American urban roads were originally paved to help bicyclists reach their destinations. As the pace of the American lifestyle quickened and automobiles were made affordable to a larger portion of the population, bicycling and walking gradually dropped in priority. Since the late 1940's, motor vehicles have been the dominant influence on transportation and land use patterns and subsequently, these land use patterns have changed behavior patterns. The convenience and flexibility of the automobile are easily recognized; however, automobiles are not the most efficient mode of travel for some types of trips. The benefits of alternative modes of travel such as bicycling and walking are particularly significant for short urban trips. The arguments for encouraging these modes of travel are both functional and philosophical:

a. Bicycling and walking are two of the most cost efficient modes of transportation with regard to operation, development and maintenance of facilities.

b. Bicycling and walking are two of the best forms of physical exercise and therefore can effectively enhance the health of the user.

c. Bike and pedestrian facilities developed for transportation purposes can simultaneously enhance recreation and tourism opportunities.

d. National, state and local units of government increasingly acknowledge the benefits of bicycling and walking beyond merely recreational values. Recognizing the efficiency of bicycling and walking for certain types of trips among the other modes of travel is the basis for multi-modal transportation planning.

e. Bicycling and walking do not contribute to noise or air pollution and thus contribute to the health of the community. Off-road facilities developed for bicycling and walking can protect and enhance natural resources and provide opportunities to preserve and enhance viewshed corridors.

f. Bicycling and walking promote social interaction of families and community members.

The premise of multi-modalism is simple: to create a transportation system that offers not only choices among travel modes for specific trips, but more importantly, presents these options so that they are viable choices that meet the needs of individuals and society as a whole. More than 49% of Wisconsin residents engage in bicycling for recreation, according to the 2005-2010 Wisconsin Statewide Comprehensive Outdoor Recreation Plan (WDNR, 2006). Converting a portion of these recreation bicyclists to commuting cyclists is a primary goal of this plan.

Local investments in bicycling can lead to a large economic impact. A January 2010 study[1] indicates the annual economic impact of bicycle recreation and tourism in Wisconsin to be over $920M. In addition, development of bicycle facilities can have a positive effect on real estate values. A 1998 study found that lots adjacent to the Mountain-Bay Trail in Brown County sold faster and for an average of 9% more than similar property not located next the Trail.

Statewide, bicycling and walking have been promoted through a variety of plans, including the latest multimodal planning document, *Connections 2030*. The Connections plan calls for bicycle and pedestrian provisions on state highway projects, inclusion in the Metropolitan Planning Organization's (MPO) plans and also recommends continued investment through dedicated funding programs such as Transportation Enhancements. Biking and walking will continue to be vital components of Wisconsin's multimodal transportation system.

Bicycling is an underutilized mode of transportation in Sturgeon Bay. While the majority of city residents reported a travel time to work of just over 12 minutes in 2000, very few chose to commute by bicycle (<2%). The relatively small number of bicycling trips can be attributed to impediments such as traffic conditions, safety concerns, transportation infrastructure and topography. This plan is designed to increase levels of bicycle use by making recommendations to remove these impediments, and to change the prevailing attitude that using an automobile is easier and more convenient than bicycling.

1.2 Public Process

Development of this plan was administered by City staff with oversight from the Parks & Recreation Board. The plan was prepared by Schreiber|Anderson Associates, Madison, Wisconsin.

The planning process began with an inventory of conditions including historical data, field observations (conducted by traveling the planning area), research of local and county planning

[1] Grabow, Hahn, and Whited. Valuing Bicycling's Economic and Health Impacts in Wisconsin. The Nelson Institute for Environmental Studies. January 2010.

documents and meetings with the public and government agency staff. Planning and design criteria derived from Wisconsin Bicycle Facility Design Handbook, AASHTO Guidelines for Developing Bicycle Facilities, and The Manual for Uniform Traffic Control Devices (2009 Edition) were used as general analysis criteria.

The following sections describe the public process used to generate the recommendations contained within this plan.

1.2.1 City Staff

The process was initiated by City Staff who solicited proposals to prepare the plan in late 2009. After award of the contract, a conference call was held on January 2, 2010 to request pertinent plans related to development of a citywide bicycle network. The primary outcome of the call were four primary objectives:

a. To sign bike routes on streets that currently provide a high level of service and connectivity for cyclists;
b. To develop a consistent system of wayfinding signage and on-street facilities;
c. To identify areas were additional study or facilities development are necessary before a bike route can be established;
d. To create companion strategies and programs to educate and encourage bicycling.

City Staff provided ongoing data and plan assistance throughout the process.

1.2.2 Parks & Recreation Board

The Parks & Recreation Board were utilized as an oversight committee to review plan elements and monitor plan progress. The draft plan was presented to the Board before being sent to the Common Council for approval.

1.2.3 Public Information Meetings

There were two public information meetings held during the process. Details and outcomes for these meetings are listed below.

<u>PIM #1: Introduction and Visioning</u>

The first public information meeting for the Sturgeon Bay Bicycle Master Plan was held on Wednesday, February 24, 2010 at City Hall from 5:30-7:00pm. The meeting preceded a regular meeting of the Park and Recreation Committee/Board. It was attended by 15 to 20 people.

The purpose of the meeting was to introduce the planning process, review the 2008 Bike Route Plan and 2009 Bike Route Field Analysis Map, and to discuss hopes and concerns about the bicycle network. Results are shown in Table 1.

Table 1: Hopes and Concerns

Hopes	Concerns
Put markings on 3rd Ave for bikes	Oregon Street Bridge at 1st Ave
This plan will improve connections for bikes inside and outside the city	Difficult connections exist to shopping areas
Bike-only lanes can be installed on Egg Harbor Road	Michigan Street Bridge will continue to have poor connections to street; will not

	accommodate bikes and pedestrians
Connect to the soccer fields off Alabama St	Can't get a route through John Miles Park
Safety is increased for kids	Crossing Michigan St and Jefferson St
City bike routes are connected to county bike routes	Cooperation from County
Increase the perception of safety to encourage everyone to bike more	
Transportation trips by bike increase	
Enhance tourism through bikes	
Ahnapee Trail link into downtown	
More rails-to-trails	
Bike/ped bridge or tunnel at Michigan St/STH 42/57 intersection	
Connect bridges via off-road trail system along waterfront	

PIM #2: Open House

The second public information meeting for the Sturgeon Bay Bicycle Master Plan was held on Wednesday, May 5, 2010 at City Hall from 6:30-8:00pm. This was a special meeting for the purpose of reviewing plan recommendations. It was attended by 10 to 15 people.

The purpose of the meeting was to discuss the outcomes of the focus area analysis and to unveil the proposed bicycle route network. Comments were general in nature and pertained to the desire for better access to more places and existing intersections that are hard to negotiate. The discussion also included off-road trail discussions for the proposed segment between Utah Street and Michigan Street north of the Bayview Bridge.

1.3 Bicycle Route Map (2008)

The Parks & Recreation Committee/Board developed a Bicycle Route Map that was finalized in 2008. Descriptions of the map and implementation criteria are provided below.

1.3.1 Bicycle Routes Map

The map identified "Bicycle Routes Approved by Committee, and "Future Bicycle Routes Approved by Committee". In addition, The Ahnapee Trail, Ice Age Trail, and "Other" paved trails were shown. See Appendix A.

It should be noted that not all of the segments on the map exist. As identified, the "Future Bicycle Routes Approved by Committee" are often streets that have not yet been constructed. Similarly, portions of the "Ice Age Trail" do not formally exist as a trail, or are sidewalks and not intended for use by cyclists.

1.3.2 Plan Implementation Criteria

The Citizens and Visitors of the City of Sturgeon Bay should have safe, convenient, and year-round bicycle and pedestrian transportation connecting neighborhoods, parks, schools,

commercial districts and work places as well as connecting with surrounding communities' paths, trails and routes. The purpose of these Bike Route Map criteria is to provide an outline of needed infrastructure improvements and a prioritized list of projects to complete in an expedient manner.

Street Markings

a. On arterial streets, Bike Routes should consist of Bike Lanes with painted stripes and symbols
b. Directional signs shall mark Bike Routes on non-arterial (less busy) streets.
c. Other residential streets are assumed "safe" for bicycles, but these won't be marked as Routes
d. Where street parking is incompatible with bike lanes, this plan prefers bike lanes except in downtown business districts, where street parking is necessary.

Sidewalks

e. The current City Ordinance (7.12) allows bicycles to operate on sidewalks under the provisions of State Statute 346.94(1), except where posted as prohibited.
f. Where bicycling is prohibited sidewalks should be identified and marked with "Dismount Bicycle" signs (walkway by Stone Harbor, school entrances, downtown sidewalks). When authorized "Dismount Bicycle" signs have been erected, no person shall ride or cause to be ridden or use a bicycle, motor assisted bicycle or animal on any sidewalk or part of sidewalk within the specified area.

Capital Improvements

g. All Bike Route related capital improvements should be planned for and executed in a timely, fiscally responsible manner. A 5-10 year plan of improvements should be established and committed to by the Common Council.
h. All Bike Paths should be paved. Gravel paths should be paved, though, when establishing a new path, gravel can be initially used when paving is financially impractical.
i. When rebuilding streets, those designated as Bike Routes should be improved for better bicycle and pedestrian safety and pleasure. Establishing sidewalks, widening streets, installing crossing islands, improving street lighting and other relevant improvements must be considered.
j. Route Signs: Simple directional route signs should be well-designed so both residents and visitors can find, understand and easily follow bike routes through the City.
k. Directional Signs: At key intersections, directional signs should be established showing direction and distance to the following City landmarks:
    i. City Parks
    ii. City Schools
    iii. City Hall
    iv. Business Districts (Egg Harbor Road, Jefferson Street, 3rd Ave / East Side downtown, West Side downtown, Industrial Park, etc.)
    v. Scenic Routes (Memorial Drive, etc.)
    vi. Farmers Market
    vii. Library

l. Bike Racks: City Parks and "downtown" shopping districts should have public bike racks. These racks should be designed and manufactured locally to reflect Sturgeon Bay's unique history and culture.
m. Coordination: The City should continue to develop its parks and facilities to include bike related recreational ideas.
n. Inter-governmental Cooperation: The City should pursue cooperative efforts from its surrounding Towns as well as Door County, the State of Wisconsin, and Federal levels of government to promote this plan.

Education

o. The City should use its media resources to educate the public about bicycle and pedestrian safety.
p. The City should promote safe, non-aggressive driving and riding practices to both drivers and riders of all ages.
q. The City, its employees, and elected / appointed officials should lead by example by biking and walking to, from and during work, when appropriate. Everyone should wear helmets.
r. Maps: The City should print a well-designed map, showing Bike Routes and appropriate landmarks. The map should be simple, easy to read and interpret, and also contain relevant rules and safety information.

Funding

s. The City should pursue all relevant grants for these projects
t. The City Engineer and staff should estimate costs for various components of this plan
u. The City should engage the local business community to sponsor specific projects
v. The City should attract the interest of non-profit organizations to partner with

Glossary of Terms

w. BIKE PATH: an off-road path wide enough for two way bike and pedestrian traffic. A separate "road" for bikes and pedestrians complete with signs for safety (stop, yield) and convenience (directions, street names, and maps). Used where current roads don't exist or where vehicle traffic is too dangerous for bikes and pedestrians.
x. BIKE LANE: a lane of traffic dedicated to bicycles marked by a white stripe and bike stencil painted on the road. Used where traffic is busy and bike paths are impractical.
y. BIKE ROUTE: A route where both bikes and pedestrians are encouraged. Bike Routes include Bike Paths and Lanes. All are marked with signs and/or paint.

1.4 Bicycling Audit (2009)

During the morning and early afternoon of May 14th, 2009 SAA reviewed all street and trail segments identified on the 2008 Bicycle Route Map (dated September 11, 2008). This was done to ensure the level of service for each segment is appropriate for official designation prior to the City signing these roadways as official bicycle routes. The following sections detail the results of the analysis. See map in Appendix B.

1.4.1 Assess Recommended Routes

SAA assessed the existing bicycle routes in Sturgeon Bay as identified in the 2008 Bicycle Route Plan as "Bicycle Route Approved by Committee". SAA understands there was an

extensive public involvement effort utilized to determine these routes and it shows. Many of the selected routes were easy to ride and provide good connections throughout the city.

SAA's methodology included bicycling route segments while taking photos and documenting field notes. SAA also used a windshield survey (in-car) to save time and ensure the entire community would be surveyed. Major segments audited by car include county highways that lead away from the urbanized area (CTH TT, CTH U, etc.) and the far northeast corner of the city. A majority of segments west of the Sturgeon Bay canal, and the immediate downtown area were audited on bicycle.

The outcome of this analysis revealed that many segments are ready for official route designation without any additional improvement for bicycle accommodation. In fact, the areas that were most difficult to bicycle already contained facilities. An example is the Maple-Oregon Street Bridge which contains bike lanes but due to traffic volume can be difficult to negotiate. This is especially true after a bridge opening when traffic queues, or when attempting to execute a left-hand turn from the bridge onto 1st Avenue or Neenah Avenue because traffic exiting or entering bridge does not stop.

1.4.2 Observed Bicycling Conditions

Data generated during the audit were used to create a Bicycling Conditions Map (See Appendix B) that delineates and rates segments of the proposed bicycle route network by user type ("enthusiast" was included as a route category based on perceived comfort level for a casual cyclist). Where appropriate, SAA included field notes where special conditions apply. Examples include steep slopes, narrow roadways, and editorials on how best to utilize a facility. For example, the Bayview Bridge only has a sidepath on the eastern side of the structure, when one reviewer was surveying the bridge he approached from the north using the highway and was unable to access the facility. The map identifies the trail location on the east side only.

<u>Description of Legend on Bicycling Conditions Map</u>
Bike Route*: recommended bike route*
Bike Route – Advanced User*: bike route should be signed, but user comfort is compromised by one or more factors including pavement condition, slope, or traffic volume*
Ahnapee Trail*: Ahnapee State Trail segment in Sturgeon Bay*
Other Paved Trail*: off-road trails other than the Ahnapee State Trail*
Community Facilities*: potential route user destinations such as the YMCA*
Park Lands*: potential route user destinations (public spaces)*

The Bicycling Conditions Map does not depict any of the "Future Bicycle Routes" from the 2008 Bicycle Route map. Some of these routes were tested and they should not be identified on any map that is intended for navigation; they should be used as a planning tool only. However, some photos have been included on the Bicycling Conditions Map to document current conditions of these future routes. Some observations related to the Future Bicycle Routes include:

- 9th Court to 9th Avenue through park: this is a logical connection and should be prioritized on a capital improvements plan (Image 11).
- Louisiana Street to Middle/High School: the map shows a connection through the high school parking lot. The route would require counterflow movement through what

appears to be a one-way driveway for buses. Work with the school district to formalize this connection and prevent user conflicts (Image 13).

- Off-road trail by compost site on Division/Shiloh Road: these connections exist as unimproved surfaces. Off-street facilities in this general location would help open the area to different user groups (Image 5). The Division Road/Shiloh Road route segment (on-street) was rated as "enthusiast" by one reviewer (standard by the other), so an off-road facility may help alleviate concerns and increase use (Image 6).
- Extension of S. Ashland Ave across Green Bay Road (STH 42/57): this would be a good segment though it would perform the same function as S. Duluth Ave (CTH S). The reviewer was forced to back-track to Sawyer Drive to access S. Duluth Ave. Through discussions with the DPW, SAA recommends using the access road near the Target entrance to travel east to S. Duluth Ave.

Changes to the suggested bicycle route network were made in order to provide "loops" wherever possible. This increases mobility for system users. Examples include abandonment of the Ice Age Trail segments as bicycle facilities. A better option near S. Madison Ave is to use the signed "Snowmobile Route" system on-street. The Bicycling Conditions Map identifies this route as the best linkage for north/south travel from Green Bay Road to Maple Street (along Lansing Ave). Maple Street was also identified as a key segment since the Maple-Oregon Bridge is the primary bridge crossing for cyclists within the community and provides adequate accommodations for cyclists.

1.4.3 Roster of Segment Notes

A roster of field study notes developed through the bicycle route analysis include a subjective analysis of physical conditions, by street name, for each segment identified. In some instances the roster also includes recommendations to improve non-motorized transportation mobility throughout the city. Not all segments within the Sturgeon Bay Bike Route network are identified in the roster.

Street Name	Segment	Comments	Other Notes
Egg Harbor Rd		2 ped refuges - will they be striped?	
18th	Michigan to Florida	Residential, 25 mph, wide, curb/gutter	
18th	Florida to Egg Harbor	no shoulder, narrows, 35 mpg	
Alabama	18th to Egg Harbor	25mph, no shoulder, wide enough	
Neenah	Oregon Bridge to Walnut	curb/gutter, 25 mph, heavy traffic	
14th	Egg Harbor to Michigan	41', striped curb terminates prior to Tech School, lots of bikes at MS	run stripe full length of segment
Michigan	14th to 18th	no center line currently, wide enough for bike lane, curb/gutter, residential	bike lane
Michigan	18th to STH 42/57	narrows significantly, no curb/gutter, 1-2' gravel shoulder, 30' wide, access to YMCA is via sidewalk on north side of Michigan	
County TT	STH 42/57 to Mathey	good pavement, gravel shoulder, 45 mph	Widen to Big Creek Rd

County TT	Mathey to Ridge Road	55mph, poor pavement, painted centerline, no shoulder	
County TT	Ridge Rd to terminus	gravel shoulders slope significantly, good pavement, 24' wide, 55 mph, significant S curve	Warning signage re: S curve
STH 42/57	Michigan to Utah	striped paved shoulder, high ADT, access to trail over Bay View Bridge	
Utah	STH 42/57 to Cove Rd	good pavement, no shoulder, 25 mph	
Cove	Utah to Vermont Place	good pavement, 1-2' gravel shoulder, 25mph, little traffic	
Canal	Cove to overlook Park	35 mph, mediocre pavement, 1-2' gravel shoulder, very little traffic	formalize trail on canal?
18th Place	Utah to Memorial Drive	25mph, residential, curb/gutter	
Memorial	18th to Quincy	residential, curb/gutter, 25mph, 40' wide	
Quincy	Memorial to Oregon	curb/gutter, good pavement	use Memorial to Oregon as more direct segment
1st	Oregon to Michigan	Difficult to cross when bridge traffic is heavy	
1st	Michigan to 3rd	industrial, good pavement (to Jefferson)	
3rd	Iowa to Alabama	25 mph, striped paved shoulder	
Gordon	3rd to Old Highway	35 mph, no shoulder, hilly, truck traffic	
Old Highway Rd	Gordon to Egg Harbor	35 mph, 2-3' gravel shoulder	
Egg Harbor Rd	Old Hwy Rd to 14th	25- 35 mph, very wide paved shoulder on both sides	
Egg Harbor Rd	14th to 8th	bike lane striped - also ped lane, 25 mph, educational signage as to who operates where	How do users cross safely?
Walnut	Neenah to Shiloh	wide, curb/gutter, good pavement	
Tacoma Beach Road	Shiloh to Clay Banks	no shoulder, good pavement	
Clay Banks Road	Tacoma Beach to Sand	25 - 45 mph (quarry entrance), moderate pavement, no shoulder until town line	
Sand	Clay Banks to Lake	moderate pavement	
Lake Lane	Sand to terminus	good pavement, no shoulder, little traffic, speed not posted but traffic moves fast	
Division	Shiloh to Clay Banks	good pavement, no shoulder, little traffic	
Leeward	Shiloh to Neenah	curb/gutter, wide, old bike route signage	

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2 GOALS, OBJECTIVES AND POLICIES

This chapter contains goals and objectives to enable Sturgeon Bay to achieve a bicycle system that will benefit area businesses, visitors, and residents.

2.1 Goals and Objectives

Goals and objectives that should be followed by all entities working toward an improved multimodal transportation network are listed below. Numerical listing is for reference purposes only and should not suggest order of importance

Goal 2.1.1: Develop a well-connected bicycle network that links a variety of destinations together into a cohesive transportation system.

Objectives:

a. To promote bicycle and pedestrian travel modes by linking pedestrians and bicycle systems throughout the city and region.
b. To capitalize on the availability of easements and access corridors to enhance the existing linear trail network throughout Sturgeon Bay. This includes constructing linkages between Memorial Drive and the Bayview Bridge.
c. To complete off-road segments linking to the Ahnapee Trail.
d. To formalize connections to and through city parks (e.g. Big Hill Park).

Goal 2.1.2: Increase the utilization, availability, and demand for funding to improve bicycle facilities.

Objectives:

a. To target resources for bicycle and pedestrian improvements to areas of greatest need.
b. To leverage available funding that may be available through Safe Routes to School monies to augment the bicycle network for all users.
c. To increase education that encourages bicycle and pedestrian commuting and creates advocates.
d. To identify and pursue all available grants.

Goal 2.1.3: Design roads to be compatible with surrounding uses and be pedestrian, bicycle and transit friendly.

Objectives:

a. To integrate the existing trail system into a bicycle and pedestrian transportation network.
b. To identify priority origins and destinations and increase access to these locations through a variety of travel modes.
c. To better accommodate the provision and identification of bicycle facilities on roadways including use of appropriate striping or signage.
d. To form linkages with other communities and places of recreational and commercial value.

Goal 2.1.4: Reduce the number and severity of vehicular crashes with particular emphasis on reducing vehicle-bicycle conflicts and crashes.

Objectives

a. To increase reporting and tracking of crashes throughout Door County.
b. To reduce speeding in high-traffic areas.
c. To increase the media attention given to bicycle, pedestrian, and automobile responsibilities.
d. Work with Bicycle Federation of Wisconsin to air public service announcements focused on educating bicyclists and motorists alike.

Goal 2.1.5: Supplement facilities improvements with adequate education, encouragement, and enforcement programs.

Objectives:

a. To increase educational opportunities to educate pedestrians, bicyclists, and motorists about rights and responsibilities on roadways and shared-use facilities.
b. To promote incentives for walking or biking to work.
c. To increase the safety of transportation facilities by enforcing speed limits, rights or way, etc.
d. To encourage healthy lifestyles and reduce obesity rates.

Goal 2.1.6: Enhance intergovernmental cooperation and coordination for improving multimodal transportation.

Objectives:

a. To work jointly with multiple jurisdictions in planning and funding linear trail and dedicated on-street transportation facilities.
b. To increase political buy-in by engaging elected officials and residents in development and utilization of bicycle and pedestrian facilities.
c. To work cooperatively in developing grant-writing workshops, maintenance seminars, and training sessions.

Goal 2.1.7: Enhance the livability of Door County by improving transportation variety throughout the region and establishing Sturgeon Bay as the gateway.

Objectives:

a. To showcase the natural and scenic beauty of Door County through appropriate placement and development of multimodal transportation resources.
b. To promote economic vitality by utilizing and preserving access to natural and recreational features within the city and region (especially the Ice Age Trail and Ahnapee Trail).
c. To increase the amount of facilities along routes and trails (including benches, rest areas, trailheads).

Goal 2.1.9: Increase the numbers of commuters who live within the urbanized area that bicycle to work.

Objectives:

a. To require secure bicycle parking at all new employment centers with 30 or more employees and encourage adequate bicycle parking outside existing structures.
b. To work with the Bicycle Federation of Wisconsin, local certified instructors, or other groups increase bicycle education for bicycle commuters.
c. To work with neighborhood organizations and business improvement districts to match potential bicycle commuters together to increase ridership, camaraderie, and encouragement.
d. To encourage provision of appropriate worksite accommodations for bicycle and pedestrian commuters.

Goal 2.1.10: Continue to monitor progress toward implementing this plan and increasing mode share for non-motorized transportation.

Objectives:

a. To develop a list of comparable communities to compare mode share for pedestrian and bicycle travel.
b. To set a benchmark for pedestrian and bicycle mode share over the next ten years.
c. To regularly monitor police reports to determine if the incidence of vulnerable user crashes is affected by safety education programming and/or increased enforcement.
d. To formalize events, such as Bike to Work Week, with recorded data so empirical data for number of trips (or other measures) can be compared year-to-year.
e. To survey participants of education workshops or encouragement programs to see if these programs have an effect or could be better administered to enhance effectiveness or delivery.

2.2 Policies

The policies detailed below will be necessary to achieve the overall vision of developing an integrated bikeway network that serves the needs of the community, and to provide guidance on how the city can respond to bicycle, pedestrian, and other infrastructure, education, and enforcement needs. The following policies are divided into three general policy areas:

1. Network and Facilities: the development of safe, convenient, and continuous facilities that serve the needs of all current and potential transportation users.
2. Safety: increasing the safety of the transportation network through education and enforcement.
3. Implementation: funding and implementation programs.

2.2.1 Network and Facilities

a. Sustain and expand the system of off-street bike paths, on-street bike lanes, and bicycle parking areas throughout the city.
b. Replace all substandard bike parking as funding permits.
c. Eliminate gaps in the bicycle network to improve connectivity between destinations.
d. Track the success of the bicycle and pedestrian network through periodic surveys.
e. Create a central clearinghouse for bicycle issues including an on-line reporting mechanism for hazards, maintenance concerns, and facility improvements.
f. Identify and enhance pavement conditions and conflict locations
    i. Carry bike lanes through to intersections when possible
    ii. Utilize a leading pedestrian interval on streets crossing arterial streets
    iii. Limit right turns on red where bike lanes are present
g. Provide additional bike parking at major events and event centers.
h. Ensure that repair and construction of transportation facilities minimize disruption to the bicycling and pedestrian environment.
i. Regularly inspect and resurface bikeways when needed, and provide regular cleaning (especially in spring).
j. Specific sidewalks should be identified and marked with "Dismount Bicycle" signs (walkway by Stone Harbor, school entrances, downtown sidewalks)
k. On arterial streets, Bike Routes should consist of Bike Lanes with painted stripes and stencils. Bike lanes should be installed on bicycle routes with 3,000 AADT or greater, though cyclists riding on segments linking to primary destinations such as parks or schools may benefit from bike lanes even where traffic counts do meet the AADT threshold.
l. Most residential streets are assumed "safe" for bicycles and won't be marked as Bike Routes. This is not an indicator that the street is unsafe for bicyclists.
m. Where street parking is incompatible with bike lanes, this plan prefers bike lanes except in downtown business districts, where street parking is necessary.
n. All Bike Route related capital improvements should be planned for and executed in a timely, fiscally responsible manner. A 5-10 year plan of improvements should be established and committed to by the Common Council.
o. All Shared Use Paths should be paved. Gravel paths can be initially used when paving is financially impractical.
p. When rebuilding streets, those designated as Bike Routes should be improved for increased bicycle and pedestrian safety and comfort. Establishing sidewalks, widening streets, installing crossing islands, improving street lighting and other relevant improvements must be considered.

q. Route Signs: Simple directional route signs should be well-designed so both residents and visitors can find, understand and easily follow bike routes through the City.
r. Directional Signs: At key intersections, directional signs should be established showing direction and distance to the following City landmarks:
    i. City Parks
    ii. City Schools
    iii. City Hall
    iv. Business Districts (Egg Harbor Road, Jefferson Street, 3rd Ave / East Side downtown, West Side downtown, Industrial Park, etc.)
    v. Scenic Routes (Memorial Drive, etc.)
    vi. Farmers Market
    vii. Library
s. Bike Racks: City Parks and "downtown" shopping districts should have public bike racks. These racks should be designed and manufactured locally to reflect Sturgeon Bay's unique history and culture.
t. Coordination: The City should continue to develop its parks and facilities to include bike related recreational ideas.
u. Inter-governmental Cooperation: The City should pursue cooperative efforts from its surrounding Towns as well as Door County, the State of Wisconsin, and Federal levels of government to promote this plan.

2.2.2 Safety

a. Make bicycle education and safety materials available in all public buildings.
b. Establish bicycle skills training courses (eg. The League of American Bicyclists Effective Cycling Program) as part of regular programming available through the Parks & Recreation Department.
c. Create a consistent and accurate method for reporting collisions and monitor collision data to identify problem locations.
d. Provide sufficient lighting on all bikeways, walkways, and bicycle parking areas.
e. Implement bicycle and pedestrian satisfaction surveys to monitor changes in perceived safety, barriers/hazards, and travel mode share.
f. Target locations for periodic enhanced enforcement efforts.
g. The City should use its media resources to educate the public about bicycle and pedestrian safety.
h. The City should promote safe, non-aggressive driving and riding practices to both drivers and riders of all ages.
i. The City, its employees, and elected / appointed officials should lead by example by biking and walking to, from and during work, when appropriate.
j. Maps: The City should print a well-designed map, showing Bike Routes and appropriate landmarks as funding permits. The map should be simple, easy to read and interpret, and also contain relevant rules and safety information.

2.2.3 Implementation

a. Fund bikeway and walkway projects and programs through existing and new sources of local, regional, state, and federal funding programs.
b. Secure ongoing funding to support bicycle education courses.
c. Secure ongoing funding to support regional bicycle outreach and encouragement programs such as "Bike to Work Week".

d. Encourage joint funding application where feasible.
e. Monitor progress toward achievement of goals and policies within this plan and update this plan frequently to ensure relevancy, awareness, and consistency.
f. The City should engage the local business community to sponsor specific projects.
g. The City should partner with non-profit organizations whenever it will lead to implementation of plan objectives.

3 BEST FACILITY PRACTICES

Bicycle and pedestrian facilities greatly enhance the usability of the entire transportation network. Accommodating for a variety of transportation modes is the idea behind "complete streets" and improves mobility for all users. The purpose of this chapter is to provide clear and consistent information about how to plan and design bicycle, and to a lesser extent, pedestrian facilities. Much of this document is based on existing published standards and guidelines through the Wisconsin Department of Transportation (WisDOT), the Manual of Uniform Traffic Control Devices (MUTCD) or the American Association of State Highway and Transportation Officials (AASHTO).

3.1 Bicycle Facilities

The best strategy for accommodating bicycle trips is to provide adequate on-street bicycle lanes and to educate the driving public on the need to share the road with bicyclists. Signs, off-road bicycle paths, proper bike parking facilities, and non-infrastructure initiatives also facilitate safe bicycle travel.

3.1.1 Bike Lanes

Bike lanes can be incorporated into a roadway when it is desirable to delineate available road space for preferential use by bicyclists and motorists, and to provide for more predictable movements by each. Bike lane markings provide greater comfort for bicyclists who are not used to operating on a roadway with other traffic. See Figure 1.

Bike lanes should be one-way facilities and carry bike traffic in the same direction as adjacent motor vehicle traffic. On one-way streets, bike lanes should generally be placed on the right side of the street. However, bike lanes on the left side of the street may be appropriate when it will substantially decrease the number of conflicts, such as those caused by heavy bus traffic or unusually heavy turning movements to the right, or if there are a significant number of left-turning bicyclists.

Curbside bike lanes and bike lanes adjacent to parking are common treatments. It is important that a curbside bike lane include at least 5 feet of space outside of the gutter pan to allow for snow storage and to discourage bicyclists from riding in the gutter pan. In corridors with limited space an innovative 5 foot gutter pan bike lane with saw cut joints can be installed to accommodate bicycles. See Facility Sheet 3.1.

Figure 1: Bike Lanes

Figure 2: Multi-Use Path

Figure 3: Separated Path

3.1.2 Shared-Use Roadway

A shared-use roadway is typically a neighborhood street where traffic volumes and traffic speeds are low and bicyclists and motorists can comfortably share the road. Width is the most critical variable affecting the ability of a roadway to accommodate bicycle traffic. In order for bicycles and motor vehicles to share the use of a roadway without compromising the level of service and safety for either, the facility should provide sufficient paved width to accommodate both modes. This width can be achieved by providing wide outside lanes or paved shoulders. Where there is not enough width for a motor vehicle and a bicycle to operate side-by-side, a shared-lane marking can be installed to communicate that the roadway should function as a single-file facility. See Facility Sheet 3.2.

It is important to note that all streets should be designed to be bicycle friendly. Roadways should be designed so that catch basins or roadway joints will not entrap a bicyclists' tire. In addition, manholes should be placed in locations that will not impede bicycle travel. Efforts should also be made to keep roadway surfaces smooth and free from potholes.

3.1.3 Multi-Use Path

This facility is located within its own right of way, is usually 10-14 feet wide and is commonly designed for two-way travel. See Figure 2. Multi-use paths can serve a variety of purposes. They can provide users with a shortcut through a residential neighborhood, provide access to school sites, and can provide an enjoyable recreational opportunity. Shared use paths can be located along rivers, ocean fronts, canals, abandoned or active railroad and utility rights-of-way, limited access freeways, within college campuses or within and between parks. Paths can also provide bicycle access to areas that are otherwise served only by limited access highways closed to bicycles. See Facility Sheet 3.3.

Paths should be thought of as a complementary system of off-road transportation routes for bicyclists and others that serve as a necessary extension to the roadway network. Paths should not be used to preclude on-road bicycle facilities, but rather to supplement a system of on-road bike lanes, wide outside lanes, paved shoulders and bike routes.

3.1.4 Separated Path

A separated path has dedicated space for bicyclists and pedestrians. Separated paths allow for less conflict between faster bicyclists and slower pedestrians. Many cities such as Minneapolis, MN and Denver, CO utilize separated paths to

enhance user-friendliness. Separated paths should have at least 5 feet in each direction for bicycles and a 6 foot walkway for pedestrians (16 ft min). Figure 3 shows a separated path on a bridge in Portland, OR that includes a one-way bike travel lane and a two-way pedestrian lane.

3.1.5 Bicycle Routes and Other Signs

Suitably designed bikeways can be identified formally as "Bike Routes." Bike routes are segments of a system of roads that are designated by a jurisdiction having authority with appropriate directional and informational markers, with or without a specific bicycle route number (AASHTO definition). These routes should indicate a major route that most bicyclists will feel comfortable using. The routes are not intended to link all possible locations, and bicyclists are not required to use these routes. New bicyclists, and bicyclists new to Sturgeon Bay, will find these routes useful for getting to know the area by bicycle.

There are several reasons for designating signed bike routes:

a. The route provides continuity to other bicycle facilities such as bike lanes and multiuse paths.
b. The road is a common route for bicyclists through a high demand corridor.
c. The route extends along local neighborhood streets and collectors that lead to an internal neighborhood destination such as a park, school or commercial district.

Bike route signs may be used on shared streets, streets with bike lanes, and on multiuse paths. Regardless of the type of facility or roadway where they are used, it is recommended that bike route signs include destination information, as shown in Figure 4. See Facility Sheet 3.4.

“Bike Route” or “Share the Road” signage can be used to encourage bicyclists to use a given corridor and to remind motorists that they may encounter a bicycle. Bike Route signage should be placed at key decision points along a corridor and Share the Road signage should be spaced at regular intervals.

3.1.6 Bicycle Parking Facilities

Bicycle racks are necessary for cyclists to secure their bicycles once they reach their destination. Choosing the appropriate style of bicycle rack is based on how much security is required at a location. Available space is also factor in determining what style of rack should be installed. Some bicycle rack styles take up more space than others and position parked bicycles differently. Choosing the right bike rack involves looking at utility locations, fire escapes, sidewalk dimensions, and visibility. Design is a critical component in bicycle rack selection. In general, a bicycle rack should include two points of contact with the bicycle to keep it from falling and damaging the bicycle. The “inverted-u” is considered the most effective design. See Figure 5 and Facility Sheet 3.5.

Figure 4: Destination-based Bike Route Sign (Portland, OR)

Figure 5: Inverted-U

Figure 6: Dismount Zone Sign

3.1.7 Additional Design Considerations

Catch Basins: A properly designed catch basin should be entirely located within the gutter pan and catch basin covers should be placed to avoid catching the tires of a bike. Drainage grates (catch basin covers) should be placed perpendicular to the direction of travel.

Transitions (On- and Off-Street): The transition of paths to roadways is particularly important for creating a functional bicycle network. Special design treatments should be applied depending on the relative volume of motor vehicle and bicycle traffic.

a. Bicycle-Pedestrian Signal: for mid-block crossing of higher volume roadways, where the crossing is located a sufficient distance from adjacent signalized intersections.
b. Roundabout: standard roundabout design on the motor vehicle approaches, with modified design for the bike path approaches.
c. Raised Crossing: maintains the grade of the path across the roadway.
d. Multi-way Stop Control: requires all approaches to stop, which can be desirable in locations with limited sight distance.

Bike Station: A Bicycle Station is a full service indoor bicycle storage facility that is typically staffed or has membership access. Bicycle Stations generally include a secure place to store a bike and may provide services such as bike repair, bike rentals, concessions, bicycle sales, and merchandising. Some bicycle stations include restrooms, drinking fountains, lockers, and shower facilities. Bicycle Stations are excellent locations to distribute maps and to provide the public with basic information about local paths, safety, and rules of the road.

Dismount Zone: Dismount zones are often needed when bicycles and pedestrians cannot safely share the same space. Signage and pavement markings are often helpful in informing bicyclists (See Figure 6), however in some areas it is not practical or necessary to sign or mark the dismount zone because a of known statute or ordinance. Dismount signage and pavement markings should be minimized and should only be used when one or more of the following criteria are met:

a. The location presents a clear safety problem such as a narrow sidewalk or a steep slope. Clear zones, sight distances, and crash history should be evaluated.
b. The location has a substantial number of pedestrians such as a college campus or a sidewalk in front of numerous

businesses. Both pedestrian and bicycle volumes and level-of-service should be considered and compared.

c. The location is in an area with a high number of children or elderly pedestrians.
d. The location has a suitable alternative route for bicycles within a reasonable distance.

3.2 Pedestrian Facilities

The overriding principle in providing for pedestrians is to create public rights-of-way that work effectively for and benefit all modes of transportation. A transportation environment and system that works for pedestrians will generally work better for bicyclists, disabled persons, automobile drivers, and for all other users, including transit and commercial vehicles.

Pedestrian access is increased when sidewalks are installed on both sides of every street where people live, work, go to school, or walk to accomplish errands or visit neighbors and friends. Sidewalks should be a minimum of five feet wide and wider in high volume pedestrian areas. Curb ramps should be installed at all intersections and mid-block crossing areas. Each municipality should also ensure that it has developed and updated an ADA compliance plan.

However, what constitutes a "pedestrian-friendly" or "walkable" neighborhood is much more than merely having the aforementioned facilities in place. A walkable or pedestrian-friendly community is one that provides a comfortable and safe environment for pedestrians. High quality, navigable sidewalks certainly are one part of the equation; however, other amenities such as street trees, pedestrian-scale lighting, street furniture, and boulevard space separating vehicle traffic lanes from sidewalks are also important. The clearing of snow and ice, especially at crossings, is another important consideration.

The safety and comfort of pedestrians can also be enhanced by implementing traffic calming measures. Narrow roadways necessarily decrease automobile speed. Installing pedestrian and auto traffic signs and signals, raised pedestrian crossings, speed bumps/tables and bump outs are all effective treatments.

3.2.1 Crosswalk Enhancements

Crosswalks are typically intended for pedestrians, however some bicyclists choose to ride on sidewalks and often use pedestrian crosswalks. Unless a path approaches an intersection, crosswalk design and crosswalk enhancements should be based on pedestrian needs and not designed specifically for bicycle use.

Most intersections in Sturgeon Bay have striped crosswalks. Striped crosswalks are permitted at signalized intersections and typically consist of two solid parallel white lines. In some cases when the crossing distance is long or there are very high volumes, a zebra crosswalk may be used. Crosswalk enhancements may include zebra/continental crosswalks, crosswalk bollards, flashing warning signs, enhanced pavement markings, and lighted crosswalks.

3.2.2 Curb Extensions

Often called "bump outs" curb extensions are used to slow traffic and to reduce the distance a pedestrian needs to cross a roadway. In many cases, catch basins and manholes need to be relocated in addition to new pedestrian aprons, and curb and gutter relocation. Bump-outs should not protrude more than the width of the parking lane.

Curb Extension Design: Curb extensions need to be customized to the proposed location based on topography, roadway widths, and functional classification. Curb Extensions typically protrude 8-10 feet when parking is present. When a bike lane is present, it should be placed outside of the gutter pan and should be striped to the crosswalk.

Delineators for Plowing: Curb extensions should be constructed with a 5:1 taper to allow for proper snow plowing. Curb extensions are difficult to plow around and curb delineators should be installed at both ends of the curb extension tapers so that plow drivers can approximate the curb line. Delineators should be located approximately 18 inches behind the curb line.

3.2.3 Pedestrian Refuge Islands

Pedestrian refuge islands are defined as the areas within an intersection or between lanes of traffic where pedestrians may safely wait until vehicular traffic clears, allowing them to cross a street. Refuge islands are commonly found along wide, multilane streets where adequate pedestrian crossing time could not be provided without adversely affecting the traffic flow. These islands provide a resting area for pedestrians, particularly those who use wheelchairs, elderly, or otherwise unable to completely cross an intersection within the provided signal time. These refuge islands also provide a safety area for pedestrians caught in the street when a signal changes.

In areas of heavy traffic, a Z-crossing can be used to increase safety. A Z-crossing utilizes a median island and crosswalks laid out in a staggered configuration at uncontrolled intersections. The configuration requires pedestrians to walk toward traffic to reach the second half of the crosswalk.

Pedestrian refuge islands may have merit on E Maple Street and S Neenah Avenue where these two streets intersect west of the Oregon Street Bridge. Bicyclists may benefit from pedestrian refuge islands if they choose not to utilize a travel lane to execute a turning movement. For this reason, the refuge island should be wide enough to accommodate a bicycle (preferably one with a trailer).

3.2.4 Lead Pedestrian Intervals and Pedestrian Signals

When pedestrian signals are timed with a green phase at an intersection both pedestrians and motor vehicles (particularly right-turning vehicles) start at the same time and conflicts can result. A lead pedestrian interval is a change in signal phasing at intersections that allows a pedestrian phase to begin a short time (generally 4 seconds) before the green phase for motor vehicle traffic. This allows pedestrians a "head start" utilizing crosswalks in the intersection. This facility requires the intersection to be signed for "no turn on red". This signal phase enhances visibility of pedestrians at crossings and alerts motorists to the existence of pedestrians in the right-of-way.

Facility Sheet 3.1

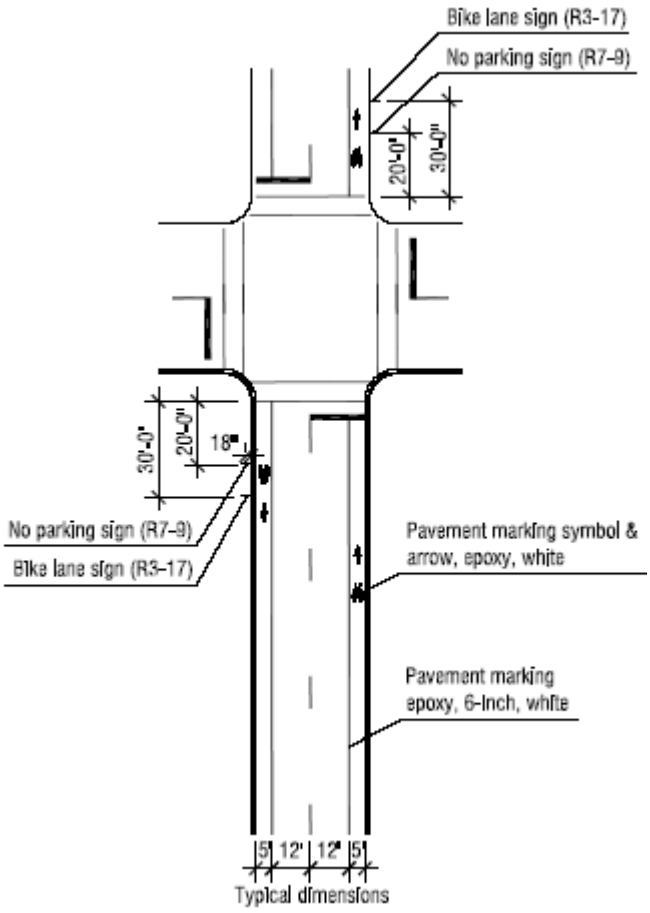
Bike Lane

Description/Purpose
Marked space along length of roadway for exclusive use of cyclists. Bike lanes create separation between cyclists and automobiles.

Advantages
- Provides bicycle access on major through street
- Clarifies lane use for motorists and cyclists
- Increases cyclist's comfort through visual separation

Disadvantages
- Space requirements may preclude other possible uses like parking or excess travel lane width

Design



Application
- On roadways with 3,000 motor vehicles per day or higher
- Any street with excessive curb-to-curb space where bike lanes could help reduce vehicle lane widths

Design/Maintenance Considerations
- Bike lane width
- Frequency of bike lane symbol
- Keep bike lane symbols out of the path of turning vehicles
- Typically placed on right side of roadway (unless one-way street)
- Automobile "door zone" clearance when bike lanes are adjacent to parked cars
- One-way facility carrying traffic in same direction as adjacent traffic

Design Guidance
- Minimum 4 feet width for roadways with no curb and gutter
- If parking is permitted, the bike lane should be placed between the parking area and the travel lane and have a minimum width of 5 feet
- Where parking is permitted but a parking stripe or stalls are not utilized, the shared area should be a minimum of 11 feet without a curb face and 12 feet adjacent to a curb face

Facility Sheet 3.2

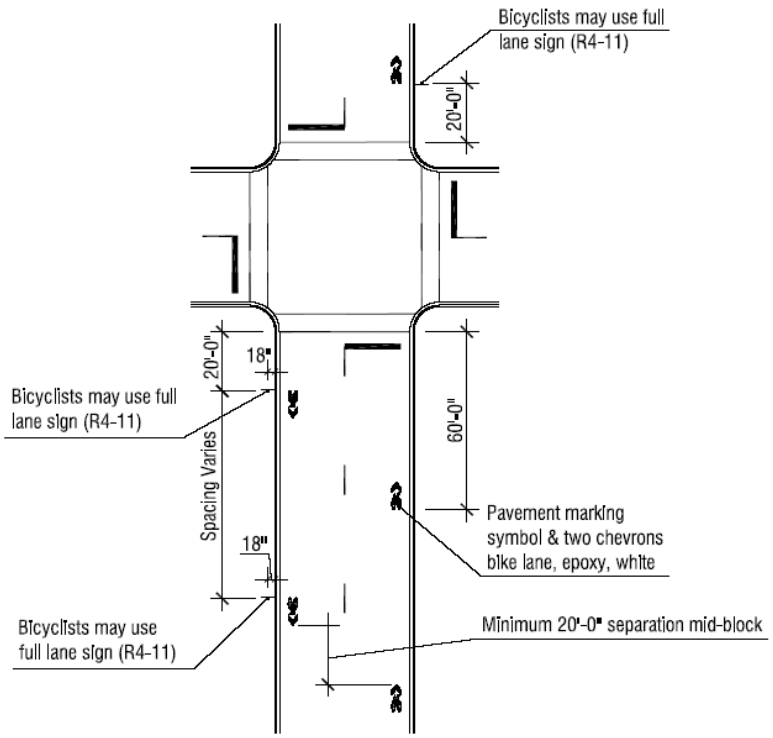
Shared Lane

Description/Purpose
Shared roadway pavement markings, or "sharrows", are marking used to indicate a shared lane environment for bicycles and automobiles. Sharrows identify to all road users where bicycles should operate on a street where a separated facility is not feasible.

Advantages
- Helps cyclists position themselves in lanes too narrow for a motor vehicle and a bicycle to travel side-by-side
- Provides pavement markings where bike lanes are not possible

Disadvantages
- Maintenance requirements
- Not as effective as a separated bicycle facility

Design



Application
- Roadways with moderate motor vehicle traffic volumes but where bike lanes cannot be installed due to insufficient right-of-way
- Short gaps between bike lanes
- Low traffic shared roadways
- Where bike route passes by angled-parking

Design/Maintenance Considerations
- Marking placed a minimum of 11' from curb face where on-street parking exists
- Pair with "Share the Road" signage

Design Guidance
- Frequency of "sharrow" symbol should correspond to the difficulty for cyclists (conflict areas may require greater frequency of markings)
- Ensure placement of pavement marking is out of the "door zone"

Facility Sheet 3.3

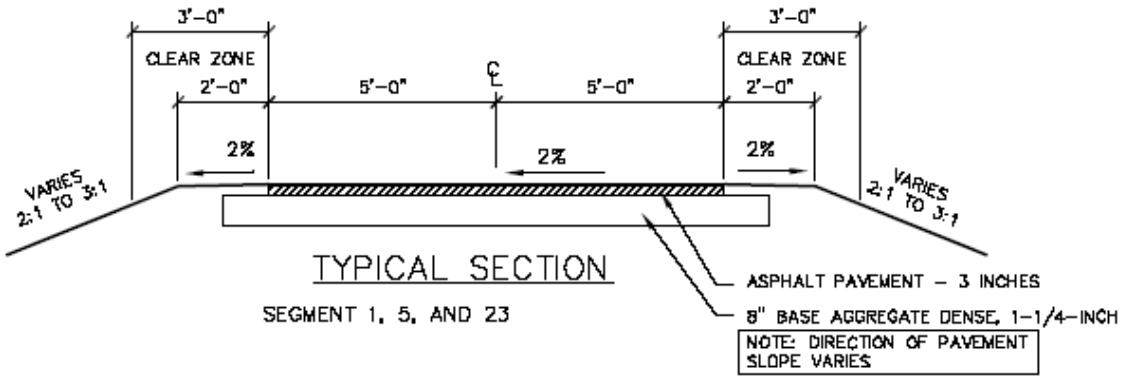
Multiuse Path

Description/Purpose
Multiuse paths effectively maximize available right-of-way by combining uses. They accommodate several types of non-motorized users including bicyclists, pedestrians, joggers, and roller bladers.

Advantages
- Can enhance access to destinations
- Wide range of user comfort

Disadvantages
- Right-of-way acquisition
- Cost

Design



Application
- Connections between cul-de-sacs
- Linear trail network
- Rails-to-trails conversions
- Along waterways

Design/Maintenance Considerations
- Speed of cyclists
- Slope, grade
- Pedestrian use volumes
- Lighting
- Signage
- Markings

Design Guidance
- Some multiuse paths are striped with a centerline to delineate direction
- Must be at least 10 feet wide; wider paths are preferred on busier paths
- Ideally, bicyclists and pedestrians should be separated
- Vegetation can be used adjacent to catch run-off

Facility Sheet 3.4

Bicycle Wayfinding

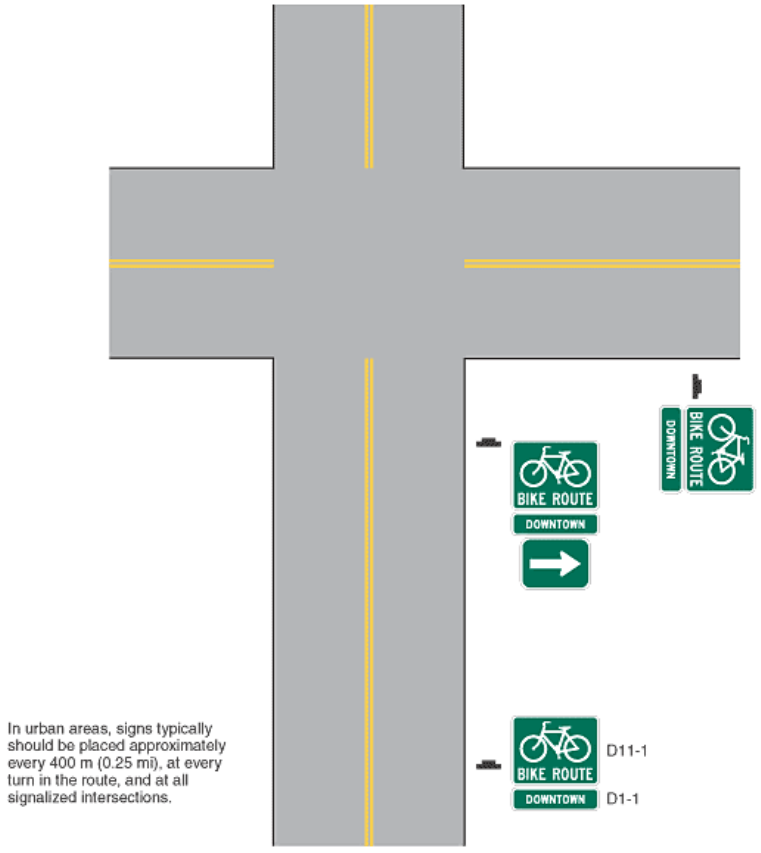
Description/Purpose
Informational signage tells a cyclist where they are located or which facility they are using. Signs for bike routes or lanes also communicate to motorists that bicycles may be present. Wayfinding signage provides destination information at decision points and enhances the usability of the bicycle network.

Advantages
- Tells users where a route or path goes
- Can identify distance to destination
- Can name certain segments or paths

Disadvantages
- If there's a lot of information it may require frequent updating
- Names listed may be unfamiliar to users

Design

Figure 9B-6. Example of Signing for an On-Roadway Bicycle Route



Application
- Bike Route and Destination signs only on designated routes
- Destinations mentioned must accommodate bikes

Design/Maintenance Considerations
- All signs retroreflectorized
- Detour signs when under repair
- Limit number of signs per location

Design Guidance
- "No Motor Vehicles" sign at path entrance
- Warning signs at crossings
- Trail signs located 3' to 6' from trail edge
- Overhead signs on trails require 8' clearance

Facility Sheet 3.5

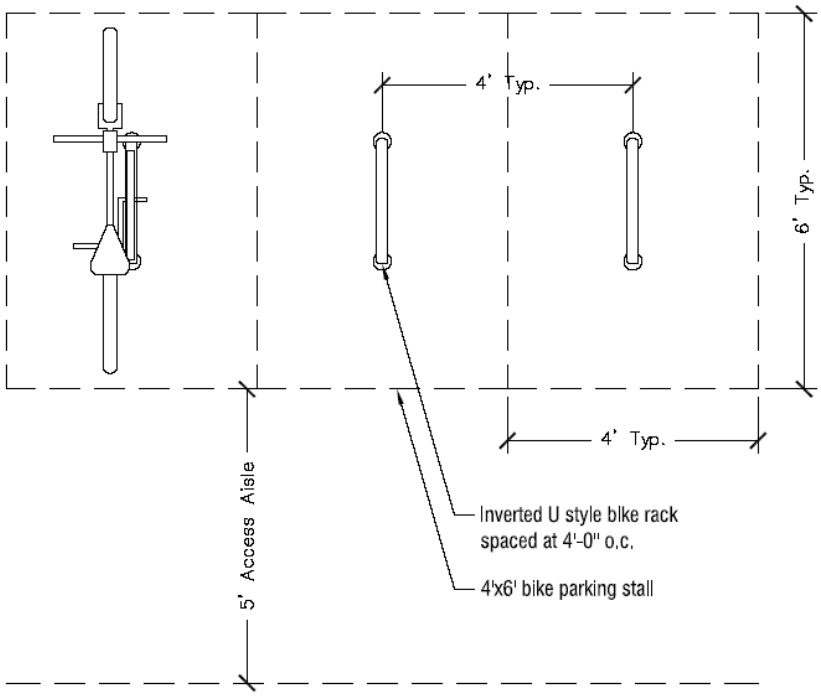
Bicycle Parking

Description/Purpose
Bicycle parking allows bicyclists secure parking upon reaching their destination. Racks should be ideally located near a building entrance to encourage bicycle use and increase security.

Advantages
- Provides a dedicated space for bicyclists
- Can encourage bicycle trips if well placed
- Formalizes access corridors for site planning

Disadvantages
- Requires maintenance
- Substandard designs can be a disincentive
- Security can be a concern

Design



Application
- Use to identify where bikes should be secured

Design/Maintenance Considerations
- Must be cleared of snow in winter
- Place in well lit area
- Mopeds allowed?

Design Guidance
- Place on paved surface
- Surface should not exceed 2% slope
- Utilize 4' (preferred) x 6' stall with 5' access aisle (36" minimum spacing between racks)
- Locate within 50' of a building entrance

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4 RECOMMENDATIONS

This chapter addresses the issues and opportunities identified throughout this plan. It presents actionable solutions to grow the bicycle network in Sturgeon Bay. Recommendations are categorized into two sections 1) Programmatic Recommendations, 2) Facilities Recommendations. The chapter concludes with a listing of potential funding sources and an action table for implementation of stated recommendations and facilities improvements.

4.1 Programmatic Recommendations

The following operational recommendations focus on education, encouragement, enforcement, and evaluation. Attention to operational procedures and programs is critical if Sturgeon Bay wants to improve the level of safety and convenience for bicyclists and pedestrians.

4.1.1 Education

Education programs include identifying safe routes, teaching proper techniques for riding near automobiles, locating places to safely cross a street, and demonstrating how to maintain a bicycle in good working order. Education may also include discussing where and how to properly lock bicycles or identifying areas where conflicts may occur between users of different modes within transportation network. The city should coordinate with the Sturgeon Bay School District and other willing public and private partners to administer educational programming.

a. Work with volunteers and staff from area organizations and bicycle businesses to promote bicycle repair education and training.
b. Create informational packets demonstrating the benefits of active transportation modes. Utilize library, city offices, and other gathering locations to display materials and event information.
c. Identify League Cycling Instructors through the League of American Bicyclists to teach cyclists to ride safely and confidently. Bike Education programs include basic traffic skills, commuting, and motorist education curricula.
d. Work with local bike shops, service organizations, and other agencies to sponsor helmet giveaways and fit clinics.
e. Encourage inclusion of bicycle and pedestrian education as part of Driver Safety Education programs within the community.
f. Create PSA's for use on community radio and television programming.
g. Invite guest speakers and hold assemblies on safe and effective non-motorized transportation. Seek the help of user groups to run programs and seminars on safe bicycling.
h. Consider holding bicycle rodeos. While these events are generally held for people new to cycling (i.e. children) the curricula can be developed to initiate users new to

Sturgeon Bay about local routes and opportunities. It may also encourage new users to try bicycling for the first time.

i. Coordinate with local businesses to develop a multimodal transportation guide that identifies bicycle rack locations, crosswalks, and parking lots. The guide should include high-quality graphics and information that could be used by residents and tourists to take a walking or bicycling tour around the city.
j. Create a Bicycle Ambassador Program that enlists volunteers to periodically interact with others around the city and give out free safety gear and resources, teach "ABC Quick Check" techniques, and speak with motorists about bicycle and pedestrian issues.
k. Educate motorists and bicyclists through a Share the Road Campaign by developing Share the Road flyers – one targeting bicyclists and pedestrians and one targeting motorists. Fliers outline safe and courteous behavior, collision reporting procedures, and local bicycling resources.

4.1.2 Encouragement

Encouragement programs should be used to enable and promote biking. This can be done through incentives (or rewards) and through provisions (such as bicycle racks). Encouragement activities should utilize social marketing techniques to make it attractive and rewarding to participate in bicycling activities.

a. Promote the idea of employer incentive programs to encourage local workers to try bicycling and walking to work. Company programs may include flexible arrival and departure times, or games such as "fantasy" teams that compete against each other for prizes.
b. Work with local service organizations, sports associations, and police departments to develop a *Sunday Parkways* event. *Sunday Parkways* are times set aside on weekends and holidays for traffic-free bicycling, skating, and walking on a network of selected streets. Existing automobile infrastructure is effectively transformed into bicycle and pedestrian trails gathering neighbors outdoors to celebrate walking and bicycling. The program has been successful in promoting public health and alternative transportation in cities from New York City, NY to San Francisco, CA but is scalable and can be implemented in smaller communities. In August 2009, Madison, WI closed six miles of downtown streets to motorized traffic for their "Ride the Drive" event.
c. Promote public bicycle rides, events, programs, and bicycle advocacy groups including Bike to Work Week, bike swaps, club rides, fundraising events, and competitive sporting events.
d. Commit Sturgeon Bay to becoming a recognized Bicycle Friendly Community (BFC) a designation sponsored by the League of American Bicyclists. The program recognizes the city's efforts to encourage a more bicycle friendly atmosphere for residents and visitors.
e. Include a "transportation" page on the city website that includes bicycle and pedestrian maps, flyers, and materials. Consider working with local groups to develop organized rides and events.
f. Develop a detour protocol when bicycle and pedestrian facilities are under construction. This includes identifying alternate routes and signing them accordingly.

4.1.3 Enforcement

Consistent enforcement of traffic laws plays an important role in advancing bicyclist and pedestrian safety.

a. In conjunction with local and county police, hold periodic traffic stops where motorists, bicyclists and pedestrians may be stopped, given a Share the Road flyer, and have the opportunity to provide feedback to officers regarding the campaign.
b. Implement a trained bike patrol officer or Community Service Officer program during special events to engagement other bicyclists and model good behavior.
c. Educate and train law enforcement personnel in the enforcement of laws concerning bicyclists' rights and responsibilities. Consider sending an officer to the WisDOT-Bureau of Transportation Safety (DOT-BOTS) Pedestrian and Bicycle Law Enforcement training course, new recruit training, and refresher courses.
d. Consider installing driver feedback signs to display driver's rate of speed in real time. These devices provide for self-enforcement and remind motorists of posted speed limits.

Driver Feedback Sign

4.1.4 Evaluation

Evaluation of bicycle and pedestrian activity includes documenting trends and preferences. Surveys and audits can help provide quantitative support for bicycle and pedestrian improvements.

a. Work with local police, volunteers, and sports associations to perform bicycle counts at least once every two years.
b. Perform a regular tally of bicycle rack usage and document requests for bicycle racks as part of street reconstruction projects.
c. Consider developing an online reporting instrument where bicyclists and pedestrians who encounter barriers, such as bad pavement or overgrown shrubs, can report issues.
d. Provide transportation surveys for residents and visitors that wish to comment on the ease of use for each transportation mode in the city, including integration of multiple modes of transportation, to identify gaps in the system.

4.2 Facilities Recommendations

The following facilities recommendations focus on physical improvements to the transportation network. This plan was developed for on-street facilities, though certain off-road segments where included in maps where on-street accommodation or continuation of an off-street facility was warranted.

4.2.1 Focus Areas

There were four "focus areas" identified through public input and city staff that required additional analysis due to safety or operational issues. These areas include the following locations (maps in Appendix D):

Michigan Street Bridge (east and west approach): Michigan Street provides a vital water crossing. It is currently undergoing reconstruction, but users will continue to be asked to cross the bridge using the sidewalk. The bridge structure was not wide enough to support a 10' multiuse path so cyclists must yield to pedestrians when using this facility. Recommendations include clear signage that indicates how cyclists are supposed to operate on the bridge and approaches. This plan recommends a route connection to the Oregon/Maple Street Bridge as the preferred crossing location.

West (See Map 4-1A)
Eastbound facilities include installing a bike route sign (D11-1) and directional arrow (M6-2) to show the bike route veers off of N Madison Avenue onto the sidewalk. Use a "sharrow" stencil to show the bicyclist's path. Install "Bicyclists Must Yield to Peds" (R9-6) signs on the sidewalk.

East (See Map 4-1B)
Westbound facilities include installation of bike route signs and directional arrows that direct cyclists to the southern sidewalk at S 1st Street. Cyclists may then choose to continue south to the Oregon/Maple Street Bridge, or use the sidewalk to cross the bridge. "Bicyclists Must Yield to Peds" signs should be installed.

E Maple St/S Neenah Ave (See Map 4-2): the western approach of the Oregon/Maple Street Bridge includes a wide multilane road at the intersection of S Neenah Ave. This plan recommends development of pedestrian refuge islands on both E Maple Street and S Neenah Avenue to provide accommodations for pedestrians. Bicycle lanes are also proposed on Maple/Oregon Street through the intersection at S Neenah Avenue to better indicate where cyclists should operate. Route signage and directional arrows should also be installed to enhance navigation.

S Lansing Ave/Green Bay Rd (See Map 4-3): the Ahnapee Trail currently terminates at S Lansing Ave. There is an existing crosswalk on the west side of S Lansing Ave across Green Bay Road. This positions bicyclists traveling northbound on S Lansing Ave against the flow of traffic and creates a turning hazard. This plan proposes carrying the Ahnapee Trail across to the southeast corner of the intersection and relocating the crosswalk to the eastern side of S Lansing Ave. This shortens the crossing distance on Green Bay Rd and better positions northbound trail users. Route signs should also be installed.

Lansing Ave/Green Bay Rd (Ahnapee Trail)

9th Court/Big Hill Park/Louisiana St (See Map 4-4): construct a trail through Big Hill Park from N 9th Ct. to N 9th Ave. Route bicycle traffic on Louisiana Street and through the high school parking lot. A combination of markings would be used to develop a contraflow bike lane and shared-lane markings on the one-way drive through the high school connecting N 12th Ave to N 14th Ave. Directional signage should be used throughout this corridor to direct users to Big Hill Park and the high school.

4.2.2 System Improvements

This section details bicycle facilities recommendations for the City of Sturgeon Bay. Careful consideration was used when determining the best connections between origins and destinations within the existing transportation network. These routes and facilities also recognize how mobility will be expanded through continued expansion of the Ahnapee State Trail and how increased access to this and other regional amenities will benefit the overall bicycling network.

Maps delineating the bicycle network can be found in Appendix E. The improvements table (Table 4-1) includes the following information:

Project
Name of street segment or approximate location or name of trail segment

Limits
Segment limits from project beginning to end point

Facility
Suggested improvements

Length (in feet)
The approximate length of the project within defined limits; "TBD" used when the extent of the project is unknown

Total Cost
$ figures..... represent estimated total cost of project, unless unit costs are shown
TBD..... costs to be determined because project scope is unknown at this time

Map
The map number where the project is delineated or described

Funding
Potential funding sources (see section 4.3.3 for complete list)

Term
1-5 ..... targeted for implementation in the next five years
5-10..... targeted for implementation in the next ten years
10+..... long-term recommendation that should be evaluated when plan is updated

Table 4-1: Improvements Table

Project	Limits	Facility	Length (ft)	Total Cost	Map	Funding	Term
S Duluth Ave	South city limits to Green Bay Rd	Bike Lanes	3727	$7,454	5-2, 5-3	TE, BPFP, STP-U	5-10
Maple St	Joliet Ave to S Neenah Ave	Bike Lanes	1932	$3,864	5-2, 5-3, 5-4	SRTS/TE	1-5
S Neenah Ave	Green Bay Rd to Maple St	Bike Lanes	2848	$5,696	5-2, 5-4	TE, BPFP, STP-U	1-5
Oregon St	1st Pl to 3rd Ave	Bike Lanes	849	$1,698	5-2, 5-4	TE, BPFP, STP-U	1-5
Michigan St	1st Ave to STH 42/57	Bike Lanes	8278	$16,556	5-2, 5-4	SRTS/TE	1-5
1st Ave	Michigan St to 3rd Ave/Iowa	Bike Lanes	2339	$4,678	5-1, 5-4	TE, BPFP, STP-U	1-5
3rd Ave	Iowa St to W Bay Shore Ct	Bike Lanes	4848	$9,696	5-1	TE, BPFP, STP-U	5-10
Jefferson St/8th Ave	5th Ave to Egg Harbor Rd	Bike Lanes	2366	$4,732	5-1	TE, BPFP, STP-U	1-5
14th Ave	Michigan St to Egg Harbor Rd	Bike Lanes	4756	$9,512	5-1	TE, BPFP, STP-U	1-5
Egg Harbor Rd	14th Ave to Old Highway Rd	Bike Lanes	3817	$7,634	5-1	TE, BPFP, STP-U	1-5
Old Highway Rd	Egg Harbor Rd to W Gordon Rd (Town)	Bike Lanes	2822	$5,644	5-1	TE, BPFP, STP-U	Town
STH 42/57	Utah St to Michigan St*	Bike Lanes	2804	$5,608	5-2	TE, BPFP, STP-U	10+
Planned Trail	Memorial Dr to existing trail	Trail	1888	$75,520	5-2	RTP	1-5
Long-Term Trail	Ahnapee Trail to Tacoma Beach Rd	Trail	TBD	TBD	5-2	RTP	10+
Long-Term Trail	Bayview Park to N Quarter Deck Ln	Trail	TBD	TBD	5-2	RTP	10+
Long-Term Facility	N Quarter Deck Ln to Circle Ridge Pl	TBD	TBD	TBD	5-2	General Fund	10+
Long-Term Trail**	Utah St to Michigan St	Trail	TBD	TBD	5-2	RTP	1-5
Long-Term Facility	Barge Rd to Strawberry Ln	TBD	TBD	TBD	5-2	General Fund	10+
Long-Term Trail	Big Hill Park	Trail	TBD	TBD	5-1, 4-4	General Fund	5-10
Long-Term Facility	High School Parking Lot and access road	TBD	TBD	TBD	5-1, 4-4	General Fund	5-10
Long-Term Facility	Through Door County Fairgrounds	TBD	TBD	TBD	5-1	General Fund	5-10
Long-Term Facility	Connect Georgia St	TBD	TBD	TBD	5-1	General Fund	5-10
				TOTAL: $158,292			

*unless an off-street facility is built between Utah St and Michigan St

** while this facility is labeled "long-term" it should be built as soon as possible if right-of-way can be secured

4.3 Additional Costs and Funding Opportunities

This section explores typical costs for installation of bicycle and pedestrian facilities and potential sources of funding. Costs are provided as estimates to enhance the transportation network for bicycle and pedestrian accommodation. However, these costs should not be seen as additions to the transportation system, rather, they are elements of a complete street that functions for all potential transportation users. Including these facilities in preliminary designs and estimates now will result in lower overall costs than retrofitting facilities at a later date.

4.3.1Facility Development Costs

General costs for projects related to bicycle accommodation are shown below. Not all facilities will are recommended for Sturgeon Bay, but can be used to compare alternative design scenarios.

5' Sidewalks: $4 per square foot (concrete).

10' Paved Trail Facilities: $150,000 per mile, including excavation, base course, asphalt, salvaged topsoil, and drainage (assume two pipes per mile).

10' Gravel Trail Facilities: $85,000 per mile, including excavation, base course, and salvaged topsoil.

Bicycle Rack (inverted U): $99-250 each

Constructing a Bike Lane (5'): $60 per lineal foot (urban cross section includes curb and gutter)

Crosswalk (wide continental pattern): $300 each

Curb ramp (with truncated dome): $1,500 each

Pedestrian Refuge Island: $15,000 each

Striping (Bike Lane): $2.50 lineal foot (epoxy) or $1 per lineal foot (paint).

Stencils: words each ($60 epoxy, $40 paint), symbols each ($120 epoxy, $70 paint), arrows each ($120 epoxy, $70 paint).

Signs: $65 each sign, $50 each post.

4.3.2 Facility Maintenance Costs

Per-mile maintenance costs can differ according to environmental conditions, like snow removal, and economic factors. The following estimated costs were derived from various state and municipal sources and are given on a per mile/per year basis.

Bike Lanes and Wide Curb Lanes: $1,500 per mile, including signs, striping, stencils and street sweeping (Arizona Highway Dept.)

Paved Paths: $600 - $900 per mile, including barriers, spot repairs, vandalism, striping stencils, clean-up and shoulder grading (MinDOT and C. Madison, WI)

Gravel Paths: $1,200 - $1,500 per mile, depreciation and spot repairs, signs, litter clean-up and mowing ditches (WDNR)

Shared Roadways: Negligible costs (less than 1% of the routine road costs, including sign repair, vegetation pruning and extra litter clean up)

These per-mile costs are generalized and do not include the maturation costs of reconstruction or the costs of snow removal activities.

Maintenance costs can be offset through cooperative agreements with public and private agencies. Adopt-a-Bikeway programs and other similar programs can provide reliable routine clean up and repair activities.

4.3.3 Funding Sources

Sturgeon Bay should appropriate annual funds for bicycle and pedestrian improvements just as they do for other roadway projects. In addition, many of the proposed bicycle and pedestrian projects may be eligible for state or federal funding.

As part of the state and federal initiatives to enhance bicycling and walking as regular transportation modes, several grants and funding sources are available to communities for planning, facility development, and land acquisition.

Federal transportation enhancement programs, most recently reauthorized as SAFETEA-LU, have helped fund many bicycle and pedestrian transportation activities throughout the United States. Similarly, Wisconsin has approved the funding of many community projects. City officials should coordinate with WisDOT's Northeast Region for available grant funding.

Alternate funding strategies through private interests, including business associations, should also be considered. Local private interests will benefit from an improved system that offers transportation choices and attracts travelers and tourists to the area. Private agencies that share the vision of an integrated bicycle system may be willing to invest in development or maintenance of facilities. These private partnerships should be explored to provide better bicycle facilities.

The following programs provide funds for bicycle and pedestrian improvements.

<u>Local Transportation Enhancements (TE)</u>

Program Description: Transportation enhancements (TE) are transportation-related activities that are designed to strengthen the cultural, aesthetic, and environmental aspects of transportation systems. The transportation enhancements program provides for the implementation of a variety of non-traditional projects, with examples ranging from the restoration of historic transportation facilities, to bike and pedestrian facilities, to landscaping and scenic beautification, and to the mitigation of water pollution from highway runoff. Most of the projects awarded in Wisconsin have been for bicycle and pedestrian facilities. Examples

of bicycle and pedestrian projects include: multi-use trails, paved shoulders, bike lanes, bicycle route signage, bicycle parking, overpasses/underpasses/bridges, sidewalks, and pedestrian crossings. Local municipalities contribute 20% of the project costs.

Transportation enhancement activities must relate to surface transportation. Federal regulations restrict the use of funds on trails that allow motorized users, except snowmobiles.

Contact: John Duffe, State Coordinator at 608-264-8723 or john.duffee@dot.state.wi.us

Bicycle and Pedestrian Facilities Program (BPFP)

Program description: Bicycle and pedestrian facility projects costing $200,000 or more and planning projects costing $50,000 or more are eligible for BPFP funds. To be eligible, the project must be usable when it is completed and not staged so that additional money is needed to make it a useful project. A project sponsor must pay for a project and then seek reimbursement for the project from the state. Federal funds will provide up to 80% of project costs, while the sponsor must provide at least the other 20%. Because of the similarities between the BPFP and the Transportation Enhancements (TE) program objectives and eligibility criteria, applications and funding for both programs are undertaken together.

Contact: John Duffe, State Coordinator at 608-264-8723 or john.duffee@dot.state.wi.us

Surface Transportation Program (STP-U) Urban

Project Description: This program allocates federal funds to complete a variety of improvements to federal-aid-eligible roads and streets in urban areas. Projects must meet federal and state requirements. Communities are eligible for funding on roads functionally classified collector or arterial. The WisDOT requires that pedestrian and on-street bicycle accommodations be part of all STP projects within or in the vicinity of population centers, unless extraordinary circumstances can be demonstrated to WisDOT for not providing these accommodations.

Contact: Renee Callaway, State Coordinator at 608-266-3973 or renee.callaway@dot.wi.gov

Robert Wood Johnson Foundation (RWJF)

Project Description: One of the largest foundations in the country, the Robert Wood Johnson Foundation offers grants that address public health issues, such as childhood obesity and asthma. Bicycle and pedestrian facilities qualify for RWJF funding.

Contact: Robert Wood Johnson Foundation http://www.rwjf.org/applications/index.jsp

Wisconsin Department of Natural Resources Stewardship Program (Stewardship)

Program Description: Stewardship funds are intended to support the development of "nature-based" recreational facilities. Stewardship grants have been used to implement hiking and biking trails and otherwise facilitate active recreation. Local municipalities or the grant

applicant is responsible for 50% of project costs. This program is primarily used for acquisition of park lands.

Contact: Sue Kocken, Environmental Grant Specialist for the Northeast Region, Wisconsin Department of Natural Resources, 920-662-5487 or Susan.Kocken@Wisconsin.gov

Wisconsin DNR Recreational Trails Program (RTP)

Program Description: Recreational Trails grants provide funding to build off-street trails for both motorized and non-motorized transportation. Local municipalities or the grant applicant is responsible for 50% of project costs. Eligible projects include:

- Maintenance and restoration of existing trails.
- Development and rehabilitation of trailside and trailhead facilities and trail linkages.
- Construction of new trails (with certain restrictions on Federal lands).
- Acquisition of easement or property for trails.

Contact: Sue Kocken, Environmental Grant Specialist for the Northeast Region, Wisconsin Department of Natural Resources, 920-662-5487 or Susan.Kocken@Wisconsin.gov

Safe Routes to School (SRTS)

Program Description: Safe Routes to School (SRTS) programs encourage children ages K-8 to walk and bike to school by creating safer walking and biking routes. These programs are funded through the revised federal transportation act - SAFETEA-LU - signed into law on August 10, 2005. This legislation provides funding to state departments of transportation to create and administer SRTS Programs. SRTS Programs improve walking and biking travel options, promote healthier lifestyles in children at an early age and decrease auto-related emissions near schools. SRTS funds can be used for both infrastructure projects and non-infrastructure activities within 2 miles of elementary and middle schools. Safe Routes to School grants fully fund accepted projects (100% funding).

Contact: Renee Callaway, Wisconsin Safe Routes to School Coordinator, Wisconsin Department of Transportation at 608-266-3973 or renee.callaway@dot.state.wi.us

Appendix A:

2008 Bicycle Routes

Appendix B:

2009 Bicycle Audit Map

Appendix C:

PIM #1 Key Conflict Areas

Appendix D

Focus Areas

Appendix E

Bicycle Facilities Plan
(Quadrant and Composite Bicycle Network Maps)