Regional Bicycle-Pedestrian Plan Update

August 28, 2003

Final Report

Chittenden County Metropolitan Planning Organization

Communities working together to meet Chittenden County's transportation needs

Chittenden County Metropolitan Planning Organization

30 Kimball Avenue, Suite 206
South Burlington, Vermont 05403-6825
T 802-660-4071
F 802-660-4079
www.ccmpo.org
info@ccmpo.org

The preparation of this document was financed jointly by the eighteen municipalities in Chittenden County and the Chittenden County Transportation Authority; the Vermont Agency of Transportation; and the United States Department of Transportation, Federal Highway Administration, and Federal Transit Administration.

Submitted by: Wilbur Smith Associates

CCMPO Board

William Keogh, Burlington – Chair
James Condos, South Burlington – Vice Chair John Booth, Essex – Secretary-Treasurer

Gerard Mullen, Bolton
William Keogh, Burlington
Jeff McDonald, Charlotte
Chris Conant, Colchester
Jeff Carr, Essex
John Booth, Essex Junction
Andrea Morgante, Hinesburg
Richard Moulton, Huntington
Robert Penniman, Jericho
James Manley, Milton
Virginia Clarke, Richmond
Phil Beliveau, St. George
Norman Silcox, Shelburne
Jim Condos, South Burlington
Stan Hamlet, Underhill
Tom Buckley, Westford
George Gerecke, Williston
Michael O'Brien, Winooski
Patricia McDonald, State of Vermont

Ex-officio, non-voting
Chris Cole, CCTA
Lewis Wetzel, CCRPC
John Hamilton, Burlington Int'l Airport
Mike Flaherty, Vermont Transportation Authority
Jerome Hebda, Vermont Railway
Christopher Jolly, FHA
Andrew Motter, FTA

CCMPO Staff

Paul Craven, Project Manager
Bernadette Ferenc, Administrative Assistant
Christine Forde, Sr. Transportation Planner
Peter Keating, Sr. Transportation Planner
William Knight, Executive Director
David Roberts, Sr., Transportation Planner
Susan Smichenko, Sr. Transportation Planner
Daryl Benoit, Transportation Planner

Bike/Ped Steering Committee

Connie Livingston
Bob Penniman
Amy Bell
Jon Kaplan
Jeff Fehrs
Tom Berry
Jeanette Berry
Richard Bernstein
Lew Wetzel
George Gerecke
George Sporzynski
William Patrick
Jim Brangan
David Jacobwitz
Chapin Spencer
Peter Keating

This Plan is dedicated to the memory of two committed bicycle advocates, both of whom passed away while bicycling:

George Sporzynski wholeheartedly participated on the Bike/Pedestrian Steering Committee overseeing development of this Plan. Ever respectful and courteous to all involved, George supported improving conditions for bicycling and walking with a passion seldom seen in others. His strong advocacy is largely responsible for the design and construction of the extensive bike/pedestrian path network in South Burlington.

Bill MacLeay, while chairman of the Colchester Selectboard enthusiastically supported the development of bicycle and pedestrian facilities in his community and throughout the region, particularly the Colchester Bike Path, the Causeway Path, and widening road shoulders when repaving,

We regret that their premature passing kept them from seeing this Plan through to completion and sharing in the satisfaction of a job well done.

Contents

Table and Appendix List

EXECUTIVE SUMMARY

The Chittenden County Metropolitan Planning Organization (CCMPO) is developing an update to the 1993 Alternative Transportation Path Plan. The 1993 plan covered eight municipalities: Burlington, Colchester, Essex Junction, Essex Town, Shelburne, South Burlington, Williston and Winooski. Since then the CCMPO has been expanded to cover all eighteen communities in Chittenden County and this Plan encompasses these same communities.

PURPOSE

The purpose of this plan is to provide guidance for the implementation of interconnected bicycle and pedestrian networks for transportation. The CCMPO and the federal government have set ambitious goals to increase the amount of bicycling and walking and to increase safety by reducing the number of crashes. Another purpose of this update is to broaden the 1993's Plan to include more of a focus on on-road bicycle facilities and pedestrian facilities such as sidewalks.

Pedestrian and bicycle networks are important in and of themselves but are critical components of a multi-modal system that serves all citizens and visitors in Chittenden County. The success of these networks is measured by the degree to which they are integrated with the planning and design of other modes of transportation such as bus, rail, ferry and automobiles.

Investing in pedestrian and bicycle facilities like sidewalks, shared use paths and on-road bicycle facilities not only assists the foot traveler and bicyclists to meet their traveling needs but can also lead to other quality of life and health improvements for individuals and the region as a whole. Biking and walking, in conjunction with transit, can play key roles in reducing traffic congestion.

Like the recently completed *Vermont Pedestrian and Bicycle Facility Planning and Design Manual*, it is a fundamental principle and expectation of this Plan that all transportation projects will be planned, designed and constructed under the assumption that they will be used by pedestrians and bicyclists (except where specifically prohibited such as on limited access highways).

TYPES OF FACILITIES AND PROGRAMS

A wide variety of bicycle and pedestrian facilities are available that can serve their needs. These include:

- Shared use paths,
- Sidewalks,
- Bicycle lanes,
- Paved shoulders,
- Wide curb lanes, and
- Shared lanes.

Key attributes of safe, functional and well used bicycle and pedestrian networks are:

- Continuity,
- Directness,
- Attractiveness, and
- Maintenance.

FACILITIES RECOMMENDATIONS

This Plan recommends a regional networks of on-road bicycle facilities (309 miles) and shared use paths (117 miles) to provide high quality connections between communities and to major activity centers in Chittenden County and to neighboring counties, shown in Figure 1. The most important function of these networks is to identify corridors of *regional significance* from a bicycling and pedestrian perspective.

Appendix 2 contains a detailed list of proposed and existing pedestrian and bicycle facilities within each Chittenden County community, which form the basis for the regional networks. The regional networks do not, and should not, include all of the facilities shown on the local plans. The regional facilities promote walking and bicycling between or through the communities, while the local networks promote and provide more localized access and mobility. There are also some facilities in the regional plan that are not indicated in the municipal plans, either due to an unperceived need for the link at the local level, or the general exclusion of certain types of facilities.

Important considerations in the identification of these on-road and shared use path networks are:

- High quality connections between 'Metropolitan' and 'Village' Planning Areas (developed by the CCRPC for its regional plan process) should be the fundamental framework for determining the density of the network -- the number of facilities. These connections should accommodate bicyclists and pedestrians of all skill levels, where practical and feasible. In some corridors, this may be either by shared use path and/or on-road bicycle facility.
- A shared use path network should complement, not replace, an on-road bicycle facility network. In many corridors, both types of facilities are recommended.
- The networks should form the basis for priorities for future funding of CCMPO projects and planning.

Sidewalk priorities are identified in the 2000 CCMPO Pedestrian Policy and Sidewalk Plan for Chittenden County.

IMPLEMENTATION

The Implementation Plan provides information on Baseline Costs for bicycle and pedestrian facilities, identifies funding sources and funding strategies, outlines current spending levels and potential funding targets and emphasizes a number of Implementation Strategies as follows:

- Give highest priority to multi-jurisdiction projects for construction and planning funds.

- Give priority to projects that provide connections between Villages and Metropolitan planning areas.

- Give priority to projects within Village and Metropolitan Planning Areas.

- Pedestrian accommodations should be an essential part of all commercial and residential developments/redevelopments and thereby should be funded by the developer.

- When planning and designing pedestrian-bicycle facilities, design to meet anticipated demand and the needs of the 'design bicyclist."

- Ensure that full consideration of bicycle-pedestrian facilities is provided in the use of all federal transportation funds by the CCMPO, as required by federal law. This means including these facilities, where practicable and feasible, in all traditional roadway projects.

- Expand the use of state funding used for bicycle and pedestrian projects by publicizing the flexible use of funds for standalone bicycle-pedestrian projects and for including bicycle-pedestrian facilities in traditional road and bridge projects.

- Develop an innovative mix of local funds to implement bicycle and pedestrian facilities.

- Maximize the use of private funding through fundraising and through the use of developer exactions or impact fees.

- Work to make every street bicycle and pedestrian compatible to the extent practicable, where bicycling and walking is not specifically prohibited

- Be open to and encourage flexibility in the application of design guidelines in the design of projects where true safety concerns are not compromised.

- Design with maintenance in mind through choice of materials and construction methods.

- Design with the appropriate level of anticipated demand for the facility and for the lowest skilled users expected to use the facility.

- Program on the order of 3% per year on average over the course of each three year funding cycle for standalone bicycle-pedestrian projects.

- Program on the order of 35 % per year of total funding (on average over the course of each three year funding cycle) to transportation projects that include a bicycle/pedestrian component.

- Work to increase the amount of funding programs available and diversify existing programs for use in maintaining shared use paths, on-road bicycle facilities and sidewalks.

- Advocate for the enforcement of motor vehicle laws and laws governing bicyclists and pedestrians.

- Advocate for the funding and implementation of Encouragement and Promotion strategies.

- Develop and implement a multi-faceted approach to education related to bicycle and pedestrian issues, focusing on safe operation and sharing the road.

- Endorse the guidelines being developed by VTrans for bicycle and pedestrian projects receiving funding through the CCMPO.

- To gauge the progress of and results from the Plan's implementation, it is recommended that the CCMPO adopt a series of bicycling and pedestrian-related performance measures that are reviewed every three years.

- Work with local, regional and statewide partners to improve the accident reporting system related to bicycling and walking. Incorporate comprehensive accident reporting to the degree possible, to include police reported accidents and hospital data.

- Create a line item in the CCMPO's Transportation Improvement Program (TIP) annually obligating funds for sidewalk projects.

Funding Strategies. This Plan has identified a significant number of new facilities that likely will outstrip available public resources if implemented as standalone bicycle-pedestrian projects or limited to funds earmarked specifically for bicycle-pedestrian projects. Innovative funding and project programming can extend available funding. It is critical to take full advantage of funding that is available from all funding sources including federal, state, local and private sources. Many projects will not likely be implemented using dedicated bicycle-pedestrian funding but as part of a larger transportation project such as reconstruction of a roadway and adding shoulders or sidewalks.

EXISTING PLANNING AND IMPLEMENTATION EFFORTS

An extensive network of bicycle and pedestrian facilities is evolving in Chittenden County. This is taking place through a large number of cooperative efforts at a wide range of levels involving a large number of entities. An inventory of local facilities in included in the appendix.

CHAPTER 1: INTRODUCTION

The Chittenden County Metropolitan Planning Organization (CCMPO) has contracted with Wilbur Smith Associates (WSA) to perform an update to the 1993 Alternative Transportation Path Plan. The 1993 plan covered eight municipalities: Burlington, Colchester, Essex Junction, Essex Town, Shelburne, South Burlington, Williston and Winooski. Since then the CCMPO expanded to cover all eighteen municipalities in Chittenden County and this Plan encompasses these same communities. The original plan also focused solely on alternative transportation paths. This update has a broader focus, looking at on-road as well as off-road facilities that have region-wide importance.

This Final Report is organized into three distinct sections: Existing Conditions, Network Recommendations and Implementation Plan. The first section documents Existing Conditions related to previous and current planning efforts and provides an update on the status of bicycle-pedestrian related planning in the CCMPO area. The second section identifies the recommended bicycle and pedestrian networks. The third section identifies steps and policies recommended for implementation.

1.1 Purpose

The purpose of this plan is to provide guidance for the implementation of interconnected bicycle and pedestrian networks for transportation. The CCMPO, VTrans and the federal government have set ambitious goals to increase the amount of bicycling and walking for transportation and to increase safety by reducing the number of crashes. Another purpose of this update is to broaden the 1993's Plan to include an increased focus on on-road bicycle facilities and pedestrian facilities such as sidewalks.

This Plan uses a broad definition of transportation trip. Any trip that could potentially be made by automobile is considered a transportation trip. This includes trips for commuting to work, shopping, running errands and trips to parks and recreation areas.

Because it is regional in scope, this plan may not include all the bicycle and pedestrian facilities within each community in the regional networks. Some facilities may meet more local needs while others fill an almost exclusively recreational purpose or may not provide regionally important connectivity.

Pedestrian and bicycle networks are important in and of themselves but are critical components of a multi-modal system that serves all citizens and visitors in Chittenden County. The success of these networks is measured by the degree to which they are integrated with the planning and design of other modes such as bus, rail, ferry and automobiles, and the degree to which they are used.

1.2 Why Plan for Pedestrian and Bicycle Improvements?

Investing in pedestrian and bicycle facilities like sidewalks, shared use paths and on-road bicycle facilities not only assists the foot traveler and bicyclists to get from trip origin to destination but can also lead to other quality of life improvements. These include:

More Transportation Choices: As conditions improve and more people are willing to walk or bike short distances to bus stops or rail stations, transit becomes a better mode choice for more people. Walking and biking can also substitute for short car trips, benefiting traffic flow and potentially reducing congestion.

***Economic Vitality*:** A significant level of Chittenden County commerce takes place in historic downtowns and village centers. Sidewalks provide the pedestrian infrastructure that directly serves this commercial activity. Making these areas more walkable and bicycle friendly directly benefits the businesses and the local economy. The quality of the pedestrian and biking environment can also improve tourism.

***Safe Neighborhoods*:** Neighborhoods are friendlier and safer if residents and visitors walk and bicycle. Their presence strengthens neighborhood bonds through frequent personal interactions and helps deter crime. More walking and biking can also reduce car trips within these neighborhoods thereby reducing the number of potential car/pedestrian and car/bicyclist conflicts.

***Cleaner Environment*:** Changing the modal balance between cars and other modes - especially walking and biking - will benefit air quality by reducing vehicle emissions.

Energy Efficiency: Fewer motor vehicle trips means less fuel consumed and more energy conserved.

***Better Health*:** Walking and bicycling can be keys to improving the physical fitness of many Americans. Regular walking and bicycling reduces the risks of major diseases, relieves stress and improves mental health.

Save Money: Walking and bicycling not only expand travel choice, but when combined with transit, can significantly reduce individual and household transportation expenses.

Social Equity: Walking and bicycling expand personal mobility and choice for those who do not or can not drive - typically the young, the elderly, the disabled and those without cars. An improved pedestrian and bicycling system provides independent mobility and accessibility for more of our citizens. (Adapted from *Pedestrian Policy and Sidewalk Plan for Chittenden County*, CCMPO, 2000, included in Appendix 1.)

1.3 Planning and Design Considerations

1.3.1 Types of Bicyclists, or The 'Design Bicyclist'

Planning for bicyclists involves providing bicycle facilities to meet the needs of bicyclists with various interests, ages and skill levels. A three-tier classification of bicycle skill levels has been developed that approaches bicyclists primarily from their ability to interact with traffic. This system is used in the latest AASHTO *Guide for the Development of Bicycle Facilities*, the *de facto* standard for bicycle facility planning and design in the United States, and in the *VTrans Pedestrian and Bicycle Facility Planning and Design Manual*, the current standard in Vermont. These classifications include Group A, Advanced Bicyclists; Group B, Basic Bicyclists; and Group C, Child Bicyclists.

Group A, Advanced Bicyclists – Advanced Bicyclists are very experienced bicyclists comfortable riding in most all traffic conditions, requiring less separation from traffic. On lower speed, lower traffic roads they are comfortable mixing with motorized traffic. On higher volume, higher speed traffic roadways, they benefit from increased travel lane width (wide curb lanes), bicycle lanes on urban roadways or paved shoulders on rural roadways. They typically prefer riding on roads to shared use paths because they tend

to be more direct. They travel at higher speeds and choose routes to minimize delays and for directness of travel.

Group B, Basic Bicyclists – Basic Bicyclists are adult or teenage bicyclists that are less skilled than advanced bicyclists and less comfortable riding in traffic. They prefer roadways with lower traffic volumes and speeds and greater separation from traffic with designated on-road bicycle facilities or shared use paths.

Group C, Child bicyclists – Child bicyclists are the least skilled bicyclists and require bicycle facilities that provide the greatest separation from traffic. They are best accommodated on residential neighborhood streets with low traffic volumes and speeds or on shared use paths.

1.3.2 Facility Design Guidelines

VTrans has published its *Pedestrian and Bicycle Facility Planning and Design Manual*. This Manual provides guidelines adapted specifically for Vermont for planning, designing and implementing bicycle and pedestrian facilities. The final version is currently available on line and printed copies are anticipated to be completed in early 2003.

Please refer to this Manual for specifics regarding facility, planning and design.

Types of Bicycle Facilities

Shared Use Paths – "Shared use paths are facilities on exclusive right-of-way and with minimal cross flow by motor vehicles. Users are non-motorized and may include but are not limited to: bicyclists, in-line skaters, roller skaters, wheelchair users (both motorized and non-motorized) and pedestrians, including walkers, runners, people with baby strollers, people walking dogs, etc." (AASHTO, 1999). These may be along, near or separate from roadways, on abandoned rail lines or adjacent to or within active rail lines. Other names used for these facilities may include bicycle path, bike path, Class I Bicycle Facility, transportation path, multi-use path, or bike trail. In this Plan, the term Shared Use Path will be used unless referring to the proper name of a facility, such as the Burlington Bikepath.

Shared Use Path

Bicycle Lane – A bicycle lane or bike lane is a portion of the roadway designated for preferential or exclusive use by bicyclists. It includes both roadway striping, pavement markings and signage to identify the presence of the facility. It should be a one-way facility except under special circumstances. Bike lanes are typically provided in an urban or village setting to provide more delineation between or channelization of vehicular and bicycle traffic. Parking should be banned in bicycle lanes. Another formerly used term for bicycle lane is Class II facility.

Bicycle Lane

Paved Shoulder – A paved shoulder is additional width contiguous to the travel lane. It is delineated by a white 6" wide stripe. Paved shoulders are typically provided on an uncurbed, rural roadway cross-section but may also be provided on an urban, curbed roadway

cross-section.

Wide Curb Lane or Wide Outside Lane – A wide curb lane is a bicycle facility where additional width above a standard 11'-12' travel lane is provided in the travel lane closest to the curb. It is typically an urban or suburban bicycle facility on a curbed roadway but can be a rural roadway without curbing. Bicyclists and motorists share the lane but the additional width allows motorists to pass the bicyclist without changing lanes or crossing over the center line. No special signage or striping is required. Lanes wider than 15' should not be provided as they may encourage use as two travel lanes by motorists.

Paved Shoulder

Shared Lane – A shared lane provides no additional travel lane width for the bicyclist but can accommodate bicyclists by virtue of lower traffic volumes and speeds. Motorists and bicyclists share the travel lane. No special signage or striping is provided. Ideally, these facilities are 11' to 13' in width. However, most streets and roads in Vermont are considered shared lane facilities.

Bicycle Route – A bicycle route is a preferred route for bicyclists that has been designated for use by signs. It may contain a combination of any or all of the above mentioned bicycle facility types.

Wide Curb Lane

The primary factors in selecting the type of facility that is appropriate for a roadway are:

- Design bicyclist
- Traffic volumes
- Area type (urban, village, rural)
- Roadway characteristics (curbed uncurbed, presence of parking)

Other important bicycle facilities or amenities include bicycle racks, bicycle lockers and signage.

A note on facility naming: Class I, Class II and Class III bicycle facilities. These terms are currently used by many of the CCMPO communities to describe bicycled facilities and are also used in CCMPO's 1994 Alternative Transportation Plan. This naming scheme is now obsolete and has been replaced with newer terms. Class I facilities correspond to shared use paths; Class II facilities correspond to bicycle lanes; and Class III facilities correspond to Shared Lanes. Often Class III facilities refer to roads that may have 'Bicycle Route' signs located along them. It is recommended that the Class terms be replaced with the more precise terms used in this plan.

Types of Pedestrian Facilities

Important pedestrian facilities include:

- Sidewalks
- Shared use paths
- Pedestrian mall (pictured at right)
- Pedestrian trails or paths
- Crosswalks
- Pedestrian signals
- Curb extensions/bulb outs
- Pedestrian refuge islands
- Curb ramps
- Audible signals at intersections.

Pedestrian Facility

Important planning and design considerations include conformity with the Americans with Disability Act. A design guide for accessible Facilities, "Designing Sidewalks and Trails for Access-Best Practices Design Guide" was published in two parts by the Federal Highway Administration.

As with bicyclists, the specific characteristics of pedestrians that will use a facility must be taken into account when selecting the facility and designing it. For instance, for areas with high elderly populations it may be desirable for pedestrian signals to provide additional time during the pedestrian phase to cross the street. Areas with high numbers of pedestrians may warrant exclusive pedestrian phases (all traffic stops) rather than the more frequent concurrent pedestrian phases (vehicle traffic parallel to the pedestrian movement goes).

CHAPTER 2: RECOMMENDED REGIONAL NETWORKS

An extensive network of sidewalks, shared use paths and on-road bicycle facilities is evolving in the County. Each of these networks is critical to the improved safety and mobility of pedestrians and bicyclists of all capabilities.

In developing a regional network, several considerations are important, most having to do with the term regional itself. Determining what is regional versus what is local is not always clear cut. The basic premises for identifying and developing these regional networks in this study include:

- Regional facilities provide safe and convenient *access to* major activity centers and transportation centers or hubs within the region. Local facilities, in contrast , primarily provide *circulation within* the broader community (resulting in a finer grained network of facilities).
- High quality connections between 'Metropolitan' and 'Village' Planning Areas (developed by the CCRPC for its regional plan process) should be the fundamental framework for determining the density of the network -- the number of facilities. These connections should accommodate bicyclists and pedestrians of all skill levels, where practical and feasible. In some corridors, this may be by shared use path and/or on-road bicycle facility.
- A shared use path network should complement, not replace, an on-road bicycle facility network. In many corridors, both types of facilities are recommended.
- The networks should form the basis for priorities for future funding of CCMPO projects and planning.

The most important function of the network is to identify corridors of regional significance from a bicycling and pedestrian perspective. The networks emphasize connections between communities, between major activity centers such as major shopping and employment centers, town centers, educational facilities, major regional recreational resources and to transportation centers.

Figure 1 identifies the recommended Shared Use Path and On-road Bicycle Facility Networks. A facility type is shown -- on-road and/or shared use path -- but implementation will require additional study. The type of facility built will depend on more detailed analysis of the expected users and what is determined to be feasible within a specific corridor.

Since most roads are now considered to be shared lane facilities, the regionally important on-road Bicycle Facilities may be either wide curb lane, paved shoulders or bicycle lane facilities.

Figure 1 and accompanying tables, Tables A and B in Appendix 3 starting on page 65, identify these facilities by major segment – segments that connect activity centers, transportation centers, or metropolitan and village planning areas. Currently, some portion of segments shown on the map as 'Proposed' exist but are coded as proposed because they don't provide a continuous facility for the entire segment. For instance, Route 2 in Burlington has bicycle lanes for a part, but not all, of the segment and are therefore shown as proposed. Likewise, several paths exist in Williston but are not a continuous

facility along the entire regional segment, so are shown on the map as proposed. Tables A and B identify the segments and where part of a segment has been implemented by using the label 'existing/proposed'.

Several corridors show only on-road bicycle facilities. The development of these facilities will require further reexamination of the specific details of each corridor. Issues such as visual impacts, integration with existing on street parking and limited right-of-way will need to be addressed before the system can be completed. In some corridors, continued growth in demand may warrant the development of a shared use path instead.

Appendix 2 contains a detailed list of proposed and existing pedestrian and bicycle facilities within each Chittenden County community. These on-road bicycle facilities and shared use path plans by the individual municipalities form the basis for the regional networks. The regional networks do not, and should not, include all of the facilities shown on the local plans. The regional facilities promote walking and bicycling between or through the communities, while the local networks promote and provide more localized access and mobility.

There are also some facilities in the regional plan that are not indicated in the municipal plans, either due to an unperceived need for the link at the local level, or the general exclusion of certain types of facilities. For instance, most of the State highways in the County are included in the regional on-road bicycle facility network; most are not in the municipal plans. (Most local plans focus on shared use path and trail networks.) These State highways in many cases connect the population and job centers in the County and are thus logical parts of a regional bicycle network. Their inclusion in the network also emphasizes the importance of their improvement (such as the addition of paved shoulders of adequate width) when roadwork is being programmed on these State roadways.

CHAPTER 3: IMPLEMENTATION PLAN

The Implementation Plan provides information on Baseline Costs for bicycle and pedestrian facilities, identifies funding sources and funding strategies, outlines current spending levels and potential funding targets and emphasizes a number of Implementation Strategies.

3.1 Regional Facilities and Local Facilities

A cornerstone of this Plan is the identification of two recommended regional networks: an on-road bicycle facility network and a regional shared use path network. As described in Chapter 2, Recommended Networks, these networks are intended to provide high quality transportation connections to major transportation facilities and systems and connections between existing and future centers. These centers include Metropolitan and Village centers (as identified in the Regional Plan by the Chittenden County RPC, 2001) and major activity and employment centers such as Taft Corners in Williston.

Importantly, the two regional networks provide a regional framework for establishing implementation and funding priorities by the CCMPO and its member communities and agencies. They also identify corridors important to bicycling and walking from a regional perspective.

Implementation Strategy: Multi-jurisdictional Projects. Give highest priority to multi-jurisdiction projects for construction and planning funds.

Many of these projects are currently underway and are described in Chapter 4.

Implementation Strategy: Travel Between Villages and Metropolitan Planning Areas. Give priority to projects that provide connections between Villages and Metropolitan planning areas.

Many local facilities, identified in Appendix 2, are not part of the regional network. They provide important connections and circulation within and between neighborhoods and to locally important attractions such as parks, libraries and schools. Thus, when looking to implement the regional plan, the focus should be on those regional facilities that help to link these important local facilities to each other.

Implementation Strategy: Sidewalks. Give priority to projects within Village and Metropolitan Planning Areas.

Sidewalks by their nature are generally local facilities. They provide important pedestrian connections (and sometime bicycle connections for children) within and between neighborhoods and downtowns/village centers.

Implementation Strategy: Pedestrian accommodations should be an essential part of all commercial and residential developments/redevelopments and thereby should be funded by the developer.

Besides sidewalks along street frontage, internal sidewalks for on-site circulation are important to provide connections from public streets to building entrances and within and between developments. While not appropriate in every case, these site connections make walking and transit use not only safer but a viable and attractive alternative to driving. Even when formal sidewalks are not appropriate, pedestrian circulation should still be considered. See the VTrans *Pedestrian and Bicycle Facility Planning and Design Manual* for additional pedestrian planning and design considerations.

Implementation Strategy: When planning and designing pedestrian-bicycle facilities, design to meet anticipated demand and the needs of the 'design bicyclist."

The various different types of facilities described in this Plan provide varying degrees of mobility for the different types of users identified in Section 1.3.1. The final design of a facility will ultimately determine how suitable it is to the different types of users. It is therefore important to keep the "design bicyclist" or other users in mind as the project is being designed, to make sure that their specific needs in terms of needs and comfort are considered.

3.2 Funding Strategies

This Plan has identified a significant number of new facilities that will likely outstrip available public resources if implemented as standalone bicycle-pedestrian projects or with only funds earmarked specifically for bicycle-pedestrian projects. Innovative funding and project programming can extend available funding. For instance, it may not be practical or financially feasible to improve many of the rural roadways to recommended widths as a standalone project. Many would need four to six feet of additional width to provide a paved shoulder of sufficient width on each side of the road. For most of these roads, it may be advisable to wait until the road will undergo reconstruction or rehabilitation. While it may take longer to implement the network, it can be done more cost-effectively and often with better results. Adding shoulders alone to a roadway can have mixed results -- the shoulder pavement structure may not be as good as the rest of the roadway.

Following a discussion of typical bike and pedestrian facilities costs, the text describes federal, State, local and private funding programs and strategies.

3.2.1 Baseline Costs for Bicycle-Pedestrian Facilities

Costs can vary widely depending on the type of bicycle-pedestrian facility being developed as well as by the standards used (often dictated by the funding source), the area (rural, suburban or urban) and environmental considerations.

The major types of facilities considered here include on-road bicycle facilities, shared use paths and sidewalks. On-road bicycle facilities include bicycle lane, paved shoulder, wide curb lane, shared lane. Each of these facilities has implications for the level of accommodation they provide to the bicyclist, initial project costs and on-going maintenance costs. For example, bicycle lanes have higher initial and on-going costs related to roadway signing and striping/stenciling. The facilities themselves can be implemented by constructing additional roadway width or by retro-fitting existing width to provide additional room for bicycles. This may include reducing the number of travel lanes and/or removing/relocating on-street parking.

For shared use paths, costs are also widely variable due to right-of-way costs, standards used, material types, environmental considerations and potential additional needs such as bridges, boardwalk, trailheads, fencing, railings and signage. Environmental considerations include wetlands, topography, and stream or river crossings.

Table 1 identifies major types of bicycle and pedestrian projects and typical facility development costs.

Table 1. Typical Facility Development Costs

Facility/Item	Description	Cost Range
Bicycle Lane	Add 5' bike lane each side, signing, striping/ stenciling - Urban area, per mile	$250,000 to $500,000
	Signing and Striping/Stenciling, per mile (retro-fit)	$2500-$5000
Paved Shoulder	Additional 6' of roadway width (3' shoulders) per mile	$150,000 to $300,000
	Additional 10' of roadway width (5' shoulders), per mile	$200,000 to $400,000
Wide Curb Lane	Additional 6' of roadway width - Urban area, per mile	$150,000 to $300,000
Shared Use Path	10' wide asphalt path surface, per mile	$465,000 *
	10' wide stonedust path surface, per mile	$375,000 *
	Bridge, 14' wide, per linear foot of span length, pre-fabricated	$1500-$2500
	Bridge, 10' wide, per linear foot of span length, pre-fabricated	$1000-$2000
Bicycle Signage	Bicycle Route signs, every half mile and at major decision points, per sign	$500
	Bicycle Route sign with directional/destination information and logo, per sign	$750
	Share the Road signs, at identified locations, per sign	$500
Bicycle Loop Detectors	Bicycle sensitive loop detectors, per intersection approach, per lane (assumes existing traffic controller)	$1000
Sidewalk	5' wide asphalt sidewalk, per mile	$211,000 *
Sidewalk	5' wide concrete sidewalk, per mile	$390,700
Pedestrian Signal Heads	Provide indication of 'Walk/Don't Walk' to indicate pedestrian phase and status, per head (where traffic signals already exist)	$1000
Countdown Timers	Provides pedestrian and drivers feedback as to remaining time for pedestrians to cross intersection, per timer (where traffic signals already exist)	$1500
Audible Signals	Audible feedback for the visually impaired at intersections, per intersection	$1000
Crosswalks	Painted/thermoplastic, per crosswalk	$500
	Raised crosswalk, per crossing	$2000-$15,000
Curb extension	Extends curb line at intersection or mid-block location to reduce crossing distance for/increase visibility of pedestrians, per corner	$2000 - $20,000
Bicycle Parking	Inverted U-rack, capacity 2 bicycles, per unit	$150-$250
	Bicycle locker, capacity 2 bicycles, per unit	$1000
Design/Construction	Preliminary engineering – as a percent of construction cost	20%
	Project management – as a percent of construction cost	10%

Facility/Item	Description	Cost Range
	Construction inspection – as a percent of construction cost	10%

This table of unit costs represents typical construction costs ***only*** and does not include other costs associated with developing a shared-use path, sidewalk or bicycle projects. Source: WSA; * "*Report on Shared-use Path and Sidewalk Unit Costs*", VTrans, 2002; www.walkinginfo.org; www.bicyclinginfo.org. Depending on the design, costs vary from those shown above. Costs of right-of-way not included.

3.2.2 Federal Funding

Implementation Strategy: Ensure that full consideration of bicycle-pedestrian facilities is provided in the use of all federal transportation funds by the CCMPO, as required by federal law. This means including these facilities, where practicable and feasible, in all traditional roadway projects.

The federal funds that the CCMPO allocates every year are passed-through to it by the State transportation agency, VTrans. There are also State dollars spent in the CCMPO area that are programmed by VTrans. It is a federal requirement that the MPO, though, approve the spending of federal transportation funds by VTrans within its area.

Numerous federal funding programs provide opportunities to build or maintain bicycle and pedestrian facilities and programs. The following is a brief summary of these funding categories and eligible types of projects and programs. Funding programs of the Federal Highway Administration, Federal Transit Administration and other federal agencies and departments are described below. More detailed information can be obtained at: www.fhwa.dot.gov/environment/bikeped/BP-Guid.htm#App-2 . It is important to remember that much of the money that VTrans receives has limitations on the types of projects on which it can be spent, but there is some flexibility to transfer money between funding 'pots'.

Federal Highway Administration

Interstate Maintenance funds. These funds are programmed directly by VTrans to maintain/improve the interstate highway system in Vermont. There are no specific funds set aside for bicycle or pedestrian facilities but these funds may be used to improve facilities (sidewalks, widen to provide shoulders or bicycle lanes, pedestrian crossings, e.g.) at interchanges, or overpasses, for instance.

This may have specific applicability along I-89 and the Circumferential Highway at existing and/or future interchanges or overpasses.

National Highway System (NHS) funds. The NHS is comprised of "urban and rural roads serving major population centers, major travel destinations, international border crossings, and intermodal transportation facilities. The Interstate System is part of the National Highway System" (FHWA website). A wide range of pedestrian and bicycle facilities are eligible for NHS funds including paths within Interstate highway rights-of-way, bicycle lanes or paved shoulders on non-access limited NHS roadways as well as underpasses/tunnels or overpasses of NHS roadways. Examples of NHS roadways include I-89 and Routes 7 and 2. State transportation agencies get NHS money by a formula set by Congress and typically program these funds directly with concurrence from MPO's, where applicable.

NHS funds may have specific applicability to providing a shared use path along or over the Circumferential Highway, or I-89, and adding shoulders or bike lanes to NHS non-access limited roads.

Highway Bridge Replacement funds. These are funds to rehabilitate or replace bridges. Bicycle accommodation *shall* be provided on rehabilitated or replaced bridges when bicycles are allowed on the roadway *and* when it can be done at a reasonable cost.

This may have specific applicability to provide improved on-road bicycle facilities when bridges are rehabilitated or replaced with federal funds between Winooski and Burlington, in addition to other locations throughout the County. In Vermont this partially funds the Town Highway Bridge Program and the Adaptive Use Bridge Program (described in more detail below).

Surface Transportation Program (STP). This is the largest federal transportation funding pot that provides VTrans with the flexibility to build a wide variety of transportation facilities, including bicycle-pedestrian projects.

STP funds may have specific applicability by including improved or new bicycle-pedestrian facilities (sidewalks, paved shoulders/bicycle lanes) as part of roadway reconstruction/ rehabilitation/widening and new alignment roadways. Other programs such as bicycle maps and bicycle-pedestrian promotion/encouragement programs can be funded with STP money. VTrans has flexed some of its STP funds for the 'Bicycle and Pedestrian Program' (CCMPO, *Funding Sources for Transportation Projects*, 1999). It may be more difficult to 'flex' money for standalone bicycle and pedestrian projects in the future due to the backlog in needs related to roads and bridges.

Transportation Enhancements (TE). This is a 10% set-aside of VTrans' STP funding to be used specifically on projects that 'enhance' the transportation system. There is a list of thirteen criteria, three of which include eligibility of bicycle-pedestrian projects and programs. Building shared use paths, rail trails, sidewalks and on-road bicycle facilities as well as bicycle parking, and safety and educational programs are eligible. Other eligible uses include restoration of historic transportation structures such as train stations and preservation of rail corridors.

Transportation Enhancements has specific applicability by being one of the major funding sources nationally for funding standalone (not part of a larger transportation project) bicycle or pedestrian facilities. Individual segments of sidewalk, path, or bicycle lane or paved shoulder can be funded with these monies. Other project types may be bicycle parking at transit or intermodal centers. VTrans has traditionally funded selected projects among proposals submitted statewide with CCMPO concurrence.

Safety Set-aside. This also is a 10% set-aside of VTrans' STP allotment. Bicycle and pedestrian projects were recently made eligible for these funds with passage of TEA-21. The Hazard Elimination Program is one sub-program for which bicycle or pedestrian projects can be funded that address a high priority (relative to statewide safety needs) safety problem. Bicycle safety must be considered in projects using the Railway-Highway Crossing portion of the VTrans' safety funds.

The Safety Set-aside has specific applicability to locations with a high incidence of bicycle and/or pedestrian crashes. These locations compete with other safety priorities. VTrans funds selected projects among proposals evaluated statewide.

Congestion Mitigation Air Quality (CMAQ) Funds. Funds for projects that reduce congestion, reduce energy consumption and/or improve air quality. States with areas in non-compliance with air quality regulations receive higher amounts of money. All other states, including Vermont, receive a minimum allotment. Eligible project types include bicycle parking and educational programs aimed at reducing automobile use, including increasing bicycling and walking. Vermont, however, has historically allocated these funds to transit projects.

Recreational Trails Program. Funds administered by the Vermont Department of Forests, Parks & Recreation to plan, maintain, restore and construct recreation trails. Projects are competitive Statewide. The regional network does not include any purely recreational trails but some projects may qualify based

on providing access to recreational areas. This funding source may be more suitable for implementing local trails and paths.

National Scenic Byways Program. This program "recognizes roads with outstanding scenic, historic, cultural, natural, recreational and archeological qualities by designating them as National Scenic Byways or All-American Roads" (FHWA website). Bicycle and pedestrian-related projects that are affiliated with a National Scenic Byway, All American Road or State Scenic Byway are eligible for funding. These projects may include sidewalks, paved shoulders or bicycle lanes, informational signing, bicycle parking and crosswalks.

Chittenden County's Lake Champlain Byways communities – Charlotte, Shelburne, South Burlington, Essex Junction, Winooski, Burlington, Colchester, and Milton – are eligible for National Scenic Byways funding. In 2003, $143,000 in byways funds was granted to the Chittenden County Regional Planning Commission (CCRPC) for the development of interpretive and directional signage in these communities. Some of the non-motorized facilities listed in this plan are also identified in the *Chittenden County – Lake Champlain Byways Corridor Management Plan*, which is available through the CCRPC.

High Priority Projects/Demonstration Projects/Congressional Earmarks. These are transportation projects with a specific earmark for a specific project. They are inserted into the annual transportation appropriation.

Earmarks have most specific applicability for bicycle-pedestrian projects for which there is broad public and political support. They are generally more expensive projects that would burden typical funding sources. Projects most likely to be included are bridge projects with bicycle-pedestrian accommodations, bridges for paths or high profile path projects.

VTrans Bicycle and Pedestrian Program. The Bicycle and Pedestrian Plan administers a statewide competitive grant program using federal, state and local funds to construct bicycle and pedestrian projects.

Toll Credits. States can receive investment credits from toll revenues and apply them to the non-federal match share of authorized programs and projects. This essentially allows the use of 100% federal funds for selected projects, freeing other non-federal cash resources to be used as matching funds elsewhere. This financing technique can help in starting and advancing projects quicker.

Federal Transit Administration

Urbanized Area Formula Grants. These grants to urbanized areas with population over 50,000 persons are for capital projects that may include "pedestrian and bicycle access to a mass transportation facility" (FHWA website).

3.2.3 State Funding

Implementation Strategy: Expand the use of state funding used for bicycle and pedestrian projects by publicizing the flexible use of funds for standalone bicycle-pedestrian projects and for including bicycle-pedestrian facilities in traditional road and bridge projects.

State funding programs include the following programs:

- Town Highway Class 2 Rehabilitation Program -- a VTrans and CCMPO administered program that prioritizes class 2 roads for rehabilitation for statewide competition for funds

- Town Highway Bridge Program -- provides funds for bridge rehabilitation or reconstruction of bridges with spans over 20' using a combination of federal or state and local money.

3.2.4 Local Funding

Implementation Strategy: Develop an innovative mix of local funds to implement bicycle and pedestrian facilities.

Local funds as match are typically required for all the federal and state programs listed above. Other sources of local funds may be:

- General fund revenues are programmed into an annual capital improvement program (CIP) that may include an occasional or annual allotment of funds for specific projects or groups of projects including roadway reconstruction/ resurfacing, sidewalks, spot bikeway improvements and paths.
- Local bonds can be used to fund bicycle or pedestrian projects such as paths and sidewalks and are repaid over the life of the bond (20 years, e.g.). South Burlington has used three bond issues to fund multiple phases of shared use path construction.
- In-kind services such as labor by a public works department or the value of rights-of-way can be used as local match for certain federal funding sources.
- Impact fees.

3.2.5 Private Funding

Implementation Strategy: Maximize the use of private funding through fundraising and through the use of developer exactions or impact fees.

Private funds and groups are increasingly being asked to construct and maintain paths, sidewalks and support facilities such as bicycle parking.

- Local developers. Developers may voluntarily or by requirement of municipal ordinances provide sidewalks, paths, bicycle parking, showers/lockers, traffic signal improvements and roadway improvements with bicycle accommodations. South Burlington has been very successful at requiring and encouraging developers to reserve rights-of-way for paths and to construct paths as part of development projects.
- Bicycle-Pedestrian/Trails Groups. Many CCMPO municipalities have active advisory groups that raise money or provide labor for the construction and/or maintenance of bicycle-pedestrian facilities.
- Community service projects. Groups such as the Rotary Club, National Guard or Boy Scouts often 'adopt' trail projects as a community service and/or training opportunity and provide either funding or labor/equipment.

A creative mix of funding is required to implement bicycle and pedestrian networks. A review of national experience finds that continual commitment of funds, official staff efforts, and volunteer involvement over the long term is the major factor in areas that are recognized for excellence in their facilities and by the high use of those facilities. For instance, both Davis, California and Madison, Wisconsin have an over twenty year history of developing extensive bicycle facility networks and in result have a high percentage of commute and other transportation trips by bicycle.

3.3 General Strategies

Key strategies to maximize the implementation of the Plan and make the most effective use of transportation funds and opportunities are:

Implementation Strategy: Work to make every street bicycle and pedestrian compatible to the extent practicable, where bicycling and walking is not specifically prohibited.

VTrans has developed State standards for minimum accommodation for shoulder widths and wide car lanes of bicyclists and pedestrians on State roads and streets. Local street improvement projects should include accommodations for bicyclists and pedestrians where practicable.

Implementation Strategy: Ensure that bicycle and pedestrian considerations are included in every transportation project such as roadway reconstruction/rehabilitation, bridge rehabilitation/replacement, development of intermodal centers, design of transit services, to the extent practicable and reasonable.

The federal government has developed guidance for how and when pedestrian and bicycle facilities are to be included in projects when federal funds are used. Early in the project funding and development phases, it should be identified whether a project contains a regional element or recommendation of this plan (or local bicycle-pedestrian plan, where applicable), and if so, the elements should be incorporated as appropriate. Roadway projects that include a segment of the regional on-road network should select the appropriate type of bicycle facility to help create a high quality bicycle network, accommodating the least experienced level of bicyclist expected to use it. On roads other than this regional network, VTrans has established design guidelines that should be followed. As funding and opportunities allow, a higher level of accommodation should be provided.

Implementation Strategy: Be open to and encourage flexibility in the application of design guidelines in the design of projects where true safety concerns are not compromised.

Rigid adherence to guidelines can drive up project costs significantly and increase project impacts. 'Context sensitive design' – designing each project recognizing its unique characteristics and surroundings – can not only improve the design but reduce costs and project impacts on the built and natural environment.

Implementation Strategy: Design with maintenance in mind through choice of materials and construction methods.

The design and construction of a facility can have significant impact on how well it can be maintained. Some materials may have lower upfront construction costs but much higher long term maintenance costs.

Implementation Strategy: Design with the appropriate level of anticipated demand for the facility and for the lowest skilled users expected to use the facility.

Building a substandard facility can create safety problems and is costly to fix after the fact.

3.4 Recommended Annual Funding Level for the CCMPO TIP

Implementation Strategy: Program on the order of 3% per year on average over the course of each three year funding cycle for standalone bicycle-pedestrian projects.

To recommend an annual funding level for the bicycle and pedestrian element of the CCMPO Transportation Improvement Program (TIP), it is instructive to look at its most recent three year funding program. For fiscal years 2002 to 2004, more than $122 million federal dollars in transportation projects are included in the CCMPO TIP (CCMPO TIP 2002-2004 Summary Report, 2001).

Table 2 identifies standalone TIP projects funded for the period 2002-2004.

Table 2. Standalone Bicycle-Pedestrian CCMPO TIP Projects: 2002-2004 (thousands, $)

Project Name	Municipality	2002	2003	2004
Downtown Bike/Pedestrian Plan	Burlington	$ 24		
Flynn Theater Sidewalk/Lighting	Burlington	$ 61		
Route 127 Bike Path	Burlington	$ 1,216		
Charlotte Recreational Trail	Charlotte	$ 110		
Blakely Road Pedestrian Overpass	Colchester	$ 180		
VT Route 15 Bike Path (design/ROW)	Colchester/EJ		$ 300	$ 500
Hinesburg Pathway	Hinesburg		$ 513	
Jericho/Underhill Sidewalks	Jer./Underhill	$ 264		
Lake Champlain Bikeways	Regional	$ 15		
Regional Recreational Trails	Regional	$ 70	$ 70	$ 70
West Main Street Sidewalks	Richmond	$ 310		
VT Route 2A Multi-use Path	Williston	$ 182		
Totals		$ 2,432	$ 883	$ 570

Source: CCMPO TIP 2002-2004 Summary Report, 2001.
Federal funds only. These funds do not include State and/or local match that may be required.

The three-year average from 2002 to 2004 is approximately $1.3 million per year for standalone bicycle-pedestrian projects. These projects include those that VTrans programs or selects through the Transportation Enhancements & Bicycle & Pedestrian programs through a Statewide competitive process. This amount accounts for 2.5% percent of the overall average CCMPO funding level for the same period of $40.7 million. The amount may be more variable than what the CCMPO itself can control/program due to Statewide priorities. This amount also does not include the amount of local funding that may be used for bicycle and pedestrian facilities.

The recommended 3% of total CCMPO funding would be approximately $1.5 million per year based on current CCMPO funding levels. It is recommended that a percentage average target be used instead of absolute figures due to fluctuations in annual funding levels. A three-year average is proposed to account for the funding of higher cost facilities that may require more than 3% in any given year and lower offsetting levels for subsequent years. The $1.5 million includes funds that CCMPO directly programs as well as Statewide funds that VTrans programs, including the Transportation Enhancements and Bicycle and Pedestrian Program.

Implementation Strategy: Program as much as 35 % per year of total funding on average over the course of each three year funding cycle for non- standalone bicycle-pedestrian projects.

While it is difficult to precisely measures bicycle and pedestrian components of other transportation projects, it is important to continually encourage and promote non-standalone bicycle and pedestrian projects. Table 3 identifies the projects in the 2002-2004 TIP that have readily identifiable bicycle and/or pedestrian components.

Table 3. TIP Projects with Bicycle-Pedestrian Components: 2002-2004 (thousands, $)

Project Name	Municipality	2002	2003	2004
Downtown Transit Center	Burlington	$ 3,741		
North Street Revitalization	Burlington	$ 2,000		
Riverside Avenue	Burlington		$ 4,750	
South End Transit Center	Burlington	$ 4,000		
US 7 Rehabilitation	Charlotte		$ 5,355	
Lime Kiln Bridge	Colchester/SB	$ 400	$ 1,000	$ 1,888
Regional Bridge & Maint. Activities	Regional	$ 582	$ 582	$ 3,222
Shelburne Road Reconstruction	Shelburne/SB	$ 267	$ 7,465	$ 6,289
Totals		$ 13,422	$ 19,152	$ 11,399

Source: CCMPO TIP 2002-2004 Summary Report, 2001.
Federal funds only. These sums do not include State and/or local match that may be required.

The three-year average funding from 2002 to 2004 is approximately $14.7 million per year for non-standalone bicycle-pedestrian projects. This is 36% of the total average transportation funding for Chittenden County of $40.7 million over the same three years. This figure far outpaces the $ 1.3 million per year programmed for standalone bicycle and pedestrian projects. This reinforces the concept that an important implementation concept is to ensure that bicycle-pedestrian considerations and high quality facilities are incorporated to the extent practicable in all transportation projects.

The continued programming of bicycle and pedestrian facilities into new roadway, and roadway reconstruction and rehabilitation projects is essential to the successful implementation of this plan. This may be the most single important way on-road bicycle facilities are implemented.

3.5 Supporting Programs and Facilities

3.5.1 Facility Maintenance

Implementation Strategy: Work to increase the amount of funding programs available and diversify existing programs for use in maintaining shared use paths, on-road bicycle facilities and sidewalks.

One of the major issues identified during the development of this Plan is the lack of resources for maintenance of bicycle and pedestrian infrastructure. This includes operational maintenance such as plowing of shared use paths and sidewalks during the winter to extend their use to all year-round and the sweeping of paved shoulders in the early Spring. Long term maintenance needs include repaving, patching or replacement of paths and sidewalks. There is currently a heavy burden on local funds, generally property taxes, to fund maintenance activities. Increasing funds and diversifying funds (beyond municipal general funds) available for use maintenance was cited during the Plan's development as an important issue to be resolved.

A working group consisting of representatives of communities should be established to discuss opportunities for improved maintenance of bicycle and pedestrian facilities. This may include discussions related to:

- Available funding sources
- Maintenance methods
- Sharing of resources (equipment, personnel, information)
- Maintenance standards for facilities including frequency of sweeping of roadways and plowing of paths
- Pooled bids for roadway striping and marking for bicycle facilities (e.g., edge lines for paved shoulders or bike lanes, pavement markings such as bike stencils).

3.5.2 Enforcement

Implementation Strategy: Advocate for the enforcement of motor vehicle laws and laws governing bicyclists and pedestrians.

Respect for the rights and responsibilities of all users of the public right of way is important to the safe and enjoyable use of bicycle and pedestrian facilities. Enforcement by local police departments is critical to set the tone for a safe and enjoyable environment. Speeding, failure to stop for pedestrians in crosswalks, or harassment of bicyclists can exacerbate an already often inhospitable environment (e.g., lack of bicycle facilities, poor or inadequate shoulders, discontinuous sidewalks and paths, lack of adequate crossing time at signalized intersections).

Just as motorists must follow the rules of the road, so too should bicyclists and pedestrians. Bicyclists are not currently defined as 'vehicles' in Vermont statutes. They are, however, given all the duties and rights of motor vehicles.

3.5.3 Encouragement & Promotion of Non-Motorized Transportation

Implementation Strategy: Advocate for the funding and implementation of Encouragement and Promotion strategies.

Encouragement and promotion programs are essential to getting the word out on the significant benefits of bicycling and walking to the environment, personal health and community vitality. Potential program elements include:

- 'Bike to Work' or Alternative transportation days and fairs to promote alternatives to single occupant commuting by automobile
- 'Bike Buddy' programs, tailored after successful programs in the West that pair novice and experienced commuter bicyclists together to help ensure a positive experience for new bicycle commuters
- Tourism promotion programs to promote the economic benefits of the emerging on-road and shared use path bicycle and pedestrian networks including the Lake Champlain Bikeways tours as part of a broader Cultural Heritage program
- Establishment of Alternative Commute Coordinators at the region's large employers and through CATMA.
- Establishment of local bicycle and pedestrian coordinators (similar to Burlington) to oversee a local planning process and to review development plans for their impacts on bicyclists and pedestrians (these tasks can be assigned to existing staff).
- Lake Champlain Byways program to promote bicycling for tourism and health purposes.

- Establish a Signage Program to develop coordinated signage for the bicycle and pathway networks.
- Create a Safe Routes to School Program to encourage walking and cycling alternatives for school students.

3.5.4 Education

Implementation Strategy: Develop and implement a multi-faceted approach to education related to bicycle and pedestrian issues, focusing on safe operation and sharing the road.

The Education program may include:

- Elementary school safety programs that cover safe cycling and pedestrian behaviors
- "Effective Cycling" courses for adults, typically offered by bicycle advocacy groups or by certified instructors
- Education of local public works and other maintenance staffs in bicycle-pedestrian specific maintenance needs including more frequent sweeping roadway edges, path maintenance, bicycle-friendly roadway patching, safe drainage grates, and maintenance of vegetation along paths
- Public service announcements (PSA's) on television, radio, web-based and print media regarding bicycle and pedestrian safety issues
- Include bicycling and walking in programs to promote more active lifestyles and combat obesity in children and adults
- Hold workshops to educate the public, elected/appointed officials, local bicycle/pedestrian committees and professionals regarding the design and planning of bicycle and pedestrian facilities.

3.5.5 Other Initiatives

Other initiatives suggested for action include:

- Repeal of the sidepath law which requires bicyclists to use a shared use path if one is available adjacent to the roadway.
- Evaluate alternative funding measures for the maintenance of bicycle-pedestrian facilities. Options may include an excise tax on bicycles, bicycle license fees, use of gasoline tax revenues and environmental penalties funds.
- Expand the tie-in with Cultural Heritage programs such as the Lake Champlain Bikeways program and potential linkages to bike and rail tours (such as with the *Vermonter*).
- Develop model ordinances for municipalities sponsored by the CCMPO and CCRPC, focusing on inclusion of bicycle and pedestrian considerations into site planning and impact fees.
- Provide greater technical assistance, for local advocacy and planning of bicycle and pedestrian networks and programs and for creating improved development form (e.g., compact, walkable neighborhoods) under the sponsorship of the CCMPO and/or CCRPC.
- Fund additional planning studies to fill gaps in the regional network identified in Chapter 4.
- Consider accelerated implementation of the Byways program to build facilities in time for the 2009 celebration of Samuel de Champlain's arrival in the region 400 years ago.

3.5.6 Design Standards or Guidelines

Implementation Strategy: Endorse the guidelines being developed by VTrans for bicycle and pedestrian projects receiving funding through the CCMPO.

VTrans has released its Planning and Design Manual within the year. This manual provides current standards in Vermont and should be followed, as appropriate, for the planning and design of regional facilities identified in this Plan.

3.6 Network Implementation Status and Potential Estimated Costs

Figure 1 identifies over 425 miles of regional on-road bicycle facilities and shared use path facilities. The status of the implementation of these networks is shown in Table 4.

Table 4. Regional Network Implementation Status and Potential Costs

	Shared Use Paths		On-road Bicycle Facilities	
Status	Miles	Estimated Cost ($ millions)	Miles	Estimated Cost ($ millions)
Existing/Funded	30	N/A	18	N/A
Partial ('Existing/ Proposed')	10	$3.5	54	$14.2
Proposed	76	$35.3	237	$82.9
Total	117	$38.8	309	$97.1

Source: Wilbur Smith Associates. Assumes 75% of 'Partial' facilities do not exist. Uses $465,000/mi for shared use paths; $350,000/mile of on-road facilities representative of current costs to construct these facilities from scratch. See Table 1 notes for what costs do and do not include.

The potential costs associated with implementing this network are shown in Table 4. These costs are intended to provide an order of magnitude cost for implementing these projects *as standalone projects* -- for instance, paved shoulders being added to a road independent of the road's rehabilitation or reconstruction. The table shows potential total costs of approximately $39 million for implementing 84 miles of shared use path and $97.1 million for implementing 278 miles of *stand-alone* on-road bicycle facilities.

The marginal cost to add sidewalks or bicycle facilities (bicycle lanes, paved shoulder or wide curb lane) can often be significantly less when being done as part of a larger transportation project such as a roadway rehabilitation or reconstruction. Adding shoulders or sidewalks to a larger project may add 10% to 20% to a project's cost. For instance, reconstructing a two-lane roadway may cost upwards of $1,000,000 per mile. Including new paved shoulders may increase the project costs by $100,000 to $200,000 dollars, significantly less than the potential $350,000 per mile if done as a standalone project. In the case of adding paved shoulders during rehabilitation projects, the results are much better than adding paved shoulders without rehabilitation of the roadway (due to seams in the pavement and uneven wear of the surfaces). Adding paved shoulders also benefits motorist operation and safety and furthers preservation of the roadway's pavement.

Figure 1 also shows the location of three bridges that would provide important regional connections between communities. Specific feasibility studies are required to determine potential construction costs for each, but the costs may be in the range of $1-3 million each.

The *Pedestrian Policy and Sidewalk Plan for Chittenden County* (CCMPO, 2000) identified approximately $14 million in new sidewalk and maintenance needs in the communities.

3.7 Performance Measures

Implementation Strategy: To gauge the progress of and results from the Plan's implementation, it is recommended that the CCMPO adopt a series of bicycling and pedestrian-related performance measures that are reviewed every three years.

Performance measures are typically quantitative in nature. Baseline information is collected and then the data is tracked through time at specified intervals to measure progress. Several traits related to performance measures are:

- The dimension of the system being measured (accessibility, safety, mobility, quality of life, implementation)
- The level of measurement (systemwide, corridor, or townwide)
- The perspective (system operator or the system user's perspective)
- The output or outcome (Output -- a tangible measure that you have control over, such as the number of miles of paths provided; Output -- a result of an output action, such as the number of path users)
- Existing Data or New Data Sources.

It is desirable in general for the performance measures to:

- Be measurable from data that is already collected,
- Be from the user's perspective,
- Have more weight be given to outcome-oriented measure, and
- Be easily understood and measured.

Table 6 identifies the recommended set of performance measures related to bicycling and walking and their related facilities. It should be recognized that no one performance measure by itself will measure the success of this Plan. The total picture provided by all the measures together is needed to assess progress. For instance, the total mileage of bicycle and pedestrian facilities could increase dramatically (a definite positive) but may not increase walk-bike work trip mode share (a negative) if facilities don't link residences with work places.

Several of the performance measures may provide guidance for prioritizing projects in the TIP. Ideally, individual projects would promote the goals inherent in the performance measures. Funding criteria could be tied directly to several of the performance measures. The most important of these would be:

- Safety (does the project eliminate an unsafe condition for bicyclists or pedestrians?) and
- Regional connectivity (does the project provide a regional connection between town centers, growth areas or transportation facilities?).

One of the more difficult areas is the reporting of accident information. While several existing sources of information could be used for this measure, it is important that a consistent Statewide accident reporting

system be established. Many accidents involving pedestrians and bicyclists go unreported. The 1999 FHWA report *Injuries to Pedestrians and Bicyclists: An Analysis Based on Hospital Emergency Department Data*

> …presents a descriptive analysis of data collected prospectively at eight hospital emergency departments over approximately a 1-year time period in three States: California, New York, and North Carolina. Information was gathered on 2,509 persons treated for injuries incurred while bicycling or walking. Results show that 70 percent of the reported bicycle injury events and 64 percent of the reported pedestrian injury events did not involve a motor vehicle. In addition, 31 percent of the bicyclists and 53 percent of the pedestrians were injured in non-roadway locations such as sidewalks, parking lots, or off-road trails. (FHWA website)
>
> While these data [, provided from police accident data,] provide considerable information to help guide safety program and countermeasure development, they have often been referred to as "the tip of the iceberg" because they are limited almost entirely to motor vehicle-related events that occur on public roadways. Specifically, they exclude: (1) many bicycle-motor vehicle and pedestrian-motor vehicle crashes that occur in non-roadway locations such as parking lots, driveways, and sidewalks, and (2) bicycle and pedestrian falls that do not involve a motor vehicle, regardless of whether they occur on a roadway or in a non-roadway location. There is also evidence that even many pedestrian- and bicycle-motor vehicle collisions occurring on public roadways are not reported in police crash files. (bicyclinginfo.org website)

The report highlights the importance of not relying on one data source to convey a complete picture of bicycle and pedestrian-related accidents. Complete data will increase awareness related to safety and may elevate its importance, resulting in more funding to address safety issues (substandard or lack of adequate bicycle and pedestrian facilities, e.g.).

Implementation Strategy: Work with local, regional and statewide partners to improve the accident reporting system related to bicycling and walking. Incorporate comprehensive accident reporting to the degree possible, to include police reported accidents and hospital data.

Table 5 identifies the recommended performance measures to be adopted by the CCMPO to track the implementation progress of the plan. The Table describes:

- The attribute of the bicycle and pedestrian system that is being measured by the particular performance measure,
- Whether the performance measure covers the entire system or particular corridors or municipality-wide;
- Whether the performance measure is from the system user's or system administrator's perspective;
- Whether the performance measure is looking for specific measurements of the system – output, or for more general modifications of activity – outcome; and
- Where the information needed to evaluate the performance measure could be found.

The initial column in Table 5 describes the various recommended performance measures. The second column identifies what specific aspect of the regional bicycle and pedestrian system the particular performance measure is meant to track. The third column describes at what level the measurement is meant to occur: over the entire system, within certain corridors or within a particular municipality. The

fourth column indicates whether the performance measure is looking for specific outputs, such as a particular level of funding or a certain number of connections that are a direct result of implementation work, or outcomes, such as a change in behavior or greater use of a particular section, which are indirect results of the implementation work. The last column describes from where the information needed for the performance measure could be collected.

Table 5. Recommended Performance Measures

Performance	Dimension of System			Outcome or Output Measure?	Existing Data or Data Collection
Miles (km) of non-motorized facilities	Accessibility	System Corridor Town	System user System operator	Output	CCMPO Inventory
Percent of TIP allocated to bicycle-pedestrian projects Percent of non-Enhancement & Bicycle and Pedestrian Program project dollars that include accommodations for bicyclists-pedestrians	Implementation	System	MPO/Public	Output Output	
Walk mode share /frequency of trips made by walking Commute trips All trips Bike mode share/freq. of trips made by bike Commute trips All trips Number bicycle boardings on commuter rail and CCTA Percent walk access to commuter rail	Accessibility	System Corridor Town	System operator	Outcome Outcome Outcome Outcome	

Performance	Dimension of System			Outcome or Output Measure?	Existing Data or Data Collection
User satisfaction with bike/pedestrian facilities (quality and access to destinations) On-road Paths Sidewalks	Mobility	Corridor Facility	System user	Outcome	MTP surveys every 5 yrs
Number and severity of bicycle crashes Number and severity of pedestrian crashes	Safety	System	System operator	Outcome Outcome	Police reports Hospital admission records
Level of Maintenance	Safety	System	System operator	Outcome	Municipal Maintenance records
Percent connections between Town Centers/Growth Areas/RPC 'Planning Areas' On-road Paths Sidewalks	Quality of Life Safety Accessibility	System user Corridor Town	System user	Output	CCMPO monitoring

MTP = Metropolitan Transportation Plan
CCTA = Chittenden County Transit Authority
TIP = Transportation Improvement Program

The CCMPO is recommended to:

- Coordinate and lead the data collection effort with several partners including the CCTA, VTrans, municipalities, police, hospitals and the CCRPC
- Report every three years on the progress of the plan as part of the MTP update process.

3.8 Timeline and Funding Priorities

Section 3.6, Network Implementation Status and Potential Estimated Costs, estimates that the costs to implement the recommended regional shared use path and on-road bicycle networks are $38.8 million and $97.1 million, respectively. This total, approximately $135.9 million, far exceeds the recommended minimum twenty year spending total for standalone bicycle-pedestrian projects. This amount is approximately $30 million at $1.5 million per year. As has been discussed previously, a combination of funding and implementation strategies will needed to construct these facilities.

The Timeline below places emphasis on the short term. The focus of this time period should be on increasing the effectiveness of existing paths and on-road bicycle facilities by filling gaps in the network.

Short term (0-6 years)

1. Shared Use Paths. Focus implementation efforts on filling high priority gaps in the existing shared use path network. Priorities include:

- Allocating funds to two major river crossings over the Winooski River between Burlington and Colchester and Burlington and Winooski.
- Funding shared use path projects that complete missing sections between existing paths identified in the regional network. For instance, fund the path section in the network along Queen City Park Road between So. Burlington's path and the Burlington Bikepath. Currently a sidewalk and the roadway is used between these existing paths. These types of connections greatly increase the usefulness of the existing paths.

2. Roadway Projects. All transportation projects will be planned, designed and constructed under the assumption that they will be used by pedestrians and bicyclists (except where specifically prohibited such as on limited access highways).

3. Allocate some portion of TIP funds to safety, education and promotion projects such as Safe Routes to School, bicycle and pedestrian maps, and signage programs.

4. Establish an annual funding allocation for bicycle parking.

5. Implement the highest priority bicycle and pedestrian elements of the Lake Champlain Byways program including low cost route improvements, maps and route signage.

Moderate and Long Term (7 to 20 years)

1. Roadway Projects. Continue to ensure that bicycle and pedestrian components (sidewalks, pedestrian signals, on-road bicycle facilities, paths or reserved rights of way for paths) are included in all TIP projects to the extent possible.

2. Shared Use Paths. Work outwards from established population and employment centers when prioritizing projects to ensure that funded projects make regional connections.

3.9 Lower/No-Cost Items for Implementation

Many low or no-cost programs can be implemented in the short-term that can have immediate benefits to safety and the amount of bicycling and walking. These programs include:

- Schedule the periodic review of signalized intersections where pedestrian signal equipment is located to ensure that it is functioning correctly and that signal heads are working.
- Use higher visibility crosswalks at unsignalized intersections (e.g., ladder style or raised crosswalks) instead of standard crosswalk markings. Install advance signage at higher volume pedestrian crossings. Expand the use of portable crosswalk signs that reinforce "State Law: Yield for Pedestrians".
- Identify opportunities on lower volume suburban/rural roadways (less than 1500 ADT and 45 mph or less) to re-stripe the roadway to add a shoulder or increase the current shoulder width. On roads that are 22' wide, for instance, stripe the road with 9' travel lanes and 2' shoulders.

These are the minimum values for lane width and paved shoulders for rural collector and rural local roadways in the State design standards. This will help steer drivers away from the edge of the roadway and provide some operating space for bicyclists. Perform before and after rides with bicyclists of all skill levels to test the effectiveness of the change.

- Place Share the Road signs (W16-1 and W11-1) at locations where on-road bicycle facilities end but where bicyclists will continue.
- Test and tune loop detectors at actuated signalized intersections to detect bicyclists.
- Identify locations to install bicycle boxes or advance stop lines for bicyclists at busier intersections. These markings allow bicyclists to start in front of motorists at intersections and to make left turns with less conflict.
- At signalized intersections with higher pedestrian volumes and concurrent pedestrian phasing, identify locations that may benefit from innovative pedestrian phasing such as lead pedestrian phases. Lead pedestrian phases allow pedestrians to begin crossing in advance of vehicle phases and can reduce conflicts between pedestrians and left turning vehicles. See Alternative Treatments for At-Grade Pedestrian Crossings (ITE, 2001) for an in depth description of the benefits and applications of innovative signal timing.

CHAPTER 4: STATUS OF EXISTING BICYCLE & PEDESTRIAN PLANNING

4.1 Multi-state, National or International Planning

AASHTO Guide for the Development of Bicycle Facilities (1999)

This is the *de facto* national bicycle facilities planning and design guidebook for the United States. Many states require that facilities conform to the design guidelines contained in the document. It includes sections on:

- Bicycle Facility Planning
- Facility Design
- Operations and Maintenance.

Significance to This Plan:
Notwithstanding the planning and design guidance contained in the *VTrans Pedestrian & Bike Facility Planning & Design Manual* and the *Vermont State Design Standards*, this is the starting point for most all bicycle facility planning and design within the State and nation. VTrans has incorporated much of this guide into its planning and design manual for Vermont.

Lake Champlain Bikeways

The Lake Champlain Bikeways is a multi-state/province initiative to identify and market bicycle routes in the states of Vermont and New York and the province of Quebec, Canada. It has identified over 1100 miles of bicycle routes including a 350-mile loop around Lake Champlain and 24 interpretive loop tours. It also provides information on supporting bicycle tourism services, such as lodging, bicycle shops and restaurants.

Significance to This Plan:
The identified bikeways create regional linkages to adjoining counties, New York and Quebec. They also raise the visibility of bicycling within the region and promote economic development related to bicycle tourism. Ten theme routes have been proposed in Chittenden County (the 'Cycle the City' theme route in Burlington has been implemented).

Lake Champlain Byways Corridor Management Plan (2002)

This plan is Chittenden County's element of the Lake Champlain Byways Plan for the New York-Vermont region. The Chittenden County Regional Planning Commission is the lead agency for this effort. The Corridor Management Plan includes three broad objectives including:

- Transportation and multi-modal connections (auto, bicycle, pedestrian, ferry, equestrian, train, boat, bus, and air travel)

- Intrinsic resources and partnerships
- Sustainable tourism and economic development.

Significance to This Plan:
The 2002 Vermont Byways designation of Charlotte, Shelburne, South Burlington, Essex Junction, Winooski, Burlington, Colchester, and Milton allows these municipalities to apply for National Scenic Byways funding. These federal funds can be used for a variety of projects, including improving roadways for cycling, constructing shared use paths, implementing safety improvements, designing and installing wayfinding signage, and other improvements.

Bicycling and walking are highly visible modes of transportation and recreation within the Byways Corridor. While U.S. Routes 7 & 2 are designated as the "Champlain Trail," several alternate automobile routes are identified in the Corridor Management Plan. These roads, and others that access the corridor's significant intrinsic resources, are eligible for National Scenic Byways funding. The Corridor Management Plan identifies specific transportation improvements within the corridor. Additional improvements can be added to the plan annually.

4.2 Statewide Planning

Vermont Bicycle and Pedestrian Plan (December 1998)

The State's Bicycle and Pedestrian Plan is the guiding policy document for VTrans' implementation of bicycle and pedestrian facilities and programs.

The plan states,

> The regional planning entities should work in partnership with the state bicycle and pedestrian coordinator to implement this plan. They should be encouraged to undertake and implement bicycle and pedestrian plans. The Regional plans should include:
>
> - Inventory of existing facilities.
> - An assessment of existing facility use and future need, including: identification of primary bicycle routes and needed shoulder improvements, potential rail trails, shared-use paths, sidewalks and pedestrian facilities, potential intermodal connections, and traffic calming needs.
> - The prioritization of desired future facilities and/or facility improvements.
> - Link(s) with neighboring regions.

Significance to This Plan:
The Statewide plan sets the policy framework for the development and implementation of bicycle and pedestrian plans and programs in the State of Vermont. It has lead to many current initiatives such as reviving the Bicycle & Pedestrian Program, more leadership by municipalities in implementing facilities and the development of a planning and design guide for the State.

VTrans' Pedestrian and Bicycle Facility Planning and Design Manual (2002)

This planning and design guide is a current effort by VTrans to provide detailed guidance to communities for the planning, design and implementation of bicycle and pedestrian facilities. Sections of the guide cover:

- Planning for Pedestrians and Bicyclists
- Pedestrian Facilities
- On-road Bicycle Facilities
- Shared use paths
- Rail-Trails and Rails-with-Trails.
- Traffic Calming
- Signs, Pavement Markings and Signals
- Landscaping and Amenities
- Maintenance.

Significance to This Plan:
This document provides the definitive comprehensive guidance for the planning and design of bicycle and pedestrian facilities in Vermont. A major focus of the document is tailoring planning and design considerations to the unique characteristics of Vermont.

The Vermont State Standards for the Design of Transportation Construction, Reconstruction and Rehabilitation on Freeways, Roads and Streets (VTrans)

This document identifies standards for non-local roadways in Vermont and guidelines for local roadways. It emphasizes flexibility in design based on function classification of the roadway (arterial, collector or local) and its design context (urban or rural, environmental considerations, cultural and historic resources).

Significance to This Plan:
This document provides guidance for the inclusion of bicycle and pedestrian facilities during the design of roadways in Vermont. Of particular importance are its discussions of travel lane widths, shoulder widths, shared lane widths and other accommodations for bicyclists and pedestrians. This document identifies mostly minimum standards as they relate to accommodating bicycles on roadways, not desirable or preferred levels of accommodations.

Cross Vermont Trail

The Cross Vermont Trail (CVT) is a designated pedestrian/bicycle trail connecting Chittenden County on the west side of the State with Wells River on the east side.

Significance to This Plan:
This trail will provide pedestrian connections within Chittenden County and connections to counties to the east, providing a continuous east-west route through the State.

Vermont Association of Snow Travelers (VAST) Trail

VAST trails are winter-only trails for snowmobiling that are created and maintained by VAST.

Significance to This Plan:
The VAST network may provide future opportunities for shared use of their network by bicyclists and/or pedestrians.

4.3 Regional Efforts

Chittenden County Metropolitan Planning Organization (CCMPO)

Year 2000 Transportation Survey (2000)

In 2000, the CCMPO undertook a random sample survey of Chittenden County residents to gauge their attitudes and preferences regarding a wide range of transportation issues. The survey asked respondents to identify their priorities for an improved transportation system and future spending for transportation projects. The survey was answered by 328 persons from throughout the County and nearby towns. A variety of survey methods were used including in-person surveys and internet surveys. In-person survey stations were located in Hinesburg, Burlington, Shelburne, South Burlington and Richmond.

The geographic distribution of respondents is as follows.

Table 6. Location of Survey Respondents

Town	Count	Town	Count
Burlington	78	Jericho	14
Shelburne	31	Richmond	10
Hinesburg	29	Charlotte	9
Essex Jct	26	Winooski	6
So.	26	Underhill	2
Colchester	20	Huntington	2
Williston	19	Essex	1
Milton	15	Other	40
		TOTAL:	328

Source: Chittenden County Year 2000 Transportation Survey, 2001, WSA/RSG.

Key finding of the survey include:

- Improving bike and walk facilities received the **highest overall rating** for importance
- Bike and walk facilities are **most in need of improvement** of the County's transportation facilities.
- 78% of the respondents thought providing separated bike paths is **important or very important**; only 10% thought it is not important or not at all important.
- 79% of the respondents thought providing bike lanes along existing roads is **important or very important**; only 9% thought it is not important or not at all important.
- 60% of the respondents thought providing bicycle amenities such as bicycle racks, bike shelters and lockers is important or very important; 17% thought it is not important or not at all important.

- 88% of the respondents thought fixing existing sidewalks is **important or very important**; only 2% thought it is not important or not at all important.
- 74% of the respondents thought encouraging compact development is **important or very important**; only 7% thought it is not important of not at all important.
- 72% of the respondents thought providing pedestrian amenities such as green strips, benches, trees, and other landscaping is important or very important; only 10% thought this not important or not at all important.

Significance to this Plan:
This survey identifies the importance that the County's residents place on high quality bicycle and pedestrian facilities for the positive impact they can have on safety and quality of life.

Alternative Transportation Path Plan (1993)

The Alternative Transportation Path Plan (1993) by the CCMPO is the plan which this project is updating. It developed individual alternative transportation path plans for the eight 'core' communities of Chittenden County that made up the CCMPO at that time. The communities included were: Burlington, Colchester, Essex Junction, Essex town, Shelburne, South Burlington, Williston and Winooski. From these community plans, a regional network was distilled. The individual plans reflect a citizen and community-driven process.

The Plan discusses paths and facilities in the terminology of Class I, Class II and Class III facilities (which has since been replaced in bicycle planning literature by new terms). Most all the communities have retained these general labels for their planning but use multiple types of names for these facilities.

Significance to This Plan:
The 1993 plan built upon the Chittenden Greenways Project done in 1991 (described below) to develop comprehensive 'path' networks in eight communities. It set regional priorities for projects in the Regional Network. It comprehensively looked at design standards and other issues such as signage. The project identified a large constituency for a pathway network through the community surveys and outreach effort.

Pedestrian Policy and Sidewalk Plan (September 2000)

The Pedestrian Policy and Sidewalk Plan is the guiding document in Chittenden County for pedestrian policies and the development of sidewalks and other pedestrian facilities. The plan raises the profile of pedestrian needs in the county and the role of the pedestrian system within an integrated transportation system. It identifies 5 Regional Pedestrian Policies, with accompanying strategies, which include:

1. Increase pedestrian mobility
2. Improve the safety and comfort of pedestrians
3. Provide pedestrian accessibility to all destinations
4. Systematically program pedestrian improvements in the Transportation Improvement Program (TIP)
5. Encourage pedestrian activity.

Thirteen communities were identified with sidewalks within the county, totaling approximately 440 miles of sidewalk. Those without sidewalks were Westford, Bolton, St. George, Charlotte, Huntington and Buels Gore.

The text of the plan concludes with a discussion of "Selection Criteria" that project reviewers will use to prioritize sidewalk construction proposals for TIP funding. These criteria are:

"Will the project …

1. Address a community identified sidewalk priority?
2. Contribute to an integrated sidewalk system that includes other pedestrian facilities, to increase pedestrian travel?
3. Link existing or proposed sidewalk networks, communities and/or residential neighborhoods?
4. Connect in a logical manner village/town centers, schools, public buildings, employment sites or other popular trip origins and destinations?
5. Be a part of a grid street layout with short blocks in business districts and town centers?
6. Address safety and the needs of all non-motorized travelers?
7. Provide buffers from moving motor vehicles and delineate, sign, and mark the facilities as appropriate and ensure a secure environment, e.g. consider lighting, increased visibility, open sight lines, and access to police and emergency vehicles?
8. Provide street trees and other landscaping to bring a human scale to the street environment?
9. Contribute to an equitable geographic distribution of funding for sidewalk projects?
10. Maximize opportunities to leverage project funding from a variety of sources?
11. Bring an existing sidewalk into compliance with the Americans with Disabilities Act (ADA)?"

An investment plan totaling approximately $14,000,000 in sidewalk needs was identified (not all communities are included in this total). This includes a mixture of sidewalk maintenance and/or new facilities for the communities.

Appendix A of the Sidewalk Plan includes maps of existing and proposed sidewalks. Appendix B includes typical sections for construction of sidewalks and curbing.

Significance to This Plan:
The Pedestrian Policy and Sidewalk Plan will remain the major pedestrian element of this Plan Update related to sidewalk facilities. The Plan Update will take a comprehensive look at how sidewalks fit in with other pedestrian and transportation needs, especially how shared use paths and other pedestrian facilities are needed to complement the sidewalk system.

Chittenden County Long-Range Transportation Plan (1997)

This plan establishes the vision, goals and investment strategies for a multi-modal transportation system for Chittenden County to the year 2013. The vision emphasizes "safety, efficiency and accessibility", support for "dense community centers" and a transportation system that is "truly multi-modal - offering people viable alternatives". This plan is currently undergoing a comprehensive update.

Metropolitan Transportation Plan (MTP) (Ongoing)

This is the update to the 1997 Long-Range Transportation Plan currently being completed.

Significance of This Plan: This Plan described the future for a larger transportation system within which the recommendations of this Plan will fit. This Plan Update will comprise the pedestrian and bicycle element of the MTP and shows how bicycle and pedestrian facilities relate to the rest of the transportation

system. The MTP looks at the entire transportation system in Chittenden County and sets priorities and recommendations for it.

Chittenden County Regional Planning Commission

Chittenden County Regional Plan (2001)

The Chittenden County Regional Plan was developed to "help guide growth and development in Chittenden County".

This Plan creates a foundation for developing a sustainable future for development. Based on the "planning areas" concept, this Plan uses the strength of Chittenden County's communities by unifying municipal plans under a comprehensive regional umbrella.

The Plan's Metropolitan Planning Areas enable high-density, mixed-use, downtown development where it's desired. The Village Planning Areas' attributes reflect the traditional Vermont hamlet, which encourages mixed-uses on a pedestrian scale. These areas will be the focus for development over the next 20 years, and multi-modal transportation infrastructure should be in place to serve new residents and businesses.

Key aspects of the plan for this Regional Bicycle and Pedestrian Plan include:

- Identification of future land uses through Planning Areas -- Metropolitan, Village, Transition, Special Uses and Rural.
- Transportation Goal 5: "Expand the network of sidewalks and bike paths where appropriate to improve the mobility and safety of pedestrians and bikers"
- Recreation Goal 2: "Establish a region-wide system of interconnected walking trails, bicycle paths and natural areas"
- Regional Bus and Bike Map that identifies Existing and Proposed Class I and Class II Bike Path facilities.

Significance to This Plan:
This Plan provides the land use and environmental planning context for the future development of bicycle and pedestrian facilities in the County. The Planning Areas are used in this Plan to identify important corridors for bicycle and pedestrian connections. For instance, the 'Metropolitan' and 'Village' areas may be locations within which to target priorities for sidewalk and path investment and to target for connections between these areas. It includes an inventory of existing and proposed Class I and II bicycle facilities/shared use paths.

Chittenden Greenways Project (May 1991)

This project identifies 'Community Greenways' and 'Conservation Greenways' throughout Chittenden County. Community Greenways are more relevant to this plan because they are envisioned to be "safe, off-road corridors of open space that connect neighborhoods, schools, parks, work places and community centers via paths and trails".

Significance to This Plan:
Approximately 200 miles of Community Greenways in 17 communities were identified through a comprehensive outreach effort. Nine distinct routes were identified that connect most areas of the County. A constituency for pathway planning and implementation was identified during the process.

Campus Area Transportation Management Association - Bike Maps

The Campus Area Transportation Management Association (CATMA) has published an updated Bike Map in 2002 for the university area in Burlington. It illustrates Class I, II and III facilities in and around the campus.

Significance to This Plan:
Identifies bicycle and pedestrian connections within and to the university and college campuses and establishes bicycling as an important element of the travel demand management program in the region.

Chittenden County Transit Authority- 'Bike and Ride'

This brochure by the CCTA identifies the benefits gained when combining bus use for bicycle commuting or touring. It identifies popular bicycle routes.

Significance to This Plan:
Resource for establishing bicycling as an important linkage to the transit system in the region and clearly explains how bicycling can be used in conjunction with transit.

Burlington Bike Council - Cycle the City & Other Maps

The Burlington Bike Council has published maps that highlight bicycle routes and tours in Burlington and South Burlington. These maps are made available free to help promote bicycling.

Significance of This Plan:
Helps highlight portions of the regional system in Burlington and South Burlington.

4.4 Multi-jurisdictional Planning Efforts

Several efforts have been or are currently being planned that involve multiple jurisdictions. These include:

- Charlotte to Burlington Shared Use Path/Rail with Trail -- This proposed path runs parallel to the Vermont Railway State-owned rail corridor and would connect Charlotte, Shelburne and South Burlington to the Burlington Bike Path.
- Colchester to Burlington Shared Use Path Bridge -- This is a high priority bridge over the Winooski River which will provide a connection to the causeway to South Hero/Grand Isle to the Burlington Bike Path.
- Winooski River Bridges between Burlington and Winooski – Studies on how to improve existing, or build new, bridges over the Winooski River to provide pedestrian and bicycle connections between the communities.
- Williston to Burlington Waterfront -- This is an initiative to provide a shared use pathway connection from Williston to Burlington via South Burlington that would also serve as the western end of the Cross Vermont Trail.
- Island Line Rail Trail – a proposed shared use path connecting Chittenden County to Grand Isle County and Quebec, Canada.

4.5 Municipal Planning Status and Facilities Plans

Appendix 2 contains a detailed list of proposed and existing pedestrian and bicycle facilities within each Chittenden County community. Many communities are far along in implementation of their plans while others are at the beginning stages of identifying local priorities.

Significance of These Plans:
The on-road bicycle facilities and shared use path plans by the individual municipalities in Appendix 2 form the basis for the regional networks. The regional networks do not, and should not, however, include all of the facilities shown on the local plans. The regional facilities promote walking and bicycling between or through the communities, while the local networks promote and provide more localized access and mobility.

Appendix 1 - Pedestrian Policy and Sidewalk Plan for Chittenden County

Adopted in 2000

This Plan was adopted by the CCMPO in 2000 and remains the sidewalk facility element of the Regional Bicycle and Pedestrian Plan.

"People like to walk together.

"In many parts of the world, particularly the Latin nations, it is a part of daily life to take an evening stroll. There is a complex and involved ritual to this walk, this promenade, this passaggiaeta *or* paseo*, as it's called in Italy and Spain. It was a tradition in France and Britain, and in the United States, too, before the automobile spread us so far apart that one has to drive to find a place to walk."*
From: City Comforts: How to Build an Urban Village, by David Sucher, 1995

INTRODUCTION

Whether walking for pleasure like the southern Europeans mentioned above or traveling to a particular destination, pedestrian movement is the key to any well-functioning multimodal transportation system. Walking is a part of the beginning and end of virtually all trips in any mode. Whether traveling by bus, car or bicycle, a part of every trip usually occurs on foot. Persons in wheelchairs or other forms of mobility assistance are pedestrians as well. Their mobility and accessibility rely heavily on the quality and features of the pedestrian environment.

Walking is often the quickest way to accomplish very short trips in urban areas and is a practical travel option for many trips less than one mile, or trips requiring several stops along the way. According to the 1990 Census, over 4,000 households in Chittenden County did not have a car. For these people, walking may be their only consistent transportation choice. However, pedestrian accommodations are not always provided for or available in our auto-dominated society. Pedestrians often use unpleasant and unsafe walking environments along busy roadways because trip destinations are located there.

Chittenden County presents a "mixed bag" of pedestrian amenities. Many traditional community centers feature extensive sidewalk networks while some major arterial roadways connecting those centers pose significant pedestrian challenges. The intent of this pedestrian policy and sidewalk plan is to provide guidance to improve the plight of the pedestrian and help make the Chittenden County region a place of walkable communities.

BENEFITS FROM PEDESTRIAN IMPROVEMENTS

Investing in pedestrian amenities like sidewalks not only assists the foot traveler to get from trip origin to destination but can also lead to other quality of life improvements. These include:

More Transportation Choices: As conditions for pedestrians improve and more people are willing to walk short distances to bus stops or rail stations, transit becomes a better mode choice for more people. Walking can also substitute for short car trips, benefiting traffic flow and potentially reducing congestion.

Economic Vitality: A significant level of Chittenden County commerce takes place in historic downtowns and village centers. Sidewalks provide the pedestrian infrastructure that directly serves this commercial activity. Making these areas more walkable directly benefits the businesses and the local economy. The quality of the pedestrian environment can also improve tourism.

Safe Neighborhoods: Neighborhoods are friendlier and safer if residents and visitors walk. Their presence strengthens neighborhood bonds through frequent personal interactions and helps deter crime. More walking can also reduce car trips within these neighborhoods thereby reducing the number of potential car/pedestrian conflicts.

Cleaner Environment: Changing the modal balance between cars and other modes - especially walking - will benefit air quality by reducing vehicle emissions.

Energy Efficiency: Fewer motor vehicle trips means less fuel consumed and more energy conserved.

Better Health: Walking is also a key to improving the physical fitness of many Americans. Regular walking reduces the risks of major diseases, relieves stress and improves mental health.

Save Money: Walking not only expands travel choice, but when combined with transit, can significantly reduce individual and household transportation expenses.

Social Equity: Walking expands personal mobility and choice for those who do not or can not drive - notably the young, the elderly, the disabled and those without cars. An improved pedestrian system provides independent mobility and accessibility for more of our citizens.

CHALLENGES TO PEDESTRIAN IMPROVEMENTS

If pedestrian amenities like sidewalks offer so many benefits, what keeps us from providing them? Unfortunately, for many years pedestrian concerns were absent from the processes of land use planning and the planning, design and operation of our roadway system. Consequently, we now face clear obstacles and challenges in our attempt to improve the pedestrian environment. Major challenges include low-density land development, regulatory recognition, pedestrian barriers in the transportation system, and pedestrian safety.

Low Density Development

Low density suburban and rural development patterns featuring segregated land uses and transportation infrastructure focused almost exclusively on the car have created environments that do not support or encourage walking and contribute further to our heavy dependence on cars. Making this development pattern and the separation of land uses attractive to pedestrians will take substantial time and effort.

Regulatory Recognition

A chief reason the land development pattern is low density and features segregated uses is the regulatory/permitting process at the local level. Municipal zoning bylaws describe the densities and uses in various areas within communities and the subdivision regulations regulate street layout and other details. Historically, both have focused more on vehicle movement and accommodation and less on pedestrian concerns.

At the state level, Act 250 regulates land development that meets certain criteria. If an Act 250 permit is required, one of the issues that requires attention is transportation, specifically that the proposed development will not cause unreasonable congestion or unsafe conditions. In the review process this criteria nearly always considers car and truck traffic impact analyses only, seldom if ever considering non-vehicular modes likes bicycles and pedestrians. While analyzing and modeling vehicle movements is common, factoring in pedestrians or bicyclists is not.

Transportation Facility Barriers

Numerous aspects of our existing transportation facilities reveal major deterrents to walking and create obstacles to travel for all pedestrians. These include:

- The lack of sidewalks
- Narrow walkways
- Missing curb cuts
- Poorly constructed or maintained walking surfaces

- Difficult street crossings
- Physical features such as rivers, railroad tracks and major roadways that lack pedestrian crossings
- Poor pedestrian access to transit
- High speed and high volume traffic adjacent to activity centers like schools, shopping centers and residential neighborhoods

Source: Campaign to Make America Walkable (Washington, DC 1998)

Safety

Pedestrian safety is a major traffic safety problem all over the country and one that is often overlooked. As recently as 1996, thirteen percent of traffic fatalities nationwide were pedestrians, with most on neighborhood streets. Several factors contribute to this:

- Design improvements focused on making neighborhood roadways wider/faster
- Commuters rushing to work/Excessive speed
- Drivers looking for shortcuts
- Lack of speed limit enforcement

Source: Creating Walkable Communities, Mid-America Regional Council, 1998

Pedestrian safety has not always been a priority traffic engineering issue. Improving the roadway to enhance the vehicular level of service - to move cars and trucks faster and more efficiently - has been the chief concern. These improvements have often been to the detriment of pedestrians. Few traffic engineering efforts have focused on both the safety concerns of pedestrians and vehicles, and even fewer seek to modify driving behavior in order to better protect and accommodate pedestrians.

Aware of the benefits and faced with the challenges, the CCMPO offers the following policy guidance designed to enhance the pedestrian mode.

REGIONAL PEDESTRIAN POLICY

"The success of a pedestrian network lies in the design of the routes and amenities along those routes. A sequence of spaces ranging in scale from intimate to vast, enclosure to exposure, need to be linked by a system of appropriate paving, lighting, plantings, and signage to maintain continuity. Major routes, which connect primary destinations within the regional core, should be visibly tied to the activity of the streets when not actually located along them. The pedestrian network should be linked with key transit stops, commercial areas, plazas, residential fronts, public parts, bike paths, greenways and open space to facilitate use and access. Interruptions in routes and inconvenient level changes and detours will discourage pedestrian travel. Tunnel and bridge crossings not at grade should be continuous with a major destination or activity at one end. In rural areas, adequate sidewalk and path systems should be provided for pedestrians, especially within and between activity and growth centers. The above measures will create a pedestrian friendly environment thereby making the area more attractive to transit as well."

Source: A Twenty-Year Vision for Transportation in Chittenden County, 1997 The Chittenden County Long Range Transportation Plan

To achieve the pedestrian system described in the Chittenden County Long Range Plan, the following regional objectives will guide pedestrian system planning and project implementation:

1. **Increase pedestrian mobility**.
   - Improve local infrastructure to meet identified pedestrian needs. (See sidewalk project evaluation criteria on page 10, which determine need.)
   - Ensure that future road and bridge improvements adequately accommodate pedestrians.
   - Pursue methods for more systematically and credibly analyzing and addressing current and future need for pedestrian facilities.

2. **Improve the safety and comfort of pedestrians**.
   - Identify and improve high accident locations.
   - Identify and remove barriers to pedestrian movement.
   - Ensure continuity in the pedestrian network.
   - Provide pedestrian amenities in all future design work.
   - Develop a data collection and problem reporting process.
   - Ensure proper maintenance of existing and future facilities.
   - Employ traffic calming techniques as appropriate and desired.
   - Ensure ADA compliance of all pedestrian improvements.

3. **Provide pedestrian accessibility to all destinations**.
   - Develop or improve links between pedestrian travel and other modes.
   - Ensure adequate pedestrian access to and from all current and planned transit stops.
   - Develop or enhance pedestrian facilities at all activity centers.

4. **Systematically program pedestrian improvements in the Transportation Improvement Program (TIP).**
   - Inventory the pedestrian infrastructure of the region.
   - Develop regional prioritization criteria for pedestrian projects.
   - Provide, as appropriate, design guidelines for pedestrian improvements. (For example, see Appendix B, Examples of Typical Sections for Sidewalks and Curbing.)

5. **Encourage pedestrian activity**
   - Develop incentive programs to encourage increased pedestrian activity.
   - Establish a mode shift goal quantifying a higher share of pedestrian trips.
   - Encourage the municipal adoption of pedestrian supportive policies and programs in town plans and ordinances.

REGIONAL SIDEWALK PLAN

The best known and most commonly used piece of pedestrian infrastructure is the sidewalk. Sidewalks have been part of city, town and village centers for decades. They provided a clear, distinct separation from vehicular traffic and directed pedestrians to commercial and residential land uses. While early sidewalks were confined to town centers, more recently, residential development outside those centers has included them. Much of the more recent sidewalk construction took place in suburban communities like South Burlington, Essex, Colchester, and Milton as the result of subdivision regulations stipulating sidewalks for safe pedestrian travel.

Sidewalk maintenance and expansion projects are primarily funded at the local level through the municipal property tax. To a lesser extent, the federal Enhancements Program has funded some sidewalk improvements. With this *Pedestrian Policy and Sidewalk Plan for Chittenden County* the CCMPO intends to apply federal highway funds to selected sidewalk projects.

Municipal Sidewalks

The map on page 7 shows the Chittenden County municipalities currently with sidewalks. While sidewalks in Burlington, Winooski, and the more built up suburban communities are more extensive, the rural town systems in Underhill, Jericho, Richmond, and Hinesburg remain confined to smaller village areas. The table on page 8 shows the extent of sidewalk infrastructure by community, with Burlington having close to half the region's total. The appendix contains municipal maps of the existing and planned sidewalk networks.

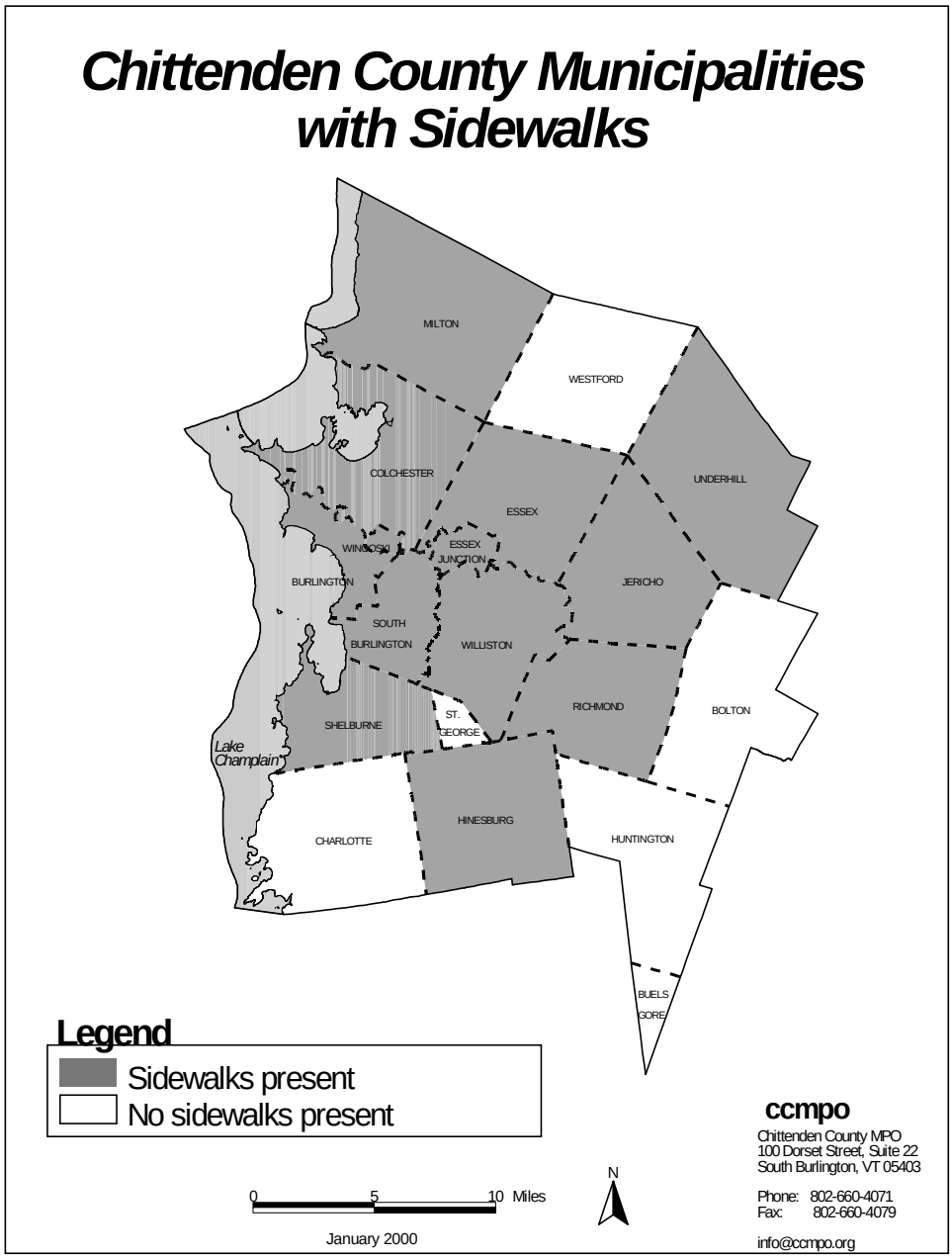
Sidewalk Planning Status and Need

The table on page 9 reveals the status of sidewalk plans and implementation projects in Chittenden County towns. It also attempts to quantify the financial need to maintain and improve the sidewalk infrastructure - a regional total estimated at over $14,000,000. (This estimate combines total need identified by some communities and the five-year capital needs of other municipalities. Not all towns are represented.)

Implementation

In order to address this sidewalk infrastructure need, the CCMPO recommends this region fully utilize the Transportation Enhancement and the Bike/Pedestrian Programs administered by VTrans, and wherever appropriate, necessary, and feasible, insist all roadway reconstruction projects include sidewalks. Longer term, the CCMPO will seek the cooperation of the Vermont Agency of Transportation to create a regional sidewalk fund in the TIP. Current federal law allows federal-aid highway funds to be used for sidewalk projects on roads both on and off the federal-aid system. The purpose of a regional TIP sidewalk fund will be to annually supplement funds for municipal sidewalk upgrades and/or construction projects that might otherwise go un-funded, and thus better address these high priority infrastructure needs.

While the Enhancement and Bike/Pedestrian Programs are currently available for sidewalk funding, a TIP sidewalk fund is not. To make such fund a part of a future TIP, the CCMPO will seek the cooperation of the Vermont Agency of Transportation (VTrans) to effect the necessary policy, regulatory and/or legislative changes necessary to allow this use of federal funds.


Chittenden County Municipalities with Sidewalks
MILTON
WESTFORD
COLCHESTER
UNDERHILL
ESSEX
ESSEX JUNCTION
WINOOSKI
BURLINGTON
JERICHO
SOUTH BURLINGTON
WILLISTON
RICHMOND
BOLTON
SHELBURNE
ST. GEORGE
Lake Champlain
HINESBURG
CHARLOTTE
HUNTINGTON
BUELS GORE
Legend
Sidewalks present
No sidewalks present
0 5 10 Miles
N
January 2000
ccmpo
Chittenden County MPO
100 Dorset Street, Suite 22
South Burlington, VT 05403
Phone: 802-660-4071
Fax: 802-660-4079
info@ccmpo.org

Chittenden County Sidewalk Miles, 1999

Municipality	*Miles of Public Sidewalk*	*Information Source*
BOLTON	0	Inspection*
BUELS GORE	0	Inspection*
BURLINGTON	200	Approximation by Justin Rabidoux, Burl. DPW
CHARLOTTE	0	Inspection*
COLCHESTER	20	Bryan Osborne, Colchester Public Works
ESSEX	69	Essex GIS
ESSEX JCT.	38	EJ 1997 RSMS
HINESBURG	2	Measured in Village with GIS
HUNTINGTON	0	Inspection*
JERICHO	1	Inspection*
MILTON	13	Milton 1998 RSMS
RICHMOND	2	Inspection*
ST. GEORGE	0	Inspection*
SHELBURNE	3	Sidewalk Improvement Plan
SO.BURLINGTON	50	Approximation by Bruce Hoar, South Burl. Public Works
UNDERHILL	.3	Calculated from town map
WESTFORD	0	Inspection*
WILLISTON	25	Neil Boyden, Williston Public Works
WINOOSKI	15	1991 RSMS
County Total	438.3	

*Inspections performed by CCMPO Interns, August 1999

The CCMPO proposes a sidewalk program that will:

- Evaluate and prioritize sidewalk projects applying for funds under the Enhancement and Bike/Pedestrian Programs prior to submission to VTrans,
- and/or may itself become a regional applicant for these funds for sidewalk projects.

Project Eligibility and Selection

Eligible sidewalk projects include facility upgrades (ADA modifications, widening, etc.) and new sidewalk construction. Reconstruction of existing sidewalk and routine sidewalk maintenance such as surface repairs, drainage improvements and snow removal are not eligible. Funds apply to project preliminary engineering, right-of-way and construction phases only.

PURPOSE AND OBJECTIVES

The purposes/goals of the CCMPO sidewalk program are: 1) to provide communities access to federal funds to improve their public sidewalk systems, 2) to advance the development of an integrated sidewalk system using accepted standards and guidelines, and 3) to encourage connections between neighborhoods, schools, parks, town centers and linkages to other public spaces for the benefit of the non-motorized traveler.

SUBMISSION REQUIREMENTS

To be eligible for program funds, project applications must include the following:

1. A project definition study/report identifying as appropriate a) project purpose and need, b) alternatives considered, c) a conceptual design and d) environmental impacts.
2. A maintenance and repair plan.

SELECTION CRITERIA

To select projects for inclusion in a regional sidewalk application program, or prioritize individual sidewalk applications, project application reviewers will evaluate the project using the following eleven prioritization criteria:

Will the project…

1. Address a community identified sidewalk priority?
2. Contribute to an integrated sidewalk system that includes other pedestrian facilities, to increase pedestrian travel?
3. Link existing or proposed sidewalk networks, communities and/or residential neighborhoods?
4. Connect in a logical manner village/town centers, schools, public buildings, employment sites or other popular trip origins and destinations?
5. Be part of a grid street layout with short blocks in business districts and town centers?
6. Address safety and the needs of all non-motorized travelers?
7. Provide buffers from moving motor vehicles and delineate, sign and mark the facilities as appropriate and ensure a secure environment, e.g. consider lighting, increased visibility, open sight lines, and access to police and emergency vehicles?
8. Provide street trees and other landscaping to bring a human scale to the street environment?
9. Contribute to an equitable geographic distribution of funding for sidewalk projects?
10. Maximize opportunities to leverage project funding from a variety of sources?
11. Bring an existing sidewalk into compliance with the Americans with Disabilities Act (ADA)?

The CCMPO will encourage sidewalk project applications to the VTrans programs and may solicit sidewalk projects for a regional application to the same state programs. All projects must conform with this *Pedestrian Policy and Sidewalk Plan for Chittenden County* and will be evaluated under the prioritization criteria identified above.

Sources

1998 Hillsborough County MPO Pedestrian System Needs Assessment, November 1998

A Twenty-Year Vision for Transportation in Chittenden County, January 1997

A Vision of a Walkable Community, Campaign to Make America Walkable, Washington DC 1997

Bicycle & Pedestrian Transportation Plan, City of Bloomington, Bloomington, IN December 1995

City Comforts: How to Build an Urban Village, David Sucher, Seattle WA 1995

Creating Walkable Communities, Mid-America Regional Council, Kansas City, MO December 1998

Massachusetts Pedestrian Transportation Plan, 1998

Pedestrian Facility Guidebook, Washington Department of Transportation, Olympia, WA 1997

Regional Pedestrian Master Plan, Niagara Transportation Committee, December 1997

Note: Not included from the full pedestrian plan document are **Appendix A: Municipal maps of existing and proposed sidewalks** and **Appendix B: Examples of Typical Sections for Sidewalks and Curbing.**

Appendix 2 - Municipal-level Bicycle and Pedestrian Facility Inventory

INTRODUCTION

The following sections identify the status of planning and implementation of bicycle and pedestrian facilities by Chittenden County communities. These local plans form the basis for the vast majority of the regional network recommendations in Chapter 3. There are some facilities shown in the regional networks that are not shown in the local networks. These new facilities provide inter-municipal or regional connections that may not have been identified locally.

Note: There is some ambiguity in several communities regarding their use of the term 'Class II' facility. As defined, this term now equates to a Bicycle Lane. In many community plans, it appears that a Class II facility was used to describe a paved shoulder, rather than a bike lane. Where it has been used by communities, the term Class II is translated in this report to Bike Lane/Wide Paved Shoulder. Class III facilities where it has been used by communities, has been translated in this report to Bicycle Route/Wide Curb Lane. (Class II, as well as Class I and Class III, is no longer used to describe bicycle facilities. Shared Use Path, Bicycle Lane and Shared Lane are terms currently used to describe bicycle facilities.)

It should also be noted that the majority of roads in Vermont are considered to be shared lane facilities, even with no formal designation or special accommodations for bicyclists.

This inventory provides brief descriptions that summarize the information related to the sidewalk network from the 2000 Pedestrian Policy and Sidewalk Plan (CCMPO, 2000).

Shared use paths are summarized as part of bicycle facilities.

BURLINGTON

NOTE: The City of Burlington is in the process of creating a bicycle/pedestrian plan for the City that references the CCMPO's Bicycle Pedestrian Plan and other existing and on-going local bike/ped planning. This local plan, when completed, will be used to re-evaluate the CCMPO's proposed regional bike/ped recommendations and may lead to revisions of that plan.

The Burlington Bicycle Council, an advisory group to the Department of Public Works, has completed a detailed inventory and analysis of the City's streets. This assessment was used in the 2002 North/South Bike/Pedestrian Route Study to support the creation of an existing conditions map. Burlington's current emphasis is on continuing to improve the on-street bicycling network. To this end, the City has just completed the North/South Bike/Pedestrian Route Study, funded with an enhancement grant. This study outlined three north/south priority routes as well as east/west routes to augment the north/south system. These routes connect to Burlington's downtown from the South End, Old North End, and Winooski. Public Works staff anticipates adoption of the overall plan by the Public Works Commission and City Council early in 2003.

Cycle The City - This is a ten-mile "self-guided historic tour" of the City. It is comprised of a combination of on-road and off-road bicycle facilities, including the Burlington Bike Path. It is part of the Lake Champlain Bikeways program.

The City has appointed a half-time bicycle and pedestrian planner to oversee planning and project implementation. The City of Burlington provided updated information for this plan and solicited and included input from the Burlington Bicycle Council.

Existing and Proposed Sidewalks

Burlington has an extensive system of sidewalks and crosswalks throughout the downtown and most of its residential neighborhoods. A network of 200 miles of sidewalks is estimated to exist. Sidewalk costs were estimated at approximately $4 million for replacement or rehabilitation of approximately 30 miles of sidewalk (Pedestrian Policy and Sidewalk Plan, CCMPO, 2000). Approximately 1000' of sidewalk are added by the City per year where priorities dictate. New sidewalks are also added as part of the development/redevelopment process (City of Burlington communication, 2001). The City has a capital improvement plan for the upgrading of existing sidewalks to continually improve pavement conditions, and ADA access provisions.

Existing Bicycle Facilities

Burlington has a detailed map of existing bikeways throughout the City made up of shared use paths, bike lanes, and shared lane bike routes. The Burlington Bicycle Council has stated that "it is imperative to create a comprehensive bicycling signage program that its integrated with the bicycle map. We should identify the routes with post-mounted signs that reinforce the classification of the road. The same system would be used for recreation paths."

Shared Use Paths

- The Burlington Bike Path, a heavily used shared use path, begins at Oakledge Park at the southern edge of the city and follows Lake Champlain for nearly seven miles to the Winooski River in Burlington's New North End. It provides connections to the downtown, neighborhoods, schools, and businesses. It is the "spine" of the proposed 1993 regional pathway network in Chittenden County.
- There is a network of shared use paths on the University of Vermont campus which cover 2.3 miles and provide access into South Burlington.
- There are two shared use paths that connect to the Ethan Allen Homestead in the Winooski Valley Park District. The first, un-paved path connects from Burlington's Intervale to the Homestead. The second, paved path, connects with this path at Ethan Allen Homestead, parallels Route 127, and has two northern branches. One branch crosses 127 and enters Ethan Allen Park. The second branch crosses 127 and connects at the eastern end of Ethan Allen Parkway in the New North End.

Bike Lanes

- There are approximately five miles of existing bike lanes in Burlington, most of which serve as critical links by connecting the shared lane bike routes to create a continuous network. These are located on North Avenue, Pine Street, South and North Union Streets, Mansfield Avenue, East Avenue, College Street, South and North Willard Streets, Route 2/Main Street at the Burlington/South Burlington line and on Routes 7/2/Riverside Avenue leading from the Winooski city line to Intervale Road.

Bicycle Routes/Wide Curb Lane

- The designated shared lane bike routes in Burlington total approximately 18.5 miles. They combine with several bike lane connections allowing bicyclists to traverse from the southern end of Burlington to the northern end while accessing schools, hospitals, city hall, and the post office. The major streets covered by the bike route are South Prospect Street, Pine Street, North Street, North Avenue, and Ethan Allen Parkway. Several streets with signed bicycle routes provide access to the Burlington Bike Path, which parallels Lake Champlain.

Proposed Bicycle Facilities

Shared Use Paths

- A planned and funded path connects Ethan Allen Homestead in the Winooski Valley Park District, runs south along Route 127, and ends on Manhattan Drive in the Old North End. Construction on this segment is planned for Spring, 2003.
- Burlington is working with the City of Winooski on traversing the Winooski River in two locations: in Burlington's Intervale via the "Blue Bridge" (an active rail bridge) and at the foot of Burlington's Colchester Avenue and Winooski's Main Street via the Main Street Bicycle/Pedestrian Bridge. VTrans, Burlington, and Colchester have been working to create a link across the mouth of the Winooski River connecting the Burlington Bike Path to Colchester's shared-use path system. The Burlington to Colchester Bike and Pedestrian Bridge is planned to begin construction in Januarys, 2003.
- A connecting existing path at the bridge to Ethan Allen Parkway would end at the bridge over the Winooski River as it enters Colchester. There, it would connect with existing paths and lanes on Route 127 and Borestone Lane, to the Burlington Bike Path, and the Burlington to Colchester Bike and Pedestrian Bridge.
- A proposed path would begin at a new Winooski River crossing (probably near the "Blue Bridge"), cross Intervale Road and continue to Manhattan Drive where it would connect with the 127 Bike Path from Ethan Allen Homestead.
- A shared use path has been planned and funded to start where Routes 7 and 2 cross the Winooski River (Riverside Avenue). A scoping study for a separated river (the "Blue Bridge") crossing has been completed; the funding and timing of potential future construction has not been identified.
- Another shared use path of 2.4 miles is planned as part of the Champlain Parkway project. It is located approximately 500 feet west of Pine Street beginning at the northern terminus of the existing path from Queen City Park Road. It begins north of Home Avenue and ends at Lakeside Avenue. The path continues onto Lakeside Avenue to Pine Street, north along Pine Street, bearing west of Gregory Supply, and ending at the foot of Battery Street. The path will connect here with the Burlington Bike Path.

Bike Lanes/Wide Paved Shoulders

- Upgrade Depot Street as a bicycle/pedestrian/emergency access route to the Waterfront
- Continue bike lanes from Institute Road on North Avenue north to Route 127
- Improve bicycle facilities on North Avenue between Route 127 and Plattsburg Avenue
- Connect Ethan Allen Parkway to Burlington Bike Path via North Avenue and Leddy Park Road
- Prime north-south routes as defined by the 2002 North/South Bike/Pedestrian Route Study are:
    - Shelburne Road
    - St. Paul Street
    - South and North Union Streets
    - South and North Winooski Avenue
    - Riverside Avenue
    - Pine Street
    - Locust Street (as a connection to other north/south streets)
    - Battery Street
    - Park Street
    - North Avenue
    - North Champlain Street
    - Manhattan Drive

  The City plans to begin improvement of north/south routes beginning in 2003.

- Prime east-west routes to augment north/south routes as defined by the 2002 North/South Bike/Pedestrian Route Study are:
    - Home Avenue
    - Flynn Avenue
    - Sears Lane
    - Howard Street
    - Pine Place/Spruce Street
    - Maple Street
    - Main Street
    - College Street
    - Cherry Street
    - Pearl Street
    - Archibald Street/Manhattan Drive/Ward Street
- Consider continuing bike lanes on Willard Street south of Main Street

Bicycle Routes/Wide Curb Lanes

- There are currently no proposed additional bicycle routes in Burlington due to the City's focus on improving the on-road bicycle network with designated bike lanes.
- Burlington plans to have bicycle "park and ride" facilities included in commuter capture lots, for example, the Gilbane Innovation Center.

CHARLOTTE

Existing and Proposed Sidewalks

Charlotte has no existing sidewalks and has no current plans for adding sidewalks.

Existing Bicycle Facilities

Shared Use Paths

- Currently 400' of pathway has been built from Ferry Road to the train station.

Bike Lanes/Wide Paved Shoulders

- 1.4 miles on Dorset Street from the Shelburne town line south to Carpenter Road
- 1.2 miles on Hinesburg Road from Mt. Philo Road to Route 7 (4' facility on one side of the road only) and from Greenbush Road to the Vermont Railway (3' facility on one side of road only). These facilities do not meet general design standards for bicycle lanes.)

Bicycle Route/Wide Curb Lane (Champlain Bikeway)

- A shared lane bike route starts at the Shelburne town line following Greenbush Road to Lake Road. It then follows Lake Road to Ferry Road. The route follows Ferry Road to the Vermont Railway where a bike lane begins. The bike lane leads to Greenbush Road where the shared lane bike route picks up again. The route then follows Greenbush Road south to the Ferrisburgh town line. The total length of this route is 8.7 miles. The Town has decided to not allow signs on this route.

Proposed Bicycle Facilities

Shared Use Paths

- Charlotte Recreational Pathway - A shared use pathway is in the early conceptual planning stages to parallel the Vermont Railway line beginning at the train station just south of Ferry Road and continuing to the Shelburne town line and connecting to the Burlington Bike Path. This will extend the existing 400' of path described above.
- Melissa & Trevor Mack Trail – A 3-mile recreational trail connecting the northern end of the funded and planned Charlotte recreational pathway, a planned underpass of Route 7, with the village center.

Bike Lanes/Wide Paved Shoulders

- There are no proposed bicycle lanes in Charlotte.

Bicycle Routes/Wide Curb Lane

- There is a series of proposed bike routes for Charlotte that will connect existing bike lanes and make one continuous connection from Shelburne and Hinesburg, through Charlotte to Lake Champlain.
- A proposed bike route picks up at the intersection of Dorset Road and Carpenter Road (where an existing wide paved shoulder ends). It follows Dorset Road south for 1.5 miles to Hinesburg Road.
- A proposed bike route follows Hinesburg Road 3.4 miles from the Hinesburg town line. It would pick up with an existing wide shoulder at Mt. Philo Road.
- A short 0.3 mile bike lane would connect two existing bike lanes on Ferry Road from Route 7 to Greenbush Road.
- Another bike lane would start near an existing shared lane bicycle facility at Lake Road and Ferry Road. This lane would follow Ferry Road for 1.3 miles to Lake Champlain and the Essex, New York ferry service.

COLCHESTER

Existing and Proposed Sidewalks

The town has an existing sidewalk network of approximately 20 miles and has identified sidewalk needs totaling $3.5 million (Pedestrian Policy and Sidewalk Plan, CCMPO, 2000).

Existing Bicycle Facilities

The town of Colchester has four existing shared use paths providing important regional and local connections.

Shared Use Paths

- Colchester Bike Path - An existing shared use path meanders 2.3 miles through the area between Creek Farm and Bayside Park. It begins at Creek Road at its northern end, crosses Bay Road and continues at Blakely Road and Laker Lane at its southern end. It provides access to three schools in this area -- the elementary, middle and high schools. The path connects to existing wide shoulder on Blakely Road and a proposed path along Mallets Bay Avenue.
- Causeway Path - A second existing shared use path extends from the Winooski River at the northern terminus of the Burlington Bike Path and Delta Park. A ferry currently provides a

crossing but a bridge is in the planning stages. The path is 4.3 miles long from the Winooski River to the Colchester Point/Mills Point area. The path then becomes a causeway that continues over Lake Champlain to Grand Isle/South Hero.

- The third existing pathway parallels Porters Point Road from Prim Road/Heineberg Drive to Porters Point School
- A short path also exists along Airport Road, connecting to the path leading to the causeway and linking south to Burlington.

Bike Lanes or Wide Paved Shoulders

- A wide shoulder is located on Blakely Road from Laker Lane Mallets Bay Avenue. It provides connections to three schools in this area -- the elementary, middle and high schools.
- Another existing bike lane begins on Route 127/Hienberg Drive at the Winooski River and continues north to Porters Point Road.
- A bike lane along Route 2, 2.5 miles long, runs from the Milton town line to the junction of Routes 2 and 7.
- A wide shoulder is on Route 127 from I-89 to Route 2/7.

Bicycle Route/Wide Curb Lane

- There are no existing bicycle routes or wide curb lanes in Colchester.

Proposed Bicycle Facilities

The town has an extensive network of planned shared use paths and bike lanes connecting all areas of the town to Burlington, Milton, Winooski, Essex Town and Essex Junction.

Shared Use Paths

- A path parallel to Malletts Bay Avenue from the Winooski border to Blakely Road.
- An east-west shared use path parallel to Lakeshore Drive (Route 127)/Blakely Road/Severance Road to the Essex town line.
- Path parallel to Prim Road from West Lakeshore Drive to Porters Point Road.
- Path along Porters Point Road from Porters Point School to West Lakeshore Drive.
- Shared use path for the entire length of Route 7 in Colchester.
- Short connecting paths along Main Street and Creek Road.
- Path along Route 15 from Winooski to Essex.

Bike Lanes/Wide Paved Shoulders

- Proposed bike lane on Route 7 in Colchester for 7 miles from the Winooski town line to the Milton town line. This would provide an important regional connector.
- Proposed bike lanes along Prim Road/Route 127 from Porters Point Road to West Lakeshore Drive.
- Bike lanes on Lakeshore Drive (Route 127)/Blakely Road/Severance Road to the Essex town line.
- Bike lanes the entire length of Mallets Bay Avenue.
- Bike lanes on Route 2A From Route 7/2 to Essex town line.

Bicycle Routes/Wide Curb Lane

- There are no proposed bicycle routes or wide curb lanes in Colchester.

ESSEX TOWN AND ESSEX JUNCTION

The Town of Essex provided maps of updated shared use path and pedestrian trail facilities. Pathway facility information was provided from Maps 6 to 9 from the Draft Comprehensive Plan and from a "Path/Sidewalk Plan" prepared by the Town of Essex.

The Town of Essex and Village of Essex Junction have an evolving shared use path network. In 2000, the Essex Town Selectboard chartered a Trails Committee that has been prioritizing pathway needs. Two top shared use path priorities are listed in the Draft 2001 Comprehensive Plan: Route 15 from Butlers Corner to Sand Hill Road (currently being studied) and Route 2A from Old Colchester Road on Route 2A to the Shillingford Crossing sidewalk along Pinecrest Drive (Town of Essex, Draft Comprehensive Plan, 2001).

Existing and Proposed Sidewalks

The Essex Town contains approximately 69 miles of sidewalks. Sidewalk additions are proposed along Route 15 (Pedestrian Policy and Sidewalk Plan, CCMPO, 2000) and Kellogg Road into Colchester. Essex Junction contains approximately 38 miles of sidewalks. New sidewalks are requested as part of subdivisions and commercial development.

Existing Bicycle Facilities

Shared Use Paths

- Shared use path from Route 15 (west of Saybrook Road) to Essex Way and through the I-289 interchange, to and through the Lang Farm development with termini at Countryside Drive in the Village of Essex Junction and Sydney Drive in Essex Town. At Countryside Drive, it becomes a shared lane facility with connections to the resumption of shared use path (EssJ-2P) at Brickyard Road, continuing to Route 15.
- Shared use path parallel from Countryside Drive to Route 15/Main Street.
- Short section of gravel path from Essex Elementary School to end of Thomas Lane. Provides connection from small neighborhood to school. Additional short section of gravel path (Ess-10P) along Brown's River Road/Route 128 extending west from Thomas Lane. Planned connection to Frederick Road.
- Shared use path from Sand Hill Road to Thompson Drive/Saxon Industrial Park.
- Short shared use path alongside Founders Road from Sand Hill Road near the Founders School. The full path will connect From Sand Hill Road to Essex Junction at the existing path at Essex Way.
- Short section of shared use path next to Upper Main Street/Route 15 from Blue Butler Drive to Center Road/Route 15.
- Short section of shared use path alongside Old Stage Road extending from Cabot Court to Willoughby Drive. Part of larger path extending length of Old Stage Road from Route 15 to Westford town line.

Bike Lanes/Wide Paved Shoulders

- The Alternative Transportation Path Comprehensive Plan (CCRPC) shows an existing bicycle lane from Five Corners on Maple Street/Route 117 for approximately 1.2 miles.

Bicycle Routes/Wide Curb Lanes

- There is a designated bicycle route on Countryside Drive in Essex Junction that connects two shared use paths that connect the Butlers Corner area to Essex Junction.

Proposed Bicycle Facilities

Shared Use Paths

The Town of Essex and Essex Junction have ambitious plans for an extensive network of paths within the communities and connections to adjoining communities.

Three proposed routes enter Essex from Westford:

- A four mile path follows Old Stage Road from the Westford town line to the existing path beginning at Willoughby Drive.
- A 3.3 mile path follows Chapin Road from the Westford town line to Towers Road.
- A 4.1 mile path follows Route 128 from the Westford town line to Essex Center/Route 15.

Seven proposed routes connect Essex Town and the Village of Essex Junction to Colchester:

- Brigham Hill Road has a proposed path which parallels it for 3 miles from the Colchester town line to Pages Corner/Old Stage Road.
- A proposed path follows Indian Brook Reservoir to Indian Brook Road for a total of 3.4 miles.
- A 2.8 miles path follows Lost Nation Road into Essex.
- Two paths follow rail lines into and out of Essex and Essex Junction.
  Shared use path along Route 2A from Colchester for 3.0 miles to Five Corners in Essex Junction. The second parallels Route 15 and the rail corridor from Colchester for 2.2 miles to Five Corners in Essex Junction.
- A shared use path of 5.2 miles starts near Indian Brook at the Colchester town line and crosses Routes 2A and 15 (Main Street). It continues to follow near Alder Brook to the Williston town line.
- Shared use path from Colchester into Essex following Kellogg Road 0.5 miles then splitting north on the Susie Wilson Bypass and south on Susie Wilson Road.

Two proposed paths would connect Essex to Jericho.

- A shared use path following River Road/Route 117 from Jericho continues through the Town of Essex to Essex Junction.
- Shared use path from Jericho follows Route 15 from the Jericho town line to Saxon Hill Road. Provides connection to path to Essex Center.
- Shared use path along Weed Road from Route 15 to Route 128 connecting to pathway along Route 128 and on Route 15.
- Shared use path from east of Route 15 near Saxon Hill Road to Essex Center via Frederick Road on an alignment outside of the Route 15 right-of-way.

Cross-town paths

- Shared use path along the Winooski River from Pinewood Drive through Essex and Essex Junction to the Colchester town line.
- Shared use path parallel to I-289/Circumferential Highway from the Colchester town line to the Williston town line.

Shared use paths internal to the town

- Shared use path along Sand Hill Road from Route 117 to Route 15 in Essex Center.

There are three proposed shared use paths entering Essex and Essex Junction from Williston.

- A shared use path follows Route 2A for 0.5 miles to the pathway along the rail corridor
- Shared use path following North Williston Road 2.4 miles to Saxon Hills Road in Essex.
- Short shared use path that would connect Route 128 to Frederick Road and path parallel to Route 15 to Jericho.
- Connection from Sand Hill Road to existing path to Essex Junction at Essex Way.

Bike Lanes/Wide Paved Shoulders (information from the Alternative Transportation Path Comprehensive Plan (1993)

- Several bike lanes (or paved shoulders) are proposed from the Alternative Transportation Path Comprehensive Plan (1993). These include:
    - Route 2A from the Colchester town line in the Town of Essex to Five Corners in Essex Junction
    - Route 15 from the Colchester town line in the Town of Essex and Essex Junction to Jericho
    - West Street in Essex Junction
    - Route 117 from Essex Junction to the Jericho town line in Essex
    - Old Stage Road
    - Route 128
    - Sand Hill Road.

Bicycle Routes/Wide Curb Lanes

- There are no proposed bicycle routes or wide curb lanes in Essex or Essex Junction.

HINESBURG

Existing and Proposed Sidewalks

Hinesburg currently has approximately 2 miles of sidewalk in the Village Center. Extensions of the system are planned in the Village Center for Route 116, Mechanicsville Road, Commerce Street and CVU Road.

Existing Bicycle Facilities

- No shared use paths currently exist in Hinesburg.

Proposed Bicycle Facilities

Shared Use Paths (information from the Alternative Transportation Path Comprehensive Plan (1993).

- A proposed shared use path starts near Lewis Creek Road in Southern Hinesburg. The path follows north between Gilman Road and Silver Street 4.4 miles to pond Road. At Pond Road the path splits into two paths
- One path extends 2.6 miles between Route 118 and Shelburne Road to the Shelburne town line.
- Another path continues 2.5 miles following Place Road and Pond Road. It then brushes the corner of the St. George town line and ends at the Williston town line.

Other

On-road Bicycle Facilities

- The Addison County Regional Planning Commission indicates two bicycle routes that would connect with Hinesburg. One is located on Route 116 and the other is located on Silver Street connecting Monkton Ridge and Hinesburg Village.

HUNTINGTON, BUELS GORE, ST. GEORGE

Existing and Proposed Sidewalks

In Huntington, one small section of sidewalk exists in front of a residence. There are long range plans to add sidewalks in Lower Huntington Village. No sidewalks currently exist or are planned in Buels Gore or St. George.

Existing Bicycle Facilities

- There are no existing shared use paths in Huntington, Buels Gore, or St. George.

Proposed Bicycle Facilities

- There are no proposed bicycle facilities in Huntington, Buels Gore, or St. George.

JERICHO

Existing and Proposed Sidewalks

Approximately 1 mile of sidewalk exists in the Underhill Flats and Jericho Village areas. New sidewalks are proposed in the Underhill Flats area in a joint grant with the Town of Underhill.

Existing Bicycle Facilities

- No shared use paths currently exist in Jericho.

Proposed Bicycle Facilities

Shared Use Paths

- The main route continues up a long switch-back grade past local neighborhoods and Jericho Elementary School. Crossing Route 15, the proposed pathway rejoins the old rail grade and follows Browns River to the Browns River Middle School in the Riverside section of Underhill (1988 Greenway Plan).

Bike Lanes/Wide Paved Shoulders

- No bike lanes or wide paved shoulders are proposed for Jericho.

Bicycle Routes/Wide Curb Lanes

- No bicycle routes or wide curb lanes are proposed in Jericho.

MILTON

The Town recently adopted its Alternative Transportation Master Plan (WSA, 2002) that identifies concepts for bicycle and pedestrian networks. The main features are the central role for bicycle-pedestrian facilities in the future vision of the Town Core Area and the radial pattern of facilities from Milton Village.

Existing and Proposed Sidewalks and Pedestrian Facilities

The Town currently has approximately 13 miles of sidewalks. An additional 22 miles of sidewalk needs have been identified estimated at $2.8 to $3.1 million (Pedestrian Policy and Sidewalk Plan, CCMPO,

2000). In January 2001, the Town completed a Long Range Access and Mobility Plan which identified its two highest sidewalk priorities as:

- Extending the sidewalk along Route 7 from the Grand Union to Checkerberry
- Middle Road from Railroad Street to Russell Circle.

The Town has also completed a Town Core Master Plan that calls for greatly improved pedestrian connectivity in the Town Core Area, especially along and across Route 7.

Existing Bicycle Facilities

- Route 2 through Colchester (north of Route 2A) and Milton, extending west from Route 7 to the Sand Bar Bridge to Grand Isle/South Hero, has 6'-8' paved shoulders available for bicyclist use.
- Route 7 has paved shoulders for a marked bike route from the Colchester town line to Andrea Estates.

Proposed Bicycle Facilities

Shared Use Paths

A proposed shared use path of approximately 5 miles starts on Route 7 at the Colchester town line. It follows Route 7 to Milton Village.

- Shared use path from the Town Core Area to the Poor Farm Road Neighborhood, crossing the Lamoille River.
- Shared use path along Route 7 from the Town Core Area to Main Street.

Bike Lanes or Shared Lane Facilities

- A large network of on-road bicycle facilities is proposed in Milton, radiating outward from Milton Village. Roads included in this network include:
    - Route 7 north of Main Street
    - Lake Road
    - Westford Road
    - North Road
    - McMullen Road
    - Duffy Road
    - East Road
    - Hobbs Road
    - West Milton Road and Bear Trap Road connecting to Route 2
    - Cadreact Road/Beebe Hill Road.
    -

RICHMOND AND BOLTON

Existing and Proposed Sidewalks

There are approximately 2 miles of sidewalks in the town of Richmond, primarily in Richmond Village. There are plans for short additions to the existing sidewalks. There are currently no sidewalks in Bolton and none are planned.

Existing Bicycle Facilities

- No shared use paths, bike lanes or shared lane bicycle facilities currently exist in the towns of Richmond and Bolton.

Proposed Bicycle Facilities

Shared Use Paths

- There is one proposed shared use path connecting Richmond and Bolton via the Winooski River. The path starts near the Old Round Church in Richmond and follows the Winooski River through Bolton to the Duxbury town line. The path is 7.8 miles total, 3.7 miles lie in Richmond and 4.1 miles are in Bolton. This is part of the Cross Vermont Trail.

Bike Lanes/Wide Paved Shoulders

- No bike lanes or wide paved shoulders are proposed for either Richmond or Bolton.

Bicycle Routes/Wide Curb Lanes

- No designated bicycle routes or wide curb lanes are planned in Richmond or Bolton.

SHELBURNE

Existing and Proposed Sidewalks

Shelburne contains approximately 3 miles of sidewalks (Pedestrian Policy and Sidewalk Plan, CCMPO, 2000) along many of its major roads in the village center. This system has recently been expanded.

Existing Bicycle Facilities

Shared Use Paths

- There is one existing shared use path of 1.2 miles from the Shelburne Bay Park to Bay Road.

Bike Lanes/Wide Paved Shoulders

- There are no existing bike lanes or wide paved shoulders in Shelburne.

Bicycle Routes

- There are no existing bicycle routes in Shelburne.

Proposed Bicycle Facilities

Shared Use Paths

- The proposed Longmeadow-Webster Road Path will begin at the shared use path on Allen Road in South Burlington. It will run south, connecting the neighborhoods that lie between Shelburne Road and Spear Street to Webster Road. The path will run close to Webster Road, cross the LaPlatte River, and connect to Shelburne Village. The municipality has made this corridor a priority.
- The Ti Haul Road Path, a 1.3 mile shared use path to extend the existing path at Shelburne Bay Park to Harbor Road, has been funded. The project should be complete by 2003.
- The proposed Beach Link path will link Shelburne Village with the Town beach. Although, the exact route is undetermined, it will be an important shared use path for the Town.
- The proposed Harbor Road path will link Shelburne Village with the northern terminus of the Shelburne Bay Park shared use path.
- The proposed Rail with Trail path runs along side the Central Vermont Railway tracks from Harbor Road to the South Burlington line.

- The proposed Mid-Route Connection will connect the Rail with Trail and Longmeadow-Webster Road path near Shelburne Commons on US Route 7.

Bike Lanes/Wide Curb Lanes

- Dorset Street-South Burlington line to Pond/Irish Hill Roads intersection
- Spear Street-South Burlington line to Pond/Falls Roads intersection
- US Route 7 – South Burlington line to Charlotte line
- Harbor Road – northern terminus of Shelburne Bay Park path to Shelburne Shipyard
- Falls/Irish Hill/Pond Roads – Shelburne Village to VT Route 116
- Mt. Philo Road – Marsett/Falls Roads intersection to Charlotte line
- Marsett-Marsett/Falls Roads intersection to US Route 7
- Bostwick Road – US Route 7 to Beach Road

SOUTH BURLINGTON

The City of South Burlington has had a formal Recreation Path Committee since 1991. The committee has recently expanded its scope to include sidewalks and trails. Their recently updated Comprehensive Plan identifies existing and proposed pathway and on-road bikeway facilities. The City actively pursues/requires developers to provide easements or paths in conjunction with approval of developments.

Existing and Proposed Sidewalks

The City contains approximately 50 miles of existing sidewalks. No new sidewalks are planned by the City but it requires them as part of new developments (Pedestrian Policy and Sidewalk Plan, CCMPO, 2000). A sidewalk is planned as part of the improvements along Route 7 to the Shelburne town line.

Existing Bicycle Facilities

South Burlington has an existing system of shared use paths that allows users access to most of the town as well as a connection to the Burlington Bike Path system.

Shared Use Paths

The City contains approximately 15.1 miles of existing shared use paths (South Burlington Comprehensive Plan, 2001).

- Shared use path along Spear Street from Gutterson Field House/UVM to I-89. The path provides a major north-south connection and to Burlington to the west, currently ending at Farrell Street (proposed to be extended to Swift and Proctor Streets). Extension south of I-89 to the Shelburne town line is proposed.
- Shared use path from Burlington line/Red Rocks Park, through Farrell Park to Dorset Street/Dorset Community Park, providing major east-west access in the city. Extension east is proposed to the Williston town line.
- These shared use paths provide a southerly connection from Farrell Park to Szymanski and Overlook Parks, eastward to intersect with the Dorset Street path and across to neighborhoods west of Route 116/Hinesburg Road.
- Shared use path along Dorset Street from Route 2/Williston Road to Old Cross Road. Future extension is planned to the Shelburne town line. The existing path from Route 2 to I-89 is located adjacent to the sidewalk along both sides of the road. It provides connections to the University Mall, Route 2, the high and middle schools and the existing path west along Kennedy Drive. From I-89 southward, it is a separated pathway on one side of the road. It provides access to the Dorset Community Park.

- Shared use path parallel to Kennedy Drive between Dorset Street and Route 2/Williston Road. This provides a short, local north-south connection between neighborhoods.

Other short sections of paths have been built, usually in association with the development of residential properties. These new sections of path connect to previous path sections or existing sidewalk or will connect when other planned sections of path are constructed. They include:

- Sections on the Vermont National Country Club
- Along Nowland Farm Road
- Between Harbor View Road and Allen Road
- Along Midland Avenue
- Between Williston Road and Lynn Avenue across Community Lutheran Church Land and the Garvey Property (a City owned parcel).

Bike Lanes/Wide Paved Shoulders

- There is a paved shoulder along one side of Spear Street for two lengthy sections of the roadway.

Bicycle Routes/Wide Curb Lanes

- Shared lane bicycle facilities exist on Farrell Drive and Patchen Road.

Proposed Bicycle Facilities

Shared Use Paths

- South Burlington has an extensive system of proposed shared use paths, many which run in loops. There are several proposed paths which run north from the Shelburne town line into various parts of South Burlington and Burlington. Major planned paths run parallel to Shelburne Road, Spear Street, and Dorset Street. There are also a few proposed paths that lead from Williston and Colchester into South Burlington. For instance parallel paths along Kimball Avenue, Williston Road, Poor Farm Road, and Lime Kiln Road/Airport Parkway are proposed.

Bike Lanes/Wide Paved Shoulders

- The Alternative Transportation Path Comprehensive Plan (CCRPC, 1993) includes an extensive system of proposed bicycle lanes in South Burlington.
- The Route 7 reconstruction plans include a bicycle lane between Imperial Drive and the Shelburne Town line.

Bicycle Routes/Wide Curb Lanes

- There are no bicycle routes or wide curb lanes planned for South Burlington.

UNDERHILL

Existing and Proposed Sidewalks

There are approximately 0.3 miles of sidewalks in the Underhill Flats area of town (Pedestrian Policy and Sidewalk Plan, CCMPO, 2000). The Town plans to expand the sidewalk system in Underhill Flats through a grant received jointly with the town of Jericho.

Existing Bicycle Facilities

- No designated bicycle facilities currently exist in Underhill

Proposed Bicycle Facilities

Shared Use Paths
A proposed shared use path follows Route 15 in Jericho and splits into two separate paths just before the Underhill town line.

- One path follows Route 15 north for 4.9 miles to the North Underhill area.
- The second path follows River Road to Pleasant Valley Road. In the area of New Road the trail heads northeast for 1.2 miles before it ends. The total length of this trail is 3.8 miles.

Bike Lanes/Wide Paved Shoulders

- No bike lanes or wide paved shoulders are currently proposed for Underhill.

Bicycle Routes/Wide Curb Lanes

- No bicycle routes or wide curb lanes are currently proposed for Underhill.

WESTFORD

Information from the Town Plan was used in compiling the information below.

Existing Bicycle and Pedestrian Facilities

- There are no identified existing shared use paths, on-road bicycle facilities, sidewalks or trails in Westford.

Proposed Bicycle and Pedestrian Facilities

Shared Use Paths

- The Town Plan calls for the development of walking trails in the Town. Suggested routes are from the Village Center to the School, to the Post Office and to the Huntley Road Swimming area.
- There is also an endorsement in the Town Plan of the Chittenden County Greenways Plan (1991) and Alternative Transportation Path Comprehensive Plan to establish a 3.9 mile trail along the west side of the Browns River, extending toward Essex.

Other

On-road Bicycle Facilities

- The Lamoille County Regional Planning Commission Alternate Transportation Plan calls for preferred bicycle routes to be located on Route 15, entering Westford from Cambridge.
- Route 128 connecting Fairfax and Westford is shown as a bicycle route on published maps available from the State.

WILLISTON

Williston provided updated digital information from its 2001 Comprehensive Plan regarding existing shared use paths, sidewalks and trails in the community.

Existing and Proposed Sidewalks

Williston has approximately 25 miles of sidewalks, lining most streets in recent residential and commercial subdivisions. Sidewalks also are found along the main street in the historic village and along portions of Route 2A and Brownell Road. Additional sidewalks are planned along existing main roads (Pedestrian Policy and Sidewalk Plan, CCMPO, 2000).

The 2001 Comprehensive Plan states that "the sidewalk system is growing primarily within the area designated for compact growth -- the commercial areas, the medium density residential areas, and the Village Center…. The long term goal is to have sidewalks along all roads in this area, both along the periphery and internally… The Town should concentrate on constructing sidewalks along previously constructed portions of non-residential roads. Residential developers should provide sidewalks along at least one side of most neighborhood roads. Non-residential developers should provide sidewalks along the frontage of all abutting roads. In addition, the Town should assist in filling in gaps where sidewalks are not constructed along existing local or neighborhood roads" (page 62-63). The Plan also envisions an extensive network of *primitive trails* south of I-89 to provide pedestrian connections.

Existing Bicycle Facilities

Shared Use Paths

- Marshall Avenue Bike Path – 1 mile path on Marshall Avenue from South Brownell Road to Route 2A.
- A 1.2 mile shared use path starts at North Williston Road near Central School and meanders northwest. It circles the ball fields and continues west to Old Stage Road.
- A 1 mile shared use path starts off of Talcott Road near Allenbrook School and connects to the Southridge neighborhood area.

Bike Lanes/Wide Paved Shoulders

- There are no existing bike lanes or wide paved shoulders in Williston. There are sections of paved shoulders along state highways for use by bicyclists, most notably along portions of Route 2 and Route 2A.

Bicycle Routes/Wide Curb Lanes

- There are no designated bicycle routes or wide curb lanes in Williston.

Proposed Bicycle Facilities

Shared Use Paths

An extensive system of shared use paths is detailed in the 2001 Williston Comprehensive Plan. The paths are located north of I-89. South of I-89 as network of primitive trails is proposed that are not designed accommodate bicyclists.

Major elements of the proposed shared use path network include:

- Link from Williston Center to Route 2 in the Governor Chittenden Road corridor
- Route 2A corridor
- Kimball Avenue/Shunpike Road corridor
- Completion of the Williston Village Bike Path

Other

On-road Bicycle Facilities
On-road bicycle facilities have been proposed for the following roads (CCMPO Alternative Transportation Path Plan):

- Route 2A from Essex Junction, through Williston, to St. George
- River Cove Road
- Brownell Road
- Walker Hill Road
- Old Creamery Road
- Oak Hill Road
- North Williston Road
- South Road/East Hill Road
- Mountain View Road
- Redmond Road
- Shunpike Road
- Marshall Road.

WINOOSKI

Existing and Proposed Sidewalks

Approximately 15 miles of sidewalk exist in Winooski. Sidewalks along several major roadways are in need of repair including Route 7/2, East Spring Street and La Fountain Street. New sidewalks are proposed for existing residential streets (Pedestrian Policy and Sidewalk Plan, CCMPO, 2000).

Existing Shared Use Paths

- There are no existing shared use paths in Winooski.

Existing Bicycle Facilities

- There are no existing on-road bicycle facilities in Winooski.

Proposed Bicycle Facilities

Winooski has a series of proposed shared use paths that would enable bicyclists to circle the entire perimeter of Winooski. These shared use paths also create access to all of Winooski's surrounding municipalities (Burlington, Colchester, and South Burlington).

- A 2.3 mile shared use path parallels the Winooski River (also the town boundary with Burlington). This path has 2 access points which cross the river into Burlington.
- A 0.8 mile path starts near the Winooski River and continues through the Winooski Natural Area to the South Burlington town line. The path parallels the South Burlington town line and ends at East Allen Street.
- Another shared use path starts off of Florida Avenue near St. Michaels College. This path of 0.8 miles traverses parts of Gilbrook Park and has two access points into Colchester.
- There are a series of small shared use paths in the northwest corner of Winooski that connect different neighborhoods. These 4 separate paths total approximately 1 mile.

Bike Lanes/Wide Paved Shoulders

- There are no proposed bike lanes or wide paved shoulders in Winooski

Bicycle Routes/Wide Curb Lanes

There is an extensive system (approximately 8 miles total) of bicycle routes planned in Winooski that will enable users to access any part of the City. The following is a listing of the major streets covered by these facilities.

- Route 15 (East Allen Street) entering from Colchester in the east
- Routes 7 and 2 (Main Street) entering from Colchester in the north
- Malletts Bay Avenue entering from Colchester in the northwest
- Weaver Street parallels Main Street
- La Fountain Street offers east/west travel across Winooski from St. Michaels College (ends at Main Street)
- East Spring Street traverses east/west across Winooski and crosses Main Street.

Appendix 3 – Figure and Tables of Proposed Facilities

Table A
Recommended Regional Shared Use Path Network

ID	Municipality	Facility/Corridor	From-To	Connection	Length (mi.)	Status
1	Burlington	Burlington Bikepath	Colchester - So. Burlington	Burl. Neighborhoods/ Downtown/ Waterfront - Colchester - So. Burlington	7.4	Existing
2	Burlington	Intervale/Ethan Allen Homestead	Route 127 - Winooski	Colchester - Burlington - Winooski	4.1	Existing/ Proposed
3	Burlington	Southern Connector	Maple St - Austin Dr	Downtown - So. Burlington	2.2	Proposed
4	Burlington	Colchester Avenue	UVM campus to Winooski River Bridge	UVM-Winooski	0.5	Proposed
5	Charlotte	Rail with Trail Pathway	Shelburne - Train Station	Charlotte - Burlington - Colchester	3.2	Proposed
6	Colchester	Causeway - Biscayne Heights Path	Winooski River/Burlington - Grand Isle/South Hero	Burlington - Colchester - So. Hero	3.0	Existing
7	Colchester	Airport Rd/Porters Point Path	Causeway Path - Route 127	Colchester - Burlington - So. Hero	2.0	Existing
8	Colchester	Route 127/Prim Road Parallel Path	Lakeshore Dr - Winooski River/Burlington	Colchester - Burlington	2.3	Proposed
9	Colchester	Route 127/Blakely Rd	Prim Rd - Route 7/2	Colchester	3.6	Existing/ Proposed
10	Colchester	Mallets Bay Ave Path	Blakely Rd - Winooski	Bayside Park/Municipal Center - Winooski	2.8	Proposed
11	Colchester	Colchester Bike Path	Route 7/2 - Route 127/Mallets Bay Ave	Colchester Village - Municipal Center	2.9	Existing/ Proposed
12	Colchester	Route 15 Parallel Path	Winooski - Essex Center	Winooski - Essex Center	0.8	Proposed
13	Colchester	Route 7/2 Parallel Path	Milton - Route 127	Milton - Colchester Path Network	3.1	Proposed
14	Colchester	Severance Road Parallel Path	Route 7/2 - Essex	Colchester - Essex	2.0	Proposed
15	Colchester	Circ. Highway Parallel Path	Severance Road - Essex	Colchester - Essex	1.0	Proposed
16	Essex	Circ. Highway Parallel Path	Route 2A - Route 117	Essex - Colchester	5.2	Proposed
17	Essex/Essex Junction	Route 15 Parallel Path	Winooski - Essex Junction	Winooski - Essex Junction	2.1	Proposed
18	Essex	Essex Bike Path	Essex Center - Essex Junction	Essex Center - Essex Junction	2.2	Existing/ Proposed
19	Essex	Essex to Jericho Path	Essex Center/Route 15 - Jericho	Essex Center - Jericho	2.7	Proposed
20	Essex	Essex Center Path	Butlers Corner to Essex Center	Butlers Corner to Essex Center	1.0	Existing/ Proposed
21	Essex	Essex-Colchester Connector	Colchester - Susie Wilson Road	Colchester - Essex	0.5	Proposed
22	Essex	Route 15 - Cir. Highway Path	Route 15 - Circ. Highway Path	Essex Center - Essex Junction	1.7	Proposed
23	Essex Junction	Route 2A Parallel Path	Five Corners - Winooski River/Williston	Five Corners - Winooski River/Williston	0.6	Proposed
24	Hinesburg	Hinesburg Village Path	Hinesburg Village	Hinesburg Village to On-road facilities	0.6	Proposed
25	Jericho	Jericho Center Path along Rail Corridor	Route 15 - Jericho Center	Essex - Jericho Center	3.4	Proposed
26	Milton Path	Milton Center Path	Colchester town line to Milton Center	Colchester to Milton Center	5.2	Proposed
27	Richmond	Cross Vermont Trail	Route 2 - Williston Rd/Cochran Rd	Williston - Norwich	2.7	Proposed
28	Shelburne	Rail with Trail Path	So. Burlington - Charlotte	Colchester - Burlington - Charlotte	5.4	Proposed
29	Shelburne	Shelburne-So. Burlington Connector Path	So. Burlington - Rail with Trail Path	So. Burlington - Shelburne	2.8	Proposed
30	So. Burlington	Rail with Trail Path	Burlington - Charlotte	Burlington/Burlington Bikepath - Charlotte	1.7	Proposed
31	So. Burlington	Spear Street Path (Phase III)	University - Farrell St	University to Route 7/Burlington Bikepath	3.5	Existing
32	So. Burlington	Dorset Street	Route 2 - Old Cross Rd	Route 2/Univ. Mall - Connecting Paths	2.7	Existing
33	So. Burlington	Mid-city Connector (E-W)	Dorset St - Route 7/Burlington Bikepath	Dorset St - Route 7/Burlington Bikepath	2.3	Existing
34	So. Burlington	Route 2 Parallel Path	University - Route 116	Burlington - So. Burlington/Dorset St/Colchester	1.3	Proposed
35	So. Burlington	Route 2 - Lime Kiln Bridge Path	Route 2 - Winooski River	So. Burlington - Winooski	1.9	Proposed
36	So. Burlington	Kennedy Dr - Kimball Ave	Muddy Brook	So. Burlington - Williston	1.4	Proposed
37	So. Burlington	Kennedy Drive Parallel Path	Dorset Street - Route 2	City Center - Route 2 Corridor	1.5	Existing

Table A
Recommended Regional Shared Use Path Network (cont'd.)

38	So. Burlington	Swift St/Muddy Brook Path	Route 7 - I-89	So. Burlington - Williston	4.8	Existing/ Proposed
39	So. Burlington	Shelburne-So. Burlington Connector Path	Mid-city Connector - Shelburne	So. Burlington - Shelburne	2.3	Proposed
40	Williston	Route 2A Parallel Path	Essex Junction/Winooski River - Tafts Corner/Marshall Ave Path	Essex Junction/Winooski River - Tafts Corner/Marshall Ave Path	2.7	Existing/ Proposed
41	Williston	Shunpike/Marshall Ave Path	So. Burlington - Williston Center	So. Burlington - Williston Center	4.5	Existing/ Proposed
42	Williston	Essex - Williston Village Path	Route 2A - Williston Center	Route 2A - Williston Center	2.3	Proposed
43	Williston	Taft Corner Connector	Route 2A - Williston Center Path	Taft Corner to Williston Center Path	0.8	Proposed
44	Williston	Williston Center - Richmond Path	Williston Center - Route 2/Williston	Williston - Richmond	4.0	Proposed
45	Winooski	Rail with Trail Path	Winooski - Intervale/Burlington	Winooski - Intervale/Burlington	0.7	Proposed
46	Winooski	Mallets Bay Ave Path	Colchester - Winooski Center	Colchester - Winooski Center	0.7	Proposed
					116.1	

NOTE: At the Town of Williston's request, the portion of on-road facility #99 between Route 2A and North Williston Road will be redesignated as a shared use path.

Table B
Recommended On-Road Bicycle Network

ID	Municipality	Facility/Corridor	From-To	Connection	Length (mi.)	Status	Functional Class	Est. ADT
1	Bolton	Route 2	Richmond - Washington Cnty	Richmond - Washington County	5.6	Existing	Rural Princ. Art.	> 8000
2	Bolton	River Road	Richmond - Washington Cnty	Alt. Route 2/Richmond - Washington Cnty	3.9	Proposed	Rural Local	1500-4000
3	Bolton	Bolton Valley Access Road	Bolton - Bolton Valley Ski Area	Bolton - Bolton Valley Ski Area	4.1	Proposed	Rural Collector	1500-4000
4	Burlington	Riverside Ave - Winooski Avenue/No. Union Street	Winooski River/Colchester Avenue - North Street	Winooski to Rt 127/Downtown	1.5	Proposed	Urb. Min. Art.	> 8000
5	Burlington	North/South Union Street & Winooski Avenue	North Street - Locust Street	Two downtown bikeways	1.5	Proposed	Urb. Princ. Art.	> 8000
6	Burlington	Plattsburg Avenue	Winooski River - North Avenue	Colchester to North End	0.6	Proposed	Urb. Min. Art.	> 8000
7	Burlington	North Avenue/Sherman Street/Battery Street	Plattsburgh Avenue - College Street	Route 127 to Burl. Bikepath	3.4	Proposed	Urb. Min. Art.	> 8000
8	Burlington	Colchester Avenue	Winooski River - Prospect St	Winooski to Downtown	1.1	Proposed	Urb. Min. Art.	> 8000
9	Burlington	North Street	North Union Street - North Avenue	Winooski/Intervale Paths - North Avenue/Burl. Bikepath	0.6	Proposed	Urb. Collector	> 8000
10	Burlington	So. Prospect Street/Fairmont Street	Colchester Ave - Proctor Ave/So. Burlington	Winooski/UVM - So. Burlington	1.9	Proposed	Urb. Local	1500-4000
11	Burlington	College Street	Prospect St - Lake St/Burlington Bikepath	University to Waterfront/Bikepath	1	Proposed	Urb. Local	> 8000
12	Burlington	Pine Street	College St - Queen City Pk/So Burlington	Downtown to So. Burlington	2.1	Proposed	Urb. Min. Art.	> 8000
13	Burlington	Locust Street	Pine St. - Route 7	Burlington Bikepath to North/South Connector	0.4	Proposed	Urb. Local	< 1500
14	Burlington	Flynn Avenue	Burlington Bikepath - Route 7	Burlington Bikepath to So. Burlington	0.8	Proposed	Urb. Min. Art./Local	1500-4000
15	Burlington/So. Burlington	Queen City Park Road	Pine Street - Route 7	Burlington - So. Burlington	0.2	Proposed	Urb. Local	1500-4000
16	Burlington	Route 2	Prospect Street - So. Burlington line	University to So. Burlington	0.4	Proposed	Urb. Princ. Art.	> 8000
17	Charlotte	Route 7	Shelburne - Ferry Road/Church Hill Rd	Shelburne/Chittenden Cnty - CharlotteAddison Cnty	3.1	Existing	Rural Princ. Art.	> 8000
18	Charlotte	Route 7	Ferry Road/Church Hill Rd-Ferrisburg/Addison Cnty	Shelburne/Chittenden Cnty - CharlotteAddison Cnty	3.4	Proposed	Rural Princ. Art.	> 8000
19	Charlotte	Spear Street/ Spear Street Ext./Mt. Philo Road	Shelburne - Mt. Philo Road/Addison Cnty	Shelburne/Charlotte - Addison Cnty	8.1	Proposed	Rural Min. Art.	4000-8000
20	Charlotte	Green Bush Road/Lake Road	Shelburne - Ferry Road	Shelburne village - Charlotte Village/Ferry	4.5	Proposed	Rural Local	1500-4000
21	Charlotte	Green Bush Road	Ferry Road - Addison Cnty	Charlotte - Addison Cnty	3.5	Proposed	Rural Local	1500-4000
22	Charlotte	Ferry Road	Ferry - Route 7	Ferry/Charlotte village/Proposed Rail with Trail - Hinesburg	2.7	Proposed	Rural Collector	1500-4000
23	Charlotte	Church Hill Road/Hinesburg Road	Route 7 - Hinesburg	Ferry/Charlotte village - Hinesburg	4.6	Proposed	Rural Collector	1500-4000
24	Colchester	Route 7/7&2	Milton - Winooski	Milton Center - Colchester - Winooski	6.5	Proposed	Urb./Rural Princ. Art.	> 8000
25	Colchester	Route 2	Route 7&2 - Milton	Milton/South Hero - Chimney Corner/Colchester	2.2	Proposed	Rural Princ. Art.	> 8000
26	Colchester	Route 2A	Route 7 - Essex town line	Colchester/Route 7 - Essex/Essex Junction	2.3	Proposed	Rural Min. Art.	> 8000
27	Colchester	Severance Road/Kellog Road	Route 7 - Essex	Colcester - Essex/Essex Junction	2	Proposed	Rural Collector	4000-8000
28	Colchester	Blakely Road/Lakeshore Drive	Route 7 - Prim Road	Colchester - Burlington	3.7	Proposed	Urb. Collector	4000-8000
29	Colchester	Route 127-Heinberg Road/Prim Road	Blakely Road/Lakeshore Road - Winooski River/Burlington	Colchester - Burlington	2.2	Existing	Urb. Min. Art.	4000-8000
30	Colchester	Brigham Hill Road	Milton - Essex	Milton - Essex	0.4	Proposed	Rural Local	< 1500
31	Colchester	East Road	Milton TL - Route 7/2	Milton - Colchester/Chimney Corner	2.9	Proposed	Rural Collector	1500-4000
32	Colchester	Malletts Bay Avenue	Blakely Road - Winooski	Colchester/Malletts Bay - Winooski center	2.9	Proposed	Rural Collector	1500-4000
33	Colchester	Mayo Road/Jasper Mine Road	Milton/W. Milton Road - Route 2	Milton village - Chimney Corner/ Route 2	0.9	Proposed	Rural Local	< 1500
34	Essex/Essex Junction	Route 15	Essex Junction - Route 128	Essex Junction - Butlers Corner/Essex Center - Jericho	3.1	Proposed	Urb. Princ. Art.	> 8000

Table B
Recommended On-Road Bicycle Network (cont'd.)

35	Essex	Route 128	Route 15 - Westford	Essex/Essex Junction - Butlers Corner - Westford/Franklin Cnty	4.4	Proposed	Urb./Rural Collector	4000-8000
36	Essex	Weed Road - Route 15	Route 128 - Jericho	Essex Center - Jericho	1.8	Proposed	Rural Local	1500-4000
37	Essex/Essex Junction	Route 2A	Colchester - Essex/Essex Junction	Colchester - Essex - Essex Junction	2.8	Proposed	Rural Min. Art.	> 8000
38	Essex	Kellog Road	Colchester - Susie Wilson Road	Colchester - Essex/Essex Junction	0.5	Existing	Rural Collector	4000-8000
39	Essex	Susie Wilson Road/Susie Wilson Bypass	Route 15 - Route 2A	Route 15 - Route 2A	1.3	Existing/ Proposed	Urb. Collector	4000-8000
40	Essex	Brigham Hill Road/Old Stage Road	Colchester - Route 15	Milton - Essex/Essex Junction	4.6	Proposed	Rural Local	< 1500
41	Essex/Essex Junction	Route 117	Route 15/2A - Essex - Jericho	Essex Junction - Essex/Jericho	4.4	Proposed/ Existing	Urb. Princ. Art.	4000-8000
42	Hinesburg	Shelburne Road	Shelburne - Route 116	Shelburne - Hinesburg	3	Proposed	Rural Collector	1500-4000
43	Hinesburg	Route 116	St. George - Addison County	Shelburne - Hinesburg/Chittenden County - Addison County	7.2	Proposed	Rural Min. Art.	> 8000
44	Hinesburg	Richmond Road	Route 116 - Hinesburg Road	Hinesburg - Huntington Center - Richmond	1.4	Proposed	Rural Collector	1500-4000
45	Hinesburg	Richmond Road	Richmond - Texas Hill Road/North Road	Richmond - Hinesburg/Addison Cnty	2.1	Proposed	Rural Collector	< 1500
46	Hinesburg	Charlotte Road	Charlotte - Route 116	Charlotte - Hinesburg	2.6	Proposed	Rural Collector	1500-4000
47	Hinesburg	Silver Street	Route 116 - Addison County	Hinesburg/Chittenden County - Addison County	3.4	Proposed	Rural Collector	1500-4000
48	Hinesburg	Hinesburg Hollow Road	Route 116 - Addison County	Hinesburg - Huntington Center	2.8	Proposed	Rural Collector	1500-4000
49	Hinesburg	Pond Road	Richmond - CVU Rd/Richmond Road	Richmond - Hinesburg/Addison Cnty	2.1	Proposed	Rural Local	< 1500
50	Hinesburg	Mechanicsville Road	Richmond Road - Route 116	Route Connector	0.9	Proposed	Rural Collector	1500-4000
51	Huntington	The Main Road	Richmond - Huntington Center - Addison County	Richmond - Huntington Center - Addison County	9.6	Proposed	Rural Collector	1500-4000
52	Huntington	Hinesburg Hollow Road	The Main Road - Addison County	Huntington Center - So. Hinesburg	1.4	Proposed	Rural Collector	1500-4000
53	Jericho	Route 15	Essex - Underhill	Essex - Jericho/Riverside - Underhill	3.7	Proposed	Rural Min. Art.	> 8000
54	Jericho	Browns Trace Road	Lee River Road - Richmond	Underhill/Jericho - Richmond	6	Proposed	Rural Collector	1500-4000
55	Jericho	Lee River Road	Route 15 - Browns Trace Road	Essex - Jericho	3.1	Proposed	Rural Collector	< 1500
56	Jericho	Skunk Hollow Road	Route 15 - Route 117	Jericho - Richmond - Essex	3.1	Proposed	Rural Local	< 1500
57	Jericho	Route 117	Essex - Richmond	Essex - Jericho - Richmond/Route 2	2.8	Proposed	Rural Min. Art.	4000-8000
58	Jericho	Steam Mill Road	Route 15 - Underhill	Jericho/Riverside - Underhill Center	0.4	Proposed	Rural Local	< 1500
59	Jericho	Governor Peck Road	Browns Trace Road - Richmond	Jericho - Richmond/Route 117	1.5	Proposed	Rural Collector	1500-4000
60	Jericho	Barber Farm Road	Browns Trace Road - Route 117	Jericho - Richmond/Route 117	2.5	Proposed	Rural Local	1500-4000
61	Milton	Route 7	Georgia/Franklin County - Colchester	Franklin County - Milton Center - Chittenden County	8.2	Proposed	Rural/Urb. Princ. Art.	> 8000
62	Milton	Main Street and Westford Road	Route 7 - Westford	Milton - Milton Center - Route 128/Westford Center	3.7	Proposed	Rural Collector	1500-4000
63	Milton	Bombardier Road/Hobbs Road/McMullen Road/Duffy Road	Route 7 - Colchester/Essex	Milton - Essex Center/Butlers Corner - Essex Junction	4.1	Proposed	Rural Local	< 1500
64	Milton	Middle Road	Route 7 - Hobbs Road	Milton Center Connector	0.4	Proposed	Rural Local	1500-4000
65	Milton	Route 2	Colchester - South Hero	South Hero - Colchester	3.7	Existing	Rural Min. Art.	> 8000
66	Milton	Lake Road	Georgia/Franklin Cnty - Route 7	Georgia/Franklin County - Milton Village	5.9	Proposed	Rural Collector	1500-4000

Table B
Recommended On-Road Bicycle Network (cont'd.)

67	Milton	Sanderson Road	Lake Road - Bear Trap Road	Milton Village - Colchester/ Chimney Corner (Alt. to Route 7)	2.9	Proposed	Rural Collector	1500-4000
68	Milton	Bear Trap Road/W. Milton Road	Sanderson Road - Colchester TL	Milton Village - Colchester/ Chimney Corner (Alt. to Route 7)	3	Proposed	Rural Local	< 1500
69	Milton	East Road	McMullen Road - Colchester TL	Milton Village - Colchester	2.2	Proposed	Rural Collector	1500-4000
70	Richmond	Jericho Road/Bridge Street	Cochran Road - Route 2 - Jericho	Jericho - Richmond	2.8	Proposed	Rural Collector	1500-4000
71	Richmond	Route 2	Williston - Bolton	Williston - Richmond - Bolton	6.4	Proposed	Rural Princ. Art.	> 8000
72	Richmond	Route 117	Jericho - Route 2	Jericho - Richmond	0.9	Proposed		
73	Richmond	Williston Road	Williston - Hinesburg Road	Williston - Richmond - Bolton	1.2	Proposed	Rural Local	< 1500
74	Richmond	Cochran Road	Huntington Road/Bridge Street - Bolton TL	Richmond - Bolton	3.6	Proposed	Rural Local	1500-4000
75	Richmond	Hinesburg Road	Hinesburg - Cochran Road/Bridge Street	Richmond - Hinesburg	3.8	Proposed	Rural Collector	< 1500
76	Richmond	Huntington Road	Cochran Road - Huntington	Richmond - Huntington	4.1	Proposed	Rural Collector	1500-4000
77	Richmond	Governor Peck Road	Route 117 - Jericho	Richmond - Jericho	0.9	Proposed		
78	Shelburne	Spear Street	So. Burlington - Charlotte	Shelburne to So. Burlington/UVM	4.1	Proposed	Rural Min. Art.	4000-8000
79	Shelburne	Route 7	So. Burlington - Charlotte	So. Burlington to Charlotte	4.8	Proposed	Princ. Art.	> 8000
80	Shelburne	Falls Road	Route 7 - Charlotte	Shelburne town center - Charlotte/Alt Route 7	0.7	Proposed	Rural Local	4000-8000
81	Shelburne	Marsett Road/Falls Road/Irish Hill Road/Dorset St/Shelb.-Hineburg Rd	Route 7 - Dorset St	Train Station/Shelburne village - Hinesburg town center	4	Proposed	Rural Collector	4000-8000
82	Shelburne	Bostwick Road	Route 7 - Charlotte	Shelburne village - Charlotte Village	2.3	Proposed	Rural Local	1500-4000
83	So. Burlington	Fairmont Street	Burlington - Shared Use Path	Burlington/UVM - Shared Use Path/ Burlington Bike Path	0.3	Proposed	Urban Local	1500-4000
84	So. Burlington	Proctor Avenue	Route 7 - Fairmont Street	Burlington/Burlington Bike Path - So. Burlington Shared Use Path Network/UVM	0.4	Proposed	Urban Local	1500-4000
85	So. Burlington	Spear Street	Shelburne - Route 2	Shelburne - Burlington	4	Existing/ Proposed	Rural Min. Art.	4000-8000
86	So. Burlington	Route 7	Burlington - Shelburne	Burlington - Shelburne	2.4	Proposed	Urb. Princ. Art.	> 8000
87	So. Burlington	Route 2	Burlington - Williston	Burlington - So. Burlington - Williston	3.1	Existing/ Proposed	Urb. Princ. Art.	> 8000
88	So. Burlington	Queen City Park Road	Route 7 - Burlington	Burlington Bikepath to So. Burlington	0.3	Proposed	Urban Local	1500-4000
89	St. George	Route 116	So. Burlington - Hinesburg	So. Burlington - Hinesburg	0.3	Proposed	Rural Min. Art.	4000-8000
90	St. George	Route 2A	Williston - Hinesburg	Williston - Hinesburg	2	Proposed	Rural Collector	4000-8000
91	Underhill	Route 15	Westford Road - Jericho	Westford - Underhill Flats/Jericho	4.9	Proposed	Rural Min. Art.	4000-8000
92	Underhill	River Road	Jericho/Route 15 - Krug Road	Jericho/Riverside - Underhill Center	2.3	Proposed	Rural Collector	1500-4000
93	Underhill	Pleasant Valley Road	River Road - Lamoille County	Underhill Center - Lamoille County	6	Proposed		
94	Westford	Milton Road	Westford Road/Milton - Route 128	Milton - Westford	1.8	Proposed	Rural Collector	1500-4000
95	Westford	Route 128	Franklin Cnty - Essex	Franklin Cnty - Essex	6.5	Proposed	Rural Collector	1500-4000
96	Westford	Route 15	Underhill - Lamoille Cnty	Underhill/Jericho - Lamoille Cnty	2.8	Proposed	Rural Min. Art.	4000-8000
97	Williston	Route 2	So. Burlington - Richmond	So. Burlington - Richmond/ Major E-W Connector	5.8	Proposed/ Existing	Princ. Art./Min. Art.	> 8000
98	Williston	Route 2A	Essex Junction - St. George/Route 116	Essex Junction/Essex - Hinesburg/Addison Cnty	5.9	Proposed/ Existing	Min. Arterial	4000-8000; > 8000

Table B
Recommended On-Road Bicycle Network (cont'd.)

99	Williston	Industrial Ave/Mountain View Road/Gov Chittenden Road*	Route 2 - Route 2	Alt. Route for Route 2/So. Burlington - Richmond	6.4	Proposed	Rural Collector; Local	1500-4000
100	Williston	Oak Hill Road/South Road/East Hill Road	Route 2 - Pond Road/St. George	Williston - Hinesburg	5.2	Proposed	Rural Local	< 1500
101	Winooski	Route 7/2	Burlington - Colchester	Burlington - Colchester	1	Proposed	Urb. Princ. Art.	> 8000
102	Winooski	Route 15	Route 7/2 - Essex	Winooski - Essex - Essex Junction	1.2	Proposed	Urb. Princ. Art.	> 8000
103	Winooski	Malletts Bay Avenue	Colchester TL to Route 15 & 7/2	Colcester - Winooski - Burlington	0.8	Proposed	Urb. Min. Art.	4000-8000

*At the Town of Williston's request, the segment between VT Rt. 2A and North Williston Road will be redesignated as a shared use path.