ST. CROIX COUNTY
Bicycle and Pedestrian PLAN

Adopted
May 2, 2017

St. Croix County Wisconsin
Innovation Through Cooperation

Adopted on May 2, 2017
St. Croix County Board of Supervisors
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Prepared by:

St. Croix County Community Development Department

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Community Development Committee

Transportation Committee

Contents

ST. CROIX COUNTY

Bicycle and Pedestrian PLAN

Part 1: Overview of the Plan

1.1 Background

The St. Croix County Bicycle and Pedestrian Plan (the Plan) was developed to serve as a guide for the further development of bicycle and pedestrian facilities in St. Croix County and as a strategy to enhance opportunities for bicycling and walking across the county for a wide variety of people—from school children to casual adult bicyclists to avid road cyclists. The Plan identifies a primary bike and pedestrian network to safely and efficiently serve bicyclists and pedestrians in St. Croix County. The Plan also includes a variety of recommendations for new and enhanced bikeway and trail facilities within the network that will provide a higher level of service than existing bikeway infrastructure in the county.

The intent of this multijurisdictional Plan is to give local units of government, maintenance authorities, and the county as a whole a comprehensive map of potential bikeways and trails as well as tools and recommendations to consider when planning and setting policy. A far-reaching stakeholder and public engagement process was employed to gain input from hundreds of people from across the county—including elected officials, agency staff, advocates, and the general public—in shaping the future for biking and walking.

Past Planning Efforts

St. Croix County and many of its individual communities have long histories of planning for biking and walking. The County Highway Department has nearly completed implementation of its Bicycle Transportation Plan (1995-2015) that was developed more than two decades ago. Implementation of that plan included installing bike route signs and paving shoulders on many County highways. The County's 2008 Parks and Recreation Bicycle and Pedestrian plan went a step further by identifying low-traffic town roads for biking and corridors for future trails. Several individual communities have bikeway and/or trail plans and some have been very proactive in implementing trails and sidepaths in the past 10 years. Previous plans and other documents are summarized in Part 2 of the Plan.

As a result of the efforts of the County, municipalities, and bicycle and trail advocates, many miles of signed bike routes and several paved and unpaved trails have been provided across the county. Examples include the Wildwood Trail from Woodville to Pierce County, networks of trails and sidepaths in communities such as Hudson and New Richmond, and the popular signed bike route on County Highway E. Furthermore, many of the county and state parks and recreation areas have some form of internal trail, but these areas are not connected to each other by trails or easy-to-use bike routes.

Examples of the results of previous planning efforts in St. Croix County. The Wildwood Trail (left), a signed bike route (center), and Hatfield Lake Trail in New Richmond (right).

Recent Opportunities and the Need for a New Plan

More recently, the St. Croix Crossing project has afforded a major opportunity to St. Croix County. The project revolves around rerouting motor vehicle traffic crossing the river between Houlton and Stillwater to a new bridge located approximately a mile and a half downriver from the historic lift bridge. The new bridge will include a bicycle and pedestrian crossing and the lift bridge will exclusively carry bicycle and pedestrian traffic. A new loop trail will connect the two bridges on both sides of the river, effectively linking northern St. Croix County to the Twin Cities.

The St. Croix Crossing project, implementation of the County Highway Department's 1995-2015 plan, and increasing public interest across the county spurred the need to develop a new countywide Bicycle and Pedestrian Plan. This Plan will identify an array of policy and infrastructure strategies and priorities to make bicycling and walking safer and more appealing for the general population as well as more avid cyclists. Moreover, since it is being developed as a countywide project, it will consider the needs and priorities of all parts of the county.

Artist rendering of the new St. Croix Crossing Bridge (background) and historic Stillwater Lift Bridge (foreground).

Return on Investment: Tourism & Economic Development

The Plan is also an opportunity to attract additional tourism to St. Croix County and generate further economic development. Bicycle recreation and tourism contributes $924 million ($535 million from out-of-state tourism) to Wisconsin's economy (2010).[1] In Minnesota, bicycle riders spend more than $427 million while on bike trips (2009).[2] Hundreds of thousands of visitors from outside St. Croix County visit Willow River State Park and Eau Galle Recreation Area each year. Whether St. Croix County captures more of this economic activity depends in part on publicity and promotion of existing opportunities in the form of online advertising, special events, etc. However, it also depends on whether people have positive experiences when riding on roads and trails in St. Croix County, and whether they return regularly and spend money here. Comfort, enjoyment, and safety are direct results of wise investment in trails and on-road bikeways—the primary focus of the Plan. One study found that every $1 million of spending on off-road paths and paved shoulders generated an annual $9 million worth of economic activity linked to bicycle tourism each year—that is an **annual nine-to-one return on the investment**.[3]

Demographic Profile of St. Croix County

St. Croix County has experienced rapid growth over the past 15 years as a part of the greater Twin Cities metropolitan region. Most of the population lives in cities and villages, but almost a third live in unincorporated areas, reflecting the strong rural character of the county. Median household income[4] is $70,313, which is significantly higher than the statewide median of $52,738. Figure 1–1 and Figure 1–2 illustrate these trends.

Figure 1–1: County Population Distribution and Growth

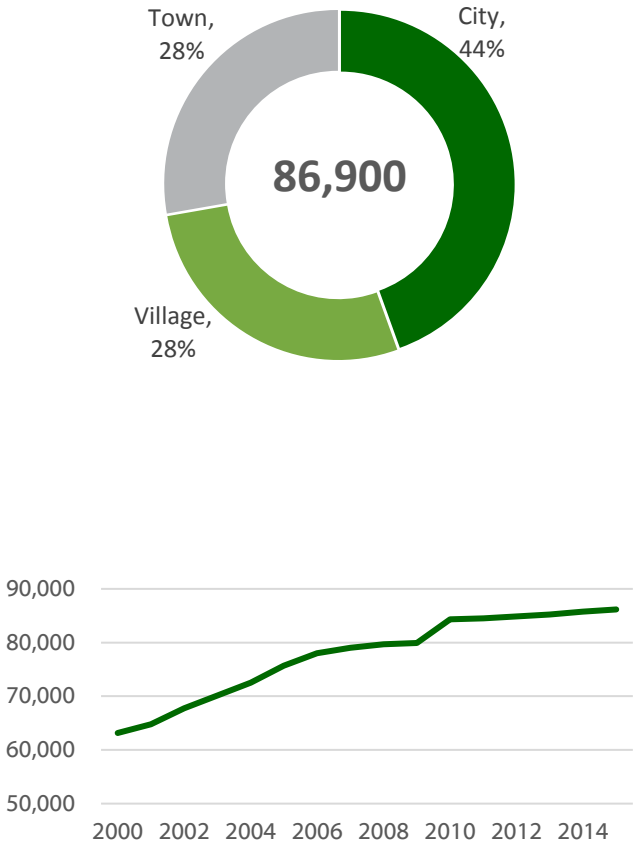


Figure 1–2: Household Income in the County

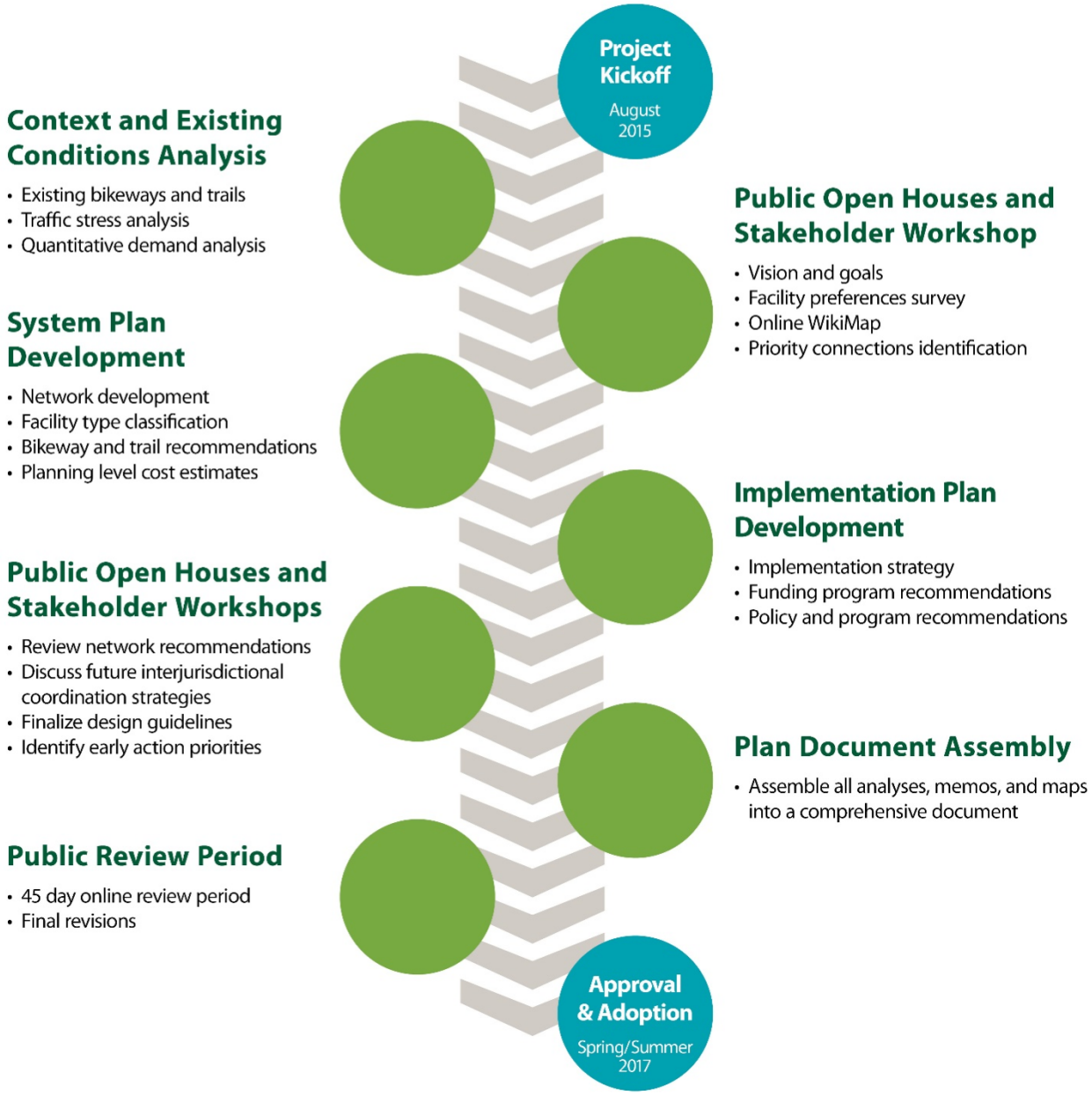
Median Household Income: $70,300

Plan Development Process

The Plan was developed by St. Croix County through its Community Development department in close coordination with the Highway department and Parks division. An Advisory Team—composed of representatives from communities across the county, multiple advocacy organizations, the health community, the Wisconsin Department of Transportation (WisDOT), and the County Board—provided important input during the planning process. The Advisory Team met six times over the duration of the project to review work products and provide guidance.

The majority of the funding for this project came from a Transportation Alternatives Program (TAP) grant awarded by WisDOT. The grant was awarded thanks to the hard work of the County, advocates, and other stakeholders in preparing the application. A portion of the TAP funds were used to hire the consultant team that assisted in the preparation of the Plan. Figure 1-3 summarizes the entire plan development process.

Figure 1–3: Plan Development Process



1.2 Planning Approach

The St. Croix County Bicycle and Pedestrian Plan aims to serve the needs of the entire county by identifying strategies to achieve both short-term and long-term outcomes. The plan's focus, therefore, is on A) the development of near-term and longer-term infrastructure solutions; and B) creating a comprehensive toolbox of supporting policies and strategies that enable the county, municipalities, and stakeholders to effectively implement the Plan.

The development of the Plan's recommendations revolve around quantitatively and qualitatively answering three questions—who will use the system, where they want to be able to go by bike or on foot, and what facility types and treatments are appropriate (for example, paved shoulders versus shared roadways).

Understanding the wide array of people that walk and bike in St. Croix County is central to the approach taken in the development of this Plan.

Vision and Goals for the Plan

At the outset, the Advisory Team and other stakeholders began developing a unified vision and set of goals for the Plan. Agreeing on a vision and goals gives direction and order to the planning process while shaping the decision-making process that leads to the Plan's ultimate recommendations. A vision statement clarifies the beliefs and governing principals of the plan to the greater community (as well as to staff, participants, and volunteers). The plan goals are a list of more specific ways that the Plan will achieve this vision.

Vision Statement

St. Croix County will work in collaborative partnership with towns, villages, and cities to provide safe, convenient, and enjoyable walking and biking opportunities that serve a broad range of people with different ages, abilities, and interests; support tourism and enhanced quality of life; and link communities to each other, to key destinations, to surrounding counties, and across the St. Croix River to the Twin Cities region.

Goals

Safety – Increase and emphasize safety for all road users through a combination of infrastructure improvements that provide safe places to walk and bike; education programs at schools and for adults; and enforcement strategies that increase awareness, understanding, and compliance with existing traffic laws.

Inclusiveness – Increase the comfort, accessibility, usefulness, and appeal of trail and on-road bikeway networks to serve a broad range of people biking and walking—including children going to school, adults commuting to work, people concerned about interacting with motor vehicles, out-of-state tourists, avid road cyclists, and people that bike and walk primarily for recreation.

Partnerships – Increase communications and coordination between St. Croix County, municipal staff, elected officials, advocates, schools and school districts, public health and healthcare, civic organizations and non-profits, state agencies (such as the Department of Transportation and Department of Natural Resources), and the general public to leverage resources and knowledge to develop networks for bicycling and walking that are consistent, context-sensitive, and continuous from one community to another.

Support – Increase public and political support to encourage bicycling and walking, develop sustainable funding strategies, and secure buy-in for implementation of this Plan through education and outreach about the health and economic benefits—both personal and community-wide—of walking and biking.

Connectivity – Increase connectivity for biking and walking within and between communities, to key destinations such as schools and state parks, to surrounding counties in Wisconsin, and across the St. Croix River to Minnesota.

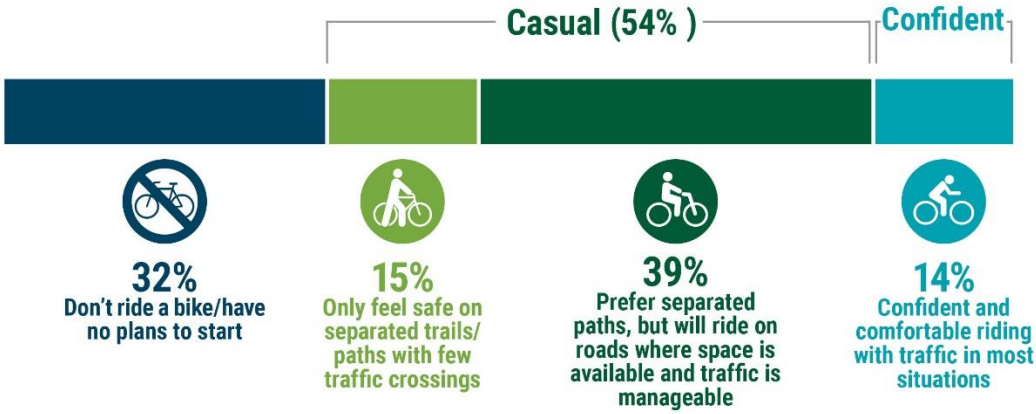
Understanding Who Bikes and Walks

A wide range of people with varying abilities and preferences bike and walk in St. Croix County—even people that do not consider themselves bicyclists or pedestrians ride or walk occasionally. Examples of the wide variety of purposes and styles of walking and biking include walking down the street to a neighbor's house, biking to work, children walking and biking to school, walking and window-shopping along a main street, using a wheelchair to get around, and riding 150 miles in a day for recreational purposes.

Making sense of this broad spectrum is important in order to develop a plan that effectively meets the needs of people biking and walking in St. Croix County. Doing so necessitates identifying factors that differentiate types of users into distinct groups. Pedestrians, while a diverse group in terms of physical ability, have needs and operating characteristics that are generally homogeneous—they all generally move at about the same speed and are best served by sidewalks, sidepaths, and trails that are separated from motor vehicle traffic. Bicyclists, however, have a much greater diversity in terms of operating characteristics—most notably speed and comfort interacting with motor vehicle traffic.

Since different types of bicyclists have different levels of comfort interacting with motor vehicle traffic, it is important to identify how St. Croix County's population is distributed within this spectrum. In 2014 and 2015, the Survey Research Center at UW River Falls conducted a survey of St. Croix County residents. The survey sought to classify bicyclists based on an analysis originally performed by the Portland Office of Transportation[5], which indicates that people (whether or not they regularly ride a bicycle) fall into one of the four categories shown in Figure 1–4. These categories are based on peoples' traffic stress tolerance or comfort, confidence, and willingness to interact with motor vehicle traffic. The findings are that the majority of people have a low tolerance for interacting with motor vehicle traffic—the group labeled "casual bicyclists."

Figure 1–4: Types of Bicyclists in St. Croix County

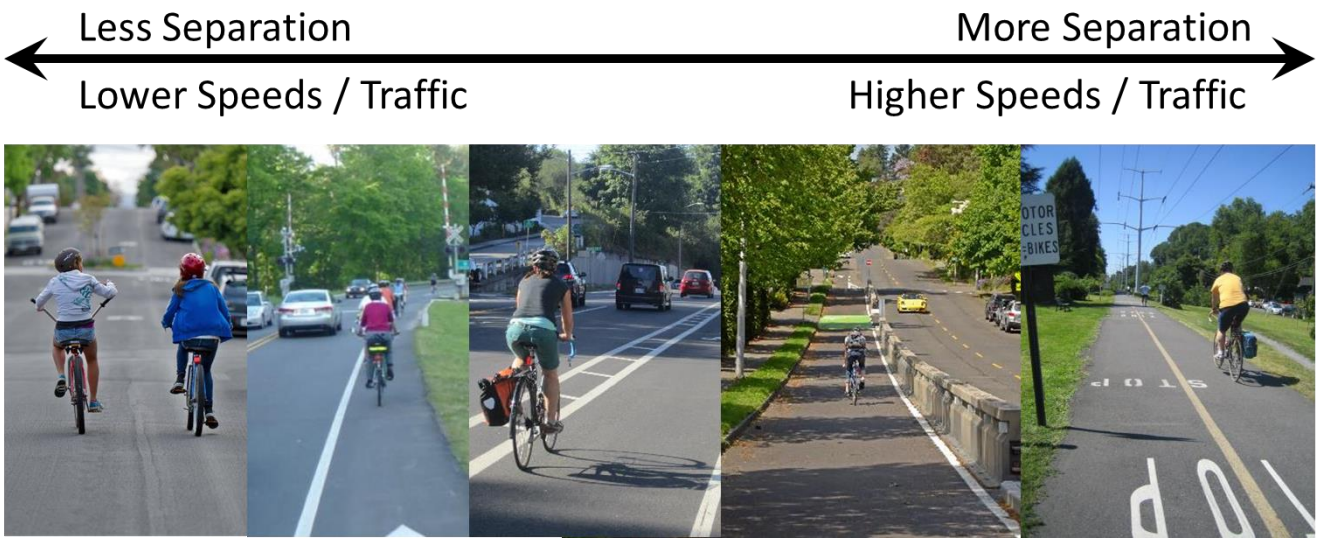


The UW River Falls Survey Center distributed 1,700+ random surveys by mail throughout the county and received 626 responses. This results in a 95% confidence level with a +/- 3.1% margin of error.

The research and thinking surrounding this method for classifying the general population by traffic stress tolerance posits that a significant portion of the "casual bicyclist" population is not bicycling very often, at least not on streets and roads with little separation between bicycles and cars. Additional research[6] shows that the majority of the casual bicyclist population is concerned about interactions with motor vehicles, which indicates that separation from motor vehicle traffic is the most important factor to consider to encourage more people to bicycle.

Separation is achieved by providing different types of bikeway facilities depending on the traffic context (speed and volume of motor vehicle traffic). Many people can feel comfortable bicycling on low speed streets with very little motor vehicle traffic, even without a dedicated bicycle facility. On the other hand, higher speeds and higher volumes of motor vehicle traffic necessitate the provision of bikeway facilities that provide additional separation in order to be comfortable for the majority of the bicycling public. Figure 1–5 illustrates the relationship between bicycle facility types and traffic context. Each of the example images presents a low level of traffic stress for casual bicyclists.

Figure 1–5: Relationship between Traffic Context and Appropriate Bikeway Facility Type for Less Confident Bicyclists



Terminology

There are many terms used to describe different bikeway facility types, such as shared-use path, trail, bike path, sidepath bike lane, bike route, etc. To promote consistency and ease of understanding, the following terms are used throughout this document:

- **General Terms**
  - **Bikeway** – Any type of bicycle facility (including trails), but typically used in reference to bikeways within a street or road right-of-way. Includes bike lanes, paved shoulders, signed bike routes, and sidepaths.
  - **Trail** – A term that is often used to distinguish bikeways that are primarily located in independent rights-of-way. May be primarily recreational in nature but also serves a transportation function.
- **Facility-Specific Terms**
  - **Path or Shared Use Path–** Often synonymous with the word "trail," a shared use path is a separated facility, typically in an independent right-of-way such as a greenbelt or abandoned railroad.
  - **Sidepath** – A separated path along a roadway that serves people bicycling and walking. Sometimes referred to as a path, but the term "sidepath" is used to distinguish the context and likelihood that interactions with motor vehicles at driveways and intersections will be more common. May also serve skateboarders, rollerbladers, and other non-motorized and non-equestrian users as determined by individual municipal ordinances.
  - **Bike Route** – A signed route that is preferred for bicycling due to access to destinations or low traffic. Does not have a delineated or dedicated space for bicycling.
  - **Bike Lane** – A striped lane (typically only in urban areas) for the exclusive use of bicyclists.
  - **Paved Shoulder** – Paved area at the edges of rural roadways seperated by a striped line. A paved shoulder is suitable for bicyclists if it is at least 4 feet in width.

Other facility-specific terms are used occasionally in this document and are defined in Part 3.

1.3Public and Stakeholder Engagement

The process of developing the Plan included a variety of opportunities for public and stakeholder engagement. Input received from municipal stakeholders, advocates, and the general public shaped the Plan's infrastructure and policy recommendations. A summary of the process is described below.

Summary of the Engagement Process

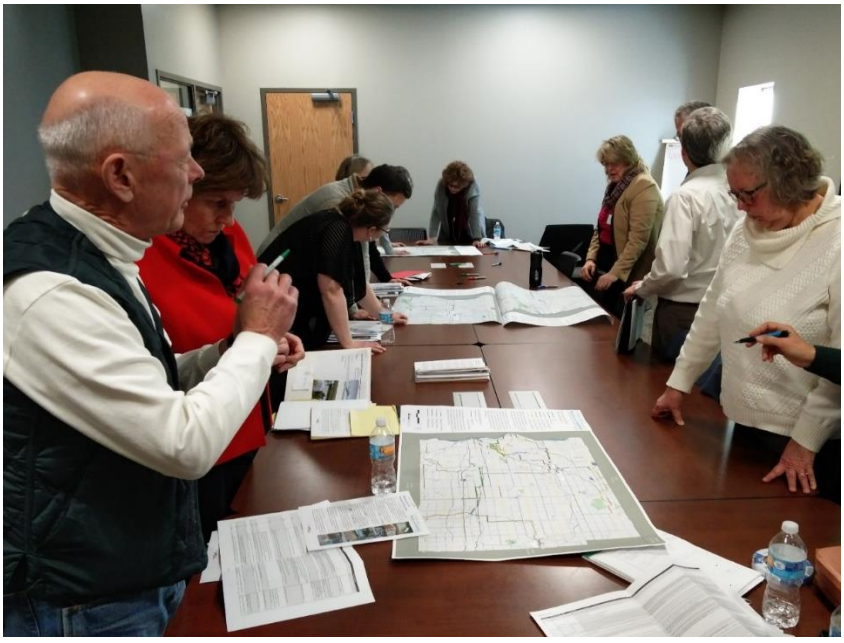
An effective community engagement and communications process helps ensure the creation of an effective, high-quality Plan that is supported by stakeholders and establishes a clear path toward reaching the Plan's vision. The engagement process for the Plan had the following goals:

- Developing a unified vision and shared goals for the Plan.
- Informing project participants about the project.
- Discussing and receiving feedback on recommendations and priorities from stakeholders.
- Leveraging the current high levels of enthusiasm and momentum amongst the public and advocacy groups for bicycle, pedestrian, and shared-use infrastructure.
- Engaging St. Croix County residents around bicycling and walking as they relate to tourism, economic development, healthy life styles, safe commuting, and recreation.

The engagement process included several outreach tools and strategies, which are described below.

Advisory Team

An interjurisdictional Advisory Team met six times and provided input throughout the development of the Plan, including reviewing and commenting on major project components. Advisory Team members were expected to share relevant information about public input opportunities and project materials with the agency or organization they represent as well as their stakeholder contacts. The Advisory Team included representatives from the County Highway and Public Health departments, staff from cities, villages, and towns throughout the county, local bicycle and trail advocacy organizations, the Hudson Hospital, and the St. Croix Central School District.



The Advisory Team met six times, providing input and guidance throughout the development of the plan.

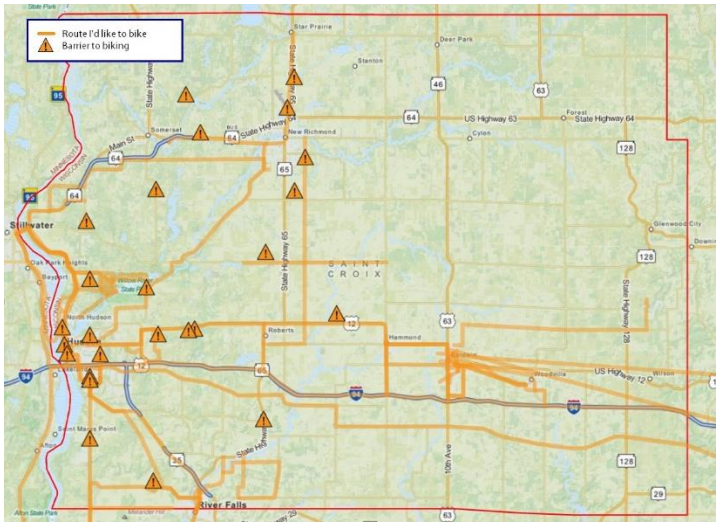
Project Website

The project website, which was hosted at https://www.sccwi.gov/365/Bicycle-Pedestrian-Facilities-Plans served as the central place for disseminating information about the project and engagement opportunities online. The website was updated regularly with information about work-to-date and public engagement opportunities.

The Bicycle and Pedestrian Plan project website was a primary source of project information for a variety of stakeholders. Updates, maps, memos, and other materials were posted here for public review throughout the project.

Online Mapping Tool (WikiMap)

The project team developed an online interactive map, called a WikiMap, to collect geographically-specific information about walking and biking topics in St. Croix County. Respondents identified barriers to biking and walking, biking or walking destinations, routes they currently bike, and desired routes or connections for biking and walking. The map was online and available for public input from September to November, 2015, and was promoted through the project website, email list serves, at public meetings, and at community events



The WikiMap provided an opportunity for people to participate from the comfort of their homes and on their own schedule. This map shows routes people said they would like to bike and barriers to biking.

Listening Sessions

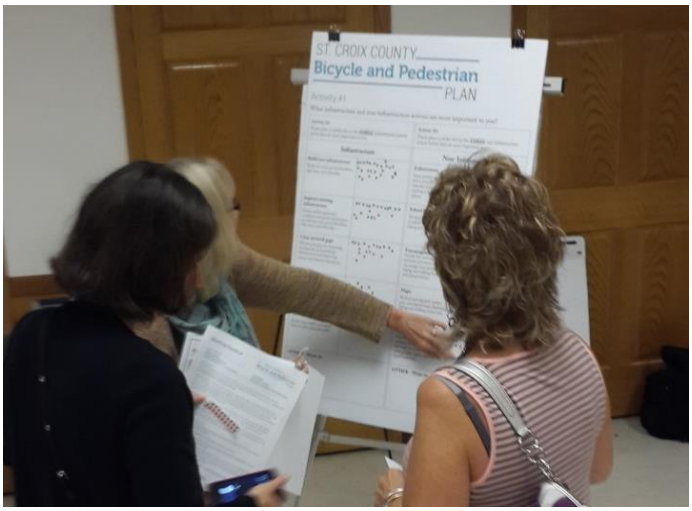
A series of six listening sessions provided a comfortable space for stakeholder groups to discuss their priorities for the plan. By convening stakeholder groups—such as bicyclists, highway department staff, and town representatives—participants were more likely to share honest feedback since they can relate to one another and there was common understanding and trust.

Stakeholder Workshops

Two half-day Project Workshops were held to solicit information and feedback from a wide range of stakeholders on an invitation basis. These meetings were designed to foster communication and collaboration between officials, municipal and county staff, and knowledgeable advocates—the invitation list was evenly balanced between these three groups—as well as providing opportunities to discuss and gain feedback on technical aspects of the project. The workshops consisted of a variety of large- and small-group sessions that were designed to solicit feedback and input about walking and bicycling in St. Croix County as well as foster discussion among adjoining municipalities and various advocacy groups.

Public Open Houses

Four open houses were held to allow the general public to learn about the plan, and provide input, and engage in dialogue with County staff, the Advisory Team, and each other about walking and bicycling. The first two open houses focused on the Plan's vision, goals, and priorities, and provided early guidance and education about the plan. The third and fourth open houses were held toward the end of the planning process to gather feedback on the plan's recommendations for trails and bikeways.



The open houses offered members of the public a variety of ways to express their preferences and priorities for biking and walking in the county.

Meeting in a Box

The Advisory Team and public advocacy groups were given the tools and training to engage with other members of the public at various events around the county by using a "Meeting in a Box" (MIAB). The MIAB consisted of a PowerPoint presentation, an informational handout, and interactive voting activities that were the same as those used at the first two open house events. As part of this strategy, project partners and volunteers were trained how to use and present the materials and brought them to a variety of community gatherings around the county. Input from the voting activities was incorporated with the input from the open house.

The "Meeting in a Box" materials were deployed by advocacy organizations including River Valley Trails and the St. Croix Bike and Pedestrian Trail Coalition. This approach allowed the Plan's outreach efforts to reach a substantially larger population.

Final Public Information Meeting

On March 29th, 2017, the last public information meeting was held at the County Board Room in Hudson. Approximately 40-50 people attended this meeting. There was strong support for the plan, and no major concerns or issues arose during comments and discussions with staff.

Public Hearing

On April 6th, 2017 the St Croix County Community Development and the Transportation committees held a public hearing on the plan. Approximately 20 people attended and provided comments. The public comments are summarized in Table 1-1. Some of these suggestions resulted in changes to the plan such as upgrading from paved shoulders to separated paths along Cty Rd A, Cty Rd I, and Rose Lane. Other comments at the public hearing were addressed or future consideration was noted.

Final Public Informational Meeting held March 29th, 2017

Table 1–1: Public Hearing Comments April 6, 2017

Source	Comment	Department Recommendation
Transportation Committee #1	Change the following route areas to bike paths instead of bike routes due to high traffic count: Cty Rd E, Cty Rd A, & Cty Rd I. (12.4 miles)	Changed Cty Rd A and Cty Rd I to separated paths in the Primary Recommendation. Removed Primary Recommendation for Cty Rd E paved shoulders, left E in the Full Build alignment as a separated path.
Transportation Committee #2	Remove Cty Rd M from the maps throughout the plan document, as it is a Pierce Cty Rd.	Removed from the map and project list.
Transportation Committee #3	Eliminate winter maintenance paragraph (plan document page 78, Packet page 85) and (plan document page 118 & packet page 125).	Removed paragraph from the plan
Transportation Committee #4	Remove Rose Lane, Baldwin, listed as a duplicate road (plan document page 69, packet page 74). Pick either Paved Shoulders or a Separated Path.	Changed Rose Lane Primary Recommendation to a separated path.
Debby Walters	Supports the adoption of this plan. Recommends Baldwin-Woodville connection from Cty Rd BB to 220th as a separated bike path.	Changed Rose Lane Primary Recommendation to a separated path.
Ric Ahern	Supports the adoption of this plan. Expressed the economic benefits of trails. Wants completion of the Great Rivers State Trail.	
Jim Webber	Supports the adoption of this plan. Hudson would benefit from more trails (tourism/economic benefits).	
Marian Webber	Supports the adoption of this plan.	
Gerald Bauer	Supports the adoption of this plan.	
Sue Wevers	Supports the adoption of this plan. Recommends a path between North side of Baldwin to the South side of Baldwin along/near Hwy 63.	Parts 1 and 2 describe the process to fund and construction specific projects. During the initial planning phases when individual projects are identified and engineering assessments are conducted, alternate routes will be explored and evaluated with local municipalities.
Mike Deneen	Supports the adoption of this plan.	
Mark Vanasse	Supports the adoption of this plan. Recommends alternate route on Landing Hill. Also raised concern about the ability to update the county plan with new local community plans.	Parts 1 and 2 describe the process to fund and construction specific projects. During the initial planning phases when individual projects are identified and engineering assessments are conducted, alternate routes will be explored and evaluated with local municipalities. Part 4 of the Plan lists all local municipal plans that have been reviewed and incorporated into the County-wide Plan. When local plans are

Source	Comment	Department Recommendation
		updated the municipality can request an amendment to the County-wide Plan.
Susan Heuiser	Supports the adoption of this plan. Raised concerns about wayfinding, an alternate route on Landing Hill, funding mechanisms for smaller communities, and the ability to update the county plan with new local plans.	Part 3.6 of the Plan provides a wayfinding framework and recommends wayfinding be addressed in a future study. Parts 1 and 2 describe the process to fund and construction specific projects. During the initial planning phases when individual projects are identified and engineering assessments are conducted, alternate routes will be explored and evaluated with local municipalities. Part 3.2 of the plan addresses possible funding mechanisms. Part 3.1 recommends local municipal support of the County-wide Plan by resolution. County staff will provide examples upon request. Part 4 of the Plan lists all local municipal plans that have been reviewed and incorporated into the County-wide Plan. When local plans are updated the municipality can request an amendment to the County-wide Plan.
Bill Lawson	Supports more trails, but from the Town of Somerset's point of view cannot see where the money would come from. Recommends alternate routes on Landing Hill.	Parts 1 and 2 describe the process to fund and construction specific projects. During the initial planning phases when individual projects are identified and engineering assessments are conducted, alternate routes will be explored and evaluated with local municipalities. Part 3.2 of the plan addresses possible funding mechanisms.
Mark Gherty	Supports the adoption of this plan. Expressed the economics benefits of trails. Handouts: "Bike 4 Trails", Juneau County Trails, WSJ article, & Bicycle Economic Impact Studies.	
Ruth Steiner	Supports the adoption of this plan. Recommends moving away from Cty Rd I and onto local Rds with lower speed limits. Encourages bike routes along 50th St, 170th Av, & 165th Av.	Parts 1 and 2 describe the process to fund and construction specific projects. During the initial planning phases when individual projects are identified and engineering assessments are conducted, alternate routes will be explored and evaluated with local municipalities.
Janet D'Ambrosio	Encouraged people to view draft interpretive panels online which will be placed along the new St Croix Crossing Loop Trail.	

Engagement Process Outcomes

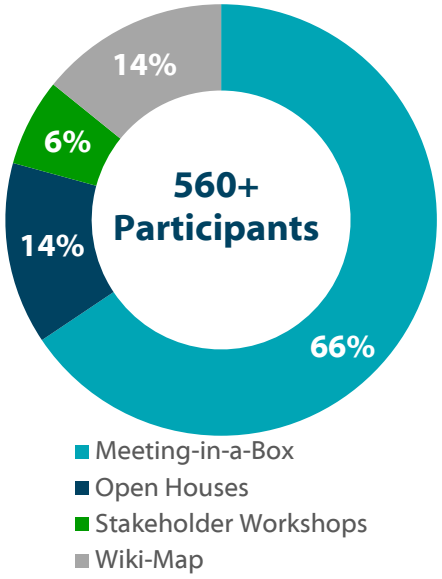
The engagement process successfully reached numerous stakeholders throughout the planning process. Some of the highlights of the findings and participation data are discussed below.

Participation Overview

The outreach strategies brought more than 560 participants into the planning process, as shown in Figure 1–6.

- Most participants were engaged through the "Meeting in a Box," which brought planning materials to seven community gatherings and engaged at least 370 people.
- A total of 114 people attended the two stakeholder workshops and four open houses.
- More than 80 respondents from 13 different communities provided input on the WikiMap.
- Participants were well-distributed among the county's cities, villages, and towns, as demonstrated in Figure 1–7: Participation by Community Type.

Figure 1–6 : Total Participation, by Outreach Strategy

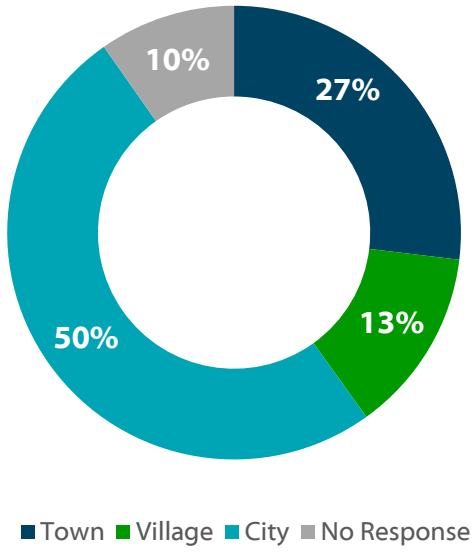


In-Person Meeting Highlights

At the open houses and stakeholder workshops, participants talked about their ideas for bicycling and walking in the county with each other, county staff, and the consultant team. Some of the topics that were discussed include:

- The Plan needs to clearly communicate the benefits of investing in bicycling and walking while dispelling misconceptions in order to articulate public opinion and build political support.
- The Plan needs to develop or identify a sustainable funding strategy and component programs/tactics to make implementation of infrastructure feasible.
- There needs to be increased communication, coordination, cooperation, and information-sharing between municipalities, the County, WisDOT, and other agencies.
- The Plan needs to create or enhance connections between communities and to major destinations in St. Croix County and beyond to support economic vitality and provide transportation choice.
- People of all ages and abilities need to experience comfort, safety, and courtesy when walking and biking.

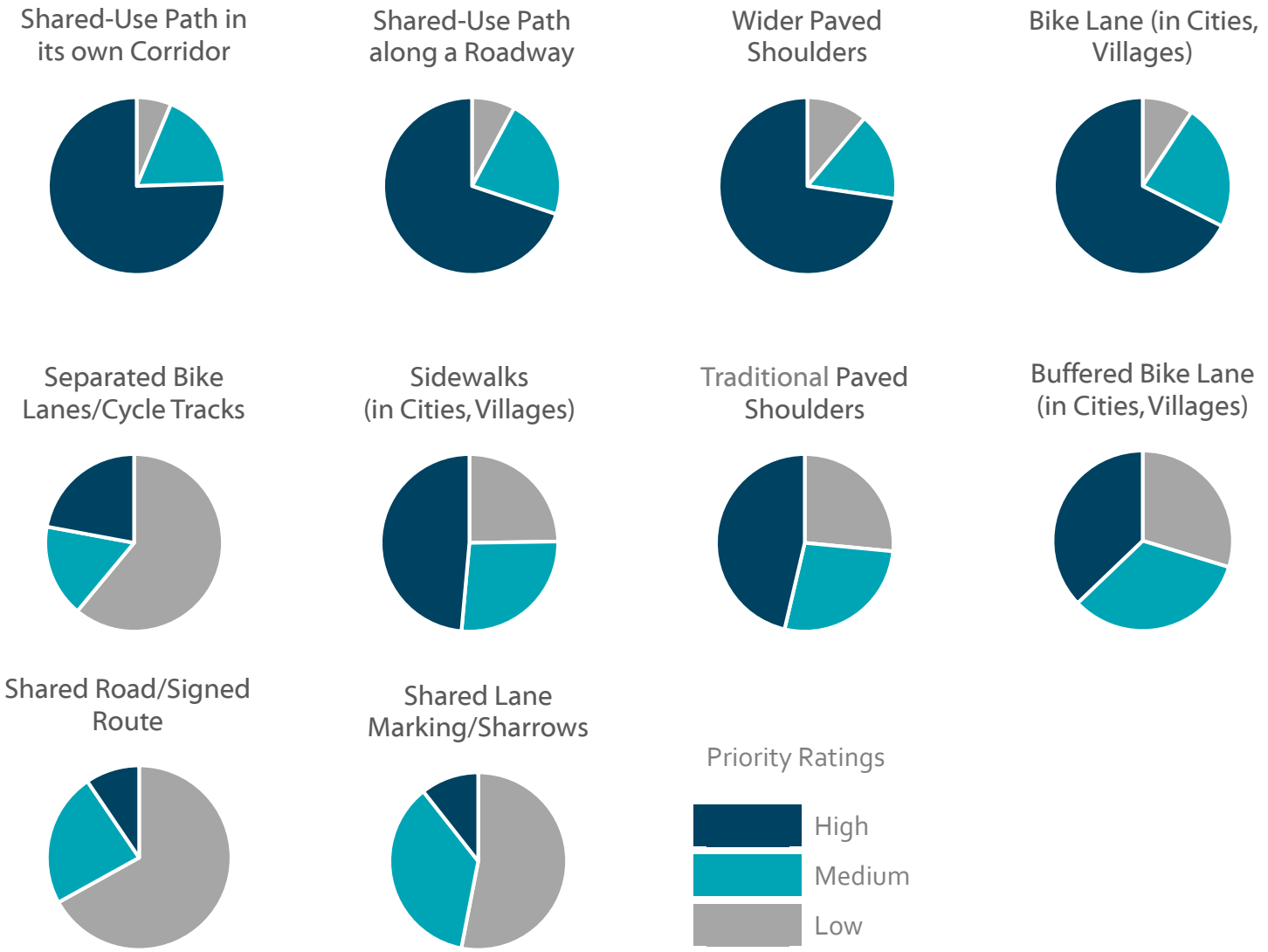
Figure 1–7: Participation by Community Type



Participants also engaged in structured activities, using stickers to quantify the amount of public support for different types of investments, programs, and bicycle infrastructure. The following findings emerged from those activities:

- When asked for infrastructure priorities, participants overwhelmingly favored building new infrastructure and improving existing infrastructure. Few voted to improve roadway crossings or slow vehicular traffic.
- When asked for non-infrastructure (or programming) priorities, most participants supported producing maps for biking and walking routes, and increasing traffic education. There was less support for increasing enforcement and expanding school safety programs.
- As can be seen in Figure 1–8, participants strongly preferred bicycle infrastructure like paths, which provide full separation from motor vehicle traffic. There was less interest in facilities that do not provide any level of separation from motor vehicles, such as shared lanes and signed routes.

Figure 1–8: Priority of Bicycle and Pedestrian Facility Types



Online Input Summary

Respondents to the WikiMap were asked to identify barriers to biking and walking, biking or walking destinations, routes they currently bike, and desired routes or connections for biking and walking. The respondents provided ample information on biking routes and barriers, but very few participants provided input on walking routes.

In response to the questions on where people currently bike, respondents identified a total of 80 routes they currently bike, as well as 61 biking or walking destinations. The majority of routes and destinations are clustered around the cities and villages in the western half of the county. In response to questions on where respondents would like to bike, and the barriers that keep them from doing so, respondents identified a total of 63 routes they would like to bike, as well as 28 barriers for biking. Most of the barriers identified were along County highways, especially in the western half of the county. The top factors that dissuade respondents from using these routes are lack of a path, bike lane, or paved shoulder; high-speed traffic; and too much traffic. Many respondents identified a desire to bike along west-east corridors, particularly between the villages of Baldwin and Woodville.

Key Themes

After considering all the comments and public responses received during the public involvement process, several themes emerged:

People want more bicycle infrastructure overall

When asked to prioritize infrastructure actions, participants overwhelmingly favored building new infrastructure, in contrast to filling in minor gaps or slowing motor vehicle traffic. Pedestrian-only infrastructure was not a high priority, although shared-use paths (which would serve pedestrians as well as bicyclists) were popular among respondents.

People want bicycle infrastructure that provides separation from motor vehicles

Participants prefer shared-use paths, wide paved shoulders, and bike lanes over treatments such as shared lane markings (also known as "sharrows") and signed routes, which do not provide any separation from motor vehicles. At in-person meetings and on the WikiMap, many participants identified motor vehicle traffic and aggressive motorists as the two most common factors that discourage people from walking or biking in St. Croix County. Keeping the two travel modes separate could help encourage more people to walk or bike.

People want separated paths that connect to the new loop trail

Based on responses to the WikiMap and input at in-person meetings, there is a strong desire to connect the new loop trail between Houlton, WI, and Stillwater, MN, to communities in St. Croix County. Specifically, connections are desired between the loop trail and North Hudson, Hudson, Somerset, New Richmond, and Willow River State Park.

People want more west-east bikeway connections across the county

The responses to the WikiMap pointed out a lack of good east-west bike routes in the county, particularly parallel to I-94 and linking Roberts, Hammond, Baldwin, and Woodville.

People want a sustainable maintenance program for trails, sidewalks, and on-road bikeways

A majority of participants believe the County, municipalities, and WisDOT should be improving existing infrastructure by ensuring quality pavement conditions and good maintenance.

People want investment in non-infrastructure programs

Participants support programmatic strategies such as producing maps that show biking and walking routes, as well as increasing traffic education for all road users. Stakeholders understand that these efforts will require partnerships between agencies, local advocates, state agencies, and state organizations such as the Wisconsin Bike Fed.

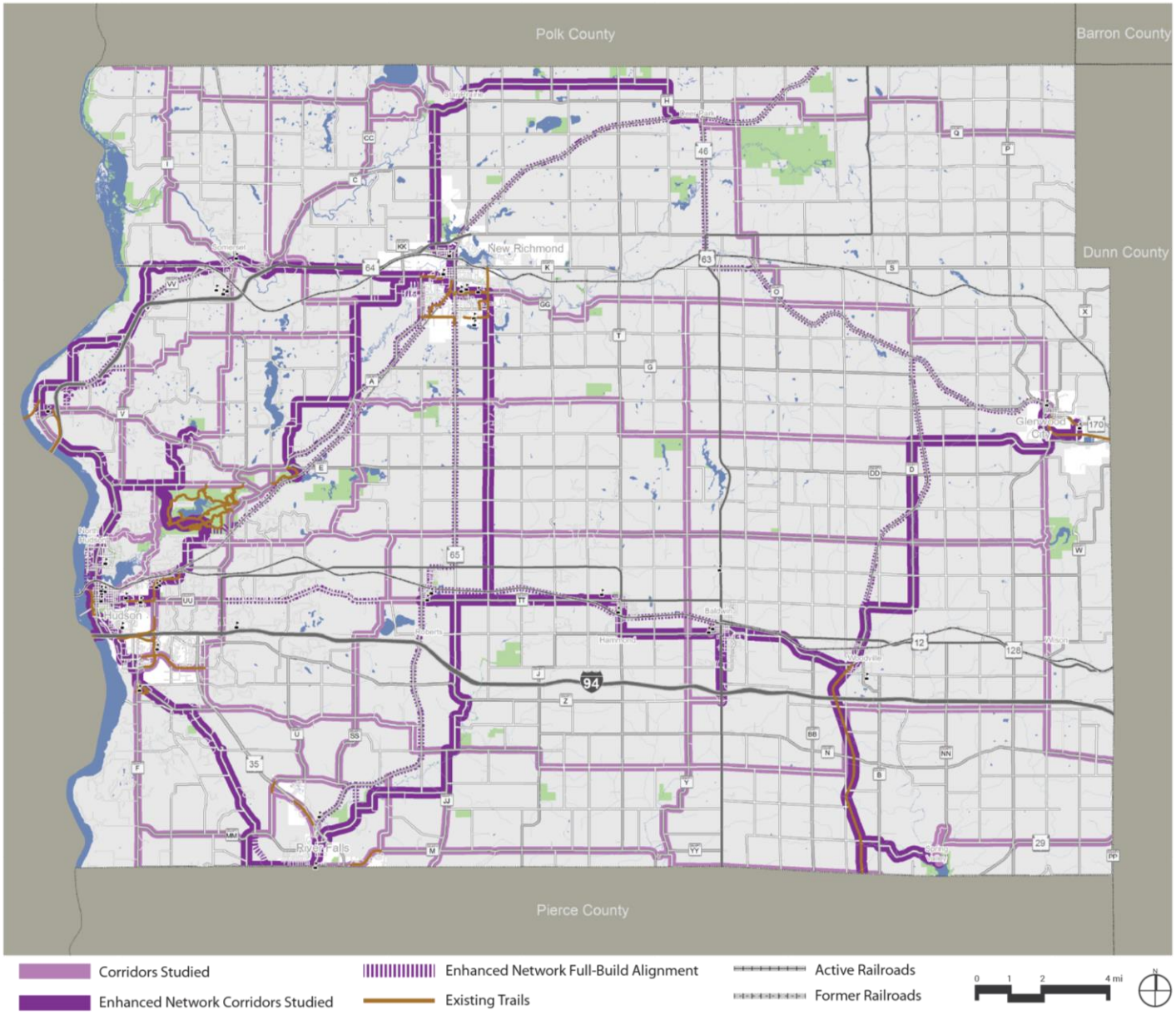
1.4 Key Recommendations and Strategies

Part 2 and Part 3 of the Plan provide detail on infrastructure and policy recommendations and how the recommendations were developed. Below are some of the Plan's key recommendations and strategies.

Enhanced Network

The Plan's bikeway and trail infrastructure recommendations (the System Plan) are based on a 539 mile network that was developed based on stakeholder input and quantitative analysis. A subset of the network (highlighted with dark purple lines in Figure 1–9) was designated as the "enhanced network." The enhanced network is intended to provide a lower-stress, higher-level-of-service experience primarily for casual bicyclists. Bikeway and trail recommendations for the enhanced network prioritize separation from motor vehicle traffic, such as sidepaths and wider paved shoulders.

Figure 1–9: The Bikeway and Trail Network



Summary of System Plan Recommendations

The bikeway and trail recommendations of the System Plan (see Figure 1-11) were developed based on a number of factors, including expected user type (casual or confident bicyclists), traffic volumes and speeds, and physical constraints. The System Plan recommends approximately 102 miles of new bikeways and trails in addition to minor enhancements (signs and occasional spot improvements) along 327 miles of existing bikeways, trails, and low-traffic rural roads (see Figure 1–10).

In addition, a "full build" network is recommended, composed of about 92 miles of additional bikeways (81 miles of which are paths). Full-build alignments represent future investments to improve connections for more casual users. The time horizon for implementation of full build alignments has not been determined and may extend beyond the life of the Plan.

Figure 1–10: Miles of System Plan Recommendations

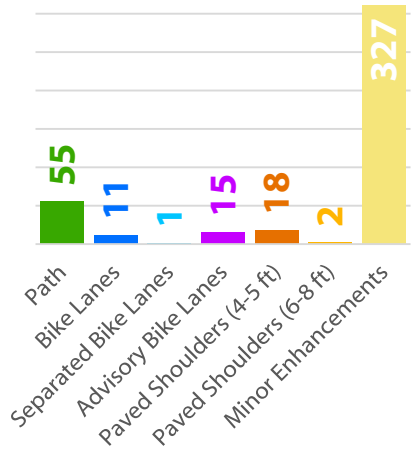
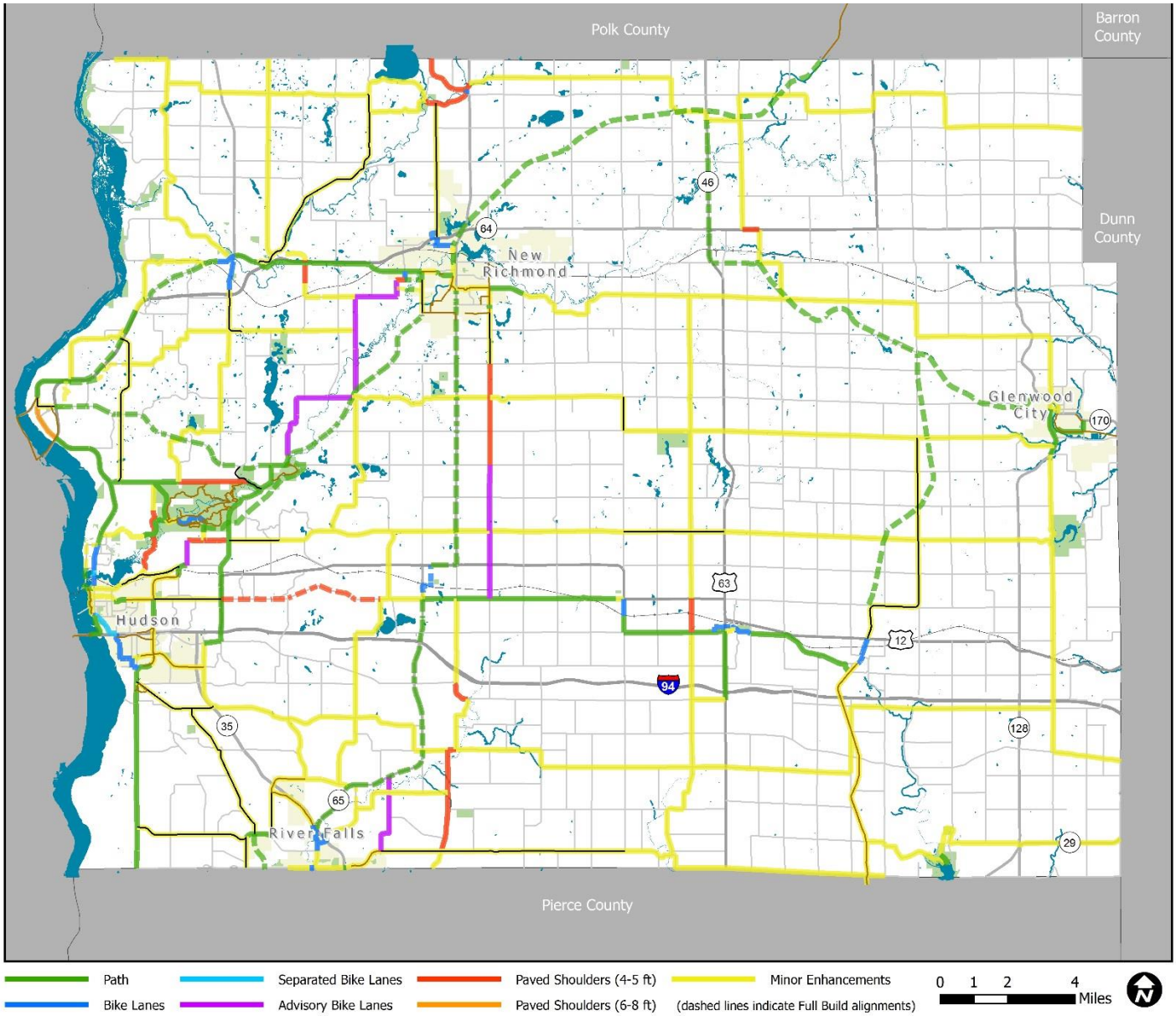


Figure 1–11: System Plan Recommendations – Including Full Build Alignments



Planning, Budgeting, and Right-of-Way Acquisition

The Plan represents the intended actions and priorities of St. Croix County and the municipalities and advocates that participated in its development. It provides a basis on which the County and municipalities can budget for future investments and coordinate specific bikeway and trail project implementation. However, the recommendations shown on the map are based on preliminary planning-level investigation and not implementation-level engineering study to confirm feasibility. Additional study and outreach to property owners will occur prior to implementation of any of the Plan's bikeway and trail recommendations.

The journey from Plan to reality for each bikeway and trail involves many steps and typically takes several years. The process may vary from one jurisdiction to another, but typically it mirrors the jurisdiction's roadway project development process. Typical steps include:

1. Developing a long-range plan that identifies comprehensive bikeway and trail network needs (this Plan).
2. Identification of individual projects within the Plan (at a minimum identifying the beginning point and ending point for each project and a time horizon for construction).
3. Budgeting for the project in a multi-year capital improvement plan or otherwise allocating funding for the project (such as by applying for and receiving grant funding).
4. Producing a preliminary engineering assessment to confirm feasibility, refine the alignment, assess basic impacts, and determine right-of-way needs.
5. Acquire right-of-way, complete engineering construction documents, and accept contractor bids.
6. Construction, traffic control, and project completion.

Broad public involvement and communication is part of steps 1, 2, 3, and 4. Outreach to individual property owners affected by the project usually occurs as early as step 2 and as late as step 4.

Funding Strategy

Successful, timely implementation of the bikeway and trail recommendations of this Plan requires extensive partnerships and continued collaborative conversations that center on an effective funding and implementation strategy. Grant programs, such as the Transportation Alternatives Program, are seen as one of the primary sources of funding bicycle and pedestrian infrastructure. However, grant funding sources are very limited and highly competitive. **The infrastructure recommendations in the Plan cannot be implemented in a timely manner solely through grant funding.** Rather, the majority of the recommendations in the Plan will need to be funded from County and local sources. New funding sources on the county or municipal level may be needed to fill the gap.

County Funding Strategy

This Plan recommends a funding strategy for St. Croix County to be considered by the County Board in order to facilitate the implementation of this Plan. The strategy includes the following components:

1. **Jurisdiction** – The St. Croix County Board anticipates adopting the St. Croix County Bicycle and Pedestrian Plan by resolution and funding the recommendations of the Plan that fall within or along County right-of-way. In addition, the County may choose to assist municipalities that have limited resources in funding minor enhancements to bikeways, as budget allows (such as contributing to matching grant funds and purchasing or installing bike route signs along town roads).
2. **Bikeways on County Highways** – St. Croix County anticipates continuing to fund on-road bikeway improvements on County highways from the same funding source as the larger roadway projects, as has been the practice of the Highway department for more than 20 years, since the adoption of its 1995-2015 Bicycle Transportation Plan.
3. **Other Bikeways** – St. Croix County anticipates establishing an annual budget line item (separate from the County Road and Bridge Fund) for bicycle and pedestrian infrastructure improvements, identifying projects to be funded each year and establishing a process to do so, and setting an annual budget level.

See Section 3.1 in Part 3 for additional information.

Municipal Funding Strategy Recommendations

St. Croix County encourages municipalities to pass resolutions of support for the Plan and to commit to assisting in its implementation. Municipal staff and elected officials are encouraged to consult the Plan and locally adopted bikeway and trail plans (if available) and/or representative stakeholders prior to making decisions regarding transportation investments.

Many of the Plan's recommendations fall within municipal rights-of-way. If municipalities want to see recommendations implemented within their communities, they will be responsible for securing funding. If requested, St. Croix County may provide each municipality with a specific funding goal, based on factors such as mileage of recommended improvements within their jurisdiction, the community's property valuation, current/forecasted population, etc.

Policy Recommendations and Model Policies

Policies and programs at the County and municipal levels are essential for the successful implementation of this Plan. Recommendations contained in Part 3 of the Plan include new policies, changes to existing policies, and a call for renewed commitments to existing policies. These recommendations are based on the Plan's goals and intended policy outcomes that resulted from an extensive, eight-month stakeholder involvement process.

In Part 3, the Plan recommends the following policies:

Design and Implementation Policies

- County Development Requirements Modifications
- Municipal Development Requirements Modifications
- Contracts and Contractor Oversight
- Use of Design Guidelines
- WisDOT Resolution of Support*
- Municipal Complete Streets Policies*
- Sustainable Maintenance Strategy and Program*

*In addition to providing basic policy recommendations in these areas, model resolutions, policies, or programs are provided.

Coordination and Communication Policies

- Intergovernmental Bicycle and Pedestrian Quarterly Newsletter
- Intergovernmental Bicycle and Pedestrian Annual or Biannual Summit
- Training and Continuing Education
- Increased Public Engagement
- Outreach, Awareness, and Education
- Tourism and Economic Development
- Child Encouragement and Safety

References

[1] Grabow, et al, "Valuing Bicycling's Economic and Health Impacts in Wisconsin," The Nelson Institute for Environmental Studies, Center for Sustainability and the Global Environment, University of Wisconsin- Madison, January 2010. https://www.adventurecycling.org/default/assets/File/USBRS/Research/Wisconsin_bicycling_Final_Report.pdf

[2] Venegas, Ernesto, "Economic Impact of Recreational Trail Use," University of Minnesota Tourism Center, November 2009. http://headwaterseconomics.org/wphw/wp-content/uploads/Trail_Study_4-trail-use-in-minnesota.pdf

[3] Lawrie, et al, "Pathways to Prosperity: the economic impact of investments in bicycling facilities," N.C. Department of Transportation Division of Bicycle and Pedestrian Transportation, Technical Report, July 2004. http://headwaterseconomics.org/wphw/wp-content/uploads/Trail_Study_7-pathways-to-prosperity-bicycle-facilities.pdf

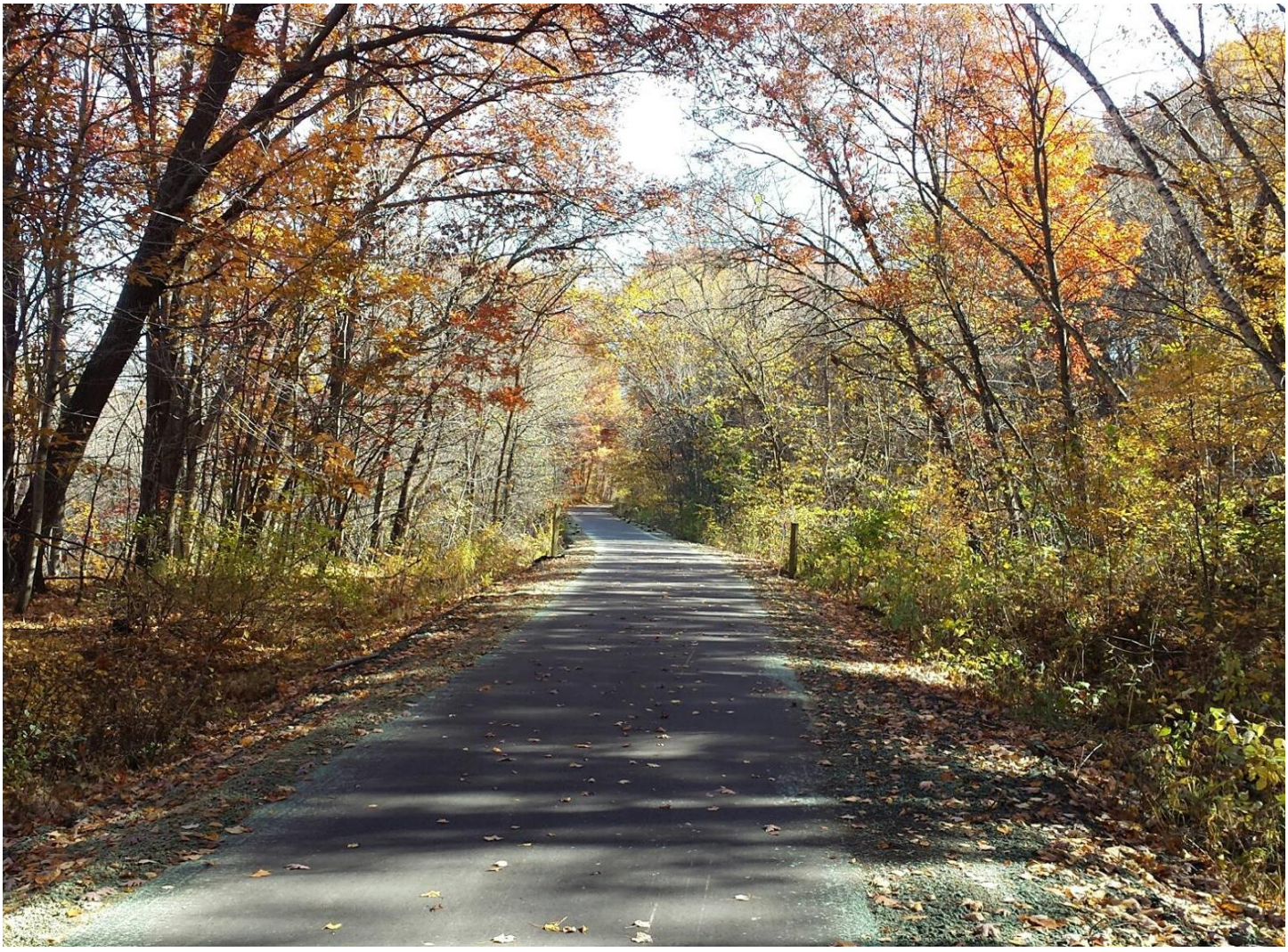
[4] U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

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

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

ST. CROIX COUNTY Bicycle and Pedestrian PLAN 2017

Part 2: System Plan



Introduction

Recommendations for bikeways and trails—the "System Plan" element of this document—were developed through a process that considered past investments, current conditions, and future needs. Each step of this process is outlined on the following pages and is structured in three parts:

1. **Context and Existing Conditions** – An assessment of relevant plans and policies, the existing bikeway and trail system, bicycle and pedestrian crash history, conditions on roadways, and an analysis of probable demand for additional bikeway and trail infrastructure.
2. **Network Development** – The creation of a network of existing and future bikeways to be studied in greater detail. At this stage, specific recommendations had not been identified; rather, the network simply identified where connections are needed. The network was designed based on stakeholder input with the goal of connecting each community to important destinations across the county. A subset of the network—the "enhanced network"—was identified to provide a lower-stress experience to better serve casual users.
3. **Bikeway and Trail Recommendations** – Finally, each segment of the network was assigned a specific facility type recommendation (e.g., bike lanes, path, etc.) based on context, traffic volumes and speeds, anticipated users within the corridor, and constraints. Segments within the enhanced network received recommendations for facility types more suited to people that are less comfortable interacting with motor vehicle traffic.

2.1 Context and Existing Conditions

Overview of Relevant Plans and Policies

Numerous background plans and policy documents relevant to biking and walking in municipalities throughout the county were reviewed in preparation of this Existing Conditions analysis. Reading through existing plans can help identify issues and desired bikeways and trails that may be included in the recommendations of this Plan. Appendix A includes a summary of these previous and on-going planning efforts affecting biking and walking in and around St. Croix County. Reviewers examined plans and studies prepared for the County and all municipalities in the County, focusing on identifying whether and how each plan includes the following six elements:

- Trail inventory
- On-Street Bikeway Inventory
- Trail Network Recommendations
- On-Street Bikeway Network Recommendations
- List of Priority Projects
- Specific Policy Recommendations

Table 2–1 on the following page displays a matrix of the relevant plans for all municipalities in St. Croix County, showing whether each plan included any content related to those six areas. Most municipalities in the County have either a Comprehensive Plan or a Park and Recreation Plan that includes information on most of the aspects of the bikeway or trail network. However, many of the villages and towns in the eastern part of the county do not have their own plans pertaining to bicycling and walking.

Statewide Policies and Documents

In addition to the plans in Table 2–1, the following statewide documents were also taken into consideration:

- Wisconsin State Bikeways Project (2015 Draft)
- Wisconsin Department of Transportation Connections 2030 (2009)
- Wisconsin State Bicycle Transportation Plan 2020 (1998)
- Wisconsin Pedestrian Policy Plan 2020 (2002)
- Wisconsin Department of Transportation Advisory on Installation of Bicyclist Compatible Rumble Strips (2011)
- Wisconsin Department of Transportation Guide for Path/Street Crossings (2011)
- Bicycle Crash Analysis for Wisconsin Using a Crash Typing Tool (PBCAT) and Geographic Information Systems (2006)
- Wisconsin Bicycle Planning Guidance (2003)
- Wisconsin Bicycle Facility Design Handbook (2004)
- Wisconsin Guide to Pedestrian Best Practices (2010)
- Wisconsin Rural Bicycle Planning Guide (2006)

Table 2–1: Matrix of Relevant Plans for All Municipalities in St. Croix County

Plan Name (Year Adopted)	Trail Inventory	On-Street Bikeway Inventory	Trail Network Recom.	On-Street Bikeway Network Recom.	List of Priority Projects	Specific Policy Recom.
St. Croix County Plans						
St. Croix County Comprehensive Plan (2012)	- -	- -	- -	- -	- -	- -
St. Croix County Parks & Recreation Bicycle & Pedestrian Plan (2008)	☐	☐	☐	☐	☐	☐
St. Croix County: 2014-2015 Bicycling & Pedestrian Survey and Safe Routes to School Survey Report (2015)	☐	☐	☐	☐	- -	- -
St. Croix County Outdoor Recreation Plan (2013)	☐	☐	☐	☐	☐	☐
St. Croix County Bicycle Transportation Plan (1996)	☐	☐	☐	☐	☐	☐
Town Plans*						
2006 Heartland Comprehensive Plan (Combined plan for the Towns of Baldwin, Cylon, Hammond, Pleasant Valley, and Stanton)	☐	☐	☐	☐	☐	☐
Town of Cady Comprehensive Plan 2009-2030	- -	- -	- -	- -	- -	- -
Town of Eau Galle Comprehensive Land Use Plan (2006)	☐	☐	- -	- -	- -	- -
Town of Emerald 2010-2035 Comprehensive Plan	- -	☐	- -	- -	- -	- -
Town of Erin Prairie Comprehensive Plan (2010)	- -	- -	- -	- -	- -	- -
Town of Forest Comprehensive Plan 2009-2030	- -	- -	- -	- -	- -	- -
Town of Kinnickinnic Comprehensive Plan (2008)	☐	☐	☐	☐	☐	☐
Town of Richmond Comprehensive Plan (2011)	☐	☐	☐	☐	☐	☐
Town of St. Joseph Bicycle & Pedestrian Facility Implementation Study (2014)	☐	☐	☐	☐	☐	☐
Town of St. Joseph Outdoor Recreation Plan (2013)	☐	☐	☐	☐	☐	☐
Town of Somerset Comprehensive Parks & Recreation Plan (2013)	☐	☐	☐	☐	☐	☐
Town of Somerset Comprehensive Plan (2015)	☐	☐	☐	☐	☐	☐
Town of Star Prairie Comprehensive Plan (2010)	☐	☐	☐	☐	☐	☐
Town of Troy Comprehensive Plan (2014)	☐	☐	☐	☐	☐	☐
Village Plans*						
Village of Deer Park Comprehensive Plan (2011)	☐	☐	☐	☐	☐	☐
Village of Hammond Pedestrian Access Plan (2004)	☐	☐	☐	☐	☐	☐
Village of North Hudson Outdoor Recreation/Park Plan (2014)	- -	- -	- -	- -	- -	☐
Village of Roberts Outdoor Park & Recreation Plan (2014)	☐	☐	☐	☐	☐	☐

Plan Name (Year Adopted)	Trail Inventory	On-Street Bikeway Inventory	Trail Network Recom.	On-Street Bikeway Network Recom.	List of Priority Projects	Specific Policy Recom.
Village of Somerset Outdoor Recreation Plan (2013)	☐	☐	☐	☐	☐	☐
Village of Somerset Safe Routes to School Plan (2008)	☐	☐	☐	☐	☐	☐
Village of Spring Valley Comprehensive Plan (2008)	☐	☐	☐	☐	☐	☐
City Plans						
Glenwood City Comprehensive Plan (2005)	☐	☐	☐	☐	☐	☐
Glenwood City Safe Routes to School Plan (2013)	☐	☐	☐	☐	☐	☐
City of Hudson Comprehensive Plan (2009)	☐	☐	☐	☐	☐	☐
City of Hudson Parks & Outdoor Recreation Plan (2010)	☐	☐	☐	☐	☐	☐
City of New Richmond Comprehensive Plan (2005)	☐	☐	☐	☐	☐	☐
City of New Richmond Bicycle & Pedestrian Comprehensive Plan (2003)	☐	☐	☐	☐	☐	☐
City of River Falls Comprehensive Plan (2005)	☐	☐	☐	☐	☐	☐
City of River Falls Bicycle & Pedestrian Plan (1995)	☐	☐	☐	☐	☐	☐

*The following towns and villages do not have land use, transportation, or park and recreation plans readily available on municipal or County websites: Town of Glenwood, Town of Hudson, Town of Rush River, Town of Springfield, Town of Warren, Village of Baldwin, Village of Star Prairie, Village of Wilson, and Village of Woodville.

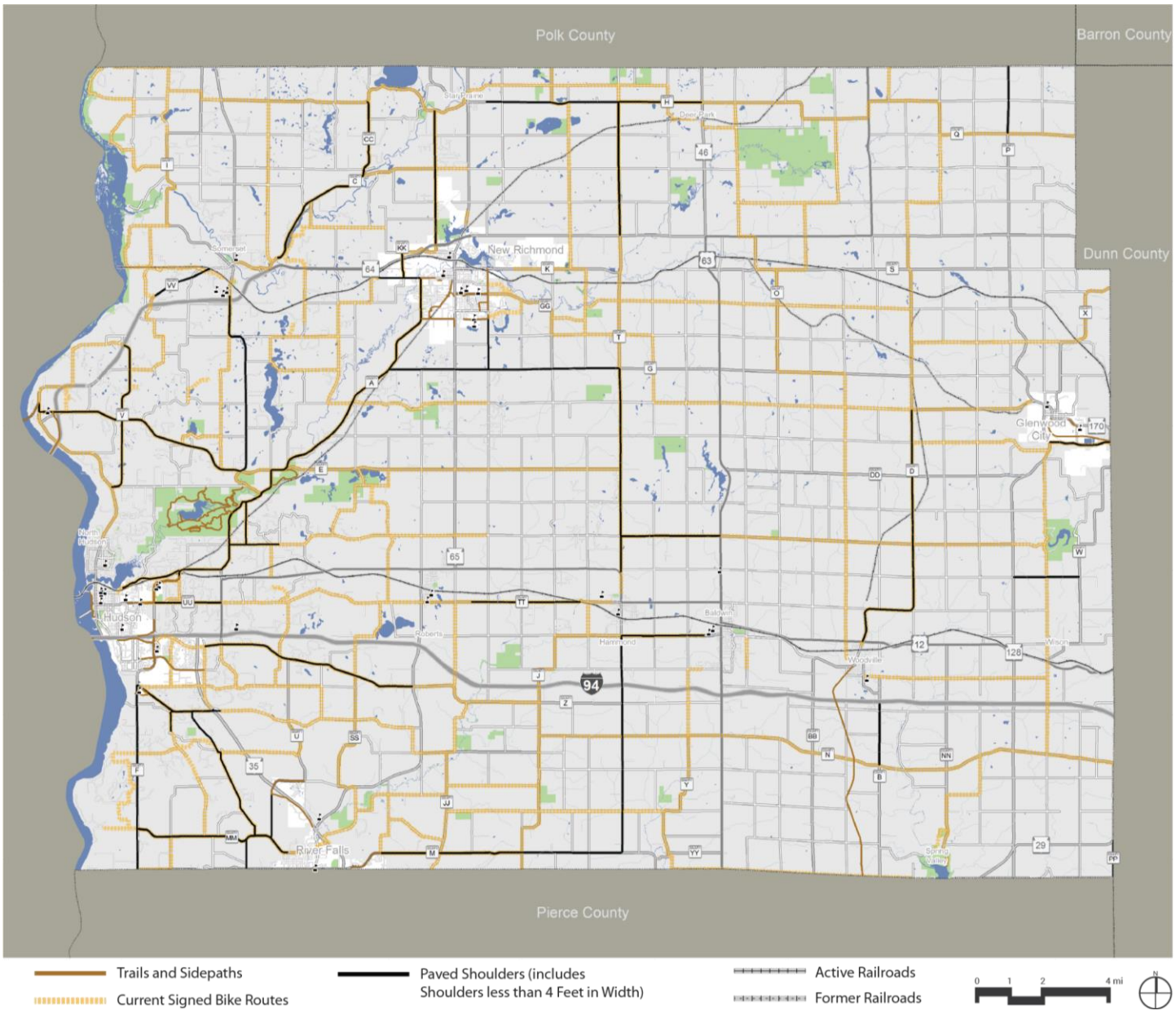
Existing Bikeways and Trails

St. Croix County has an existing system of bikeways and trails (see Figure 2–1), which is generally more complete within cities and some villages. In rural parts of the county, the system is largely composed of on-road bikeways in the form of signed routes or paved shoulders. The elements that comprise the existing system include:

- **Signed Bike Routes –** A network of signed bike routes exists across St. Croix County. These routes are not numbered or otherwise differentiated from one to another—a situation that often causes confusion. Many of the routes exist on town roads. Route signs should potentially be removed based on conformity with the Plan's recommended bikeway network and proposed wayfinding framework (see Page 129 in Part 3).
- **Paved Shoulders** – The Highway Department has built many miles of paved shoulders (3 to 4 feet in width) that serve bicyclists. This is largely a result of the 1996 Bicycle Transportation Plan.
- **Wildwood Trail** – The Wildwood Trail is the only existing trail of countywide significance in St. Croix County. It runs along a former railroad from Woodville approximately 8 miles south to the Pierce County line and on into Spring Valley.
- **St. Croix Crossing Loop Trail** – Slated for construction in 2018, the Loop Trail element of the St. Croix Crossing project will connect the communities of Houlton, WI, and Stillwater, MN, at two locations.
- **Municipal Bikeway Systems** – Several miles of paths, sidepaths, and on-street bikeways exist within municipalities. Hudson, New Richmond, and River Falls have the most extensive systems.
- **Internal Park Trails** – Trails within state, county, and municipal parks. Often, these trails are not paved and sometimes (as is the case in Willow River State Park) bicycles are not allowed.


St. Croix County's existing bikeway and trail system is largely composed of signed bike routes and paved shoulders, with a few linear trails such as the Wildwood Trail (right) and sidepaths within municipalities.

Figure 2–1: Existing Bikeways



Crash History and Analysis

While crashes are an unfortunate reality associated with all modes of transportation, bicyclists and pedestrians are especially vulnerable. Pedestrians and bicyclists involved in crashes with motor vehicles are far more likely to be seriously injured or killed than are the drivers and passengers in the motor vehicle. Across the U.S., more than 5,000 people are killed while biking or walking and more than 100,000 are seriously injured annually. Worldwide, more than 270,000 people are killed while walking each year. While in the past Americans have generally accepted traffic fatalities as unavoidable, many states, counties, and communities across the country are adopting "Vision Zero" campaigns to end traffic deaths.

In support of this Plan's goal of improving safety for people walking and biking, studying the location, characteristics, and contributing factors of crashes provides a better understanding of why crashes occur and how they might be prevented though engineering, education, and enforcement efforts.

Statewide Trends

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

- Four of the top five crash types most frequently reported indicated that the motorist made the critical error that contributed to the crash.
- There were far more reported urban crashes than rural crashes (94 percent of the total).
- The majority of reported crashes occurred at intersections (66 percent).
- There was a high frequency of reported sidewalk/crosswalk-type crashes (28 percent of all crashes).
- Reported crash rates were lower on wider roadways for both local roads and state highways.
- While urban streets had a much higher crash rate, rural highways had a much higher rate of fatalities.

In addition, while the report found that the number of crashes between bicyclists and motorists continue to decrease each year, the number of fatalities has remained generally constant since 1990 (approximately 10 to 12 each year). However, while there were only four bicyclist fatalities in Wisconsin in 2004, there were 15 fatalities in 2015 and for 2016 there have been 10 already as of September. This dangerous trend reflects national trends—across the country, bicyclist fatalities increased 13 percent from 2014 to 2015.

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

- The majority of crashes occur when the pedestrian is in the crosswalk (25.3 percent) or in the roadway (56.7 percent).
- Most crashes occur at either intersections (37 percent) or midblock (30 percent). However, intersection crashes occur for only 12 percent of fatalities while midblock crashes account for nearly 35 percent.
- There are a variety of crash types, but the two most common involve vehicles turning/merging at intersections and colliding with a pedestrian (13 percent) and pedestrians dashing into the roadway in front of a vehicle (12 percent).
- Injury rates increase with motor vehicle speed (see Figure 2–2). A pedestrian struck by a motor vehicle travelling at 30 mph is substantially more likely to die than a pedestrian struck by a motor vehicle travelling at 20 mph.

Figure 2–2: Vehicle Speed and Pedestrian Survival Rates

Data source: Killing Speed and Saving Lives, UK Dept. of Transportation, London, England

St. Croix County Crash Analysis – Overview of Findings

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

The location of all crashes occurring in St. Croix County between 2005 and 2014 were identified. A total of 125 pedestrian and bicyclist crashes occurred during this time period—69 pedestrian crashes and 56 bicyclist crashes. Eight crashes resulted in fatalities (two bicyclists and six pedestrians), 21 resulted in incapacitating injuries (10 bicyclists and 11 pedestrians), and 88 resulted in non-incapacitating injuries (42 bicyclists and 46 pedestrians). An additional 35 crashes occurred in the portion of River Falls that is in Pierce County (13 involving bicycles, two of which resulted in incapacitating injuries, and 22 involving pedestrians, four of which resulted in incapacitating injuries). The crashes occurring in Pierce County are not included in the remainder of this analysis.

Summary of Bicycle Crashes

There was an average of 4.7 reported bicycle crashes per year with a high of eight in 2010 and a low of one in 2009. Over the 10-year period, the average number of crashes per year generally declined. During this time, the population of St. Croix County grew by approximately 13 percent. Although the sample is small from a statistical perspective, these results could indicate an encouraging trend. Most (70 percent) bicycle crashes happened in the five-month span of May through September. Most (57 percent) bicycle crashes occurred between 3:00 and 6:00 pm. Inclement weather did not appear to be a significant crash factor with only two crashes occurring in rainy/wet conditions (and none in snowy conditions).

Additional bicycle crash analysis findings include:

- Bicycle crashes occurred predominantly at intersections (74 percent). This is substantially higher than the statewide average of 66 percent. The majority of crashes (74 percent) happened on roads with a posted speed of 25 to 35 miles per hour.
- 68 percent of bicycle crashes occurred in the Cities of Hudson, New Richmond, and River Falls; 9 percent occurred in villages; and the remaining 23 percent occurred in towns. While the majority of crashes occurred in the three largest cities in the county, these crashes only account for 45 percent of the fatal and incapacitating injuries.
- 77 percent of the bicyclists involved in crashes were male. The greatest concentration of bicyclist crashes by age was between 9 and 15 years of age (45 percent of crashes). There was a smaller concentration of bicycle crashes among riders between ages 19 and 28 (21 percent). The characteristics of motorists involved in bicycle-related crashes were evenly distributed by sex and age.

- Injuries were generally non-incapacitating (77 percent). Four percent of the crashes resulted in death (two fatalities) and 19 percent were incapacitating.
- Alcohol involvement (pedestrian or motorist) was reported as "unknown" in 91 percent of bicycle crashes for the county. For the state as a whole, in 2013, 30 percent of the fatal bicycle crashes and 3 percent of injury crashes involved either an impaired bicyclist or motorist.
- Areas with the highest concentration of bicycle crashes are 2nd Street and Carmichael Road in Hudson and Knowles Avenue (Highway 65) in New Richmond. It is probable that a significant factor leading to these concentrations is exposure—more bicyclists ride along these streets than other streets in the county with similar traffic speeds and volumes.

Summary of Pedestrian Crashes

There was an average of 6.4 reported pedestrian crashes per year with a high of 11 in 2005 and a low of 3 in 2012 and 2014. During this time, the population of St. Croix County grew by approximately 13 percent. Meanwhile, the number of pedestrian crashes each year rose and fell but generally decreased. The months with the most crashes were September (8 crashes) and October (10 crashes). There have not been any pedestrian crashes in August during the ten-year period. Most pedestrian crashes happened between 3:00 pm and 8:00 pm, with a slight rise in crashes between 7:00 and 11:00 am. While most crashes (81 percent) occurred during clear or cloudy conditions, 31 percent occurred when road conditions were icy, snowy, or wet.

Additional pedestrian crash analysis findings include:

- The location of pedestrian crashes was evenly split between intersection and non-intersection, with slightly more crashes occurring at intersections (52 percent). The majority of crashes (70 percent) happened on roads with a posted speed limit of 25 miles per hour.
- 53 percent of the pedestrians involved in crashes were male and 47 percent were female. The greatest concentrations of pedestrian crashes by age were between 13-15 years of age (16 percent of crashes) and 51–53 years of age (11 percent). The rest of the crashes were fairly evenly distributed among the other age groups. Of drivers involved in pedestrian crashes, 14 percent were between the ages of 16 and 19. The rest of the drivers involved in pedestrian crashes were evenly distributed by sex and age.
- Injuries were not reported or reported as non-incapacitating in 75 percent of crashes. Ten percent of the crashes resulted in fatalities and 15 percent in incapacitating injuries.
- Alcohol involvement (pedestrian or motorist) was reported as "unknown" in 92 percent of pedestrian crashes for the county. For the state as a whole, in 2013, 54 percent of the fatal pedestrian crashes and 9 percent of injury crashes involved either an impaired pedestrian or motorist.
- The area with the highest concentration of pedestrian crashes is Knowles Avenue (Highway 65) in New Richmond. Most of these crashes (88 percent) resulted in unreported, minor, or non-incapacitating injuries (two crashes resulted in incapacitating injuries). Of the 16 crashes that occurred in the study area resulting in fatalities or severe injuries, 13 occurred in cities and villages. More than half were on streets with posted speed limits of 25 miles per hour. The most common cause of the crash was a driver going straight and either failing to yield or driving inattentively.

Traffic Stress Analysis

Traffic stress was analyzed for all streets and roads in the county using a combination of the Level of Traffic Stress (LTS) model, which was developed by the Mineta Transportation Institute, and the Bicycling Conditions for Rural Roadways model, which was developed by the Wisconsin Department of Transportation (WisDOT). The traffic stress analysis was based on available data, including speed limits, traffic volumes, pavement width, presence of on-street parking, and presence of bike lanes. Table 2–2 shows the rating scale used in this Plan that is a combination of the two models noted above. The detailed methodology used for the LTS analysis is described in Section 4.2..

Table 2–2: Traffic Stress Analysis Rating Scale

Level of Traffic Stress Rating	Bicycling Conditions for Rural Roadways Rating	Description
LTS 1	n/a	Little to no traffic stress. Generally suitable for the entire population. Only applies to low-speed city streets and separated paths.
LTS 2	**Good**	Little traffic stress. Suitable for most adults, even those with less confidence or experience interacting with motor vehicles (e.g., casual bicyclists).
n/a	**Good** (higher traffic)	Low traffic stress but with over 500 ADT. Suitable for most adults, but perhaps not for those with little confidence or experience interacting with motor vehicles. Only applies to rural roads.
LTS 3	**Moderate**	Moderate traffic stress. Uncomfortable and unappealing for some, but adequate for more experienced bicyclists.
LTS 4	**Poor**	High traffic stress. Only suitable for very skilled and confident bicyclists.

Level of Traffic Stress Analysis Findings

The LTS model identifies the traffic stress that may be experienced along each part of the roadway network. It also serves as a tool to help develop interconnected networks of low-stress bikeways that will appeal to casual bicyclists, who comprise the majority of the population (see Page 9 in Part 1).

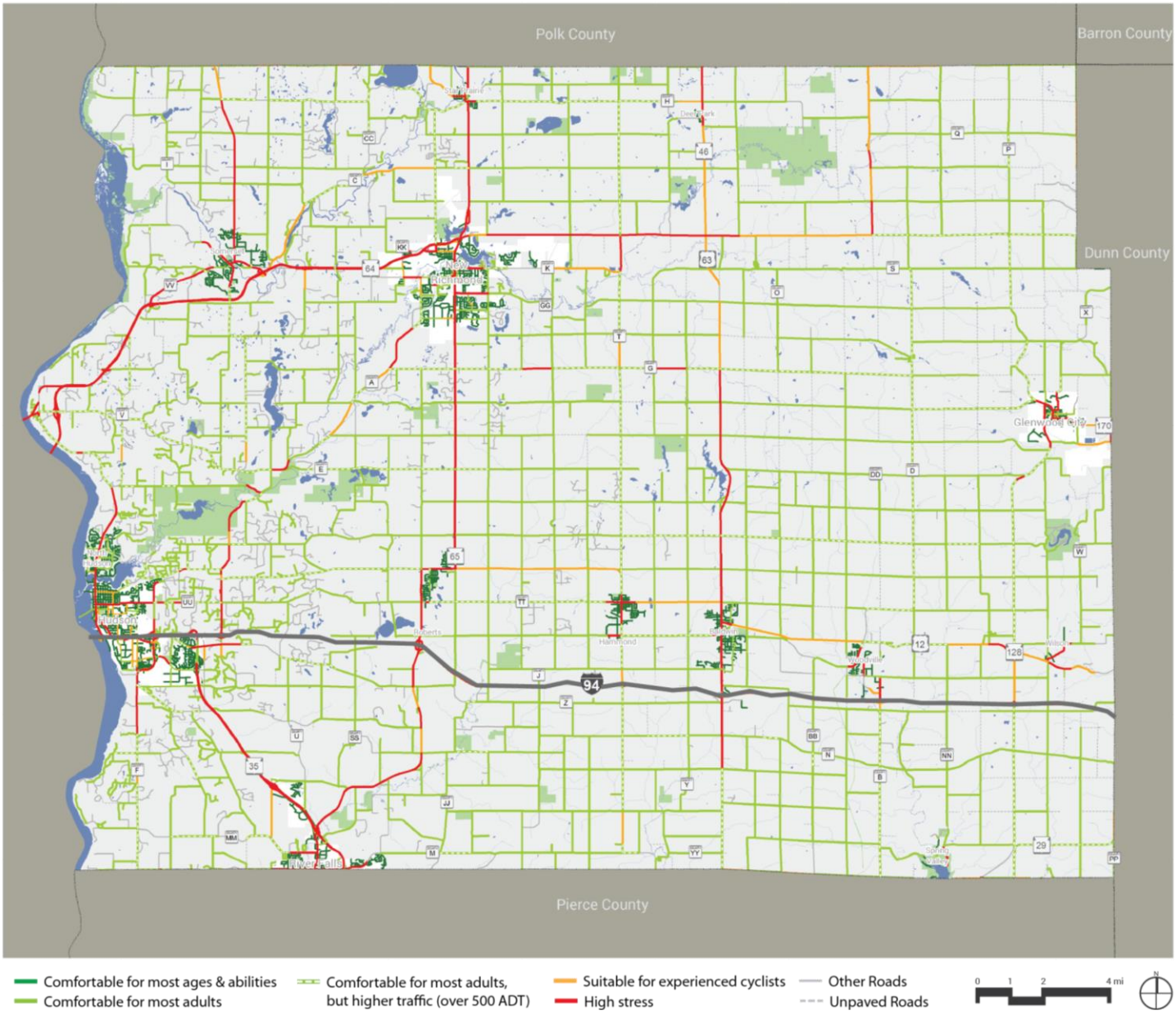
The analysis (see Figure 2–3) shows that a substantial portion of St. Croix County's street and road network has low levels of traffic stress and should therefore be comfortable for most users. However, most of the lowest-stress (LTS 1) roadways are local neighborhood streets that do not provide intercity or cross-county connections. Still, a significant portion of St. Croix County's rural town roads and county highways fall within the next stress level (LTS 2/Good) and create a well-connected network. Many of these roads have traffic volumes less than 500 ADT (average daily trips). However, there are caveats to this:

1. In some areas (such as around the Willow River and between Somerset and Houlton) these lower-stress roads do not comprise a fully-connected network.
2. This analysis is not able to consider the effect of peak hour traffic (the busiest hour of the day), which is known to be a factor on some otherwise low-traffic roads in the county.
3. This analysis is incapable of considering every single factor that may contribute to traffic stress. For example, while the analysis shows Highway 128 as largely being lower-stress, most people experience higher levels of stress on this road for various reasons, such as the curviness of the road and amount of heavy truck traffic.

Unsurprisingly, I-94 and some state highways have high stress levels (LTS 4/Poor), which is expected since traffic stress is directly associated with traffic volume. These high-stress roadways include several roads that are the primary or only paved connection between two destinations or communities, such as Highway 35 between Houlton and North Hudson, and Highway 64 between Houlton and Somerset.

Findings from the LTS analysis suggest that while there are many low-stress roadways in St. Croix County, these roadways are not always suitable in their current condition for bicycling—especially not for less confident bicyclists. Furthermore, the low- and lower-stress streets and roads in the more populated western half of the county do not form as complete of a network as those in the eastern half. Therefore, some bikeways will need to be constructed along busier roadways, such as Highway 35 to create a connection between North Hudson and Houlton, while providing a higher level of separation between people biking and motor vehicle traffic. In some of these cases, full separation in the form of a paved path or trail will be necessary. In other cases, paved shoulders may be adequate, especially for users that are more avid cyclists and are comfortable biking alongside higher-speed traffic.

Figure 2–3: Traffic Stress Analysis Results



Demand Analysis

An assessment of demand (both existing and potential) for bicycle and pedestrian travel within the county was performed as part of this project. This analysis indicates the areas with the greatest need for bikeways and trails and will help prioritize network segments for implementation. Based on input from the Advisory Team and other stakeholders, two demand analysis maps were prepared.

Demand Analysis #1 (Transportation / Casual Bicyclist-Oriented)

The first analysis is the more conventional of the two analyses. It is oriented toward people that bike for casual "out the back door" recreation or for transportation purposes—whether commuting to work, biking to school, or riding to meet friends for dinner. As such, it is based on factors that logically identify where people are most likely to begin and end their trips. Based on experience, these factors and weightings produce logical results that align with expectations of demand from the casual bicyclist portion of the population.

Factor	Weighting (maximum points out of 100)
Population density	40 pts
Employment density (or location of major employers)	20 pts
Schools (elementary, middle, high)	20 pts
Major trails (including the programmed Loop Trail and popular trails within major parks)	10 pts
Major parks (county, state, Corps of Engineers)	5 pts
Tourist destinations (wineries, artisan foods, you-pick farms, museums, etc.)	5 pts

Demand Analysis #2 (Tourism / Avid Recreational Bicyclist-Oriented)

The methodology for the second analysis was developed to identify opportunities for strengthening the tourism-oriented aspect of bicycling in St. Croix County, especially for avid bicyclists. While sources exist (such as Strava Labs' Global Heatmap) to identify where these types of users are **currently** riding, this analysis seeks to identify where people would **want** to ride if conditions were conducive. The Wisconsin State Bikeways Study identifies traffic stress, services (lodging, restaurants, grocery stores, bicycle repair shops), and amenities (forested areas, lakes, rivers, scenic vistas, historic landmarks) as important attracting factors for multi-day touring cyclists. These and other factors were used for this analysis.

Factor	Weighting (maximum points out of 100)
Low-stress rural roads	35 pts
Destinations (small communities, "pit stop" locations, rural taverns or restaurants, etc.)	25 pts
Barrier crossings (bridges over rivers, freeways, railroads, etc. that have limited crossing opportunities)	20 pts
Scenery (park land, forests, waterfowl production areas, public hunting grounds, prairie habitat, etc.)	20 pts
Areas to avoid (mining sites, recycling facilities, truck routes, concentrated animal feeding operations, manure storage sites, etc.)	- 20 pts (reduces the total score)

Scores for each factor were calculated using Geographic Information Systems (GIS) software as described below.

- **Low-stress Rural Roads –** Regardless of experience, most avid cyclists prefer roads with lower levels of motor vehicle traffic. The traffic stress analysis (see Page 38) was used to identify ideal roads (from a traffic perspective) for road cycling, so that connections to these areas can be improved. For purposes of this analysis, low-stress rural roads with less than 50 cars per day that are at least 0.5 miles in length were selected.
- **Destinations –** This factor includes small communities, such as those with populations between 500 and 2,000 (or more or less), which are often attractive destinations for avid cyclists because they typically have places to rest, regroup, get a snack and water, and use a restroom. This factor also includes locations of destinations that may be attractive either as final destinations or as "pit stop" locations along a person's route. This includes places such as wineries, breweries, agri-tourismfarms, museums, historic sites, rural restaurants and taverns, major parks, and gas stations. The locations of these destinations largely originated from input provided via the project WikiMap (see Page 19 in Part 1).
- **Barrier Crossings –** Rivers, railroads, and freeways can be barriers to all forms of land-based transportation, including biking and walking. Locations at which these barriers can be crossed (for example, a trail bridge over the St. Croix River or a non-interchange crossing of I-94) are very important for biking and walking and are viewed as a surrogate for high-demand. They are effectively locations through which biking and walking traffic must funnel to cross the barrier. Providing appropriate access to and from these crossings is of utmost importance.
- **Scenery** – Forested areas and preserved lands afford scenic value along roads. Although cyclists may not stop at these locations, they may choose routes that allow them to ride past these areas due to the scenery they afford. This factor is composed of water bodies (lakes, ponds, and rivers); county, state, and federal park land; forested areas; waterfowl production areas; public hunting grounds; prairie habitat; and wetlands.
- **Areas to Avoid** – There are several detractors or areas which most people would try to avoid when choosing a route, whether due to odors, debris in the air, or associated truck traffic. For this analysis, this factor includes mining sites, recycling facilities, truck routes, confined animal feeding operations, and manure storage sites.

Analysis Results

The results of both analyses (see Figure 2–4 and Figure 2–5) show a high level of demand in the western half of the County, as well as an east-west corridor parallel to the Interstate and stretching from Roberts to Woodville. Demand Analysis #1 shows more concentrated demands surrounding cities and villages, as well as areas of moderate demand in the more populous towns. Demand Analysis #2 shows demand distributed along corridors, including from Willow River State Park to Star Prairie, the Lift Bridge to Somerset, and Hudson to Hersey. It also shows pockets of demand in the northeastern portion of the County.

Taken together, these two analyses support the Draft Study Network—especially the primary loop connecting Houlton, North Hudson, Hudson, River Falls, Roberts, New Richmond, and Somerset and the east-west corridor linking Roberts, Hammond, Baldwin, and Woodville.

Figure 2–4: Demand Analysis #1 (Transportation / Casual Bicyclist-Oriented)

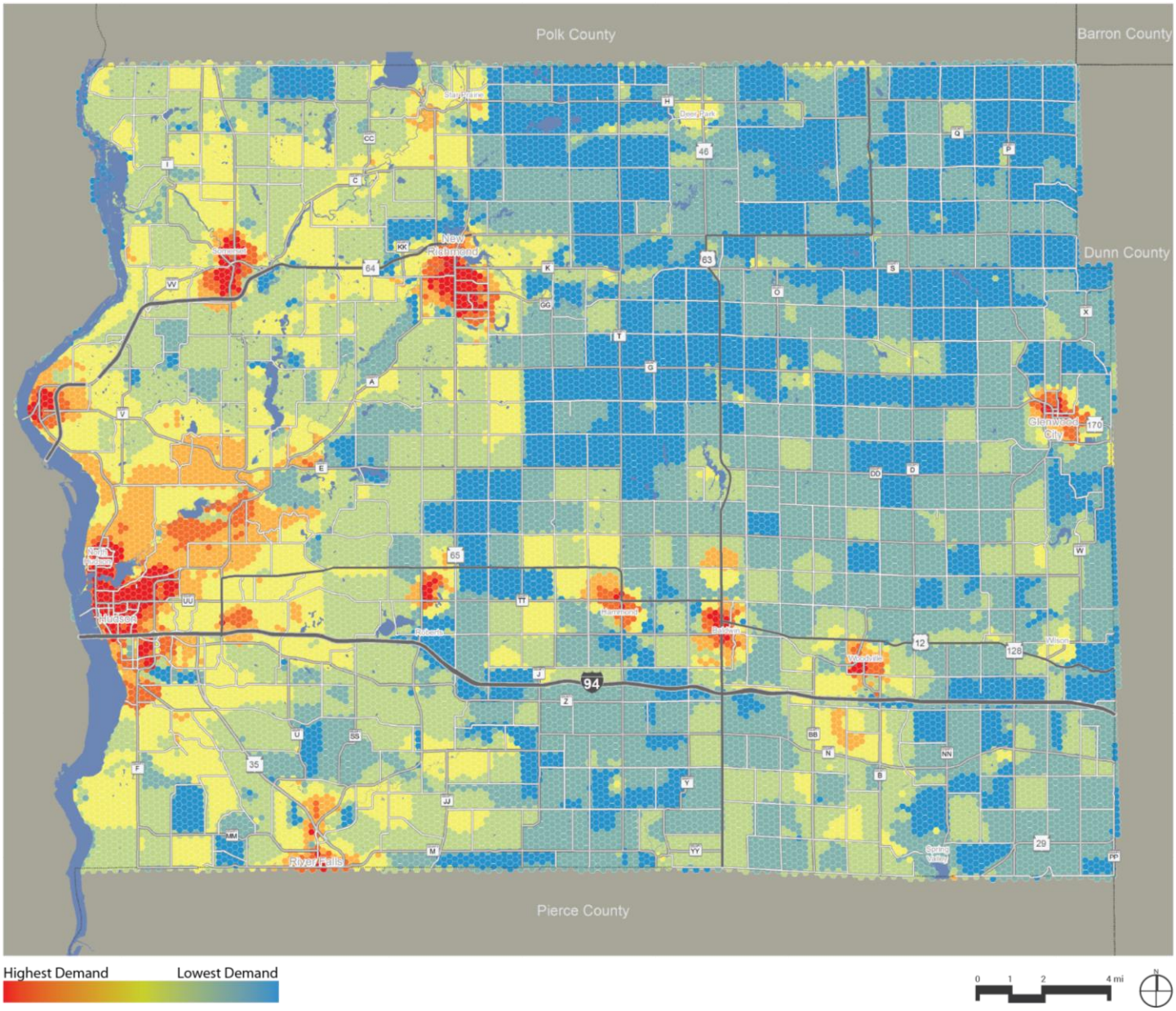
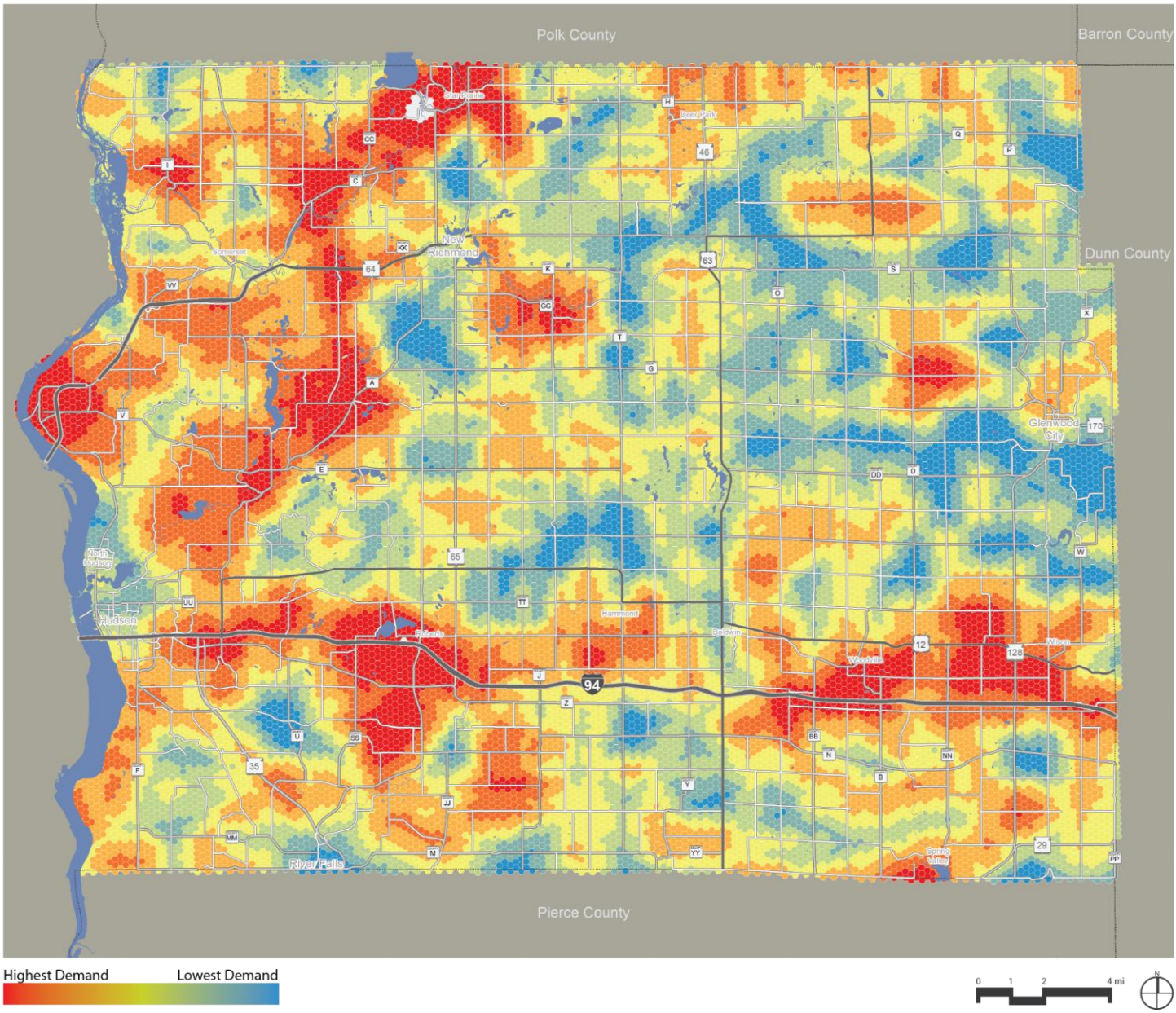


Figure 2–5: Demand Analysis #2 (Tourism / Avid Recreational Bicyclist-Oriented)



2.2 Network Development

The network of existing and future bikeways and trails builds upon the analysis of context and existing conditions. The network is an evolution of previous bikeway and trail planning efforts in St. Croix County and identifies corridors to be studied in greater detail. At this stage, specific recommendations are not identified; rather, the network simply identifies where connections are needed. The network development process, which is described on the following pages, included four primary steps: classifying user types, determining priority connections, refining an interconnected network, and identifying gaps and barriers.

Classifying User Types

The first step in the network development process is to understand the wide variety of people walking and biking in St. Croix County. In Part 1 of the Plan, the wide spectrum of peoples' preferences, behaviors, skill levels, and reasons for walking and biking was discussed. For the sake of simplicity and clarity, three classifications have been established for this Plan: pedestrians and two classifications of bicyclists, which correlates with the results of a survey of St. Croix County residents performed in 2015 (see Figure 2–6). The three classifications are discussed below.

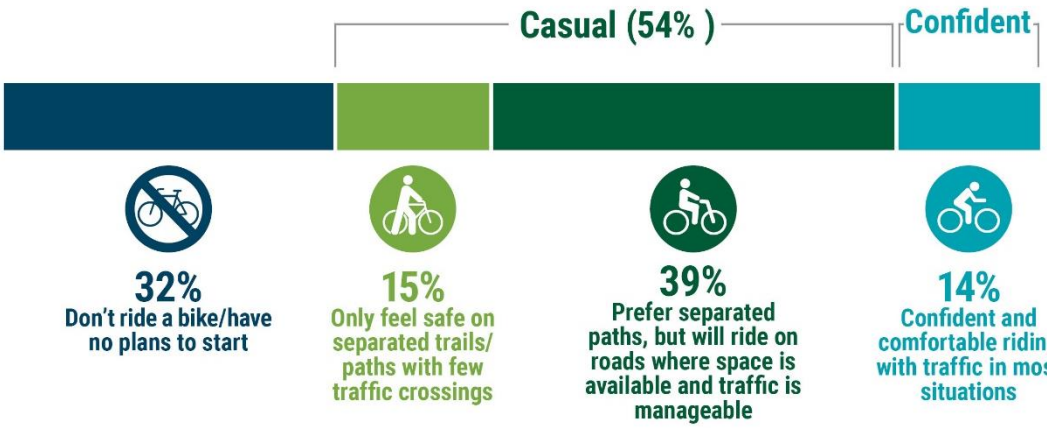
Pedestrians – This category includes all people that walk, run, or use a wheelchair or other mobility device, regardless of age or ability. The needs of almost all pedestrians can be met with the same infrastructure approach since federal and state mandates require all sidewalks and paved paths to be usable for people with disabilities.

Casual Bicyclists – This category equates with 54% of the population, including the 15% that only feels safe on separated trails/paths with few traffic crossings and the 39% that prefers separated paths, but will ride on roads where space is available and traffic is manageable.

Confident Bicyclists – This category equates with the 14% of the population that is confident and comfortable riding in traffic in most situations.

An important objective of this Plan is to identify ways to increase safety and meet the needs of a broad cross section of the population, especially those that are less comfortable interacting with motor vehicle traffic (the casual bicyclist classification). It is important to recognize that people can shift between categories depending on where they are or who they are with—for example, someone that regularly bikes on county highways may avoid traffic when biking with their child.

Figure 2–6: Types of Bicyclists in St. Croix County



The UW River Falls Survey Center distributed 1,700+ random surveys in the mail and received 626 responses. This results in a 95% confidence level with a +/- 3.1% margin of error.

Determining Priority Connections

The second step in developing the recommendations of this Plan was to determine priority connections for future bikeways and trails that provide access to where people want to go. This effort built upon existing and planned bikeway and trail networks in the county. Stakeholder and public input was gathered through various means to identify important connections and to refine these links into an interconnected bikeway and trail network with the goal of connecting each community to important destinations across the county. Priority connections were identified using three methods, which combined online and in-person public input with quantitative analysis.

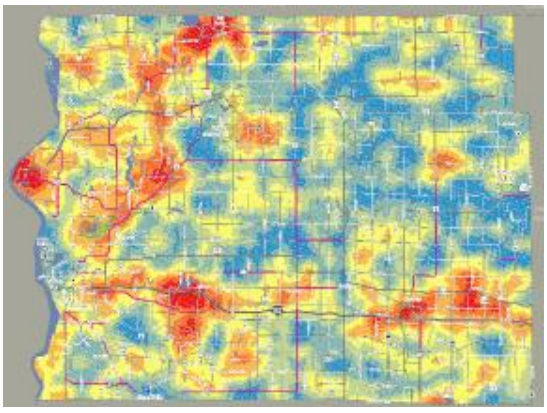
WikiMap – This online interactive mapping activity provided the opportunity for any member of the public with access to the internet to provide input for the Plan. Participants drew lines and points on an online map to identify barriers, destinations, routes they bike or walk along currently, and routes they would like improved for biking and walking. This activity identified significant demand for improvements connecting the new Loop Trail in Houlton to Hudson and River Falls, as well as a corridor connecting Roberts, Hammond, Baldwin, and Woodville.

WikiMap Results

Stakeholder Priority Maps – At an in-person workshop, stakeholders identified priority connections using colored tape. A limited amount of tape was given to each small group for this activity in order to reflect financial constraints. The priorities identified reflected those identified through the WikiMap, with more emphasis given on a corridor connecting the new Loop Trail in Houlton to Stillwater and New Richmond.

Example Stakeholder Priority Map (one of four maps)

Demand Analysis – County staff and consultants performed a quantitative analysis to identify the areas where higher levels of biking and walking could be expected in St. Croix County, if safe and comfortable bikeways were available. This analysis included two models, one of which focused on more casual bicyclists and pedestrians and the other focused on more avid bicyclists. Stakeholders provided input on the two models, which included factors such as population density, schools, tourist destinations, scenery, etc. The resulting heat maps indicate "hot spots" for bicycling and walking activity.



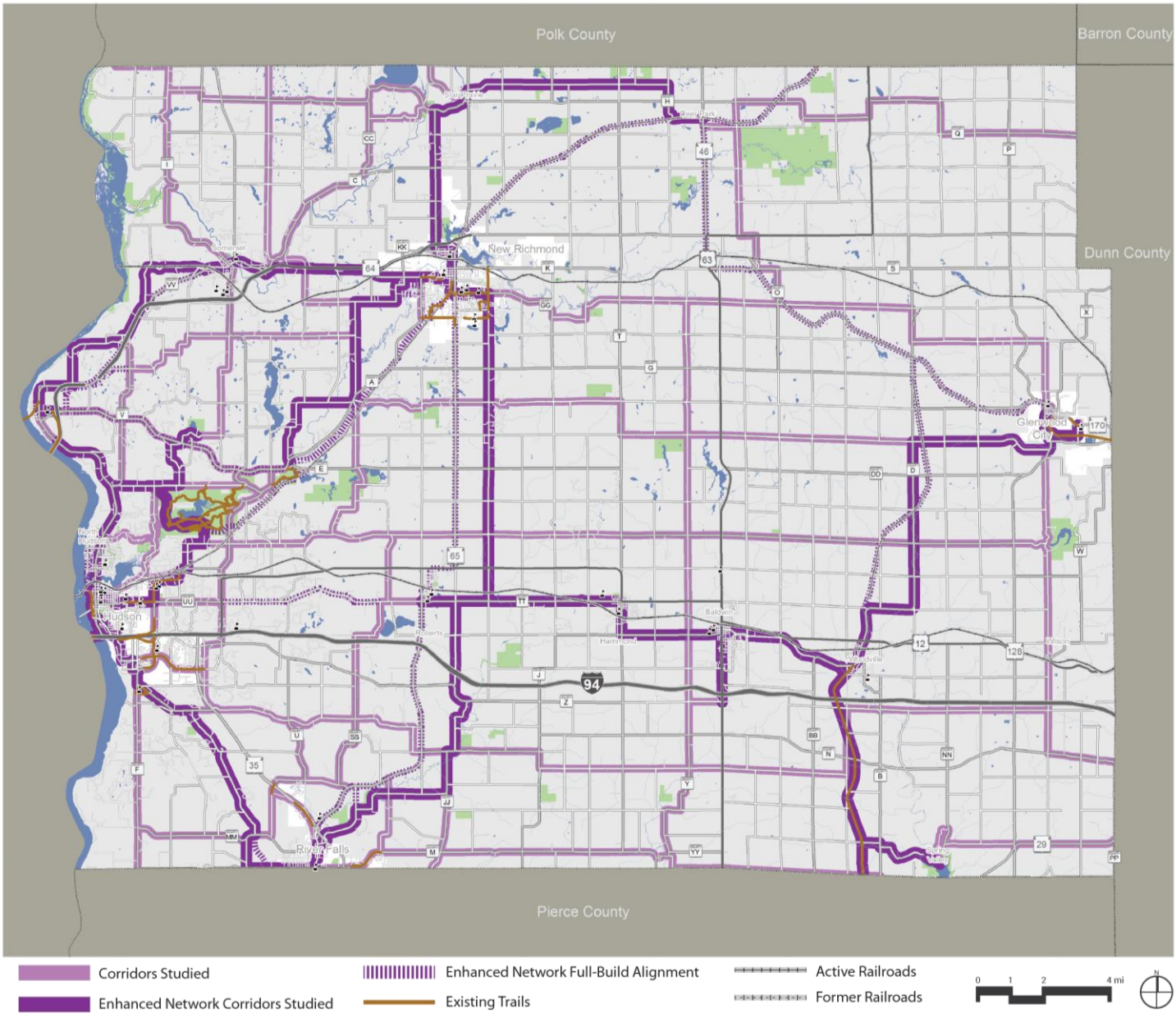
Analysis Results

Many of the priority connections identified during these three exercises follow existing bike routes and proposed trails that have been part of past plans. Notably, each of the three exercises identified a strong desire to provide or enhance bikeways within the Highway 35, Highway 64, Highway A, and Highway 12 corridors. This is especially true where these corridors connect communities to each other and to the new St. Croix Crossing Loop Trail.

Refining an Interconnected Bikeway and Trail Network

The third step in this process was to refine the priority connections into a cohesive, interconnected bikeway and trail network of corridors for further study. In the end, not all of the bike routes currently present in the county were included in the network, largely due to public and stakeholder preference to focus efforts on enhancing the quality of a fewer number of potential bikeways and trails. In addition, conditions have changed along some existing bike routes (such as increased traffic levels). The segments comprising the network were analyzed and observed in the field to determine current conditions, challenges, and opportunities.

Figure 2–7: The Bikeway and Trail Network



Creating an Enhanced Network

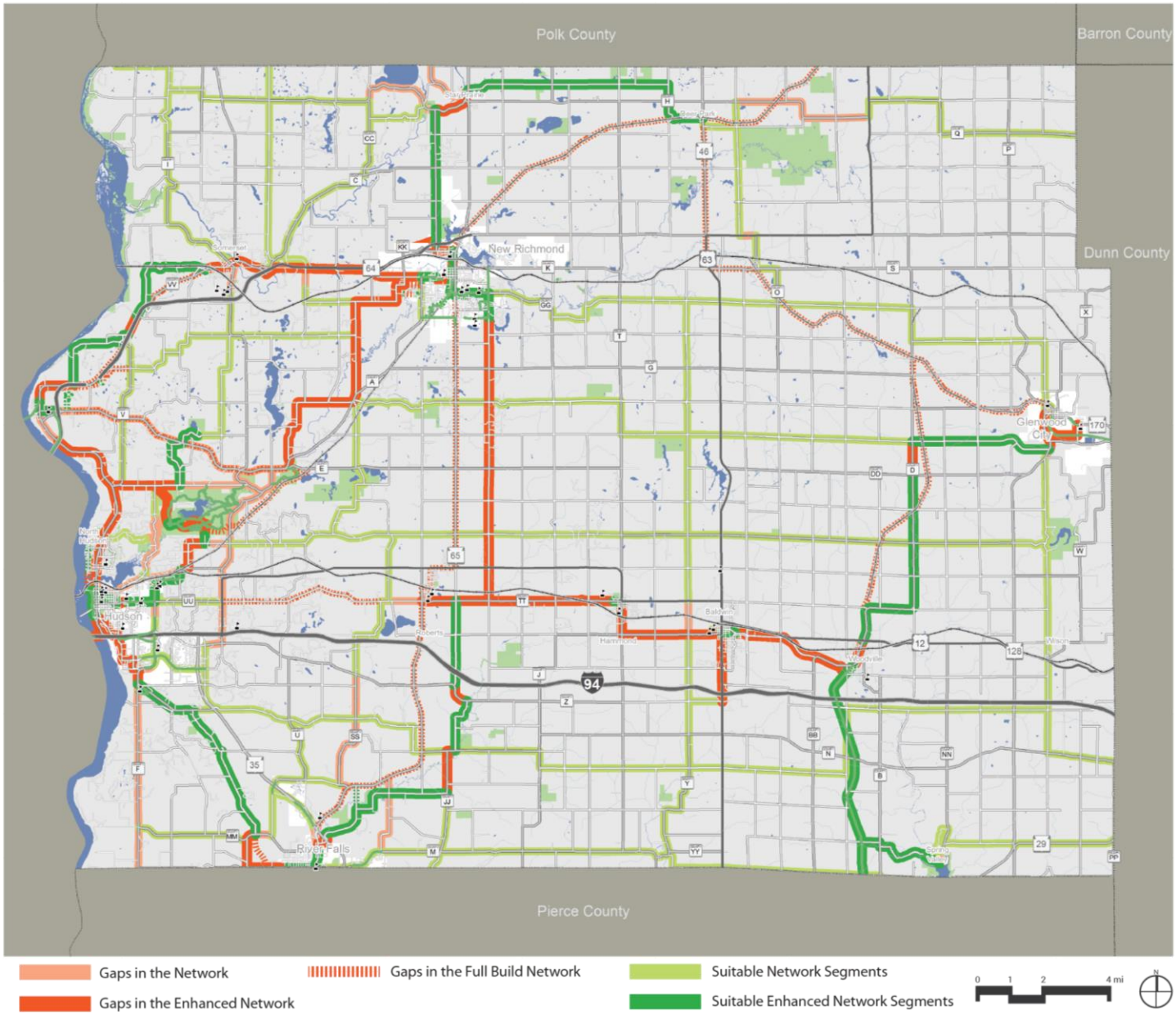
There is a strong desire in St. Croix County to enhance key connections—especially those linking communities and schools—to have a higher level of comfort and ease of use. To achieve this, a subset of the network was selected to form an "Enhanced Network" (represented by dark purple lines in Figure 2–7) to be developed with the goal of adequately accommodating a wide range of users, especially those with little comfort interacting with motor vehicle traffic (classified as casual bicyclists). While initially the Enhanced Network will include some low-traffic town

roads, the ultimate vision (or "full build") is for the network to be mostly composed of trails with a few low-stress on-road bikeways providing critical connections.

Identifying Gaps and Barriers

The final step of the network development process was to identify which segments were currently suitable for bicycling and walking and which can be considered gaps in the system (see Figure 2–8). These "gaps" indicate where infrastructure improvements—such as paved shoulders or paths—are needed in order for the connection to serve the intended user types. For segments of the network that are not gaps, there are still opportunities for providing minor enhancements in the form of warning, regulatory, and wayfinding signs, as well as occasional pavement markings.

Figure 2–8: Gaps in the Bikeway and Trail Network



2.3 Bikeway and Trail Recommendations

The segments comprising the network were analyzed and observed in the field to determine current conditions, challenges, and opportunities. Specific types of bikeway and trail facilities were then recommended for each segment. This was performed by assembling a menu of candidate facility types, selecting an appropriate facility type based on traffic context and physical constraints, and considering whether the segment is part of the Enhanced Network (in which case a higher-grade facility type was selected). Once assembled on the map, these recommendations form a comprehensive network of planned bikeways and trails.

Types of Bikeway and Trail Facilities

The Plan's infrastructure recommendations are categorized into a menu of seven facility types, as listed below. The multi-colored lines next to each description match the colors of lines used on the bikeway and trail recommendations map. Some of these facility types include variations, such as wider versions, versions with additional striped buffers, and two-way versions.

Path

A shared-use path or trail can be located along a road right-of-way or in an independent right-of-way such as a stream valley, greenway, along a utility corridor, or an abandoned railroad corridor. Paths as part of county corridors should be at least 10 feet wide, and wider where higher use is expected.

Bike Lanes

A bike lane designates space for the preferential or exclusive use of bicycles. Standard bike lanes are typically 5 feet wide but wider variations can be advantageous. A common variation is the buffered bike lane, which places a 1 to 3-foot wide painted buffer between the bike lane and adjacent travel lane.

Separated Bike Lanes

A separated bike lane, sometimes called a cycle track or protected bike lane, is a bicycle facility that is physically separated from both the street and the sidewalk. Separated bike lanes can be one way for bicycles on each side of a two-way street, or two-way and installed on one or both sides of the street.

Advisory Bike Lanes[ii]

Advisory bike lanes delineate preferred space for bicyclists and pedestrians, giving them right-of-way in that space. Cars travel down the center of the narrow roadway and merge into the advisory bike lane when passing an oncoming vehicle. Advisory bike lanes are suited to very low-traffic roads.

Paved Shoulders (4-5 feet)

Paved shoulders that serve as a bicycle accommodation are typically 4 or 5 feet wide. Many roads in the county have paved shoulders but lack continuity through intersections. Climbing lanes are a variation that provides a paved shoulder or bike lane in the uphill direction, but not the downhill direction.

Wide Paved Shoulders (6-8 feet)

Higher traffic roads can be improved for bicycling through the provision of wider (6 to 8 feet) paved shoulders. Some roads in the county have wide paved shoulders but lack continuity through intersections.

Minor Enhancements

Low-cost, strategically-placed pavement markings and signage can enhance bike routes and existing trails. Shared lane markings, or Sharrows (see image), can increase awareness of bicyclist presence, indicate lane positioning, and aid in wayfinding (but should only be used on low-speed, low-traffic streets). Signs can aid in wayfinding and raise awareness of the rules of the road.

Facility Selection Process

Specific facility types for each segment of the bikeway and trail network were chosen based on a quantitative and qualitative review of the conditions in the area based on three factors:

1. **Context** – Is the corridor in a populous city or village, or is it in a low-density rural area? Different types of facilities are suitable within cities and villages (e.g., bike lanes), whereas others are more appropriate in rural areas (e.g., paved shoulders).
2. **Motor vehicle traffic** – How much traffic is there and how fast is it going? Bikeways along streets and roads with higher levels of traffic necessitate greater separation between people biking, walking, and driving.
3. **Intended users** – What types of users will be biking and walking along the corridor? If the segment is part of the Enhanced Network, a higher-grade facility is warranted.
4. **Site constraints** – Are there right-of-way or physical constraints that limit the ability to implement the desired facility type? If so, an alternate facility type or an alternate route was selected.

In general, where a particular facility type is recommended by the Plan, the recommendation is for the standard treatment. For example, bike lane recommendations generally indicate standard 4- to 5-foot wide bike lanes unless otherwise noted. However, the appropriate variation or treatment type for each recommendation should be investigated in more detail during the development of a specific project. In cases where higher levels of casual bicyclists are expected or where a lower-stress variation (such as a wider or buffered bike lane) is feasible, such alternatives should be considered even if the plan recommendation only calls for standard bike lanes.

Bikeway and Trail Network Recommendations

The culmination of the analyses is a comprehensive recommended network of bikeways and trails. The System Plan's primary recommendations include approximately 102 miles of new bikeways and trails in addition to minor enhancements (signs and occasional spot improvements) along 327 miles of existing bikeways, trails, and low-traffic rural roads (see Figure 2–9). The recommendations are shown in Figure 2-10.

Recommendations on town, village, and city streets and roads represent minimum treatments. Municipalities are encouraged to provide a higher level facility if so desired (e.g., a shared use path instead of or in addition to bike lanes).

Figure 2–9: Miles of System Plan Recommendations

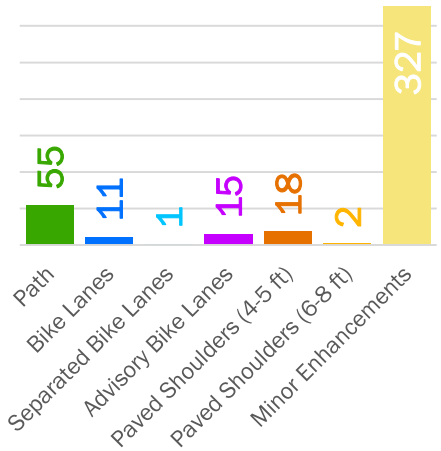
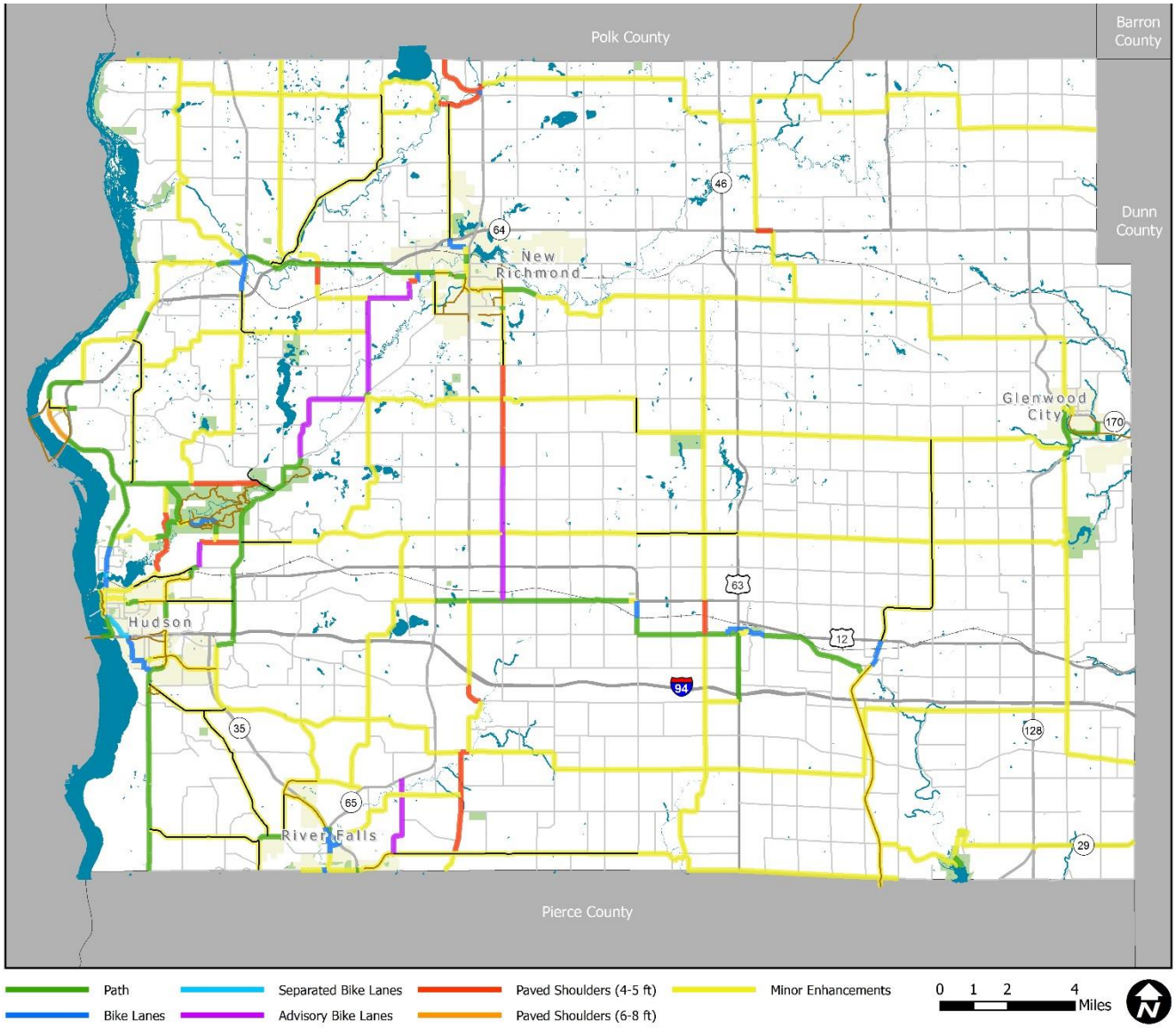


Figure 2–10: Bikeway and Trail Network Recommendations

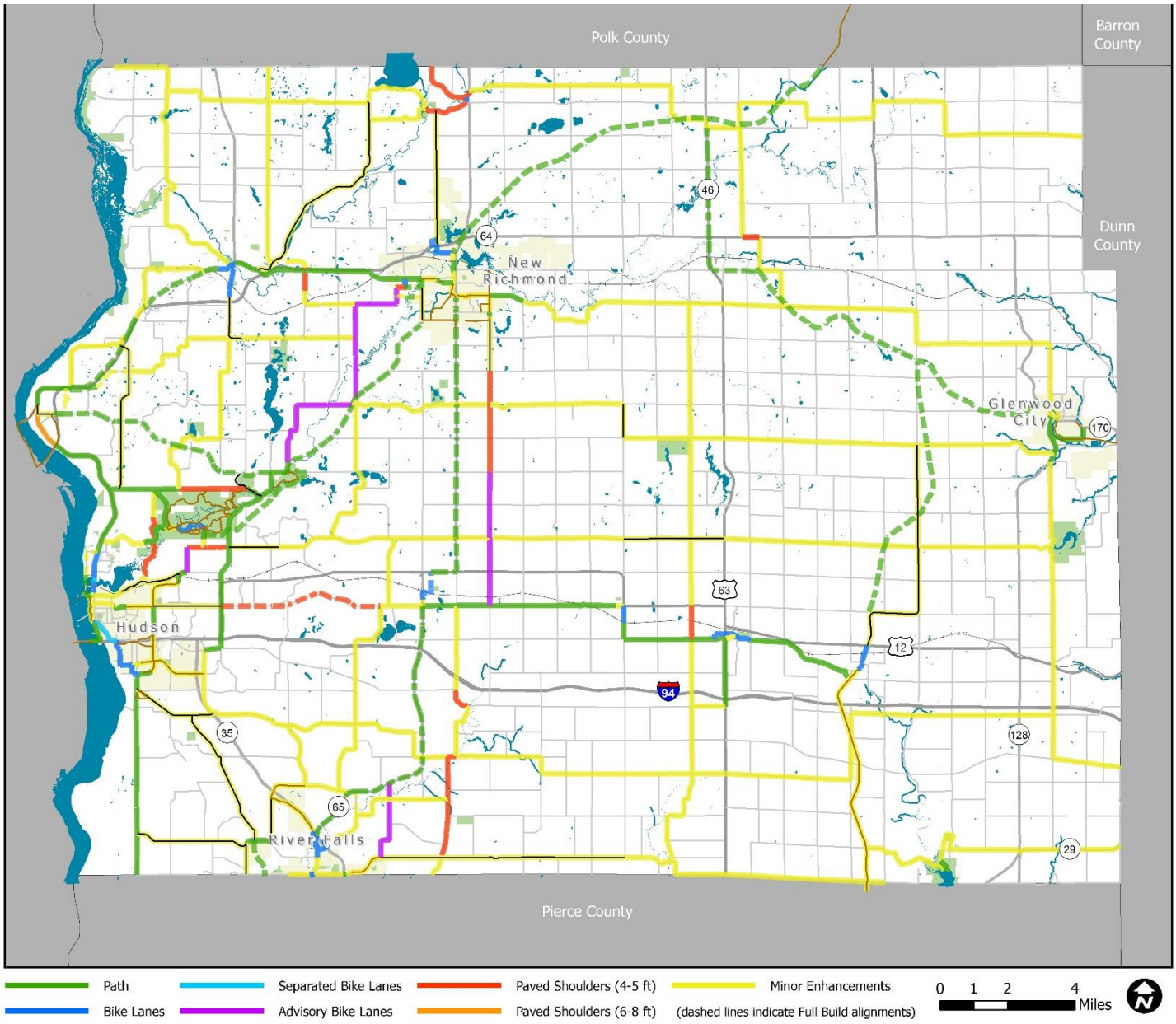


Full Build Alignments

In addition to the Plan's primary recommendations for bikeways and trails, a "full build" network is recommended (see Figure 2–11).

Full build alignments represent potential future investments to improve connections, especially for more casual users. The time horizon for implementation of full build alignments has not been determined and may extend beyond the life of the Plan. Some of the Full Build alignments may prove infeasible once studied further and therefore may not be constructed.

Figure 2–11: Bikeway and Trail Network Recommendations – Full Build



Planning, Budgeting, and Right-of-Way Acquisition

The Plan represents the intended actions and priorities of St. Croix County and the municipalities and advocates that participated in its development. It provides a basis on which the County and municipalities can budget for future investments and coordinate specific bikeway and trail project implementation. However, the recommendations shown on the map are based on preliminary planning-level investigation and not implementation-level engineering study to confirm feasibility. Additional study and outreach to property owners will occur prior to implementation of any of the Plan's bikeway and trail recommendations.

The journey from Plan to reality for each bikeway and trail involves many steps and typically takes several years. The process may vary from one jurisdiction to another, but typically it mirrors the jurisdiction's roadway project development process. Typical steps include:

1. Developing a long-range plan that identifies comprehensive bikeway and trail network needs (this Plan).
2. Identification of individual projects within the Plan (at a minimum identifying the beginning point and ending point for each project and a time horizon for construction).
3. Budgeting for the project in a multi-year capital improvement plan or otherwise allocating funding for the project (such as by applying for and receiving grant funding).
4. Producing a preliminary engineering assessment to confirm feasibility, refine the alignment, assess basic impacts, and determine right-of-way needs.
5. Acquire right-of-way, complete engineering construction documents, and accept contractor bids.
6. Construction, traffic control, and project completion.

Broad public involvement and communication is part of steps 1, 2, 3, and 4. Outreach to individual property owners affected by the project usually occurs as early as step 2 and as late as step 4.

Typical Costs for Bikeway and Trail Facilities

Planning-level cost estimates for the projects recommended by this Plan are based on typical per-mile cost estimates (see Table 2–3) for various treatments multiplied by the project's length. Unique situations (such as drainage crossings or complex intersection treatments) were not directly considered in the development of these cost estimates, but a 25 percent contingency was included in order to account for such situations.

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

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

Table 2–3: Typical Cost per Mile for Bicycle Facilities (Color Coded to Match Figure 2–10)[iii]

Facility Type and Implementation Method	Stand-Alone Project Typical Cost per Mile (2016 Dollars)	Coordinated Project Typical Cost per Mile (2016 Dollars)
Shared Use Path		
Widen Existing Path (by 4 feet)	$175,700	$168,600
Construct New (10 feet)	$487,800	$469,000
Bike Lanes		
Add Striping and Markings	$36,500	$34,700
Lane Diet	$48,300	$34,700
Road Diet	$82,400	$44,500
Widen Roadway	$556,300	$254,700
Buffered Bike Lane (Road Diet)	$84,100	$69,700
Separated Bike Lanes		
Pair of 7-foot One-Way Separated Lanes (Road Diet)	$532,600	$507,200
Single 10-foot Two-Way Separated Lane (Road Diet)	$270,100	$257,300
Advisory Bike Lanes		
Add Striping, Markings, and Signage	$36,500	$34,700
Paved and Striped Shoulders		
Move Edge Line (Lane Diet)	$23,800	$0
Pave New or Widen Existing Shoulders (by 2 feet each side)	$88,500	$71,700
Pave New or Widen Existing Shoulders (by 4 feet each side)	$208,100	$159,600
Minor Enhancements		
Add Shared Lane Marking (Sharrow)	$4,600	(same)
Add Bike Route Signage/Wayfinding	$1,900	(same)

2.4 Project Schedule

This section includes a list, or master project schedule, of bikeway and trail projects (Table 2–4) created to facilitate implementation of this Plan's recommendations—which will require a coordinated effort between St. Croix County, individual municipalities, state agencies, and advocates. **This schedule is not a priority list**; rather, it is an inventory of bikeway and trail infrastructure needs, segmented into manageable projects, and provided as an aid for municipalities that wish to identify, prioritize, and implement individual projects identified by the Plan.

Methodology

The master project schedule lists potential shared use path (trail), bike lane, separated bike lane, advisory bike lane, and paved shoulder projects that reflect the bikeway and trail infrastructure recommendations described in Section 2.3. Projects were generally segmented based on changes of facility type (such as where paved shoulders transition into bike lanes) and to keep projects at reasonable lengths. Several projects include more than one roadway and pass through more than one municipality. An example of this is the Advisory Bike Lanes project that follows 80th Street, turns onto 132nd Avenue, turns onto 83rd Street, and turns onto 140th Avenue, while passing through both the Town of St. Joseph and the Town of Richmond.

Minor enhancements (see Page 50) projects are not included in the master project schedule for brevity. Projects along minor enhancements corridors will vary in terms of scope, but will primarily include the relatively inexpensive addition of bike route and/or wayfinding signage. In some cases, they may necessitate spot treatments, such as an intersection reconfiguration; however, identifying specific spot treatment needs across the county was beyond the scope of this Plan.

Master Project Schedule Structure

The master project schedule (Table 2–4) identifies each project, project extents (beginning and ending points), specific facility recommendations, project length, cost estimates, and involved agencies/municipalities. The list separates projects into two categories:

- **Early Action Priorities** – The five projects that were selected for further analysis in anticipation of near-term implementation. See Page 58 for additional detail on these projects.
- **Additional Projects** – An additional 64 projects identified for implementation over the life of this Plan. Municipalities may choose to prioritize these for immediate implementation, or for implementation at a later date. Municipalities are encouraged to make decisions on the timing of implementation in coordination with St. Croix County, neighboring municipalities, and the public.

Table 2–4: Master Project Schedule

Project Complete	Project ID	Enhanced Network	Project Description	From Street	To Street	Facility Recommendation	Length (miles)	Stand-Alone Project Cost Estimate	Coordinated Project Cost Estimate	Roadway Owner (if other than municipality)	Municipality
Early Action Priorities											
	1	Yes	I-94-River Crest Elementary School Connection	I-94 Bridge over St Croix River	Rivercrest Elementary	Varies	4.2	$ 1,080,000		County	City of Hudson, Town of Troy
	2	Yes	Loop Trail-Willow River State Park Connection	New Hwy 64 Bridge	Rolling Hills Trl	Path	4.4	$ 2,441,000		State, County	Town of St Joseph
	3	Yes	Wis-35 Connection to Hudson	Cty Rd V	St Croix St	Varies	3.3	$ 1,332,000		State	City of Hudson, Village of North Hudson, Town of St Joseph, Town of Hudson
	4	Yes	Loop Trail-Somerset Connection	Loop Trail	Spring Street	Varies	8.9	$ 1,710,000		State	Village of Somerset, Town of St Joseph, Town of Somerset
	5	Yes	Baldwin-Woodville Connection	Wildwood Trail	14th Ave	Varies	4.8	$ 1,759,000			Village of Baldwin, Village of Woodville, Town of Baldwin
Additional Projects											
	6		Cty Rd M (Bridge Ave)	County Line Ave	Hwy 65	Paved Shoulders (4-5 ft)	1.6	$ 232,000	$ 117,000	County	Town of Star Prairie
	7	Yes	Cty Rd H (Hill Ave) / Hwy 65 (Jerdee Ave and Jewell St)	Old Mill Rd	Saratoga Ave	Paved Shoulders (4-5 ft)	1.5	$ 215,000	$ 109,000	County	Town of Star Prairie
	8	Yes	Hwy 65 (Main St)	Cty Rd H	Jerdee Ave	Bike Lanes	0.2	$ 12,000	$ 8,000	State	Town of Star Prairie
	9		Hwy 63/64	220th St	Cty Rd O	Paved Shoulders (4-5 ft)	0.5	$ 71,000	$ 36,000	State	Town of Cylon
	10		Cty Rd I (Spring St and Sunrise Dr)	Main St	Kohler Dr	Bike Lanes	1.0	$ 48,000	$ 34,000	County	Village of Somerset
	11	Yes	Main St	Spring St	Hwy 35	Bike Lanes	0.2	$ 8,000	$ 6,000		Village of Somerset
	12	Yes	Hwy 35	Church Hill Rd	Cty Rd C	Path	0.8	$ 371,000	$ 356,000	State	Village of Somerset, Town of Somerset
	13	Yes	Hwy 64 / Hwy 35	Cty Rd C	110th St	Path	3.5	$ 1,687,000	$ 1,622,000	State	Town of Somerset, Town of Richmond
	14		85th St	Old Hwy 64	174th Ave	Paved Shoulders (4-5 ft)	0.7	$ 96,000	$ 49,000		Town of Somerset
	15	Yes	110th St / Somerset Rd	Hwy 64	Cty Rd A	Path	1.6	$ 780,000	$ 750,000		City of New Richmond, Town of Richmond
	16	Yes	Wall St / N 4th St	Industrial Blvd	N Pierce Ave	Bike Lanes	0.7	$ 34,000	$ 25,000		City of New Richmond
	17	Yes	Monette Park Connector	4th St @ E River Dr	Rail Bridge Trail @ E 6th St	Path	0.5	$ 245,000	n/a		City of New Richmond
	18		Cty Rd GG	140th St	150th St	Path	1.0	$ 505,000	$ 486,000	County	Town of Richmond
	19	Yes	140th St	168th Ave	166th Ave	Path	0.1	$ 56,000	$ 54,000		Town of Richmond
	20	Yes	100th St / 170th Ave / 112th St	Cty Rd A	175th Ave	Advisory Bike Lanes	4.5	$ 164,000	$ 156,000		Town of Richmond
	21	Yes	175th Ave	112th St	115th St	Paved Shoulders (4-5 ft)	0.2	$ 35,000	$ 18,000		City of New Richmond
	22	Yes	115th St	175th Ave	Somerset Rd	Bike Lanes	0.2	$ 12,000	$ 9,000		City of New Richmond
	23	Yes	Cty Rd A	140th Ave	100th St	Path	0.3	$ 124,000	$ 119,000	County	Town of Richmond
	24	Yes	80th St / 132nd Ave / 83rd St / 140th Ave	Cty Rd A	Cty Rd A	Advisory Bike Lanes	3.5	$ 129,000	$ 123,000		Town of St Joseph, Town of Richmond
	25		Hwy 35 / Main St	Hwy 64 Bridge	Houlton School Cir	Paved Shoulders (6-8 ft)	1.1	$ 234,000	$ 180,000	State	Town of St Joseph
	26		Cty Rd E	Hwy 64	Thelen Farm Trl	Path	0.3	$ 147,000	$ 142,000	County	Town of St Joseph
	28		Cty Rd A	Cty Rd E	80th St	Path	0.7	$ 338,000	$ 325,000	County	Town of St Joseph
	29		Cty Rd A	McCutcheon Rd	Cty Rd E	Path	2.9	$ 1,425,000	$ 1,370,000	County	Town of St Joseph, Town of Hudson
	30		Cty Rd A	Cty Rd U	McCutcheon Rd	Path	0.8	$ 407,000	$ 391,000	County	Town of Hudson
	31		River Rd	Rolling Hills Trl	Cty Rd I	Paved Shoulders (4-5 ft)	2.0	$ 287,000	$ 145,000		Town of St Joseph
	32		Cty Rd I	Cty Rd E	Cty Rd A	Path	1.2	$ 583,000	$ 560,000	County	Town of St Joseph
	33	Yes	140th St	Cty Rd G	Cty Rd E	Paved Shoulders (4-5 ft)	3.0	$ 425,000	$ 215,000		Town of Richmond
	34	Yes	140th St	Cty Rd E	Cty Rd TT	Advisory Bike Lanes	4.0	$ 145,000	$ 138,000		Town of Warren
	35	Yes	Hwy 128 (Syme Ave)	Oak St W	130th Ave	Path	1.1	$ 549,000	$ 528,000	State	Glenwood City, Town of Glenwood
	36		Hwy 128	130th Ave	Rustic Rd 3	Path	0.3	$ 146,000	$ 141,000	State	Town of Glenwood
	37	Yes	County Fair Grounds Path / 320th St	Hwy 128	Hwy 170	Path	1.3	$ 630,000	n/a	County	Glenwood City

Notes

The Project Complete column can be used to check off projects as they are implemented.
Slashes [/] denote projects that follow more than one street or road. For example, "100th St / 170th Ave" means the project follows 100th Street, then turns and follows 170th Avenue.
Parentheses [( )] identify local names of streets and roads. For example, "Hwy 65 (Main St)" means the project is on Highway 65, which is called Main Street in Star Prairie.
All costs have been rounded to the nearest $1,000.
Recommendations may not be addressed during highway maintenance projects.
Any Projects on Cty Rd M along the St. Croix/Pierce County border fall under Pierce County jurisdiction.

Table 2–4: Master Project Schedule (continued)

Project Complete	Project ID	Enhanced Network	Project Description	From Street	To Street	Facility Recommendation	Length (miles)	Stand-Alone Project Cost Estimate	Coordinated Project Cost Estimate	Roadway Owner (if other than municipality)	Municipality
	38	Yes	Willow River SP Path (west side)	River Rd	Casperson Dr	Path	2.3	$ 1,113,000	n/a	DNR	Town of St Joseph, Town of Hudson
	39	Yes	Willow River SP Park Road	n/a	n/a	Bike Lanes	1.0	$ 47,000	$ 34,000	DNR	Town of Hudson
	40	Yes	Willow River SP Path (south side)	State Park Road	McDonald Ln	Path	0.4	$ 176,000	n/a	DNR	Town of Hudson
	41		Trout Brook Rd	Golden Oaks Rd	Trout Brook Ln	Paved Shoulders (4-5 ft)	2.0	$ 281,000	$ 142,000		Town of Hudson
	42	Yes	McCutcheon Rd	Dally Rd	Cty Rd A	Paved Shoulders (4-5 ft)	1.2	$ 176,000	$ 89,000		Town of Hudson
	43	Yes	Dally Rd	Cty Rd A	McCutcheon Rd	Advisory Bike Lanes	0.7	$ 27,000	$ 26,000		Town of Hudson
	44	Yes	Cty Rd A	Dorwin Rd	Dally Rd	Path	0.5	$ 252,000	$ 242,000	County	Town of Hudson
	45		Buckeye St	1st St	2nd St	Bike Lanes	0.1	$ 3,000	$ 2,000		City of Hudson
	46	Yes	9th St	Orange St	Fox St	Bike Lanes	0.0	$ 1,000	$ 1,000		City of Hudson
	47	Yes	Vine St	10th St	Wisconsin St	Path	0.4	$ 185,000	$ 178,000		City of Hudson
	48		Carmichael Rd	Vine St	Deerhaven Dr	Path	0.5	$ 243,000	$ 234,000		Town of Hudson
	49		Hwy 12 (Cty Rd U) / Cty Rd N	Cty Rd A	Old Hwy 35 S	Path	2.7	$ 1,338,000	$ 1,286,000	State	Town of Hudson
	50	Yes	Cty Rd TT (Graham St W)	Hwy 65	Meadows Dr	Path	5.8	$ 2,810,000	$ 2,701,000	County	Village of Roberts, Village of Hammond, Town of Warren, Town of Hammond
	51	Yes	Cty Rd T (Davis St)	Hwy 12	Railroad Tracks	Bike Lanes	0.5	$ 25,000	$ 18,000	County	Village of Hammond
	52	Yes	Cty Rd T (Davis St)	Railroad Tracks	Cty Rd J	Path	0.5	$ 237,000	$ 228,000	County	Village of Hammond
	53	Yes	Cty Rd J (Florence St)	Davis St	Hwy 63	Path	3.0	$ 1,466,000	$ 1,409,000	County	Village of Baldwin, Town of Hammond
	54		200th St	Hwy 12	Cty Rd J	Paved Shoulders (4-5 ft)	1.0	$ 142,000	$ 72,000		Town of Hammond
	55		Hwy 63 (10th Ave)	Cty Rd J	50th Ave	Path	2.0	$ 998,000	$ 960,000	State	Village of Baldwin
	56	Yes	14th Ave / Maple Street	Cty Rd J	220th St	Bike Lanes	1.3	$ 62,000	$ 44,000		Village of Baldwin
	57	Yes	70th Ave / Rose Ln	220th St	Cty Rd BB	Path	2.3	$ 1,101,000	$ 1,059,000		Town of Baldwin
	58	Yes	Cty Rd BB / Small creek parallel to 220th St	Rose Ln	Wildwood Trail	Path	1.2	$ 596,000	$ 573,000	County	Town of Baldwin
	59	Yes	Cty Rd BB (Main St) / Cty Rd D (Lockwood St)	Wildwood Trail	Hwy 12	Bike Lanes	0.8	$ 40,000	$ 29,000	County	Village of Woodville
	60		Cty Rd F	River Crest Elementary	Pierce County	Path	5.3	$ 2,579,000	$ 2,479,000	County	Town of Troy
	61	Yes	Cty Rd MM	Mann Ln	Radio Rd	Path	0.8	$ 379,000	$ 364,000	County	Town of Troy
	62		Paulson Rd	Hwy 65	Existing Path on Paulson Rd	Bike Lanes	0.4	$ 21,000	$ 15,000		City of River Falls
	63		Hwy 65 (N Main St)	Huppert St	Riverside Dr	Bike Lanes	0.4	$ 20,000	$ 14,000	State	City of River Falls
	64	Yes	Hwy 65 (N Main St)	Cty Rd MM	Paulson Dr	Bike Lanes	0.4	$ 19,000	$ 14,000	State	City of River Falls
	65	Yes	Quarry Rd	Hwy 65 (N Main St)	Hwy 35	Bike Lanes	0.5	$ 24,000	$ 17,000		City of River Falls
	66		Liberty Rd	Cty Rd M	Hwy 65	Advisory Bike Lanes	2.4	$ 88,000	$ 84,000		Town of Kinnickinnic
	67	Yes	Cty Rd JJ (Saddle Club Rd) / Cty Rd J	Cty Rd M	Old Cemetery Rd	Paved Shoulders (4-5 ft)	3.3	$ 465,000	$ 235,000	County	Town of Kinnickinnic
	68	Yes	Cty Rd N	130th St	Old Cemetery Rd	Paved Shoulders (4-5 ft)	0.7	$ 100,000	$ 51,000	County	Town of Kinnickinnic
	69		Eau Galle Lake Connector (may require significant boardwalk section)	Existing Access Drive off of Boston Road	Cty Rd NN	Path/Boardwalk	0.4	$ 392,000	n/a	USACE	Village of Spring Valley

Notes

The Project Complete column can be used to check off projects as they are implemented.
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Parentheses [( )] identify local names of streets and roads. For example, "Hwy 65 (Main St)" means the project is on Highway 65, which is called Main Street in Star Prairie.
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Recommendations may not be addressed during highway maintenance projects.
Any Projects on Cty Rd M along the St. Croix/Pierce County border fall under Pierce County jurisdiction

Early Action Priority Corridors

Five priority corridors were selected from the Plan's bikeway and trail network recommendations for further analysis. The intent is that the analysis, detailed recommendations, and cost estimates provided for each corridor will streamline and accelerate implementation, possibly leading to the preparation of grant applications in the near future.

Selected Corridors

The corridors were selected by the Advisory Team based on a discussion of stakeholder and public input and considering potential linkages to upcoming bikeway projects. The five corridors include:

1. I-94-River Crest Elementary School Connection
2. Loop Trail-Willow River State Park Connection
3. Wis-35 Connection to Hudson
4. Loop Trail-Somerset Connection
5. Baldwin-Woodville Connection

Methodology and Limitations

Each analysis includes a corridor overview explaining the context and nearby destinations, a corridor map illustrating the bikeway and trail alignments that comprise the corridor, an alignment description that provides detail regarding recommended bikeway types and unique challenges along the route, and a planning-level cost estimate. These analyses and accompanying recommendations and cost estimates are planning-level studies. Each corridor will benefit greatly from preliminary engineering in order to identify any additional challenges and refine the accuracy of the cost estimates.

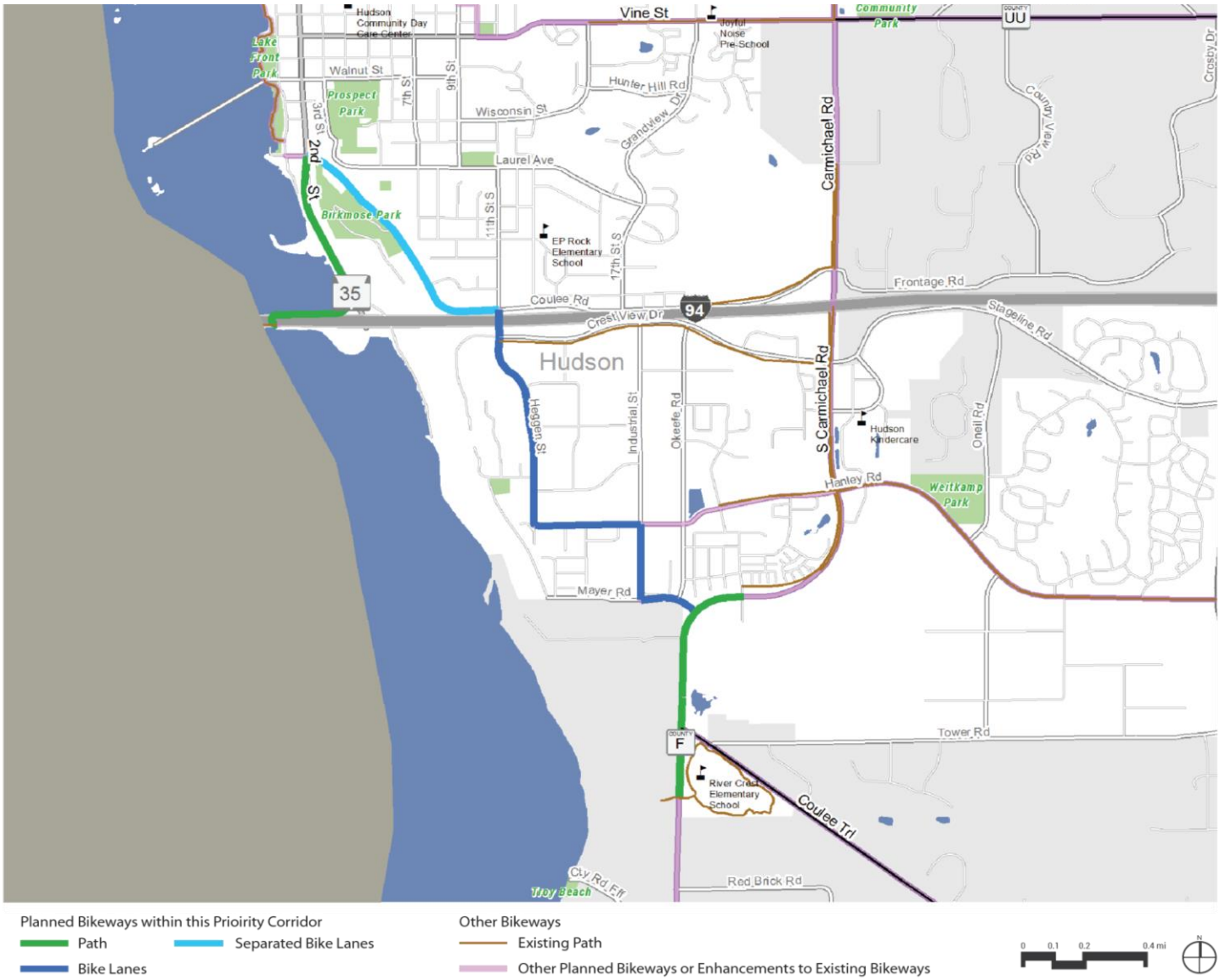
Corridor 1: I-94-River Crest Elementary School Connection

Corridor Overview

The bikeway recommendations for Corridor 1 are intended to provide better connections between the south end of downtown Hudson and other existing bikeways and trails that create important regional connections. The segment along 2nd Street, between the intersection with Coulee Road and Interstate 94, improves upon the existing sidewalk connection to the separated path across the I-94 bridge, providing safer access for trips to and from Minnesota to the City of Hudson and its existing bikeways. With the connection to Coulee Road providing much needed access across the interstate highway at the 11th Street overpass, the commercial areas along and south of I-94 can be reached from the significantly lower-lying area along the river. Since Coulee Road ascends considerably from 2nd Street to 11th Street, this segment is best served with the proposed separated bike path.

To the south of I-94, the corridor serves bicycle and pedestrian trips to employment areas with connections to an existing path along Crest View Drive and to the industrial park. Continuing south in the Town of Troy, this corridor provides for safe travel to River Crest Elementary School and the YMCA's Camp St. Croix, while creating connections to existing trails along S. Carmichael Road and Coulee Trail, and to the trails and the bicycle/pedestrian underpass of County Highway F in the vicinity of the elementary school. This corridor also improves bicycle travel to Troy Beach, just south of the corridor along the river.

Figure 2-12: Corridor 1 Alignment



Alignment Description

- **Existing 5-foot wide sidewalk (I-94 bridge to the 2nd Street/Coulee Road intersection): Path**
  - Remove existing 5-foot wide sidewalk and replace with a minimum 10-foot wide path.
  - Minor earthwork may be needed.
  - Choke point: Existing W-Beam guardrail and steep slope makes widening difficult along the curve along 2nd Street (near St Croix Marina).
  - Careful design will be needed for the intersection transition at 2nd Street and Coulee Road, paying attention to the movement from the path to the separated bike lane across the intersection.
- **Coulee Road (2nd Street to 11th Street): Separated Bike Lane**
  - Roadway is approximately 34 feet (wider at intersections).
  - Preferred option: Two 10.5-foot travel lanes plus a single two-way separated bike lane (10-foot width plus 3-foot buffer) on Northeast side of the street.
  - Alternative: Two 11-foot travel lanes plus one two-way separated bike lane (9-foot width plus 3-foot buffer) on Northeast side of the street.
- **11th Street (bridge over I-94): Bike Lanes**
  - Bridge is approximately 42 feet wide, not including the sidewalk.
  - Proposed cross section: Two 11-foot travel lanes, one 10-foot left turn lane, and two 5-foot bike lanes.
  - Alternative: Reconfigure the roadway to include two 10.5-foot travel lanes, a 10-foot wide left turn lane, and a single two-way separated bike lane (9-foot width plus 2-foot buffer) on the west side of the bridge adjacent to the sidewalk.
- **Heggen Street (Crest View Drive to Hanley Road): Bike Lanes**
  - Existing path measures approximately 8 feet wide.
  - Existing roadway measures approximately 34 feet wide.
  - Proposed cross section: Two 11-foot travel lanes and two 6-foot bike lanes.
  - At the intersection with Crest View, may need to narrow travel lanes to approximately 10.5 feet to fit 5-foot wide bike lanes.
  - Alternative: Widen existing sidepath to 10 feet to accommodate bicyclists and pedestrians adequately.
- **Hanley Road (Heggen Street to Industrial Street): Bike Lanes**
  - Existing roadway measures approximately 34 feet wide.
  - Proposed cross section: Two 11-foot travel lanes and two 6-foot bike lanes.
  - Alternative: Construct a 10-foot wide sidepath on the south side of the road.
- **Industrial Street (Hanley Road to Mayer Road): Bike Lanes**
  - Existing roadway measures approximately 34 feet wide.
  - Proposed cross section: Two 11-foot travel lanes and two 6-foot bike lanes.
  - Alternative: Construct a 10-foot wide sidepath on either side of the road.
- **Mayer Road (Industrial Street to Carmichael Road): Bike Lanes**
  - The width of Mayer Road varies from about 27 feet to 44 feet.
  - Proposed cross section: Two 11-foot travel lanes and two 6-foot bike lanes (the turn lane at O'Keefe Road would be 10 feet wide).
  - At the intersection of Mayer Road and Carmichael Road, the proposed cross section is two 11-foot turn lanes, one 11-foot westbound lane, and two 5-foot bike lanes.
  - Pinch point at intersection of Industrial Street and Mayer Road. Near this intersection, the roadway is too narrow for bike lanes on both sides of the street for a length of approximately 200 feet.
    - Short Term: Shared lane markings on the north (westbound) side of the street and bike lane on the south (eastbound) side. Alternatively, a 10-foot wide path on the north side of the street and bike lanes on the south side.
    - Long Term (when roadway is reconstructed): Widen roadway to fit bike lanes.

- **Carmichael Road (Mayer Road to existing path underpass at River Crest Elementary School): Sidepath**
    - Construct a 10-foot wide sidepath on the west side of the road.
    - Steep slopes along the right-of-way will likely require drainage work and earthwork/grading.
    - Significant grading may be required to connect to the existing path near the underpass.
    - Significant clearing and grubbing may be required for portions of the path.
    - Existing W-Beam guardrail may make the connection to the existing path underpass more difficult.
    - Due to these factors, the cost estimate for this segment is increased by 25 percent.
- **Carmichael Road (Mayer Road to Albert Street): Path**
    - Construct a 10-foot wide sidepath on the west side of the road to connect to existing sidepath that terminates at Albert Street.
    - Connection from Carmichael Road to Albert Street is steep and may require switchback(s).

Planning Level Cost Estimate

The estimated cost of constructing the recommended bikeway facilities within this corridor is $1,080,000 This includes $302,000 for the replacement of 0.86 miles of existing sidewalk with a path, $240,000 for 0.89 miles of separated bike lanes, $58,000 for 1.59 miles of bike lanes, and $480,000 for 0.82 miles of path. Outside variables not included in this estimate are the cost of design, right-of-way acquisition, or changes to signalized traffic control.

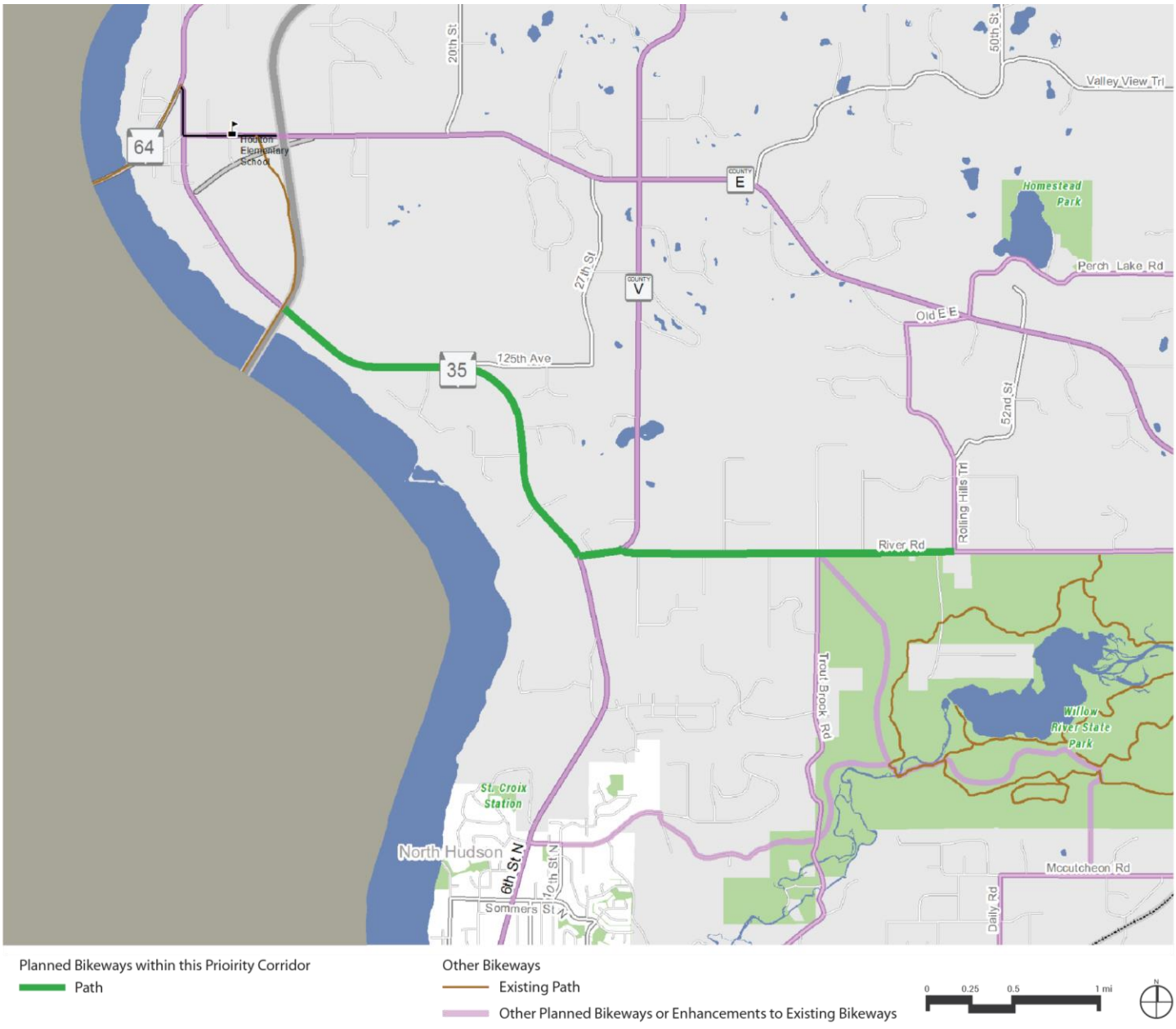
Corridor 2: Loop Trail-Willow River State Park Connection

Corridor Overview

This corridor provides a key connection from the new St. Croix River crossing to the very popular Willow River State Park and its internal trail system. The segment along Highway 35 also provides a critical link from the new bridge and bikeways in Minnesota, to populations on the Wisconsin side, south of the bridge, including the Town of St. Joseph, Village of North Hudson and the City of Hudson. This segment will present some challenges for implementation. The busy and high speed conditions of the highway (with a speed limit of 55 miles per hour in much of this section of Highway 35) indicate a need for a separated sidepath. This will provide a much needed link to the new bridge and the Loop Trail being constructed as a part of the bridge project.

The River Road segment of the corridor would provide safe access to Willow River State Park, a destination for families and bicycle tourists from both Minnesota and Wisconsin. The sidepath is proposed to continue to another planned bikeway, north from Willow River State Park, to Homestead Park and Perch Lake.

Figure 2-13: Corridor 2 Alignment



Alignment Description

- **Wis-35 (New Wis-64 bridge over the St. Croix River to County Highway V): Sidepath**
  - Construct a 10-foot wide sidepath on the north/east side of the roadway.
  - Drainage work and earthwork/grading may be required (open section roadway).
  - Connecting this sidepath to the path along Wis-64 will require a significant grade change. It may be possible to cross Wis-35 south of the bridge at-grade, run a path down the embankment, turn under the Wis-64 bridge, and run back up the embankment on the other side to meet the Wis-64 path. Detailed analysis and preliminary engineering will need to be performed.
  - Due to these factors, the cost estimate for this segment is increased by 25 percent.
- **County Highway V (Wis-35 to River Road): Sidepath**
  - Construct a 10-foot wide sidepath on the north side of the roadway.
  - Drainage work and earthwork/grading may be required (open section roadway).
- **River Road (County Highway V to Rolling Hills Trail and Willow River State Park): Sidepath**
  - Construct a 10-foot wide sidepath on the north side of the roadway.
  - Drainage work and earthwork/grading may be required (open section roadway).
  - May need crossing improvements to connect from the path on the north side of the roadway to the State Park on the south side of the roadway. This connection will occur somewhere between Trout Brook Road and Rolling Hills Trail, depending on the State Park's preference and requirements.

Planning Level Cost Estimate

The estimated cost of constructing the recommended bikeway facilities within this corridor is $2,441,000. This corridor consists of 4.41 miles of path.

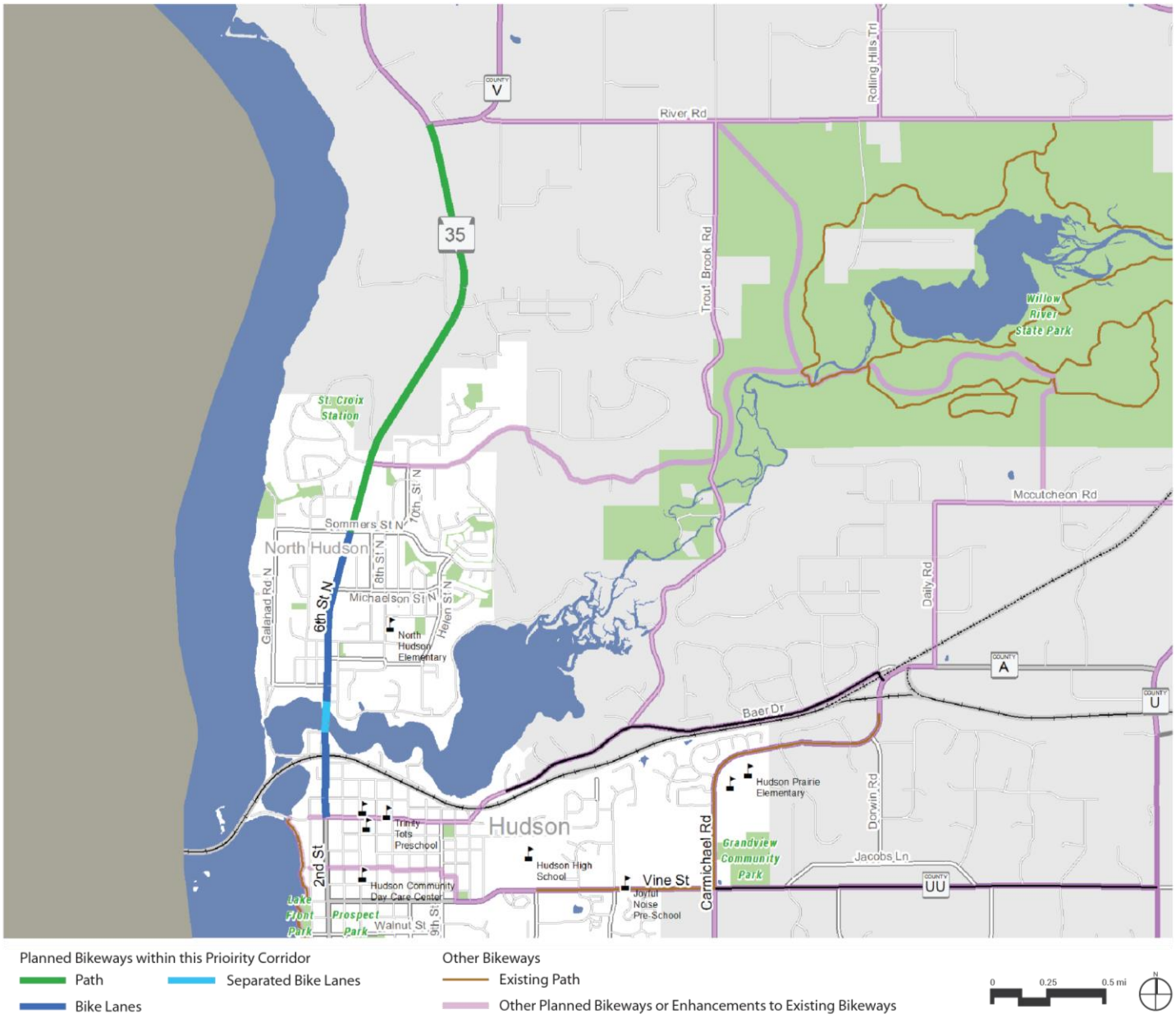
Corridor 3: Wis-35 Connection to Hudson

Corridor Overview

Corridor 3 is the next segment between the Loop Trail and the Village of North Hudson and City of Hudson. Highway 35 north of North Hudson has higher speeds, indicating the need for the sidepath until a point in the Village where the speed limit drops to 25 miles per hour, allowing for safe bicycle travel in on-street bike lanes.

This connection is critical as bicyclists will need a route from the Loop Trail to the many destinations in Hudson. Also, this would allow a loop to be completed using trails at the new river crossing and the Interstate 94 river crossing.

Figure 2-14: Corridor 3 Alignment



Alignment Description

- **Wis-35 (County Highway V to Sommers Street N): Sidepath**
  - Construct a 10-foot wide sidepath on the east side of the roadway.
  - Drainage work and earthwork/grading may be required (open section roadway); some areas have steep slopes along the right-of-way.
  - Significant clearing and grubbing may be required for portions of the path.
  - Existing w-beam guardrail along portions of the segment.
  - Existing power lines may pose conflicts with the sidepath's alignment.
  - Due to these factors, the cost estimate for this segment is increased by 25 percent.
- **Wis-35 (Sommers Street N to South Street): Bike Lanes**
  - Existing roadway measures approximately 32 feet wide. On-street parking is not allowed. Right-of-way constraints make a sidepath unfeasible in the near term.
  - Proposed cross section: Two 11-foot travel lanes and two 5-foot bike lanes (measured from curbface).
  - At the intersection with Monroe Street, the roadway is approximately 40 feet wide with two through lanes and a left-turn lane on each approach. This is too narrow to add bike lanes to the existing pavement section and retain three 11-foot wide lanes. One solution is to provide two 10-foot travel lanes, one 10-foot turn lane, and two 5-foot bike lanes. However, this is a state highway and WisDOT typically does not construct lanes narrower than 11 feet. Another solution is to widen the existing sidewalks (to 8 feet) for approximately 200 feet in each direction for use as sidepaths (this would likely not require narrowing the roadway). Another, less desirable, solution is to drop the bike lanes in advance of the intersection and add shared lane markings and "Bikes May Use Full Lane" signs.
- **Wis-35 (South Street in North Hudson to North Street in Hudson): Separated Bike Lanes**
  - Existing roadway measures approximately 48 feet wide.
  - Proposed cross section: two 11-foot travel lanes and two one-way separated bike lanes (7-foot width plus 6-foot buffer).
- **Wis-35 (North Street to St Croix Street): Bike Lanes**
  - Existing roadway measures approximately 32 feet wide. On-street parking is not allowed. Right-of-way constraints make a sidepath unfeasible in the near term.
  - Proposed cross section: two 11-foot travel lanes and two 5-foot bike lanes.

Planning Level Cost Estimate

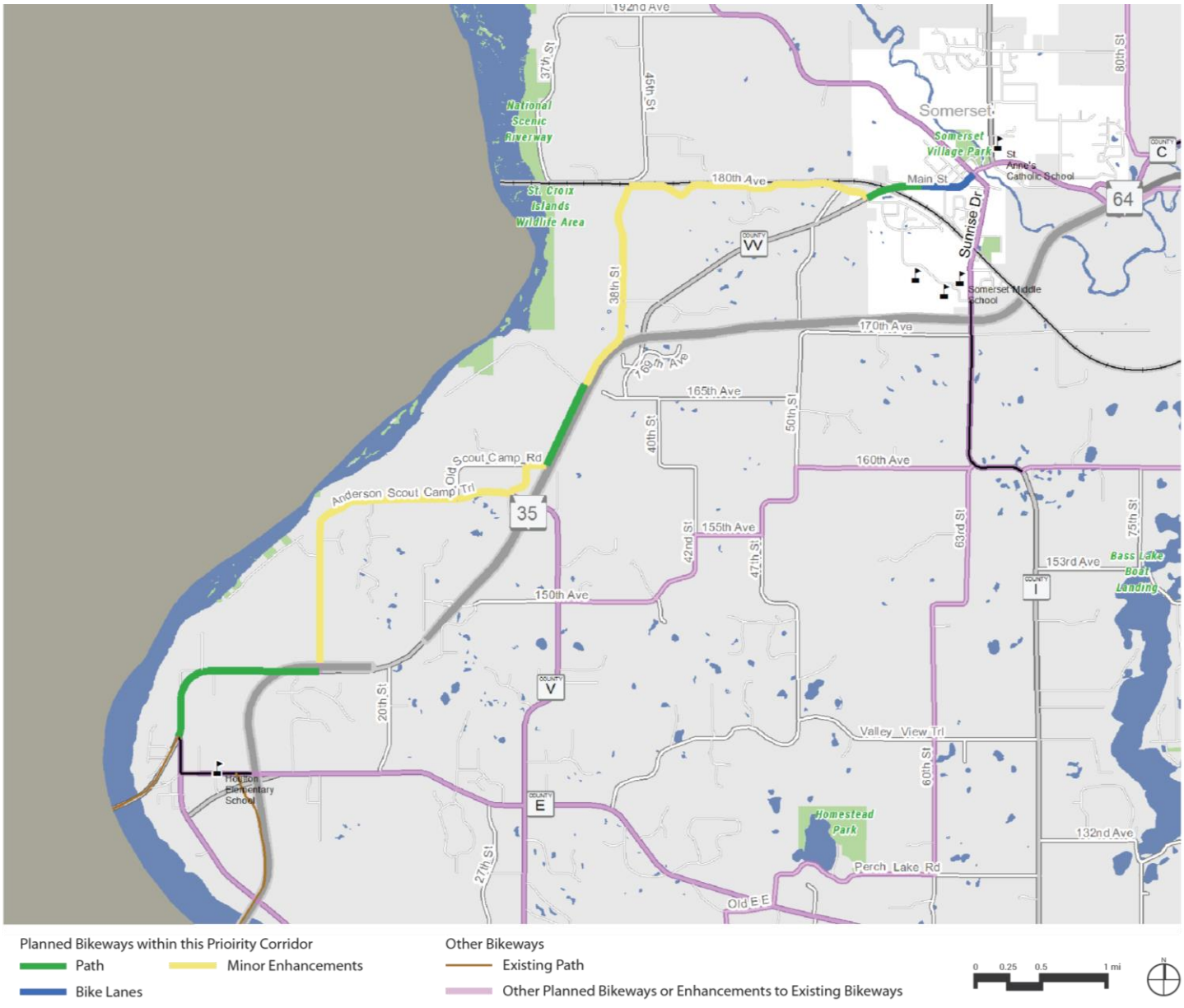
The estimated cost of constructing the recommended bikeway facilities within this corridor is $1,332,000. This includes $1,214,000 for 1.99 miles of path, $43,000 for 1.17 miles of bike lanes, and $75,000 for 0.14 miles of separated bike lanes. Outside variables not included in this estimate are the cost of design, right-of-way acquisition, or changes to signalized traffic control.

Corridor 4: Loop Trail-Somerset Connection

Corridor Overview

This segment provides a critical connection to the St. Croix Crossing project and its Loop Trail component along a scenic route north to the Village of Somerset. In Somerset, the corridor provides access to a popular Apple River tubing site and the Somerset Amphitheater, which hosts large concerts and festivals. The corridor also connects to other planned bikeways north of Somerset along CTH I and 80th Street, linking to the Apple River Canyon State Natural Area and beyond to other bicycling opportunities in Polk County. This segment is also the first step in reaching another primary population and activity center in St. Croix County, the City of New Richmond. The combination of on-road facilities and separated sidepaths, where necessary, will provide a comfortable ride for most riders, while some significant terrain variation will keep the route interesting for fitness riders.

Figure 2-15: Corridor 4 Alignment



Alignment Description

- **Old Wis-35 (Main Street to Anderson Scout Camp Road): Sidepath**
    - From Main Street to Triangle Drive, provide a 10-foot wide path along the abandoned Wis-35 road bed (west side of Wis-35). This may entail adding pavement markings, concrete barriers, or selective excavation of the old road bed (by WisDOT).
    - From Triangle Drive to Anderson Scout Camp Road, construct a 10-foot wide sidepath along the north side of the roadway.
- **Anderson Scout Camp Road (Old Wis-35 to 30th Street): Minor Enhancements**
    - Existing road has low traffic volumes and is approximately 20 feet wide.
    - Add Bikes May Use Full Lane signs and wayfinding signs.
    - Ensure adequate pavement conditions by patching any potholes or cracks.
- **30th Street (Anderson Scout Camp Road to Old Anderson Scout Camp Road): Minor Enhancements**
    - Existing road has low traffic volumes and is approximately 25 feet wide.
    - Add Bikes May Use Full Lane signs and wayfinding signs.
- **Old Anderson Scout Camp Road (30th Street to proposed path parallel to Wis-64): Minor Enhancements**
    - Existing road has low traffic volumes and is approximately 25 feet wide.
    - Add Bikes May Use Full Lane signs and wayfinding signs.
    - Ensure adequate pavement conditions by patching any potholes or cracks.
- **Parallel to Wis-64 (Old Anderson Scout Camp Road to 165th Avenue): Path**
    - Construct a 10-foot wide path on the northwest side of the road.
    - Requires addressing right-of-way encroachment but minimal right-of-way acquisition.
    - Includes significant topographic variation, which increases the cost estimate for this segment by 50 percent.
- **38th Street (Proposed path parallel to Wis-64 to 180th Avenue): Minor Enhancements**
    - Existing road has low traffic volumes and pavement width varies.
    - Add Bikes May Use Full Lane signs and wayfinding signs.
- **180th Avenue (38th Street to County Road VV/Main Street): Minor Enhancements**
    - Existing road has low traffic volumes and pavement width varies.
    - Add Bikes May Use Full Lane signs and wayfinding signs.
- **Main Street (180th Avenue to Somerset Amphitheater entrance): Sidepath**
    - Construct a 10-foot wide sidepath on the north side of the street.
    - The bridge over the railroad is not wide enough for a sidepath. The bridge could potentially be widened or the path could cross the railroad at-grade. This is a significant challenge, which increases the cost estimate for this segment by 100 percent.
- **Main Street (Somerset Amphitheater entrance to Spring Street): Bike Lanes**
    - The existing roadway is approximately 34 feet wide, but has several traffic calming features that narrow the roadway (one median island near the Amphitheater entrance and several curb extensions to shorten crosswalks for pedestrians). Near Spring Street, on-street parking is provided.
    - The proposed cross section is two 11-foot lanes and 6-foot bike lanes. However, bike lanes would have to merge with travel lanes where the roadway narrows for traffic calming.
    - The need for on-street parking should be reconsidered, especially in light of the significant amount of off-street parking available in the area.

The long-term vision for this corridor is to connect the three path sections described above by:

1) Constructing a 10-foot wide path along Wis-64 from the south end of Anderson Scout Camp Road to Old Anderson Scout Camp Road (north of CTH V); and

2) Constructing a path along Wis-64 and CTH VV from 165th Avenue to 180th Avenue.

Planning Level Cost Estimate

The estimated cost of constructing the recommended bikeway facilities within this corridor is $1,710,000. This includes $1,564,000 for 2.47 miles of path, $136,000 for 6.24 miles of minor enhancements including signs, shared lane markings, and filling potholes, and $10,000 for 0.22 miles of bike lanes. Outside variables not included in this estimate are the cost of design, right-of-way acquisition, or changes to signalized traffic control.

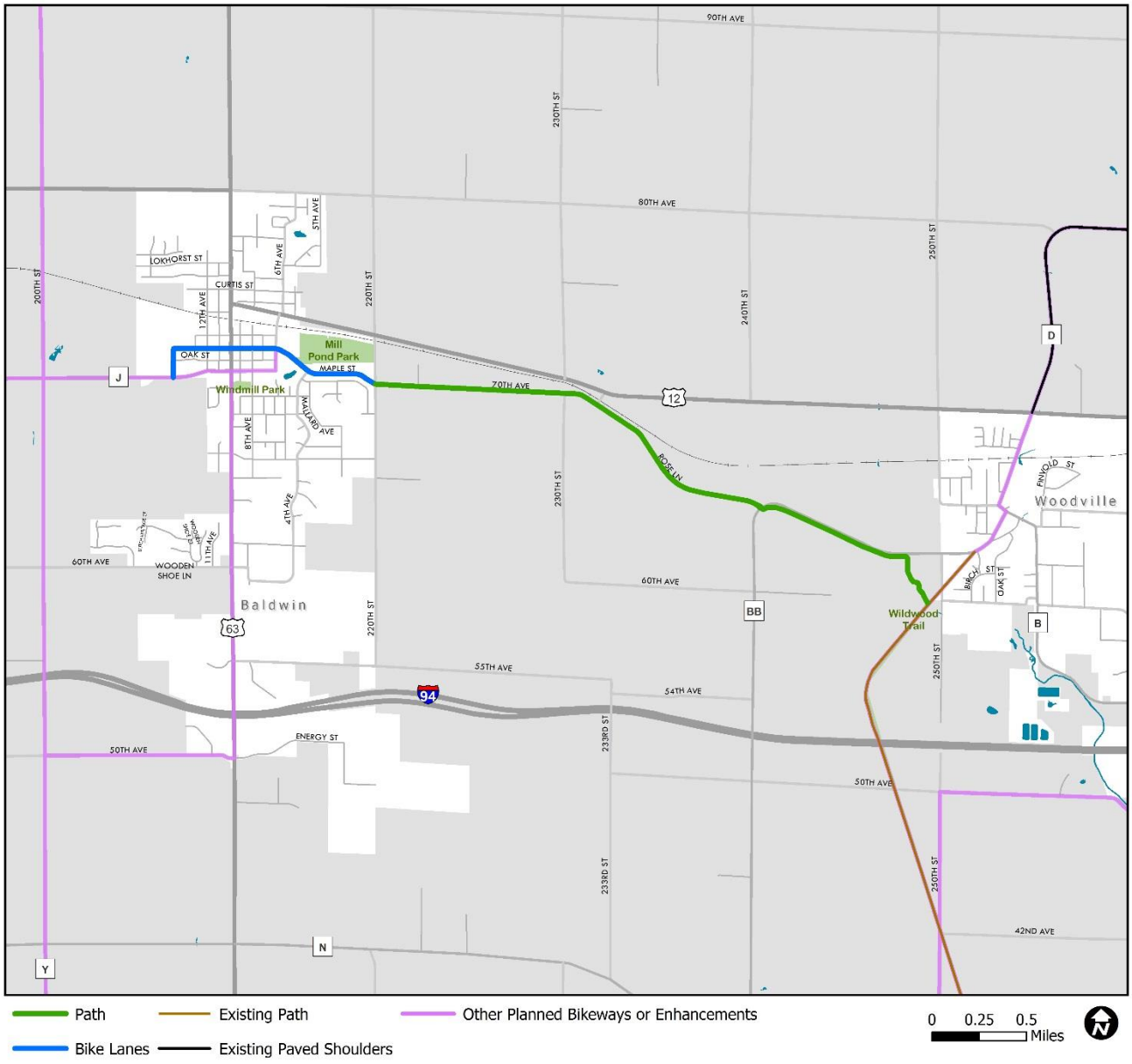
Corridor 5: Baldwin-Woodville Connection

Corridor Overview

Corridor 5 connects Baldwin and Woodville, which are closely linked in terms of schools, sports, and community facilities, but have remained separated by a lack of safe bicycling routes. The elementary school and high school for the Baldwin-Woodville School District are both located in the Village of Baldwin, but the Middle School is located in Woodville. This necessitates many families living in either community to transport their child (or children) to the other community at some point during each child's school years. With the distance between the communities being approximately five miles, bicycling could serve some of those school trips, such as those after baseball or theater practice when a bus may not be available, but potentially also as a healthy or convenient choice for students and other bicycle riders of all ages.

This corridor is seen as one of the most critical links in a much-requested connection between the communities in the Interstate 94/Highway 12 corridor running east-west through the county.

Figure 2-16: Corridor 5 Alignment



Alignment Description

- **Along creek (Wildwood Trail to County Highway BB): Path**
  - Construct a 10-foot wide path on the west side of the creek.
  - Some clearing and grubbing may be required.
  - Easement or right-of-way acquisition may be required.
- **County Highway BB (path along creek to Rose Lane): Sidepath**
  - Construct a 10-foot wide sidepath along the south side of the roadway.
  - Drainage work and earthwork/grading may be required (open section roadway). Some areas have steep slopes. Utility poles may present challenges in a few locations.
  - Detailed design will be needed for the transition from path along County Highway BB to path at the intersection of County Road BB and 70th Avenue/Rose Lane.
  - Due to these factors, the cost estimate for this segment is increased by 25 percent.
- **70th Avenue/Rose Lane (County Road BB to 220th Street):SidePath**
  - Construct 10-foot wide sidepath along 70th Avenue/Rose Lane. The side of the roadway will be determined after further engineering study.
  - Drainage work and earthwork/grading may be required (open section roadway). Some areas have steep slopes.
- **Florence Street (220th Street to 6th Avenue): Bike Lanes**
  - Existing roadway measures approximately 34 feet to 42 feet wide.
  - Proposed cross section: Two 11-foot travel lanes and two 6-foot bike lanes.
- **Maple Street (6th Avenue to 14th Avenue): Restricted Lanes (Combination Bike and Parking Lanes)**
  - Existing roadway measures approximately 38 feet wide. Maple Street is predominately a residential street with on-street parking that is minimally used. It does not have a marked centerline except for a half block on either side of Highway 63. The block between Highway 63 and 9th Avenue has demarcated on-street parking stalls on the north side and is approximately 42 feet wide.
  - Proposed cross section: two 9-foot restricted lanes (which serve as bike lanes but allow parking) and 20 feet of travel way in the center (no centerline). Within a half block of the intersection with Highway 63, provide a centerline, two 11-foot wide travel lanes, and two 7.5-foot wide bike lanes or restricted lanes.
  - Alternative cross section: a single 24-foot wide center travel way that **includes** two 5-foot wide advisory bike lanes (resulting in 14 feet between the advisory bike lanes), and two 7-foot wide parking lanes.

Planning Level Cost Estimate

The estimated cost of constructing the recommended bikeway facilities within this corridor is $1,759,000 This includes $1,697,000 for 3.5 miles of path, and $62,000 for 1.3 miles of separated bike lanes. Outside variables not included in this estimate are the cost of design, right-of-way acquisition, or changes to signalized traffic control.

References

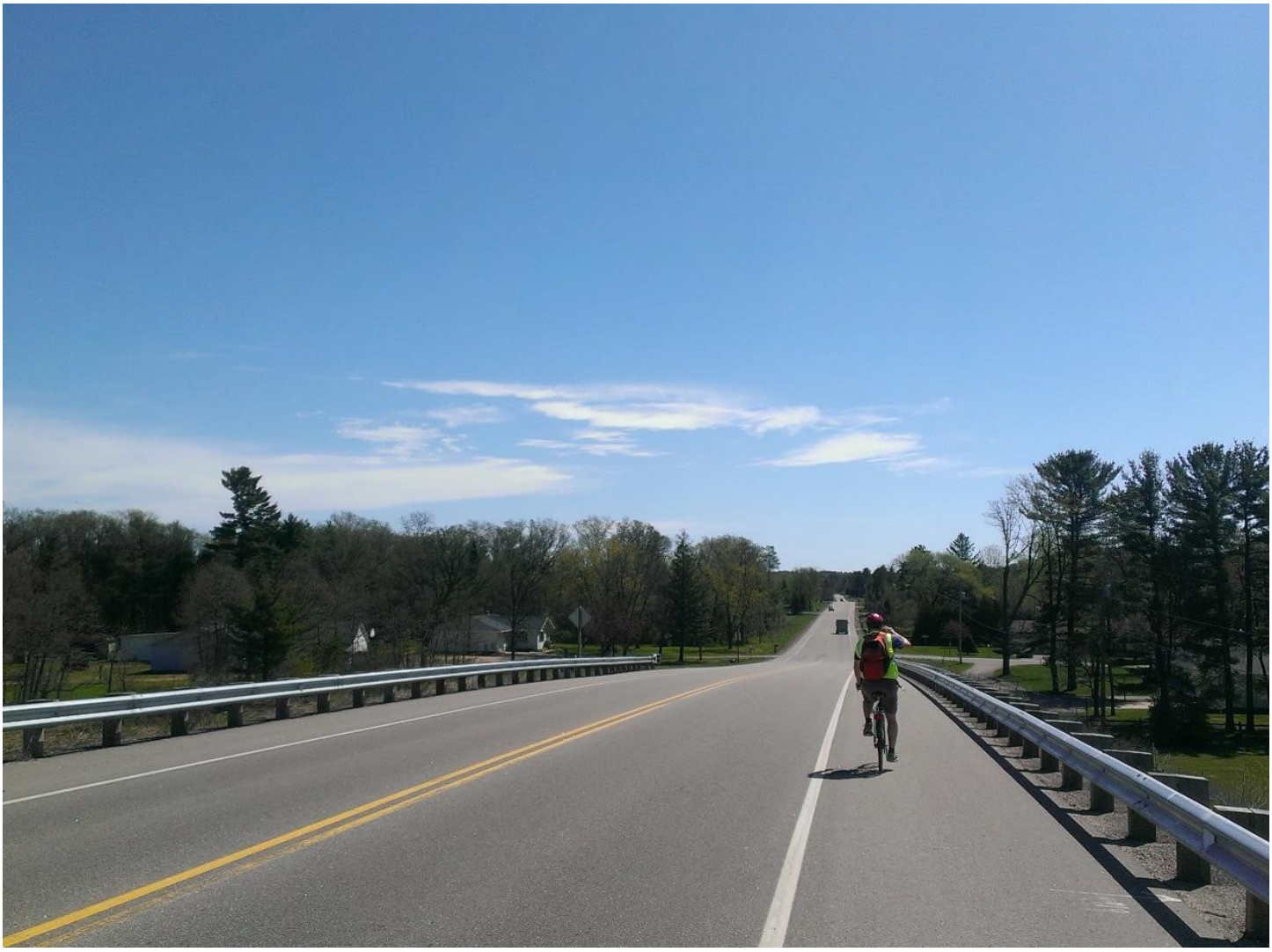
[i] Bicycle Crash Analysis for Wisconsin Using a Crash Typing Tool (PBCAT) and Geographic Information System (GIS)

[ii] Photo Copyright 2014 The Dartmouth, Inc.

[iii] These typical costs were developed in part using Wisconsin Department of Transportation Average Unit Price data located at: http://wisconsindot.gov/hcciDocs/contracting-info/average-unit-price.pdf (accessed October 5, 2016) as well as historical average costs observed by Toole Design Group.

ST. CROIX COUNTY Bicycle and Pedestrian PLAN 2017

Part 3: Implementation Manual



3.1 Funding & Implementation Strategy

The focus of the System Plan (Part 2) is the development of a countywide network of off-road trails and on-road bikeways intended to serve avid and casual bicyclists and pedestrians alike. The majority (approximately 70%) of the recommendations are for low-cost, minor enhancements to low-traffic roads and existing trails. The remainder (30%) of the recommendations are for more substantial investments to link communities via separated trails and enhanced on-road bikeways.

Successful, timely implementation of the proposed bikeway and trail recommendations of the System Plan requires extensive partnerships and continued collaborative conversations to develop and adopt an effective funding and implementation strategy. The following pages outline a proposed strategy for Plan implementation, defining both St. Croix County's role along its county highways as well as encouraging the municipalities to adopt similar strategies for local funding along city streets and town roads.

Foundation of the Strategy

Commitment and a coordinated funding and implementation strategy at the County and municipal levels is essential for the successful implementation of the Plan. The strategy proposed in this section was developed to help achieve the Plan's goals, further specific objectives, minimize cost while maximizing value, and seek a more stable and sustainable funding approach.

Relationship with Plan Goals

Based on stakeholder input, a vision statement and five supporting goals were developed for the Plan. The **Partnerships** goal urges St. Croix County and other agencies to "leverage resources [e.g., funding]…to develop networks for bicycling and walking." The **Support** goal recognizes that it is important to "increase public and governmental support to…develop sustainable funding strategies [and] secure buy-in for implementation" by highlighting the economic benefits of walking and biking. See Page 8 in Part 1 for the full list of Plan goals.

Strategy Objectives

Strategy objectives are based on the results of an extensive, eight-month stakeholder involvement process, during which stakeholders identified several intended policy outcomes. These were refined into five objectives:

- **Consistent and Timely Implementation** (practices that make the implementation of the primary elements of this Plan feasible in the next 10 years)
- **Enhanced Inter- and Intra-Agency Coordination** (enhanced communication between the County, municipalities, and WisDOT, as well as improved coordination within individual agencies)
- **Adequacy of Funding** (making sure enough funding is made available through grants, capital improvement programs, and annual budgets to pay for annual priority infrastructure improvements)
- **Enhanced Project Development Processes** (to streamline and consider the inclusion of bike and pedestrian accommodations in roadway projects, especially when substantial cost savings can be realized)
- **Adequate Maintenance** (ensuring that investments in bicycling and walking infrastructure are maintained to an appropriate level for year-round or seasonal use)

Minimizing Cost and Maximizing Value

The cost of constructing bicycle and pedestrian infrastructure (whether paved shoulders, bike lanes, sidewalks, or a parallel trail) can be substantially decreased if built as part of larger roadway projects due to the economy of scale. Typically, project budgets can be leveraged to fund the cost of the accommodations from the same source as the roadway project with minimal impact to the overall project budget. This is particularly the case when improvements are relatively minor such as adding signs, widening existing shoulders by one or two feet, and spot treatments (such as bike lane striping at intersections). This approach, however, is not usually viable for trail projects.

Reduced Reliance on Grant Programs

Grant programs, such as the Transportation Alternatives Program, are seen as one of the primary sources of funding bicycle and pedestrian infrastructure. However, grant funding sources are very limited and highly competitive. **The infrastructure recommendations in the Plan cannot be implemented in a timely manner solely through grant funding.** Rather, the majority of the recommendations in the Plan will need to be funded from county and local sources. New funding sources on the county or municipal level may be needed to fill the gap.

However, the County, municipalities, and advocates should continue to seek funding from alternative sources (grants, philanthropic foundations, donations, etc.), making a concerted effort to attain 10 percent of the funding of stand-alone projects from such sources. Potential alternative sources are discussed on Pages 77 and 82.

Activating the Strategy

Making the Case for Investing in Biking and Walking

Increasing the dialog about investing in biking and walking, encouraging more people to try active transportation, and increasing safe behavior on the part of all transportation users is just as important as building infrastructure. The starting point is to effectively and continually convey the value of biking and walking. A concerted marketing effort raising awareness of the vision of this Plan and the importance of investing in walking and biking should focus on reaching elected officials and the voting public, and include messaging that replaces "what will this cost?" with "what is this worth?" (worth defined as quality of life value, the value of saving a life, etc.). It is important for advocates, citizens, and other stakeholders to take this message to local officials and the broader community. As time progresses, this message should be evolved in a coordinated manner by the stakeholders.

Intergovernmental Coordination

Throughout the planning process, a strong desire to increase coordination and communication between municipalities, with the County, and with WisDOT and other state agencies has been expressed by stakeholders. Two solutions to facilitate this type of coordination were developed based on priorities and objectives discussed at Project Advisory Team and Stakeholder Workshop meetings:

1. An annual half-day or full-day St. Croix County Bicycle and Pedestrian Summit (or conference) that provides opportunities for stakeholders to coordinate plans and projects or receive training on topics like project prioritization, grant applications, design practices, tourism strategies/actions, etc. Such an event would likely be overseen and sponsored by St. Croix County, with advocacy groups taking responsibility for planning, preparing, and hosting the event. It will be especially important to plan well ahead and work hard to get key people to commit to attending (e.g., chamber of commerce representatives if tourism is a topic). Participants to invite and engage include representatives from each municipality, County Transportation Committee members, County Community Development Committee members, WisDOT representatives, County Highway Department and Community Development Department staff, and delegates from active advocacy organizations.
2. A quarterly email newsletter to facilitate an ongoing conversation about bicycle and pedestrian events and infrastructure projects (municipal, county, and state) that occur within St. Croix County. This would be an outlet to notify agencies and stakeholders of street and highway activities, coordinate grant applications, disseminate information, and publicize training and events. County staff would likely coordinate and distribute this email newsletter, but content would largely be developed by advocates and municipal representatives.

Proposed Strategy for St. Croix County

The following strategy outlines the ways in which St. Croix County anticipates funding and implementing the bikeway and trail recommendations of this Plan.

1. Plan Adoption and Support

The St. Croix County Board anticipates adopting the St. Croix County Bicycle and Pedestrian Plan by resolution and funding the recommendations of the Plan that fall within or along County right-of-way. The Board also plans to direct the Transportation Committee, Community Development Committee, Highway Department, and Community Development Department to assist in the implementation of the Plan, specifically along the county highway system.

This plan recognizes and explains that the recommended improvements that fall within municipal rights-of-way continue to be the responsibility of each municipality. However, the foundation for successful and timely Plan implementation is to continue fostering healthy partnerships to meet a common goal for developing the bikeway and trail systems. As such, the County may choose to assist municipalities that have limited resources in funding minor enhancements to bikeways, as budget allows (such as contributing to matching grant funds and purchasing or installing bike route signs along town roads).

A commitment to implement this Plan should revolve around adopting a more integrated, multi-modal approach to transportation and land use planning. This can be made possible through improved inter-departmental, inter-committee, and staff/board communication, coordination, and alignment within the County government that addresses and eliminates disconnects between countywide transportation and land use planning and the development and implementation of transportation projects. As part of the Comprehensive Zoning Revision, St. Croix County should research its legal options for either requiring or incentivizing new developments to plan for and accommodate alternative transportation facilities. This could include multiple bicycle and pedestrian access points and adequate easements for future sidewalks or paths along thoroughfares in order to increase connectivity between neighborhoods and provide alternatives to walking and biking along busy roads.

2. Encouraging Municipal Support

St. Croix County encourages municipalities to pass resolutions of support for the Plan and to commit to assisting in its implementation. Municipal staff and elected officials are encouraged to consult the Plan and locally adopted bikeway and trail plans (if available) and/or representative stakeholders prior to making decisions regarding transportation investments.

Many of the Plan's recommendations fall within municipal rights-of-way. If municipalities want recommendations implemented within their communities, they will be responsible for securing funding for those projects. If requested, St. Croix County may provide each municipality with a specific funding goal, based on factors such as mileage of recommended improvements within their jurisdiction, the community's property valuation, current/forecasted population, etc.

3. Projects Funded as Part of Roadway Projects

St. Croix County anticipates continuing to fund on-road bikeway improvements on county highways from the same funding source as the larger roadway projects, **as has been the practice of the Highway department for more than 20 years, since the adoption of its 1995-2015 Bicycle Transportation Plan**. When the County engages in striping, paving, reconstruction, and construction activities, it anticipates designing, funding, and constructing any on-road improvements recommended in the Plan as part of the overall project, up to 20 percent of the project budget. This includes projects such as standard-width (typically 4 feet) paved shoulders, bike lanes in urban and transition areas, signage, and pavement markings. This does not apply to roads functionally classified as local. Additional funding beyond the 20 percent—if needed specifically for bikeway improvements—can come from the new separate budget line item (see page 78).

Because the State of Wisconsin considers shoulders and bike lanes to be part of the roadway, the use of the County Road and Bridge Fund for such improvements on the County highway system is in accordance with Wisconsin Statute 83.065 ("Expenditures from said fund shall be made only for the purposes of constructing and maintaining highways and bridges…").

4. Projects Funded by Separate Budget Line Items

Separate budget line items are needed for bikeway and trail improvements that are not funded as part of roadway projects—such as stand-alone trail construction, installation of signs and pavement markings, sidewalks, costs for on-road improvements not covered by same-source funding (see 2.1), right-of-way or easement acquisition, etc.

St. Croix County anticipates establishing an annual budget line item (separate from the County Road and Bridge Fund) for bicycle and pedestrian infrastructure improvements, identifying projects to be funded each year and establishing a process to do so, and setting an annual budget level. Moneys from this fund should be limited to the purpose of designing, constructing, and repairing on-road bikeway and off-road trail improvements recommended by the Plan, as well as additional bicycle and pedestrian-specific infrastructure improvements recommended by staff.

Sources for Additional Revenue

Budgeting for the line items described above will require diverting funding from other budget activities or increasing revenues. Potential sources for additional revenues fall into three categories:

1. Grant programs and charitable contributions – Transportation Alternatives[1] grants, Recreational Trail Aids Program grants, contributions from private and non-profit foundations, or donations from individuals (explained in greater detail on page 80).
2. User fees – Reallocate revenues from existing user fees (e.g., parking meter revenues) or create new user fees (e.g., annual or daily trail passes or bicycle registration fees[2]).
3. Property taxes – Utilize increased levy resulting from new construction and increased valuations or increase the mill rate slightly.
4. Sales Tax – Utilize a portion of the half-cent (0.5%) sales tax allocated to the County.

It is important to recognize that fuel tax and motor vehicle registration fee revenues are generally only spent on state highway projects, and—due to stagnant fuel tax rates and revenue diversion at the state level—these user fees generally pay for less than half the cost of roadway projects. The other half of the funding for state highways—and almost all county and municipal roadway projects—comes from general funds, which are funded by sales, property, and income taxes. St. Croix County residents pay these taxes at the same rates, regardless of whether they walk, bike, or drive.

[1] Part of the federal Surface Transportation Block Grant Program administered in Wisconsin by the Department of Transportation.
[2] It is important to recognize that many cities and states that have required bicycle registration fees or licenses in the past, and many that have considered implementing such programs, have abandoned the idea because the administrative costs far exceed the revenues generated by the programs.

Recommended Municipal Funding Strategies

Projects Funded as part of Municipal Roadway Projects

St. Croix County encourages villages, cities, and towns to fund on-road bikeway improvements on municipal streets and roads from the same funding source as the larger roadway project, in order to facilitate and reduce the cost of implementation of on-road bikeways, sidewalks, and trails in municipal rights-of-way. This approach can apply to bikeways and trails recommended by this Plan as well as to basic bicycle and pedestrian accommodations that may be required by local Complete Streets policies.

Complete Streets policies can be adopted by individual municipalities to facilitate the incorporation of context-sensitive bicycle and pedestrian elements when city, village, or town roadways are constructed/reconstructed. Each municipality is encouraged to adopt a Complete Streets policy. A model policy is provided on Page 91.

Projects on State Highways

In order to ensure that the Plan's recommendations along state highways are implemented and funded as part of state highway projects, each municipality will need to coordinate with the Wisconsin Department of Transportation and adopt a resolution of support (in accordance with WisDOT requirements) for individual roadway projects. A model resolution of support is provided on Page 95.

Municipal Budget Line Items

St. Croix County encourages municipalities to establish annual budget line items for bicycle and pedestrian infrastructure improvements. This funding should ideally be used for local shares of costs for implementing the Plan's recommendations and for local improvements not specified by the Plan.

Municipal Development Requirements

In addition to funding improvements from county and municipal budgets (the primary manner of implementation), implementation of some of the Plan's recommendations can be facilitated by development projects. Examples include requiring new development and redevelopment to dedicate easements, pay municipal impact fees, or construct specific improvements.

Municipalities are encouraged to incorporate provisions in their subdivision and zoning ordinances that require new developments to include multiple bicycle and pedestrian access points and sidewalks or paths (or adequate right-of-way for future sidewalks) along thoroughfares in order to increase connectivity between neighborhoods and provide alternatives to walking and biking along busy roads.

In addition, municipalities are encouraged to consider expanding existing (or adopt new) impact fees for new development to expand local multi-modal transportation networks to meet the increased transportation demand that accompanies new development.

Sustainable Maintenance Strategy and Program

The League of American Bicycling has found that agencies with successful maintenance strategies are those that consider bicycle and pedestrian infrastructure in the same light as other infrastructure systems—as a necessary priority based on the community's value of the service the infrastructure provides. St. Croix County anticipates working with municipalities—potentially via an interjurisdictional body—to cooperatively implement a strategy for annual maintenance needs and responsibilities that is feasible, time-efficient, and cost-effective. This should include guidelines for necessary agency commitments (such as maintaining pavement markings and signs, plowing, removal of winter maintenance debris (e.g., sand) from intersections and paved shoulders each spring, sweeping trails of leaf fall and other debris, etc.). Although it is not at a county-scale, the City of Madison has an exemplary comprehensive maintenance strategy that defines departmental responsibilities and maintenance intervals.[i]

On-Road Bikeways

The maintenance of on-road bikeway facilities (including plowing, sweeping, and striping) are typically the responsibility of the same agency that maintains the rest of the roadway and should be funded from the same maintenance budget. However, state statute assigns maintenance responsibility for portions of state and county roadways outside of the vehicle travelled way, within municipal boundaries, to cities and villages. For St. Croix County, this means the Highway department is typically responsible for maintaining paved shoulders, bike lanes, and advisory bike lanes on county highways in rural areas. Cities and villages are typically responsible for maintenance of paved shoulders and bike lanes on county and state highways within their municipality. The Highway department also anticipates continual maintenance of any town roads' paved shoulders, bike lanes, and/or advisory bike lanes, which is performed at each town's discretion. For city and village streets, as well as towns that maintain their own roadways, it should be the responsibility of each municipality to maintain bikeways on its roadways.

Paths

The responsibility for maintaining paths can vary based on path location and maintenance type (patching, striping, mowing, litter removal, etc.).

Assigning Responsibilities by Path Location

Responsibility can be assigned based on who owns the path (defined by who paid for it or whose right-of-way it is within), which municipality it is within, or by negotiation in order to maximize efficiency and minimize cost. Using a path along a county highway as an example, several options exist:

- **By right-of-way**: the path is within County right-of-way or an easement attained by the County, so the path is maintained by the County
- **By jurisdiction**: the path passes through three municipalities, so each one maintains the section of the path within their boundaries
- **Case-by-case negotiation**: one municipality along the path is capable of maintaining the entire corridor; the county and other two municipalities reimburse the maintaining municipality for their share of the maintenance
- **Single maintainer:** assign maintenance responsibilities of all paths within the county to a single organization; this organization could be St. Croix County or one (or more) special maintenance districts funded by local contributions, property taxes, foundations, etc.

Assigning Responsibilities by Maintenance Type

Different organizations are best suited to certain types of maintenance. Major maintenance (such as pavement patching, crack sealing, and striping) are best left to groups experienced with pavement maintenance, such as the Highway department and municipal public works departments. Tasks such as mowing and snow removal along paths can be performed by groups that typically perform similar work in parks or other public properties. Day-to-day maintenance such as litter removal and general upkeep can be assigned to volunteer organizations, such as a "Friends of the _____ Trail" groups, scouts, service organizations, and other non-specialized labor. All of these tasks can also be contracted out, but should be overseen by appropriate county or municipal staff.

Table 3–1 shows an example of how maintenance responsibilities could be assigned by location and by maintenance type. Adequate funding will need to be allocated to each of the groups involved in maintaining the path system.

Table 3–1: Example Assignment of Maintenance Responsibilities

	Major maintenance Patching, crack sealing, striping, sign replacement on an as-needed basis. All paths should be inspected biannually for maintenance needs and to ensure ADA compliance.	**Intermediate maintenance** Mowing on a biweekly or monthly basis, tree trimming as needed to maintain clearances, snow plowing of priority paths within 48 hours of snowfall.	**Day-to-day maintenance** Daily or weekly volunteer patrols with ongoing litter removal. Groups should report pavement, signage, and vegetation maintenance needs to appropriate agencies.
Paths along county/state highways	Various Trail Maintenance Authorities*	Parks division*	Volunteer groups
Paths along municipal roadways	Municipality	Municipality	Volunteer groups
Paths in independent alignments (e.g., former railroad)	Parks division*	Parks division*	Volunteer groups

* Funding for maintenance activities will need to be allocated, perhaps as part of the county budget line item described on Page 78.

3.2 Funding Sources

Determining how to fund various bikeway and pedestrian improvements is a key strategic issue that communities face when implementing bicycle and pedestrian plans. While there are many funding options, each source may have limitations making it more or less appropriate for certain types of projects. Some funding sources are targeted to infrastructure while others target education and encouragement efforts. Some sources are not directly bicycle or pedestrian related but can be applied to bikeway and pedestrian projects that may have a nexus with another public priority such as historic preservation or public health. Some sources may support grants of hundreds of thousands or millions of dollars; others may be targeted to smaller amounts and require citizen volunteers or community involvement, as a part of the required local match.

Federal Funding Administered by State Agencies

On December 4, 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act into law. The primary Federal Transportation funding program for bicycling projects, known as the Transportation Alternatives Program (TAP) under the previous transportation act, MAP-21, was replaced with a set-aside of Surface Transportation Block Grant (STBG) Program funding for transportation alternatives (TA). These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvement—such as historic preservation and vegetation management—and environmental mitigation related to stormwater and habitat connectivity. Annual funding levels under the new 'Transportation Alternatives Set-Aside', or 'TA Set-Aside', are estimated to increase modestly over the life of the Act, from FY 2016 to FY 2020, but are subject to the annual obligation limitations imposed on the Federal-aid Highway Program. Funds are apportioned to States based on each State's proportional share of FY 2009 Transportation Enhancement funding. For most projects under the TA Set-Aside the Federal share is generally 80 percent Federal and 20 percent State or local match, with some exceptions, predominantly safety improvements or projects on tribal or national park lands where 100 percent federal funding can be available. Table 3–2, which appears later in this section, provides a summary of the types of bikeway projects that would be eligible for a wide range of Federal Transportation funding programs.

Other programs under the new FAST Act have remained largely unchanged, although names of programs have seen some changes. The long-standing Surface Transportation Program (STP) has been converted into the Surface Transportation Block Grant Program (STBG), recognizing that this program has the most flexible eligibilities among all Federal-aid highway programs and aligning the program's name with how the FHWA has historically administered it, and with the funding's intention to best address State and local transportation needs. The TA Set-Aside and other federal funding sources that are pertinent to St. Croix County or its individual communities are summarized below.

Surface Transportation Block Grant Program (STBG)

The Surface Transportation Block Grant Program (formerly STP) – **Small Urban Areas** (pop. 5,000-200,000); **Rural Areas** (pop. <5,000); and **State Flex** programs provide flexible funding that may be used by States and localities for bicycle transportation facility and pedestrian walkway projects on any Federal-aid highway. Furthermore, this program may fund bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities. A surface transportation block grant project may not be undertaken on a road functionally classified as a local road or a rural minor collector. Funds from this program may also be used for non-construction projects such as maps, brochures, and public service announcements related to safe bicycle use and walking. Although seldom used for bicycle and pedestrian projects, this is still an excellent source of funding for hard to finance bicycle and pedestrian infrastructure. Up to 80% of project costs can be covered by STBG funds. The Wisconsin Department of Transportation administers these funds, and is responsible for selecting projects through a competitive process. Eligible recipients of the Small Urban Areas and Rural Areas sub-programs are clearly tied to population. The STBG-State Flex subprogram is used by the State for state specific projects, or on any local projects throughout the State, regardless of population.

STBG-Transportation Alternatives Set-Aside (STBG-TA)

The STBG-TA program will provide the County's best opportunity for federal funding of bicycle and pedestrian projects. Projects that exceed $300,000 are the best fit for this program since a significant amount of administrative work is involved. STBG-TA eligible activities include planning, design, and construction of bicycle and pedestrian facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity. WisDOT administers this program, including project selection through a competitive process, with the exception of the Recreational Trails Program (RTP) portion, which is administered by DNR and is discussed below.

The STBG-TA program replaces the **Transportation Alternatives Program (TAP)**, which itself combined the **Transportation Enhancements (TE)**, **Safe Routes to School (SRTS)**, and **Recreational Trails Program (RTP)**. Projects that were previously eligible under any of these programs, and carried forward as TAP, are now eligible under STBG-TA. However, STBG-TA is more competitive than the programs it replaces, because it combines multiple funding categories that were previously separate and has a smaller overall funding allocation. Furthermore, up to half of the funding can be diverted to projects outside of this program. For the 2016-2020 grant cycle, the Wisconsin Department of Transportation received $62.6 million worth of funding requests. However, to date only $15 million of TA funding has been budgeted ($7.5 million per year for 2016 and 2017).

Recreational Trails Program (RTP)

Funds from the RTP may be used for various kinds of trail projects. Eligible activates (in order of priority) are: maintenance or restoration of existing trails, development or rehabilitation of trailside/trailhead facilities and trail linkages, construction of new trails, and property acquisition for trails. This is the only federal transportation funding source that can be used for maintenance activities. These funds are administered by the Wisconsin Department of Natural Resources (DNR) and have a cap of $45,000 per grant per fiscal year.

Highway Safety Improvement Program (HSIP)

The FAST Act continues HSIP to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal lands. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. Seven percent of each State's annual STBG Program funds is set aside for the Highway Safety Improvement Program and Railway-Highway Crossing Program, which are intended to address bicycle and pedestrian safety at hazardous locations, among other issues.

Highway Safety Grant Program (Section 402)

The Highway Safety Grant Program (commonly referred to as Section 402 funds) is administered by Wisconsin DOT. Federal 402 funds are used for pedestrian and bicycle public information and education programs. Funds are distributed to states annually from the National Highway Traffic Safety Administration (NHTSA) according to a formula based on population and road mileage. Government agencies or government-sponsored entities are eligible to apply for 402 funds.

Transportation Investment Generating Economic Recovery (TIGER) Program

Major bicycle and pedestrian projects could potentially be funded under the highly competitive TIGER Discretionary Grants Program. The program originated as a part of the American Recovery and Reinvestment Act (ARRA) of 2009 and, with minor modifications, has continued to award grants on a competitive basis for projects that will have a significant impact on the nation, a metropolitan area, or a region. Funded projects have been multimodal and multijurisdictional projects, which are typically difficult to fund through traditional programs. Awarded projects are those that leverage resources, encourage partnership, catalyze investment and growth, and fill a critical void in the transportation system or provide a substantial mobility benefit to the area.

In the most recent cycle TIGER Discretionary Grants Program funding (FY2015), just 39 projects were selected for funding from 627 eligible applications from across the nation. The selection focused on projects that better connect

communities to centers of employment, education, and services, especially in economically distressed areas. One recent project was awarded a $10 million grant to develop complete streets and a linear park trail to catalyze redevelopment in the heart of a community by relocating rail serving an industrial park and removing rail from the downtown area. Other projects included the construction of sidewalks as a small component of a much larger project to provide accessible transportation throughout a community. Applications have been accepted for the FY 2016 TIGER Discretionary Grant cycle, however, recipients have not yet been selected. Awards could range from a minimum of $5 million in urbanized areas (>50,000 population in the 2010 Census), or $1 million in rural areas, to a statutory maximum of $100 million. Local share must cover at least 20 percent of funded projects.

Associated Transit Improvements (ATI)

The Federal Transit Administration (FTA) supports bicycle access improvements through its ATI program, which makes grant funding available through many of FTA's formula and discretionary programs, whether as part of a larger transit project or independently. The grant programs most pertinent to St. Croix County include: Enhanced Mobility of Seniors and Individuals with Disabilities (S. 5310), which could fund bicycle improvements that provide access to an eligible public transit facility, funded at 80 percent federal share; and Formula Grants for Rural Areas (S. 5311), which includes within its eligible projects capital and planning for bicycle routes to transit, bike racks, shelters and equipment for public transportation vehicles. Investments in bicycle access to public transportation can help communities promote the use of transit and provide better access to the public. Bike routes around stations increase the number of people riding their bikes to public transportation and make the streets safer for both pedestrians and cyclists. Linking bicycling and public transportation also provides a greater variety of transportation options while reducing costs and space requirements since building bicycle parking at transit facilities can be much less expensive and require much less space than automobile parking. These funds are managed by WisDOT.

Federal Lands Transportation Program (FLTP) and Federal Land Access Program (FLAP)

The Office of Federal Lands Highway (FLH) manages several programs that can be used for a wide range of transportation project planning and construction, including the development of bicycle and pedestrian facilities, adjacent to or on federal lands. The FLTP is a performance management-based program with annual performance measured against baseline conditions and set goals. Partners include the National Park Service, Fish and Wildlife Service, USDA Forest Service, Bureau of Land Management, and US Army Corps of Engineers. The FLAP emphasizes access to and through Federal Lands for visitors, recreationalists, and resource users, with an emphasis on high-use recreation sites and economic generators. The Federal Lands Planning Program is funded through a maximum set-aside of five percent from FLTP and FLAP to carry out the long-range system-wide transportation planning and coordination, asset management, data collection activities for Federal Lands, including, tribal transportation facilities, and other federally owned roads open to public travel.

Summary of Federal Funding Sources

Table 3–2 provides a list of Federal funding sources that may be available for bicycle and pedestrian projects. Additionally, Advocacy Advance provides an online Bicycle and Pedestrian Federal Funding Resources List with frequently updated links to each program:

http://www.advocacyadvance.org/resources

Table 3–2: Potential Federal Funding Sources for Bicycle and Pedestrian Projects

Activity	FTA/ATI	HSIP	NHPP/NHS	STBG	STBG-TA	RTP	PLAN	402	FLH
Access enhancements to public transportation	●			●	●				●
Bicycle and/or pedestrian plans	●			●			●		●
Bicycle lanes on road	●	●	●	●	●				●
Bicycle parking	●			●	●				●
Bike racks on transit	●			●	●				●
Bicycle share (capital/equipment; not operations)	●		●	●	●				●
Bicycle storage or service centers	●			●	●				
Bridges / overcrossings	●	●	●	●	●	●			●
Bus shelters	●			●	●				●
Coordinator positions (State or local)				●	●				
Crosswalks (new or retrofit)	●	●	●	●	●	●			●
Curb cuts and ramps	●	●	●	●	●	●			●
Helmet promotion				●	●			●	
Historic preservation (bike, ped, transit facilities)	●			●	●				●
Land/streetscaping (bike/ped route; transit access)	●			●	●				●
Maps (for bicyclists and/or pedestrians)	●			●	●			●	
Paved shoulders		●	●	●	●				●
Police patrols				●	●			●	
Recreational trails				●	●	●			●
Safety brochures, books				●	●			●	
Safety education positions				●	●			●	
Shared use paths / transportation trails	●	●	●	●	●	●			●
Sidewalks (new or retrofit)	●	●	●	●	●	●			●
Signs / signals / signal improvements	●	●	●	●	●				●
Signed bicycle or pedestrian routes	●		●	●	●				●
Spot improvement programs	●	●		●	●	●			
Traffic calming	●	●	●	●	●				
Trail bridges		●	●	●	●	●			●
Trail/highway intersections		●	●	●	●	●			●
Training				●	●	●		●	
Tunnels / undercrossings	●	●	●	●	●	●			●

FTA/ATI: Federal Transit Administration Capital Funds and Associated Transit Improvement
HSIP: Highway Safety Improvement Program
NHPP/NHS: National Highway Performance Program (National Highway System)
STBG: Surface Transportation Block Grant Program
STBG-TA: STBG-Transportation Alternatives Set-Aside
RTP: Recreational Trails Program
PLAN: Statewide or Metropolitan Planning
402: State and Community Traffic Safety Program
FLH: Federal Lands Highway Program (Federal Lands Access Program, Federal Lands Transportation Program

State Funding Sources

Currently, there are no state programs that fund bicycle and pedestrian projects. For a two year period, the WisDOT Bicycle and Pedestrian Facilities Program provided state funds, along with federal funds, to provide funding of local project. The one exception to this is the Department of Natural Resources' Stewardship Program. The set of eligible activities includes paths, but only for acquisition of property for paths. When stewardship funds have been used for paths, they have been dedicated primarily for the purchase of long segments of rail properties for trail use.

Local Funding Sources

A discussion of funding approaches and strategies is presented on Pages 76 to 81, which includes discussion regarding the need for local funds to be used either on their own and/or as a match for federal funding in order to achieve the Plan's vision. Generally, the majority of the bikeway recommendations that are implemented as stand-alone projects will need to be funded through the implementing municipality's general fund (if not grants). This is particularly true of any on-street markings. Projects that have a longer life than street markings (i.e. paths) may be able to be financed through general obligation debt in the same manner that many street or other infrastructure projects are financed.

Non-Governmental Funding Sources

Private funding for bikeways and trails is typically used to maintain or enhance existing infrastructure. While less common, it is possible to leverage private funding to construct new infrastructure, such as by helping to provide the 20 percent local funding match required by many grant programs. These funding sources generally fall within one of two categories.

Philanthropic Foundations

Private foundations and non-profit charitable foundations are potential sources of funding for bikeway and trail projects. In addition to seeking grants from a foundation's existing assets, businesses and organizations could be encouraged to "adopt" or sponsor segments of a trail or on-road bikeway to help fund ongoing maintenance.

Direct Contributions

The County, municipalities, and advocates could work together to develop a robust giving program that allows individuals to make direct contributions to fund bikeway and trail projects. Such a program could include elective contribution options on utility bills or property tax bills, a contribution option on the County's website, and partnerships with one or more non-profit foundations to develop fundraising campaign materials and a dedicated fundraising website.

3.3 Program Recommendations

Programs at the County and municipal levels play an important role in making communities better for walking and biking. Recommendations contained in this section are based on the Plan's goals and intended program outcomes that resulted from an extensive, eight-month stakeholder involvement process.

Program Objectives

Throughout the stakeholder engagement process, County staff and the consultant team sought input on program needs from various types of stakeholders. Like the strategy objectives discussed on Page 74, these program objectives are based on input from members of advocacy organizations (e.g., River Valley Trails, New Richmond Pathways, and St. Croix Bicycle and Pedestrian Trails Coalition); officials and staff from towns, villages, and cities; County officials and staff; avid bicyclists; and the general public.

- **Bikeways and Trails with Predictable Designs** – e.g., similar sign appearance, striping patterns, etc. so that users are able to easily use bikeways that cross jurisdictional lines
- **Enhanced Project Development Processes** – to streamline and facilitate the inclusion of bike and pedestrian accommodations in roadway projects, especially when substantial cost savings can be realized
- **Enhanced Inter- and Intra-Agency Coordination** – improved communication between the County, municipalities, and WisDOT, as well as enhanced coordination within individual agencies
- **Enhanced Public Input** – opportunities for advocates and the general public to be informed about transportation projects and provide input on priorities
- **Provision of Basic Accommodations** – measures to include basic elements such as sidewalks in cities and villages, bike lanes, or paved shoulders when roadways are built or reconstructed
- **Increased Awareness and Education** – broad initiatives to increase awareness of traffic law, the rights of roadway users, and safe travel behavior

Program Recommendations Overview

Recommendations for programs, initiatives, and activities are organized in three categories:

- **Coordination and Communication** – Strategies for increasing the transfer of information and knowledge-sharing from one community to the next, while also increasing public awareness and outreach regarding bikeway, trail, and road projects.
- **Education and Awareness** – Initiatives and programs that improve safety for people biking, walking, and driving while increasing awareness of the rules of the road and rights of various transportation users.
- **Child Encouragement and Safety** – Programs and tools that can be used to make biking and walking to school safer and more enjoyable for children of all ages.

Coordination and Communication

Training and Continuing Education for Agency Staff

Increasing the knowledge and capabilities of planners, engineers, and law enforcement officers is paramount to the effective implementation of this plan and continued safety of the public. All agencies should strive to provide training and continuing education opportunities for their staff members. The Sheriff's Office should provide training that is specific to bicycle and pedestrian traffic enforcement issues. Training opportunities should be provided to Sheriff's deputies and law enforcement officers from other agencies should be invited to participate. The St. Croix County Community Development and Highway departments should continue seeking training opportunities for staff and serving as resources for municipal planners and engineers (such as providing guidance on how to develop a municipal bicycle and pedestrian plan that builds upon the County plan).

Increased Public Outreach

There is a strong desire amongst advocates and the general public to have increased opportunities to be informed and provide additional input during the transportation planning/programming processes, Capital Improvement Plan development processes, project design processes, etc. of the various local and state authorities responsible for roadways.

The various roadway authorities could define (on a website) their current planning and programming processes and workflows. Additional resources could be used to provide updated and informative FAQs highlighting the limiting factors and necessity of strategic project prioritization decisions occurring on a month-to-month basis vs. identifying specific projects a year or more in advance. The website could also include descriptions of the general types of projects (new construction, reconstruction, repaving, restriping, etc.) and the anticipated number of centerline miles of each type of project anticipated for the year. In an effort to increase public participation, outreach efforts could be expanded to include increased publicity of public hearings for new plans and CIPs, meetings held within the municipality in which a transportation project is taking place, and/or general open houses a few times per year during which potential highway projects for the future can be discussed.

Bicycle Friendly and Walk Friendly Community Status

The League of American Bicyclists ranks applicant communities on their level of "bicycle friendliness" on a scale from "Honorable Mention" through "Platinum." Similarly, the Pedestrian and Bicycle Information Center (PBIC) awards communities that improve and prioritize pedestrian safety, access, mobility and comfort with either a bronze, silver or gold designation. Both programs provide a roadmap to enhance conditions for active transportation in a community. The application processes helps communities recognize their strengths and weaknesses regarding biking and walking, and the responses from the League of American Bicyclists and PBIC help guide each community in improving conditions for biking and walking.

Applying for Bicycle Friendly and Walk Friendly Community status can highlight the achievements of a community. Filling out the applications has the added benefit of requiring communities to comprehensively assess their current standing and progress.

Education and Awareness

Education and awareness of the rules of the road are important component of improving the safety of bicyclists, pedestrians, and motorists alike. Without proper knowledge and skills regarding how to interact with different types of road users, people may behave in ways that put themselves or others at unnecessary risk (e.g. failing to yield to pedestrians in crosswalks, bicycling against traffic, walking with traffic). Several initiatives can be deployed to help improve safety for all users.

Media and Public Service Announcements

Encouraging safe and friendly behavior on the road is an important task that can occur through print, television, and online education campaigns to increase awareness of the rules of the road and broaden education for bicycling and walking. Education efforts should include messages targeted at reducing distracted and aggressive driving. An effort such as this should be coordinated between local advocacy organizations and governmental agencies. In many parts of the country, County health departments have taken the lead on efforts such as this.

Safety Training and Education

Advocacy organizations, bike clubs, and governmental agencies should partner with the Wisconsin Bike Fed to provide education and encouragement efforts with the goal of enticing more people to walk and bike and to do so in a safe manner. This should be coordinated with community partners and local events to reach broader audiences. The Wisconsin Bike Fed's Share & Be Aware program offers educational materials and programs for making biking and walking safer across the state. In addition, the program has regional Ambassadors that are available to attend local events and help provide educational training.

Defensive Driving, Biking, and Walking Course

Offering a bicycle and pedestrian education course as an alternative for bicyclists, pedestrians, and motorists who are first-time minor offenders of bicycle and pedestrian-related rules of the road is an efficient and cost effective way to deal with infractions. The County could explore this option in partnership with local jurisdictions for educating rather than punishing some rules of the road violators. Online courses are offered by private companies and non-profits and may be a more administratively-feasible option.

Bike to Work Week and Bike & Walk to School Day

Bicycling to work or to other destinations is a great way to get exercise, save money, reduce pollution, and have some fun. Bike to Work weeks are national activities and are easily organized with help from the League of American Bicyclists website. Information on the website includes a listing of national and local events, suggested promotional materials, and a handbook. Activities for these events may include morning commute stations where bicyclists are treated to free coffee and breakfast, bike tune ups, and other incentives; group rides with local civic leaders; and discounts at local businesses for commuters and participants.

Mailed Education Materials

Including bicycle related educational pieces in utility or tax bills, newsletters, and other mailed communications is an easy way to reach a large group of people. Simple communications could cover a seasonal topic such as rules of the road, local bicycling ordinances, and back-to-school safety information.

Child Encouragement and Safety

With the recent precipitous rise of childhood obesity due in part to diet and decreased physical activity, bicycling and walking can be illustrated as an opportunity to build improved health into daily life. Incorporating education related to walking and biking into the physical education and health curricula of public and private elementary and middle schools is an opportunity to incorporate biking and walking in to the daily exercise ritual of families who live close to schools. However, children are among our most vulnerable users of the traffic environment. For this reason, safe infrastructure must be provided and education efforts must be geared toward protecting these users.

Safe Routes to School

Safe Routes to School (SRTS) is a national program for increasing safety for children walking and biking to school and encouraging more kids to be active in their daily lives. SRTS programs typically involve the development of SRTS travel plans that often result in neighborhood infrastructure improvements that increase safety for children. All public and private schools should have Safe Routes to School plans (backed by SRTS committees) that detail the routes and changes needed to increase the percentage of youth biking and walking while increasing safety. These plans should also include strategies for educating and encouraging children. Finally, communities should prioritize the elimination of policies discouraging kids from walking/biking to school if or when safe routes are provided.

On-the-bike Training for Children and Youth

Bike Rodeos and other on-the-bike training programs are great ways to direct and deliver bicycle related curricula to children and youth. Topics discussed typically include the parts of a bicycle, how a bike works, how to fix a flat tire, proper helmet fitting, rules of the road, road positioning, and on-bike skills. These events are often facilitated by local police departments, schools, or cycling clubs and model programs are available through the League of American Bicyclists website.

Bike & Walk to School Day

Bike and Walk to School days are national activities and are easily organized with help from the National Center for Safe Routes to School website. Information on the website includes a listing of national and local events, suggested promotional materials, and a handbook. Bike and Walk to School Day is an important component of Safe Routes to School as it both encourages and educates students on how to get to school via bike or their feet.

Other Encouragement Activities

Walking school buses and bike trains are great encouragement tools, and get parents and children talking about how they get to school. Contests between classrooms and schools can build momentum and pride about biking and walking to school. Physical education curriculum that teaches safe walking and bicycling practices is especially important to increase safety and empower children to engage in active transportation. High schools and higher education institutions can take similar but more advanced steps to increase bicycling and walking, with students taking a greater level of responsibility. Bicycling and hiking/running clubs, bike centers, bike rentals, and marketing promotion of bicycling and walking can all be led by young adults.

3.4 Model Policies and Ordinances

Model Complete Streets Policy

A well-crafted Complete Streets policy is an effective way to ensure the implementation of bicycle and pedestrian improvements as part of street and road projects, as well as a tool to increase safety and quality of life. Complete Streets policies adopted by individual municipalities facilitate context-sensitive design when city, village, or town roadways are constructed/reconstructed. Each municipality is encouraged to adopt a Complete Streets policy; in order to facilitate this outcome, a model policy has been developed for municipalities to tailor and adopt.

This model policy has been crafted based on the National Complete Streets Coalition's *The Best Complete Streets Policies of 2015* report. The structure of the policy is based on the National Complete Streets Coalition's 10 criteria for quality and effective Complete Streets policies. Guidance for modifying the language to each municipality is provided in text boxes alongside each section of the policy.

Model Policy Language

Section 1: Vision

This Complete Streets policy directs the [MUNICIPALITY] to provide streets that are safe and accessible for all people. Complete Streets will benefit the community in many ways, including enhancing quality of life and creating a balanced and interconnected transportation network that provides for economically sound and connected development patterns, public health and safety, livability, equity, affordability, economic activity, and community character.

Modifications to Section 1

The vision should be customized or tailored for each individual community based on their unique values and goals. Communities are encouraged to create a completely new vision for their policies based on the Complete Streets principles included throughout this model policy.

Section 2: All Users and Modes

It is the intent of the [MUNICIPALITY] that Complete Streets and roads be safe for users of all ages, all abilities and all income levels as a matter of routine. This Policy directs decision-makers to consistently plan, design, construct, and maintain streets to accommodate all anticipated users including but not limited to pedestrians, bicyclists, motorists, emergency vehicles, and [INSERT OTHER USERS AS APPROPRIATE].

Modifications to Section 2

This section should be modified to include all anticipated modes in a community that should be considered during street design (although every mode may not necessarily be accommodated on every street). Example additions include paratransit, freight and commercial vehicles, and agricultural vehicles.

Section 3: All Projects and Phases

All types of transportation projects are subject to this policy, regardless of funding source, including those involving new construction, reconstruction, retrofit, repaving, rehabilitation, and change in the allocation of pavement space on an existing street.

Modifications to Section 3

Some communities may feel that this language is too far-reaching. However, it is recommended that Section 3 not be modified. Rather, modify the exceptions that are included in Section 4 in order to improve the efficiency of this policy.

Section 4: Clear, Accountable Exceptions

Any exception to this policy must be approved by the [TOWN/VILLAGE BOARD, CITY COUNCIL, TRANSPORTATION COMMITTEE, or PUBLIC WORKS COMMITTEE] and be documented with supporting data that indicates the basis for the decision. Such documentation shall be publicly available.

Exceptions may be considered for approval when:

1. An affected roadway prohibits, by law, use by specific users (such as interstate highways) in which case a greater effort shall be made to accommodate those specified users elsewhere, including on roadways that cross or otherwise intersect with the affected roadway;
2. The costs of providing accommodations are excessively disproportionate to the need or probable use;
3. The existing and planned population, employment densities, traffic volumes, or level of transit service around a particular roadway is so low as to demonstrate an absence of current and future need.
4. Transit accommodations are not required where there is no existing or planned service;
5. Routine maintenance of the transportation network does not change the roadway geometry or operations, such as mowing, sweeping, and spot repair;
6. There is a reasonable and equivalent project along the same corridor that is already programmed to provide facilities exempted from the project at hand.

Modifications to Section 4

Each municipality should identify the appropriate body for overseeing the application of this policy and approving or denying exceptions.

The list of exceptions may be modified, but should be done so with careful consideration so as not to render the policy ineffectual.

The rule of thumb definition for "excessively disproportionate" (Exception 2) is 20 percent of the total project cost. This number is not hard and fast as the appropriate figure may be substantially higher or lower on any given project, but communities should not consistently define excessively disproportionate as a figure substantially lower than 20 percent.

Section 5: Network

The [MUNICIPALITY] recognizes the need for a connected, integrated network for all modes that improves street connectivity and provides transportation options to a resident's many potential destinations. This policy recognizes that all modes do not receive the same type of accommodation or amount of space on every street, but that the street network should allow everyone to safely and conveniently travel across the community.

Modifications to Section 5

It is important that policies recognize that Complete Streets are not stand-alone projects, but are part of a greater interconnected system. The language in this section can be modified or combined with language in another section.

Section 6: Jurisdiction

This policy applies the [MUNICIPALITY], private developers, St. Croix County, the Wisconsin Department of Transportation, and any other body that constructs or maintains streets and roads within the incorporated boundaries of the [MUNICIPALITY].

Modifications to Section 6

Many agencies and organizations play a role in the development of a community's transportation network. It is important that a municipality's policy recognize this fact and express its applicability to projects performed by other agencies.

Section 7: Design

The [MUNICIPALITY] and any agency or organization that plans, designs, or constructs a transportation facility in the incorporated boundaries will use the latest and best design standards when designing streets, including the latest editions of the following:

- General Street Design
  - Designing Walkable Urban Thoroughfares: A Context Sensitive Approach: An ITE Recommended Practice (Institute of Transportation Engineers)
  - Urban Street Design Guide (National Association of City Transportation Officials)
- Bicycle and Pedestrian Design
  - Guide for the Development of Bicycle Facilities (American Association of State Highway and Transportation Officials)
  - Wisconsin Bicycle Facility Design Handbook (Wisconsin Department of Transportation)
  - St. Croix County Bicycle and Pedestrian Plan Design Guidelines (St. Croix County)
  - Urban Bikeway Design Guide (National Association of City Transportation Officials)
  - Guide for the Planning, Design, and Operation of Pedestrian Facilities (American Association of State Highway and Transportation Officials)
  - Public Rights-of-Way Accessibility Guidelines (United States Access Board)
- Detailed Street Design
  - A Policy on Geometric Design of Highways and Streets (American Association of State Highway and Transportation Officials)
  - Manual on Uniform Traffic Control Devices (Federal Highway Administration)

Modifications to Section 7

The list of standards and guidelines can be modified. This list should not be seen as a mandate to consult every publication on every project.

Section 8: Context Sensitivity

Complete Streets will be designed in a context-sensitive manner to respond to the character of the surrounding neighborhood, its current and planned buildings, as well as its current and expected transportation needs.

Modifications to Section 8

It is important that policies recognize that Complete Street design must be sensitive to context. The language in this section can be modified or combined with language in another section.

Section 9: Performance Measures

The [MUNICIPALITY] will measure the success of this policy using various performance measures, including but not limited to:

- Number of crashes and severity of injuries
- Injuries and fatalities for all modes
- Number of curb ramps
- Number of pedestrian countdown signals
- Miles of routes accessible for people with disabilities
- Sidewalk condition ratings
- Travel time in key corridors (point A to point B)
- Emergency vehicle response times
- Number of students who walk or bike to school
- Commercial vacancies in downtown
- Bike route connections to off-road trails (equity across all districts of the community)

Modifications to Section 9

This section should be modified to include a reasonable set of performance measures (potentially as few as two) that will help the community track progress. Consideration should be given to data availability and ease of tracking when selecting performance measures.

- Citizen and business surveys of satisfaction with streets and sidewalks
- Number of bicycle friendly businesses recognized by the League of American Bicyclists
- Number of bike parking spaces

The [MUNICIPAL DEPARTMENT, ADMINISTRATOR, ETC] will present an annual report to the [TOWN/VILLAGE BOARD, CITY COUNCIL, TRANSPORTATION COMMITTEE, or PUBLIC WORKS COMMITTEE] showing progress made in implementing this policy.

Section 10: Implementation Steps

Implementation of this policy will be carried out cooperatively among all departments in the [MUNICIPALITY] with multi-jurisdictional cooperation, and to the greatest extent possible, among private developers and state, regional, and federal agencies.

The [MUNICIPALITY] will take specific steps to implement this policy, including:

1. Restructuring or revising related procedures, plans, regulations, and other processes to accommodate all users on every project, including:
    a. [RELATED PROCEDURES, PLANS, REGULATIONS, and OTHER PROCESSES]
    b. …
    c. …
2. Adopting and regularly consulting the St. Croix County Bicycle and Pedestrian Plan Design Guidelines, which reflect the current state of best practices in bicycle and pedestrian design.
3. Offering opportunities for transportation staff, community leaders, and the general public to participate in workshops and other training opportunities so that everyone understands the importance of the Complete Streets vision.
4. Developing and instituting better ways to measure performance and collect data on how well the streets are serving all users.

Modifications to Section 10

This section should be modified based on the community's capabilities and priorities. The National Complete Streets Coalition encourages communities to include variations of the four specific steps included in this model policy language.

In addition to adopting the St. Croix County Bicycle and Pedestrian Plan Design Guidelines, communities may also elect to adopt national or state-level recognized design guidance.

WisDOT Resolution of Support

In July of 2015, the State statute addressing the establishment of bikeways and pedestrian ways (§84.01(35)) was modified and the corresponding Administrative Code Trans 75 was repealed. Prior to the change, the statute commonly known as the "Complete Streets Law" read "… the department [WisDOT] will ensure bikeways and pedestrian ways are established in all new highway construction and reconstruction projects funded in whole or in part from state funds or federal funds." One major change resulting from the 2015-2017 Wisconsin Budget bill Act 55 was the changing of "will ensure" to "will give due consideration to …." The Statute was also changed from a presumption that bicycle and pedestrian facilities would be included unless an exception applied, to a presumption that bicycle and pedestrian facilities cannot be included in a state-funded project unless certain conditions are met. That is, WisDOT may not establish a bikeway or pedestrian way if any of the following apply:

1) Bicycles and pedestrians are prohibited by law from using the highway; or
2) The project is wholly or partially funded with state funds, unless the governing body of each municipality (city, village, or town) within the project has adopted a resolution authorizing the department to establish the bikeway or pedestrian way.

Even after giving "due consideration," if WisDOT determines that bikeways and pedestrian ways are warranted on a project, WisDOT is authorized to include those facilities only if each municipality has adopted a resolution (an example of such a municipal resolution is included on the following page). Resolutions must be unique to each individual project. A blanket resolution addressing all highway projects, present and future, within the municipality does not meet the requirements of the new law.

In relation to federally-funded projects, the need for WisDOT to obtain a municipal resolution(s) does not apply if FHWA provides written notice that establishment of a bikeway or pedestrian way, as a part of project, is a condition of the use of federal funds for that project. However, municipal resolutions can be submitted for these projects and WisDOT will include them in the environmental document submitted to FHWA. In cases where a resolution is not required for a federally funded project, the planning and design processes will still provide opportunities for public input and to evaluate environmental impacts of project alternative that may include bike and pedestrian accommodations. Both Wisconsin state law and federal legislation require that bicyclists and pedestrians shall be given due consideration, but municipal action is required for State funded projects and recommended for federally-funded projects.

Resolution Regarding the Construction of

Bicycle and Pedestrian Accommodations along [USH/STH NUMBER]

In the [MUNICIPALITY]

Resolution Number [XXX]

Whereas, 2015 Wisconsin Act 55, State Statute 84.01(35) prohibits the Wisconsin Department of Transportation from establishing a bikeway or pedestrian way as part of a new highway construction or reconstruction project funded in whole or in part from state funds unless the governing body of each municipality in which a portion of the project will occur has adopted a resolution authorizing the department to establish the bikeway or pedestrian way; and

Whereas, the Department of Transportation plans to construct a new highway or reconstruct of [ROADWAY (PROJECT ID)] from [PROJECT LIMITS] in [MUNICIPALITY]; and

Whereas, bikeways and pedestrian ways provide multimodal transportation;

Now therefore, be it resolved that [MUNICIPALITY] hereby authorizes the Department to construct bikeways and pedestrian ways as part of the construction/reconstruction of [ROADWAY (PROJECT ID)] from [PROJECT LIMITS].

City, Village, Town Council/Board

Signature: _____ Date: _____

[NAME], [MAYOR/PRESIDENT/CHAIR]

[MUNICIPALITY]

I [FULL NAME], [CITY/VILLAGE/TOWN] Clerk of the [MUNICIPALITY], Wisconsin, do hereby certify that the foregoing is a true and correct copy of a resolution adopted by the [CITY/VILLAGE/TOWN COUNCIL/BOARD] on [DATE] and that the said resolution was approved by the [CITY/VILLAGE/ TOWN COUNCIL/BOARD] on [DATE]

3.5 Design Guidelines

In order to serve a wide range of bicyclists, a variety of bikeway types are proposed for use in St. Croix County. The following pages include design guidelines for a variety of bikeway and trail facility types. The guidelines include best practices, minimum and preferred standards, and design considerations. Each guideline also includes specific references that should be consulted when bikeways are being formally designed and designated. These guidelines are intended to be shared between jurisdictions (and can be adopted by resolution by municipalities and the County) in order to ensure the predictability of on-street bikeways and paths across the county. The design guidelines are organized as outlined below.

Facility types –the bikeway and trail types recommended by the Plan

- Shared use paths
- Bike lanes
- Separated bike lanes
- Advisory bike lanes
- Paved shoulders
- Sidewalks

Linear enhancements to existing bikeways –add-on treatments for the facility types listed above that improve visibility, comfort, or usability

- Traffic calming
- Bicycle boulevard treatments
- Shared lane markings
- Bike routing/destination wayfinding

Amenities, intersections and spot treatments – location-specific safety, comfort, and accessibility treatments

- Bikeway intersection pavement markings & signal design
- Curb ramps
- Marked crosswalks
- Crossing islands
- Trail heads, parking areas, rest stops

Guideline Structure

Each design guideline is provided as a two-page factsheet and is organized as follows:

- Summary of the facility type
- Benefits and challenges of the facility type or treatment
- Design criteria, such as minimum and preferred width
- Additional considerations, such as how to approach signage or pavement markings
- References and resources for further guidance

Links to state and national design standards and additional resources are provided at the end of the section.

Contractor Oversight

In addition to properly designing bicycle and pedestrian accommodations, it is important to ensure that they are constructed as intended. Sometimes contractors deviate from specified designs either due to simple oversight or because they second-guess the intent of the design. For example, a contractor might stripe shoulders narrower than specified by the County Highway Department or other jurisdiction. It is important that County and municipal contracts for roadway construction and maintenance projects ensure that contractors construct infrastructure and apply pavement markings as designed and intended by the agencies. Enforcing such requirements will necessitate adequate staff availability to review projects after construction and follow up with contractors as needed.

Facility Types

Shared Use Paths

A shared use path is a two-way facility physically separated from motor vehicle traffic and used by bicyclists, pedestrians, and other non-motorized users. Shared use paths, also referred to as trails, are often located in an independent alignment, such as a greenbelt or abandoned railroad. However, they are also regularly constructed along roadways; often bicyclists and pedestrians will have increased interactions with motor vehicles at driveways and intersections on these "sidepaths."

Shared-use paths may parallel streets, highways, utility easements, railroads, and natural features such as rivers or creeks.

Benefits

- Separated from motor vehicle traffic.
- May be appropriate for less-confident adults, children, seniors, and persons with disabilities.
- Provides recreational opportunities in addition to transportation.

Challenges

- Potentially costly and complicated right-of-way acquisition.
- Topography and drainage can greatly impact design.
- High construction costs.
- Can present safety concerns when placed adjacent to a roadway with frequent driveway or intersection crossings.

Design Criteria

Minimum width: 10 feet

Preferred Width: 10-12 feet

Notes:

- Widths as narrow as 8 feet are acceptable for short distances under physical constraint. Warning signs should be considered at these locations.
- In locations with heavy volumes or a high proportion of pedestrians, widths exceeding 10 feet are recommended. A minimum of 11 feet is required for users to pass with a user traveling in the other direction. It may be beneficial to separate bicyclists from pedestrians by constructing parallel paths for each mode.
- Paths must be designed according to state and national standards. This includes establishing a design speed (typically 18 mph) and designing path geometry accordingly. Consult the AASHTO Guide for the Development of Bicycle Facilities for guidance on geometry, clearances, traffic control, railings, drainage, and pavement design.

Additional Considerations

- According to the American Association of State Highway and Transportation Officials, "Shared use paths should not be used to preclude on-road bicycle facilities, but rather to supplement a network of on-road bike lanes, shared roadways, bicycle boulevards, and paved shoulders." In other words, in some situations it may be appropriate to provide an on-road bikeway in addition to a sidepath along the same roadway.
- Many people express a strong preference for the separation between bicycle and motor vehicle traffic provided by paths when compared to on-street bikeways. Sidepaths may be desirable along high volume or high speed roadways where accommodating the targeted type of bicyclist within the roadway in a safe and

comfortable way is impractical. However, sidepaths may present increased conflicts between path users and motor vehicles at intersections and driveway crossings. Conflicts can be reduced by minimizing the number of driveway and street crossings present along a path and otherwise providing high-visibility crossing treatments.

- Paths typically have a lower design speed for bicyclists than on-street facilities and may not provide appropriate accommodation for more confident bicyclists who desire to travel at greater speeds. In addition, greater numbers of driveways or intersections along a sidepath corridor can decrease bicycle travel speeds and traffic signals can increase delay for bicyclists on off-street paths compared to cyclists using in-street bicycle facilities such as bike lanes. Therefore, paths should not be considered a substitute to accommodating more confident bicyclists within the roadway.
- Along paths that provide attractive recreational opportunities, consider adding amenities such as benches, rest areas, and scenic overlooks.

References & Resources

- AASHTO Guide for the Development of Bicycle Facilities (2012)
- FHWA Shared-Use Path Level of Service Calculator (2006)
- Manual on Uniform Traffic Control Devices (2009)
- Wisconsin Bicycle Facility Design Handbook (2004, minor updates in 2006 and 2009)

Bike Lanes

Bike lanes provide an exclusive space for bicyclists in the roadway. Pavement markings on the roadway and optional signs are used to establish bike lanes. Bike lanes are typically used on collector and arterial streets with higher traffic volumes and/or speeds. Research on bicyclists' perceptions of safety has shown that as traffic speed and volume increase, bicyclist's perception of safety degrades significantly and results in increased stress and discomfort. Adding bike lanes on moderately busy streets can lower the stress level and encourage bicyclists to use the street.

Bike lanes provide dedicated space on a roadway.

Bicyclists are not required to remain in a bicycle lane when traveling on a street and may leave the lane as necessary to make turns, pass other bicyclists, avoid debris, or position themselves for other necessary movements. Motorists may only use bike lanes temporarily when making right turns, accessing parking spaces and entering and exiting driveways and alleys. Stopping, standing, and parking in bike lanes is prohibited.

Benefits

- Dedicated space for bicyclists (except near intersections where motorists may enter bike lanes to make right turns).
- Established facility type that is understood by most road users.
- May encourage more bicycle travel.
- Inexpensive; typically installed by re-allocating existing street space by narrowing or removing lanes.
- Can lower motor vehicle speeds in some settings.

Challenges

- May not be appropriate for all types of bicyclists.
- Potential risk of "dooring" when placed adjacent to parking.
- Potential for vehicles driving/parking in the bicycle lane due to lack of curb or other vertical separation.

Design Criteria

Minimum width: 4 feet next to gutter seam
5 feet next to parked cars

Preferred Width: 5 feet next to gutter seam
6+ feet next to parked cars

- May be wider adjacent to narrow parking lanes and in areas with high on-street parking turnover. When placed next to a parking lane, the reach from the curb face to the edge of the bike lane should be 14.5 feet; the minimum is 13 feet, according to the Wisconsin Bicycle Facility Design Handbook.
- If bike lanes are adjacent to guardrails, walls, or other vertical barriers, additional bicycle lane width is desired to account for bicyclist "shy" distance from the edge.
- Include pavement markings to indicate one-way travel and designate that portion of the street as a bike lane.
- Bicycle lanes should be demarcated with 6- to 8-in white lines using traffic paint or 6-inch skid-resistant material.

Additional Considerations

- Two-way bicycle travel may be achieved on some one-way streets by providing a contra-flow bike lane.
- A bike lane may optionally be placed on only one side of a roadway in the uphill direction as a climbing lane if space is limited.
- Depending on the design of the roadway, bicyclists may have to operate in mixed traffic (such as to make turns). Green paint can be used to highlight bike lanes at conflict points, such as right turn lanes.
- For high-speed or high-volume roads, alternative routes suitable for users of all abilities should be considered, in addition to bike lanes on the main road.
- Standard bike lanes may be 6 feet wide, which provides greater separation between bicycles and cars, accommodates people who are pulling bike trailers, and may allow passing without leaving the bike lane.

  If street width is available to provide bike lanes wider than 6 feet, consider painting a "buffer" (minimum 18") between the bike lane and travel lane and/or between the bike lane and the parking lane to provide additional separation and reduce the threat of dooring. A separated bike lane (discussed in detail on the next page) may also be considered.

While typically provided on both sides of the street, bike lanes can be provided individually to address unique challenges. Contra-flow bike lanes can be provided on one-way streets to allow two-way movement by bicyclists (above). On steep roadways without room for bike lanes on both sides, climbing lanes (below) provide space for bicyclists in the uphill direction.

References & Resources

- AASHTO Guide for the Development of Bicycle Facilities (2012)
- NACTO Urban Bikeway Design Guide (2012)
- Manual on Uniform Traffic Control Devices (2009)
- Wisconsin Bicycle Facility Design Handbook (2004, minor updates in 2006 and 2009)

Separated Bike Lanes

Separated bike lanes, also known as protected bike lanes or cycle tracks, are exclusive bicycle facilities that are physically separated from both pedestrians and motor vehicles. Separated bike lanes isolate bicyclists from motor vehicle traffic using a variety of methods, including curbs, a parking lane, flexible delineators, bollards, large planting pots or boxes, landscaped medians, removable curbs, or other measures. Buffered bike lanes that do not include a vertical element are not considered separated bike lanes.

Separated bike lanes can be one way for bicycles on each side of a two-way road, or two-way and installed on one or both sides of the road. They are typically used on large multi-lane arterials where higher vehicle speeds exist. They may also be appropriate on high-volume but lower-speed streets, particularly in urban centers.

Benefits

- Comfortable for a broad spectrum of people, including young riders and more cautious bicyclists.
- Minimize mid-block conflicts with motor vehicles.
- Reduces conflicts with pedestrians by reducing sidewalk riding; can also shorten pedestrian crossings.

Separated bike lanes are typically used on large multi-lane arterials with high vehicle speeds, but can be appropriate for lower-speed streets that have high traffic volumes.

Challenges

- Careful design at intersections is necessary to ensure bicyclists are visible to motorists in adjacent lanes.
- May require special equipment for street sweeping and snow plowing.
- Where the vertical separation is achieved with curbs, stormwater drainage can present a challenge.
- Require a greater reallocation of existing street space than a standard bicycle lane.
- Emergency, transit, and maintenance vehicle access may require special treatments.

Design Criteria

Minimum width: 5 feet (one-way facility) **Preferred width:** 6.5 feet (one way facility) allows for passing

8 feet (bidirectional facility) 10+ feet (bidirectional facility)

- Separated bike lanes require varying widths of buffer space between the bike lane and the adjacent lane. Small barriers such as flexible delineator posts or removable curbs can be separated with a **minimum** 2-foot buffer. In general, a 6-foot buffer is **preferred** for all separation methods.
- Separated bike lanes are appropriate on streets with operating speeds of 25 mph and higher, and volumes that exceed 4,000 vehicles per day.

Additional Considerations

- Separated bike lanes can be level with the sidewalk, at an intermediate height between the sidewalk and the street, or level with the street. If designed to be level with the sidewalk, they should provide a vertical

separation between bicyclists and pedestrians, as well as a different surface treatment to delineate the bicycle from the pedestrian space (such as asphalt vs. concrete).

- Separated bike lanes can be a useful treatment on streets that connect to off-street paths, because people riding on paths are likely to be less accustomed to riding with motor vehicle traffic.
- The provision of separated bike lanes should consider the design and function of intersections, which may require adjustments to signal timing and phasing and/or modifications to pavement and curb sections. Traffic studies should be performed before implementing separated bike lanes.
- Bi-directional bike lanes can create challenges with turning vehicles, because motorists looking for gaps in traffic may not be looking for bicyclists approaching from the counter-flow direction.

References & Resources

- NACTO Urban Bikeway Design Guide (2012)
- MASSDOT Separated Bike Lane Planning and Design Guide (2015)

Advisory Bike Lanes

Many lower-traffic roads are too narrow to provide exclusive space for two standard-width bicycle lanes and two standard-width travel lanes. For lower volume, lower speed roads, advisory bike lanes (ABLs) have been developed as an alternative to a shared lane marking treatment to separate bicyclists from automobile traffic. These roads are marked to provide two separate standard width bicycle lanes on either side of a single shared (un-laned) motor vehicle travel space essentially creating a three-lane cross section. Roadway centerlines are not present.

ABLs have been used in numerous European countries for years, but they are new to the United States and require experimental approval from the FHWA before implementation. The first ABLs in the United States were installed in Minneapolis in 2011. Since then there has been no increase in head-on automobile crashes and overall speeds on those streets have dropped, creating a safer environment for drivers, bicyclists, and pedestrians. FHWA has also granted approval to Edina, MN, Hanover, NH, and Alexandria, VA.

Benefits

- Provides a designated space for bicyclists and can be used by pedestrians.
- May reduce speeds and traffic volumes.
- Can be applied on narrow roadways.
- Cost-effective, requiring only paint and signs.

Challenges

- Requires experimental approval from FHWA.
- New traffic treatments can result in confusion amongst users. A pilot project is recommended prior to widespread application.

Advisory bike lanes (ABLs) are a cost-effective way to delineate priority space for bicyclists on low-traffic town roads without striped centerlines. Drivers may cross the dashed line if it is not occupied by a bicyclist[ii].

Design Criteria

Maximum Average Daily Traffic (ADT): 1,500

(In urban settings, advisory bike lanes can be applied on streets with up to 4,000 ADT)

Preferred ADT: up to 500

- ABLs are appropriate on streets with operating speeds of up to 25 mph in urban settings, or 45 mph in rural settings.
- Center bi-directional travel lane should be 12 to 18 feet wide.
- ABLs should be 4-6 feet wide, following the minimum and recommended widths for standard bike lanes.
- ABLs can only be used with un-laned automobile travel lanes. On roads with existing centerlines, the centerline must be removed prior to installation of ABLs.

Additional Considerations

- Installation of ABLs should be accompanied by explanatory signs, as well as a vigorous public education campaign to help residents understand the new treatment.
- Prior to widespread application of ABLs across a community, a pilot project is recommended. A pilot project should consist of measuring speeds, traffic volume, and crashes prior to installation; installing ABLs according to best-practices and FHWA guidance; educating the public and gaining public input; and measuring speeds, traffic volume, and crashes after installation.

References & Resources

- FHWA Guidance on Bicycle Facilities and the Manual on Uniform Traffic Control Devices: Dashed Bicycle Lanes
- The Netherlands CROW Design Manual for Bicycle Traffic

Paved Shoulders

Paved shoulders provide a range of benefits: they reduce motor vehicle crashes, reduce long term roadway maintenance, ease short term maintenance such as snow plowing, and provide space for bicyclists and pedestrians (although paved shoulders typically do not meet accessibility requirements for pedestrians). Paved shoulders are typically reserved for rural road cross-sections.

Paved shoulders reduce run-off-road crashes, improve roadway maintenance, and can provide space for bicyclists

Where 4-foot or wider paved shoulders exist already, it is acceptable or even desirable to mark them as bike lanes in various circumstances, such as to provide continuity between other bikeways. If paved shoulders are marked as bike lanes, they need to also be designed as bike lanes at intersections. Where a roadway does not have paved shoulders already, paved shoulders can be retrofitted to the existing shoulder when the road is resurfaced or reconstructed. In some instances, adequate shoulder width can be provided by narrowing travel lanes to 11 feet.

Benefits

- Provide separated space for bicyclists and can be used by pedestrians.
- Reduce run-off-road motor vehicle crashes.
- Reduce pavement edge deterioration and accommodate maintenance vehicles.
- Provide emergency refuge for public safety vehicles and disabled vehicles.

Challenges

- May not provide a comfortable experience for all bicyclists when used on high-speed roads.
- May not facilitate through-intersection bicycle movement unless specifically designed to do so.
- For pedestrians, paved shoulders do meet accessibility requirements.

Design Criteria

- **Minimum width**: 4 feet (5 feet if adjacent to curb or guardrail)
- **Preferred width**: 6 feet

Shoulder Width Selection Grid

Intended User Type	Under 500 ADT	500-1,500 ADT	1,500-3,500 ADT	Over 3,500 ADT	Over 7,000 ADT
More Confident	--	--	**4′**	**6′**	**Sidepath recommended***
Less Confident	**Advisory Bike Lanes recommended**	**4′**	**4′**	**Sidepath recommended***	**Sidepath recommended***

*In addition to paved shoulders, which should be provided by default on roads with these traffic volumes in order to reduce run-off-road crashes, improve roadway maintenance, and additionally provide space for more confident bicyclists.

Additional Considerations

- Reducing travel lane width on existing roads—also known as a "lane diet"—is one way to increase paved shoulder width. This approach may negate the need to add pavement or reduce the amount of additional

pavement needed. Many St. Croix County Highways have 12-foot wide travel lanes next to 2- or 3-foot wide paved shoulders. By moving the edge line (also referred to as the "fog line" or "shoulder stripe") 1 foot toward the center of the roadway, 3- or 4-foot wide paved shoulders can be provided next to 11-foot wide travel lanes. This is an inexpensive or even cost-free solution that may provide suitable bicycling accommodations without widening the roadway. Research shows that 11-foot lanes next to 4-foot paved shoulders are generally as safe for motor vehicle traffic as 12-foot lanes next to 3-foot paved shoulders.[iii] However, the former is substantially better for bicycling, maintenance, agricultural vehicles, and disabled vehicles. The County Highway Department allows for a standard 11-foot wide travel lane for roads with fewer than 2,000 ADT to be considered in accordance with the WisDOT Facilities Development Manual.

- There are several situations in which additional shoulder width should be provided, including motor vehicle speeds exceeding 50 mph, moderate to heavy volumes of traffic, and above-average bicycle or pedestrian use.
- The placement of rumble strips may significantly degrade the functionality of paved shoulders for bicyclists. Rumble strip placement depends on the use of and goals for the shoulder. To best benefit bicyclists, rumble strips should be placed as close to the edge line as practicable and four feet of usable shoulder space should be provided for bicyclists. However, it is also common practice to place rumble strips 12 to 18 inches outside of the edge line in order to address noise concerns. Design engineers balance these competing preferences on a case-by-case basis, considering input received from nearby residents and users of the roadway. Where rumble strips are present, gaps of at least 12 feet should be provided every 40 to 60 feet. Alternatively, rumble strips could be avoided altogether, since research indicates that rumble strips on two-lane rural roadways have a only a small safety benefit.[iv]
- Intersections with unpaved roads and driveways often result in gravel and debris deposited on paved shoulders. Paving the aprons of these intersections can mitigate the negative effect.

References & Resources

- AASHTO Guide for the Development of Bicycle Facilities (2012)
- AASHTO Policy on Geometric Design of Highways and Streets (2013)
- Manual on Uniform Traffic Control Devices (2009)
- Wisconsin Rural Bicycle Planning Guide (2006)

Sidewalks

Sidewalks play a critical role in the character, function, enjoyment, and accessibility of neighborhoods, main streets, and other community destinations. Sidewalks are the place typically reserved for pedestrians within the public right-of-way, adjacent to property lines or the building face. In addition to providing vertical and/or horizontal separation between vehicles and pedestrians, the spaces between sidewalks and roadways also accommodate street trees and other plantings, stormwater infrastructure, street lights, and bicycle racks.

Urban and suburban neighborhoods often have 5-foot sidewalks. It is preferable to have a wide terrace between the curb and the sidewalk to separate pedestrians from the road and to provide room for street trees, utility poles, and other furnishings.

Benefits

- Dedicated space for pedestrians. The presence of a sidewalk or pathway on both sides of the street corresponds to approximately an 88% reduction in "walking along road" pedestrian crashes.
- Improve mobility for pedestrians and provide access for all types of pedestrian travel.
- Sidewalks can encourage walking and promote fitness, exercise, and the general health of a community.

Challenges

- Often difficult to retrofit streets to add sidewalks in existing neighborhoods.
- Need to be maintained and often that responsibility is passed on to adjacent property owners.

Design Criteria

Minimum width: 4 feet around obstructions

Preferred width: 5 feet in residential areas
6 feet or wider in commercial areas

- Wider sidewalks should be installed near schools, at transit stops, in downtown/main street areas, or anywhere high concentrations of pedestrian traffic exists.
- Maximum cross-slope: 2%. Recommended cross-slope is 1% to 2% with tight tolerances
- Running grade: generally permissible to match the grade of the adjacent roadway
- The Wisconsin Department of Transportation (WisDOT) recommends a typical width for the Furnishing Zone, or terrace, of four to six feet.

Additional Considerations

- Sidewalks are used for many purposes, such as café seating, retail display, utilities, bike racks, traffic signs, etc., especially in downtown and main street areas. In these cases, the Pedestrian Clear Zone (the portion of the sidewalk space used for walking, using mobility assistance devices, or pushing strollers) should have a smooth surface, provide a continuous and direct path, and maintain the minimum width outlined above.

- The Furnishing Zone or terrace (the space between the curb and sidewalk) provides space for curb ramps, streetlight poles, fire hydrants, bike racks, traffic signs, etc. In residential areas this is commonly a planted strip. This space should be clear at intersections in order to maintain maximum sight lines for both motorists and pedestrians.
- When retrofitting sidewalks in a community, it is best to first concentrate on busier streets and around places where walking is more common: schools, transit stops, commercial areas, etc.
- Even though roadway shoulders are not legal pedestrian facilities in Wisconsin and cannot legally be designated as pedestrian access routes, the occasional pedestrian that uses a shoulder as a walkway benefits from a wide paved shoulder.

Sidewalks in downtown and main street areas often serve multiple purposes in addition to conveying pedestrian traffic. In the above photo, the Furnishing Zone contains trees, signs, shrubs, etc. While café seating is a desirable amenity, in this example the chairs are encroaching on the Pedestrian Clear Zone, which should be at least 6 feet wide.

References & Resources

- Wisconsin Guide to Pedestrian Best Practices (2010)
- NACTO Urban Street Design Guide (2013)
- Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG; 2011)

Linear Enhancements to Existing Bikeways

The following enhancements may be applied in addition to the bicycle facility types outlined in the previous section. These enhancements may also be applied to low-traffic shared streets and roads that do not have dedicated bicycle infrastructure.

Traffic Calming

Traffic calming is the use of physical engineering measures that change the design of streets to reduce speeds, alter driver behavior, and improve conditions for non-motorized street users.

Traffic calming aims to slow the speeds of motorists to a "desired speed" (usually 20 mph or less for residential streets and 25 to 35 mph for collectors and minor arterials). The greatest benefit of traffic calming is increased safety and comfort for all users on and crossing the street. Compared with conventionally-designed streets, traffic calmed streets typically have fewer collisions and far fewer injuries and fatalities. These safety benefits are the result of slower speeds for motorists that result in greater driver awareness, shorter stopping distances, and less kinetic energy during a collision.

Benefits

- Increased safety/decreased severity of traffic crashes.
- Some treatments, such as street trees, outdoor cafes, and planted traffic circles, make the street more attractive.
- Reduced cut-through traffic.
- Reduced need for police enforcement.

Traffic calming aims to slow the speeds of motorists through a variety of treatments, such as the speed hump shown above.

Challenges

- Impacts traffic patterns.
- Treatments should accommodate snow removal operations, including markers or vertical signage.
- Impacts on street drainage need to be carefully considered.
- Some treatments may have high construction costs.
- Concerns about emergency vehicle access may arise, but in practice impacts on emergency access are typically negligible or very minor.

Design Criteria

- Vertical deflections such as speed humps and speed cushions should have a smooth leading edge, a parabolic rise, and be engineered for a speed of 25 to 30 mph. Speed humps should be clearly marked with reflective markings and signs.
- Typically speed humps are 22 feet in length, with a rise of 6 inches above the roadway. They should extend the full width of the roadway and should be tapered to the gutter to accommodate drainage. Speed humps are not typically used on roads with rural cross-sections; however if they are used on such roads, they should match the full pavement width (including paved shoulders).
- Speed humps or speed cushions are not typically used on collector or arterial streets.
- The size of chicanes will vary based on the targeted design speed and roadway width, but must be 20 feet wide curb-to-curb at a minimum to accommodate emergency vehicles.

- A typical curb radius of 20 feet should be used wherever possible, including where there are higher pedestrian volumes and fewer larger vehicles.

Additional Considerations

- Prior to permanently implementing a traffic calming measure, it may be useful to introduce a temporary measure using paint, cones, or street furniture, as changes can easily be made to the design.
- A formal policy or procedure can help a community objectively determine whether traffic calming measures should be installed on a street or in a neighborhood. Such a procedure should include traffic and speed studies and a way to gather input and approval from neighborhood residents.

References & Resources

- Huang and Cynecki (2001). The Effects of Traffic Calming Measures on Pedestrian and Motorist Behavior. FHWA
- ITE Traffic Calming Web site
- NACTO Urban Street Design Guide (2013)

Bicycle Boulevard Treatments

Bicycle boulevard treatments applied on quiet streets, often through residential neighborhoods, are designed to prioritize bicycle through-travel while discouraging motor vehicle traffic and maintaining relatively low motor vehicle speeds. Treatments vary depending on each unique context and often include elements of traffic calming, traffic diverters, pavement markings, and speed attenuators such as speed humps or chicanes, and signs.

Many cities already have signed bike routes along neighborhood streets that provide an alternative to traveling on high-volume, high-speed arterials. Applying bicycle boulevard treatments to these routes makes them more suitable for bicyclists of all abilities and can reduce crashes as well.

The treatments used on bicycle boulevards vary depending on the traffic volumes, speeds, and street width, as well as the overall context of the neighborhood. They may include pavement markings, traffic diverters, mini traffic circles, and treatments to reduce motor vehicle speed such as speed humps or chicanes.

Benefits

- Suitable for most ages and abilities of bicyclists.
- May calm traffic speeds; slower speeds are safer and help reduce crash injuries.
- Inexpensive; typically retrofitted within existing right-of-way.
- May reduce cut-through traffic.

Challenges

- Impacts traffic patterns.
- Emergency, transit, and maintenance vehicle access requires careful consideration.
- Developing appropriate treatments at major intersections.
- Wayfinding to community destinations on major roadways.

Design Criteria

Maximum Average Daily Traffic (ADT): 3,000 **Preferred ADT**: up to 1,000

- Target speeds are typically around 20 mph; there should be a maximum < 15 mph speed differential between bicyclists and vehicles.

Additional Considerations

- Stop signs or traffic signals should be placed along the bicycle boulevard in a way that prioritizes the bicycle movement, minimizing stops for bicyclists whenever possible.
- Include traffic calming measures such as street trees, traffic circles, chicanes, and speed humps. Traffic management devices such as diverters or semi-diverters can redirect cut-through vehicle traffic and reduce traffic volume while still enabling local access to the street.
- Communities should implement bicycle boulevard treatments on one pilot corridor to measure the impacts and gain community support. The pilot program should include before-and-after crash studies, motor vehicle counts, and bicyclist counts on both the bicycle boulevard and parallel streets. Findings from the pilot program can be used to justify bicycle boulevard treatments on other neighborhood streets.
- Additional treatments for major street crossings may be needed, such as median refuge islands, rapid flash beacons, bicycle signals, and HAWK or half signals.

References & Resources

- AASHTO Guide for the Development of Bicycle Facilities (2012)
- NACTO Urban Bikeway Design Guide (2012)
- Manual on Uniform Traffic Control Devices (2009)
- Fundamentals of Bicycle Boulevard Planning & Design (2009)
- Minikel (2011). Cyclist safety on bicycle boulevards and parallel arterial routes in Berkeley, California. Department of Urban Studies and Planning, Massachusetts Institute of Technology

Shared Lane Markings

Shared lane markings (or "sharrows") are pavement markings that denote shared bicycle and motor vehicle travel lanes. The markers are two chevrons positioned above a bicycle symbol, placed where the bicyclist should be anticipated to operate. In general, this is a design solution that **should only be used in locations with low traffic speeds and volumes** as part of a signed route, bicycle boulevard, or as a temporary solution on constrained, higher-traffic streets until additional right of way can be acquired.

Shared lane markings show preferred lane positioning to people bicycling while also reminding drivers to expect people on bikes.

Benefits

- May increase motorist awareness of the potential presence of bicyclists.
- Can act as wayfinding aids.
- Does not require specialized maintenance, sweeping, or plowing.
- Low cost of implementation.

Challenges

- Are often misused in inappropriate contexts as a "band-aid" treatment when budgets or site constraints do not allow the provision of a suitable bicycle facility. While it may be acceptable to use this marking as an interim treatment, it should not be viewed as a permanent solution in on streets with traffic speeds over 35 mph or traffic volumes over 4,000.
- May not be suitable for all users as shared lane markings do not provide separate space for bicyclists.
- Pavement markings may have higher maintenance needs than other facility types due to the wear and tear presented by motor vehicles driving over the pavement markings.

Design Criteria

- **Preferred** on streets with posted speed limits of up to 25 mph and traffic volumes of less than 4,000 vehicles per day. **Maximum** posted speed of street: 35 mph
- The marking's centerline must be minimum 4' from curb where parking is prohibited.
- The marking's centerline must be minimum 11' from curb where parking is permitted, so that it is outside the door zone of parked vehicles.
- For narrow lanes, it may be desirable to center shared lane markings along the centerline of the outside travel lane.

Additional Considerations

- Typically used on local, collector, or minor arterial streets with low traffic volumes. Commonly used on bicycle boulevards to reinforce the priority for bicyclists.
- Typically feasible within existing right-of-way and pavement width even in constrained situations that preclude dedicated facilities.
- May be used as interim treatments to fill gaps between bike lanes or other dedicated facilities for short segments where there are space constraints.
- May be used for downhill bicycle travel in conjunction with climbing lanes intended for uphill travel.
- Typically supplemented by signs, especially Bikes May Use Full Lane (R4-11).

References & Resources

- AASHTO Guide for the Development of Bicycle Facilities (2012)
- NACTO Urban Bikeway Design Guide (2012)
- Manual on Uniform Traffic Control Devices (2009)

Bike Routing/Destination Wayfinding

Wayfinding is a highly visible way to improve bicycling in an area because it helps identify the best routes to destinations, helps people overcome a barrier of not knowing where to ride, and reminds motorists to anticipate the presence of bicyclists. A wayfinding system is typically composed of signs and pavement markings that guide bicyclists along preferred routes (which may or may not be numbered, named, or color-coded) to destinations across the community, county, or region. Signs may also state distances or time to destinations.

Benefits

- Improves the usefulness of the bicycle network, especially when routes are diverted away from well-known streets.
- Helps bicyclists find lower-stress bikeways.
- Supports bicycle encouragement efforts by reducing concerns about misdirection and getting lost.
- Provides a widespread indicator for motorists that bicyclists should be expected on streets, especially those that are popular bike routes.

Image 1: M 1-8 series bicycle route sign

Challenges

- Can cause unnecessary confusion if signs do not uniquely identify the route, if the selection of destinations is not optimized, and if placement of signs is not logical.
- Bike route signs should be placed in addition to appropriate facility types such as paved shoulders or bike lanes. Bike route signs are only a suitable stand-alone treatment on very low-traffic roads.
- Too many signs can contribute to sign clutter.

Image 2: D11-1 series bicycle route sign with D1-3 series destination signs

Design Criteria

- Basic bicycle route signs consist of a MUTCD-style "Bike Route" sign placed every half mile on a major bike route and on the approach to major bike routes at decision points. Unique numbered routes can be designated and can incorporate a route name or agency logos (see example in Image 1).
- Bike route signs can be supplemented with "fingerboard" panels showing destinations, directions, and distances (see Image 2 and Image 3).
- Place directional signs (see Image 2) on the near side of intersections and confirmation signs (see Image 3) on the far side of intersections.

Image 3: Image 2: D11-1 series bicycle route sign with D1-3 series destination signs

Additional Considerations

- A bicycle wayfinding protocol should coordinate with bicycle route maps and provide three general forms of guidance:
  - Decision assemblies, which consist of Bike Route identification and optional destination fingerboards, placed at decision points where routes intersect or on the approaches to a designated bike route.
  - Turn assemblies, which consist of Bike Route panels and arrow plaques, placed where a designated bike route turns from one street to another.
  - Confirmation assemblies, which consist of Bike Route panels and optional destination fingerboards, placed on the far side of intersections to confirm route choice and the distance (and optionally, time) to destinations.
- Sign design can be customized to add distinct community branding, but the clarity and accuracy of the information must be the top priority.

- If destination wayfinding is implemented, the location of signs and represented destinations should be planned in a comprehensive manner, considering the likely routes of bicyclists and probable destinations. Typical destination wayfinding content includes direction, name, and distance to communities, commercial centers, shared use paths, and other popular destinations.
- The sign protocol should take into consideration the height and type of sign post that is used. It is common on shared-use paths for two sign assemblies to be mounted on the same sign post. If signs are bolted directly to the post, and the assemblies need to be mounted at a 90-degree angle, a longer post may be required to accommodate the extra height.

References & Resources

- NACTO Urban Bikeway Design Guide (2012)
- Manual on Uniform Traffic Control Devices (2009)

Amenities, Intersections, and Spot Treatments

Bikeway Intersection Treatments

The majority of motor vehicle crashes involving bicycles in urban areas occur at intersections. In Wisconsin, on-street bicycles are required to follow the same rules of the road as motorists. Good intersection design makes bicycling more comfortable, reduces conflicts with motor vehicles and pedestrians, and contributes to reduced crashes and injuries for all modes. Pavement markings increase visibility and provide a clear route for bicyclists through the intersection.

Bike lanes should continue all the way to intersections (above) and should be dashed where they cross right turn lanes. Green pavement (below) can also be used to highlight conflict areas.

Benefits

- Provide continuity through intersections and help define expectations.
- Warn users of potential conflict locations.
- Encourage turning motorists to yield to bicyclists, who have the right-of-way when passing straight through an intersection.

Challenges

- Excessive pavement markings may result in confusion or visual clutter.
- Pavement width at intersection approaches is often in short supply due to the addition of left and right turn lanes.

Design Criteria

- To the maximum extent possible, bikeways should be continuous through intersections. Dedicated bike lanes should be provided on all intersection approaches where space is available.
- At intersections with a dedicated right turn lane (like in the photos above), bike lanes should be provided to the left of the right turn lane to minimize conflicts with motor vehicles.
- At complex intersections or intersections with higher levels of conflicts, bikeways may be striped continuously through the intersection

Additional Considerations

- A variety of pavement markings including green pavement, shared lane markings, bike boxes, dashed lines, and solid lines can be used to enhance intersections, guide bicyclists, and warn of potential conflicts. The treatment will vary depending on the context of each intersection and should be chosen based on engineering judgment.
- Corridor-wide intersection treatment can maintain consistency; however, spot treatments can be used to highlight conflict locations.
- Removal of some on-street parking may be necessary to provide adequate space for continuous bike lanes and dedicated right turn lanes, as well as to provide adequate visibility for all road users.
- Improved signal designs provide adequate time for bicyclists to clear signalized intersections, minimize bicyclist delay, and reduce the likelihood that bicyclists will disobey the signal. Bicyclists should be accommodated by lengthening or adjusting traffic signal phases and ensuring that loop detectors sense bicycles. Bicycle-specific signals may be used and have received interim approval from FHWA. Refer to the references and resources listed below for specific design criteria.

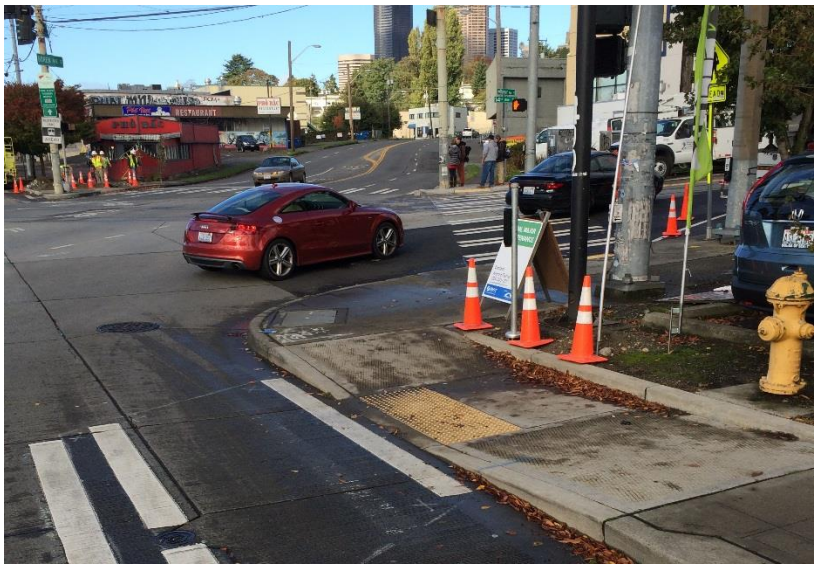
Bike boxes and green pavement (combined in this example) are two tools for improving intersections for bicyclists. Bike boxes improve the ability for bicyclists to make left turns at intersections.

References & Resources

- AASHTO Guide for the Development of Bicycle Facilities (2012)
- Manual on Uniform Traffic Control Devices (2009)
- OTREC Operational Guidance for Bicycle-Specific Traffic Signals (2013)
- Jensen, SU. Safety effects of blue cycle crossings: A before-after study. Accident Analysis & Prevention, 40(2), 742-750. (2008)
- Thompson, SR. Bicycle-Specific Traffic Signals: Results from a State-of-the-Practice Review (2012)

Curb Ramps

Curb ramps provide transition between sidewalks and crosswalks and must be installed at all intersection and midblock pedestrian crossings, as mandated by federal legislation (1973 Rehabilitation Act and ADA 1990).



Curb ramps must include truncated domes. Sedimentation and snow accumulation are challenges.

Benefits

- Universally, widespread benefits apply to people using wheelchairs, strollers, walkers, crutches, handcarts, bicycles, or who have mobility restrictions that make it difficult to step up and down high curbs.

Challenges

- Curb ramp designs can be challenging especially at intersections with large corner radii or on streets within narrow right-of-ways.
- Need to be well maintained, especially during winter months when snow and ice are encountered.
- If not designed to ADA standards, curb ramps can be a problem for pedestrians with visual impairments because they minimize the tactility of the transition point between the sidewalk and the roadway.

Design Criteria

- Maximum slope: 1:12 (8.33%).
- Maximum slope of side flares: 1:10 (10%).
- Maximum cross-slope: 2% (1–2% with tight tolerances recommended).
- Should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk.
- Truncated domes (the only permitted detectable warning device) must be installed on all new curb ramps to alert pedestrians to the sidewalk and street edge.
- Type II ramps, which provide one ramp leading to each crosswalk at an intersection, are strongly preferred over Type I ramps that only provide a single ramp for multiple crosswalks.

Additional Considerations

- Furnishing zones or terraces (the space between the curb and sidewalk) of 7’ of width provide just enough space at intersections for curb ramps to gain sufficient elevation to a sidewalk.
- Separate curb ramps should be provided for each crosswalk at an intersection rather than a single ramp at a corner for both crosswalks. The separate curb ramps improve orientation for visually impaired pedestrians by directing them toward the correct crosswalk.
- Curb ramps are required to have landings. Landings provide a level area with a cross slope of 2% or less in any direction for wheelchair users to wait, maneuver into or out of a ramp, or bypass the ramp altogether. Landings should be 5’ by 5’ and shall, at a minimum, be 4’ by 4’.
- All newly constructed and altered roadway projects (including resurfacing projects) must include curb ramps. Agencies with more than 50 employees are required to have a transition plan in place to address the staging of the curb ramp upgrades.

References & Resources

- Wisconsin Guide to Pedestrian Best Practices (2010)
- Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG; 2011)

Marked Crosswalks

Well-designed crosswalks are an important component to increase the safety of pedestrians crossing streets and roads. Safety for all pedestrians, especially for those with limited mobility and disabilities, is the single most important criteria in crosswalk design.

Legal crosswalks exist at all locations where sidewalks meet the roadway, regardless of whether pavement markings are present. Drivers are legally required to yield to pedestrians at intersections, even when there are no pavement markings. Providing marked crosswalks communicates to drivers that pedestrians may be present, and helps guide pedestrians to locations where they should cross the street. In addition to pavement markings, crosswalks may include signals/beacons, warning signs, and raised platforms.

Raised crosswalks have traffic-calming effects. This crosswalk crosses two travel lanes, a bike lane, and a parking lane.

Benefits

- Increases the visibility of pedestrians crossing at intersections and controlled mid-block crossings.
- Can have traffic-calming effects if raised or if curb extensions are provided.

Challenges

- Road grades and crowns pose challenges for constructing crosswalks that meet accessibility requirements.
- Multi-lane streets and rural intersections require longer crosswalks and are less comfortable for pedestrians.
- Enforcing stop-bar compliance is important so that drivers do not stop in crosswalks.

Design Criteria

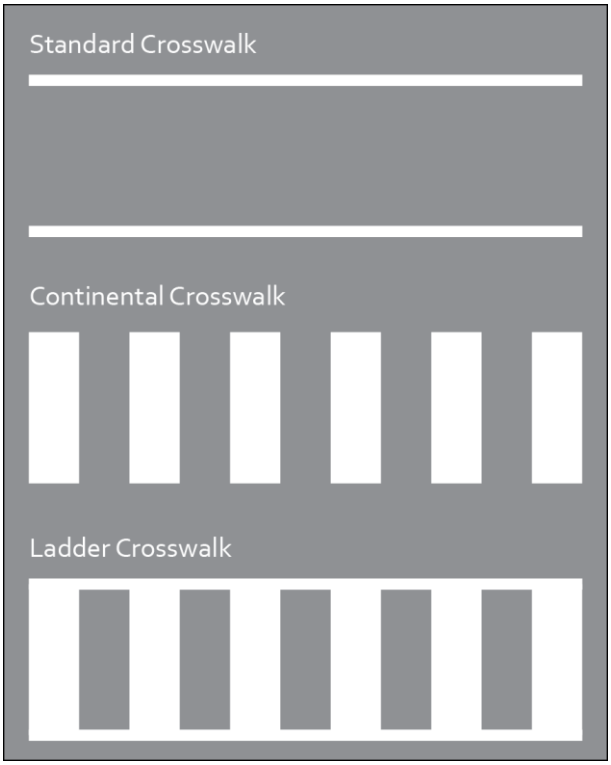
- Place on all legs of signalized intersections, in school zones, and across streets with more than minor levels of traffic.
- Crosswalks should be at least 10 feet wide or the width of the approaching sidewalk if it is greater. In areas of heavy pedestrian volumes, crosswalks can be up to 25 feet wide.
- Stop lines at stop-controlled and signalized intersections should be striped no less than 4 feet and no more than 30 feet from the approach of crosswalks.
- Add rapid-flash beacons, signals, crossing islands, curb extensions, and/or other traffic-calming measures when ADT exceeds 12,000 on 4-lane roads or speeds exceed 40 mph on any road.
- Designs should balance the need to reflect the desired pedestrian walking path with orienting the crosswalk perpendicular to the curb; perpendicular crosswalks minimize crossing distances and therefore limit the time that pedestrians are exposed.
- Refer to the references and resources listed below for specific design criteria.

Additional Considerations

- There are many different styles of crosswalk striping and some are more effective than others. Ladder and continental striping patterns are more visible to drivers.
- Signal phasing is very important. Pedestrian signal phases must be timed based on the length of the crossing. If pedestrians are forced to wait longer than 40 seconds, non-compliance is more likely.
- Raised crossings calm traffic and increase the visibility of pedestrians.
- Curb extensions, also known as bulb-outs and bump-outs, reduce the distance pedestrians have to cross and calm traffic.

References & Resources

- Wisconsin Guide to Pedestrian Best Practices (2010)
- NACTO Urban Street Design Guide (2013)
- Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations: Final Report and Recommended Guidelines (2005)
- Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG; 2011)
- ADA Accessibility Guidelines (2004)
- Manual on Uniform Traffic Control Devices (2009)



Typical crosswalk marking patterns. Ladder and continental striping patterns are more visible to drivers.

Crossing Islands

Crossing islands are raised islands that provide a pedestrian refuge and allow multi-stage crossings of wide streets. They can be located along the centerline of a street, as roundabout splitter islands, or as "pork chop" islands where right-turn slip lanes are present.

This crossing island doubles as a partial diverter. Curb ramps are "cut through," allowing pedestrians to remain at-grade.

Benefits

- Provide pedestrians refuge when crossing wide, multi-lane streets.
- Improve crossings at unsignalized locations, as pedestrians are only required to negotiate one direction of traffic at a time.
- Have traffic calming effects.

Challenges

- Noncompliance with pedestrian signals may increase with multi-stage crossings due to impatience or feelings of vulnerability.
- While preferable, cut-through medians may accumulate debris and snow more than ramped islands.

Design Criteria

Minimum width: 6 feet **Preferred Width**: 8 feet (to accommodate bicyclists and wheelchair users)

- Curb ramps with truncated dome detectable warnings and 5' by 5' landing areas are required.
- A "nose" that extends past the crosswalk is not required, but is recommended to protect people waiting on the crossing island and to slow turning drivers.
- Vegetation and other aesthetic treatments may be incorporated, but must not obscure visibility.

Additional Considerations

- There are two primary types of crossing islands. The first provides a cut-through of the island, keeping pedestrians at street-grade. The second ramps pedestrians up above street grade and may present challenges to constructing accessible curb ramps unless they are more than 17' wide.
- Crossing islands should be considered where crossing distances are greater than 50 feet to allow multi-stage crossings, which in turn allow shorter signal phases.
- Cut-through widths should equal the width of the crosswalk. Cut-throughs may be wider in order to allow the clearing of debris and snow, but should not encourage motor vehicles to use the space for U-turns.
- Crossing islands can be coupled with other traffic-calming features, such as partial diverters.

- At mid-block crossings where width is available, islands should be designed with a stagger, or in a "Z" pattern, encouraging pedestrians to face oncoming traffic before crossing the other side of the street.

References & Resources

- NACTO Urban Street Design Guide (2013)
- Manual on Uniform Traffic Control Devices (2009)

Crossing islands with offset openings encourage pedestrians to face oncoming traffic before crossing the opposite side of the street.

Trailheads, Parking Areas, Rest Stops

Trailheads, parking areas, and rest stops provide access to the bikeway network, encourage more use of the paths and bikeways, and provide meeting and parking locations for groups. The number and type of amenities provided at a trailhead, parking area, or rest stop is based on the number of users of the path or bikeway and the relative ease of finding services nearby.

This rest stop has benches, a water fountain, and a map of the bicycle network.

Benefits

- Encourage greater use of paths and bikeways
- Provide parking and access points for paths.
- Serve as a meeting point with off-street parking for cycling groups.
- Provides an element of "branding" for the bikeway network.
- Maps of the area help path or bikeway users with wayfinding.

Challenges

- Higher-amenity trailheads can be expensive to construct and maintain.
- Water, sewer, and electric service may be needed.
- Ongoing maintenance needs.

Design Criteria

- Trailheads:
    - Location: usually located in a park, along a major roadway, or at the terminus of a path. **At a minimum**, provide a trailhead at each path terminus. **Preferred** placement would include all path intersections with major roadways or other major paths, where the path traverses a business district, or every 10 miles.
    - Amenities: 10, 20, or more parking spots with overflow parking area, permanent or portable restrooms, drinking fountains, shelter with seating, bike repair stations, and basic amenities such as trail information kiosks and waste receptacles.
- Parking areas:
    - Location: Parking areas should be placed based on both opportunity and demand, such as at a rural town hall with a parking lot that has little use on the weekends. They could also be provided at parking lots or small parks near paths or on-road bikeways in order to provide a meeting location for road cycling groups.
    - Amenities: 10-20 parking spots, drinking fountain or potable water spigot, shaded area, seating, bike repair station, and basic amenities such as path or bike route information signage and waste receptacles. Access to permanent or portable restrooms is also highly desirable at these locations.
- Rest stops:
    - Location**: At a minimum,** place rest stops on paths at parks and at intersections with major roadways or other paths. **Preferred** placement of rest stops would include intermediate locations along paths and on-road bikeways as well. In areas with more pedestrians, rest stops can be provided every 1-2 miles. In more remote areas on paths or on-road bikeways, they can be spaced at 3-5 miles.
    - Amenities**:** Water fountains (where feasible), a seating area, fix-it station, as well as basic amenities such as trail information signage and waste receptacles. May include permanent or portable restrooms in more remote areas. Typically does not include off-street parking.

Additional Consideration

- The number and types of amenities provided depends on the number of users of the facility. Trailheads located in a county, regional, or state park will provide a higher number of amenities because they serve more than just path users.
- Map kiosks should be sited and placed so that the information is visible to someone in a wheelchair. Place map kiosks and seating areas a minimum of 5 feet off the path, to prevent people from blocking the path.
- All trailheads, parking lots, and rest stops should be designed for accessibility according to the ADA.
- Trailheads, parking areas, and especially rest stops are great opportunities for corporate sponsorship, donations, and "adoption" by clubs or other organizations. Public agencies would likely acquire the land and oversee construction, whereas businesses and non-profits could donate funds to purchase the amenities.

References and Resources

- Minnesota Trail Planning, Design, and Development Guidelines (2007)

Links to Primary Design Resources

1. The American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 4th Edition (2012)
   https://store.transportation.org/Item/CollectionDetail?ID=116
2. NACTO Urban Street Design Guide (2013)
   http://nacto.org/publication/urban-street-design-guide/
3. The Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (2009)
   http://mutcd.fhwa.dot.gov
4. Wisconsin Rural Bicycle Planning Guide (2006):
   http://wisconsindot.gov/Documents/projects/multimodal/bike/rural-guide.pdf
5. Wisconsin Bicycle Facility Design Handbook (2004, with minor updates in 2006 and 2009):
   http://wisconsindot.gov/Documents/projects/multimodal/bike/facility.pdf

3.6 Wayfinding Framework

The St. Croix County Bicycle and Pedestrian Plan (the Plan) includes a bicycle wayfinding protocol that includes a multi-level proposed bicycle route sign system that provides consistency across the County while allowing opportunities for unique branding by individual communities. Signage is to meet the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) and will help bicyclists to navigate roadways and paths to reach destinations throughout the County.

Wayfinding Purpose and Need

Many roads in the county are currently signed as bike routes (see image right). There is dissatisfaction with the current bike route signs, since they are seen by some as confusing and do not provide any information about the destination, direction, or number/name of the bike route. Public comments during the planning process identified a need for countywide bikeway maps to help people find bicycling routes. Future wayfinding signs should be coordinated with route maps. Finally, consideration should be given to wayfinding interactions with US Bike Routes and Wisconsin Bike Routes that pass through the county.

The following pages outline a proposed framework for improved bicycle wayfinding that would provide consistency across the county while providing opportunities for communities to incorporate unique branding.

Existing bike route sign on Rustic Road 3, south of Glen Hills County Park

Purpose of Bike Route Signing and Bicycle Wayfinding

When considering the type of information and destinations that should appear on bicycle wayfinding signs, it is helpful to keep in mind the reasons for providing a comprehensive wayfinding sign system. These reasons are set forth below:

- Provide guidance along routes that are not intuitive or are different from those followed by motorists
- Provide navigational assistance to popular destinations for bicyclists and trail users
- Encourage people to try bicycling by showing how easy (or quick) it is to get to destinations by bicycle
- Support bicycle safety by helping bicyclists find safe, low-traffic routes
- Remind motorists that bicyclists should be expected on roads, especially those that are popular bike routes
- Promote bicycle tourism in the county

Types of Bicycle Wayfinding

Traditionally, there have been two approaches to bicycle route signing and wayfinding: signing for recreational routes, and destination-based wayfinding. The two approaches can be combined, but they can sometimes be incompatible: recreational routes are often circular or will deviate from the shortest path in order to take in a beautiful scenic view, follow a river, or go up a challenging hill. Destination-based wayfinding routes usually take a more direct—but still safe—route and will avoid steep hills. Table 1 highlights the different approaches and provides some examples of each, as well as some examples where they have been combined.

Table 1

	Destination-Based Wayfinding	Route-Based Wayfinding	Combination of Route-Based and Destination-Based
Primary use	Transportation	Recreation	Transportation and recreation
Type of travel and route	Routes are mostly direct and less hilly	Routes may be circular, may follow waterbodies or scenic views.	Routes are mostly direct. May be "urban escape routes" or popular shared-use paths.
Type of information on signs	Destinations, direction, and distance (optional).	Route name (or route number), direction, and optionally, distance. Routes may be color-coded.	Route name (or route number), direction, and distance (optional). Routes may be color-coded.
Examples	 Pittsburgh, PA	 Wausau, WI	 Rockville, MA
	 Arlington, VA	 Madison, WI	 Madison, WI (proposed)

Proposed Bicycle Wayfinding Framework

The following framework proposes a four-part approach for St. Croix County:

1. Destination-Based Wayfinding on the Enhanced Network
2. Route-Based Wayfinding on County Recreational Routes
3. U.S. and Wisconsin Bike Route Signs
4. County Bikeway Maps

The approach for each is described below.

Destination-Based Wayfinding on the Enhanced Network

The Plan proposes an Enhanced Network of low-stress bikeways between population centers and popular destinations. Because these are relatively direct routes that will attract more bicyclists that will be traveling for transportation purposes or leisurely recreation (rather than a focus on high mileage rides), the emphasis should be on providing destination-based wayfinding along those routes. The selection of destinations for signs can include city/village centers, main streets, schools, trails, parks, and other popular destinations for bicycling. Municipalities and the county should cooperatively identify destinations for inclusion.

Simple "Bike Route" signs should be avoided. However, route signs featuring distinct names can be used if desired. For example, the Enhanced Network loop connecting Houlton, Somerset, New Richmond, Roberts, River Falls, and Hudson could be named the "West St. Croix Bikeway" or "River Valley Circle" or "The Big Ring." If not, the wayfinding fingerboard signs can be used on their own. The concept for destination-based wayfinding is illustrated below.

	Decision Assembly (placed in advance of a decision point)	Confirmation Assembly (placed after a turn, and at regular intervals along a route)	Turn Assembly (Placed in advance of a turn on the route)
Examples of route sign and fingerboard assemblies			
Examples of fingerboard assemblies*			(not applicable)

*When a route sign is not used, fingerboards can be placed independent of other signs or below certain some signs (Bike Route signs, No Parking signs, etc.). They may not be placed on the same post as Speed Limit or Stop signs.

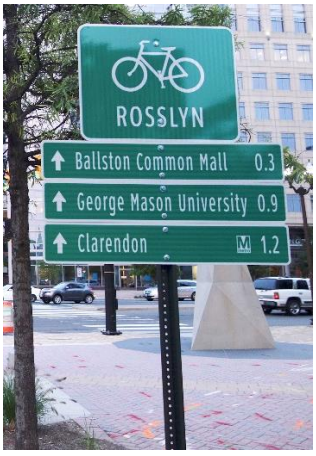
Route-Based Wayfinding on County Recreational Routes

Several years ago, the county Parks Division mapped five recreational "circle routes" around New Richmond, River Falls, Hudson, Baldwin, and Glenwood City. These five recreational routes could serve as a starting point for signing recreational routes in the more rural parts of the county. Before signing routes, the County should

1. Work with bicycling groups and local communities to determine whether any significant modifications should be made to the routes and whether additional routes are needed.
2. Modify the routes to follow to the Plan's network of bikeways where possible.
3. Decide on a final numbering or naming convention for the routes (e.g., "Route 4" or "Green Loop" or "Hudson Loop 2").

In order to maintain a unified look, these recreational routes could be branded by color or some other consistent theme. Like destination-based wayfinding, it is important to provide turn assemblies and confirmation assemblies along numbered/named bike routes. Decision assemblies are also helpful when two bike routes converge, intersect, or split.

Examples of Route-Based Wayfinding signs are illustrated below.

Modeled on MUTCD M1-8 Sign	Modeled on MUTCD D11-1c Sign	Flexible interpretation of MUTCD guidance
		
		

US and Wisconsin Bike Routes

The Wisconsin Department of Natural Resources and Department of Transportation are currently planning U.S. and Wisconsin Bicycle Routes (USBRs and WIBRs) for long-distance touring and recreational riding. As part of that plan, several draft routes—USBR 10, USBR 20, and WIBR 11—are identified to travel through St. Croix County. Once these routes have been identified and adopted by the State, they should be signed with both local wayfinding signs consistent with the recommendations above and the appropriate US. Bicycle and Wisconsin Bicycle Route signs (see box).

County Bikeway Maps

Installation of a coordinated bike route sign system will broaden public awareness of bicycling, but it should be supplemented by maps and online tools. Many jurisdictions in Wisconsin print maps that bicyclists can pick up at bike shops and government offices. These maps are designed to help bicyclists find the most comfortable route for their trip, whether for transportation or recreation. They can also be provided as large-scale PDFs online. Online maps potentially have unlimited distribution, while paper maps are limited by the quantity printed. St. Croix County should develop and publish a paper map of bicycle routes and make it available online.

U.S. Bicycle Routes should be marked with the Alternate M1-9 sign (displayed above) which is described in detail in a 2012 memo by the Federal Highway Administration. State bicycle routes will use the sign design displayed below.

Sign Placement Guidelines

Wayfinding signs should be placed in addition to appropriate facility types such as paved shoulders or bike lanes. Bike route signs are only a suitable stand-alone treatment on very low-traffic roads. Signs should be placed in such a way that they minimize visual clutter while remaining highly visible and legible to bicyclists.

Basic Placement Guidelines

- Basic bicycle route signs should be placed every half mile on a major bike route and on the approach to major bike routes at decision points.
- Place decision and turn assemblies on the near side of intersections and confirmation assemblies on the far side of intersections.
- Take into consideration the height and type of sign post that is used. It is common for two sign assemblies to be mounted on the same sign post. If signs are bolted directly to the post, and the assemblies need to be mounted at a 90-degree angle, a longer post may be required to accommodate the extra height.

References & Resources

- NACTO Urban Bikeway Design Guide (2012)
- Manual on Uniform Traffic Control Devices (2009)

References

[i] City of Madison, "Public Works Bikeway Maintenance," https://www.cityofmadison.com/residents/winter/documents/PWBicycleFacilitiesMaintenance.pdf

[ii] Photo copyright 2014 The Dartmouth, Inc. All rights reserved. Reprinted with Permission.

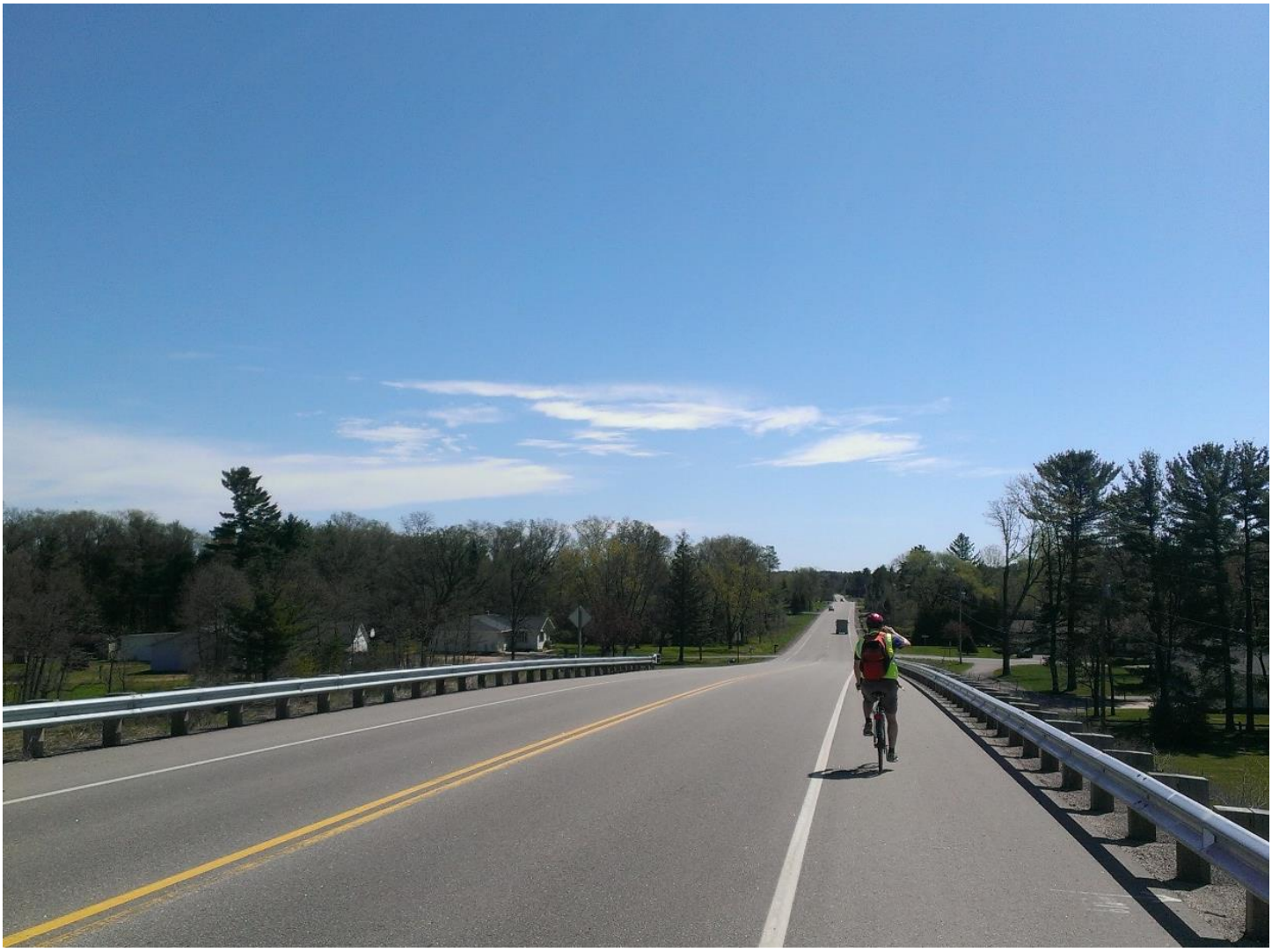
[iii] Safety Evaluation of Lane and Shoulder Width Combinations on Rural, Two-Lane, Undivided Roads, FHWA (2009).

[iv] Report 641: Guidance for the Design and Application of Shoulder and Centerline Rumble Strips, National Cooperative Highway Research Program (2009).

ST. CROIX COUNTY

Bicycle and Pedestrian PLAN 2017

Part 4: Appendices



4.1 Review of Relevant Plans and Policies

County Plans and Policies

St. Croix County Bicycle Transportation Plan 1995-2015

As St. Croix County's first bicycle plan, this plan included recommendations which were intended to provide guidance for the enhancement of the bicycling environment in the County, while recognizing the fiscal and political constraints under which county and local municipalities operate. To maintain this focus, the plan and recommendations were developed in accordance with the following goals and objectives.

Goal I: To encourage the use of bicycles as an element of an integrated multi-modal transportation system in St. Croix County

Objectives

- Identify a bikeway system in St. Croix County that will provide bicyclists with safe and convenient access to major centers of employment, education, shopping, housing and recreation.
- Develop a bicycle plan for St. Croix County that employs an acceptable methodology to determine suitable bicycle facilities and identify improvements needed to attain a suitable situation.
- Increase the safety of bicycle transportation in St. Croix County through bicycle facility improvements, expanded education programs and increased law enforcement pertaining to the interaction between motorists and bicyclists on public roads.
- Promote increased use of bicycles as a viable alternative mode of transportation.

Goal II: To increase recreational bicycling opportunities for residents and to enhance tourism and the economy of St. Croix County.

Objectives

- Continue to pursue improvements to identified bicycle facilities, where needed.
- Acquire and develop abandoned railroad corridors for bicycle trails that provide a connection to other bicycle facilities, where feasible.
- Promote recreational bicycling for its associated physical and mental health benefits.

Goal III: To promote a safe bicycling environment in St. Croix County through facility improvements and education and enforcement programs.

Objective

- Increase the safety of bicycle transportation in the County through bicycle facility improvements and educational and enforcement programs for bicyclists, motorists and law enforcement personnel.

St. Croix County Parks and Recreation Bicycle and Pedestrian Plan (2008)

This 2008 plan was developed in consultation with a Bicycle and Pedestrian Facilities Planning Advisory Committee, which reviewed and updated goals and objectives from the 1995 Bicycle Transportation Plan. The recommendations presented in this plan were intended to provide guidance for the enhancement of the bicycling environment in the County, and encourage inter-governmental coordination toward that goal, while recognizing the

fiscal constraints under which county and local municipalities operate. The following goals and objectives were developed to keep the planning effort focused on these issues.

Goal 1: To encourage the use of bicycle and pedestrian modes as elements of an integrated multi-modal transportation system in St. Croix County.

Objectives

- Identify a bikeway/pedestrian system in St. Croix County that will provide bicyclists and pedestrians with safe and convenient access to major centers of employment, education, shopping, housing, and recreation.
- Develop a bicycle/pedestrian plan for St. Croix County that employs an acceptable methodology to determine suitable bicycle facilities and identify improvements needed to attain a suitable situation.
- Encourage the coordination and cooperation between cities, villages, and towns in the planning and development of bike/pedestrian facilities.
- Increase the safety of bicycle and pedestrian transportation in St. Croix County through bicycle/pedestrian facility improvements, expanded education programs and increased law enforcement pertaining to the interaction between motorists and bicyclists on public roads.
- Promote increased use of bicycles and walking as viable alternative modes of transportation.
- To strongly consider accommodations for bicycles and pedestrians in the construction and reconstruction of bridges and other barrier crossings.

Goal 2: To increase recreational bicycling and walking opportunities for residents and to enhance tourism and the economy of St. Croix County.

Objectives

- Continue to pursue improvements to identified bicycle and pedestrian facilities where needed.
- Acquire and develop abandoned railroad corridors for bicycle/pedestrian trails that provide a connection to other bicycle/pedestrian facilities, where feasible.
- Seek to acquire lands for proposed off-road trail systems.
- Develop funding sources that would support the development, operation, and maintenance of a bicycle/pedestrian trail system.
- Promote recreational bicycling and walking for its associated physical and mental health benefits.
- To pursue improvements that will provide safe recreational bike/pedestrian opportunities for families and children.

Goal 3: To promote a safe bicycling/walking environment in St. Croix County through facility improvements and education and enforcement programs.

Objective

- Increase the safety of bicycle and pedestrian transportation in the County through bicycle/pedestrian facility improvements and educational enforcement programs for bicyclists, motorists, and law enforcement personnel.

St. Croix County: 2014-2015 Bicycling and Pedestrian Survey and Safe Routes to School Survey Report

In 2014-2015, the UW River Falls Survey Center conducted a survey of St. Croix County residents regarding bicycling and walking habits and perceptions. The Center distributed 1,700+ random surveys in the mail and received 626 responses. This results in a 95% confidence level with a +/- 3.1% margin of error.

Summary of Results

- A slight majority of respondents believe bike and/or walkability is important or very important when choosing where to live or work.
- Approximately two-thirds of respondents said that it is important or very important for county and local governments to invest in bicycle and pedestrian systems.
- When residents were asked to identify the top benefits and uses of bicycle and pedestrian systems in St. Croix County, most respondents believe that exercise/health and recreation are the most important.
- Approximately 4 in 10 respondents describe their level of comfort or confidence with respect to bicycling as "casual" – preferring separate paths, but riding on roads where space is available and traffic is manageable.
- Generally, females and younger respondents appear to be more active and interested in biking and pedestrian systems in the County.
- Nearly three-fourths of respondents never bike between home and work, school, or to run errands. Approximately one-half of respondents never bike for social, recreation, or exercise.
- More than one half of the respondents said motor vehicle traffic and lack of connected multi-use trails and sidewalks discouraged their biking and walking.

Town Plans and Policies

Town of Cady Comprehensive Plan 2009-2030

This plan addresses biking and walking through one of the plan's objectives ("Explore the establishment of bicycle routes and recreational trails in the Town") and one strategy ("Inventory possible corridors and locations for pedestrian, bicycle, and equestrian recreational trails in the Town").

Eau Galle Comprehensive Land Use Plan (2006)

A bicycle and pedestrian path (Wildwood Trail) exists on the old railroad bed that extends from the Village of Woodville south (along either side of 250th Street) to Pierce County. St. Croix County has the responsibility of this path. Roadside bike and pedestrian path routes are included in the St. Croix County Highway Department Bicycle/Pedestrian Transportation Plan. This Plan serves as a tool for reference when improving roadways. If the designated bike/pedestrian routes are being considered for improvement, the Town will review the improvements desired for bike and pedestrian transportation. Funding is a separate issue to be considered along with the improvement decisions. The safety of residents and the traveling public are of utmost importance during the development and maintenance of these transportation facilities.

The Bicycle/Pedestrian Transportation Plan recommends three facility types (shared roadway, paved shoulder and path or trail). CTH "N" and the Wildwood Trail are the only designated Bicycle/Pedestrian routes listed on the plan that run through Eau Galle, and no bicycle/pedestrian traffic is allowed on I-94.

Shared roadway: Roads with relatively low traffic volumes and able to meet the suitability standards, and can be safely shared by bicyclists, pedestrians and motorists with no additional improvements necessary. All other Eau Galle roadways not listed on the county designated bike/pedestrian plan currently handle the local bicycle and pedestrian traffic as designed. Bikes and pedestrians use the gravel shoulders when necessary and share the roadway with vehicle traffic in a safe and efficient manner through the current traffic laws.

Paved shoulder: Rural collector highways that are not suitable as shared roadways should have paved shoulders to a minimum width of three feet to accommodate bicycle/pedestrian traffic. There are no designated roads in Eau Galle of this type.

Path/Trail: A bike/pedestrian path/trail should be physically separated from motor vehicle traffic by an open space or barrier and may be within the road right-of-way or within an open space. They should be constructed with an 8-10 foot wide paved surface and a two-foot clear zone on each side to accommodate two-way travel. Structures such as bridges, overpasses and underpasses should be constructed 10-12 feet width where feasible. St. Croix County is currently improving this facility (Wildwood Trail).

Town of Forest Comprehensive Plan 2009-2030

This plan addresses biking and walking through two objectives and associated strategies.

Objective 3: Coordinate transportation projects with neighboring municipalities and St. Croix County.

Strategies:

- Work with adjoining towns to plan, construct and maintain those roads that affect both jurisdictions including cost sharing where appropriate.
- Work with St. Croix County on the implementation of the 2008 St. Croix Bicycle and Pedestrian Plan.

Objective : Explore the establishment of bicycle routes and recreational trails in the Town.

Strategy:

- Inventory possible corridors and locations for pedestrian, bicycle, and equestrian recreational trails in the Town.

The Town currently allows ATVs on all Town roads pursuant to Ordinance No. 01- 2009. Portions of County highways in the Town of Forest have been identified in the Wisconsin Bicycle Transportation Plan 2020 as having positive conditions for bicycling. The Town also contains one established County snowmobile route. These recreational transportation activities are not inconsistent with this Plan, though the Town expresses an interest to participate in the planning and review of any future recreational trails and transportation routes.

Town of Kinnickinnic Comprehensive Plan (2008)

Even though the Town of Kinnickinnic is primarily rural and does not have many areas of activity connected by pedestrian or bike trails, residents of the town may benefit from the presence of trails that connect residential areas with recreational and commercial areas in the future. Trail systems that connect residential areas to other activities can help reduce the amount of traffic on the town's roads, while connecting trails that link recreational areas with commercial areas in the town can promote tourism in the local economy. Currently, the Town of Kinnickinnic does not have any bike/pedestrian trails.

St. Joseph Bicycle & Pedestrian Facility Implementation Study (2014)

This plan studies potential implementation of select alignments that meet Town priorities and are best positioned to connect key community destinations with the Loop Trail. The St. Joseph Parks, Trails and Recreation Committee prioritized the following alignments for this study:

- River Road (Alignment 1A)
- Anderson Scout Camp Trail (Alignment 4A)
- State Highway 35 (Alignment 2A)

Recommendations

The following are recommendations regarding next steps in pursuing funding and implementation of preferred trail alignments.

- Develop a community vision for trails and recreational opportunities. Incorporate this plan with discussion of preferred trail alignments into the Town's upcoming Comprehensive Plan.
- Use Comprehensive Plan outreach opportunities to create a shared vision in support of these community trails.
- Participate in the upcoming public outreach process for the Willow River State Park master plan amendment to show support for additional bicycling trails in the park and express the desirability of a connection from the Loop Trail into the park via St. Joseph.
- Participate in the St. Croix County bicycle and pedestrian planning process to build county-wide support for trails and identify opportunities for collaboration with other entities in the County to support bicycling facilities.
- Participate in conversations with the Wisconsin DOT to understand and influence final design of the Loop Trail and facilities that meet bicycling needs along State Highway 35.

The plan also identified specific action steps for the three alignments listed above.

Town of St. Joseph Outdoor Recreation Plan (2013)

This plan identifies an integrated loop trail system, connecting the Willow River State Park, the County Homestead Parklands Park, and the Loop Trail of the St. Croix River Crossing, Town of St. Joseph Parks, and adjoining communities' trail systems, especially the Town of Somerset, the Town of Hudson, and other points of interest. Benches, rest areas, viewing sites, and landscape plantings should be incorporated to unify the look of the trail system. Trail connectivity should be a primary consideration when determining trail locations.

Goals - Hiking, Biking, and Other Trails

- Provide an accessible and interconnected loop trail system that links parks, open space, and points of interest.
- Provide trail facilities that are scenic, provide a satisfying recreational experience and are in harmony with the Town's natural resources.
- Create multipurpose trail corridors where uses are compatible.
- Create trails which connect with other communities' trail systems and which connect with recommended St. Croix County trail corridors.
- Work with other governmental entities to determine who is best suited to accept ownership of the St. Croix River Crossing Loop Trail from the Historic River Bridge to the New River Bridge.

Objectives/Policies - Hiking, Biking, and Other Trails

- Create a list for the development of the designated trail system.
- Acquire land or property easements to continue the development of the trail system.
- Develop pathways in roadway rights-of-way as roads in the community are improved.
- Provide off road trails whenever possible since these are safer and more pedestrian and user friendly than those along roadways.
- Develop trails so that the residents in the Town are no more than 1 mile from a hiking/biking trail.
- Designate the use of snowmobile and horse trails to help maximize the safety of trails for all users.
- Minimize the removal of trees, shrubs and other vegetation to preserve the natural beauty of the area when constructing bicycle and pedestrian trails in wooded and wetland areas.
- Trails should be located within a 20' easement if possible.
- Trails should be 8'-10' wide, and made of bituminous material, if possible.
- To the extent economically and physically feasible, create American Disabilities Act compliant accessibility.

This plan also includes an action plan for eight specific bikeway/trail alignments.

Town of Somerset Comprehensive Plan (2015)

This plan recognizes and states that pedestrian and bicyclist traffic is not just recreational, but is an alternative to the automobile for many purposes, including commuting to work, shopping, visiting neighbors or service providers, and safe routes to school. Due to the lack of density in the Town, there are very few opportunities to walk and bike for functional reasons. Therefore, the majority of walking and biking for Town residents are for recreational purposes. Previous survey results showed that 67 percent of respondents agreed or strongly agreed that there should be more biking and walking lanes along public roadways within the community. In addition, 70 percent agreed or strongly agreed that there should be more off-road biking and walking trails in the Town.

Town of Somerset Comprehensive Parks & Recreation Plan (2013)

The Town of Somerset Comprehensive Parks and Recreation Plan *2013-2018* includes the following recommendations that also apply to non-recreational bicycle and pedestrian traffic:

- Establish bike route signage on heavily travelled roads
- Promote connector trails between existing and new developments for pedestrians and bicycles, including between River Hawk Rice to Pine Cliff to Whispering Pines
- Develop a comprehensive trail system connecting neighborhoods, bike paths, parks, etc.
- Create ADA-compliant accessibility where economically and physically feasible.

Appendix A of the Parks and Recreation Plan identifies the existing bike and pedestrian routes within the Town of Somerset. Outside of Parnell Prairie and the Boy Scout Camp, no off-road trails existing with the Town.

Appendix B identifies proposed trail corridors.

2006 Heartland Comprehensive Plan (Town of Baldwin, Town of Cylon, Town of Hammond, Town of Pleasant Valley, Town of Stanton)

St. Croix County prepared a 1995-2015 bicycle transportation plan that proposes a bikeway system of 258 miles throughout the county. The proposed bikeway system includes County and town roads in the towns of Baldwin, Cylon, Hammond, Pleasant Valley and Stanton. County-wide it would consist of 187 miles of shared roadways, 52 miles of paved shoulders and 19 miles of bicycle paths/trails.

The recommended routes in the Heartland Towns are either shared roadways or paved shoulders based on traffic levels, pavement condition and width and shoulder width. Bicycle traffic is allowed on most roadways, but these are recommended as the most direct routes to between locations. The recommended bicycle routes are signed but not all improvements have been made.

Recommended routes through Stanton and Cylon on 235th Street, County Roads H and C/CC connect Star Prairie and Deer Park with New Richmond. Routes on County Road T, E, J and D, and Rose Lane connect Stanton, Cylon, Hammond, Baldwin and Woodville. Routes on 160th, County Roads TT, J, N, W, M and Z connect Pleasant Valley with Roberts and Hammond. Only one section of roadway in the Heartland towns was identified as needing improvement. County Road T from STH 64 to County Road J, south of the Village of

Hammond should have three to four foot paved shoulders added and signed for bicycle use. Because of the increasing popularity of the use of the bicycle for recreational and commuting purposes and the population growth in St. Croix County, the county should pursue the implementation of the proposed bikeway system.

Given the increase in traffic on county and state roads, the Towns in the Heartland Project should encourage the County to revisit the bicycle transportation plan and reevaluate the safety of the recommended routes. The towns may want to encourage the county to provide signed, paved shoulders whenever county roads are upgraded and where existing facilities can accommodate them to improve the safety and functionality of the system.

2006 Heartland Comprehensive Plan – Town of Baldwin

Goal: Provide a safe and efficient transportation system that meets the needs of multiple users.

Objectives:

- Ensure transportation system improvements are coordinated with land development desires.
- Maintain a cost effective level of service.
- Continue to support agricultural use of the transportation system.
- Coordinate multi-jurisdictional transportation system improvements and maintenance.

Policies:

- Continue to update and implement the Pavement Assessment Surface Evaluation Report (PASER) program to provide for the upgrading and maintenance of town roads.
- Work, both as a town and with the county, to properly place and maintain road signs in the town so that these signs are in compliance with the Federal Manuel on Uniform Traffic Control Devices.
- Consider implementing town road impact fees for any new development project that place burden on or require the upgrading of town roads.
- Continue posting weight restrictions on existing town roads and consider the weight limits on local roads when reviewing development proposals.
- Work with county, state and private landowners in ensuring that road-right-of ways are clear of visual obstacles, particularly at road intersections. Road right of- ways should be properly mowed and cleared.
- Consider requiring developers to provide bonds to repair damage to town roads caused by construction traffic.
- Remove the signs and recommended bike route from Rose Lane because of safety concerns and work with the county and adjoining municipalities to find an alternate route.

- Continue to communicate and work with the Wisconsin DOT on the US 63 corridor preservation project.

2006 Heartland Comprehensive Plan – Town of Cylon

Goal: Cylon's transportation system should provide for the efficient and safe movement of people and goods; serve the planned land use pattern; minimize negative impacts such as congestion, noise and air pollution and meet the needs of multiple users and transportation modes.

Objectives:

- Ensure that transportation system improvements are coordinated with land development desires.
- Coordinate multi-jurisdictional (town, village, county, state) transportation system improvements and maintenance in the Cylon area.
- Provide for adequate road capacities and road conditions.
- Consider the development of transportation system improvements for biking, hiking and other transportation modes.
- Preserve the scenic value along certain roadways to protect and enhance Cylon's rural character.

Selected Policies:

- Continue to work with the county to update and implement Town Road Improvement Programs (TRIPs) to provide for the appropriate upgrading of town roads.
- Work, both as a town and with St. Croix County, to properly place and maintain road signs in the town so that these signs are in compliance with the Federal Manual on Uniform Traffic Control Devices.
- Work with the county, state and private landowners in ensuring that road rightof- ways are clear of visual obstacles, particularly at road intersections.
- Continue posting weight restrictions on existing town roads and consider the weight limits on local roads when reviewing development proposals.
- Work with St. Croix County, Wisconsin Department of Transportation, landowners and private developers to limit development along U.S. Highways 63 and State Highways 64 and 46 to help preserve them as throughways and scenic image corridors.
- Discourage large amounts of "side of the road" development on State and County highways to prevent congestion and preserve rural character.
- Encourage bicycle traffic to utilize less traveled town and county roadways.
- Update, as necessary, standards for development of local and county roads to safely serve multiple functions while retaining rural character.
- Plan for the extension of town roads and other arterial and collector streets as necessary to complete connections, provide for appropriate routes for trucks and emergency vehicles and serve planned development areas.
- Consider planning and implementing a network of interconnected new roads to control highway access, preserve rural character, improve access to new development, minimize extensive road construction and decrease road maintenance costs.
- If appropriate, consider implementing town road impact fees for new development projects that place a burden on or require the upgrading of town roads.

2006 Heartland Comprehensive Plan – Town of Hammond

Goal: Provide a safe and efficient transportation system that meets the needs of multiple users.

Objectives:

- Ensure transportation system improvements are coordinated with land development desires.
- Provide for adequate road capacities and road conditions.

- Support the development of facilities that accommodate biking, hiking, and other modes of transportation.

Policies:

- Continue to update and implement the Pavement Assessment Surface Evaluation Report (PASER) program to provide for the upgrading and maintenance of town roads.
- Work, both as a town and with the county, to properly place and maintain road signs in the town so that these signs are in compliance with the Federal Manuel on Uniform Traffic Control Devices.
- Consider implementing town road impact fees for any new development project that place burden on or require the upgrading of town roads.
- Discourage "side of the road" residential and commercial development on State and County highways to prevent congestion and preserve rural character.
- Work with county, state and private landowners in ensuring that road-right-of ways are clear of visual obstacles, particularly at road intersections. Road right-of- ways should be properly mowed and cleared.
- Enforce weight restrictions on existing town roads and consider weight limits when reviewing development proposals.

2006 Heartland Comprehensive Plan – Town of Pleasant Valley

Goal: Provide a safe and efficient transportation system that meets the needs of multiple users.

Objectives:

- Ensure transportation system improvements are coordinated with land development desires.
- Provide for adequate road capacities and road conditions.
- Support the development of facilities that accommodate biking, hiking, and other modes of transportation appropriate to the character of Pleasant Valley.

Policies:

- Continue to update and implement the PASER program to provide for the upgrading and maintenance of town roads.
- Work, both as a town and with the county, to properly place and maintain road signs in the town so that these signs are in compliance with the Federal Manual on Uniform Traffic Control Devices.
- Consider implementing town road impact fees for any new development project that place burden on or require the upgrading of town roads.
- Support access control and rural character objectives by encouraging development design that is screened from public road view.
- Accommodate bicycle traffic on town and county roadways.
- Work with county, state and private landowners in ensuring that road right-of-ways are clear of visual obstacles, particularly at road intersections. Road right-of-ways should be properly mowed and cleared.
- Enforce weight restrictions on existing town roads and consider the weight limits on local roads when reviewing development proposals.

2006 Heartland Comprehensive Plan – Town of Stanton

Goal: Stanton's transportation system should provide for the efficient and safe movement of people and goods serving the planned land use pattern and minimize negative impacts such as congestion, noise and air pollution.

Objectives:

- Ensure transportation system improvements are coordinated with land development objectives.
- Provide for safe and adequate road capacities and road conditions.

- Coordinate multi-jurisdictional (town, village, city, county, state) transportation system improvements and maintenance in the Stanton area.
- Encourage the development of facilities that accommodate biking, hiking, and other modes of transportation appropriate to the character of Stanton.

Selected Policies:

- Continue to work with the county to update and implement Town Road Improvement Programs (TRIPs) to provide for the appropriate upgrading of town roads.
- Work, both as a town and with St. Croix County, to properly place and maintain road signs in the town so that these signs are in compliance with the Federal Manual on Uniform Traffic Control Devices.
- Require developers to provide bonds to repair damage to town roads caused by construction traffic.
- Attempt to minimize the negative impacts of proposed transportation facility expansions by implementing town road impact fees for any new development projects that place a burden on or require the upgrading of town roads or create a need for new town roads.
- Work with WisDOT on its efforts to limit access onto Highway 64/63, without limiting access over or under that highway.

Town of Emerald and Village of Deer Park 2010-2035 Comprehensive Plan

The Town of Emerald and Village of Deer Park cooperatively developed a shared comprehensive plan, which included references to a bikeway and trail system. The plan provided an overview of how the Town and Village have been involved in past bicycle and pedestrian planning efforts led by St. Croix County. Recommended bicycle route upgrades are shown on the plan's Transportation map. Generally the recommended improvements are additional shared roadways, off-road bike paths or paved shoulder with bike route designation. Additional shared roadways do not require any improvements. Based on the 2008 plan, the Town of Emerald may encourage the county to provide signed, paved shoulders whenever county roads are upgraded and where existing facilities can accommodate them to improve safety and functionality of routes.

Town of Star Prairie 2010-2030 Comprehensive Plan

This plan provides an overview of how the Town has been involved in past bicycle and pedestrian planning efforts led by St. Croix County. The Town of Star Prairie's residents indicated strong interest in additional bicycle routes or trails in the town survey and kickoff workshop. The plan indicates recommended bicycle route upgrades on a Future Bike Routes map. Generally the recommended improvements are off-road bike paths or paved shoulder with bike route designation. The Town may encourage the County to provide signed, paved shoulders whenever county roads are upgraded and where existing facilities can accommodate them to improve safety and functionality of routes.

Town of Troy Comprehensive Plan (2014)

In this plan, the Town of Troy states that it will continue to evaluate and improve its multi-modal transportation system when feasible. There are several bike routes in Troy (shown on Map 4-4 in the plan). When Town roads are constructed or reconstructed, they will be evaluated for future bike and pedestrian needs. The Town at this time does not have a designated pedestrian trail system however they do participate in St. Croix County transportation planning and some individual subdivisions include their own trails. The plan includes several relevant policy statements, as shown below.

Policy Statements

- Maintain and update the Transportation Study periodically for the purposes of planning and a Capital Improvements Plan.
- Assure all roads built by developers meet the Town of Troy's standards.
- Continue to update the Town of Troy's Transportation Study.
- Road design should be consistent with Town of Troy's policy of preserving "best-farmable land."
- Road design should follow the natural contour of the topography.

- Encourage developers to design and construct alternative non-road connections (i.e. bicycle/pedestrian routes or trails) within and adjacent to developments.
- Coordinate with St. Croix County in implementing a regional bicycle/pedestrian path system.
- Maintain existing riverway access.
- Support Park Board's efforts to implement its long-range park plan as it relates to trails and bikeways.
- Work in conjunction with developers to expand and coordinate future recreational facilities with existing facilities.

City and Village Plans and Policies

Village of Hammond Pedestrian Access Plan (2004)

The Village of Hammond adopted its 2025 Comprehensive Plan in 2004. The Comprehensive Plan is a planning tool for updating ordinances, and a guide for actions affecting growth and development within the jurisdiction of the Village of Hammond. Part of the Comprehensive Plan is the 5-year action plan. One of the five objectives within the 5-year action plan is to prepare the Village outdoor recreation plan. The sidewalk plan merged with the outdoor recreation plan, as the two plans are interrelated. The new plan has been referred to as the Pedestrian Access Plan, as it covers the sidewalk planning, and the outer recreation trail plan.

The goals of the Pedestrian Access Plan are listed below:

- Satisfy the 5-year action plan component of the 2025 Comprehensive Plan
- Provide connectivity of sidewalks to achieve WisDOT permitted crossings of USH 12 within the Village.
- Provide improved pedestrian use of sidewalks to public places, safe crossings at highways and railroads, improved access to the downtown business district.
- Satisfy WisDOT Safe Routes to School planning requirements for grant applications related to pedestrian enhancement projects.
- Incorporate findings from the Outdoor Recreation Planning efforts of the Village, and the St. Croix County Parks and Recreation Bicycle and Pedestrian Plan.

Village of North Hudson Outdoor Recreation/Park Plan 2014-2019

This plan includes several objectives that relate to biking and walking:

- Obtain sites for future parks, playgrounds, trails, and access to natural areas, as opportunities arise.
- Provide reasonable access to waterways and public recreation areas.
- Develop a five year capital improvement schedule that addresses the short, medium, and long-term priorities identified in this plan.
- Work with public and private programs to identify funding sources to implement this plan.

Village of Roberts Outdoor Park and Recreation Plan (2014)

The Village of Roberts has a five-year outdoor recreation plan to ensure that Village residents have adequate facilities available to them to satisfy their recreational needs. In addition to the 1,649 residents of the Village, tourists and seasonal residents enjoy the recreational opportunities that exist in and around the Village. The plan identifies several future bicycle and pedestrian improvements, including:

- New trail linkage to existing park facilities
- Improved directional and wayfinding signage
- Possibly coordinate with wayfinding Village-wide.

Village of Somerset Safe Routes to School Plan (2008)

The overall goals of the Village of Somerset Safe Routes to School Plan are to:

- Continue the Village's commitment to making sidewalk and bike trail improvements.
- Maintain good communication with residents, the Somerset Police Department, and the School District of Somerset to identify areas where improvements are needed and safety issues arise.
- Create a connected network of safe sidewalks and bike trails that residents of all ages can enjoy.

The Safe Routes to School Committee members identified areas in the Village where pedestrian and bicycle infrastructure improvements are needed. A count of existing bike racks was performed for each school.

Village of Somerset Outdoor Recreation Plan 2013-2018

In 2002, the Village of Somerset developed a Proposed Sidewalks and Bike Trails map as part of its Comprehensive Plan. The main purpose of the plan was to address the safety of pedestrians and bicyclist and to create an infrastructure that was connected to main traffic generators such as schools, commercial areas, and parks. The Proposed Sidewalks & Bicycle Trails map presented in the 2013 Outdoor Recreation Plan is an expansion of that initial planning process and is the official planning map for sidewalks and trails in the Village. The map shows proposed and existing sidewalk and bike trails for the Village of Somerset.

Sidewalk and Trail Categories

This plan's proposed sidewalks and trails have been categorized into three main classifications:

- Greatest Needs Areas: Areas where the Village has high safety concerns for its citizens and would also provide access to public buildings and downtown businesses. Somerset would like to see these in place as soon as possible.
- High Priority: Areas that address safety and connectivity issues but are not needed immediately. These would connect to Greatest Needs Areas after they are completed.
- Planned: Part of the Village's long- range plan for a connected pedestrian inspired transportation plan.

Interjurisdictional Coordination

Somerset's plan states that the Village should continue to plan bicycle and pedestrian routes with St. Croix County and surrounding Towns to ensure a well- connected and safe network. The plan goes on to state that joint planning is important as the new St. Croix River Bridge has been approved and bicycle trails are part of the planning and construction schedule.

Village of Spring Valley Comprehensive Plan 2009-2029

This plan includes several goals, objectives, and policies related to biking and walking. Some of the policy statements in this plan include:

- Consider requiring a Bike/Pedestrian Plan in new subdivisions and redevelopment to concentrate on connectivity.
- Visit and evaluate accident concentration sites for signage and visibility.
- Utilize signs and striping to ensure safe crosswalks for residents.
- Coordinate with surrounding municipalities, including the Towns of Gilman, Spring Lake, Cady and Eau Galle in developing a biking and walking trail network.
- Continue to pursue the extension of the Wildwood Trail into the Village connecting with the trail going to Elmwood.
- Research and apply for grants to offset the costs of sidewalks, trails, and road reconstructions.
- Continue to use a Capital Improvements Plan to plan and budget for future road maintenance.
- Provide multiple access points to subdivisions where possible.

City of Glenwood City Safe Routes to School Plan (2013)

The City of Glenwood prepared a City Bicycle, Pedestrian, and Safe Routes to School Plan with the goals of continuing the City's commitment to making sidewalk and multi-use trail improvements when economically feasible and creating a connected network of safe sidewalks and multi-use trails that residents of all ages can enjoy. The plan includes an inventory and assessment of existing sidewalks and multi-use trails, as well as an evaluation of bicycle infrastructure and needs. In addition, the Safe Routes to School Committee members were asked to identify areas within the City where pedestrian and bicycle infrastructure improvements are needed.

Proposed Sidewalk and Multi-Use Trail Considerations

The plan includes a Proposed Sidewalks and Multi-Use Trails map, which shows existing and proposed sidewalks along with multi-use trails planned in the City of Glenwood City. The proposed improvements would add approximately 1.2 miles of sidewalks and almost 1.3 miles of multiuse trails to the City's pedestrian and bicycle infrastructure. The Proposed Sidewalks and Multi-Use Trails map identifies proposed improvements and prioritizes them by category (short term, medium term, and long term).

City of Hudson Comprehensive Plan (2009)

Hudson's Comprehensive Plan identifies specific needs for bicycle and pedestrian facilities as part of its Park and Recreation section and Transportation section. The plan identifies the need to separate bicycle and motor vehicle traffic in hazardous locations, such as near Carmichael Road and Crestview Drive, by providing an alternate trail or route. The plan goes on to state that at other locations where bicyclists are anticipated, provisions for bicycles should be incorporated, even if it is just an extra 4 or 5 feet of width. Finally, the plan recognizes that care should be taken to have continuity and consistency in bicycle facilities.

In addition, this plan includes significant consideration for the development of park and pool/ride lots along the I-94 corridor to reduce congestion during morning and evening rush hour commute periods.

City of Hudson Parks & Outdoor Recreation Plan (2010)

This plan includes the goal of promoting the development and maintenance of a community pedestrian and bicycling trail system within the City of Hudson. An associated objective of the plan is to create pedestrian and non-motorized connections to parks to existing and future neighborhoods. In 2006 the City of Hudson in conjunction with updating the city's comprehensive plan surveyed city residents to solicit responses in regard to a number of community issues including the park system. Responses received indicated a strong desire for bikeways and trails.

City of New Richmond Bicycle and Pedestrian Comprehensive Plan (2003)

This plan included numerous goals, objectives, and policy statements that were identified through a community planning process. Some of the most relevant statements include:

- Support the continuation of the Multi-Purpose Pathway Steering Committee to ensure plan implementation.
- Conduct periodic bike counts at key intersections and destination points.
- All arterials and collectors should accommodate bicycles through 1) wide curb lanes (14 foot minimum) or 2) marked on-street bike lanes (5' min.); or 3) offstreet paths (8' min.). Where major streets exist that presently do not safely accommodate cyclists (e.g., Knowles) and where improvements are cost prohibitive, adjacent streets should be utilized as alternatives.
- Changes to better accommodate bicyclists should be part of all new road improvement or construction plans.
- Implement a sidewalk policy that will ensure safe pedestrian travel. Sidewalks should be required in residential areas and business districts where the roadway is busy and deemed unsuitable for children on foot or wheel chair occupants.
- Develop or encourage safety education programs in the public schools.
- Target enforcement at motorists to protect cyclists and pedestrians.
- Collect and analyze accident data through hospital and police to target problem areas.
- Work with county and township officials to ensure continuity and connectivity.
- Acquire rights of way and require construction of facilities in developing and redeveloping areas as part of the annexation and/or building permit process.
- Integrate bike routes with new subdivisions and plat approvals in townships and City.
- Institutionalize safe access for bicyclists and pedestrians through design standards and new policies.
- Allow people who do not have access to a private automobile, or are unable or choose not to drive to meet their needs without undue risks or inconvenience.

City of New Richmond Comprehensive Plan (2005)

This plan identifies that one of the most cost-effective ways to enhance bicycle and pedestrian accommodations is to incorporate them as part of larger reconstruction, new construction and some paving projects. Generally, the same sources of funding that are used for larger highway improvements can provide for bicycle and pedestrian access, if the bike/ped improvement is "incidental" in scope and cost to the overall project.

The plan discusses the characteristics of people that bike within the City. Highlights include:

- The largest number of bicycle users within the City of New Richmond are children; Children, aged 12-14, represented 100 percent of bicycle crash victims from 1998- 2001.
- About one percent of New Richmond's workforce commutes by bicycle.
- The greatest generator of bicycle travel is the New Richmond Middle School. The West Elementary School is the second largest generator. Recreational riding may be a greater generator than transportation purposes especially during fair-weather days.
- Many of the new subdivisions are not conducive for bicycling and walking, as many destination points can only be accessed through the use of high speed and/or narrow rural roads.
- There is little awareness about the rights and responsibilities of bicyclists.
- There is a need for a comprehensive education program at the elementary and/or middle school level.

River Falls Bicycle and Pedestrian Plan (1995)

The overall goal of this planning effort was to recommend facilities and policies that will encourage increased levels of bicycling and walking while creating a safe, comfortable environment for existing users. Specific objectives designed to accomplish this goal include:

- Facilitate public participation in the planning process.
- Identify the needs of different user groups of users and design a system for all ages and abilities.
- Create a bicycle transportation system accessible within a two-minute ride of all urban residences and make the pedestrian system directly accessible (one or both side of all city streets) to all residences.
- Focus the development of facilities on schools, the downtown area, other commercial areas, transportation nodes and the University.
- Design an off-street, grade/automobile separated, bicycle and pedestrian system integrated into the overall transportation system.
- Recommend bicycle and pedestrian support facilities at transportation nodes, schools and businesses.
- Integrate the plan with adjoining towns and counties.
- Develop a phased development plan and budget to accomplish the stated goals and objectives and identify funding strategies for implementation.
- Recommend community policies such as minimum road width standards and options to accommodate bicyclists on all streets.
- Recommend educational, maintenance and enforcement activities to enhance the safety of bicycling and walking.

Comprehensive Plan for the City of River Falls (2005)

River Falls' comprehensive plan reflected the goals and objectives of the 1995 Bicycle and Pedestrian Plan. It also called for the 1995 Plan to be updated by integrating existing bicycle and pedestrian facilities. Planning and design considerations should be explored to identify and recommend additional corridors for bicycles and pedestrian ways.

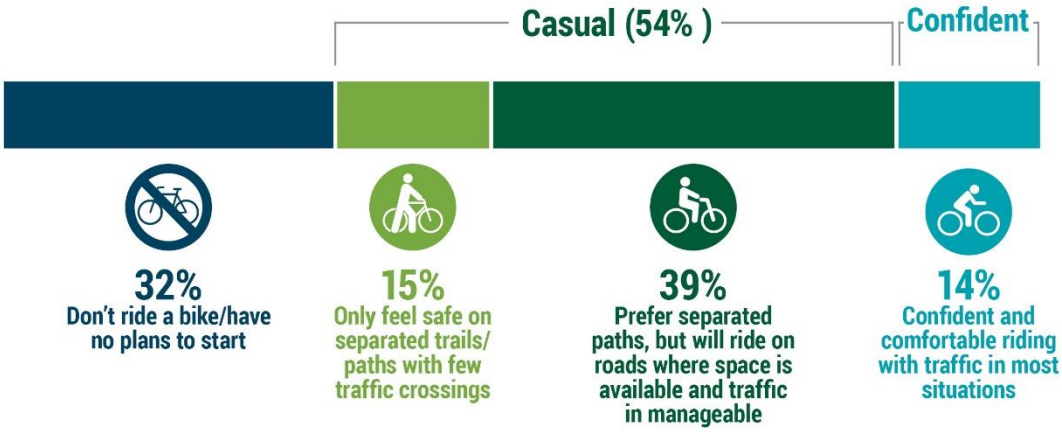
4.2 Traffic Stress Analysis Methodology

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

Types of Bicyclists and the New "Typical Bicyclist"

Anecdotal experience[1] supplemented with survey-based research[2] indicates that people (whether or not they regularly ride a bicycle) fall into one of four categories (see Figure 4-1), based on their traffic stress tolerance or comfort, confidence, and willingness to interact with motor vehicle traffic. In 2014 and 2015, the Survey Research Center at UW River Falls conducted a survey of St. Croix County residents. The survey sought to classify bicyclists within these four categories. The findings are that the majority of people have a low tolerance for interacting with motor vehicle traffic—the group labeled "casual bicyclists."

Figure 4-1: Types of Bicyclists in St. Croix County



The UW River Falls Survey Center distributed 1,700+ random surveys by mail throughout the county and received 626 responses. This results in a 95% confidence level with a +/- 3.1% margin of error.

The research and thinking surrounding this method for classifying the general population by traffic stress tolerance posits that the "Interested but Concerned" portion of the population is not bicycling very often, at least not on streets with little separation between bicycles and cars. Figure 4-1 illustrates that the majority of the population that currently or might bicycle (the "casual" categories) are concerned about interactions with motor vehicles, which indicates that **separation from motor vehicle traffic may be the most important factor to consider to encourage more people to bicycle**.

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

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

Level of Traffic Stress Methodology for Urban Streets

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

As opposed to other methods to determine the suitability of streets for bicycling (mentioned previously), the LTS method provides a greater weight to motor vehicle traffic speeds and volumes. While most people are comfortable bicycling on quiet streets, the LTS method requires physical separation between bicycles and cars when traffic volumes and speeds exceed certain thresholds. This is important because, as noted above, separation from motor vehicle traffic may be the most important factor to consider to encourage more people to bicycle.

Figure 4-2: Level of Traffic Stress (LTS) Definitions

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

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

The LTS model can factor traffic stress along street segments, intersection approaches, and street crossings in determining an overall score for a segment. The method uses several base criteria for determining traffic stress (street width, motor vehicle speed, and presence of on-street parking) as well as additional criteria depending on facility type (bike lane width, traffic volume when streets do not have bike lanes, and number of driveway/street crossings for paths).

Figure 4-3 illustrates how LTS is calculated for various types of streets. The factors included in this table have been tailored specifically for St. Croix County.

Figure 4-3: Level of Traffic Stress (Tailored for St. Croix County)

Level of Traffic Stress	Shared Streets*	Bike Lanes* not Alongside a Parking Lane (not calculated)	Bike Lanes* Alongside a Parking Lane (not calculated)	Shared-Use Paths* (trails)
LTS 1	≤ 25 MPH One travel lane in each direction	≤ 30 MPH 1 lane† Bike lane ≥ 6 feet	≤ 25 MPH 1 lane† Bike lane ≥ 7 feet	Completely separated from car traffic ≥ 10 feet wide
LTS 2	≤ 30 MPH One travel lane in each direction	≤ 30 MPH 2 lanes Bike lane 4-6 feet	≤ 30 MPH 1 lane Bike lane 6-7 feet	Along streets with few driveway/street crossings ≥ 10 feet wide
LTS 3	≤ 25 MPH Two travel lanes in each direction	≤ 35 MPH > 2 lanes Bike lane 4-6 feet	≤ 35 MPH ≥ 2 lanes Bike lane 5-6 feet	Along streets with many driveway/street crossings 8 feet wide
LTS 4	> 30 MPH More than two travel lanes in each direction	≥ 40 MPH > 2 lanes Bike lane < 4 feet	≥ 40 MPH ≥ 2 lanes Bike lane < 5 feet	n/a

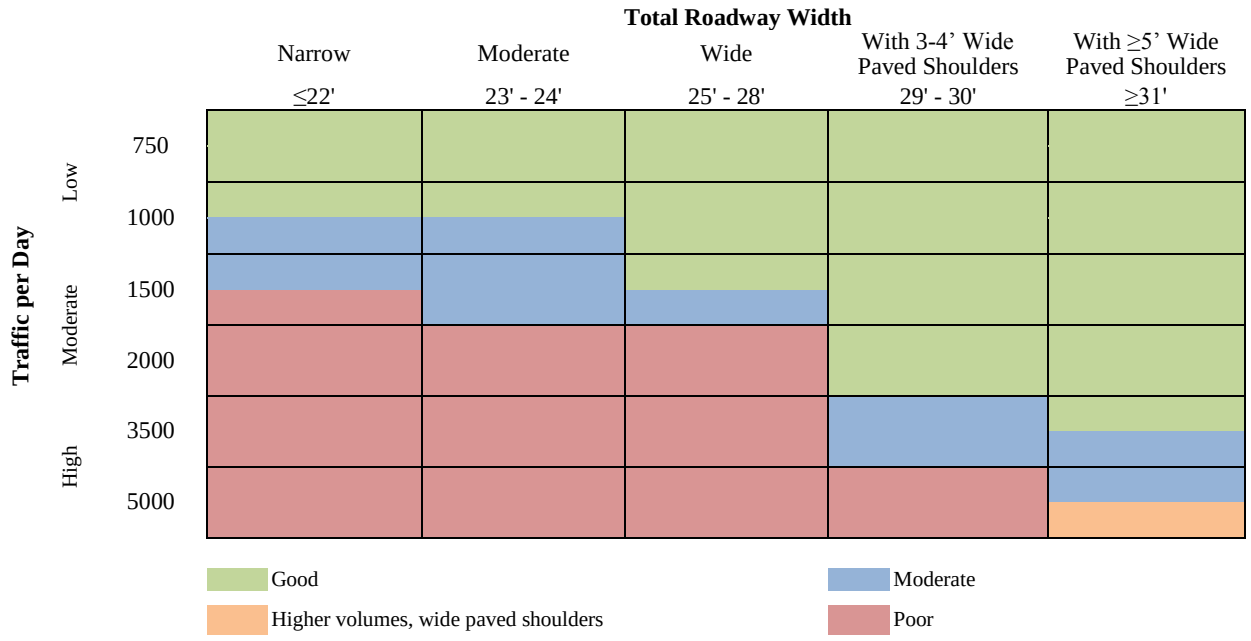
*Shared streets include sharrows, neighborhood streets, and any street without a dedicated bicycle facility. Bike lanes may include paved urban shoulders. The LTS model developed by the Mineta Transportation Institute does not consider shared-use paths; however, the LTS was tailored for St. Croix County to account for an assessment of its shared-use paths.
† Travel lanes in each direction (does not including bike or parking lanes).

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

Rating Rural Roads

The LTS model described on previous pages is based on urban and suburban contexts and cannot be applied to rural roads for this reason. However, the Wisconsin Department of Transportation (WisDOT) has a methodology for calculating bicycle compatibility for rural roads, which has been used for several decades in Wisconsin, Iowa, and other states. The model was designed to be sensitive to the conditions of low and moderate volume rural roadways and was based on the probability of a conflict between bicyclists and passing vehicles based on research performed as part of a National Cooperative Highway Research Program (NCHRP) study.[3] Very few rural roads with low volumes of traffic have enough width to allow three vehicles (two passing motorists and a bicyclist) to comfortably share the same linear space. The statistical probability of motor vehicle/bicycle conflict has a major impact on the suitability of a roadway for shared use and overall safety. The model was made sensitive to volumes based on earlier research conducted for warranting passing lanes on highways. The model uses factors including average daily traffic volume, roadway width, percent solid yellow center line, and percent truck traffic. Based on a combination of these factors, roadway segments are rated "good", "moderate," or "poor." A generalized explanation of the methodology is displayed in Figure 4-4.

Figure 4-4: Generalized Bicycling Conditions for Rural Roadways[4]



For purposes of analyzing the suitability of St. Croix County's transportation system for bicycling, the categories shown in Figure 4-2 were correlated with Level of Traffic Stress ratings, as shown in 4-5 below. Because of the higher traffic speeds experienced along rural roadways, the "Best conditions" category is associated with LTS 2. This indicates that while most adult bicyclists should be comfortable using a "Best conditions" rural road, this type of road would likely not be appropriate for younger children.

For the sake of simplicity, the LTS categorization scheme (1-4) is used for mapping urban as well as rural traffic stress. Category 1 does not appear in rural areas because there is no associated rural roads rating category, as explained in the previous paragraph.

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

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

Figure 4-5: Correlation between Urban and Rural Traffic Stress Ratings

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