Bicycle Master Plan

City of Green Lake, Wisconsin

Bicycle Federation of Wisconsin

www.bfw.org

Prepared by the Bicycle Federation of Wisconsin, 2007

Table of Contents

Foreword and Acknowledgements

We would like to thank the City of Green Lake for taking the initiative to incorporate bicycle transportation into its planning process. This demonstrates that the City identifies bicycling as an important form of transportation and recreation of the future.

The Bicycle Master Plan was authored by Greg Rybarczyk and Jack Hirt of The Bicycle Federation of Wisconsin. This plan was funded by the City of Green Lake.

The Bicycle Federation of Wisconsin is a statewide nonprofit bicycle education and advocacy organization with over 2,500 members. The Bicycle Federation of Wisconsin's mission is to make Wisconsin a better place to bicycle. Bicycling is a viable, healthy, and environmentally sustainable means of transportation, recreation, and sport. The Bicycle Federation of Wisconsin provides bicyclists of all ages with information on recreational rides, safety tips, and commuting skills while educating decision makers about the importance of bicycling to our communities. Learn more at www.bfw.org.

Greg Rybarczyk
GIS Specialist/Planner
Bicycle Federation of Wisconsin
1845 N Farwell Ave, Suite 100
Milwaukee, WI 53202
Office: 414-732-6246
Gregr1@hotmail.com

Jack E. Hirt
Executive Director
Bicycle Federation of Wisconsin
1845 N Farwell Ave, Suite 100
Milwaukee, WI 53202
Office: 414-271-9685
jack@bfw.org

Executive Summary

Green Lake has great potential to be a city where hundreds of people ride bicycles everyday: there is a high level of residential development within two miles of the central business district; shared use paths along the beautiful Green Lake, historic downtown district; the City of Green Lake has a large transient population that come to the city to recreate; and the city's system of parks and connecting pathways is highly conducive to bicycle riding. The City of Green Lake has a long and storied history of providing grand recreational opportunities for residents and travelers, and with the implementation of this Bicycle Plan, a multi-modal transportation system will provide safe and direct access to all that Green Lake has to offer.

The City of Green Lake Bicycle Master Plan was developed to serve the recreational and transportation needs of the public. The Bicycle Master Plan shall serve as a legal document to be consulted with during any land-use and/or transportation project. When the Comprehensive Plan is updated for the City, this document should serves as a supplement to the Plan, and should be part of any update to that plan.

Bicycling is an effective mode of transportation that is quiet, non-polluting, versatile, healthy, and fun. Bicycling is also a transportation mode available to all ages and income levels. In addition to the social, environmental, health, and transportation benefits, bicycling has a positive economic impact. Federal, state, and regional policies and plans have firmly established that the safe accommodation of bicycling and walking is the responsibility of state and local transportation agencies. The *City of Green Lake Bicycle Master Plan* serves as the local framework for implementing those policies and plans.

The *City of Green Lake Bicycle Master Plan* serves as a blueprint for continuous improvement of bicycling conditions and safety by addressing the "four E's" – Engineering (bicycle facility creation and improvement), education, encouragement, and enforcement (of the rules of the road for all road users – both motorists and bicyclists). When combined with facility improvements, enforcement, education and encouragement can dramatically increase both the levels of bicycling and bicyclists' safety, since studies have shown a correlation between higher numbers of bicycles in the traffic stream and lower crash rates for bicyclists.[1]

The *City of Green Lake Bicycle Master Plan* identifies existing and desirable bicycle routes within the City of Green Lake, including connections to neighboring municipalities. The *City of Green Lake Bicycle Master Plan* identifies and prioritizes bicycle facility project needs, and provides references for best practices in planning, designing, and maintaining those facilities. In addition, this Plan outlines an idea for improving bicycling in The City of Green Lake throughout the next 10 years and beyond. This plan is designed to serve as a template for bicycling and to provide direction for citizens, policy makers, and City staff. The plan introduces broad issues in bicycle planning as it applies to the environment within and surrounding Sturtevant. It also provides information, guidance, and prioritized recommendations for improvements.

Goals and Performance Measures:

Goal 1: Improve the convenience of bicycling through the accommodation of bicyclists in every City, County, and State road construction, resurfacing, streetscape, and traffic calming project improvements in the City of Green Lake.

Goal 2. Improve safety of bicyclists throughout the City of Green Lake. Reduce the rate of bicycle crashes by one third between 2007 and 2017.

General Performance Measures:

[1] *Bicycle Transportation Plan for the Madison Urban Area and Dane County*, WI, Madison Area Metropolitan Planning Organization, September 2000.

- Development and implementation of bicycle and/or motor vehicle operator education programs
- Accommodate bicyclists' needs in every local, county, or state roadway or planning project undertaken in or adjacent to the City by 2010.
- Provide short- and long-term bicycle parking in commercial districts, along main streets, in employment centers, multifamily developments, schools, industrial developments, special events, and recreational areas.
- 90% of residential parcels within 1/4 mile of a bicycle facility by 2020
- By 2010, have 20% of shared-use Paths complete, 20% of signed bicycle routes, and all bicycle lanes complete.

Specific recommendations for on- and off-street bicycle facilities, and their priority, are summarized in Chapter 6. Construction and maintenance cost estimates, design guidelines, and potential funding sources follow the specific facility recommendations, which are illustrated by the map.

Safe and convenient accommodations for bicyclists can provide transportation bicyclists with access to goods and services, just as the surface transportation network has provided that for motorists. Increasing levels of bicycling can decrease the need for roadway expansion, travel times for all road users, the community's health care costs resulting from sedentary lifestyles, and the negative environmental consequences of motor vehicle use. Supporting an expanded bicycling network can have myriad positive effects, including social, environmental, health, and economic benefits in addition to the obvious transportation benefits.

Chapter 1 – Introduction

Bicycling is an important mode of transportation that is available to all ages and socioeconomic groups. Bicycling is a convenient and efficient form of transportation. For some people, bicycling is the main mode of transportation. Bicycling is also a popular mode of transportation because, like the automobile (but unlike public transit), a bicycle provides its user with autonomy and flexibility regarding travel schedules and destinations, including multiple destinations (or "trip-chaining"). Door to door bicycle travel times for distances of up to five miles can be faster than, or at least comparable to, driving or transit. Bicycling levels are much higher during the warmer months, but the development of inexpensive, more versatile bicycles and clothing have increased both the appeal and the practice of bicycling in wetter and colder weather.

Bicycling for recreation is also popular, and its popularity (and economic impact) continues to grow, as evidenced by the number of bicyclists participating in bicycling groups and clubs. Nationally, bicycling ranks as the second most popular recreational activity.

1.1 Purposes of the Bicycle Plan

The City of Green Lake Bicycle Master Plan (PLAN) shall serve as a legal document to be adhered to during any land-use and/development project. When the revised comprehensive plan is codified by the City Administrator, this PLAN shall serve as a supplement. By making this PLAN a supplement to the comprehensive plan, it should be considered in any development and/or transportation project.

The PLAN is an effort to coordinate and develop a bikeway system that will benefit the recreational and transportation needs of the public. This PLAN also recognizes the use of the bicycle as an alternative form of transportation, which will reduce the amount of vehicles emissions in this geographic area and contribute to an improvement in air quality in the region. The provision of bikeways in the City of Green Lake and Green Lake County increases the mobility of those people who rely upon bicycles for transportation because they cannot, or choose not, to own and operate a motor vehicle. The PLAN should also serve as a blueprint for continuous improvement of bicycling conditions and safety, and serve to increase levels of bicycling through guidelines for planning, designing, and maintaining bicycle facilities.

The PLAN offers detailed engineering guidelines for various bicycle facilities, maintenance requirements, and bicycle parking recommendations. This information is located within this document in addition to state laws as they apply to non-motorized transportation. Implementation of the recommendations of this PLAN is fueled by national sponsorship of bicycling, surrounding community interest in bicycling, and the City of Green Lake's interest in promoting bicycling as a viable transportation option. The success of the PLAN will only be assured by the continued involvement of the City's bicycling community and other residents that identify the importance of a sustainable transportation system.

The PLAN shall identify existing and desirable bicycle routes within the City of Green Lake, including connections to neighboring municipalities and trails. The PLAN identifies and prioritizes bicycle facility project needs, and recommends specific policies and educational, promotional, and enforcement activities to improve the practicality and safety of bicycling for transportation on a daily basis.

The City of Green Lake Bicycle Master Plan shall serve as a framework for cooperation between state agencies, the county, the East Central Regional Planning Commission (ECRPC), and local governments in planning for and developing bicycle facilities.

1.2 PLAN Scope

The City of Green Lake Bicycle Master Plan focuses on bicycling for utilitarian and recreational purposes. For bicycle transportation, trip origins, destinations, and trip purpose are of utmost importance (e.g. commuting to work or school, shopping, attending a social event, etc.), and the bicycle is simply the means to the end. Conversely, recreational bicycling trips are made expressly for the enjoyment of bicycling, and the destination, if there is one at all, is of minor importance. The reality is that most trips (and many facilities) serve both functions, but the bicycle facility (including roadways suitable for bicycling) must be complete in order to serve the needs of all transportation bicyclists.

The City of Green Lake Bicycle Master Plan is an effort to assimilate a multi-modal transportation system. The implementation of a bicycle network will benefit recreational and transportation needs of the public. This PLAN recognizes that the use of a bicycle as a transport mode will reduce the amount of vehicle emissions in this region and hence improving the quality of life for everyone. In addition, the provision of bicycle facilities in the City will increase the mobility and access for those who rely on the bicycle for transportation purposes.

In order to be eligible for funding under most Federal aid programs, bicycle projects must be primarily for transportation purposes (the Recreational Trails Program is a notable exception). In general, federal guidelines consider any bicycle path or trail other than a closed loop trail as being principally for transportation and eligible for federal funding. With the growing federal policy support for bicycling, additional funding is available for bicycle transportation improvements.

Additionally, studies have shown that the more bicycles in the traffic stream, the lower the crash rate for bicyclists. Educating motorists on how to share the road safely with bicyclists is also important. Education of elected officials, planners, engineers, and others involved in land use development will help insure that bicyclists' needs are considered and accommodated when planning and designing new neighborhoods and roadways. Lastly, for enforcement to be effective, law enforcement officers need to know which illegal behaviors are the most common factors in crashes, and enforce them. Wisconsin's Pedestrian and Bicycle Law Enforcement training course, available through Larry Corsi through the Wisconsin Department of Transportation (WisDOT) Bureau of Transportation Safety, teaches just that. It also qualifies towards the training hours required of most law enforcement agencies.

The PLAN identifies existing facilities and deficiencies, and recommends new programs, policies, and bicycle facilities projects (off-street paths, on-street facilities, and signed routes, as well as supporting facilities, such as bicycle parking) for the planning period. Implementation of the plan will encourage the use of this practical, non-polluting, and affordable mode of transportation. Existing roadways in the City were analyzed for their suitability for bicycling, to identify corridors that serve as bicycle transportation routes or barriers to cycling. The bicycle facility recommendations are those necessary for bicyclist safety, mobility, and access to important destinations such as schools, employment centers, commercial areas, public institutional land uses, and recreational areas. Recommendations are prioritized to fill in gaps, first in order to maximize the existing network, and then augment the existing bicycle transportation network in the City and its connections to other municipalities.

The recommendations of this PLAN are flexible. In many cases the recommended facility is what will ultimately be constructed. Opportunities may arise in some locations that will require the proposed solution to be re-evaluated. These opportunities may result in a facility that is safer, more comfortable, and more cost-effective than what was originally scripted. There are recommendations in this PLAN that can be implemented easily in the short-term with other recommendations requiring addition time. In cases where the bicycle facility cannot be constructed immediately, short-term solutions may be used. The PLAN's guiding policy is to promote bicycle use as a viable, attractive, healthy, non-polluting form of transportation and to assure safe and convenient access to all areas of the city. The four "E's" (Education, Enforcement, Engineering and Encouragement) contribute to this policy.

1.3 Summary of Public Input

An effective plan includes input from the public during the planning process as an effort to assess what the wants and needs of the residents are. Input for this PLAN was collected by administering an online survey and a mass mailing of the survey to each resident. In addition, valuable input was received from a public Park and Recreation Board meeting.

1.3.1 Information collected at the Public Park and Recreation Board Meeting

A Bicycle Federation of Wisconsin (BFW) Staff person was present at the September Park and Recreation Board meeting to present and solicit comments on the draft Bicycle Maps. At the meeting a regional and citywide map were reviewed by all board members, and subsequently explained further by the BFW staff person. Concerns regarding the bicycle facility types and locations were expressed by board members. The connecting of the City with nearby municipalities

was proven to be important, as well as increasing local bicycling in the City. As a result, the bicycle map and plan was modified to reflect these local concerns.

1.3.2 Information collected from Public Input Surveys

Public input was solicited via an online survey and paper survey that was mailed to each City of Green Lake Resident administered online by the Bicycle Federation of Wisconsin, and also provided with a copy of the Village newsletter to every household in the Village. The responses to the survey are summarized here.

Q1. How often do you bicycle in and around the City of Green Lake?

Answer Options	Response Percent	Response Count
never	36.00%	62
once a month	20.30%	35
once a week	18.60%	32
multiple times a week	20.30%	35
daily	5.20%	9
	answered question	172
	skipped question	8

Q2. How important is it to you to improve the conditions for bicycling in your community?

Answer Options	Response Percent	Response Count
very unimportant	9.70%	17
somewhat unimportant	12.50%	22
somewhat important	20.50%	36
very important	48.30%	85
no opinion	9.70%	17
	answered question	176
	skipped question	4

Q3. How often do you use your bicycle for transportation?

Answer Options	Response Percent	Response Count
never	45.90%	79
0-3 times per week	43.00%	74
3-6 times per week	8.70%	15
7 or more times per week	2.30%	4
	answered question	172
	skipped question	8

Q4. How often do you use your bicycle for recreation/exercise?

Answer Options	Response Percent	Response Count
never	14.50%	24
0-3 times per week	55.20%	91
3-6 times per week	25.50%	42
7 or more times per week	4.80%	8
	answered question	165
	skipped question	15

Q5. Do you agree with Wisconsin State Law that Bicycles are considered vehicles of the road and have the right to be driven on the street?

Answer Options	Response Percent	Response Count
strongly disagree	5.10%	9
somewhat disagree	9.10%	16
somewhat agree	34.30%	60
strongly agree	45.10%	79
no opinion	6.90%	12
	answered question	175
	skipped question	5

Q6. What's the longest distance you would consider riding a bicycle?

Answer Options	Response Percent	Response Count
0-1 mile	18.90%	31
1-5 miles	20.70%	34
5-10 miles	18.30%	30
10 or more miles	42.70%	70
	answered question	164
	skipped question	16

Q7. What factors discourage you from bicycling in your community?

Answer Options	Slightly Discourages	Moderately Discourages	Greatly discourages	Rating Average	Response Count
Motorists not following the laws of the road	52	62	26	1.81	140
Unfriendly roadways for bicycles	30	53	66	2.24	149
No bicycle parking at destinations	72	47	15	1.57	134
Lack of greenway trails	36	51	57	2.15	144
Lack of interest	71	20	23	1.58	114
				answered question	164
				skipped question	16

Q8. How would the factors below affect your decision to bicycle more?

Answer Options	not affect	moderately affect	greatly affect	Rating Average	Response Count
More on-street facilities (bike lanes, paved should	29	39	90	2.39	158
More greenway trails	33	39	85	2.33	157
More bicycle parking	61	56	27	1.76	144
Increased enforcement of laws applying to motoris	55	67	32	1.85	154
Education programs for bicycle safety	83	51	15	1.54	149
A map of bicycle facilities for planning routes	41	49	64	2.15	154
				answered question	160
				skipped question	20

Q9. What types of destinations would or do you bicycle to?

Answer Options	Yes	No	Rating Average
Places of employment	41	95	1.7
Schools	49	87	1.64
Restaurants	80	65	1.45
Shopping/retail	88	60	1.41
Entertainment	89	55	1.38
Parks	120	34	1.22

Beaches	106	42	1.28
Trails and Greenways	108	28	1.21
			answered question
			skipped question

Q10. Where do you feel comfortable bicycling?

Answer Options	Yes	No	Rating Average
Streets containing bike lanes	131	19	1.13
Streets not containing bike lanes but signed as designated bike routes	79	65	1.45
Low traffic neighborhood streets	126	17	1.12
Main city thoroughfares	55	86	1.61
Rural thoroughfares	87	54	1.38
Greenway trails	130	17	1.12
			answered question
			skipped question

Q11. How important do you think it is to include bicycle issues in the City transportation planning process?

Answer Options	Response Percent	Response Count
very unimportant	8.00%	14
somewhat unimportant	16.70%	29
somewhat important	21.30%	37
very important	49.40%	86
no opinion	4.60%	8
	answered question	174
	skipped question	6

Q12. Where do you live?

Answer Options	Response Percent	Response Count
City of Green Lake	76.10%	134

Town of Brooklyn	9.70%	17
Town of Green Lake	4.50%	8
other	10.20%	18
	answered question	176
	skipped question	4

Chapter 2 –The Importance and Relevance of Bicycling

2.1 Social, Environmental, Health, and Transportation Benefits

Cycling, together with walking and in association with public transport, can broaden the range of transport choices available to citizens. In particular, safe walking and cycling, in combination with efficient public transport, can play a major role in re-establishing or maintaining adequate levels of physical activity in the general population and decreasing the risk of cardiovascular diseases, diabetes, hypertension, some cancers, as well as risks related to overweight and obesity. Improving bicycle facilities for transportation purposes benefits those who bicycle for recreation and fitness. Recreational bicycle rides can begin at home and be combined with other, often utilitarian, trip purposes. When linked with a larger bikeway system, off-street paths can provide important transportation linkages, and a complete bikeway network benefits everyone, regardless of how they use the road.

The bicycle is an effective means of transportation that is quiet, non-polluting, versatile, healthy, and fun. Bicycling is the most energy efficient form of transportation, and is often faster than driving for shorter trips (up to five miles). Bicycling offers low cost mobility; for those who do not use or have access to an automobile, such as school-age children, bicycling is particularly important. While bicycling may not replace all trips by motor vehicle, it can be a practical mode for many trips, and part of multi-modal trips as well (such as a trip to a park-and-ride carpool facility, or transit stop). Internal travel within central Wisconsin is predominantly by personal motor vehicle. Walking and bicycle travel represent the next largest percentage of internal weekday travel by resident households of the region, and that percentage has doubled since 1991.

Increasing bicycle opportunities and levels improves the efficiency of the transportation system. It improves neighborhood livability by reducing motor vehicle traffic and its associated pollution and congestion, reducing the need for motor vehicle parking, and reducing motor vehicle crashes, injuries, and property damage. Moreover, bicyclists take up little roadway space. In most urban

traffic conditions, bicyclists do not significantly limit traffic flow. Therefore, converting motorists to bicyclists will increase roadway capacity, reduce congestion, and decrease trip times for everyone.

1 in 60 workers nationwide already bicycle commutes. This proportion of bicycle commuters could rise to 1 in 5 if better facilities were provided.-according to 1990 Harris poll

2.2 Economic Impact of Bicycling

Improving the bicycling environment can provide non-transportation related benefits as well. The community benefits from bicycle riders who purchase food and other needs locally. The tourism industry benefits as more bicyclists are attracted from outside the community. Most importantly, the quality of life of the community is enhanced by the presence of bicyclists and pedestrians, for example, when social interactions occur spontaneously, or when people feel safer being outdoors[2].

Bicycle facilities have been shown to have a positive effect on both nearby property values, and an increase in business reported by owners of businesses near bicycle facilities. A study by North Carolina's Department of Transportation of bicycle facilities in the Outer Banks reveals an annual economic impact of the facilities of 600% of the (one-time) capital costs. A study in Wisconsin showed 39% of responding businesses indicated increased business as a result of users of the Fox River Trail. The same study showed that a bicycle facility had positive effects on real estate values (and therefore property tax revenues). Lots adjacent to the Mountain Bay Trail in Brown County, WI, sold faster and for an average of 9% more than similar property not located next to the trail. The study also suggests that, by providing workers an alternative to driving to work, the trail became an inexpensive alternative to increasing road capacity. The conclusion that trail facilities generate increased revenue through higher property values is corroborated by the Consumer's Survey on Smart Choices for Home Buyers. In that survey, trails ranked the second most important amenity out of a list of 18 choices.

Trail-related expenditures by bicyclists nationally range from less than $1 per day to more than $75 per day, depending on mileage covered. Generally, it has been found a trail can bring at least one million dollars annually to a community, depending on how well the municipality and public embraces the trail[3]. At the same time, another way to look at the economic benefits of trails is on property values. According to *The National Trails Partnership*[3], it has been shown that "70% of landowners felt that overall, an adjacent trail were a good "neighbor," with positive impacts including 1) getting in touch with nature (64%), 2) recreational opportunity (53%), and 3) health benefits (24%)".

2.3 Bicycling in Green Lake

Information gathered in the survey suggests that bicyclists using the streets today might be categorized in the following groups:

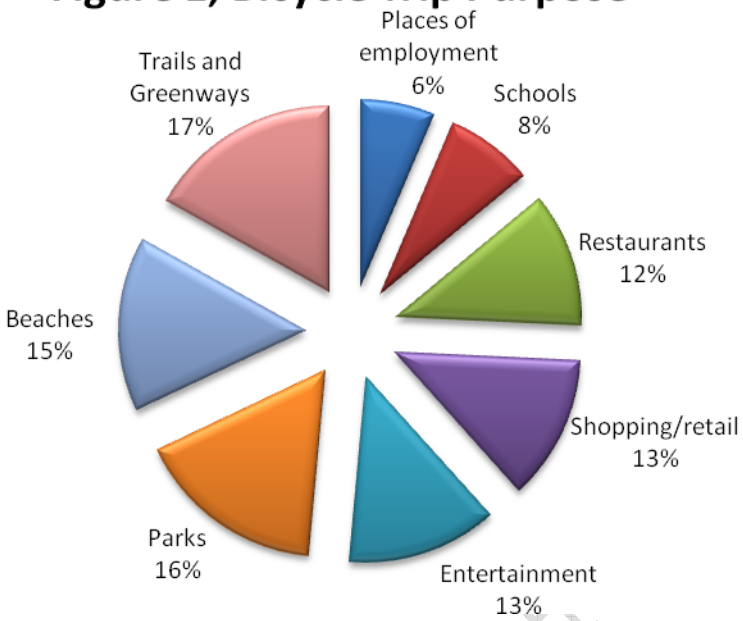
- Regular fitness and recreational riders.
- People who occasionally use a bicycle for utilitarian transportation, typically on short, bicycle-friendly routes. Trip purposes might include visiting a park, going to the library, running errands, shopping, visiting friends, etc.

Eight-six percent of those responding to the public input survey conducted as a part of this planning process, reported that their last bicycle trip was for a non-commuting purpose such as for exercise, recreation, visiting friends, or personal business (see Figure 1). Given this information, there is a potential to increase utilitarian bicycle trips by invoking present bicyclists to ride to work and/or school.

[2]National Trails Partnership, *The Economic and Social Benefit of Trails*, March 2007

[3]National Association of Realtors and National Association of Home Builders, *Consumer's Survey on Smart Choices for Home Buyers*, April 2002

Figure 1, Bicycle Trip Purpose



Chapter 3 – Existing Federal, State, Regional, Local Policies and Plans Related to Bicycling

3.1 Federal – AASHTO, USDOT - FHWA, SAFETEA-LU

The Guide for the Development of Bicycle Facilities by the American Association of State Highway and Transportation Officials (AASHTO) is commonly accepted as the "best practices" for building bicycle facilities. The Wisconsin Bicycle Facility Design Handbook, by WisDOT, however, meets or exceeds all AASHTO guidelines.

The Manual on Uniform Traffic Control Devices by the US Department of Transportation (USDOT) Federal Highway Administration (FHWA) contains currently acceptable signage for use on bicycle facilities, as well as experimental signs. mutcd.fhwa.dot.gov/

Congress firmly established the principle that the safe accommodation of bicycling and walking is the responsibility of state and local transportation agencies, and that this responsibility extends to the planning, design, operation, maintenance, and management of the transportation system in federal transportation law, including the Intermodal Surface Transportation Efficiency Act (ISTEA), its reauthorization, the Transportation Equity Act for the 21st Century (TEA-21), and its reauthorization, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), www.americabikes.org/resources_policy_biyclefriendly.asp

The Federal Highway Administration Program guidance on the federal transportation bills states that "In the planning, design, and operation of transportation facilities bicyclists and pedestrians should be included as a matter of routine and the decision not to accommodate them should be the exception rather than the rule. There must be exceptional circumstances for denying bicycle and pedestrian access either by prohibition or by designing highways that are incompatible with safe, convenient walking and bicycling."

3.2 State - Wisconsin Department of Transportation (WisDOT)

The Wisconsin Bicycle Transportation Plan 2020 (WisDOT September 1998) is intended "to establish bicycling as a viable, convenient, and safe transportation choice throughout Wisconsin." The role of the state plan is "ensuring an interconnected transportation system across government boundaries and highway jurisdictions that can work safely for bicyclists…" The recommendations in the City Bicycle Master Plan should contribute to achieving the two primary goals of the state plan: doubling the number of bicycle trips by 2010, and reducing crashes involving bicyclists and motor vehicles by 10% or more by 2010. www.dot.state.wi.us/projects/state/bike2020.htm

The Wisconsin Bicycle Facility Design Handbook meets or exceeds federal (AASHTO) guidelines, and should be used preferentially over the AASHTO Guide for the Development of Bicycle Facilities. It is available from the state bicycle and pedestrian coordinator, Tom Huber, (thomas.huber@dot.state.wi.us), and also online at www.dot.wisconsin.gov/projects/state/docs/bike-facility.pdf.

Although intended for larger communities, the Wisconsin Bicycle Planning Guidance: Guidelines for MPOs & Communities in Planning Bicycle Facilities still contains useful information about the importance of planning a complete bikeway network.

www.dot.state.wi.us/projects/bikes.htm

3.3 Regional – East Central Regional Planning Commission (ECWRPC)

The City of Green Lake Bicycle Master Plan should be coordinated with the development of regional bicycle transportation network. Many of the County's bikeways are part of a regional network of recreation trails and this PLAN should be implemented with this knowledge in mind, and will be developed and implemented with anticipated cooperation.

3.4 Local Policies and Plans

3.4.1 City of Green Lake

The City currently has a Comprehensive Plan and associated maps. The Comprehensive Plan is in the process of being updated. When the updated Comprehensive Plan becomes codified by the City, this PLAN should be incorporated into the language which dictates any future land-use predictions in order to facilitate a complete regional and citywide bicycle network and accomplish the goals set out in this document. According to the draft Future Land Use Map, there exist plans for future land acquisition that will consist of new commercial, single family residential, and multi-family residential, primarily north, east, and southwest of the current city boundary.

3.4.2 Green Lake County

Green Lake County's Park and Recreation plan (revised April 2003 and updated December 2005) is intended to serve as a framework to preserve parks and recreation opportunities for the Green Lake County from 2003 - 2008. The plan acknowledges communities that currently have bicycle facilities. This PLAN should be used in conjunction with the Park and Recreation plan in order to have a synergistic approach to planning for bicycles in Green Lake County, and specifically, The City of Green Lake. In addition, there is currently an effort to establish a county-wide and multi-county trail system. The implementation of this PLAN will help benefit this cause.

Currently, Green Lake County is developing a Transportation Improvement Plan (TIP). These efforts will assist the County in the future in developing and maintaining the county road system. With a

series of State highway improvements taking place throughout the region the County's road improvement plan will assure proper road quality.

3.4.3 Surrounding Communities

The City of Green Lake is located in the center of an ever-growing region. Therefore, the communities that surround it have a great impact on the success of non-motorized transportation within the City boundary. Specifically, bicycling in the City is dependent on connections to area-wide bicycle facilities to promote a regional recreation activity and also for commercial patronage. According to the Green Lake County Park and Recreation Plan, the Town of Brooklyn currently holds 20 miles of bicycling and hiking trails. In addition, there are a few interconnecting hiking/bicycling trails that surround the City of Green Lake. The Mascoutin Valley Trail connects the City of Berlin to Ripon, The Northwestern Trail extends westward from Ripon towards the City of Green Lake, and the Snake Creek Trail extends east from Brooklyn towards the City of Green Lake. These surrounding existing recreational bicycling trails serve as a impetus for the City to connect to and develop a connected, intercommunity trail system.

It will be important for the City of Green Lake to work with Green Lake County, City of Ripon, City of Berlin and other Cities and towns to ensure that connections between the various jurisdictions are created in a manner to facilitate a complete bicycle network as any road construction project, development or redevelopment project ensues. One-way to foster this cooperation is via a Memoranda of Understanding between surrounding municipalities. With the advent of holistic views on development patterns, transportation systems, and surrounding community leads it is prudent that a cooperative and comprehensive bicycle network strategy follow suit. This goal can only become a reality though cross-jurisdictional cooperation. Additionally, the City of Green Lake should encourage other municipalities in the region to begin creating bicycle plans of their own to incorporate into their long-range transportation and comprehensive plans.

Chapter 4 – Enforcement, Education, & Encouragement

There is a common perception that bicycling on streets is dangerous. This concern keeps people from bicycling more, or at all. In addition to engineering (facilities), discussed in Chapter 6, enforcement, education, and encouragement can all be used to effectively counter the perception that bicycling for transportation is unsafe. The "four Es" are all key components to achieving the PLAN's goals of increasing the number of trips by bicycle and improving the safety and convenience of the bicycling environment.

4.1 Enforcement

For enforcement to be effective, law enforcement officers need to know which illegal behaviors are the most common factors in crashes. One way to implement this is to develop an amendment for the law restricting bicycle riding on sidewalks and the park rule restricting bicycle riding on park paths. Wisconsin's Pedestrian and Bicycle Law Enforcement training course, available through Larry Corsi through the Wisconsin Department of Transportation (WisDOT) Bureau of Transportation Safety, teaches just that. The course also qualifies towards the training hours required of most law enforcement agencies. Contact Larry.Corsi@dot.state.wi.us, or 608-267-3154.

The rules for riding bicycles on the road (and rules for motorists sharing the road safely with bicycles) are online at www.dot.state.wi.us/safety/vehicle/bicycle/rules.htm.

WisDOT also distributes, free, printed safety materials such as a Summary of Wisconsin Bicycle Laws (HS226), and a Bicycle Law Card (HS221) that fits in a wallet. Request these materials using form DT1265 at www.dot.wisconsin.gov/forms/docs/dt1265.doc.

WisDOT's Division of Motor Vehicles Motorist Handbook includes nearly ten pages of information on bicycling safely and on motorists sharing the road safely with bicyclists.

In addition to training police in law enforcement for bicycle safety, training drivers of commercial vehicles to model behavior can bolster enforcement by police officers. The City of Madison, for example, educates all drivers of City vehicles about the state statutes that require drivers to yield to

pedestrians in crosswalks and to give all vehicles (including cyclists) 3 feet of clearance when passing.

4.2 Education

Educating motorists and bicyclists to share the road will establish safer, more inviting streets for bicycling. Bike Rodeos, Bike Ed and Safe Routes to School initiatives are three examples of established bicycle education programs. These programs are historically conducted and encouraged at by schools. There is 1 High School, 1 Elementary School, and one Lutheran School within the City of Green Lake. It is recommended that these schools implement education programs for students that encourages bicycling to school. In addition, it is recommended that lockable storage areas be provided on both school campuses. Another means to educate residents and visitors is for the City of Green Lake to partner with the city of Green Lake's Chamber of Commerce in promoting the PLAN (http://www.greenlakecc.com/greenlakecc/)

The purpose of the Federal Safe Routes to School (SRTS) Program is to address the decline in children walking and bicycling to school. In 1969, about half of all students walked or bicycled to school. Today, however, fewer than 15 percent of all school trips are made by walking or bicycling, one-quarter are made on a school bus, and over half of all children arrive at school in private automobiles. This decline in walking and bicycling has had an adverse effect on traffic congestion and air quality around schools, as well as pedestrian and bicycle safety. In addition, a growing body of evidence has shown that children who lead sedentary lifestyles are at risk for a variety of health problems such as obesity, diabetes, and cardiovascular disease. Safety issues are a big concern for parents, who consistently cite traffic danger as a reason why their children are unable to bicycle or walk to school. The SRTS Program empowers communities to make walking and bicycling to school a safe and routine activity once again. The Program makes funding available for a wide variety of programs and projects, from building safer street crossings to establishing programs that encourage children and their parents to walk and bicycle safely to school.

SRTS Background

With the passage of SAFETEA-LU, the newest federal transportation act, a national SRTS program was established for the first time. Each state has received money in proportion to the number of grade school students (k-8) to increase the number and safety of students walking and biking within a 2-mile radius of elementary and middle schools. The Wisconsin Department of Transportation is administering the funds and awarding no-match grants to local schools, school districts, cities, and non-profits. The Wisconsin Program has three components.

Planning Grants assist communities in the development of SRTS programs

Infrastructure Grants allow communities to make physical changes that influence the safety of active

transportation to school like building trails or painting crosswalks

Non-Infrastructure Grants include education, encouragement, and enforcement efforts

Renee Callaway is coordinating the WI program that will disperse a total of 7-8 million by 2009. She is available to assist communities with the process and has developed a Safe Routes to School Toolkit for Wisconsin. Applications for 2007 were due March 16th and applications for 2008 will be due next March.

The first round of Wisconsin Department of Transportation SRTS grants is currently being reviewed. Community interest in the program has been great and over 15 million dollars of requests were made. Unfortunately, competition will be stiff, as only 4 million dollars will be dispersed in this cycle.

Bike Rodeos can be effective tools for teaching kids safe bicycling basics, but only when those running the rodeos know what the most common kinds of child bicyclist crashes are, and what skills kids need to avoid them. Teaching Safe Bicycling is a course that does just that. Like Wisconsin's Pedestrian and Bicycle Law Enforcement Training, Teaching Safe Bicycling is a course coordinated by Larry Corsi, the Bicycle & Pedestrian Safety Program Manager for WisDOT's Bureau of Transportation Safety. Contact Larry.Corsi@dot.state.wi.us, or 608-267-3154.

Bike Ed is a group of courses developed by the League of American Bicyclists (LAB) to suit the needs of any cyclist. LAB certifies, insures and equips League Cycling Instructors (LCI)s to teach anything from basic skills to college level courses. LCIs are the experts in bicycle education and safety. Courses offered include: Road I, Road II, Commuting, Motorist Ed, Kids I and Kids II. LCI's can also offer modified versions of these courses and design bike rodeos and provide general safety consulting.

Road I

Gives cyclists the confidence they need to ride safely and legally in traffic or on the trail. The course covers bicycle safety checks, fixing a flat, on-bike skills and crash avoidance techniques and includes a student manual. Recommended for adults and children above age fourteen, this fast-paced, nine-hour course prepares cyclists for a full understanding of vehicular cycling.

Road II

For more advanced students with an understanding of vehicular cycling principles, this twelve-hour course includes fitness and physiology, training for longer rides, advanced mechanics, paceline skills, advanced traffic negotiation, foul weather riding and night riding. Student manuals are included with each class.

Commuting

For adult cyclists who wish to explore the possibility of commuting to work or school by bike. This three-hour follow-up to Road I covers route selection, bicycle choice, dealing with cargo and clothing, bike parking, lighting, reflection, and foul weather riding. Included with the class are handouts and student materials.

Motorist Education

A 3-hour classroom session, this course can be easily added to a driver's education curriculum, such as diversion training for reckless drivers or a course designed local bus drivers. Directed towards motorists in general, topics covered include roadway positioning of cyclists, traffic and hand signals, principles of right-of-way and left and right turn problems. Materials include Share the Road literature for bicyclists and motorists as well as other fact sheets.

Kids I

Designed for parents, instructors explain how to teach a child to ride a bike. Topics covered include how to perform a bicycle safety check, helmet fitting and bike sizing. The course includes the 10-minute 'Kids Eye View' video and a brochure for parents.

Kids II

This 7-hour class for 5th and 6th graders covers the same topics as Road I, including on-bike skills as well as choosing safe routes for riding.

The Bicycle Federation of Wisconsin has trained dozens of people in Wisconsin to teach the League of American Bicyclist courses, and BFW can connect those interested in taking Bike Ed with the closest LCI. Contact the League of American Bicyclists,

www.bikeleague.org/programs/education/courses.php, or the Bicycle Federation of Wisconsin, www.bfw.org or 608-251-4456, for more information about Bike Ed in Wisconsin.

4.3 Public City: Education and Encouragement

Publicizing bicycling is both education and encouragement. By producing and distributing bicycle education material, the City can provide bicyclists, and potential bicyclists, with the information they need to bicycle safely and comfortably. WisDOT provides a range of safety materials for free to anyone requesting them by their publication number.

Of the safety materials WisDOT provides related to bicycling, the best materials include: Wisconsin Bicycle Laws card (HS 221), Bicycle Safety-What Every Parent Should Know (HS 239), From A to Z by Bike (HS 214, for ages 11-adult), Bicycle Safety: A 'Wheely' Good Idea (HS 213, handbook for ages 8-11), Bicycles & Traffic-Get Over Your Fear (brochure HS 238), Two-Wheeled Survival (brochure HS 227), Sharing The Road: Survival of the Smallest (brochure HS 228), Street Smarts (updated brochure HS 207), and Share the Road with Bicycles (bumper sticker HS 237). Request materials from WisDOT by publication number using the form found at www.dot.wisconsin.gov/forms/docs/dt1265.doc.

Collaborating with other agencies and organizations will help deliver bicycle information more effectively. For example, bicycle education should be integrated into school curricula and park programs so that many more children learn to bicycle more safely and frequently. Collaborating with media outlets and the private sector will further increase the reach of education campaigns. The City could also make use of the website www.Streetshare.org to promote bicycling and walking, and to educate citizens about bicycling and walking in the community. Contact Dave Schlabowske, the City of Milwaukee's Bicycle & Pedestrian coordinator, to set up a link from www.StreetShare.org.

Often adults are unwilling to bicycle simply because they are unaware of the safest routes to get to their destinations by bicycle. A map for bicyclists can address that, and tips for safe bicycling can be provided on the back of the map.

4.3.1 Bike to Work Week

Bike to Work Week (BTWW) is a promotional campaign that has succeeded in increasing the numbers and safety of individuals who bike to work, shop, school, or wherever they need to go in

the communities where it has taken place. The Bicycle Federation of Wisconsin produces a toolkit for concerned citizens to start encouraging bicycling in their community through Bike to Work promotions, online at www.bfw.org/btww/howtoBTWW_single_pdf.pdf.

4.3.2 Bicycle Map

Producing and distributing a City map for bicyclists can go a long way towards encouraging and educating citizens. The Bicycle Federation of Wisconsin has produced a bicycle map for Milwaukee, and has the capability of producing a bicycle map for The City of Green Lake. Such a map could not only educate citizens about the best routes for bicycling, but could also help teach them to safety share the road with motor vehicle traffic by using safety tips and illustrations on the reverse of the map itself. An overwhelming 86% of respondents in the City of Milwaukee, to the survey indicated that a bicycle map of the area would positively (41% "greatly," 45% "moderately") affect their decision to bicycle more. In addition, in creating a bicycle map, routes could be rated based on comfort level. This would help people gauge the difficulty or acceptability of a particular bicycle facility when deciding on a destination.

In creating a bicycle map, it will be extremely important to gather more information from the public regarding the map content. From previous bicycle mapping projects completed by the Bicycle Federation of Wisconsin, map users have expressed that it is very important to include the following characteristics:

- All bicycle facilities, including signed routes, bike lanes, and bike trails, depicted
- Public amenities, such as restrooms, parks, emergency services, and private amenities, such as bike shops, should all be displayed.
- Map scale should be appropriate for users to easily determine travel distance, and the map should have as many roads as feasible labeled.
- A digital version of the map should be available on-line

Geographical Information Systems (GIS) technology and graphics software would be the best method to create the bicycle map. One of the purposes of the PLAN is to provide a facilities network map, and using GIS is the most effective means for updating the map (and the plan) in the future.

The cost of creating a bicycle route map can be divided into two parts: the cartography work and the printing and distribution. An itemized list of specific tasks and related costs can be found in the appendix, but a summary cost for cartography work is estimated at about 150 hours. Consulting rates range from $40 to $120 and higher per hour. An itemized list of estimated costs for producing and map can be found in the appendix.

Printing can be difficult to estimate since choice of color, paper stock, and number of copies printed all have a significant effect on price. In 2005, Milwaukee County updated their bicycle map, and printed 100,000 copies, or enough maps for about 10% of their population, which is projected to be enough to last for about 3 years before a reprint is needed. The cost for a standard paper stock and a four color double sided 26”x36” map was about $25,000. Enough maps for 100% of residents of the City of Green Lake would be about 100 copies, and could cost less than $500, although printing smaller quantities sometimes costs more per unit than printing larger quantities

Often at least some of the funds for a bicycle map can be procured from advertising fees from local businesses wanting representation on the map. It might also be possible to partner with the County of Green Lake, or neighboring communities on a more regional map. The City could also charge for each copy of the map, but the administrative costs of charging for each copy may exceed the revenue gained. A bicycle map is also more likely to be an effective educational strategy if it is available for free.

4.3.3 Other Avenues for Bicycle Publicity in the City

In addition to a bicycle map, and education programs described above, there are other ways to get the word out that bicycling is a viable means of transportation and recreation. The City could work with the area chamber of commerce, and with Wisconsin’s Department of Tourism to publicize bicycling. Television and/or radio Public Service Announcements about safe bicycling and motorists safely sharing the road with bicycles could be produced and aired. Advertising in newspapers, on billboards, and on buses can gain bicycling exposure.

Chapter 5 – Existing Conditions, Goals, and Performance Measures

5.1 Existing Conditions

The City currently includes approximately 1.0 mile of off-street bicycle facilities (Multi-Use Trail), consisting of one route along South Street, Maplewood Drive, and a trail within the Evensong subdivision. Although all these bicycle facilities are present, they do not meet the minimum width (10') for two-way recreational traffic, These off-street facilities are integral to the connectivity of the city's residents to various parts of Green Lake.

5.2 Goal

The goal of the City of Green Lake Bicycle Master Plan is improving the levels, safety, and convenience of bicycling in the City by accommodating bicycling in every City, County, and State road construction, resurfacing, streetscape, and traffic calming project in and connecting to the City. Additionally, create safe routes to and from all schools in the City by 2025 by applying for "Safe Routes to School" funding at this time. More specific goals regarding bicycle facilities and policies, and measures of performance follow:

5.2.1 Existing and Proposed Bikeway Network:

	2007 Existing (Miles):	Proposed (Miles):
Bicycle Lane	0	2.00
Signed Bicycle Route	0	5.00
Shared -Use Trail	1.0	30.0
Shared Roadway	0	3.00

5.3 Recommended Actions

Many things the City can do to encourage bicycling, and make bicycling safer and more convenient are not specific to any particular street or trail. The following actions are all recommended:

- Enact an ordinance requiring an adequate amount of bike parking in an appropriate location for all new commercial and industrial development and redevelopment.

- Enact an ordinance requiring all new subdivisions to reserve greenspace where off-street paved (asphalt or concrete) bicycle trails could be developed with connections to the existing or future bicycle facility network. Further, it is recommended that developers construct, or pay all cost of initial construction of such bicycle facilities, and then turn over ownership and maintenance of facilities to the City.

- Create a City policy for "complete streets," i.e., that plans for construction of new roads, or reconstruction of existing roads, shall include appropriate accommodations for bicyclists and pedestrians. Examples of language include: "The safety and convenience of all users of the transportation system, including pedestrians, bicyclists, transit users, freight and motor vehicle drivers shall be accommodated and balanced in all types of transportation and development projects and through all phases of a project …" "Provide bicycle and pedestrian accommodations along and across all streets and roadways in conjunction with construction and reconstruction where feasible and appropriate in accordance with the U.S. Department of Transportation Design Guidance on Integrating Bicycling and Walking into Transportation Infrastructure." Federal Highways Administration language can be found online at www.fhwa.dot.gov/environment/bikeped/design.htm.

- The City of Green Lake should have an appointed bicycle advisory task force committee. The committee ought to be comprised of City Staff and Sturtevant residents, and appointed by the City Administrator and/or Park and Rec Board. Duties of the task force will be: encourage intergovernmental cooperation, through memoranda of understanding, to create connections for bicycles from the City to adjacent municipalities.

5.4 Measures of Performance

Measures of performance determine measure progress made towards the goal of the City of Green Lake Bicycle Master Plan to increase the levels, safety, and convenience of bicycling in the City. This Plan establishes two types of performance measures, goals and performance measure. The performance measures used to monitor progress towards the goals will quantify long-term trends in bicycle use and safety. The performance measures related to the objectives are strategic—they will calculate the amount of progress that has been made toward specific 2017 performance targets.

A few of the performance measures listed below are recommended for organizations other then the City of Green Lake to consider. These measures are important metrics for tracking progress on this PLAN.

Performance Measure: Consider bicyclists' needs in every local, county, or state roadway project undertaken in or adjacent to the City by 2011. Subsequent to the implementation of this PLAN, each time a roadway or land use development is considered, the feasibility of a bicycle facility component within the proposal shall be considered to promote and apply an integrated transportation system to serve a multitude of people.

Performance Measure: 10% of bike lane, bike route, and shared-use path mile goals for 2016 achieved annually, beginning in 2008. This measure will track progress toward completing the entire recommended Bicycle Facility Network by 2017. An additional option that will be considered is tracking the percentage of network miles completed for different facility types (e.g., bicycle lanes, bicycle routes, and multi-purpose trails).

Performance Measure: Bicycle mode split. Bicycle mode split should be documented every five years through a City of Green Lake Travel Survey. Documenting mode shift from personal automobile use to bicycle use is an important benchmark for demonstrating that the City of Green Lake is achieving its automobile use reduction goals and increasing bicycle transit. This will allow the City of Green Lake to benchmark progress towards shifting single-occupant vehicle trips to utilitarian and recreational bicycle trips.

Strategic Performance Measure: Percentage of targeted City of Green Lake staff and Bicycle Planning subcommittee who participate in training on bicycle planning, design, and engineering issues. This measure will help indicate the level of internal training that is provided on bicycle issues. The following types of staff should receive bicycle training: planners, project managers, staff working on projects with signs and paint, staff working on signals, engineers, and field crews. The City of Green Lake should take advantage of everyday opportunities to provide these targeted staff with bicycle training and education.

Chapter 6 – Recommended Facility Plan

6.1 Bikeway Classification Descriptions

City Bikeway Treatments

A bicycle lane is that portion of the roadway designated by eight-inch striping and bicycle pavement markings for the exclusive or preferential use of bicycles (see Appendix A).

A signed bicycle route is typically designated along more lightly traveled residential or secondary roads and is indicated by signs with or without a specific route number. This

type of facility should have appropriate directional and informational markers. Signed bicycle routes are designated by the jurisdiction having authority over the roadways included in the bicycle route system. Adding pavement width to the existing roads signed as bicycle routes is not normally required; however, choosing routes with minimal traffic hazards are typically part of the process to create a good route. Bicycle routes are often utilized to direct bicyclists to less-congested roadways that may follow the same general corridor as more heavily traveled arterial highways.

A shoulder bikeway is a street upon which the paved shoulder, separated by a four-inch stripe and no bicycle lane markings, is usable by bicycles. Although the shoulder can be used by bicycles, auto parking can be allowed on a shoulder.

A bicycle boulevard is a shared roadway (bicycles and motor vehicles share the space without marked bicycle lanes) where the through movement of bicycles is given priority over motor vehicle travel on a local street. Traffic calming devices are used to control traffic speeds and discourage through trips by motor vehicles. Traffic control devices are designed to limit conflicts between automobiles and bicycles and favor bicycle movement on the boulevard street.

An extra width curb lane is a wider than a normal curbside travel lane provided to give extra room for bicycle operation where there is insufficient space for a bicycle lane or shoulder bicycle lane.

Off-Street Paths

An off-street path is a bikeway that is physically separated from motorized vehicular traffic by an open space or barrier and either within the roadway right-of-way or within an independent right-of-way. Off-street paths are intended to provide adequate and convenient routes for bicycling, walking and other non-motorized uses. Off-street paths may be implemented in corridors not well served by the street system. Separated paths either on 1 side or both sides of the street, depending on right-of-way.

A multi-use pathway is located along streets adjacent to lands with limited access within the property, transition areas from rural to suburban or suburban to urban & new residential developments in suburban or rural communities

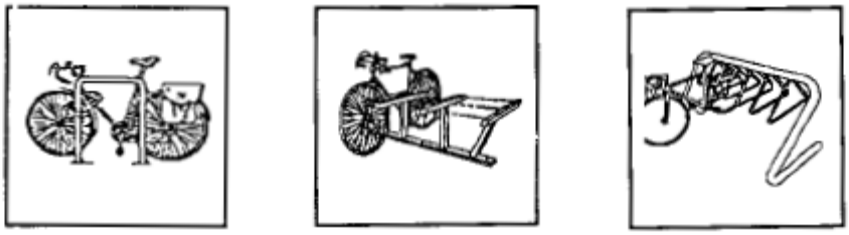
6.1.1 Bicycle Parking

Just as ordinances and development codes require off-street parking for motor vehicles, bicycle parking should be required of all new or expanded development. The amount of bicycle parking

provided can be determined as a percentage (e.g. 10%) of the amount of motor vehicle parking required, or other methods can be used. It is important that in all cases where any bicycle parking is required, no fewer than two bicycle parking spaces should be required. Bicycle parking requirements can be fulfilled by lockers, racks, or equivalent structures in or upon which a bicycle may be locked by the user. The design and location of bicycle parking racks can make them safe, secure, and convenient, or dangerous and useless for parking bicycles.

The City of Madison has an excellent set of parking requirements, along with great information about the design and location of facilities to meet their requirements, all available online at www.ci.madison.wi.us/transp/z2811bik.pdf. Another good reference is the Association of Pedestrian and Bicycle Professionals *Bicycle Parking Guidelines*, available online at www.bfbc.org/issues/parking/apbp-bikeparking.pdf.

Bicycle Locker



Bike Rail | 3-pt. Locking | Freestanding

6.1.2 On-Street Facilities

A table of recommended on-street facilities follows. Although the priority of construction is not precisely ranked, facilities that should have a higher priority of construction are grouped nearer the top, and facilities with lower priority are grouped nearer the bottom.

Location	Length	Type	Purpose/Connection	Notes
Mill Street- Hill Street to South Street	323 feet	Bike Lane	Non-motorized Connectivity	Road width adequate bicycle comfort level, only needs striping. Integral connection within the downtown business district.
Mill Street- Water Street to Hill Street	324 feet	Bike Lane	Non-motorized Connectivity	Road width adequate bicycle comfort level, only needs striping. Integral connection within the downtown business district.
Mill Street-Canal St. to bridge	189 feet	Bike Lane	Non-motorized Connectivity	Road width adequate bicycle comfort level, only needs striping. Integral connection within the downtown business district and schools.
Mill Street- bridge to North Street	1,700 feet	Signed Route	Non-motorized Connectivity	Road width suitable bicycle comfort level, only needs signage. Integral connection to schools.
N. Lawson Drive- Mill Street to STH 23	1.34 miles	Signed Route	Non-Motorized Connectivity	Road width suitable bicycle comfort level, only needs signage. Integral connection to schools.
N. Lawson Drive- STH 23 to Berlin Road	.32 miles	Signed Route	Non-Motorized Connectivity	Road width suitable bicycle comfort level, only needs signage. Integral connection to schools. WIDOT will re-construct intersection of STH 23 and N. Lawson Dr. signage should be installed.

Lake St.- Recreation area south to Water St.	356 feet	Signed Route	Non-Motorized Connectivity	Road width suitable bicycle comfort level, only needs signage. Integral connection to recreation area and proposed shared-use pathway via sewer easement.
Lake St. –Water St. to Hill St.	322 feet	Shared Route	Non-Motorized Connectivity	Road with limited room for bicyclist usage but still adequate for shared roadway usage with bicycles.
Lake St.- South St. to Illinois Avenue	2,805 feet	Shared Route	Non-Motorized Connectivity	Roadway should be repaved and widened. Connection to Lookout tower and residents along Green Lake.
South St.- 200' east of Patricia Ct. to 500' west of Commercial Ave.	3,400 feet	Bicycle Lane	Non-Motorized Connectivity	Road width adequate bicycle comfort level needs striping on widened paved shoulders.
South St.- 500' west of Commercial Ave. to 100' west of Lake Steel St.	900 feet	Signed Route	Non-Motorized Connectivity	Road width suitable for bicycles only needs signage. Integral connection to business district
South St.-100' west of Lake Steel St to Lake Street	275 feet	Bicycle Lane	Non-Motorized Connectivity	Road width adequate bicycle comfort level needs striping on shoulders.
South St.- Lake St. to S. Lawson Dr.	3,700 feet	Signed Route	Non-Motorized Connectivity	Road width suitable for bicycles only needs signage. Integral connection to business district.
South Lawson Dr.- South St. to S. Lawson Dr. 217'	217 feet	Signed Route	Non-Motorized Connectivity	Road width suitable for bicycles only needs signage. Integral connection to beach front.

Illinois St.-Lake St. to Whitetail Ct.	1.25 miles	Signed Route	Non-Motorized Connectivity	Roadway width suitable for bicycles with signage. Sewer grates replaced with bicycle friendly type. Roadway should be widened and 5' bicycle lanes implemented.
Ernest St.- South St. to Highknocker Trail	2,217 feet	Signed Route	Non-Motorized Connectivity	Roadway width suitable for bicycles with signage. Route access to Peace Lutheran School, business district, and Highknocker Park.
Lake Steel St.- South St. to 1,312' north to City boundary	1,312 feet	Bicycle Lane	Non-Motorized Connectivity	Road width adequate bicycle comfort level needs striping on shoulders when roadway is improved. Connection to proposed shared-use trail.
Scott St.-N. Lawson Dr. to western City limits and proposed Shared-use Trail	3,000 feet	Shared Route	Non-Motorized Connectivity	Roadway with insufficient width, but adequate bicycle comfort level. Connection to residential area, schools, and proposed shared-use Trail.
Forest Ave- S. Lawson Dr. to Camelot Terrace	2,300 feet	Shared Route	Non-Motorized Connectivity	Roadway with insufficient width, but adequate bicycle comfort level. Connection to existing local bike route.
S. Lawson Drive- Hayes Court to STH 23	4,000 feet	Shared Route	Non-Motorized Connectivity	Roadway with insufficient width, but adequate bicycle comfort level. Connection to Green Lake Conference Center and future residential development

6.1.3. Off-Street Facilities

A table of recommended off-street facilities follows. Although the priority of construction is not precisely ranked, facilities that should have a higher priority of construction are grouped nearer the top, and facilities with lower priority are grouped nearer the bottom.

Location	Length	Type	Purpose/Connection	Notes
From Lake Steel St. east to Lake St. and recreation area.	.54 miles	Shared-use Path	Non-motorized trail	Contingent on sewer excavation and granting of non-jurisdictional easement/annexation
Over Mill Street Bridge and Puchyan River	40 feet	Shared-use Path	Non-motorized trail Connection to existing Bicycle Lane and Bicycle Route	This bicycle facility connection must traverse over existing sidewalk. Signs are recommended to direct non-motorized traffic
Along Evensong Way within Evensong Subdivision	.53 miles	Shared-use Path	Non-motorized trail/ modification to existing off-street pathway	Widen existing off-street pathway to 10 and install signage'. Connection for residents to access Illinois Ave. and South St.
Within Maplewood Subdivision and public campground	.22 miles	Shared-use Path	Modification to existing off-street pathway	Widen and stripe existing off-street pathway along S. Lawson Dr., Oak St., and within Campground to 10'. Install bicycle crossing signage at intersection of Maplewood and Oaks St. Any future off-street bicycle paths must follow this requirement
Northerly connection to Maplewood Subdivision off-street pathway up to Scott Street	.46 miles	Shared-use Path	Non-motorized trail	This connection will be adjacent to proposed future road and serve enlarging residential population within subdivision. Follows path of existing snowmobile row route
From Scott St. towards east at Saint Marie Rd.(entry point to Snake Creek Wetland Trail)	.2.8 miles	Shared-use Path	Non-motorized trail	Connection to proposed Shared-use Path and existing multi-use trail connection to Princeton. Follows existing snowmobile row route

From Saint Marie Rd. towards Princeton City Limits	5.76 miles	Shared-use Path	Non-motorized trail	Trail that connects the City of Green Lake with Princeton, WI
Saint Marie Rd. to Irving Park Rd.	.76 miles	Shared-use Path	Non-motorized trail	Trail along STH 23 to connect city residents to Green Lake Conference Center. Contingent upon WIDOT highway re-construction
Irving Park Rd. to North St.	1.65 miles	Shared-use Path	Non-motorized trail	Trail along STH 23 to connect city residents to Green Lake Conference Center. Contingent upon WIDOT highway re-construction
North St. to N. Lawson Drive	1.03 miles	Shared-use Path	Non-motorized trail	Trail along STH 23 to connect city residents. Contingent upon WIDOT highway re-construction
N. Lawson Dr. to STH 49	.46 miles	Shared-use Path	Non-motorized trail	Trail along STH 23 to connect city residents. Contingent upon WIDOT highway re-construction
STH 49 to Busse Drive	.13 miles	Shared-use Path	Non-motorized trail	Trail along STH 23 to connect city residents. Contingent upon WIDOT highway re-construction
Busse Drive to Forest Ridge Road	.69 miles	Shared-use Path	Non-motorized trail	Trail along STH 23 to connect city residents. Contingent upon WIDOT highway re-construction
Forest Ridge Road to approx. 1,000' east of Murry Rd. then north approx. 1,300' to proposed shared-use path	2.33 miles	Shared-use Path	Non-motorized trail	Trail along STH 23 to connect city residents to other proposed regional shared-use path. Contingent upon WIDOT highway re-construction
Scott St. north and northwest to Saint Marie Rd (Snake River Connector Trail)	2.80 miles	Shared-use Path	Non-motorized trail	Pathway to serve increasing residential population of Maplewood subdivision and to gain access to Princeton and Snake River Wetlands Trail. Path should use existing snowmobile route row.

Saint Marie Rd west to Princeton City limits (Snake River Connector Trail)	5.76 miles	Shared-use Path	Non-motorized trail	Access to Princeton and Snake River Wetlands Trail. Pathway takes advantage of existing snowmobile route row. Contingent upon granting of easements from private property owners, railway company, and adjacent jurisdictions.
Start 3,000' north of city limits at Snake River Wetlands connector trail, north to City of Ripon	Approx. 8 miles	Shared-use Path	Non-motorized trail	Connection to the City of Ripon and the Mascoutin Valley State Trail. Contingent upon granting of easements from private property owners, railway company, and adjacent jurisdictions. Proposed trail should utilize existing snowmobile route
Start 3,000' north of city limits to abandoned railway, westward	5.0 miles	Shared-use Path	Non-motorized trail	Purpose is to connect the City of Green Lake to the City of Ripon and the existing Northwestern Trail. Proposed route utilizes existing snowmobile route and abandoned railway corridor. Contingent upon granting of easements from private property owners, railway company, and adjacent jurisdictions.

Figure 6.3.1, Proposed Bicycle Map

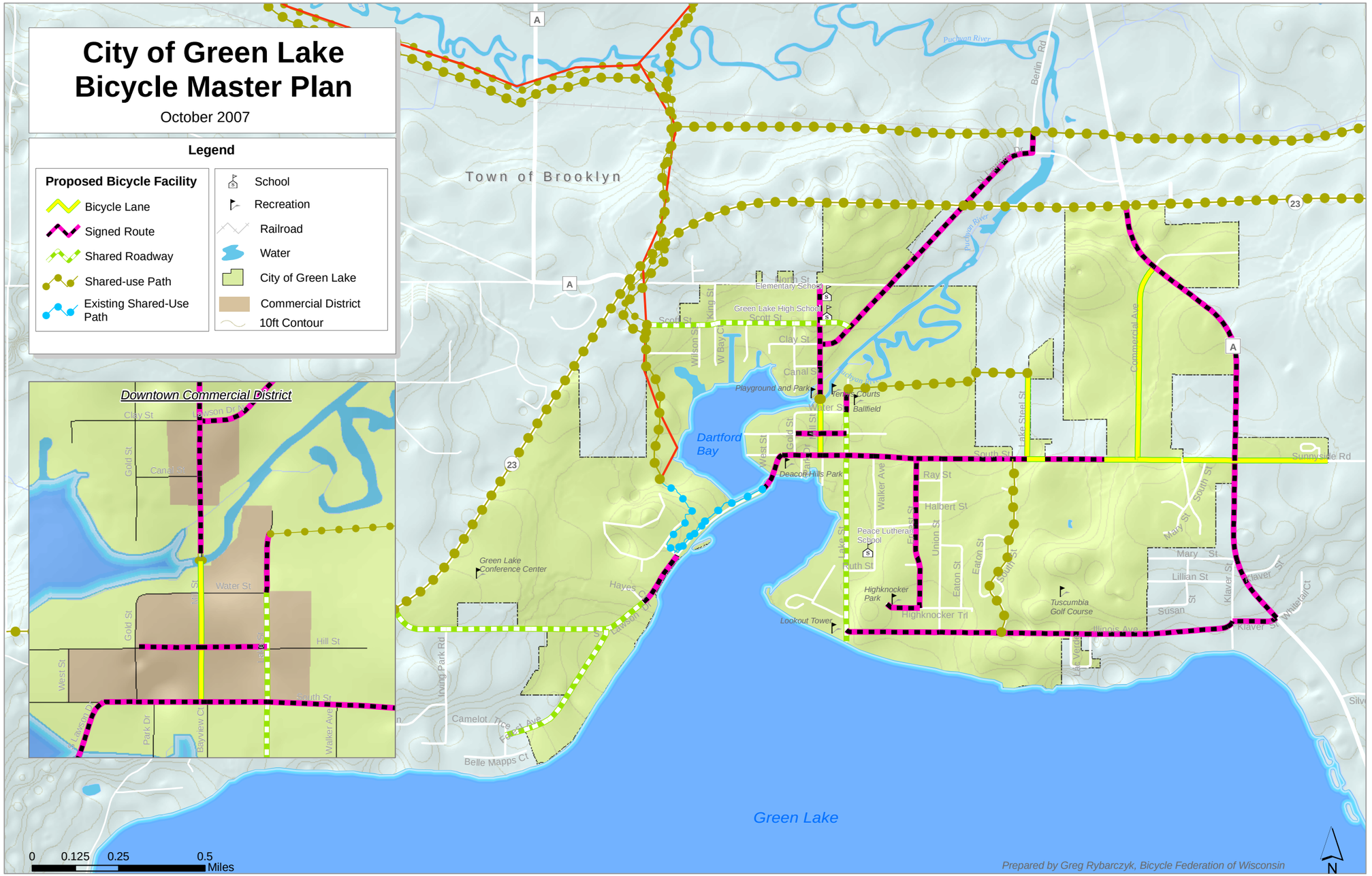
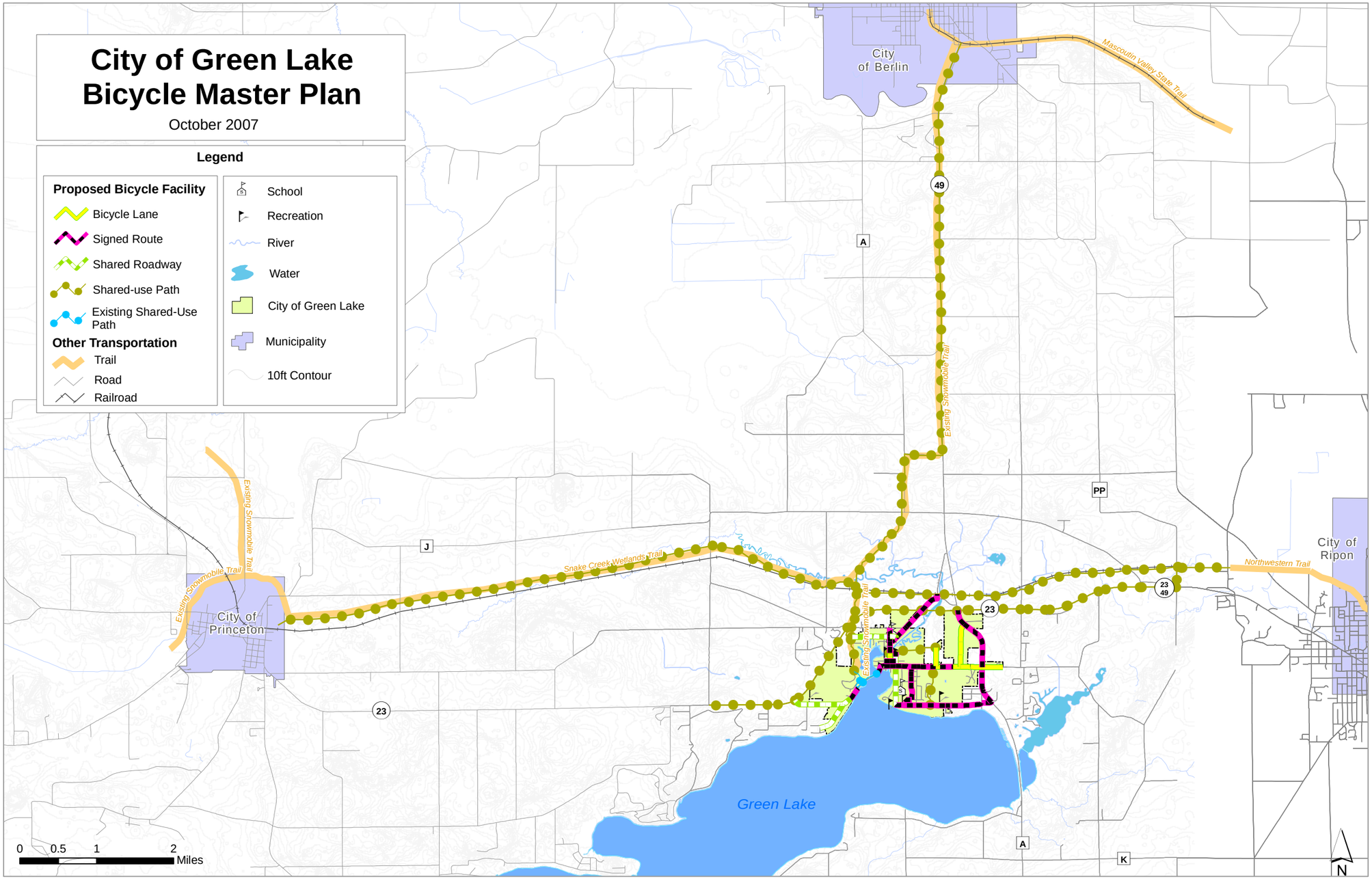


Figure 6.3.2, Regional Proposed Bicycle Map



6.3 Construction and Maintenance Costs

Wisconsin uses the "marginal cost" approach. In the marginal cost approach, the per-unit costs of bicycle improvements are those costs over and above the costs of the project without bicycle accommodation. Typically, right-of-way costs and the costs of relocating utilities are not included in these cost estimates for bicycle facilities. Following are some examples of costs to construct various bicycle facilities from various sources.

From WisDOT's Bicycle Transportation Plan:

Paved shoulder, 3 feet both sides; over gravel shoulder:	$20,000/mile
Paved shoulder, 5 feet both sides; over gravel shoulder:	$33,000/mile
Wide curb lane (one or two feet added, both sides):	$15-50,000/mile
Bike lane, five/six feet, both sides:	$25-90,000/mile
Bike path (final limestone surface):	$10,000/mile
Bike path (asphalt, 12 feet, landscaped etc):	$200,000/mile (minimum)

Where bicycle accommodations can be made simply by changing the pavement markings, the costs are obviously much lower. The following is a cost estimate, including labor costs for the area, for a bike lane striping project completed in Milwaukee, WI, in the summer of 2005. The entire project was completed with water borne paint that has a life expectancy of 1 year. From observation, however, much of the paint will last more than 1 year. In areas where Milwaukee's City buses constantly crossed the stripes, the paint did actually wear away in 1 year:

Pavement marking removal:	$0.95/linear foot, or $5016.00/mile
4" wide stripe:	$0.11/linear foot, or $580.08/mile
6" wide stripe:	$0.17/linear foot, or $897.60/mile
Bike symbol pavement marking:	$33.00/symbol
Arrow pavement marking:	$25.00/symbol

From another recent WisDOT project in Milwaukee:

4” stripe paint:	$0.20/linear foot
4” stripe Epoxy:	$0.37/linear foot
4” stripe preformed plastic:	$1.82/linear foot
6” stripe epoxy:	$1.30/linear foot
Bike lane arrows epoxy:	$54.99/symbol
Bike lane symbols epoxy:	$63.99/symbol
Bike lane words epoxy:	$54.53/symbol

Thermoplastic striping installed in the City of Chicago had the following costs:

4" stripe thermoplastic:	$.52/linear foot, or $2745.60/mile
6" stripe thermoplastic:	$.78/linear foot, or $4118.40/mile
8" stripe thermoplastic:	$1.04/linear foot, or $5491.20/mile
12" stripe thermoplastic:	$3.40/linear foot, or $17952.00/mile
Bike symbol:	$207/symbol
Arrow:	$109/symbol

For Signed Bike Routes, the AASHTO Guide recommends signing a shared roadway as a bike route every 1/4 mile (500m) and before and after every turn (both to mark the turn and to confirm that the rider has made the correct turn). Costs per sign found online vary from $100-200/sign, installed.

From the Virginia Department of Transportation, the (year 2000) costs for constructing the following bicycle facilities:

Bike path, 10 foot wide:	$92,000/mile
Bike lanes, 4 foot each side w/curb and gutter:	$270,300/mile
Bike lanes, 5 foot each side w/mountable curb:	$281,100/mile
4" stripe:	$0.60/linear foot, or $3168/mile

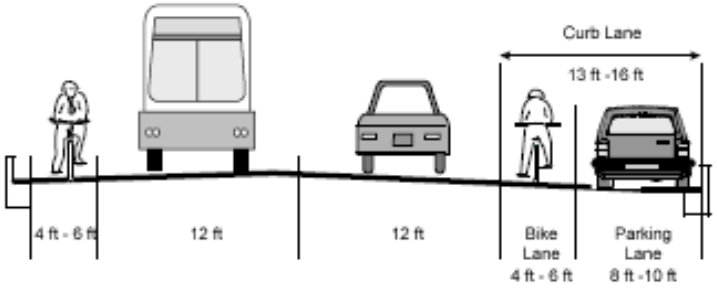
The City should budget for engineering costs, including a contingency for cost overruns. Often the federal and state funding is awarded for a fixed amount, and will not cover cost overruns, so budgets should be made carefully. For example, an MPO elsewhere in the Midwest has, in the past, budgeted 20% of every project for engineering plus contingencies.

6.4 Design Guidelines and Signage

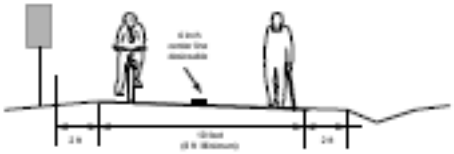
Although the Guide for the Development of Bicycle Facilities by the American Association of State Highway and Transportation Officials (AASHTO) is commonly accepted as the "best practices" for building bicycle facilities, the Wisconsin Bicycle Facility Design Handbook, by WisDOT, meets or exceeds all AASHTO guidelines, and, being specific to Wisconsin, tends not include alternative treatments that are less appropriate for cold climates. WisDOT's Wisconsin Bicycle Facility Design Handbook should therefore be the standard used by the City for the design and construction of bicycle facilities or bicycle accommodations on roadways. The Wisconsin Bicycle Facility Design Handbook can be found on the WisDOT website at:
www.dot.wisconsin.gov/projects/state/docs/bike-facility.pdf

Several examples of appropriate designs for various bicycle facilities are shown here, but there are many more examples in the Wisconsin Bicycle Facility Design Handbook, and it should be the basis for any design. (Because off-street facilities are often used by pedestrians, skaters, and other users in addition to bicyclists, they are typically called "shared-use paths" in the Wisconsin Bicycle Facility Design Handbook, and sometimes called "multi-use paths elsewhere).

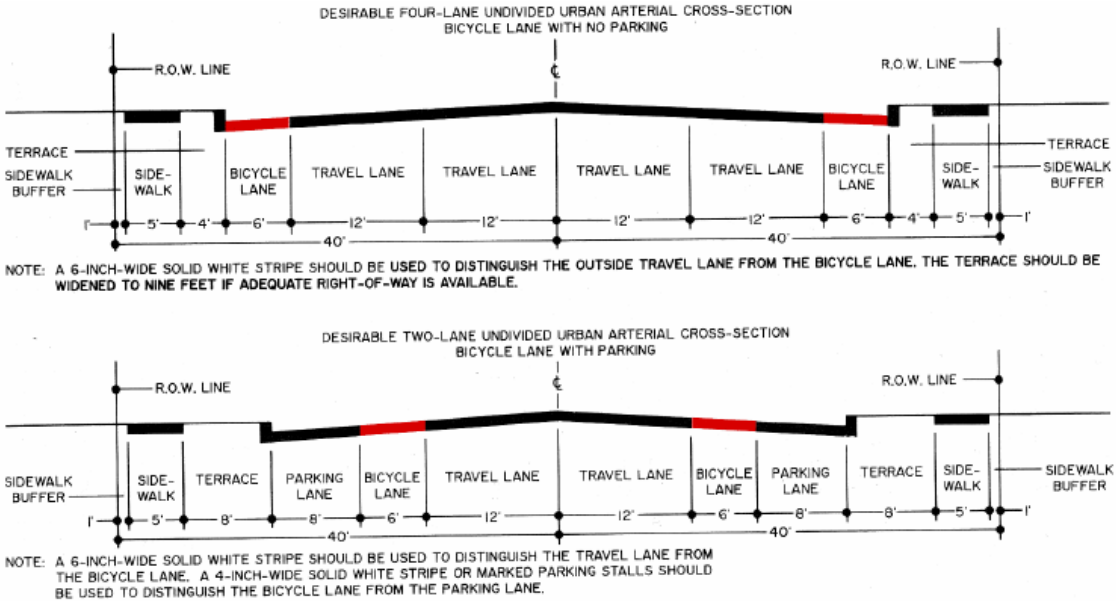
A Bicycle lane next to the curb on an asphalt roadway should be at least 5 feet wide. However, this should not include the gutter pan. [17]



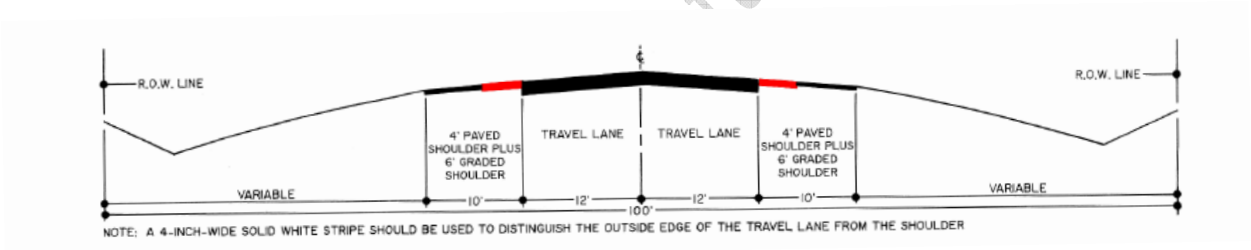
The standard width of a shared-use path. In areas with greater potential uses, adding extra width may be appropriate. [18]



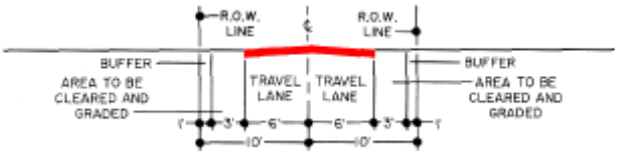
[17] Figure 5 from Page 66 of WisDOT's *Wisconsin Bicycle Transportation Plan 2020*
[18] Figure 6 from Page 67 of WisDOT's *Wisconsin Bicycle Transportation Plan 2020*



Typical dimensions for a bicycle lane next to a parking lane and without parking. [19]



Typical dimensions for an off-street bicycle pathway. [20]

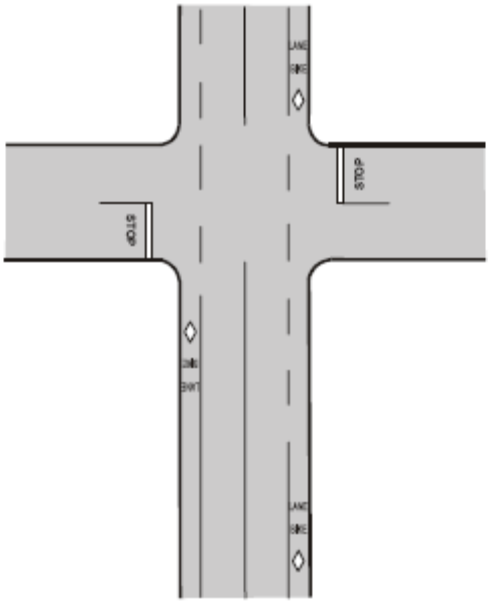


Desirable cross-section for bicycle paths in rights-of-way independent from street and highway rights-of-way.[21]

[19] Figure A-2 from Page 45 of SEWRPC's *Amendment to the Regional Bicycle and Pedestrian Facilities System Plan for Southeastern Wisconsin 2020*

[20] Figure A-3 from Page 47 of SEWRPC's *Amendment to the Regional Bicycle and Pedestrian Facilities System Plan for Southeastern Wisconsin 2020*

[21] Figure A-4 from Page 48 of SEWRPC's *Amendment to the Regional Bicycle and Pedestrian Facilities System Plan for Southeastern Wisconsin 2020*



Typical pavement markings for streets having bicycle lanes and no turning lanes. [22]

6.5 Potential Funding Sources

Many different funding sources are available for accommodating bicycles through on-street or off-street facilities. In order to be eligible for funding under most federal aid programs, bicycle projects must be primarily for transportation purposes (the Recreational Trails Program is a notable exception). In general, federal guidelines consider any bicycle path or trail other than a closed loop trail as being principally for transportation and eligible for federal funding. State funding for the construction of on-street and off-street bicycle facilities is available through programs administered by the Wisconsin Department of Transportation (WisDOT), and includes funds provided directly by the state and "pass-through" funds provided by the Federal government as part of the Federal-aid Highway, Transit, and Highway Safety Programs.

6.5.1 Transportation-Based Funding Sources

The following is a summary of potential transportation-based funding sources for accommodating bicycles, from WisDOT:

[22] Figure A-7 from Page 51 of SEWRPC's *Amendment to the Regional Bicycle and Pedestrian Facilities System PLAN for Southeastern Wisconsin 2020*

Transportation Enhancement (TE) Program

Transportation enhancements (TE) are transportation-related activities that are designed to strengthen the cultural, aesthetic and environmental aspects of transportation systems. The transportation enhancements program provides for the implementation of a variety of non-traditional projects, with examples ranging from the restoration of historic transportation facilities, to bike and pedestrian facilities, to landscaping and scenic beautification, and to the mitigation of water pollution from highway runoff. Transportation enhancements are part of the Statewide Multi-modal Improvement Program (SMIP). Approved projects are reimbursable at 80% of the cost, and a local match of 20% is required. A majority of the requests and projects awarded in Wisconsin have been for bicycle facilities. Examples of bicycle projects include multiuse trails (in greenways, former rail trails, road rights-of-way, etc.), paved shoulders, bike lanes, bicycle route signage, bicycle parking, overpasses/underpasses/bridges, and sidewalks. Transportation enhancement activities must relate to surface transportation. Federal regulations restrict the use of funds on trails that allow motorized users, except snowmobiles. The federal Transportation Equity Act for the 21st Century (TEA 21) expanded the definition of transportation enhancements eligibility to specifically include the provision of safety and educational activities for pedestrians and bicyclists, which had not been clearly eligible under the Intermodal Surface Transportation Efficiency Act (ISTEA), the original federal legislation.

Contact: WisDOT TE Program Manager John Duffe, 608-264-8723, john.duffe@dot.state.wi.us.

Surface Transportation Program – Discretionary

The Surface Transportation Program – Discretionary provides grants primarily to local governments, transit or transportation commissions, etc. in areas with a population of greater than 5,000 for projects that promote non-highway use or supplement existing transportation activities. Approved projects are reimbursable at 80% of the cost, and a local match of 20% is required. Priority is given to projects that promote alternatives to single-occupancy vehicle trips. Like TE, these funds are also part of the SMIP. Funding has gone evenly to transit and bicycle/pedestrian projects in past years. However, in the last two state budgets, no money has been appropriated for this program. Nearly every bicycle project eligible under the Transportation Enhancement program is also eligible for this program, unless the project will clearly not reduce single-occupant vehicle trips. Unlike the Transportation Enhancement program, bicycle and pedestrian planning is eligible.

Contact: WisDOT, John Duffe, 608-264-8723 john.duffe@dot.state.wi.us.

Congestion Mitigation and Air Quality Program (CMAQ)

The primary purpose of the Congestion Mitigation and Air Quality (CMAQ) Improvement Program is to fund projects and programs that reduce travel and/or emissions in areas that have failed to meet air quality standards for ozone, carbon monoxide (CO), and small particulate matter. Bicycle and pedestrian projects are eligible for CMAQ if they reduce the number of vehicle trips and miles traveled. Approved projects are reimbursable at 80% of the cost, and a local match of 20% is required. Almost all bicycle projects eligible for Transportation Enhancements and STP-D are likely to be eligible (see examples above), but a higher burden of proof that the project will reduce air pollution will be required for CMAQ funding. CMAQ is not a statewide program; only bicycle projects in Milwaukee, Kenosha, Racine, Ozaukee, Waukesha, Washington, Sheboygan, Kewaunee, Manitowoc, and Door Counties are eligible.

Contact: WisDOT Program Mgr John Duffe, 608-264-8723, john.duffe@dot.state.wi.us.

Hazard Elimination Program

Bicycle and pedestrian projects are now eligible for this program. This program focuses on projects intended for locations that should have a documented history of previous crashes.

Contact the WisDOT statewide coordinator, Chuck Thiede, 608-266-3341 for more details.

Surface Transportation Program - Urban

Metropolitan areas receive an allocation of funds annually. These funds can be used on a variety improvement projects including bicycle and pedestrian projects. Most of the Metropolitan Planning Organizations (MPOs) that administer this program have been using these funds to integrate bicycle and pedestrian projects as larger street reconstruction projects are taken on. East Central Wisconsin Regional Planning Commission, ECWRPC, is the MPO for east central Wisconsin.

Contact ECWRPC, (920) 751-4770 , staff@eastcentralrpc.org

Safe Routes to School Program

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the revised federal transportation act signed into law on August 10, 2005, provides funding to state departments of transportation to create and administer Safe Routes to School (SRTS) Programs. SRTS programs encourage children ages K-8 to walk and bike to school by creating safer walking and biking routes. SRTS Programs improve walking and biking travel options, promote healthier lifestyles in children at an early age and decrease auto-related emissions near schools.

Contact WisDOT's SRTS Coordinator, Renee Callaway, 608-266-3973, or renee.callaway@dot.state.wi.us

Incidental Improvements

Bicycle and pedestrian projects are broadly eligible for funding from most of the major federal-aid programs. One of the most cost-effective ways of accommodating bicycle and pedestrian accommodations is to incorporate them as part of larger reconstruction, new construction and some repaving projects. Generally, the same source of funding can be used for the bicycle and pedestrian accommodation as is used for the larger highway improvement, if the bike or pedestrian accommodation is "incidental" in scope and cost to the overall project. Overall, most bicycle and pedestrian accommodations within the state are made as incidental improvements.

6.5.2 Recreation-Based Funding Sources

The following information for potential recreation-based funding sources was culled from the Wisconsin Department of Transportation website.

Funding for the Recreational Trails Program (RTP) is provided through federal gas excise taxes paid on fuel used by off-highway vehicles. Towns, Citys, cities, counties, tribal governing bodies, school districts, state agencies, federal agencies and incorporated organizations are eligible to receive reimbursement for development and maintenance of recreational trails and trail-related facilities for both motorized and non-motorized recreational trail uses. Eligible sponsors may be reimbursed for up to 50 percent of the total project costs.

Eligible projects include:

- Maintenance and restoration of existing trails
- Development and rehabilitation of trailside and trailhead facilities and trail linkages
- Construction of new trails (with certain restrictions on Federal lands)
- Acquisition of easement or property for trails
- Projects are ranked in order of funding priority
- Rehabilitation of existing trails
- Trail maintenance
- Trail development
- Trail acquisition

Wisconsin Department of Natural Resources (DNR) regional staff review and rank eligible projects. Projects are then ranked in a statewide priority listing. The highest ranking projects will be funded to the extent that funds are available.

Following you will find general program information for programs that provide up to 50% funding assistance to acquire land or conservation easements and develop facilities for outdoor recreation purposes – the Stewardship Local Assistance Grant Programs, the Federal Land & Water Conservation Fund Program, and the Federal Recreation Trails Program. Any project application submitted will be considered for each of the following programs that it is eligible for.

Under the Knowles-Nelson Stewardship Local Assistance Grant Program, the following programs provide 50% funding assistance to acquire land and easements and develop trails, facilities, etc. for nature-based outdoor recreation purposes.

Aids for the Acquisition and Development of Local Parks (ADLP)

ADLP helps to buy land or easements and develop or renovate local park and recreation area facilities (e.g., trails, fishing access, and park support facilities). Applicants compete for funds on a regional basis.

Urban Green Space Grants (UGS)

UGS helps to buy land or easements in urban or urbanizing areas to preserve the scenic and ecological values of natural open spaces for outdoor recreation, including non-commercial gardening. Applicants compete for funds on a statewide basis.

Urban Rivers Grants (UR)

UR helps to buy land or easements on or adjacent to rivers flowing through urban or urbanizing areas to preserve or restore the scenic and environmental values of river ways for outdoor recreation. This includes shoreline enhancements such as development of public recreation facilities or habitat restoration that serve public recreation or resource conservation purposes. The Urban Rivers Program has a cap per applicant based on 20% of the total funds allocated to the program each fiscal year. Applicants compete for funds on a statewide basis.

Acquisition of Development Rights Grants (ADR)

ADR helps to buy development rights (easements) for the protection of natural, agricultural, or forestry values, that would enhance outdoor recreation. Applicants compete for funds on a statewide basis.

Land and Water Conservation Fund (LWCF)

LWCF provides 50% funding assistance for the acquisition and development of public outdoor recreation areas and facilities. Similar to the Stewardship ADLP program above except that active outdoor recreation facilities are eligible for grant assistance and school districts may be eligible project sponsors. Applicants compete for funds on a statewide basis.

Recreational Trails Act (RTA)

RTA provides 50% funding assistance for the development and maintenance of recreational trails and trail related facilities for both motorized and non-motorized recreational trail uses. Applicants compete for funds on a statewide basis.

These programs are administered by the Wisconsin Department of Natural Resources. The Stewardship Advisory Council, with representatives from local units of government and nonprofit conservation organizations (NCOs), advises the department on matters relating to the Stewardship program. Similarly, the State Trails Council advises the department on matters relating to the Recreational Trails Program. The National Park Service plays the major role in working with the Department on the Land & Water Conservation Fund Program and the Department of Transportation plays a role with the Recreational Trails Program. Key components of the programs are cooperation and partnership between the Wisconsin Department of Natural Resources, the federal government, local units of government, and NCOs. The programs recognize the important role each partner plays in meeting the conservation and recreation needs of Wisconsin residents and is designed to assist groups working to meet those needs. The application deadline for all of the programs is May 1 each year. Complete applications should be submitted to the regional Community Services Specialist (CSS) on, or be postmarked by, May 1.

6.5.3 Other potential funding sources

In addition to the funds administered by the state, funding for public bicycle and pedestrian projects can come from federal highway traffic safety programs, federal traffic safety (section 402) funds, the County (Racine County Department of Public Works), impact fees required of new development or redevelopment, public/private partnerships, or wholly from the private sector.

Chapter 7 – Conclusion

7.1 Priority of Construction

Priority of construction is implicit in the ranking of on-street and off-street facilities, but it should be noted that bicycle facilities are always less costly to build in conjunction (and concurrently) with road or other construction projects. Therefore, it is always advisable to include segments of planned or even proposed bicycle facilities whenever plans for bicycle facilities coincide with construction or reconstruction projects for roads.

7.2 Concluding Vision

The City of Green Lake Master Plan sets forward a strategy to achieve goals that encourages safe bicycling. The recommendations herein need to be recognized by the community and government officials in light of growing support for multi-modal transportation systems not only among residents of the City, but the region as well. Therefore, a sustainable circulation system can help alleviate the environmental externalities produced from the automobile, energy costs, and smart growth legislation, bicycling serves as a legitimate mode choice.

Supporting an expanded bicycling network can have myriad positive effects, including social, environmental, health, and economic benefits in addition to the obvious transportation benefits. By creating a transportation system that fully supports and encourages bicycling, the City of Green Lake will become a more attractive place to live and work.

Bicycling produces no air or noise pollution, decreases traffic congestion, reduces taxpayer burden, helps alleviate parking demand, saves energy, uses land and road space efficiently, provides mobility, saves citizens money, improves health, and is fun! The success of this Bicycle Master Plan will only be assured by the continued support of local government officials and its residents.

Appendices

A: Resources

American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 1999.

Bicycle Federation of Wisconsin, including the BTWW toolbox: www.bfw.org.

Bicycle Parking Guidelines, Association of Pedestrian and Bicycle Professionals, www.bfbc.org/issues/parking/apbp-bikeparking.pdf

Bicycle Parking In Madison, www.ci.madison.wi.us/transp/z2811bik.pdf

Bicycle Transportation, John Forestor, 2nd edition, 1994.

Bicycle Transportation Plan for the Madison Urban Area and Dane County, WI, Madison Area Metropolitan Planning Organization, September 2000.

City of Chicago, Bike 2015 Plan, Mayor's Bicycle Advisory Council, January 2006. www.bike2015plan.org

Economic Impact of Bicycling in Wisconsin, Prepared for the Governor's Bicycle Coordinating Council by the Bicycle Federation of Wisconsin with the Wisconsin Department of Transportation, spring 2006.

Effective Cycling, John Forestor, 6th edition, 1993.

Institute of Transportation Engineers (ITE) Traffic Calming Library www.ite.org/traffic.

Manual on Uniform Traffic Control Devices (FHWA) mutcd.fhwa.dot.gov/.

Milwaukee by Bike: Bicycle Public Plan, Bicycle Federation of Wisconsin, 2003.

Milwaukee Off-Street Bikeway Study: Milwaukee's Best Opportunities for Trail Expansion, Bicycle Federation of Wisconsin.

National Complete Streets Coalition, www.completestreets.org.

National Trails Partnership, The Economic and Social Benefit of Trails, March 2007, http://www.americantrails.org/resources/economics/MNecon.html

Pathways to Prosperity - The Economic Impact of Investment in Bicycle Facilities: A Case Study (NCDOT)
www.ncdot.org/transit/bicycle/safety/safety_economicimpact.html

Predicting Demand for Non-motorized Travel (Pedestrian and Bicycle Information Center)
www.bicyclinginfo.org/pp/predicting/index.htm

Safe Routes to School (National Center for Safe Routes to School clearinghouse)
www.saferoutesinfo.org/index.cfm

Safe Routes to School (USDOT FHWA) http://safety.fhwa.dot.gov/saferoutes/

Safe Routes to School (WisDOT), including the SRTW toolbox:
www.dot.wisconsin.gov/localgov/aid/saferoutes.htm

SEWRPC KRM: A Plan for the Kenosha-Racine-Milwaukee Commuter Link, www.sewrpc.org/KRMonline/background.shtm.

SEWRPC Regional Bicycle and Pedestrian System 2020 Plan for SE WI
www.sewrpc.org/transportation/amendmentbikeped.asp

SEWRPC Regional [I-94] Freeway System Reconstruction Plan for SE WI
www.sewrpc.org/freewaystudy

SEWRPC Regional Transportation System Plan for Southeastern Wisconsin: 2035 (SEWRPC Planning Report No. 49) www.sewrpc.org/regionalplans/regionaltransysplan.shtm

StreetShare (Motorist, Bicyclist, and Pedestrian Education website for Wisconsin)

www.streetshare.org

"Transportation Characteristics of School Children," Report No. 4, Nationwide Personal Transportation Study, Federal Highway Administration, Washington, DC, July 1972.

Wisconsin Bicycle Facility Design Handbook (WisDOT) January 2004
www.dot.state.wi.us/projects/bikes.htm

Wisconsin Bicycle Laws (in plain language, not the State Statutes verbatim)
www.dot.state.wi.us/safety/vehicle/bicycle/rules.htm

Wisconsin Department of Transportation - Bureau of Transportation Safety, Bicycle & Pedestrian Safety Program Manager, Larry.Corsi@dot.state.wi.us, 608-267-3154.

Wisconsin Department of Transportation Bicycle & Pedestrian Statewide Coordinator, Thomas.Huber@dot.state.wi.us, 608-267-7757.

Wisconsin Department of Transportation Bicycle & Pedestrian Southeast Region Coordinator, Jill Mrotek, 262-548-8794, jill.mrotek@dot.state.wi.us.

Wisconsin Department of Transportation, Transportation Enhancements Program Manager John Duffe, 608-264-8723, john.duffe@dot.state.wi.us.

Wisconsin Bicycle Planning Guidance: Guidelines for MPOs & Communities in Planning Bicycle Facilities www.dot.state.wi.us/projects/bikes.htm

Wisconsin Bicycle Transportation Plan 2020 www.dot.state.wi.us/projects/state/bike2020.htm

Wisconsin Bicycle Travel Information (including the 1999 bicycle transportation survey) www.dot.state.wi.us/travel/bike-foot/bike-index.htm

Wisconsin DOT Major Sources of Funding for Bicycle & Pedestrian Projects dot.wi.gov/localgov/docs/potential-funding.pdf

Wisconsin State Bicycle Maps (by County) www.dot.state.wi.us/travel/bike-foot/countymaps.htm

Appendix B: Estimated Cost of Bicycle Map

	hours	**low rate estimate**	**high rate estimate**	**low cost**
Creation of different layouts and symbology to be presented to the City for	20	$40/hr	$120/hr	$800

choice and approval				

Material	Est. Life	$/linear ft 6" line	Cost/ ft/yr	WisDOT Approved	Notes
Collect public input to define map needs and content		20	$40/hr	$120/hr	$800
Paper map design and cartography		100	$40/hr	$120/hr	$4,000
Digital Map Creation		8	$40/hr	$120/hr	$320
Coordinate Printing and Delivery		8	$40/hr	$120/hr	$320
Total		156			$6,240

Appendix C: Pavement Marking Cost Estimates

Waterborne Paint	.5	0.17	0.34	Yes	• Outside line wears quickly • Our estimate from Crowley was $0.17/ft, but this included field marking. The cost of just paint could be less.
Epoxy	3	0.27	0.9*	Yes	• Often flakes off concrete with poor prep • Can't be used on asphalt
Methyl Methacrylate	3	1.35	0.45*	No	• Not widely used in US • Fumes cause complaints in area for the day and day after installation
Polyester	5	0.13	0.03*	No	• Not widely used in US • Requires HAZMAT license to apply
Polyurea	3	0.9	0.3	No	• Material used in Chicago school safety program • Material deteriorated quickly according to Chicago report • Requires special equipment to apply • 3M only known manufacturer
Preformed Thermoplastic	6	1.59	0.27	Yes	• Currently used for bike symbols in Chicago • Does not work well for lines • Premark best product • Manufacturer recommends pre-sealer for older asphalt • Can be applied in all temperature ranges
Thermoplastic	10	0.68	0.07	Yes	• Not practical for detailed symbol marking • Ideal for lines • Chicago does not use pressure washing or pre-sealer, just sweeping.

					• Manufacturer estimated life is 5-6 years, but Chicago typically gets 10-11 years on high traffic streets.
Preformed Plastic Tape	3.75	2.34	0.62	Yes	• Formerly used for bike symbols in Chicago. • 3M is only known vendor. • Installation is time consuming and weather dependent. • If not installed properly, the product is very likely to fail.

Estimate is national figure from studies some years old. Costs have likely doubled.

Source: Compiled by City of Milwaukee Bicycle & Pedestrian Coordinator:
Dave Schlabowske, dschla@mpw.net

Appendix D: Summary of Wisconsin Bicycle Laws,

from http://www.dot.state.wi.us/safety/vehicle/bicycle/rules.htm.

Rules for riding bicycles on the road General rules

- Bicycles are vehicles. They belong on the road. [emphasis added]

- Ride at least three feet from the curb or parked vehicles or debris in curb area and in a straight line. Don't swerve in and out around parked vehicles.

- Always ride in the same direction as traffic.

- Sidewalk riding for bicyclists past the learning stage and being closely supervised by adults can be more dangerous than on the road, obeying traffic laws. It is also illegal unless the community has passed an ordinance specifically permitting sidewalk riding. This can be age-restricted, location-restricted or based on the type of property abutting the sidewalk.

- Obey all traffic laws.

- Be predictable! Let other users know where you intend to go and maintain an understood course.

Narrow lanes

- Ride in the center of the lane.

- Keep at least three feet between yourself and passing or parked traffic.

Wide lanes

- Ride just to the right of the actual traffic line, not alongside the curb.

- Keep at least three feet between yourself and the curb or from parked vehicles. Motorists should be passing you with at least 3 feet of clearance.

Don't get the door prize!

- Ride in a straight line three feet out from parked cars. You'll avoid car doors that open in front of you and you'll be more visible to other drivers.

- Don't pull into the space between parked cars. Ride just to the right of the actual traffic line, not alongside the curb.

- Ride straight, three feet from parked cars - don't get "doored" You will fare better with other road users if you function like a legal vehicle operator, which you are.

- Right turning motorists can be a problem, but taking the lane or more of the right portion of the wide curb lane can prevent this. Take an adult bicycling course to learn skills and develop confidence in traffic.

- Left turning motorists are the cause of most adult bicyclists' crashes. Motorists claim not to see the cyclist who is traveling in a straight path in the opposite direction.

Bicyclists, when making your own left turn look over your left shoulder for traffic, signal your left turn and change lanes smoothly, so you are to the left side or center of the through lane by the time you reach the intersection. If a left turn lane is present, make a lane change to center of that lane. Do not move to left of that lane as left-turning motorists may cut you off.

- Do not wait until you reach the crosswalk, then stop and try to ride from a stop across other traffic. If you need to cross as a pedestrian, leave the travel lanes, then get into the crosswalk, walking or riding your bicycle like a pedestrian travels, not fast, and with pedestrian signals.

Lane positioning can be especially important in approaching a downhill intersection. Moving to the center makes you more visible to intersecting and left turning motorists in opposing lanes.

- Going downhill, your speed is likely to be closer to traffic speeds or posted speed limits. Hugging the curb when there are visual barriers increases your chance to be struck by a bigger vehicle, or of hitting a pedestrian or sidewalk riding bicyclist.

- Take the lane, be seen and see other traffic better if you are close to traffic speeds

How to ride

Wear bright colors during the day and retro-reflective items at night along with headlight and taillight to increase your visibility to other road users.

- Wear a bicycle helmet on every ride to reduce your chance of head injury in event of a fall or crash. Most serious injuries from a fall or crash are to the head and most frequently, the forehead, so wear helmet level with the ground, just above the eyebrows.

Be aware of changing road surfaces, new construction or unusual barriers on the roadway, distracters for both you and other vehicle operators.

- Leaves can be slippery in the early morning and are a hazard even when slightly damp. Distractions such as dogs, wild animals and even humans can draw attention from the roadway and lead to a crash. Expect them.

Motorist reminders

- Bicycles are vehicles. They belong on the road. [emphasis added]
- Cyclists need room to get around potholes, sewer grates and other obstructions.
- Leave at least three feet when passing bicycles, more room at higher speeds.

- Change lanes to pass any bicycle traveling in a narrow lane.

- Train yourself to scan for fast moving (it's hard to tell speed) bicycles and motorcycles in the opposing lane to you when turning left, and scan sidewalks and crosswalks for pedestrians and bicyclists using the sidewalk and crosswalk as a pedestrian. Always scan to your right side sidewalk before you leave a stop light or stop sign. And to the left and right side sidewalks when on a one-way street.

From: http://www.bfw.org/projects/bicycle_laws.php

Wisconsin State Bicycle Laws

[numbers in brackets refer to State Statutes]

A. Vehicular Status

• The bicycle is defined as a vehicle. [340.01(5)]

• The operator of a vehicle is granted the same rights and subject to the same duties as the driver of any other vehicle. [346.02(4)(a)]

B. Lane Positioning

• Always ride on the right, in the same direction as other traffic. [346.80(2)(a)]

• Ride as far to the right as is practicable (not as far right as possible). [346.80(2)(a)]

• Practicable generally means safe and reasonable. 346.80(2)(a) lists a few situations when it is not practicable to ride far to the right:

• When overtaking and passing another vehicle traveling in the same direction;

• When preparing for a left turn at an inter-section or driveway;

• When reasonably necessary to avoid unsafe conditions, including fixed or moving objects, parked or moving vehicles, pedestrians, animals, surface hazards or substandard width lanes [defined as a lane that is too narrow for a bicycle and a motor vehicle to travel safely side by side within the lane].

C. One Way Streets

Bicycles on a one-way street with 2 or more lanes of traffic may ride as near the left or right-hand edge or curb of the roadway as practicable (in the same direction as other traffic). [346.80(2)(b)]

D. Use of Shoulders

Bicycles may be riden on the shoulder of a highway unless prohibited by local authorities. [386.04(1m)]

E. Riding 2-Abreast

Riding 2 abreast is permitted on any street as long as other traffic is not impeded. When riding 2 abreast on a 2 or more lane roadway, you both have to ride within a single lane. [346.80(3)(a)]

F. Hand Signals

• Bicyclists are required to use the same hand signals as motorists [346.35].

• Hand signals are required within 50 feet of your turn. It is not required continuously if you need both hands to control the bicycle [346.34(1)(b)]

G. Passing

• A motorist passing a bicyclist in the same lane is required to give the bicyclist at least 3 feet of clearance, and to maintain that clearance until safely past. [346.075]

• A bicyclist passing a stopped or moving vehicle is also required to give at least 3 feet of clearance when passing. [346.80(2)(c)]

H. Use of Sidewalks

• State Statutes allow local units of government to permit vehicles on sidewalks through local ordinances. [346.94(1)]

• When bicycles are allowed to be operated on sidewalks, bicyclists must yield to pedestrians and give an audible warning when passing pedestrians traveling in the same direction. [346.804]

• At intersections and other sidewalk crossings (alleys, driveways), a bicyclist on the sidewalk has the same rights and duties as pedestrians. [346.23, 24, 25, 37, 38]

I. Bicycling at Night

• Bicycling at night requires at least a white front headlight and a red rear reflector. The white front light must be visible to others 500 feet away. The red rear reflector must be visible to others between 50 and 500 feet away. A red or amber steady or flashing rear light may be used in addition to the required reflector. These are required no matter where you ride--street, path or sidewalk. [347.489(1)]

J. Duty to report accident. [346.70]

• The operator of a vehicle involved in an accident resulting in injury to or death of any person, or total damage to property owned by any one person of $1,000 or more shall immediately give notice of such accident to the police.

• "injury" means injury to a person of a physical nature resulting in death or the need of first aid or attention by a physician or surgeon, whether or not first aid or medical or surgical treatment was actually received;

• "total damage to property owned by one person" means the sum total cost of putting the property damaged in the condition it was before the accident, or the sum total cost of replacing such property.

• This section does not apply to accidents involving only vehicles propelled by human power.

For more information contact:

Bicycle Federation of Wisconsin, 608-251-4456, info@bfw.org, www.bfw.org

F: Summary of Public Input

Additionally, a survey was available online at surveymonkey.com. A written version of the same survey was also distributed with the The City of Green Lake Energy Bill, insuring that every household in the City of Green Lake received a survey. There were no open ended questions in either the online or the written survey, however, many paper surveys were returned with comments made in the margins.

Comments made in the margins of paper survey responses:

- Good bike paths will help Green Lake Economy. It is difficult to ride from downtown to the ABA for example. On weekends there are boat trailers allowed to park from Gold St. to the bridge and there is not enough room for cars and especially bikes. Also a path from town to south Lawson and out to the Conference Center. Also the traffic speed survey for County Trunk A seems incorrect. The path is there, but dangerous. High speed traffic discourages bikers.

- I am very pleased that the City of Green Lake is considering a Bicycle Master Plan. Please consider extending the current multi-use path that ends at Maplewood West at least to Forest Avenue. There are a number of residents living on Forest Avenue that make their way to and from town each day. It is very dangerous for people to walk along S. Lawson Drive as cars pass by. Motorists often enjoy the scenic vista across the lake rather than being alert to the pedestrians. I have reviewed the S. Lawson Drive roadway easement and confirmed that there is ample space for a multi-use path on either side of the roadway.
- My sons and their friends, all of whom are serious cyclists often come to Green Lake and cycle over 100 miles per day. They come from all over the Midwest and feel the conditions are ideal for cycling, smooth roads, light traffic; they enjoy the challenges of the rolling hills. I am of the opinion we do not need to make any further improvements, a cycle shop would help.