



Bicycling into the 21st Century via the Wisconsin Bicycle Transportation Plan

(A Summary of the Final Plan)

This summary outlines the key elements of the Wisconsin Bicycle Transportation Plan prepared by the Wisconsin Department of Transportation (WisDOT) with the assistance of a Bicycle Advisory Committee. The vision statement for this plan is:

“To establish bicycling as a viable, convenient and safe transportation choice throughout Wisconsin.”

In many Wisconsin communities, bicycling and walking are the primary ways people get to school. Bicycle trips also make-up approximately 1% to over 5% of all work-related trips in Wisconsin’s metropolitan areas during the peak bicycling months. As Wisconsin moves into the 21st century, it is likely that an even greater number of people will be bicycling for commuting, utilitarian, social, recreational, or exercise purposes.



Bike lane shoulder on Hwy 23

In surveys, people have stated that they would be more likely to bicycle if cycling were made safer and more convenient. This plan promotes the increased use of bicycling. Bicycling benefits Wisconsin in many ways: improving health, moving people and allowing them to park inexpensively, reducing congestion and air pollution, and providing a primary means of transportation (along with walking) for children and households with no car or driver.

Bicycling plays an important role in moving people. WisDOT recognizes the importance of the bicycle as a legitimate mode of transportation that can move considerable numbers of people, especially in urban areas and communities. The goals of this plan are to encourage bicycling and increase the number of bicyclists in Wisconsin. This plan presents a blueprint for improving bicycling conditions and encouraging bicycling in the state, and clarifies WisDOT’s role in that effort.

Lastly, but equally important, safety has always been a high priority for WisDOT. Today, thousands of bicyclists use state and local roads for bicycle travel. WisDOT is committed to considering the needs of bicyclists when roadway improvements are made. This is consistent with national requirements and guidelines and is viewed as means of integrating bicycling into the current transportation system.

Defining the Role of this Plan

Ensuring an interconnected transportation system across government boundaries and highway jurisdictions that can work safely for bicyclists is vital to achieving the goals of this plan. The plan identifies both state and local roles and responsibilities necessary to achieve this interconnected system. It addresses three different levels of state



interest in or responsibility for bicycle transportation: *state-owned*, *state-supported*, and *state-interest*.

The ***state-owned system*** includes the State Trunk Highway system (approximately 12,000 miles). This system is planned, designed, constructed and maintained by WisDOT. Bicycle accommodations on this system are governed by WisDOT's policies and decisions.

The ***state-supported system*** includes locally-owned roadways (including connecting highways) where there is state and federal investment in local government (county, village, city) projects. WisDOT collaborates in the decision-making process for projects on these routes, and thus influences the planning and design decisions made for those improvements, including the implementation of bicycle accommodations.

The ***state-interest system*** includes other local streets and town roads. A substantial amount of bicycle travel occurs on this system and its connectivity to the other systems is of major importance. WisDOT has an interest in ensuring that bicycle systems are interconnected and that this system serves both the mobility and access needs of bicyclists. However, unlike the other two systems, WisDOT has no oversight responsibilities for planning and designing this system. This plan therefore recommends, rather than requires, the types of bicycling accommodations needed on this system.

The goals, objectives, and implementation actions included in this plan apply directly to the state-owned and state-supported systems. However, WisDOT will work with local units of government to encourage the application of these goals, objectives, and actions in the planning, design, construction

or reconstruction of the state-interest system. Furthermore, the Wisconsin Statutes state that WisDOT "shall assist any regional or municipal agency or commission in the planning, promotion and development of bikeways."

As with any plan, the successful implementation of many of the recommended actions is dependent upon the level of funding at federal, state and local levels. Additionally, many of the improvements, especially in urban and suburban areas, will be a matter of local implementation. WisDOT cannot commit the financial resources of other agencies or public bodies, nor can it require bikeway accommodations on the local system.

Plan's Goals and Objectives

In light of the plan's vision statement, there are two primary goals of the bicycle plan:

- ◆ **Increase levels of bicycling throughout Wisconsin, doubling the number of trips made by bicycles by the year 2010.**
- ◆ **Reduce crashes involving bicyclists and motor vehicles by at least 10% by the year 2010.**

The following objectives have been established to attain the plan goals:

Objective 1 - Plan and design new and improved transportation facilities to accommodate bicyclists and encourage their use.

Objective 2 - Expand and improve a statewide network of safe and convenient routes for bicycle transportation and touring, including safe and convenient access to and through the state's urban areas.



Objective 3 - Provide consistent safety messages and training to all roadway users by expanding the range of education activities through driver licensing and training, bicycle safety education, increasing understanding of traffic laws, and provision of public service information.

Objective 4 - Improve the enforcement of laws to prevent dangerous and illegal behavior by motorists and bicyclists.

Objective 5 - Encourage more trips by bicycles by promoting the acceptance and usefulness of this transportation mode.

Current Conditions for Bicycling

Little is known about the level of bicycling in Wisconsin. Every 10 years, the U.S. Census Bureau reports information for a person's "usual and predominant" means of traveling to work. However, the census reports information for the last week in March, not the best time for bicycling in a northern state like Wisconsin. According to the 1990 census, 0.5% of the Wisconsin workforce commuted to work by bicycle during census week. Bicycle use for the summer months would be considerably higher. Despite inclement conditions of the census survey week, bicycle use for work trips exceeded 1% in several metropolitan cities. In the City of Madison, 3.3% of all residents commuted to work by bicycle, which was several times higher than the percentage of bicycle commuters in such warmer weather and larger metro areas as Dallas, Orlando, and Atlanta.

Another source — the 1995 National Personal Transportation Survey (NPTS) — can be used to provide an estimate of bicycle use in the state. The NPTS provides a year-round sample of households which is then weighted and adjusted to represent the entire population. According to the 1995 survey, 1.8% of all trips made each year by Wisconsin



Bicyclist in narrow lane

residents, age five and above, are made by bicycle.

Bicycling is a very popular means of making trips to and from school. This applies to college students, as well as to elementary and middle school students. In college cities, a significant portion of all school-destined trips are made by bicycle. The University of Wisconsin-Madison Transportation Department annually surveys students and employees and has consistently found that about 10% of all employees and about 25% of off-campus students commute to the University by bicycle during good weather months.

While conditions for bicyclists vary - from low traffic town roads and city streets to very busy urban thoroughfares - roadways have generally been built with little consideration of bicyclists. Wisconsin's county and town road systems are considered to be some of the best roads for bicycling in the Upper Midwest. However, this is due to their low traffic volumes, good surface conditions, and picturesque appeal, rather than to consideration for the needs of bicyclists. Most of the rural State Trunk Highway system now has a three-foot or wider paved shoulder. While shoulders were generally paved for maintenance and safety purposes, they also provide suitable accommodation for bicycle travel.



Few Wisconsin communities can genuinely be described as bicyclist-friendly. Many of the streets in urban areas are both low volume and low speed, making them suitable short-distance routes for adult and most child bicyclists. However, despite these relatively positive conditions, most major urban streets in the state do not have bike lanes or wide outside lanes to provide safer and more convenient conditions for bicyclists.

In newly developed or developing areas, a grid system of roads has often been set-aside in favor of a more hierarchical system, where most trips are channeled from local streets to major streets. In such situations, bicyclists have been left with few options, other than to travel on major roadways to make important connections to destinations both on and off these roadways. According to an assessment of street conditions conducted by WisDOT in 1993 and 1994, just 36% of major urban streets were considered wide enough to be suitable for bicycling. The remainder lacked wide curb lanes, bike lanes, bicycle paths or paved shoulders.

Many county and town roads adjacent to urban areas, which may have been fine for bicycling just 10 years ago, have seen tremendous increases in traffic volumes due to new development. Most of these roadways do not have either paved shoulders or lanes that are wide enough to provide adequate lane sharing for bicyclists and motorists. As a result, bicyclists often feel that they are being squeezed off the roadway by motorists who decide to pass without adequate safe clearance.

Public meetings were held midway through the development of this plan, and for the presentation of the final draft plan. Two concerns were voiced consistently and

repeatedly at all ten meetings: people wanted to have a safer bicycling environment and additional bikeways throughout the state. Specifically, many people were concerned with motorists' treatment of bicyclists and felt that more education for both motorists and bicyclists is essential. People almost universally supported current improvements and safety programs that benefited bicyclists, but wanted the plan to recommend that these improvement and programs be implemented more extensively across the state.

Benefits and Impacts of Bicycling

The benefits of bicycling can be generalized into the following categories: health, transportation, safety, environmental, transportation choice, efficiency, economic, and quality of life benefits. Costs are generally identified as those that are directly related to the increased costs of adding bicycle accommodations to roadway improvement projects.

Bicycling offers health benefits similar to any other form of cardio-vascular exercise. Bicycling, like walking, can be worked into people's daily activities so it becomes part of their regular routines, thereby freeing up the time it would otherwise require. This is a major reason why bicycle commuting is popular among many individuals. Bicycling is not only good for one's health, but it also is environmentally friendly. When bicycle trips replace motor vehicle trips, air emissions can be reduced. These reductions can be considerable within urban areas where bicycle use is high.

All roadway users benefit when bicycle accommodations are incorporated into roadway projects. Bicycle lanes, paved shoulders, and wide outside travel lanes generally require little additional pavement,



yet are important factors in improving roadway safety and capacity.



Wide outside travel lane

Lastly, bicycles are a relatively inexpensive means of personal transportation. They offer the flexibility of an auto, but often afford the rider a real time advantage over transit and autos for short trips. Most importantly, bicycles provide people with another transportation option, which is critical to those people - young and old - who do not possess a motor vehicle driver's license.

The cost of implementing this plan ranges from \$3 million to \$4 million per year for improvements to accommodate bicycles on the State Trunk Highway system. These accommodations can be in the form of paved shoulders, wider bridges, bicycle lanes, or bicycle paths. Of these improvements, paving shoulders is the least expensive, largely because wide gravel shoulders already exist on most State Trunk Highways.

Better News About Crashes

Because a goal of the Wisconsin Bicycle Transportation Plan is a 10% reduction in the number of bicyclist crashes, it is important to understand the nature and frequency of crashes today. During the past 25 years, the number of bicyclist fatalities resulting from collisions with motor vehicles in Wisconsin peaked at 40 in 1973 and has generally decreased since then — to a low of 9 in 1994.

The number of bicyclists injured in reportable crashes with motor vehicles peaked at 2,034 in 1987 and has generally decreased since then — to 1,632 in 1995. The majority of bicyclists in crashes were children. In fact, about 57% of all bicyclists in crashes were under 16 years of age, with 10 to 15 year olds alone accounting for 39% of the total. This situation is consistent with national figures.

According to data from 1987 to 1993, the vast majority (82%) of all bicycle crashes occurred in urban areas (places over 5,000 people). However, only 21% of all bicyclist fatalities occurred inside those communities. In contrast, only 5% of all bicycle crashes, but 26% of bicyclist fatalities, occurred on rural State Trunk Highways. Likewise, only 3% of all bicycle crashes occurred on County Trunk Highways, but 24% of bicyclist fatalities occurred on those highways.

Most of the crashes occurred on local urban roads where the speed limits are low. In fact, 79% of all crashes occurred where the posted speed for vehicles was 25 or 30 mph. However, fatal and severe injury rates increase dramatically where speed limits are higher.

While a detailed study of crash types in Wisconsin has not been conducted, national studies have found that three types of crashes account for the vast majority of bicyclist/motorist crashes involving children: bicyclist "riding out" from a driveway at a mid-block location; bicyclist "riding out" (failing to yield) at a controlled intersection; and bicyclist making an unexpected turn or swerving into traffic.

The most common types of crashes involving adult cyclists are markedly different. An interesting and helpful account of crash types

for adult bicyclists is provided by a study conducted in the City of Madison where 72% of all bicyclists in reportable crashes were 20 years of age or older. According to this study, two major crash types accounted for 50% of all crashes in Madison: motorist turning or merging into the path of a bicyclist (34% of all crashes); and motorist “driving out” (failing to yield) from a stop sign (16% of all crashes). Of these two crash types, a motorist making a left turn and failing to yield to a bicyclist approaching from the opposing direction was the most common.

Safety Strategies

The focus of much of this plan is on identifying physical improvements that can improve the bicycling environment. However, a comprehensive approach involving education, enforcement, and encouragement is essential. Even the best bikeway and roadway facilities can be unsafe if bicyclists and motorists use them improperly and do not respect each other. The plan’s safety strategies are based on a “4 E’s” approach (engineering, education, enforcement, and encouragement), but also involve crash prevention, intervention, and response measures.



Kids in training

Engineering measures such as paved shoulders and wider lanes should improve

safety for bicyclists while still maintaining sound performance of the system. For education and enforcement measures, WisDOT, local governments, enforcement agencies, school districts and civic groups need to continue to expand programs on bicycle traffic safety. This includes adult courses such as *Effective Cycling*™. WisDOT can assist in education and enforcement by continuing to provide and disseminate important instructional and informational brochures and safety literature, including guides that will expand knowledge of laws governing the safe operation of bicycles and motor vehicles.

One of the most effective means of reducing the severity of crashes (crash intervention) is through the use of helmets. Helmet promotions, bulk purchases, peer and adult use of helmets, education in the correct wearing of helmets, and parent/teacher education about crashes are all means of encouraging increased helmet use.

Emergency Medical Service (EMS) response is vitally important and is the only “response measure” recommended in this plan. EMS services are currently offered in most places in Wisconsin, and this plan calls for the continuation and support of these services.

Much of the success of these strategies depends on local implementation of the above actions. Communities must analyze and prioritize bicycle safety problems, focus education and enforcement actions on the most common types of crashes, and conduct education efforts targeted at the user groups most in need. Involvement of local communities is essential. While WisDOT can provide the tools to assist local communities, it can not provide many of the “4-E’s” services directly to bicyclists.



Urban and Rural Bicycling Strategies

There are two major geographic components to this plan - urban (including suburban and smaller communities) and rural (or intercity). The plan recommends policies and actions for these two components separately.

Urban strategy: Bicycle plans have recently been developed for Wisconsin's 14 metropolitan areas, as well as for several smaller communities. The State Bicycle Transportation Plan calls for the implementation of these local plans. It recommends that, on arterial streets, bicycle accommodations (in the form of wide curb lanes, bicycle lanes, or paved shoulders) be made in accordance with local plans, unless the cost or adverse impact of such accommodations is excessively disproportionate to expected use of the facilities. In addition, it recommends strong consideration of bicycle accommodations on arterial streets in communities that do not currently have bicycle plans.

Rural strategy: The plan calls for the development of a usable network of roadways and bikeways to link villages, cities, major recreation areas, and other travel destinations in Wisconsin. On moderate and high volume roadways (generally those with motor vehicle volumes exceeding 1,000 per day), paved shoulders should be considered to help accommodate bicyclists.

There are two components to the consideration of bicyclist accommodations on rural roadways. First, the plan identifies a priority system of key bike route linkages between communities and major bicyclist destinations. While most of these linkages are on State Trunk Highways, County Trunks are included if they are part of an approved county bicycle plan. Improvement priorities

should be focused on this identified system. These priority corridors and linkages are primarily on lower volume state and county highways, although, in some instances, it was necessary to include moderate volume highways in order to make connections into and out of cities.

Secondly, WisDOT has analyzed road conditions for bicycling on all County Trunk and State Trunk Highways. This analysis was based primarily on pavement width and volume of traffic, but also considered volume of truck traffic, seasonal peaks in traffic, and sight line limitation due to curves or hills. Individual county maps have been produced with this information to help planners and highway engineers in their consideration of how to best accommodate bicycle use when roadway reconstruction opportunities occur.

Implementation

WisDOT is responsible for the implementation of bicycle-related improvements on the State Trunk Highway system and encourages safer practices through its education and enforcement programs. Key to the implementation of this plan is the development of a supportive environment for bicycling in Wisconsin. A comprehensive effort involving local governments, counties and even the private sector will be necessary to reach the goals of this plan. However, this plan can only recommend or suggest roles and policy strategies for those who will be implementing its various components.

Implementation actions recommended by the plan can be grouped into the following eight categories: *urban systems, intercity (rural) linkages, citizen involvement, funding, facilities design, administrative, education and enforcement, and land use and development.*



- ◆ The most essential action necessary for the **urban system** is the implementation of the completed metropolitan area and community bicycle plans. These plans include street-by-street recommendations for bicycle accommodations. Additionally, there should be strong consideration of bicyclists on all new and reconstructed street projects within all communities.
- ◆ Similarly, recommendations for **intercity linkages** also call for the consideration of bicyclists on all projects. To aid in that consideration, two maps are provided: one showing current bicycling conditions, and the other showing State Trunk Highway priority corridors and key linkages.
- ◆ The **citizen involvement** measures call for the continued coordination of activities between local and state bodies, and bicycle groups and advocates. One of the most effective means of coordination is through advisory committees.
- ◆ **Funding** of bicycle accommodations is most effectively done at the time a roadway project is being implemented. Accommodations added at this time typically add only a small amount to overall project costs. Other funding sources for separate facilities or for encouraging projects at the local level are also important to the implementation of this plan and are expected to increase significantly over the course of the recently enacted federal surface transportation act - TEA 21.
- ◆ The **facilities design** actions recommended by this plan include the application of bicyclist-compatible design practices as provided in several good guidance and facility design standards documents available from national organizations and WisDOT. Guidance documents that describe and illustrate current and best design practices should be updated and made available to communities and counties to help in the development of bicycle facilities. WisDOT will update its Bicycle Planning Guidelines, expanding it to incorporate more information and examples of bicycle facility design.
- ◆ One key **administrative** action involves the continued training of planning and engineering professionals in the development of bicycle facilities. Another calls for the due consideration of bicycling in other key WisDOT planning efforts, such as the State Highway Plan.
- ◆ **Education and enforcement** actions include WisDOT working with communities and law enforcement agencies to identify the offenses and errors of motorists and bicyclists that are leading to the most serious crashes. These should be targeted for improved education and enforcement efforts. Although WisDOT provides model education and enforcement programs, it will continue to rely on local implementation of these programs.
- ◆ Finally, **land use and development** actions are centered around making bicycling trips more practical, through the construction of clustered development and new developments that are contiguous to the existing built-up areas of communities. Mixed use development and neighborhood shopping districts are also land use patterns that should be pursued. Internal neighborhood connections, such as paths between cul de sacs and within greenways, should also be considered in all new developments. These types of improvements also benefit pedestrians.



Biking into the 21st Century

Bicycling in Wisconsin can be made better and safer at a reasonable cost. There are many methods and examples from other states and communities to help in the attainment of this plan's goals. What has been proposed in this plan is a combination of actions that are right for Wisconsin. The implementation of this plan relies on the cooperation and participation of local and state governments. Since it takes time to develop a usable system of roadways and bikeways to provide greater mobility and access for bicyclists, results will be best measured in the longer run. In any event, today is an ideal time to set this plan into action and to begin improving conditions for bicycling into the 21st century.

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