Commonwealth of Massachusetts
Executive Office of Transportation

MASSACHUSETTS
BICYCLE TRANSPORTATION PLAN

September 2008

U. S. Department of Transportation
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EOT
Massachusetts Executive Office of Transportation

the COLLABORATIVE
Planners Collaborative
Design Collaborative
Communications Collaborative

MASSACHUSETTS BICYCLE TRANSPORTATION PLAN

Prepared for

Commonwealth of Massachusetts
Executive Office of Transportation

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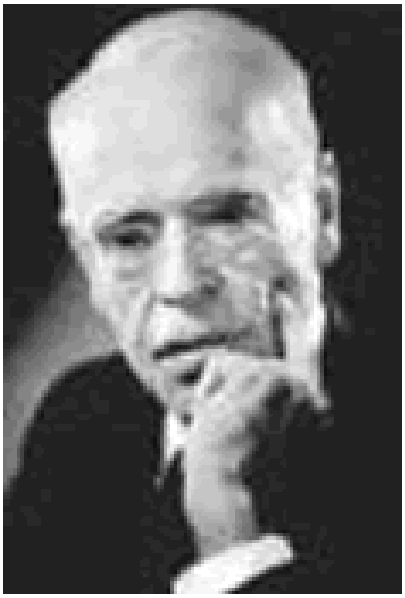
Dedication

The *Massachusetts Bicycle Transportation Plan* is dedicated to Dr. Paul Dudley White. Dr. White, a Boston native, was President Dwight Eisenhower's personal physician. His message of promoting healthy transportation, by bicycle and on foot, lives on.

He addressed the first national bicycling conference convened by the US Department of Transportation, "Bicycles USA," held at the Volpe Center in Cambridge in May 1973. Many of the people who attended that groundbreaking event are still active in the field, in large part a result of Dr. White's compelling message.

The cycling cardiologist is remembered by a path named in his honor along both sides of the Charles River.



Executive Summary

Over the past thirty years, bicycle use has evolved from a mostly recreational activity to a logical mode of travel for an increasing number of people. Transportation planners and roadway engineers now take bicycling more seriously. This shift is reflected in MassHighway's 2006 landmark *Project Development and Design Guide*, which helped to transform the way all new projects are designed and to encourage projects that are sensitive to the local context while meeting the needs of all system users.

The Massachusetts Bicycle Transportation Plan (*Plan*), prepared by the Executive Office of Transportation (EOT), continues to advance bicycle transportation by:

- Providing a complete and current inventory available of existing on-road and off-road facilities (shared use paths), projects in the pipeline, and long-term facility proposals
- Recommending a 740-mile, seven-corridor Bay State Greenway (BSG) network consisting of on-road and off-road facilities bound by a single identity and including on-road routes that parallel shared use paths
- Providing an implementation strategy aimed at launching the BSG initially as mostly an on-road system, geared to both utilitarian and recreational travel, and complemented by a long-term investment strategy
- Recommending other programmatic enhancements and interagency initiatives

In accordance with Governor Deval Patrick's Sustainable Development principles, the *Plan* addresses a number of important transportation, economic development, public health, and recreation needs by creating the groundwork for implementation of the BSG.

Establishing the BSG is motivated by a number of factors, including the Commonwealth's inherently bicycle-friendly nature, the need for more bicycle routes and more coordinated information on them, projected economic benefits, and the ability to implement the BSG incrementally.

Deploying the BSG with both on- and off-road facilities makes sense. Massachusetts is already an attractive state for bicycle riding, featuring many two-lane roadways, varied and highly picturesque landscapes, and appealing urban settings. In fact, a series of commercially available bicycle maps published for use in Massachusetts feature over 4,700 miles of roads with the designation of "recommended bicycle route on roadway."

Several factors shaped the BSG's seven corridors. These include the state legislature's directive to establish at least three north/south and two east/west routes; the desire to capitalize on prior bicycle facility investments; and the goal to connect and serve major population and activity centers. A secondary network is also proposed to supplement the BSG.

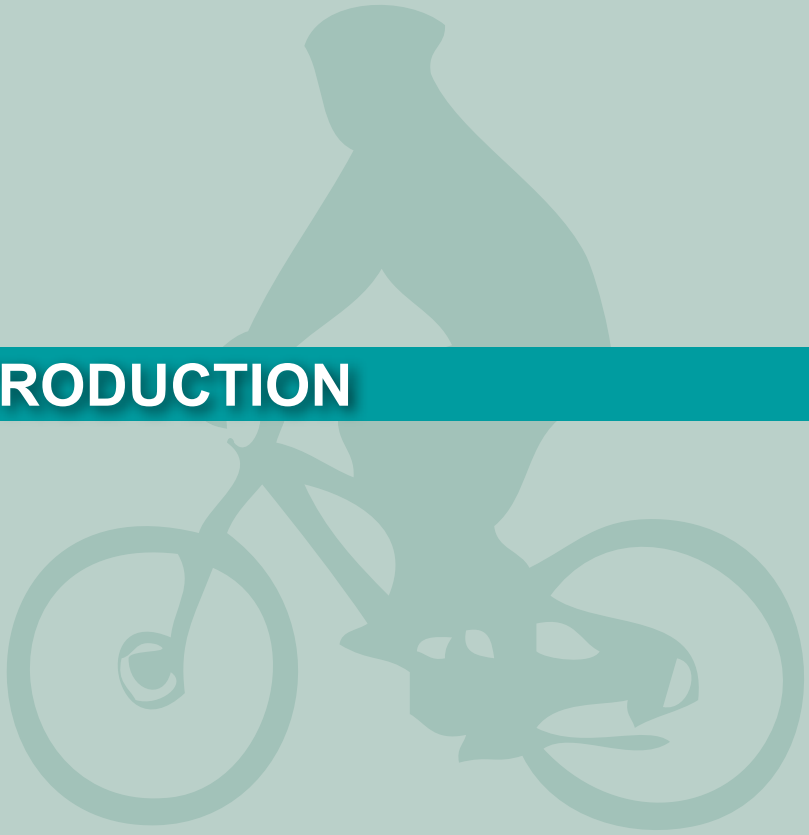
Other *Plan* recommendations include:

- Better identify state roads and bridges where bicycles are legally permitted but do not accommodate bicycles today

- Use Federal Congestion Mitigation Air Quality (CMAQ) funds and other sources to expand ancillary bicycle programs such as "Share the Road" signs, bicycle parking facilities, and regional and local bicycle planning
- Develop bicycle tourist publications through the Massachusetts Office of Travel and Tourism (MOTT)
- Improve safety through education and enforcement initiatives and facility performance measurement
- Further quantify the benefits of investments in projects and programs that improve bicycling conditions

The appeal of the proposed BSG is that implementation can begin immediately with very little initial investment. Realizing the vision of the ultimate BSG, which includes more than 500 miles of shared use paths, will require dedication, support, and commitment, as well as capital and operational investments in facilities and programs over many years. Partnerships among state agencies, regions, and municipalities will be critical to the success of the BSG, as will the involvement of non-profit groups and the private sector.

1 INTRODUCTION



1 Introduction

Bicycle transportation can help to improve mobility, reduce congestion, conserve fuel, and improve air quality, all key principles of the Commonwealth's commitment to sustainable transportation. The Massachusetts *Bicycle Transportation Plan* (the *Plan*) will improve conditions for bicycling in Massachusetts by identifying and prioritizing improvements to our existing infrastructure and by promoting supportive policies. The *Plan* will improve connections to important places and transportation resources, building upon the important work completed in the 1998 *Massachusetts Statewide Bicycle Transportation Plan* (*1998 Plan*), which focused on many key bicycle planning issues and established a detailed policy framework for bicycle transportation in the Commonwealth.

1.1 *Vision for Sustainable Bicycle Transportation*

Consistent with Governor Deval Patrick's *Sustainable Development Principles*[1], by 2030 Massachusetts will be a leading state in sustainable transportation and development. Our transportation system will better balance transportation modes, offering Commonwealth citizens and visitors alike a network of roads, shared use paths, and transit facilities designed, constructed, and maintained with bicycle use always in mind. Our bicycle transportation network will feature 50 percent more miles of designated facilities than exist now and comprise both on- and off-road resources. Bicyclists and motorists will share the road in a cooperative environment, one where the rules of the road are adhered to because education is pervasive, enforcement is consistent, and bicycling is encouraged. Schoolchildren, teens, and adults will use bicycles for a variety of trip purposes. Bicycle parking will be readily available and places of employment will have showers and changing facilities. The integration of bicycles and transit will be seamless, with provision of access to transit, parking at transit, and conveyance aboard transit.

1.2 *The Commonwealth's Role in Bicycle Transportation*

The Commonwealth has invested considerable resources throughout the state that have improved conditions for bicycling. These have included facility investments in shared use paths, roadway and bridge improvements, bicycle parking, racks on transit buses, and bicycle parking at transit stations and in commercial districts. Programmatic investments have been made in share-the-road initiatives, an annual bicycle/pedestrian conference, and inter-agency collaboration promoting safety, driver training, and education programs.

Massachusetts covers over 7,800 square miles of land area. Most bicycle trips are of relatively short distance, typically about three miles or fewer, and most take place on local roads, the majority of which are owned and controlled by municipalities. As with

[1] In May 2007, Governor Deval Patrick announced new Sustainable Development Principles. These are discussed in different parts of the report and included in Appendix 1.

all modes of transportation, the Commonwealth's role and perspective is thus inherently broader. Issues such as interregional connectivity, consistent and pervasive education and enforcement, and large-scale infrastructure investments are rightly the domain of statewide planning processes. For bicycling, the Commonwealth's role is to plan and program projects, enact laws, and to offer programs that support a variety of bicycle-related policies such as education, safety, land development, and health and wellness, among others.

The Executive Office of Transportation (EOT)[2] is the lead state agency in terms of bicycle transportation policies, programs, and resources. Three of EOT's operating departments and authorities—MassHighway, the Registry of Motor Vehicles (RMV)[3], and the Massachusetts Bay Transportation Authority (MBTA)—either implement projects or establish programs and policies that affect bicycle transportation. The policies, programs, and projects of the Massachusetts Aeronautics Commission (MAC) also affect bicycle transportation.

In addition, the EOT Secretary serves as chairperson of each Metropolitan Planning Organization (MPO) in the state and can thus participate in regional transportation decision-making. Finally, EOT has budget authority over some but not all of the transportation funding resources available from state and Federal budgets. Bicycle projects are developed at the state level by EOT, MassHighway, and the Department of Conservation and Recreation (DCR) and at the local level by municipalities and/or trail organizations.

The Massachusetts Mobility Compact (Executive Order 488), intended to "improve the delivery of transportation services in the Commonwealth by communicating regularly and more effectively and by adopting a cooperative and coordinated approach to transportation planning, design, construction, operation and maintenance," provides an excellent opportunity to better integrate the agencies under the EOT umbrella, as well as others, to provide better bicycling conditions.[4]

The operation of a bicycle in the Commonwealth is governed by Massachusetts General Law (MGL). The law treats bicycles as vehicles, and their riders "have the right to use all public ways in the Commonwealth except limited access or express state highways where signs specifically prohibiting bicycles have been posted."[5] Enforcement of applicable laws is the responsibility of police departments at the state and local level.

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[2] EOT agencies include MassHighway, MBTA, Registry of Motor Vehicles (RMV), Massachusetts Aeronautics Commission, and fifteen Regional Transportation Authorities (RTAs) outside of the MBTA service area.

[3] As of September 1, 2007, the RMV's new driver education program became a mandatory requirement for driving schools. This new program features a module on sharing the road and represents an important step forward for educating new drivers on bicycling.

[4] Discussions are underway regarding a proposed reorganization of transportation agencies under a single authority. Further details on this proposal are available through the EOT website.

[5] MGL Ch 85 Sec 11B

1.3 *Investing to Improve Bicycle Transportation*

There are many important reasons for improving bicycle transportation in Massachusetts:

- *Safety*-Making our transportation system safer for bicyclists will protect existing bicyclists and encourage more people to ride bicycles. Safety benefits will also accrue to all roadway system users
- *Health*-The benefits of bicycling as a form of exercise are well documented. Stemming the tide of increasing obesity and heart disease in our society are important public health goals. Bicycling should properly be thought of as "healthy transportation," with benefits for the Commonwealth and its communities collectively and its citizens individually
- *Environment/Energy*-As a non-motorized and non-polluting mode of transportation, bicycling is an environmentally sound mode of transportation that does not rely upon fossil fuels and does not emit greenhouse gases
- *Mobility*-Bicycles are a viable alternative to the automobile, particularly for trips of short distances. Bicycles and transit are also complementary modes
- *Congestion*-Investments in alternatives such as new or improved bicycle facilities will help to meet travel demands in certain high-use corridors, which can have a beneficial effect on congestion
- *Parking*-Our higher-density neighborhoods are often characterized by motor vehicle congestion and parking scarcity. In these locations, parking construction costs are very high, which often makes bicycling a more competitive mode of travel
- *Economy*-Investments in bicycle facilities have resulted in positive economic impacts in terms of tourism, in regions as diverse as Cape Cod and the Berkshires, and for adjacent real estate values, such as along the Minuteman Commuter Bikeway. Strategic investments in new bicycle facilities can lead to positive benefits and better serve the Commonwealth's information-based economy
- *Affordability*-Bicycle travel is low cost, allowing individuals and families to apply additional economic resources to other basic needs such as housing
- *Demographics*-Improving bicycling conditions in the Commonwealth adds to local vitality for residents and visitors alike. Promoting bicycling with improved conditions may also reduce population outflow and increase in-migration

1.4 *Organization of the Plan*

This report is presented in seven chapters plus appendices. Chapter 2 provides a context for the *Plan* by describing important prior policy and planning work, the public process for the *Plan*, and the methods used to gather and verify information. Also discussed are the roles of state, regional, and local agencies in bicycle transportation. Chapter 3 describes the existing bicycle facility network as it stood as of 2007 and includes a

summary of existing on-road marked bicycle lanes and off-road shared use paths. In Chapter 4, recommendations for a statewide bicycle network—the Bay State Greenway (BSG)—are presented, building on the resources identified in Chapter 3. Chapter 5 describes the funding and implementation strategies for the BSG. This is followed by a set of additional recommendations and action items in Chapter 6. Chapter 7 presents recommendations for programmatic needs, as well as supporting policies. An extensive set of appendices provide supporting information.

2 THE CONTEXT FOR THE PLAN

Canalside Trail (Montague)

Porter Square Station (Cambridge)

Harbor Point (Boston)

2 The Context for the Plan

Massachusetts bicycle transportation projects and programs have been underway since the 1970s. Since 1990, there has been a dramatic expansion of bicycle transportation planning and programming at the state level. MassHighway hired its first full-time bicycle and pedestrian program manager in 1992. Both the Minuteman Commuter Bikeway and Norwottuck Rail Trail were dedicated in the early 90s. The statewide bicycle transportation plan was developed at the end of the decade. These actions signaled the Commonwealth's commitment to bicycling—a commitment that has been expanded upon in recent years through the development of the new MassHighway *Project Development and Design Guide (Guide)* and the EOT's *Long-Range State Transportation Plan (Long-Range Plan)*. These documents, along with other recent state, regional, and local efforts, inform the *Plan* and establish its context. This chapter provides an overview of planning efforts in Massachusetts as well as relevant bicycle planning work in adjacent states. This chapter also provides an overview of the public outreach effort for the *Plan.*

2.1 *The Massachusetts Long-Range State Transportation Plan and the Strategic Transportation Plan*

EOT released the *Long-Range Plan* in 2006, which focused on several aspects of bicycle transportation, including identification of existing off-road bicycling facilities, the implications for on-road travel embodied within the *Guide*, (described below), and the role of bicycling as an access mode for transit, safety issues, and the funding environment.

The development of statewide mode- and topic-specific planning documents was one of the *Long-Range Plan*'s key recommendations. This *Plan* represents the first of these statewide efforts and is primarily focused on satisfying the needs for Commonwealth-wide bicycle planning.

The Strategic Transportation Plan is currently being developed by EOT. The organizing principles for this plan are to prioritize transportation improvements that meet the needs of Massachusetts residents and visitors, and to promote economic vitality. Bicycle transportation will be integrated into this effort.

2.2 *1998 Massachusetts Statewide Bicycle Transportation Plan*

The Massachusetts Statewide Bicycle Transportation Plan (*1998 Plan*) was initiated by MassHighway and released in 1998. The *1998 Plan's* purpose was to develop policies and practices to improve conditions for bicycling in the Commonwealth, with a vision of the "recognition of bicycling as a viable means of transportation and reasonable accommodation of the needs of bicyclists in policies, programs, and projects."

The *1998 Plan* prompted policy changes and the construction of improvements that have enhanced bicycling as a viable mode of transportation for the Commonwealth's citizens and visitors. At the same time, the *1998 Plan* represented an ambitious vision for a broad

spectrum of bicycling improvements such as design and construction practices, education and training programs, enforcement policies, and tourism promotion. The *1998 Plan* identified numerous action items, many of which have been implemented, as discussed in Section 6.2 and Appendix 9. Consistent with the vision for this *Plan,* the vision of the *1998 Plan* sought to increase bicycle use throughout the Commonwealth.

1998 Plan Vision Statement

The *1998 Plan's* vision statement read, "The vision of the Statewide Bicycle Transportation Plan is recognition of bicycling as a viable means of transportation and reasonable accommodation of the needs of bicyclists in policies, programs, and projects. Greater recognition and the accommodation of the needs of bicyclists will lead to a more balanced transportation system with greater modal choice and improvements in bicycle safety. Such actions will enhance the environment and quality of life in the Commonwealth, and improve personal mobility.

Bicycling is also a highly efficient means of transportation as well as a healthy, enjoyable activity for people of all ages. (The Surgeon General has found that a regular, preferably daily, regimen of at least 30-45 minutes of brisk walking or bicycling can lead to improved health.) [Source: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, "Physical Activity and Health: A Report of the Surgeon General," 1996.] For all these reasons, bicycling should be encouraged and promoted so that more people will choose to bicycle. Improving facilities for bicycling will lead to greater use of bicycles and an increase in the attendant benefits to citizens, communities, and the Commonwealth."

2.3 *MassHighway Initiatives to Improve Bicycling Conditions*

MassHighway has implemented a number of initiatives that have and will improve bicycling conditions in the Commonwealth. These include engineering directives and guidelines and the *Guide.*

2.3.1 Engineering Directives and Guidelines

- *Engineering Directive E-98-003* (adopted in May 1998) set benchmarks for bicycle and pedestrian accommodation. The *Directive* also established the position of Bicycle/Pedestrian Coordinator, designated to oversee the Directive's requirements
- *Building Better Bicycling: A Manual for Improving Community Bicycling Conditions* was distributed to Regional Planning Agencies (RPAs) and cities and towns by MassHighway in September 1999. This comprehensive manual included state-of the-practice bicycle planning and design materials, including the American

Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* (1999 Edition)[6]

2.3.2 MassHighway's Project Development and Design Guide

Chapter 86 of the Acts of 1996 required MassHighway to "make all reasonable provisions for the accommodation of bicycle and pedestrian traffic," and the *1998 Plan* was an important response to this legislation. A significant contribution towards better bicycling accommodation is the 2006 MassHighway's Project Development and Design Guide (*Guide)*. The *Guide* helped to transform the way all new projects are designed, which should dramatically improve bicycling conditions. Its primary purpose is to ensure that MassHighway's transportation investments encourage projects that are sensitive to the local context while meeting the needs of all system users. The following guiding principles articulate this purpose:

- *Multimodal Consideration*. All users should be safely accommodated by the roadway system—pedestrians, bicyclists, and drivers and passengers of motor vehicles
- *Context-Sensitive Design.* Projects intended to improve the roadway network should be implemented in such a way that the character of the project area, community values, and needs of all users are fully considered
- *Clear Project Development Process*. There will be a clear and consistently administered project development process that can be easily understood by project proponents and constituents

Although each of these principles has important implications for bicycling, the *Guide*'s greatest impact for bicycling is its treatment of pedestrians and bicycles as equal users of the roadway network. Consequently, both pedestrian and bicycle design requirements within a shared right-of-way are integrated throughout the *Guide*'s various design chapters such as cross section/roadside elements, intersection design, and pavement design.

Through this comprehensive approach to roadway design, the *Guide* mandates the development of so-called "complete streets." The concept of complete streets refers to roadways that are designed to accommodate all users, including bicyclists. The *Guide* has attracted national attention as a result. For example, the National Complete Streets Coalition, a group of transportation professionals working to enact complete street policies, views the *Guide* as one of the strongest state policies in the nation in support of complete streets.

The *Guide*'s design guidance represents significant progress for improved bicycling conditions in the Commonwealth. The *Guide* deals with projects in terms of their design. This *Plan* is geared more toward the implementation of a program consisting of on-road improvements and shared use paths.

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[6] The *Building Better Bicycling* manual provided to each municipality in the Commonwealth represented an effort at broad outreach to municipal officials to help them better accommodate bicycles in their transportation networks. Similar outreach efforts related to this *Plan* are discussed further in Chapter 6.

As the *Guide* continues to be used by design engineers, it is anticipated that the design development process used on state projects will be duplicated on municipal projects. Eventually, all applicable road and bridge projects will feature a complete streets approach.

2.4 *Other Commonwealth Planning Efforts*

Several other state-supported plans and policies have important implications for the long-term mobility of bicyclists.

2.4.1 Transit-Oriented Development

Transit-oriented development (TOD) refers to compact, mixed-use development within a short distance of a transit station. TOD is intended to provide transportation choice and a higher degree of personal mobility than is possible in areas lacking safe, convenient, and attractive pedestrian, bicycle, and transit options. Such development is also intended to reduce personal motor vehicle ownership, vehicle travel and the amount of parking needed. Since many of our communities were largely developed before the advent of the automobile, Massachusetts has considerable TOD potential.

The TOD Infrastructure and Housing Support Program (TOD Bond Program) was initially funded by the Legislature in Chapter 291 of the Acts of 2004. The program is currently administered by EOT as part of the Commonwealth Capital Policy. Commonwealth Capital explicitly endorses planning and zoning measures that are consistent with the Commonwealth's Sustainable Development Principles and encourages municipalities to implement them by using state funding as an incentive. The TOD Bond Program is one of these state funding sources. The TOD Bond Program is designed to promote compact, mixed-use development within ¼ mile of transit stations; $3 million of the $13 million in program awards through 2006 have been provided for bicycle facilities. In 2006, the program eligibility guidelines were expanded to provide up to $50,000 for preliminary design of bicycle and pedestrian facilities. A third round of funding recipients is being announced in the fall of 2008.

2.4.2 DCR's Commonwealth Connections

The Massachusetts Department of Conservation and Recreation (DCR) collaborated with the Appalachian Mountain Club, the National Park Service, and other stakeholders to create *Commonwealth Connections*, a vision for a coordinated network of trails and greenways in Massachusetts. One of the key strategies of this vision, released in January 2003, is the protection and promotion of long-distance trail corridors as primary spines of the Massachusetts Greenway System. Many unprotected segments of this 500-mile network of long-distance trails are in danger due to encroaching development or existing bans on public use.

Commonwealth Connections has already contributed to an elevated recognition of the long-distance trail systems in both statewide and local plans and in the competition for state and Federal grants. The *Plan* and its goal of improving conditions for bicycling clearly are compatible with and share common interests with *Commonwealth Connections*.

In some corridors, a statewide bicycle network would likely use portions of the long-distance trail corridors. This will help convey a vision for long-distance facilities (whether they are intended for bicyclists, hikers or all users) to local, state, and Federal stakeholders. DCR is continuing to update its statewide vision to encompass additional shared use paths and related resources.

2.4.3 MassHighway Bicycle Facilities Inventory

The *Commonwealth of Massachusetts Bicycle Facilities Inventory* project was conducted in 1995 by the Bicycle Coalition of Massachusetts (now MassBike) under contract to MassHighway. The project resulted in a final report and a computer database listing existing and potential bicycle facilities. The report included a selection of a system of bicycle touring routes and a survey of bicycling conditions, project proposals, and the opinions of the citizens and government officials who provided input. These routes are further presented in Section 3.1.2.

2.4.4 Regional and Local Planning Efforts

The Commonwealth is divided into 13 Regional Planning Agency (RPA) areas and 351 cities and towns. The *Plan's* relationship to this local context, and the local and regional planning efforts that have been created to address them, is described below.

MPO/RPA Bicycle Programs and Their Relationship to *Plan*

The Commonwealth's 13 RPAs all address bicycling as part of their transportation planning work. Ten of these regions also have a Metropolitan Planning Organization (MPO), typically based at the RPA, although there is a separate entity for the Boston region. In the three RPAs that are not MPOs—Franklin Region, Martha's Vineyard, and Nantucket—EOT, MassHighway, the RPA, and the Regional Transit Authority (RTA) cooperatively perform the functions of an MPO. Through Federal transportation legislation, the MPOs are charged with both the short-term programming and long-term planning for transportation investments in their respective regions. Any projects funded with Federal transportation funds, or that have significant impacts on air quality, must be approved through the MPO process.

Although bicycle-specific projects alone do not have significant impacts on regional air quality and some are funded through means other than Federal funds, each MPO considers bicycling in the course of its planning and programming work. The Regional Transportation Plan (RTP), a 20-year, Federally required and fiscally constrained planning document updated every four years, is one important opportunity for MPOs to address bicycling issues. The Transportation Improvement Program (TIP), an annual document that programs actual state and Federal funds for specific transportation projects that are ready for implementation, represents the final step in securing support and funding for successful bicycle projects.

While RTPs and TIPs are multimodal planning and programming documents, many RPAs provide bicycle planning services to their member municipalities and have developed bicycle and pedestrian plans that more specifically address unique modal needs. Examples of these efforts include the Pioneer Valley's *Regional Bicycle and*

Pedestrian Plan (2000), the Berkshire region's *Bicycling and Walking Transportation Plan* (2003), and the *Boston Regional Bicycle Plan* (2007). This *Plan* has been developed to be consistent with these regional planning efforts.

The *Plan's* greatest opportunity to positively impact the Commonwealth's bicycling conditions is its ability to take regionally-developed and supported concepts and facilities that may be beyond any one MPO's ability to implement (due to either geography or cost limitations, for example) and to formalize EOT's support for their implementation. The *Plan* is not intended to supersede the regional planning efforts described above, nor is it intended to siphon limited bicycle funding from the MPOs. The *Plan's* goal is to address those issues and projects that are broader in scope such as the development of a statewide bicycling network.

Exemplary Local Plans and Programs

Most bicycling in the Commonwealth occurs on our street network and the vast majority of roadway mileage consists of local streets. Therefore, our 351 cities and towns can and do play an important role in how bicycling issues are addressed. Several cities and towns have maintained strong support for bicyclist mobility on their local street networks through municipal plans, local public works initiatives, and bicycle and pedestrian committees.

While the *Plan* is not intended, nor is it able, to focus on bicycle circulation concerns at such a local level, the planning process places a high value on the quality of connections between local improvements and a statewide bicycling network. Ensuring that such connections are realized is facilitated by municipal bicycle plans and programs. The background research completed for this *Plan* identified many reports, programs, plans, maps, and illustrations. The published documents are referenced in Appendix 2. Computer files containing electronic copies of these resources have been incorporated into EOT's planning records and resources.

2.4.5 Adjacent States' Bicycle Facilities and Programs

In addition to the *Plan's* consistency with the bicycling planning work conducted at the regional and municipal levels, it has also taken into account the efforts of the five adjacent states: New Hampshire, Vermont, New York, Connecticut, and Rhode Island. Several Massachusetts regions that abut our border—the Connecticut River and Merrimack River valleys, the eastern shores of Narragansett Bay, and the hills of the western Berkshires—are part of multi-state regional economies.

The *Plan's* coordination with efforts in New York and our New England neighbors can go beyond simple network connections. A multi-state, regional approach to issues such as education, enforcement, signing, and amenities is both a laudable and attainable goal. Some of the key components of bicycle programs in adjacent states are as follows:

New Hampshire identified an on-road network several years ago, which has largely been used as a planning tool. New Hampshire has also published a series of bicycle maps.

Vermont recently completed a statewide bicycle plan. The state's approach is that bicycling should be accommodated on all roadways; network development is not part of the plan. Regional connectivity is addressed at the RPA level and Vermont's municipalities often take the initiative to develop projects. There are a number of bicycling improvements being planned that are envisioned as part of cross-border corridors with Massachusetts, including along the Connecticut River and between Bennington, VT and the Berkshires.

New York has the most developed bicycle network of Massachusetts' neighbors. The network is signed and the state has printed and web-posted maps. During the development of the network, state DOT safety officials drove the proposed routes to confirm suitability for bicyclists and identify necessary upgrades. The state repaves roadways once each decade and this work was used as the opportunity to widen shoulders along network roadways. Although this system for upgrading the network worked well on state roadways in rural sections of the state, NYSDOT encountered challenges upgrading and signing facilities through urban areas. The state assumes no liability for the signed bicycle network.

Connecticut has a network of state recommended bicycle routes that has evolved over a period of years. A state bicycle map shows an on-road network. With a few exceptions, there are no signs along Connecticut's recommended bicycle routes.

Rhode Island focuses primarily on shared use path development. There is no established on-road network although the state maintains "share the road" signs. Rhode Island currently has a consultant looking into the state's policy for signing roads as bicycle routes.

2.5 *Public Outreach in Support of the Plan*

This *Plan* has resulted from informed public input. Public contributions to this *Plan* were received in many forms, obtained primarily through a series of regional public meetings, comments provided to the project website, and during presentations at stakeholder/ interest group meetings. In 2006, EOT held a series of eight regional meetings. The consulting team presented a workshop at *Moving Together 2006* (the annual statewide bicycling and walking conference), staffed an exhibit booth at *Moving Together 2007*, and gave four presentations to the Massachusetts Bicycle and Pedestrian Advisory Board (MABPAB). A project website (massbikeplan.org) was also launched in 2006. This website provided the public an opportunity to review interim products and provide feedback via email.

This entire public process, including a detailed summary of comments received during the development of the *Plan*, is described in Appendix 3

3 BICYCLE FACILITY RESOURCES AND OPPORTUNITIES

Massachusetts Avenue (Cambridge)

Norwottuck Rail Trail (Northampton)

Canalside Trail (Turners Falls)

Ashuwillticook Rail Trail (Cheshire)

3 Bicycle Facility Resources and Opportunities

Massachusetts is an attractive state for bicycle riding, featuring thousands of miles (mi) of two-lane roadways, varied and highly picturesque landscapes, and appealing urban settings. In fact, the series of bicycle maps published for bicycling in Massachusetts features over 4,700 mi of roads with the designation of "recommended bicycle route on roadway."[7] In addition, there are approximately 420 mi of shared use paths and approximately 100-mi of partially or fully funded shared use path projects, all of which exclude motorized vehicles.

An essential product of this *Plan* is a description of the current bicycle transportation system in Massachusetts and an understanding of the various projects in the development process. This chapter includes a comprehensive inventory of bicycle facilities, funded projects, and project proposals throughout the Commonwealth. It focuses on current bicycle facilities and resources we can reasonably expect to see implemented in the near future. Longer-term proposals are also discussed. The compilation of information for this chapter involved extensive research and collaboration with a number of agencies, organizations, and individuals.[8] Sources of information are summarized in Appendix 4.[9]

3.1 *Bicycle Facility Types*

For the purpose of this *Plan*, bicycle facilities are first divided into either on-road or off-road, based on where bicyclists travel.

3.1.1 On-Road Bicycle Facilities

The ways that bicycles and other users are accommodated on roadways is described in detail in MassHighway's *Guide*[10]. Figure 3-1 is a reprint of Figure 5-6 from the *Guide*. As shown, the degree of accommodation ranges from separate accommodation for all users, to partial sharing for bicycles and motor vehicles, to shared bicycle/motor vehicle accommodation, to shared bicycle/pedestrian accommodation, to shared accommodation for all users.

Almost all roads in the Commonwealth (excluding interstate highways and most limited-access highways) are open to bicycling. The on-road bicycle system ranges from those that are open to bicycling but not designated as such to those that include bicycle designations, including:

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[7] It should be noted that roadway conditions change and a designation of "recommended" reflects the information available at the time of map publication and the collective views of the map publisher and other information providers.

[8] Despite the extensive input received, information provided in the *Plan* may change. EOT will continue to refine the facility and project data as new information is made available.

[9] A separate product of the *Plan* is a working database of facility information with accompanying files from a geographic information system (GIS).

[10] *Project Development and Design Guide*, Massachusetts Highway Department, 2006, page 5-20.

- Bicycle Routes—roads with bicycle route signs that either provide connections to other bicycle facilities, such as bicycle lanes or shared use paths, or designate preferred routes through high-demand corridors.

- Bicycle Lanes—portions of the traveled way designed for bicycle use. According to the *Guide*, "bicycle lanes should be incorporated into a roadway when it is desirable to delineate available road space for preferential use by bicyclists and motorists and to provide for movements that are more predictable by each. Bicycle lane markings can increase a bicyclist's confidence that motorists will not stray into their path of travel. Likewise, passing motorists are less likely to swerve to the left out of their lane to avoid bicyclists on their right. While bicycle lanes are generally considered the preferred treatment for bicycle accommodation, in some cases, they are neither necessary nor desirable due to low-traffic conditions. Bicycle lanes are most commonly implemented in urban and suburban settings. Frequently, bicycle lanes are found in combination with on-street parking, raised curbs, and sidewalks. In these areas, the bicycle lane also functions as the roadway shoulder associated with motor vehicles, described in more detail later in this chapter. Contraflow bicycle lanes may be appropriate on one-way streets to increase cyclists' connectivity.[11]"

3.1.2 Long Distance Bicycle Routes

There are several formal and informal long distance bicycle routes in Massachusetts as illustrated in Figure 3-2. Routes that are mapped and/or signed include:

- Claire Saltonstall Bikeway—established by legislation in 1978, this 135 mi signed on-road and shared use path bicycle route links Boston and Cape Cod. At the Sagamore Bridge in Bourne, the bikeway splits into two branches. One branch travels south (parallel to Route 28) to the village of Woods Hole in Falmouth. The main branch travels east to Orleans and then north to Provincetown. At present, this is the only signed long distance route in Massachusetts.
- The route of the PanMass Challenge (PMC), a major annual fund-raising ride on behalf of the Jimmy Fund, has also been recognized by the Legislature as a long-distance bicycle route. The PMC has two starting points, in Wellesley and Sturbridge, and concludes in Provincetown. MassHighway has provided PMC with signs and posts for permanent installation on local streets and for temporary use on state highways. The actual installation process is being managed by PMC; when complete, the PMC route will represent the second signed route in Massachusetts.
- East Coast Greenway (ECG)—the goal of the ECG Alliance is to develop a continuous shared use path system that connects all major eastern cities. The ECG spans 3,000 mi between Calais, Maine and Key West, Florida. A route has been mapped for Massachusetts and features on-road sections between existing paths. As path development continues, the ECG will shift to new facilities.
- Adventure Cycling Association (ACA) Atlantic Coast Route—this mapped on-road route runs between Florida and Maine and traverses Massachusetts with a spur serving Boston.

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[11] *Project Development and Design Guide*, Massachusetts Highway Department, Boston, MA, 2006, page 5-20.

- 1995 Massachusetts *Bicycle Inventory* Routes, which are presented in the *Plan* for information purposes as 1995 Long Distance Routes.

3.1.3 Shared Use Paths

According to the *Guide*, "shared use paths are facilities on an exclusive right-of-way with minimal cross flow by motor vehicles. Shared use paths should be thought of as a complementary system of off-road transportation routes for bicyclists and others that serve as a necessary extension of the roadway network. The presence of a shared use path near a roadway does not eliminate the need to accommodate bicyclists within a roadway (page 5-24)" The *Guide* devotes an entire chapter (11) to design guidance for shared use paths.[12]

The body of knowledge in the design, construction, and maintenance of shared use paths has evolved over several decades. Some older paths are much narrower—as few as five feet wide in some sections—than those that are have been constructed in recent years. Some older paths have experienced damage from tree roots such that, were they constructed today, would likely feature root blocks and other measures to extend the integrity of the facility. Many of the shared use paths constructed today have a longer life span than those constructed previously.

For the purposes of this *Plan*, paths are categorized as either improved or unimproved, as follows:

- Improved Path—a facility constructed as a shared use path with a paved or stabilized surface. They are designed for bicycles, pedestrians, and other non-motorized modes. In general, improved paths are suitable for all bicyclists and may be located along former railroad corridors and along waterways, utilities, or parklands. The width of existing shared use paths may vary from 5-to-12 feet.
- Unimproved Path—an unimproved path is usually a former railroad or utility corridor that is open for public use and is suitable primarily for mountain bicycles (with wider tires) or hikers. These paths are not wheelchair accessible and are not suitable for bicyclists using road bicycles (with narrower tires).

3.2 *Bicycle Facility Resources*

Figure 3-3 presents an overview of existing, funded, and proposed bicycle facilities. Shown on this map are improved and unimproved paths and on-road facilities such as bicycle lanes and bicycle routes.

Detailed maps of these features are shown in the next section. The designations used for these facilities are:

Off-Road Facilities

- Existing—open shared use paths that have a paved or stabilized surface

[12] Paved areas paralleling a roadway may also be considered shared use paths if they are so designed and designated for bicycle and pedestrian use.

- Unimproved—open shared use paths suitable primarily for mountain bikes and hikers
- Funded Project—a partially or fully funded project[13]
- Proposed—a potential improvement identified by a public agency or group but without current funding for implementation

On-Road Routes

- Bicycle Lane (existing or proposed)
- Local Route—municipally designated route or a link between trail segments

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[13] For the purposes of this *Plan*, a project is considered funded if it has been programmed through the regional transportation planning process or has another public funding source from another agency such as DCR, or is privately funded. Funded projects can include reconstruction of existing facilities, all of which require regular maintenance and some of which are candidates for reconstruction. In addition, not all of the funded projects have adequate funding to implement them as currently programmed.

3.2.1 Major Shared Use Path Resources in Massachusetts

Approximately 420 miles (mi) of improved bicycle facilities in Massachusetts have been identified for this *Plan*. These vary in length from 0.3 mi (Danehy Park in Cambridge) to 21.8 mi (Cape Cod Rail Trail in six Cape communities). The following narrative describes most of the shared use paths, trails, and trail systems of approximately four mi in length or longer. (A shared use path of four mi in length can be ridden in 20 minutes by a bicyclist traveling at 12 mph.) Excluded from this narrative are shorter paths, paths contained entirely within local or state parks and conservation areas, and on-road elements. All told, there are 22 paths and path systems with 300 mi of improved shared use paths. Many of these are planned for expansion. If expansion plans are realized, these 22 paths and path systems could potentially grow to a system of 28 paths and path systems with approximately 520 mi of improved shared use paths.

The narrative is accompanied by detailed Tables 3-1 through 3-12. Figure 3-4 provides an index to map coverage and Figure 3-5 (Maps 1-12) provide corresponding illustrations of the facilities listed in the tables. The maps are presented at three different scales (1"=5.5 mi, 1"=3 mi, and 1"=1 mi). This information is focused on the location of the facility, the municipalities it serves, and its length. In general, the discussion does not cover the facility's current condition, any issues related to intersection crossings or other matters of suitability, or travel tips. There are several websites that provide such information, most of which can be reached through DCR and the MA Office of Travel and Tourism (MOTT). The Massachusetts Bicycle Coalition (MassBike) also provides a useful website.

Where appropriate, links to informative web sites are provided. Most of these are agency links. Note, however, that these links may be subject to change or interruption. In addition, the information presented reflects information available in 2007 and is thus subject to revision.

Ashuwillticook Rail Trail (Map ID 1-1, 1-16, 1-17)—Adams, Cheshire, and Lanesborough (10.9 mi (existing) + *12.4 mi* (*future*))

The Ashuwillticook Rail Trail runs between Lanesborough and Adams on an unused railroad corridor along the Hoosic River and is overseen by DCR. The first five mi north of Pittsfield opened in 2001 and the remainder was completed in 2004. Extensions are proposed to the north (1-16: 10.7 mi) and south (1-17: 1.7 mi).

Manhan Rail Trail (Map ID 2-3, 2-9, 2-10)—Easthampton (4.4 mi + *4.1 mi)*

The Manhan Rail Trail runs between South Street in Easthampton and the Northampton Street (US Route 5)/East Street/North Street (US Route 5) intersection adjacent to the Connecticut River. US Route 5 features a bicycle route toward Northampton and a bicycle lane toward Holyoke. There are two funded projects designed to extend the trail north to Northampton (2-8: 3.4 mi (which is under construction)), and south to Coleman Road in Easthampton (2-9: 0.7 mi).

Longer-term plans include extensions south via the proposed New Haven (CT) and Northampton Corridor (1-21: 9.3 mi) where they would connect with the funded

Columbia Greenway in Westfield (1-12: 3.0 mi) and the funded Southwick Rail Trail in Southwick (1-11: 6.2 mi). This extension would complete the Massachusetts portion of the New Haven - Northampton Rail Trail Corridor.

Mass Central Rail Trail (Map ID 1-7, 1-14, 1-15, 1-22, 1-26, 2-1, 2-5, 2-8, 4-2, 4-9, 4-22, 4-26, 4-27, 10-12, 12-13, 12-14, 12-22, 12-23, 12-24, 12-29, 12-30, and 12-34)—west to east: Northampton, Amherst, Hadley, Belchertown, Palmer, Ware, Hardwick, New Braintree, Barre, Oakham, Rutland, Holden, West Boylston, Sterling, Clinton, Berlin, Hudson, Sudbury, Wayland, Weston , Waltham, Belmont, Cambridge, and Somerville (27.90 mi + *86.0 mi*)

The Mass Central Rail Trail (MCRT) is the longest rail trail proposal in Massachusetts. Its western terminus is Northampton. The proposed trail in its entirety would traverse 107.3 mi. At present 27.9 mi are categorized as existing improved, 2.1 mi are categorized as existing unimproved, 5.6 mi are funded projects, and 69.2 mi are proposed for future projects. Traveling from west to east, this trail features several names that correspond to the maps and tables, including Northampton Bikeway (existing), Norwottuck Rail Trail (described below), Mass Central Corridor (proposed), Ware River Valley Rail Trail (proposed), Hardwick Rail Trail (described below), Wayside Trail (proposed), Fitchburg Cutoff (portions open but unimproved), Red Line Linear Park Path (existing) and Extensions (existing and proposed), Somerville Community Path (existing and proposed), and North Point Path (proposed). Not all of the right-of-way is currently under the control of trail proponents.

If fully implemented, this rail trail, in conjunction with the Northampton-to-New Haven Rail Trail, would provide a connection between Boston and New Haven, and has been referred to as the "Harvard-to-Yale bicycle connection." Other major components of the Mass Central Trail are:

Norwottuck Rail Trail (Map ID 2-5)—Northampton, Hadley, Amherst, and Belchertown (10.0 mi) (MCRT)

This Norwottuck Rail Trail is 10.0 mi long shared use path between Northampton and Belchertown through Hadley and Amherst, paralleling SR 9. This DCR trail connects with the Art Swift Bike Connector to the University of Massachusetts campus in Amherst and to several bicycle routes and a bicycle lane. The trail was recently extended west from Woodmont Road to Damon Road in Northampton.

Connections can be made on-road to the Northampton Bikeway (2-1: 3.3 mi). A Downtown Connector project (2-11: 0.6 mi) is envisioned to link to the northern extension of the Manhan Rail Trail.

Hardwick Rail Trail (Map ID 1-15)—Hardwick (3.7 mi) (MCRT)

The Hardwick Rail Trail is a 3.4 mi portion of the MCRT between the villages of Gilbertville and Wheelwright in the Town of Hardwick. This project received a $500,000 transportation earmark in the SAFETEA-LU legislation. Right-of-way is being assembled to move the project forward.

Connecticut Riverwalk (Map ID 3-1, 3-2, 3-6, 3-7, 3-8, 3-10)—north to south (west bank): Holyoke, West Springfield, and Agawam; (east bank): Chicopee and Springfield) (6.0 mi *+12.8 mi)*

The Connecticut Riverwalk consists of several existing and proposed facilities along the river in Agawam, West Springfield, and Holyoke on the west bank and Springfield and Chicopee on the east bank. On the west bank, the Agawam segment is open (3-2: 2.3 mi). There are proposed projects in West Springfield (3-6: 1.8 mi) and (3-10: 3.0 mi). In Holyoke, a proposal to expand the Riverwalk north (3-8: 3.4 mi) could link to the bicycle lane on US Route 5 (see Manhan Rail Trail). On the east bank, the Springfield segment is open (3-1: 3.7 mi) with a northward extension through Chicopee proposed (3-7: 4.6 mi). Finally, a connection across the river is proposed between Chicopee and downtown Holyoke (3-9: 1.2 mi).

Franklin County Bikeway (Map ID 1-3, 1-4)—Greenfield, Montague, and Deerfield (5.7 mi)

According to the Franklin County Council of Governments website, the entire proposed Franklin County Bikeway totals approximately 44 mi and consists primarily of a loop through Greenfield, Deerfield, Montague and Gill; a spur north to the Northfield Mountain Recreation and Environmental Center and downtown Northfield; and two southern spurs, one to the Town of Sunderland and the other through Leverett Center to Hampshire County. Two shared use paths have been constructed, the Canalside Trail in the village of Turners Falls (1-4: 4.0 mi) and the Greenfield Paths (1-3: 1.7 mi).

Blackstone River Bikeway (Map ID 4-5, 4-10, 4-11, 4-12, 4-13, 4-24, 4-31)—Worcester, Millbury, Grafton, Sutton, Northbridge, Uxbridge, Millville, and Blackstone (2.2 mi + *24.4 mi)*

The Blackstone River Bikeway will ultimately connect Providence, Rhode Island and Worcester. The proposed bikeway uses both on-road routes and shared use paths in transportation corridors established by the historic Blackstone Canal and by railroads. As the project moves forward, on-road routes are in place until path sections are completed. In Massachusetts, the project consists of seven segments running south to north. Segment 1 (4-31: 2.4 mi) connects the Rhode Island section to Segment 2. This segment is proposed. A bridge type study has been completed for this section; its design has not yet advanced to the development stage. Route 122 (Main Street) is the designated interim on-road connection for Segment 1. Segment 2 (4-12: 3.8 mi) is funded for construction in the near future and will run from Central Street in Millville to Route 122 in Uxbridge. Segments 3, 4, and 5 (4-13: 16.7 mi) will connect to the completed section (Segment 6) (4-5: 2.2 mi) in Millbury and Worcester (completed as part of the Route 146 project). The 16.7 mi section is in the preliminary design phase and will be further developed along with an Environmental Impact Report (EIR) for the *entire* Massachusetts portion of the Bikeway, including Segments 1 and 7. This preliminary design work and the EIR are fully funded. Construction funds for the 16.7 mi section

will be identified upon further development of the project[14]. Section 7 (4-24: 1.5 mi) will run along Quinsigamond Avenue and Frances McGrath Boulevard in Worcester, terminating at both Union Station and the Worcester City Common. The proposed Millbury Rail Trail (4-25: 3.2 mi) is a nearby project.

Upper Charles Trail (Map ID 4-8, 4-14, 4-15, 4-28, 4-29)—Hopkinton, Ashland, Sherborn, Holliston, and Milford (3.1 mi + *18.8 mi)*

The Upper Charles Trail is a 21.9 mi rail-trail conversion in five communities. The first segment (Milford Phase 1) was completed in 2007 (4-8: 3.1 mi). Two additional segments are funded and in the design phase. Milford Phase 2 extends the existing trail north to Hopkinton and east to Holliston (4-14: 2.9 mi). Holliston Phase 1 follows the former railroad alignment from Hopping Brook Road to Cross Street (4-15: 2.0 mi). This leaves a gap between the funded sections in Holliston and Milford (4-28: 1.1 mi). The remainder of the trail includes proposals in Holliston, Sherborn, Ashland, and Hopkinton (4-29: 12.8 mi). Nearby trail proposals include the Cochituate Rail Trail in Framingham and Natick (10-11: 6.3 mi), and the third phase of the Bruce Freeman Rail Trail in Framingham and communities to the north.

North Central Pathway (Map ID 1-13, 4-1, 4-19)—Gardner and Winchendon (7.3 mi + *5.3 mi)*

The North Central Pathway is composed of several trail segments linking the downtowns of Gardner and Winchendon. The existing segments run north of the Gardner Municipal Golf Course across Route 140 to Route 12 (4-1: 4.0 mi), and from the corner of Park St. and Central St. (Route 101) proceeding north along the east side of Crystal Lake ending at the edge of the Gardner Municipal Golf Course on Green St. (3.3 mi). Two extensions in Winchendon (1-13: 2.9 mi) are funded projects: Phase 4, (a 0.9 mi project linking Summer and Glenallen Street, is currently scheduled for construction; Phase 5, a 2.0 mi project connecting Glenallen Street to North Ashburnham Road, is programmed for construction in 2010. Additional trail development is proposed in Gardner (4-19: 2.4 mi).

A connected proposal is the Ashburnham Rail Trail (4-20: 8.3 mi).

Assabet River Rail Trail (Map ID 4-7, 4-16, 4-30—Marlborough, Hudson, Stow, Maynard, and Acton (4.1 mi + *6.6 mi)*

The Assabet River Rail Trail currently runs between Lincoln Street in Marlborough and Wilkins Street in Hudson (4-7: 5.1 mi). In Hudson, the trail parallels the MCRT alignment. Additional segments are open but not improved. A funded project in Acton and Maynard (4-16: 3.2 mi) will complete the northerly end of the project and provide a connection to the MBTA South Acton Commuter Rail station. The segment in Stow (4-30: 3.4 mi) is planned for future development

[14] A portion of this 16.7 mi is existing unimproved (4-10: 3.8 mi) and runs within the Blackstone River and Canal Heritage State Park in Uxbridge and Northbridge.

Nashua River Rail Trail (Map ID 4-6)—Dunstable, Pepperell, Groton, and Ayer (11.3 mi)

The Nashua River Rail Trail is an existing improved 11.3 mi trail on the former Hollis Branch of the Boston and Maine Railroad and is overseen by DCR. The Nashua River Rail Trail was officially opened and dedicated in 2002, with a ½ mi extension to the north recently opened. It affords access to the Ayer MBTA Commuter Rail station. Supporters of the Squannacook River Trail (4-18, 4-32: 6.8 mi) are looking to connect to the Nashua River Rail Trail.

Bruce Freeman Trail (Map ID 7-14, 7-18, 10-9)—Acton, Carlisle, Chelmsford, Concord, Framingham, Lowell, Sudbury, and Westford (7.9mi +*12.6 mi)*)

The Bruce Freeman Trail is a shared use path proposed through the communities of Lowell, Chelmsford, Westford, Carlisle, Acton, Concord, Sudbury, and Framingham, following the 25 mi route of the old New Haven Railroad Framingham & Lowell line. The first phase (7-14: 7.9 mi) in Lowell, Chelmsford, and Westford is under construction and is considered an existing facility for the *Plan*. Additional phases are proposed (7-18 and 10-9: 12.6 mi).

Minuteman Commuter Bikeway (Map ID 12-2)—Bedford, Lexington, Arlington, and Cambridge (11.5 mi)

The Minuteman Commuter Bikeway runs between Bedford and Cambridge and passes through Lexington and Arlington. Its southerly terminus is at Alewife Station at the northern end of the MBTA Red Line. At this Cambridge terminus, the bikeway connects with the Red Line Linear Path and Extensions (12-13: 1.2 mi) and the Fitchburg Cutoff (MCRT) (12-22: 0.8 mi), which is an existing unimproved trail to be upgraded. There are proposals to link the Minuteman and the Mystic River Paths (12-17: 6.7 mi and 12-33: 1.9 mi), and along Alewife Brook (12-32: 1.5 mi). There is an unimproved trail at the northern end of the Minuteman, the Bedford Narrow Gauge Rail Trail (7-12: 2.8 mi). Efforts are also underway to link the Minuteman and Charles River paths and to link the Minuteman and Battle Road Trails (see below).

Battle Road Trail (Map ID 10-2)—Concord, Lincoln, and Lexington (6.5 mi)

The Battle Road Trail is in the Minuteman National Historical Park in Lincoln and Concord. The stone-dust, accessible trail connects historic sites between Meriam's Corner in Concord and the eastern boundary of the park in Lexington. The main theme of the trail is the Battle of April 19, 1775. The Town of Lexington is proposing a connector trail between the Minuteman and Battle Road (10-15: 1.7 mi).

South Bay Harbor Trail and Boston Harborwalk (Map ID 11-7, 11-8, 11-11)—Boston (8.0 mi + *1.0 mi)*

The South Bay Harbor Trail is proposed as a continuous link from Ruggles Station (MBTA Orange Line and Commuter Rail) (See Pierre Lallement Bicycle Path) to the Fan Pier on Boston Harbor via Melnea Cass Boulevard and Fort Point Channel. There are three segments: one already in place on Melnea Cass Boulevard[15] (11-7: 0.7 mi) and two

[15] This section of the trail has been recommended for reconstruction.

along the edge of Fort Point Channel (11-11: 1.0 mi), both of which are part of the Boston Harborwalk (11-8: 7.3 mi). The Harborwalk includes a separate improved segment that runs between Neponset Circle in Dorchester along the perimeter of Columbia Point, and connecting to Castle Island in South Boston via the shoreline.

Long-term plans include a proposed connection south from Neponset Circle to the Neponset River Greenway (11-9: 2.2 mi), which itself is proposed for extension to Milton (11-14: 4.6 mi). There are additional sections of the Harborwalk that are shared use paths (12-16: 1.9 mi) as well as some sections that can be traversed by bicycle but are primarily walking paths.

Paul Dudley White Charles River Bicycle Path and Extensions (Map ID 11-1, 12-1, 12-41)—Waltham, Newton, Watertown, Boston, and Cambridge (31.6 mi + *0.7 mi)*

The Dr. Paul Dudley White Bicycle Path follows both banks of the Charles River between the Museum of Science in Boston and Waltham. The shared use path previously terminated in Watertown Square in Watertown but was extended to Newton and Waltham as part of DCR's Upper Charles River Basin (not to be confused with the Upper Charles River Trail). There are gaps in this trail network (a connection across the Charles River at the Museum of Science in Boston and near Moody Street in Waltham), one of which would be filled by a proposed project in Waltham (12-41: 0.7 mi).

Pierre Lallement Bicycle Path (SW Corridor Park) (Map ID 11-5)—Boston (3.9 mi)

The Pierre Lallement Bicycle Path runs between Forest Hills Station (MBTA Orange Line and Commuter Rail) and Back Bay Station (Orange Line and Commuter Rail). This shared use path was constructed as part of the Southwest Corridor Project. It meets the South Bay Harbor Trail at Ruggles Station. Its southern terminus is close to but not connected with the trails within the Arnold Arboretum (11-3: 3.1 mi). Also nearby are the paths along the Emerald Necklace (11-4: 2.0 mi), which are also significant multi-purpose paths.[16]

Tri-Community Bikeway (Map ID 12-9, 12-27)—Stoneham, Winchester, and Woburn (5.4 mi + *6.6 mi)*

The Tri-Community Bikeway is a combination of on-road routes and shared use paths through the City of Woburn and the Towns of Winchester and Stoneham. At present, there are two completed sections in Winchester (12-9: 5.4 mi) and a funded project (12-27: 6.6 mi) in Stoneham and Woburn.

Mystic River Paths (Map ID 12-17, 12-33)—Arlington, Everett, Medford, and Somerville (6.7 mi + *1.9 mi)*

The DCR maintains the parklands along the Mystic River, which feature trails covering 6.7 mi and include a proposed extension in Arlington to the Minuteman Bikeway. This

[16] The Emerald Necklace features a 1,100-acre chain of nine parks linked by parkways and waterways. Many of the parks in the linear system feature paved pathways. This chain features several gaps that need to be filled, so it is not listed as a path system in this *Plan*. However, the *Plan* recognizes that filling these gaps will result in a more convenient, connected, and effective regional system.

shared use path network is also proposed for extension to the Northern Strand Community Trail (12-36 and 12-42: 12.5 mi).

Phoenix Bikeway and Little Bay Trail (Map ID 9-4, 9-5)—Fairhaven (4.1 mi)

The Phoenix Bikeway runs between the center of the Town of Fairhaven and the Mattapoisett town line, with a southerly spur to Little Bay.

There is a funded project to extend the trail farther east into Mattapoisett (9-9: 0.6 mi) and a longer-term proposal to extend the trail west into Wareham (9-14, 9-15: 19.6 mi).

Cape Cod Trails (Map 6 (all), Map ID 5-1, 5-24) (82.0 mi + *34.2 mi*)

Each of the 15 communities on Cape Cod has a paved shared use path. These facilities are used year-round but receive greater use during the tourist season and are an integral part of the regional tourist economy. All told, there are nearly 82 mi of improved trails. The longer facilities are described below.

Cape Cod Canal Service Roads (Map ID 6-1)—Bourne and Sandwich (13.5 mi)

This pair of shared use paths runs on both sides of the Cape Cod Canal and is maintained by the Army Corps of Engineers.

Shining Sea Bikeway (Map ID 5-1, 5-24)—Falmouth (4.6 + *5.2 mi*)

The Shining Sea Bikeway originally opened in 1976 as a Bicentennial project and was extended in 1998 (5-1: 4.6 mi). An extension north to County Road in North Falmouth is funded (5-20: 5.2 mi). This facility provides links to the Woods Hole ferry terminal and Steamship Authority parking lot, and well as the Falmouth bus depot.

Dennis Paths (Map ID 6-7)—Dennis (7.0 mi)

Several shared use paths in the Town of Dennis run parallel to parts of Old Bass River Road, Setucket Road, and Old Chatham Road.

Cape Cod Rail Trail (Map ID 6-8, 6-17, 6-19))—Brewster, Dennis, Eastham, Harwich, Orleans, and Wellfleet (21.8 + *8.6 mi)*

The Cape Cod Rail Trail, overseen by DCR, is one of the most popular path resources in New England. This facility was fully reconstructed in 2006 and 2007. An extension east into Yarmouth is funded (6-17: 5.7 mi) and an extension to Wellfleet is proposed (6-19: 2.0 mi) as is an extension of the existing Hyannis Intermodal Connector (6-20: 1.5 mi). (See Harwich-Chatham Rail Trail.)

Harwich-Chatham Rail Trail (Map ID 6-9)—Harwich and Chatham (6.6 mi)

The Harwich-Chatham Rail Trail branches east from the Cape Cod Rail Trail for 6.6 mi to the center of Chatham.

Cape Cod National Seashore Trails (Map ID 6-11, 6-12, 6-13)—Eastham, Truro, and Provincetown, (11.6 mi)

Three trails comprise the Cape Cod National Seashore trail system. These include: 1) the Nauset Trail in Eastham (6-11: 1.6 mi), which runs between the Salt Pond Visitor Center and Coast Guard Beach; 2) the Head of the Meadow Trail in Truro (6-12: 2.0 mi); and 3) the Province Lands Trails (6-13: 8.0 mi), which include the Loop Trail (5.5 mi), Herring Cove Beach spur (1.1 mi), Race Point Beach spur (0.5 mi), and Bennett Pond spur (0.3 mi).

In addition, there may be potential for additional on-road and/or shared use path development as part of the Hyannis Access Study.

Nantucket Paths (Map 5)—Nantucket (29.6+ *9.7 mi*)

Nantucket features an extensive system of shared use paths along Madaket, Eel Point, Cliff, Polpis, Milestone ('Sconset), Surfside, Fairgrounds, Bartlett, Old South, Nobadeer Farm, Airport, and South Shore Roads. Funded projects include an extension of the Cliff Road path, an extension of the Nobadeer Farm path, and a Bartlett Road connector path. Proposed projects include shared use paths along Tom Nevers, Wauwinet, Quidnet, and Hummock Pond Roads, along Mill Hill Street, Sparks Avenue, an in-town path, and an extension of the Cliff Road Path.

Martha's Vineyard Paths (Map 5 Various)—Martha's Vineyard (34.7 mi + *14.3 mi)*

The Towns of Edgartown, Oak Bluffs, Tisbury, and West Tisbury feature over 34 mi of paths on West Tisbury, Herring Cove, Katama, Edgartown-Oak Bluffs, County, Edgartown-Vineyard, and West Tisbury Roads and in the Correllus State Forest, which is overseen by DCR. While there are currently no funded projects, there are proposals to extend several existing paths and address gaps such as the Vineyard Haven-West Tisbury Connector.

3.3 *Funded Bicycle Projects*

As discussed previously, Massachusetts features many attractive roads for bicycling, so the development of a state bicycle network will be made up of both on-road facilities and shared use paths (off road). As a result of MassHighway adopting its *Guide* in 2006, many if not most of the road construction projects programmed in the future will improve conditions for bicycling.[17] Accordingly, this section focuses on shared use path projects.

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17 On-road improvements are comparatively easy to program primarily because bicycles are permitted on most roads in the Commonwealth. (Interstate and other limited-access highways exclude bicycles). Reconstruction and resurfacing projects and other road projects are prime candidates for improving the state's bicycle network. The Commonwealth's "complete streets" policy is a positive development for bicycling in the state because smoothly paved, clearly marked roadways are generally attractive for bicycle travel. The degree of attractiveness of such roadways depends on a number of factors related to the amount and type of traffic, adjacent land uses, intersections and driveways, scenery, and other factors that are well documented in bicycle transportation studies available through the Federal Highway Administration's Pedestrian and Bicycle Information Center.

Shared use path projects may be more complex, more costly, and take longer to implement than roadway projects that benefit bicycling. The Commonwealth and others have invested considerable resources in shared use path projects (see Appendix 5). As discussed previously, there are more than 420 mi of improved facilities in place and approximately 100 mi of path projects that are partially or fully funded for construction.

Numerous additional projects have received some funding for design, right-of-way acquisition, environmental cleanup, or other pre-construction work, but for the purposes of this *Plan*, if they do have currently have TIP funding, their construction is not currently funded they have been designated as proposed projects.

Table 3-13 lists the funded bicycle projects in Massachusetts. Most of these have a corresponding number or numbers in MassHighway's Project Information System (PROJIS). Those that do not have PROJIS numbers (e.g., Twin City Rail Trail, Squannacook River Trail, and DCR projects) are included as funded because they either are likely to obtain PROJIS numbers soon or are moving forward without MassHighway involvement. As shown, these projects will add just under 100 mi of shared use paths and complementary on-road routes.

The previous discussion included information on many of the funded projects and proposals. The following are the funded projects not previously described.

Lenox Bikeway (Map ID 1-19)

The Town of Lenox has proposed an 8.1 mi bikeway system between the Town of Lee and the City of Pittsfield. This project, along with proposed extensions of the Ashuwillticook Trail (1-16, 1-17: 12.4 mi), are funded through a $4M Federal earmark. The future direction of these projects is the subject of ongoing deliberations in the Berkshire MPO.

Redstone Bikeway (Map ID 3-4)

The Redstone Bikeway is a 1.5 mi project in East Longmeadow. As described in PROJIS, the trail starts "at the intersection with Denslow Road, traveling north on the abandoned Boston & Maine rail bed and ending at the intersection with Maple Street." In addition, the proposed project will include the construction of parking, picnic, and rest areas and the installation of wood safety rail, safety signing, pavement markings, and other incidental work. Future extensions south to the Connecticut line and north to Springfield (3-12: 2.3 mi) are proposed, where the path is named the Highland Division Rail Trail (3-11: 3.2 mi).

Peabody Bikeway (Map ID 7-15)

The Peabody Bikeway is a 4.6 mi shared use path through the City of Peabody running between Salem and North Reading. This project was advertised for construction in 2007. An extension on the eastern side of Route 129 (7-30: 2.0 mi) is proposed.

Fall River Regional Bikeway (Map ID 9-8)

The Fall River Regional Bikeway consists of an existing path (9-2: 1.0 mi), on-road routes, and a funded path (9-8: 0.8 mi) along the north side of South Watuppa Pond between the Route 24/Brayton Avenue Ramp and the Westport town line. Extensions in both the westerly (9-12: 1.4 mi) and easterly (9-13: 9.7 mi) directions are proposed. The easterly extension was advertised for construction in 2007.

3.4 *Congressionally Funded Bicycle Projects*

The SAFETEA-LU legislation, enacted by Congress in 2005, identified 17 projects. These projects eventually are funded through the state's High Priority Project (HPP) program. Table 3.14 presents these projects, for which $48M was earmarked. Some of these, including the Blackstone River Bikeway, were listed more than once in the legislation while others contain additional projects such as visitor centers or related bikeway amenities. In addition to these HPP-funded shared use path projects, numerous road projects are funded either through the HPP program or through other sources and will also lead to improved conditions for bicycling.

Table 3-13
Funded Bicycle Projects in Massachusetts

Map ID (s)	Path Name	Municipalities Served	Miles	PROJIS[1]
1-11	Southwick Rail Trail[4]	Southwick	6.2	602844 604443
1-12	Columbia Greenway	Westfield	3.0	603783
1-13	North Central Pathway (phase 5)	Winchendon	2.9	604061
1-14, 2-8, 12-13, 12-23, 12-24	Mass Central Rail Trail	Northampton, Hardwick, Ware, Belmont, Cambridge, Somerville	5.6	603454 602885 600811 604331
2-12	Downtown Connector[4]	Northampton	1.5	602887
2-9, 2-11	Manhan Rail Trail Extensions (South and North[4])	Northampton, Easthampton	4.1	604441 604207 604219
3-3	Holyoke Canalwalk	Holyoke	1.2	603262
3-4	Redstone Bikeway	East Longmeadow	1.5	602338
4-12, 4-13	Blackstone River Bikeway	Millbury, Sutton, Grafton, Northbridge, Uxbridge, Millville	20.5	603115 604730 602495
4-14, 4-15	Upper Charles Trail	Milford, Holliston	4.9	602929 604530
4-16	Assabet River Rail Trail	Acton, Maynard	3.2	604531
4-17	Twin City Rail Trail	Fitchburg, Leominster	6.1	None[2]
4-18	Squannacook River Trail	Townsend, Groton	3.8	None[2]
5-21, 5-22	Nantucket Paths	Nantucket	1.3	604844 604286
5-24, 6-15	Cape Cod Paths (Shining Sea[4,] Rail Trail Extension)	Falmouth, Yarmouth	10.9	603520 604488
7-14, 7-16	Border-to-Boston Trail (Clipper City Rail Trail, Salisbury Rail Trail)	Newburyport, Salisbury	3.5	604686 604330
7-15	Peabody Bikeway	Peabody	4.6	602341
9-8	Fall River Regional Bikeway	Fall River	0.8	603463
9-9	Mattapoisett Path[4]	Mattapoisett	0.6	602869
11-11	South Bay Harbor Trail	Boston	1.0	604761
12-25	Charles River/Harborwalk Conn.	Boston, Cambridge	0.8	DCR[3]
12-26	Revere Beach	Revere	2.7	DCR[3]
12-27	Tri Community Bikeway	Woburn, Winchester, Stoneham	6.6	604652
Total			**97.3 miles**	

Notes:

1. PROJIS-MassHighway's Project Information System
2. These projects have Federal funding but are not yet in the PROJIS system
3. Park facility projects being constructed by DCR that include shared use paths
4. Advertised for construction or ready for advertisement (September 2007)

Table 3.14
Massachusetts Shared Use Path Projects in SAFETEA-LU (Transportation Earmarks)

Path Name	$M	Description	Community	Status
Ashuwillticook Trail, Lenox Bikeway	$4.0	Berkshire County Bike Paths, Design & Construction	Berkshire County	Proposed
Assabet River Rail Trail	$1.5	Acquisition, engineering design, and construction of the Assabet River Rail Trail, Acton, Hudson, Maynard, and Stow	Acton/Hudson/Maynard/ Stow	Funded
Blackstone River Bikeway (3 items)	$5.6	Construct the Blackstone River Bikeway and Worcester Bikeway Pavilion between Providence, RI and Worcester, MA	Worcester County	Funded
Border to Boston Bikeway	$0.8	Design, engineer, permit, and construct "Border to Boston Bikeway" rail-trail project, from Salisbury to Danvers	Salisbury to Danvers	Funded
Cape Cod Rail Trail	$3.0	Design and construct bicycle and pedestrian trails in Barnstable County	Barnstable County	Funded
Cambridge Common	$1.0	Cambridge Bicycle Path Improvements	Cambridge	Proposed
Franklin County Bikeway	$0.8	Construction of the Canalside Rail Trail, Deerfield & Montague	Deerfield/Montague	Improved
Grand Trunk Trail	$0.6	Design and construct the 3 mile long Grand Trunk Trail bikeway from Sturbridge to Southbridge	Sturbridge to Southbridge	Improved
Holyoke Canalwalk	$3.5	Construct Holyoke Canalwalk and streetscape improvements in Holyoke	Holyoke	Funded
Mass Central Rail Trail (MCRT)	$9.0	Somerville Bicycle Path Improvements—Cedar Street to Central Street	Somerville	Funded
North Central Pathway, Squannacook River Trail, MCRT	$4.0	North Worcester County Bike Paths, Design & Construction	Worcester County	Funded
Norwottuck Rail Trail, MCRT	$4.4	Hampshire County Bike Paths, Design & Construction	Hampshire County	Funded
Quinebaug River Rail Trail	$0.8	Design and construct the Quinebaug River Rail Trail Bikeway	Southbridge	Proposed
Redstone Rail Trail	$1.2	Design and construct the 1.5 mile East Longmeadow Redstone Rail Trail bike path	East Longmeadow	Funded
Shining Sea Bikeway	$3.2	Design & Build Cape Cod Bike Trail, with Shining Sea Bikeway, to link core with outer Cape communities & heavily visited national sites	Falmouth	Funded
Southwick Rail Trail	$4.0	Southwick and Westfield Rail Trail, Design & Construction	Southwick/Westfield	Funded
Worcester (new project)	$0.6	Infrastructure Improvements in the Gardner-Kilby-Hammond Area, Worcester	Worcester	Proposed

Source: Office of Management and Budget. Status definitions for proposed and funded are as described in Section 3.2.

4 THE PROPOSED BAY STATE GREENWAY (BSG)

Minuteman Commuter Bikeway (Arlington)

Mass Central Rail Trail (West Boylston)

Harborwalk (Boston)

Typical Bicycle Crossing

4 The Proposed Bay State Greenway (BSG)

Restating a portion of the Vision presented in Chapter 1, "our transportation system will be better balanced among transportation modes, offering Commonwealth citizens and visitors alike a network of roads, shared use paths, and transit facilities that are always designed, constructed, and maintained with bicycle use in mind." One of the key strategies aimed at enhancing our existing infrastructure is the development of a statewide bicycle network proposed here as the "Bay State Greenway" (BSG), a primary network supported by secondary routes throughout the Commonwealth.

4.1 *Why a Statewide Bicycle Network?*

As also mentioned in Chapter 1, the Commonwealth's role for bicycling is to plan and program projects, enact laws, and to offer programs that support a variety of bicycle-related policies such as education, safety, land development, and physical fitness, among others. A statewide bicycle network is one such program that addresses a number of characteristics and needs:

4.1.1 Massachusetts is Bicycle Friendly

As described in Chapter 3, Massachusetts currently features more than 5,000 mi of existing roads and paths that are recommended for bicycle riding on the series of commercially available bicycle maps published by consultant team member Rubel Bike Maps, consisting of 4,700 mi of roadways and 420 mi of shared use paths. Approximately 100 mi of shared use path projects are currently funded for design and/or construction. Thousands of miles of additional roads are open to bicycle use but generally carry more traffic or provide limited connectivity and are thus considered secondary options for bicycle travel. In other words, the resources available for bicycling in Massachusetts are vast and can be tapped to create an essential element of the state's sustainable transportation system with benefits to transportation, public health, economic development, environmental quality, and tourism and recreation.

4.1.2 More Bicycle Routes Are Needed

As described in Chapter 3, there is only one signed long-distance bicycle route in Massachusetts, the Claire Saltonstall Bikeway, which was created nearly 30 years ago. The PanMass Challenge route also has some signs on locally owned roadways. Other routes are mapped, including those by agencies such as DCR and organizations such as the EGCA and ACA, as well as those developed at a municipal level. In addition, the 1995 Massachusetts Bicycle Inventory recommended a number of long distance routes.

4.1.3 Information on Bicycle Resources Is Currently Scattered

A person interested in riding a bicycle in Massachusetts can consult the extensive maps available commercially, the information contained in the Massachusetts Official Transportation Map, and other resources described in Chapter 3. However, at present, there is no comprehensive agency source of bicycle information.

4.1.4 Positive Economic Benefits Are Likely

The experience of the Route Verte[18] in Quebec indicates that a statewide bicycle network, if incorporated into the tourist economy, can yield significant economic benefits resulting from its implementation.

4.1.5 Implementation Can Be Gradual and Variable

Optimally, the BSG would from the outset feature a consistent identity with route signs, pavement markings such as route or turn symbols, and long stretches of shared use paths and on-road links that are preferred bicycling corridors. Starting with a series of maps, an optimal system can be developed over time as resources permit.

4.2 *Determining the Primary BSG Corridors*

The 5,000 mi of bicycle routes and paths that are featured as recommended for bicycling in Massachusetts represent an excellent resource for bicyclists in the Commonwealth. These routes and paths also present a challenge in determining the routing for the BSG as it is preferable to have a relatively simple system of major corridors. Consequently, not all municipalities or sub-regions can be served by the primary BSG network. Those that are not directly served will be served by a secondary network.

The following considerations were made in identifying the proposed BSG Corridors:

- Establish a minimum of three north/south and two east/west routes, per the directive of the General Court[19]
- Capitalize on prior or ongoing investments in bicycle facilities, which in turn will build support for future implementation
- Pursue corridors where proposed shared use path projects are most likely to be implemented, taking into consideration railroad corridors that may become available in the future (see Appendix 11)
- Connect and serve major cities with the greatest concentration of people
- Serve centers of activity where development patterns are more compact, as well as intermodal connection points such as transit stations and ferry terminals
- Recognize existing long-distance bicycle routes
- Connect to facilities in adjacent states

4.3 *BSG Routing Criteria*

The corridor development process guided the identification of key communities and regions in the Commonwealth that the BSG would ideally serve. The following route identification criteria were developed:

- Pursue both on-road routes and shared use pathways

[18] Route Verte is a marked bicycle route that extends for more than 2,400 mi, linking 16 regions and 320 municipalities across the entire province.

[19] Chapter 291 of the Acts of 2004 Section 76

- Incorporate shared use path projects that are most likely to be implemented
- Pursue on-road routes for each corridor to complement existing and proposed shared use facilities (e.g. Mass Central, Border to Boston, Blackstone, Berkshires, Bruce Freeman, etc.)
- Where possible, select routes that take advantage of existing shared use facilities (or facilities either currently advertised for construction or ready for advertising), as well as existing long-distance bicycling routes (such as ACA or ECGA) and other roadways identified as suitable for bicycling by RPAs or on commercially available bicycling maps
- Identify future routing options incorporating proposed shared use projects as they are implemented

The resulting BSG is an achievable route system that features a series of recognizable bicycling routes that can provide benefits to transportation safety, public health, environmental quality, economic development, and tourism and recreation.

4.4 *The Seven BSG Corridors*

The BSG is proposed as a 740 mi network of seven primary corridors. A secondary network will provide connections between the seven corridors and other population centers, intermodal facilities, commercial districts and major activity centers. Additional information on the secondary network is provided in Appendix 7. The seven proposed BSG corridors, which are illustrated in Figure 4-1 along with the secondary network corridors, are:

1. Mass Central (150 mi)[20]
2. Berkshires (65 mi)
3. Connecticut River Valley (East and West) (120 mi)
4. Nashua River-Buzzards Bay (140 mi)
5. Boston-Cape Cod (150 mi)
6. North Shore (55 mi)
7. Merrimack River-Charles River (60 mi)

The seven BSG corridors and the subsequent corridor maps follow a *single* route alignment that represents a combination of on-road and shared use path sections. Public input has resulted in the BSG including a continuous on-road routing where feasible as a *parallel* alignment. The basis for this recommendation is that not all shared use paths are cleared of snow and ice in the winter and that some bicyclists prefer to ride on the road. Note that the parallel on-road routes are not discussed or shown graphically for simplification but would be incorporated into detailed route maps in the future.

Several suggestions were made regarding additional east-west corridors, including a South Coast corridor (see Appendix 12) and a route along the former Huckleberry

[20] BSG corridors will frequently include parallel routes (shared use paths and on-road routing). The mileage information includes the end-to-end corridor distance such that parallel sections are not double counted.

Railroad. As with all routes, the implementation process will provide opportunities over time to further identify adjustments to primary routes and additions to the BSG network.

4.4.1 Shared Use Path Components of the BSG

Each of the seven BSG corridors described below incorporates existing and proposed shared use path elements. Only one alignment is shown per corridor; parallel on-road routes will be identified during the implementation phase. Because the implementation of the BSG will be a multi-year effort and because the implementation of shared use path facilities requires considerable fiscal resources and time, the majority of the near-term BSG described below is on-road, utilizing existing roadways that provide connections to activity centers or have been identified as recommended for bicycling in the Rubel Bike Maps series. This is referred to as the *proposed* BSG. Route alignments may shift to incorporate future shared use path facilities when they are completed. In fact, if all of the funded and proposed shared use path facilities were constructed, approximately 500 mi of the long-term 740 mi BSG would incorporate shared use paths (referred to as the *ultimate* BSG).

BSG corridor descriptions are oriented from west to east and from north to south. When describing the general alignment of a BSG corridor, the term "corridor" is used. When describing a particular routing alignment (either "proposed" or "ultimate") the term "route" is used. Therefore, "Mass Central Corridor" refers to the BSG corridor running the length of the Commonwealth through the center of the state, while "Mass Central Corridor Route" is used to describe specific route alignments.[21] A detailed route alignment discussion is presented in Appendix 6. In the future, the maps will be publicly available online and additional clickable features will be available.

4.4.2 Mass Central Corridor (MCC)—150 mi

Communities Served: Hancock, Pittsfield, Dalton, Hinsdale, Peru, Worthington, Chesterfield, Williamsburg, Northampton, Amherst, Hadley, Belchertown, Palmer*[22], Ware, Hardwick, New Braintree, Barre, Oakham, Rutland, Holden, West Boylston, Sterling, Clinton, Berlin, Hudson, Sudbury, Wayland, Weston, Waltham, Watertown[23], Belmont*, Cambridge, and Somerville* (150 mi)

Intersecting Corridors: Berkshires, Connecticut River Valley (West and East), Nashua River-Buzzards Bay, Boston-Cape Cod, and Merrimack River-Charles River

Description: The MCC, shown in Figure 4-2, will effectively serve as the spine of the BSG system. Beginning at the New York state border (and at the eastern terminus of New York's Bike Route 5), the MCC will cover 150 mi between Hancock and the Cambridge/Boston line, following a course that generally tracks the midpoint between

[21] The routing describes the on-road and shared use path elements but does not include a description of those on-road elements that parallel shared use paths.

[22] * Communities marked with an asterisk would be served in the future as additional shared use paths (as defined in Chapter 3) are constructed

[23] The ultimate BSG routing would bypass Watertown.

Massachusetts' northern and southern borders. This corridor is based upon the routing of the proposed Mass Central Rail Trail.

In addition to forming the central spine of the BSG system, the MCC serves a number of dense population centers and attractions. The MCC links the compact communities of Pittsfield, Dalton, Northampton, Amherst, Ware, Clinton and Hudson and the cities and towns of Greater Boston. The MCC will provide access to the Quabbin and Wachusett Reservoirs. Initially, more than two thirds of the MCC will consist of on-road routes, although the completion of proposed trail segments can potentially result in a nearly continuous shared use path stretching from Northampton to Boston.

Existing and Funded Shared Use Paths Included in Proposed MCC: Mass Central Rail Trail (ID 1-7, 4-2), Northampton Bikeway (ID 2-1), Norwottuck Rail Trail (ID 2-5), Assabet River Rail Trail (ID 4-7), Dr. Paul Dudley White Charles River Bike Path (N Side) (ID 12-1)

Existing, Funded, and Proposed[24] Shared Use Paths Included in Ultimate MCC: Mass Central Rail Trail (ID 1-7,*1-22* 4-2, *4-22, 4-27*), Ware River Valley Rail Trail (ID 1-14), Hardwick Rail Trail (ID *1-15*), Ware River Valley Rail Trail (ID *1-26*), Northampton Bikeway (ID 2-1, 2-8), Norwottuck Rail Trail (ID 2-5), Assabet River Rail Trail (ID 4-7), Wayside Trail (ID *4-27*, *10-12*, *12-30*) Red Line Linear Path and Extensions (ID 12-13), Fitchburg Cutoff (ID *12-29*, 12-22) Somerville Community Path (ID 12-14, 12-23, *12-34*) North Point Path (ID 12-24).

Long-Term Vision: If the proposed paths that comprise the MCC were fully implemented, the route would ultimately feature approximately 105 mi of shared use paths.

4.4.3 Berkshires Corridor (BC)—65 mi

Communities Served: Clarksburg, Williamstown, North Adams, Adams, Cheshire, Lanesborough, Pittsfield, Lenox, Lee, Stockbridge, Great Barrington, Egremont (proposed), and Sheffield

Intersecting Corridor: Mass Central

Description: The BC, shown in Figure 4-3, represents the BSG's westernmost north-south corridor and links the Vermont and Connecticut borders, covering approximately 60 mi and providing connections between many of the major cultural attractions and institutions in mountainous and scenic Berkshire County. The BC serves population centers in Williamstown, North Adams, Adams, Pittsfield, and Great Barrington. Although initially only a fifth of the corridor would comprise shared use paths, once all proposed trail segments are complete, this corridor would have a higher percentage of shared use path mileage than all other BSG corridors.[25]

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[24] IDs for proposed paths (as defined in Chapter 3) are shown in italics

[25] In Berkshire County, as with other BSG corridors, implementation will incorporate the participation of localities, the Berkshire Regional Planning Commission, MassHighway District 1, and others.

Existing and Funded Shared Use Paths Included in Proposed BC: Ashuwillticook Trail (ID 1-1)

Existing, Funded, and Proposed[26] Shared Use Paths Included in Ultimate BC: Ashuwillticook Trail (ID 1-1, *1-16*, *1-17*), Berkshire Bike Path (ID *1-18*)

Long-Term Vision: If the proposed paths that comprise the BC were fully implemented, the route would ultimately feature approximately 62 mi of shared use paths.

4.4.4 Connecticut River Valley Corridor (CRVC) (East and West)—120 mi

Communities Served: Northfield, Bernardston, Greenfield, Deerfield, Hatfield, Whately, Northampton, Easthampton, Southampton, Westfield, and Southwick; Northfield, Erving, Montague, Sunderland, Leverett, Amherst, Granby, South Hadley, Holyoke, Chicopee, Springfield, and Agawam (120 mi)

Intersecting Corridor: Mass Central

Description: The BSG's CRVC, shown in Figure 4-4, is two separate corridors for much of its length, one on either side of the Connecticut River. The rationale for the split facility is both the presence of established facilities on both sides of the river and high levels of bicycle use in communities on both sides of the river. In other words, implementation of these parallel corridors is expected to be relatively straightforward. Should resources not be available to pursue both, one of the two corridors could be designated a secondary network route.

The CRVC West runs from the Vermont border in Northfield south to the Connecticut border in Southwick. The corridor connects population centers in Greenfield, Northampton, Easthampton, Westfield, and Southwick as well as the rich farmland of the Connecticut River Valley. The corridor intersects with the MCC in Northampton, where Smith College is situated.

The CRVC East begins at the New Hampshire border on the east side of the river and also runs south to the Connecticut border. This corridor serves population centers in Amherst and the dense cities and towns comprising the Greater Springfield area (South Hadley, Holyoke, Chicopee, Springfield, and Agawam). This corridor passes through the campuses of the University of Massachusetts and Amherst, Hampshire, and Mount Holyoke Colleges and provides access to tourist attractions such as the Basketball Hall of Fame and downtown Springfield. It also intersects with the MCC in Amherst.

Existing and Funded Shared Use Paths Included in Proposed CRVC: Franklin County Bikeway (ID 1-3), Southwick Rail Trail (ID 1-11), Columbia Greenway (ID 1-12), Northampton Bikeway (ID 2-1), William Nagle Sr. Walkway (ID 2-4), Manhan Rail Trail (ID 2-3, 2-9, 2-10), Downtown Connector (ID 2-11), Connecticut Riverwalk (ID 3-1, 3-2)

[26] IDs for proposed paths (as defined in Chapter 3) are shown in italics

Existing, Funded, and Proposed[27] Shared Use Paths Included in Ultimate CRVC: Franklin County Bikeway (ID 1-3), Southwick Rail Trail (ID 1-11), Columbia Greenway (ID 1-12, *1-27*), New Haven and Northampton Corridor (ID *1-21*), Northampton Bikeway (ID 2-1), Manhan Rail Trail (ID 2-3, 2-9, 2-10), William Nagle Sr. Walkway (ID 2-4), Downtown Connector (ID 2-11), Holyoke Range Trail (ID *2-14*) Connecticut Riverwalk (ID 3-1, 3-2, *3-7)*), Holyoke Canalwalk (ID 3-3), Chicopee-Holyoke Connection (ID *3-9*)

Long-Term Vision: If the proposed paths that comprise the CRVC were fully implemented, the route would feature approximately 49 mi of shared use paths.

4.4.5 Nashua River—Buzzards Bay Corridor (NRBBC)—140 mi[28]

Communities Served: Dunstable, Pepperell, Groton, Ayer, Harvard, Bolton, Lancaster, Sterling, West Boylston, Worcester, Millbury, Sutton, Grafton*[29], Northbridge, Uxbridge, Millville, Blackstone, Swansea, Somerset, Fall River, Westport, Dartmouth, New Bedford, Fairhaven, Mattapoisett, Rochester, Marion, Wareham, and Bourne.

Intersecting Corridors: Mass Central and Boston-Cape Cod

Description: The NRBBC, shown in Figures 4-5 and 4-6, is the only corridor to propose incorporating an adjacent state's facilities. In defining the corridor, the goal of a second east-west connection (to complement the MCC) was met by linking the population centers on the eastern side of Narragansett Bay (on both sides of the Rhode Island/Massachusetts border) with Cape Cod. The corridor is proposed to be extended into and across Rhode Island to take advantage of the existing network of bicycle facilities in the Providence area and to tie it into the cross-state investments being made in the Blackstone Valley corridor.

The NRBCC travels from the New Hampshire border at Dunstable to the Bourne Bridge in Bourne. This route serves Worcester and key activity centers along the South Coast (Fall River, New Bedford, Wareham and the village of Buzzards Bay in Bourne), population centers in Rhode Island such as Woonsocket, Providence, and the communities along the eastern shore of Narragansett Bay.

Existing and Funded Shared Use Paths Included in Proposed NRBCC: Wachusett Greenway (ID 4-4), Blackstone River Bikeway (ID 4-5), Nashua River Rail Trail (ID 4-6), Phoenix Bikeway (ID 9-4), Fall River Regional Bikeway (ID 9-8), Mattapoisett Path (ID 9-9)

Existing, Funded, and Proposed[30] Shared Use Paths Included in Ultimate NRBCC: Wachusett Greenway (ID 4-4), Mass Central Rail Trail (ID *4-22*), Blackstone River Bikeway (ID 4-5, 4-12, 4-13, *4-24, 4-31*), Nashua River Rail Trail (ID 4-6), Phoenix

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[27] IDs for proposed paths (as defined in Chapter 3) are shown in italics

[28] Exclusive of mileage in Rhode Island

[29] * Communities marked with an asterisk would be served in the future as additional shared use paths (as defined in Chapter 3) are constructed

[30] IDs for proposed paths (as defined in Chapter 3) are shown in italics

Bikeway (ID 9-4), Fall River Regional Bikeway (ID 9-8, *9-12*), Mattapoisett Path (ID 9-9, *9-14*), Fall River to New Bedford Path (ID *9-13*), Marion-Wareham Rail Trail (ID *9-15*)

Long-Term Vision: If the proposed paths that comprise the NRBCC were fully implemented, the route would ultimately feature approximately 77 mi of shared use paths and 63 mi of on-road routes.

4.4.6 Boston-Cape Cod Corridor (BCC)—150 mi

Communities Served: Boston, Milton, Canton, Randolph, Avon, Holbrook, Abington, Brockton, East Bridgewater, Halifax, Plympton, Kingston, Plymouth, Bourne, Falmouth, Sandwich, Barnstable, Harwich, Yarmouth, Dennis, Brewster, Orleans, Eastham, Wellfleet, Truro, and Provincetown (150 mi)

Intersecting Corridors: Mass Central, Nashua River-Buzzards Bay, Merrimack River-Charles River

Description: The BCCC, shown in Figure 4-7, largely follows the Claire Saltonstall Bikeway, which was designated in 1978 and connects Boston to Provincetown and Falmouth via a signed, 135 mi route combining both on-road and shared use path facilities. Along this route, the Saltonstall Bikeway provides connections to Brockton, Plymouth, and the recreational and natural attractions on Cape Cod. In Boston, the route intersects with the BSG's MRCRC. It also connects with the NRBBC at the Cape Cod Canal.

Existing and Funded Shared Use Paths Included in Proposed BCC: Shining Sea Bikeway (ID 5-1, 5-20), Cape Cod Canal Service Roads (ID 6-1), Cape Cod Rail Trail (ID 6-8), Harborwalk (ID 11-8), Neponset River Greenway (ID 11-9)

Existing, Funded, and Proposed[31] Shared Use Paths Included in Ultimate BCC: Shining Sea Bikeway (ID 5-1, 5-24, *6-18*), Cape Cod Canal Service Roads (ID 6-1), Cape Cod Rail Trail (ID 6-8, *6-15*), Harborwalk (ID 11-8, *11-11, 11-16*), Neponset River Greenway (ID 11-9, *11-14*)

Long-Term Vision: If the proposed paths that comprise the BCCC were fully implemented, the route would ultimately feature approximately 78 mi of shared use paths and 72 mi of on-road routes.

4.4.7 North Shore Corridor (NSC)—(55 mi)

Communities Served: Salisbury, Newburyport, West Newbury, Newbury, Georgetown, Boxford, Topsfield, Wenham (interim), Beverly (interim), Danvers*[32], Peabody*, Salem, Marblehead, Swampscott, Lynn, Saugus, Melrose (interim), Stoneham (interim), Winchester (interim), Arlington (interim), Revere*, Malden*, Everett*, and Boston*

Intersecting Corridor: Merrimack River-Charles River

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[31] IDs for proposed paths (as defined in Chapter 3) are shown in italics

[32] * Communities marked with an asterisk would be served in the future as additional shared use paths (as defined in Chapter 3) are constructed

Description: The NSC, shown in Figure 4-8, runs from Salisbury (at the New Hampshire border) to Boston, where it provides connections to other BSG routes. The NSC serves Newburyport and the densely populated lower North Shore communities of Beverly, Salem, Marblehead, Swampscott, and Lynn. The proposed NSC follows a routing that initially connects with the Minuteman Commuter Bikeway in Arlington. Ultimately, as the Border to Boston and Northern Strand Community Trail (Bike to the Sea) proposals are implemented, the routing would connect more directly to Boston. As shown in the figure, the ultimate routing will be determined upon implementation.

Existing and Funded Shared Use Paths Included in Proposed NSC: Clipper City Rail Trail, Phase I (ID *7-14*)

Existing, Funded, and Proposed[33] Shared Use Paths Included in Ultimate NSC:

Salisbury Rail Trail (ID *7-13, 7-16*), Clipper City Rail Trail, Phase I (ID *7-13*), Border to Boston (ID *7-23*), Northern Strand Community Trail (ID *12-36, 12-42*)

Long-Term Vision: If the proposed paths that comprise the NSC were fully implemented, the route would ultimately feature approximately 43 mi of shared use paths and 12 mi of on-road routes.

4.4.8 Merrimack River—Charles River Corridor (MRCRC)—60 mi

Communities Served: Salisbury, Amesbury, Merrimac, Haverhill, Methuen, Lawrence, Dracut, Lowell, Chelmsford, Westford, Carlisle (interim), Concord, Bedford*[34], Lexington, Arlington and Cambridge

Intersecting Corridors: Mass Central, North Shore, and Boston-Cape Cod

Description: The concept of the MRCRC, shown in Figure 4-9, is to connect several rivers in urbanized areas including the Merrimack, Concord, Charles, and Muddy. The corridor serves the heavily populated and culturally rich Merrimack River Valley region before connecting into the Minuteman Commuter Bikeway (via the Bruce Freeman Trail) for the journey into Boston. The MRCRC connects population centers in Haverhill, Lawrence, Lowell and Greater Boston with the historically significant sites located in the Battle Road communities of Lexington and Concord. The MRCRC connects to the BSG's North Shore Corridor in Salisbury and again with that route's interim alignment in Arlington. That route continues on to the Charles River where it joins the BSG's MCC.

Existing and Funded Shared Use Paths Included in Proposed MRCRC: Salisbury Point Ghost Trail (ID 7-8), Bruce Freeman Trail (ID 7-10), Battle Road Trail (ID 10-2), Minuteman Connector (ID 10-15), Emerald Necklace Trails (ID 11-4), South Bay Harbor Trail (ID 11-7), Minuteman Commuter Bikeway (ID 12-2)

Existing, Funded, and Proposed[35] Shared Use Paths Included in Ultimate MRCRC: Salisbury Point Ghost Trail (ID 7-8),Salisbury Rail Trail (ID *7-12, 7-16*), Bruce Freeman

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[33] IDs for proposed paths (as defined in Chapter 3) are shown in italics

[34] * Communities marked with an asterisk would be served in the future as additional shared use paths (as defined in Chapter 3) are constructed

Trail (ID 7-10, *7-18*), Amesbury Rail Trail (ID *7-27*), Concord River Greenway (ID *7-29*), Reformatory Branch Trail (ID *10-3, 10-10*), Emerald Necklace Trails (ID 11-4) , South Bay Harbor Trail (ID 11-7, *11-11*), Harborwalk (ID *11-8*), Minuteman Commuter Bikeway (ID 12-2)

Long-Term Vision: If the proposed paths that comprise the MRCRC were fully implemented, the route would ultimately feature approximately 36 mi of shared use paths and 24 mi of on-road routes.

4.5 *BSG Summary*

It is important to note that the BSG network, while the central focus of the *Plan*, does not represent the entirety of bicycle projects or programs in the Commonwealth. There are many projects and programs, both state and local, that are in the planning and development stages. Project proponents will need to work closely with their MPOs and RPAs to advance such projects.

Table 4.1 describes the shared use paths that are included in the *proposed* BSG. As shown, the *proposed* BSG consists of approximately 195 mi of shared use paths, of which 169 mi exist today and 26 mi have been advertised for construction. Approximately 545 mi of the *proposed* BSG is via existing roadways.

Table 4.2 describes the shared use paths that are included the *ultimate* BSG. This includes facilities that exist today, are projects with some funding, or are proposals for future implementation. As shown, the *ultimate* BSG consists of approximately 476 mi of shared use paths, of which 174 mi either exist today or have been advertised for construction and 302 mi are proposed shared use paths. Since the *ultimate* BSG routing varies from the *proposed* BSG routing, some of the existing shared use path resources used are also different. The *ultimate* BSG would also feature approximately 265 mi via existing roadways.

Table 4.1
***Proposed* Bay State Greenway Shared Use Path Components**

Corridor Name		Mileage		
ID No	**Shared Use Path Name**	**Existing**	**Future***	**Total**
Berkshire Corridor				
1-1	Ashuwillticook Trail	10.9		
Total miles		**10.9**		**10.9**
Mass Central Corridor				
1-7	Mass Central Rail Trail	1.2		
2-1	Northampton Bikeway	3.3		
2-5	Norwottuck Rail Trail	10.0		
4-2	Mass Central Rail Trail	11.7		
4-7	Assabet River Rail Trail	5.1		
12-1	Paul Dudley White Charles River Bike Path (N Side)	20.9		

[35] IDs for proposed paths (as defined in Chapter 3) are shown in italics

Total miles		**52.2**		**52.2**
Merrimack River—Charles River Corridor				
12-2	Minuteman Bikeway	11.5		
11-4	Emerald Necklace Trails (Brookline Ave. to Ave. Louis Prang)	2.0		
11-7	South Bay Harbor Trail	0.7		
10-2	Battle Road Trail	6.5		
7-10	Bruce Freeman Trail		7.9	
7-8	Salisbury Point Ghost Trail	1.3		
Total miles		**22.0**	**7.9**	**29.9**

* Only projects currently advertised for construction are included in this category

See Figure 3-4 for ID labels

Table 4.1 (continued)
Proposed Bay State Greenway Shared Use Path Components

Corridor Name		Mileage		
ID No	**Shared Use Path Name**	**Existing**	**Future***	**Total**
Connecticut River Valley Corridor				
1-3	Greenfield Paths	1.7		
2-1	Northampton Bikeway	3.3		
2-4	William Nagle Sr. Walkway	0.5		
3-1	Connecticut Riverwalk	3.7		
3-2	Connecticut Riverwalk	2.3		
2-3	Manhan Rail Trail	4.4		
2-10	Manhan Rail Trail Northern Extension		3.4	
2-11	Downtown Connector		1.5	
1-11	Southwick Rail Trail		6.2	
Total miles		**15.9**	**11.1**	**27.0**
North Shore Corridor				
7-14	Clipper City Rail Trail		0.8	
Total miles		**0.0**	**0.8**	**0.8**
Boston—Cape Cod Corridor				
11-8	Harborwalk	7.3		
11-9	Neponset River Greenway	2.2		
6-8	Cape Cod Rail Trail	21.8		
5-1	Shining Sea Bikeway	4.6		
5-24	Shining Sea Bikeway		5.2	
6-1	Cape Cod Canal Service Roads	13.5		
Total miles		**49.4**	**5.2**	**54.6**
Nashua River—Buzzards Bay Corridor				
9-4	Phoenix Bikeway	3.3		
9-8	Fall River Regional Bikeway		0.8	
9-9	Mattapoisett Path		0.6	
4-5	Blackstone River Bikeway	2.2		
4-4	Wachusett Greenway	1.8		
4-6	Nashua River Rail Trail	11.3		
Total miles		**18.6**	**1.4**	**20.0**
BSG System (Proposed) Total		**169.0**	**25.6**	**194.6**

* Only projects currently advertised for construction are included in this category

Table 4.2
Ultimate Bay State Greenway Shared Use Path Components

Corridor Name		Mileage		
ID No	Shared Use Path Name	Proposed BSG	Ultimate BSG	Total
Berkshire Corridor				
1-1	Ashuwillticook Trail	10.9		10.9
1-16	Ashuwillticook Northern Extension		10.7	10.7
1-17	Ashuwillticook Pittsfield Extension		1.7	1.7
1-18	Berkshire Bike Path		39.4	39.4
Total miles				**62.7**
Mass Central Corridor				
1-7	Mass Central Rail Trail	1.2		1.2
2-1	Northampton Bikeway	3.3		3.3
2-5	Norwottuck Rail Trail	10.0		10.0
4-2	Mass Central Rail Trail	11.7		11.7
4-7	Mass Central Rail Trail	5.1		5.1
12-13	Red Line Linear Path and Extensions	1.2		1.2
12-14	Somerville Community Path	0.5		0.5
1-14	Ware River Valley Rail Trail*		1.4	1.4
2-8	Northampton Bikeway Extension*		1.9	1.9
12-23	Somerville Community Path*		0.5	0.5
12-24	North Point Park**		0.6	0.6
1-15	Hardwick Rail Trail		3.7	3.7
1-22	Mass Central Rail Trail		25.2	25.2
1-26	Ware River Valley Rail Trail		0.9	0.9
4-9	Mass Central Rail Trail		1.3	1.3
4-22	Mass Central Rail Trail		2.0	2.0
4-27	Mass Central Rail Trail		24.8	24.8
10-12	Wayside Trail		9.6	9.6
12-29	Fitchburg Cutoff		3.9	3.9
12-30	Wayside Trail		1.3	1.3
12-34	Somerville Community Path		1.5	1.5
Total miles				**104.9**

* Project with some funding programmed in TIP

** Privately funded project

Table 4.2 (Continued)
Ultimate Bay State Greenway Shared Use Path Components

Corridor Name		Mileage		
ID No	Shared Use Path Name	Proposed BSG	Ultimate BSG	Total
Merrimack River—Charles River Corridor				
11-7	South Bay Harbor Trail*	0.7		0.7
7-8	Salisbury Point Ghost Trail	1.3		1.3
11-4	Emerald Necklace Trails	2.0		2.0
11-8	Harborwalk	7.3		7.3
7-10	Bruce Freeman Trail*	7.9		7.9
12-2	Minuteman Bikeway	11.5		11.5
10-3	Reformatory Branch Trail		4.2	4.2
10-10	Reformatory Branch Extension		2.8	2.8
11-11	South Bay Harbor Trail		1.0	1.0
7-18	Bruce Freeman Trail		4.8	4.8
7-27	Amesbury Rail Trail		0.6	0.6
7-29	Concord River Greenway		1.5	1.5
Total miles				**45.6**
Connecticut River Valley Corridor				
2-4	William Nagle Sr. Walkway	0.5		0.5
1-3	Greenfield Paths	1.7		1.7
3-2	Connecticut Riverwalk	2.3		2.3
2-1	Northampton Bikeway	3.3		3.3
2-10	Manhan Rail Trail Northern Extension*	3.4		3.4
2-11	Downtown Connector*	1.5		1.5
3-1	Connecticut Riverwalk	3.7		3.7
2-3	Manhan Rail Trail	4.4		4.4
1-11	Southwick Rail Trail*	6.2		6.2
2-14	Holyoke Range Rail Trail		2.1	2.1
3-3	Holyoke Canalwalk*		1.2	1.2
3-9	Chicopee-Holyoke Connection		1.2	1.2
3-7	Connecticut Riverwalk and Bikeway		4.6	4.6
2-9	Manhan Rail Trail Southern Extension*		0.7	0.7
1-21	New Haven and Northampton Corridor		9.3	9.3
1-12	Columbia Greenway*		3.0	3.0
1-27	Columbia Greenway (Westfield River crossing)		0.2	0.2
Total miles				**49.3**

* Project with some funding programmed in TIP

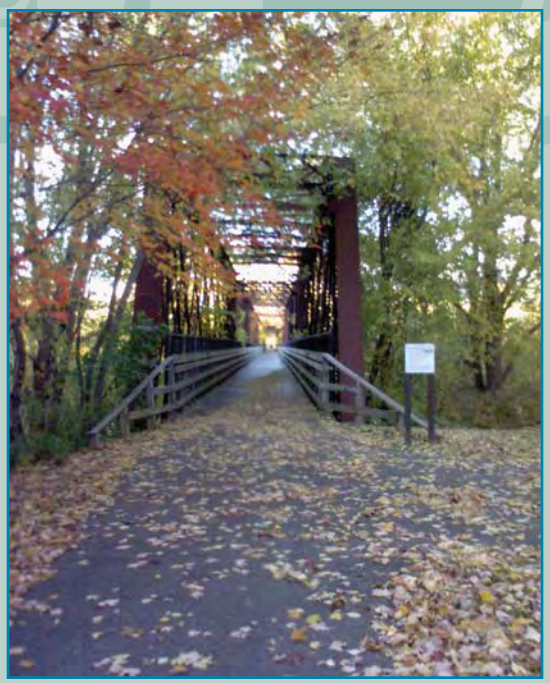
Table 4.2 (continued)
Ultimate Bay State Greenway Shared Use Path Components

Corridor Name		Mileage		
ID No	Shared Use Path Name	Proposed BSG	Ultimate BSG	Total
North Shore Corridor				
7-14	Clipper City Rail Trail Phase 1	1.3		1.3
7-16	Salisbury Rail Trail*		2.2	2.2
7-13	Salisbury Rail Trail		1.4	1.4
7-23	Border to Boston		13.6	13.6
12-36	Northern Strand Community Trail		11.3	11.3
12-42	Northern Strand Community Trail		1.2	1.2
Total miles				**31.0**
Boston—Cape Cod Corridor				
11-8	Harborwalk	7.3		7.3
11-9	Neponset River Greenway	2.2		2.2
5-1	Shining Sea Bikeway	4.6		4.6
6-8	Cape Cod Rail Trail	21.8		21.8
6-1	Cape Cod Canal Service Roads	13.5		13.5
11-11	South Bay Harbor Trail		1.0	1.0
11-16	Harborwalk		1.5	1.5
11-14	Neponset River Greenway		4.6	4.6
5-24	Shining Sea Bikeway*		5.2	5.2
6-15	Cape Cod Rail Trail Extension*		5.7	5.7
6-16	Barnstable/Yarmouth Bikeway		11.6	11.6
6-18	Shining Sea Bikeway		7.3	7.3
6-19	Cape Cod Rail Trail Extension		2.0	2.0
Total miles				**88.3**
Nashua River—Buzzards Bay Corridor				
9-4	Phoenix Bikeway	3.3		3.3
4-5	Blackstone River Bikeway*	2.2		2.2
4-4	Mass Central Rail Trail Sterling Spur	1.8		1.8
4-6	Nashua River Rail Trail	11.3		11.3
9-8	Fall River Regional Bikeway*	0.8		0.8
9-9	Mattapoisett Path*	0.6		0.6
9-15	Marion-Wareham Rail Trail		16.1	16.1
9-14	Mattapoisett Path		3.5	3.5
9-12	Fall River Regional Bikeway		1.4	1.4
9-13	Fall River to New Bedford Path		9.7	9.7
4-12	Blackstone River Bikeway*		3.8	3.8
4-13	Blackstone River Bikeway		16.7	16.7
4-31	Blackstone River Bikeway		2.4	2.4
4-22	Mass Central Rail Trail		2.0	2.0
4-24	Blackstone River Bikeway		1.5	1.5
Total miles				**77.1**
BSG System Total		**174.2**	**301.9**	**477.1**

* Project with some funding programmed in TIP

5 BSG IMPLEMENTATION AND FUNDING

Hub on Wheels Bicycle Ride (Boston)



Norwottuck Rail Trail (Northampton)

Hub on Wheels Bicycle Ride (Boston)

5 BSG Implementation and Funding

5.1 *Interim Strategy*

The BSG has been designed to incorporate as many existing shared-use facilities as practical and to identify suitable on-road routes where such facilities do not currently exist. This strategy will result in a system that can be introduced in the short-term at relatively low expense. In the early years, most of the costs associated with implementation include the development and roll out of a variety of information resources (website, signs, mapping, etc.) and promotional events in support of the BSG.

The appeal of the proposed BSG is that implementation can begin immediately with very little initial investment. Over the long-term, the ultimate BSG, in combination with other bicycle facility investments and programs, will require additional resources. This chapter outlines a proposed approach to early implementation of the BSG and includes analysis and discussion of the costs associated with the BSG and other bicycle facility projects and programs.

Realizing the full vision of the 740 mi BSG will require dedication, support, and commitment, as well as capital and operational investments in facilities and programs over many years. State, regional, and local agencies, advocacy organizations, private interests, and citizens will need to collaborate over what is anticipated to be a 25-year time frame to achieve the ultimate goal—a continuous system of shared use paths and high-quality on-road connections.

Partnerships between state government and municipalities will be critical to the success of the BSG. Federal funding, through the Transportation Enhancements program and others, will represent a significant share of project funding. However, the state appropriations process and municipal contributions through in-kind matches and the use of local funds such as those from the Community Preservation Act will be necessary in order to fully fund the BSG. In many cases, it will be the cultivation of new relationships—with universities or private sector developers—that proves to be a key to success.

5.2 *Branding*

Part of the initial effort in implementing the BSG will be the creation of a recognizable identity for the system. The identity should be simple, reference both Massachusetts and bicycling, and be well suited for placements on signs, maps, brochures and other materials in support of the BSG. In addition, the Commonwealth should protect the integrity of the BSG identity and name. This effort should also include a careful assessment of the proposed BSG name using focus groups and other marketing strategies. MOTT should be involved given their expertise in marketing the Commonwealth as a desirable travel and tourism destination.

5.3 *EOT/MassHighway Duties*

This *Plan* envisions the implementation will be achieved through the Office of Transportation Programs within EOT, supported by staff within MassHighway. Current MassHighway District Bicycle-Pedestrian contacts could potentially serve this role. These individuals will have a variety of responsibilities, including coordination with those having jurisdiction over the proposed facilities and roads that have been identified as BSG routes. The BSG staff will work closely with other agencies and interest groups. In some regards, the role of the proposed BSG staff is similar to the role of the current MassHighway Project Managers for the Blackstone Bikeway and Border to Boston Trail, but on a different scale and with different responsibilities. The following describes the various responsibilities of the proposed BSG staff.

5.3.1 On-Road Routing Coordination

Although much consideration was given in the selection of the BSG's on-road routing, local preference and knowledge will undoubtedly result in alignments for portions of the BSG, particularly those using locally owned and maintained roads. State and local officials will need to be consulted to confirm the routing suggestions, obtain permission for the installation of BSG route signs, and mark roads with directional information or bicycle lanes, if applicable. Such coordination will remain an ongoing function of the proposed BSG staff. There are certain areas where routes may overlap. The signs can be designed to offer clear wayfinding and route designation information in these instances. The same approach to on-road routing coordination is applicable to those shared use path resources that are completed in the future, thus requiring route modifications. With a parallel on-road system, supplementary signs will be needed as well as coordination with localities, RPAs, and MassHighway to modify routes as changes are made.

5.3.2 Development and Management of the BSG Website

Even as final routing decisions and other details of the BSG are resolved, information on the system can begin to flow to the public via an official BSG website. The website will initially serve as a portal for information on the network— long-term vision and current routes, schedule, and progress. Over time, the website can evolve into a comprehensive tool for use by bicyclists of all skill levels to identify commuting routes and plan longer rides. Much like the website for Québec's Route Verte, the BSG site could provide tourist information and links to major destinations as well as to lodging, dining, and other attractions along the BSG route system. The site could be developed internally or with outside resources, to be determined. The BSG staff will be responsible for contributing to its content over time.

5.3.3 Mapping

The maps presented in Chapter 4 depict the general corridors and routing of the proposed and ultimate alignments of the BSG's seven primary corridors. As these proposed routes are refined through the coordination process described above, final route maps need to be developed. Maps for public use should feature existing routing that is graphically clear and attractive to the public.

The BSG staff should work with agency staff from the Central Transportation Planning Staff (CTPS) (producers of the Massachusetts Transportation Map) as well as MOTT and DCR. In addition, the secondary BSG system that is described in Appendix 7 should also be mapped in detail.

5.3.4 Management of the Bicycle Project Database

Considerable *Plan* resources were allocated to producing a comprehensive database of existing, funded, and proposed bicycle facilities, (see Chapter 3). It is important, not only for the future management of the BSG specifically, but also for bicycle planning in the Commonwealth generally, that EOT maintain this database and make necessary changes as they occur. Since the comprehensive inventory is a product of this *Plan*, it is expected that that the BSG staff, in conjunction with and assistance from the EOT's Office for Transportation Planning (OTP), will be responsible for keeping the database current. This will require frequent consultation with OTP as well as others involved in the various facility projects, including designated MassHighway Project Managers, local and regional planners, and private organizations. The goal of this effort is to maintain consistency among information in PROJIS, the bicycle facility inventory, state and MPO TIPs, and current conditions.

5.3.5 Signs and Pavement Markings

The most complicated aspect of initiating the new BSG will be the final preparation of facilities designated as components of the network. Along the entire 740 mi network, route identification signs should be placed at frequent intervals in accordance with prevailing guidance from AASHTO and the requirements in the Manual on Uniform Traffic Control Devices (MUTCD). Sign placement will represent the most costly component of BSG startup costs (see Table 5-1) and will require ongoing coordination among the BSG staff and other MassHighway personnel, as well as local officials. While it is unlikely that signs will be placed uniformly across the Commonwealth, at least initially, efforts should be made to make signs frequent and visible enough to serve as an effective accompaniment to published BSG maps.

In addition to BSG signs, or in some cases in lieu of them, an effort should also be made to include bicycle lane markings or striping on all on-road sections of the BSG. As with sign placement, coordination with MassHighway and local officials will be critical.

In those cases where the shared use path sections of the proposed BSG require improvement, efforts should be made to address such conditions. Where immediate improvements are not feasible, the BSG staff should identify interim on-road routing.

5.3.6 Promotional Events and Building Support

Once sufficient progress has been made on the foregoing action items, the BSG staff should propose a series of high-profile promotional events to elevate the visibility of the BSG. These events should be coordinated with Mass*RIDES*, MOTT, DCR and other state agencies, each of the state's 13 RPAs, other appropriate transportation and recreational organizations, and other bicycling interests.

This *Plan* envisions a significant role in certain sections of the BSG for "friends" groups, or organizations that assume certain responsibilities for regional segments of the BSG and contribute to its upkeep and promotion. Every effort should be made by the BSG staff to encourage their formation and cultivate positive relationships. (See Section 5.4.)

5.3.7 Startup Cost Estimate

Early implementation costs for the BSG are estimated at approximately $250,000, primarily for the installation of signs and signposts. This cost could be deferred until funding sources are identified. A potential funding source may be the Transportation Enhancements Program, given the statewide significance of the BSG.

5.4 *BSG Funding Strategy*

5.4.1 Funding Requirements for Shared Use Path Systems

As mentioned previously, there are bicycle projects that are not part of the proposed BSG. Some of these are on the secondary network, while others are "freestanding" projects. As shown in Table 5-2, there are nine advertised projects, of which eight are non-BSG projects. PROJIS-based construction costs for these projects are estimated at $90.4M. It is further assumed that these cost estimates are current. Should costs increase, the implementation analysis for the *Plan* will need to be revised.

Table 5-1
Summary of Advertised and Funded Projects

	Number	Mi	Costs $M
Proposed BSG – Advertised Projects	8	24.2	$20.0
Non BSG – Advertised Projects	1	6.6	$3.5
Subtotal – Advertised Projects	9	30.8	$23.5
Ultimate BSG – Funded Projects	12	42.0	$73.0
Non BSG – Funded Projects	8	20.4	$17.4
Subtotal – Funded Projects	20	62.4	$90.4
Total	**28**	**93.9**	**$113.9**

5.4.2 Resource Allocation to the BSG

The majority of currently proposed shared use paths in the Commonwealth are included as part of either the primary or secondary BSG network. A decision to construct the BSG should not result in the abandonment of future investments in off-network improvements.

As shown in Table 5-2, most of the projects that are currently funded are either on the BSG or on the secondary network. Excluding projects currently advertised for construction and those funded by other agencies or private parties, there are 21 shared use path systems with some level of funding commitment. The funding is identified either in regional TIPs or as having transportation earmark funding in SAFETEA-LU. Of these, 13 path systems are located along primary BSG corridors, four are located along secondary network corridors, and four are located outside the BSG primary and secondary network. Except for the Nantucket paths, the off-network systems each have received funding from SAFETEA-LU earmarks. These projects should continue to be developed according to MassHighway's project development process.

Table 5-2
Relationship of Funded Path Systems to
Primary BSG and Secondary Network

Funded* Shared Use Paths/Path Systems within Primary BSG Network (13)
Assabet River Rail Trail, Blackstone River Bikeway, Cape Cod Rail Trail Extension, Border to Boston, Columbia Greenway, Fall River Regional Bikeway, Holyoke Canalwalk, Manhan Rail Trail Extensions, Northampton Bikeway Extension, Red Line Linear Path and Extensions, Somerville Community Path, South Bay Harbor Trail, Ware River Valley Rail Trail
Funded Shared Use Paths/Path Systems within Secondary BSG Network (4)
North Central Pathway, Tri Community Bikeway, Twin City Rail Trail, Upper Charles Trail
Other Funded Shared Use Paths/Path Systems (4)

Nantucket Paths, Redstone Bikeway, Squannacook River Trail, Quinebaug River Rail Trail

* Partially or fully funded projects

5.4.3 Long-Term BSG Implementation Cost Estimates

Because the ultimate BSG as envisioned will likely take 25 years to build, decisions will be required as to which shared use paths are constructed over two periods—the next 10 years (mid-term), and the subsequent 15 years (long-term).

To determine the costs of pursuing the BSG, the following assumptions have been made:

- Years 1-10 would be dedicated to completing the 28 projects that are either advertised or funded (see Table 5-1 and Appendix 10)
- Years 11-25 would be dedicated to the 32 proposed BSG facilities (see Appendix 10)
- The assumed base year cost for path construction is $1M/mile with an annual escalation of five percent
- Annual funding for pre-construction activities (planning, design, and permitting) is assumed at $0.45M with an annual escalation of 2.5 percent

The analysis presented in Table 5-3 shows that spending on design and construction of bicycle facilities would need to more than double, from a projected $312 million if the status quo is maintained for 25 years to the $688 million necessary to implement the 32 proposed BSG facilities in that time. Further details on the cost estimates are presented in Appendix 10.

Table 5-3
25-Year Implementation Cost Comparisons

	Costs ($M)		
	Current Levels	**BSG Plan**	**Difference**
Years 1-10			
Pre-Construction Investments[1]	4.52	4.52	--
Construction Costs (from Table 5-2)	90.4	90.4	--
Years 11-25			
Pre-Construction Investments[2]	6.45	6.45	--
Construction Costs[3]	211.1	586.4	375.4
Total Costs	**312.4**	**687.8**	**375.4**

1. Estimated at 5% of construction costs
2. Escalation = 2.5% per year
3. Escalation = 5% per year

See Appendix 10 for details on cost estimates.

While this plan is ambitious, the funds required represent a small proportion of the proposed spending level for the Commonwealth's statewide road and bridge program.

Using historical MassHighway spending levels to project forward, it is expected that approximately $1 billion per year will be spent over next 20 years. Implementation of the proposed BSG would entail spending approximately an additional $15M each year for BSG projects, which is less than 2% of anticipated capital spending.

5.5 *Bicycle Facilities Resource Allocation Strategy*

The BSG will serve as a clear demonstration of Massachusetts' commitment to bicycle transportation and as a primary network of bicycle facilities across the Commonwealth. Obtaining funding to implement the BSG will require additional work beyond this *Plan.* To realize the vision of the BSG, the following approach should be used to allocate future bicycle facility resources. Goals must be set for resource allocation between BSG and off-network facilities that is fair and reasonable.

5.5.1 Prioritization between BSG and Non-BSG Projects

The *Plan* recommends that the priority for implementing new shared use path facilities should be to first emphasize funded BSG projects and funded off-network projects. In general, proposed BSG projects should be given priority over proposed off-network projects except in circumstances where certain off-network projects are expected to meet other important transportation policy objectives.

This prioritization is not meant to imply, for example, that all proposed BSG projects be implemented before beginning to implement off-network projects. However, this *Plan* recommends that EOT, in its role in the MPO programming process, encourage that funds available for bicycle projects be allotted in a way that reflects these priorities. For example, in the early years of the program it may be appropriate to set a goal that 75 percent of programmed funds be directed to partially funded BSG projects with the remaining 25 percent targeted to partially funded off-network projects.

5.5.2 Setting Priorities among BSG Project Proposals

The proposed BSG represents an ambitious effort to integrate the Commonwealth's bicycle facilities and to serve key activity centers. This BSG program, which will take more than 25 years to realize, and its component projects must be very closely integrated with other elements of the transportation system in order to optimize investments. Therefore, the prioritization of the BSG's component projects must be advanced in a manner that is both transparent and rigorous. A potential prioritization strategy is discussed in Appendix 8.

5.6 *Additional Funding Strategies*

As with many transportation programs, the need for investment in bicycle facilities exceeds available resources. Given the continuing funding challenges, there are potential alternative funding opportunities that could help underwrite the growing Massachusetts bicycling network, as follows:

- Capital gifts – donations to directly fund construction of specific shared use path components

- Sponsorship opportunities – selling naming rights for a path segments with plaques or other public recognition as appropriate. For example, American Express and Coca Cola have sponsored trail development activities
- Merchandise sales – items such as guides, maps, clothing, gear, etc., could be used both to raise funds and to market the BSG through increase exposure
- In kind donations – many groups seek in-kind donations of materials, supplies, and labor[36] to help implement projects
- Fund raising rides – many groups hold fund-raising rides to support for facilities as well as to showcase them. A different element of the BSG could be selected each year. The success of the Pan-Massachusetts Challenge provides a very valuable model for such events
- Bicycle-oriented license plates – a bicycling-specific license plate could be issued, with a "Share the Road" or related theme, with proceeds to benefit bicycling, such as in other states
- "Pay-as-you-ride" kiosks – would offer bicyclists (and other shared use path users) an opportunity to make charitable donations to support the paths they use and enjoy. In time, potential smart card transponders or other fund raising devices could be deployed
- Use of local aid funds – although local aid is currently used to support municipal budgets, there may be some potential to devote some of those funds to construct or maintain bicycle facilities, a strategy to be investigated further

In addition, serious consideration should be given to the following capital strategies:

- Reducing the per-mile cost to plan, design and construct shared use paths
- Extending the project life of shared use paths

[36] Governor Patrick recently signed legislation that permits the DCR to work with volunteer organizations to maintain its parks. This act addresses issues of liability and is intended to increase volunteerism.

6 OTHER RECOMMENDATIONS AND ACTION ITEMS

Riverway (Boston)

Norwottuck Rail Trail (Northampton)

MBTA Bicycle Racks on Buses

6 Other Recommendations and Action Items

This chapter reviews the Commonwealth's primary programmatic activities and recommends additional steps to improve bicycling conditions.

6.1 *The Role of State, Regional, and Local Government*

As discussed in Chapter 1, EOT is the lead state agency in terms of bicycle transportation policies, programs, and projects. Among the agencies within EOT are MassHighway, RMV, and the MBTA.[37] With its recent implementation of the Safe Routes to School Program (SRTS), Mass*RIDES* (also part of EOT) is promoting walking and bicycling to schoolchildren and advancing an infrastructure program that could lead to construction of shared use paths and other built improvements.

There are several other state government organizations involved with programs, policies, and initiatives that involve bicycling.[38] At the regional level, RPAs - through bicycle programming and planning activities - and RTAs - through bicycle racks on buses and bicycle parking at transit facilities - are involved in providing tangible bicycling improvements. Finally, many Commonwealth communities have bicycle committees and planning and public works staff involved in bicycling as well as public safety officers patrolling by bicycle and teaching bicycle safety.

Awareness of these roles is important in terms of understanding which agencies are responsible for programs and policies and, most importantly, where resources reside. Another important factor is jurisdiction and ownership of roads and railroad rights of way. Therefore, while it is logical that the lead transportation agency in the state (EOT) prepare the state bicycle plan, EOT can encourage and assist but cannot direct all government agencies beyond its own realm of responsibility.

6.1.1 The "Five Es"

Bicycle plans and activities encompass the "Five Es:" engineering, education, encouragement, enforcement, and evaluation. To be successful, bicycle programs should follow good planning and design practices (as exemplified in the *Guide* - see Section 2.32), educate bicyclists and motorists, encourage people to ride bicycles safely, enforce the rules of the road, and evaluate programs and projects. EOT endorses the "Five Es" and will continue to follow these principles in its bicycle-related programs. EOT encourages its sister state agencies and other regional and local governments to do the same.

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[37] M.G.L. Chapter 6A: Section 19

[38] These include: the Executive Office of Public Safety and Security (EOPSS) through its Highway Safety Division (HSD) and State Police Academy, which trains future State Troopers; the Executive Office of Energy and Environmental Affairs (EOEEA) through the Department of Conservation and Recreation (DCR); and the Mass Office of Travel and Tourism (MOTT), which promotes bicycling to tourists.

6.2 *Outstanding Action Items from the 1998 Plan*

The *1998 Plan* featured an Action Plan consisting of three short-term goals specific to bicycle planning at the state level and 15 additional action items spanning highway design and maintenance practices, multimodal connections, safety and education, and tourism. This Action Plan was drawn from an extensive list of 74 proposed recommended actions.

6.2.1 *1998 Plan* Accomplishments

The short-term goals, action items, and recommended actions from the *1998 Plan* and their resolution are included in Appendix 9. Most of the recommendations from the *1998 Plan* have been implemented. Some of the most significant accomplishments are:

- Creation of the Massachusetts Bicycle and Pedestrian Advisory Board (MABPAB)
- Adoption by MassHighway of the *Project Development and Design Guide (Guide)*
- Designation of a pedestrian and bicycle coordinator for each of the five MassHighway District Offices
- Expansion of the "Bikes on the T" program within the MBTA
- Initiation of the *Moving Together* conference in 2000 as the annual statewide bicycle and pedestrian education and safety conference

6.2.2 Continuing Action Recommendations from the *1998 Plan*

Few studies, particularly those that are statewide and comprehensive in scope, will see their recommendations uniformly implemented. Conditions continue to evolve once a planning study is completed, and these changes often require a reordering of priorities. The *1998 Plan*'s outstanding action items that EOT will continue to pursue are listed below.

Complete Inventory of Roads and Bridges [that do not accommodate bicycles]

The *1998 Plan* called for an inventory of all roads and bridges allowing bicycle traffic. This goal proved to be unwieldy. A more achievable and perhaps equally important approach would be to first identify all roads and bridges from which bicycles are legally prohibited or are not properly accommodated in accordance with the *Guide*. This inventory should be combined with efforts to better document improvements provided that accommodate bicycles in accordance with the *Guide* (see Section 6.3).

Both the *Guide* and this *Plan* have contributed significantly to our understanding of the condition of state roadways for bicyclists. The *Guide* ensures that all future state roadway and bridge reconstruction projects will result in facilities meeting minimum design guidelines for bicycle travel, except in unusual circumstances. This *Plan*, in addition to the inventory of existing and proposed shared use facilities presented in Chapter 3, identifies and recommends on-road routes suitable for bicycle travel as part of the BSG described in Chapter 4.

Expand the "Share the Road" Campaign

EOT recently funded a Share the Road campaign in the Franklin and Pioneer Valley regions with Transportation Demand Management (TDM) resources. This program includes a video, website, maps, signs, and television and radio spots. As part of the effort to broaden interest in this program, the Franklin Region Council of Governments' "Enjoy the Ride/Share the Road" video was promoted at EOT's *Moving Together 2007* conference. This effort can be readily replicated in other regions (See 6.3.1)

Develop Additional Bicycle Tourist Publications

Bicycle tourist-specific mapping and brochures were recommended in the *1998 Plan*. There have been a number of significant developments in this area since the release of that plan. Commercially available statewide maps now exist that provide recommendations on preferred bicycling routes and shared use paths across the Commonwealth. The DCR and MOTT websites also provide general information about bicycling and about regional shared use paths. This *Plan* recommends that EOT expand the bicycling information on its website with links to appropriate transit services and other related resources. The proposed BSG and its website and mapping resources embodied in this *Plan* will amplify valuable information for bicycle tourists.

6.3 *Other Programs to Improve Bicycle Transportation*

During the course of the public outreach process in support of this *Plan,* as well as the review of regional plans and other project activities, the following key programs were identified as central to improving bicycle transportation.

6.3.1 EOT Agency Initiatives

Improve Bicyclist Safety through Greater Coordination

Reducing crashes involving bicyclists and heightening public awareness must always be important goals for EOT. EOT, RMV, and MassHighway will continue to coordinate with EOPSS and MDPH in a range of key areas—education, enforcement of existing laws, and tracking crash data.

RMV will continue to work with EOPSS to implement the new driver education curriculum to emphasize motorist responsibilities when encountering bicyclists on roadways. Outreach to schoolchildren should continue to emphasize bicyclist safety messages at an early age and on-going message reinforcement. The SRTS program administered by Mass*RIDES* is a valuable means to effectively provide such outreach. As RPAs plan and implement their own "Share the Road" programs and as the signed BSG bicycle routes are emplaced, MassHighway will continue to work with RPAs and EOT to implement signs on state-owned roads. EOT will work with EOPSS and MABPAB to involve State Police in enforcement of existing laws for motorists and bicyclists alike. Finally, improved crash report data on incidents involving bicycles will help MassHighway, MDPH, and EOPPS to target specific safety concerns and recommend strategies to reduce crashes.

Preserve Railroad and Utility Rights of Way for Potential Path Development

EOT is undertaking several programmatic initiatives over the next year, such as the *State Freight* and *Rail Plans* and improvements to the Transportation Enhancements Program, which will involve the potential use of railroad rights of way for shared use path development. Although the development of shared use paths covering several miles is costly for a number of reasons, EOT will continue to support the preservation of rail corridors that are suitable for development. In addition, EOT is currently working with members of the Mobility Compact to identify unused corridors that may serve future transportation purposes and the resources necessary to secure these rights of way.

Quantify Roadway Improvements That Better Accommodate Bicycles

With the development of the MassHighway *Guide*, nearly all roadway improvements in Massachusetts should now result in roadways that meet minimum design standards for bicyclists. In fact, over the past decade, many completed roadway reconstruction projects already accommodate bicycles. EOT and MassHighway will continue to work diligently toward quantifying the extent of prior and planned investments that benefit all users, including bicyclists. A related strategy is to estimate the cost associated with adding paved shoulders to road and bridge projects that do not include such features. For urban areas, a corollary estimate could be made for the cost of adding bicycle lanes.

Increase Spending on Bicycle Facilities

Spending on bicycle-specific facilities manifests the state's support for bicycling. EOT is committed to increasing spending both on shared use paths and on-road improvements that better accommodate bicycles. By identifying the cost of all bicycle improvements, including those that are components of roadway and bridge projects, a more accurate accounting of this commitment will become available. Bicycle and pedestrian coordinators from the MassHighway Districts can play a significant role in this effort.

Dedicate Resources for Shared Use Path Maintenance

As with other facility investments throughout the Commonwealth, resources must be dedicated to ongoing path maintenance to provide safe operating conditions and to prolong their useful life. Periodic maintenance includes sweeping and trash removal, line repainting, sign upkeep, and grass mowing along path margins. EOT, though not directly responsible for any shared use path maintenance, will pursue funding opportunities to ensure that paths are better maintained with greater regularity. This will include working with MassHighway District Offices to maintain the roadways designated as BSG routes. EOT will also work with other state agencies such as DCR, as well as municipalities to promote better facility maintenance. In addition, existing trail groups[39] and potential new "friends" organizations can be involved with trail maintenance.

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[39] Some of the existing friends groups include the Grand Trunk Trailblazers, the Bay State Trail Riders, the French River Connection, Wachusett Greenways, Bike to the Sea, Friends of Northampton Trails & Greenways, Friends of Schell Bridge, Friends of the Community Path, Friends of the Manhan Trail ,Friends of the Mattapoisett Bike Path, plus numerous local committees, rider groups, and advocacy organizations.

A number of ideas were suggested during the course of the *Plan* development process regarding fundraising to pay for path maintenance. These were described previously in Section 5.5 and the ideas can be applied to all shared use paths.

Measure Bicycle Facility Performance

Roads and transit systems are frequently monitored by transportation agencies to measure their performance. The extent of data collection and analysis for bicycle facilities however, is limited. One means to improve the investment decision-making process for future bicycle facilities is to gather performance data from existing facilities. Some recent efforts, such as counts coordinated by the Boston MPO's CTPS, the RPAs, and MassBike can serve as a potential model for measuring existing usage. EOT is also conducting preliminary research on automated counting technologies for shared use paths. EOT and MassHighway will work with DCR, the RPAs, and others to expand these efforts, such as deploying these automated bicycle-sensitive counting devices more extensively.

6.3.2 Other Agency Initiatives

Commonwealth Corps

Governor Deval Patrick signed legislation in November 2007 creating the Commonwealth Corps, a program encouraging state residents to volunteer for a year as tutors, assistants to the elderly, park cleaners, and other jobs in their communities. As the program is implemented, members of the Commonwealth Corps could potentially be assigned to bicycle facility maintenance, including litter, debris, vegetation and snow removal on existing shared use paths, conducting counts, preparation of paths in development, and signing and related on- and off-road maintenance for the proposed BSG.

Complete Streets Promotion

Massachusetts has had a complete streets policy for a number of years. With the publication of the *Guide*, which was disseminated to municipalities and RPAs, all MassHighway projects now incorporate a complete streets approach. Use of the *Guide* by MassHighway designers and project managers, as well consultants, will eventually spread to local road and sidewalk construction. The Baystate Roads Program and the New England Chapter of the America Public Works Association both offer educational programs for public works officials involved in road projects. EOT will continue to work with these programs to incorporate bicycle accommodation topics into the technology transfer workshop curricula.

7 CONCLUSION

7 Conclusion

Massachusetts is blanketed with cities and towns rich in history and scenic beauty, and is organized around a transportation network that largely predates the advent of the automobile. Our state is ideally suited to being a national leader in bicycle transportation as well as an attractive location for bicycle travel.

Bicycle transportation has many benefits in terms of public health and wellness, energy consumption, environmental quality, and economic activity. The Massachusetts Bicycle Transportation Plan (*Plan*) establishes a blueprint for continued development of bicycle projects, policies, and programs in the Commonwealth. Consistent with Governor Deval Patrick's Sustainable Development policies, the *Plan* is multifaceted, recommending cost-effective investments in a statewide network of facilities geared toward making bicycling safer and more attractive.

The *Plan* has outlined the prior planning efforts that formed the context for this work as well as the Patrick Administration's bicycle-supportive policies. This *Plan* offers the most comprehensive analysis of Massachusetts bicycle facilities ever completed, describing those that already exist, are funded and are due to soon become available to Massachusetts bicyclists, and have been proposed for future investments. The recommendations in this *Plan* represent a significant step forward and a continuation of preceding efforts.

The cornerstone of the *Plan's* many recommendations is the proposed Bay State Greenway (BSG), a network of seven corridors throughout the state, supported by a secondary route network. Modeled after Québec's "Route Verte," the proposed BSG is designed to be implemented in phases and with broad support from government agencies, the public, and the private sector.

Segments of the proposed BSG already exist. The Commonwealth should continue its efforts to complete the entire BSG. This statewide system, which can be built for less than the cost of a major highway or transit project, will net the Commonwealth substantial safety, mobility, health, and economic benefits over decades to come.

Even with the BSG's primary and secondary routes reaching into almost every corner of the Commonwealth, there will continue to be both infrastructure and programmatic needs beyond the proposed 740-mile BSG. Over the next 25 years, policymakers will shape priorities among the BSG and off-network facilities. This *Plan* has offered guidance on approaches to prioritization both between BSG and off-network facilities, and among the many BSG and non-BSG project proposals still in the planning stage. As the infrastructure embodied in shared use paths and bicycle lanes represents only one component of Massachusetts' investment in bicycling, this *Plan* has offered recommendations on how to further important safety, education, and enforcement goals.

The recommendations of the Massachusetts Bicycle Transportation Plan will take many years to implement. Their success in meeting the *Plan*'s goals will take even longer to

measure. These recommendations represent today's understanding of the challenges confronting bicycle transportation in the Commonwealth. They provide a roadmap for achieving a better-balanced and integrated transportation system, one safely accommodating all users. The Commonwealth's commitment to implementing these recommendations will serve as an example for other states.

APPENDICES

Massachusetts Bicycle Transportation Plan
Appendices

Appendix 1
Governor Deval Patrick's
Sustainable Development Principles

On May 16, 2007 Governor Deval Patrick announced an updated version of the Commonwealth's sustainable development principles:

The Commonwealth of Massachusetts shall care for the built and natural environment by promoting sustainable development through integrated energy and environment, housing and economic development, transportation and other policies, programs, investments, and regulations. The Commonwealth will encourage the coordination and cooperation of all agencies, invest public funds wisely in smart growth and equitable development, give priority to investments that will deliver good jobs and good wages, transit access, housing, and open space, in accordance with the following sustainable development principles. Furthermore, the Commonwealth shall seek to advance these principles in partnership with regional and municipal governments, non-profit organizations, business, and other stakeholders.

1. Concentrate Development and Mix Uses
Support the revitalization of city and town centers and neighborhoods by promoting development that is compact, conserves land, protects historic resources, and integrates uses. Encourage remediation and reuse of existing sites, structures, and infrastructure rather than new construction in undeveloped areas. Create pedestrian friendly districts and neighborhoods that mix commercial, civic, cultural, educational, and recreational activities with open spaces and homes.

2. Advance Equity
Promote equitable sharing of the benefits and burdens of development. Provide technical and strategic support for inclusive community planning and decision making to ensure social, economic, and environmental justice. Ensure that the interests of future generations are not compromised by today's decisions.

3. Make Efficient Decisions
Make regulatory and permitting processes for development clear, predictable, coordinated, and timely in accordance with smart growth and environmental stewardship.

4. Protect Land and Ecosystems
Protect and restore environmentally sensitive lands, natural resources, agricultural lands, critical habitats, wetlands and water resources, and cultural and historic landscapes. Increase the quantity, quality and accessibility of open spaces and recreational opportunities.

5. Use Natural Resources Wisely
Construct and promote developments, buildings, and infrastructure that conserve natural resources by reducing waste and pollution through efficient use of land, energy, water, and materials.

6. Expand Housing Opportunities
Support the construction and rehabilitation of homes to meet the needs of people of all abilities, income levels, and household types. Build homes near jobs, transit, and where services are available. Foster the development of housing, particularly multifamily and smaller single-family homes, in a way that is compatible with a community's character and vision and with providing new housing choices for people of all means.

7. Provide Transportation Choice
Maintain and expand transportation options that maximize mobility, reduce congestion, conserve fuel and improve air quality. Prioritize rail, bus, boat, rapid and surface transit, shared-vehicle and shared-ride services, bicycling, and walking. Invest strategically in existing and new passenger and freight transportation infrastructure that supports sound economic development consistent with smart growth objectives.

8. Increase Job and Business Opportunities
Attract businesses and jobs to locations near housing, infrastructure, and transportation options. Promote economic development in industry clusters. Expand access to education, training, and entrepreneurial opportunities. Support the growth of local businesses, including sustainable natural resource-based businesses, such as agriculture, forestry, clean energy technology, and fisheries.

9. Promote Clean Energy
Maximize energy efficiency and renewable energy opportunities. Support energy conservation strategies, local clean power generation, distributed generation technologies, and innovative industries. Reduce greenhouse gas emissions and consumption of fossil fuels.

10. Plan Regionally
Support the development and implementation of local and regional, state and interstate plans that have broad public support and are consistent with these principles. Foster development projects, land and water conservation, transportation and housing that have a regional or multi-community benefit. Consider the long-term costs and benefits to the Commonwealth.

Appendix 2
Local and Regional Bicycle Planning Documents Reviewed During the Development of the Plan

State Bicycle Planning Documents

Commonwealth of Massachusetts Bicycle Facilities Inventory, 1995

Massachusetts Bicycle Transportation Plan, 1998

Commonwealth Connections: A Greenway Vision for Massachusetts, 2002

MPO/RPA Bicycle Planning Documents

Boston Regional Bicycle Plan, 1996

Pioneer Valley Regional Bicycle and Pedestrian Transportation Plan, 2000

Berkshire Bicycling and Walking Plan, 2002

Mahican-Mohawk Bike Trail Feasibility Study, 2002

Montachusett MPO 2003 Regional Transportation Plan

CMMPO 2003 Regional Transportation Plan

Martha's Vineyard Regional Transportation Plan, 2003

Franklin Regional Council of Governments Regional Transportation Plan, 2003

SRPEDD 2003 Regional Transportation Plan

Old Colony Planning Council 2003 Regional Transportation Plan

Improving Pedestrian and Bicyclist Access to Selected Transit Stations, CTPS, 2005

Update of the Nantucket Bicycle and Pedestrian Master Plan, NPEDC, 2005

Northern Middlesex MPO FY 2006 Unified Transportation Planning Work Program

Cape Cod Regional Transportation Plan, 2006

Pioneer Valley Regional Bicycle and Pedestrian Plan, 2006

Sub-regional Bicycle Planning Documents

Alewife Master Plan

UMass/Five College Bicycle Master Plan, 2003

Dudley White Pathway Project, 2003

A Vision for an Inter-State Recreational Path: Williamstown, MA to Pownal, VT, 2003

Neponset River Reservation Master Plan, DCR, 2006

Border to Boston Trail Implementation, 2007

Local Bicycle Planning Documents

Green River Recreational Trail, Williamstown, 2002

Proposed Burlington Bikeway (Application for Transportation Enhancement Funding), 2005

Springfield River Walk and Bikeway Survey, 2005

Grand Junction Rail-with-Trail Feasibility Study, City of Cambridge, 2006

Brookline Bicycle Network Master Plan, 2007

Appendix 3
Public Outreach in Support of the Plan

This *Plan* is the product of extensive and informed public input. Public contributions to the *Plan* were received in many forms, but primarily through a series of regional public meetings, comments provided to the project website and through a series of meetings with the Massachusetts Bicycle and Pedestrian Advisory Board (MABPAB).

In the fall of 2006, EOTPW and the Planners Collaborative Team (Team) held a series of eight regional meetings in support o*f Plan*, as follows:

- Worcester, October 5, 2006
- Brockton, October 10, 2006
- Concord, October 23, 2006
- Haverhill, October 23, 2006
- Northampton, October 25, 2006
- New Bedford, October 30, 2006
- Hyannis, November 1, 2006
- Boston, November 8, 2006

The Team also presented a workshop at *Moving Together 2006*, the annual statewide bicycling and walking conference, and gave multiple presentations to the Massachusetts Bicycle and Pedestrian Advisory Board (MABPAB). During the development of the *Plan*, Team members met regularly with MABPAB to solicit input on project direction. A team of experts, organized by MABPAB met with the Team in early 2007 to discuss proposed statewide network routing.

A project website (www.massbikeplan.org) was also launched in 2006. This website provided the public an opportunity to review interim products and provide feedback via email. Over 200 emails were received through the project website.

The draft report was posted to the website in early October 2007. More than 60 comment emails and letters were received. These were incorporated into the final report to the extent feasible. When necessary, commenters were contacted with follow up questions. Although it was not possible to address each comment, every effort was made to do so. Further, the comments have been forwarded to EOTPW staff for additional reference, particularly with respect to implementation of the BSG.

Meeting Summaries

Summaries of the comments and questions received at the eight regional public meetings are provided below.

Worcester Meeting

Location: Saxe Room, Worcester Public Library
Date: October 5, 2006
Attendance: 20, representing Central Massachusetts Regional Planning Council, localities (Worcester, Fitchburg, Grafton), path interests (statewide, Wachusett Greenways, Grand Trunk Trailblazers), a bicycle manufacturer, bicycle clubs, among others
Comments:

- Provide more information on the new MassHighway *Project Development and Design Guide.* (Greater weight to bicycling and walking; design from the curb in; greater flexibility; state-of-the-practice chapter on shared use paths; etc.) How do we enforce implementation?
- Importance of maintenance to foster safe bicycling conditions, on- and off-road.
- Will paths be installed in Interstate highway corridors? (Not being contemplated)
- What are the priorities – reconstruct existing facilities where necessary, or build new facilities? (Attentive to both on- and off-road facilities, old and new)
- Not all state numbered routes are actually under the jurisdiction of the state.
- The Blackstone Bikeway was mentioned as an example of a long interstate facility that is difficult to decipher – some segments are built, others aren't. The public should be made better aware as to what "the big picture" is.
- What are activity centers? Economic development and tourism should be factored in. (Transit linkage is important; note the number of bicycles at the Alewife red Line T station.)
- Get a better definition of GIS information now. NH has done a good job with this.
- Trails can be built more quickly; NH examples were provided. Involve the private sector and volunteers to expedite projects.
- There are two tiers of project development – regional and local. People need good facilities close to home, where they do most of their bicycling. This includes well-maintained shoulders with a consistent width. A state network will provide longer projects requiring greater state oversight and management.
- Make bicycling attractive, for commuting and other utilitarian travel; that will attract more new bicyclists.
- Washington, DC has an extensive bicycle path network. Would like to see a similar system in MA.
- Gaps must be overcome; connectivity must be provided.
- Educational issues must be addressed.

- Bicyclist behavior must be addressed and improved as necessary. Show people where and how to bicycle more safely, effectively, and efficiently.
- Identify issues that are the responsibility of other agencies, such as DCR.
- Local bicycle circulation is important for tourism and economic development purposes.
- Create better links to transit; make transit better adapted to bicycles (parking, racks on buses, etc.).
- Enlist the assistance of bicycle shops; they can help spread the word on these meetings and on the *Plan Update.*
- The local newspaper coverage was helpful.
- Clarify the purpose of the *Plan Update*. Make it clearer that it is about improving bicycling conditions, and expanding bicycling opportunities.
- How will signs be used? Which are the most effective? "Share the Road?" "Bike Route?" Other? Bicyclists want legitimacy as road users, and clarity in terms of directions and distances.
- The follow-up will be important. Develop better links between existing and future facilities.
- Should mail out posters to be posted in bike shops to increase participation.
- Specific projects/facilities/gaps mentioned included a 27-mile loop around Holliston and Milford; use of an abandoned rail bed in Holliston; Worcester to Grafton connections; Grafton to Upton RR (13.5 miles, still active on ½ mile section) major barrier at Worcester Union Station; Route 122 a good corridor (future designation as a scenic byway).

Brockton Meeting

Location: Ground Level Meeting Room, Brockton Public Library
Date: October 10, 2006
Attendance: 6, representing Old Colony Planning Council, Town of Randolph, and trail group from Duxbury
Comments:

- The Claire Saltonstall Bike Route goes through Randolph on Rt. 28. This is a tough road to ride on. At least for part of the way, High Street would be better.
- Rt. 28 is under reconstruction now. Not sure what type of bicycle accommodation will be provided.
- Rt. 127 in Kingston will be reconstructed. This will be an opportunity to provide better conditions for bicyclists.
- Rt. 3A in Duxbury is hard for older bicyclists to ride on due to limited sight lines, though benefits from being a through route with relatively low traffic.
- It would be very advisable to make a connection between Kingston and Plymouth Commuter Rail stations.
- Randolph has advanced construction of a shared use path under Rt. 28 and wants to take it all the way to the Braintree T station. They are waiting to hear about a DCR grant.

- Are we coordinating with the Safe Routes to School program? Don't they have funding to build new facilities?
- How much money are you hoping to have available to fund the plan?
- Rt. 123 is going to be reconstructed from Attleboro to Abington. Its intersection with Rt. 106 is an obstacle. It would be good to ensure that the rebuilt road accommodates bicycles well
- You should look to the communities that have passed the CPA as resources to build trails. They have a coalition (www.communitypreservation.org).
- Major activity generators include: Massasoit Community College (Canton and Brockton), Bridgewater State College, Westwood Station, Southfield (former Weymouth Naval Air Station), Stonehill College in Easton, TOD project in Kingston at rail station, Cordage Park in Plymouth (600 condos), and 400-unit 40B on Randolph line in Braintree.

Concord Meeting

Location: Concord Town House Hearing Room
Date: October 23, 2006
Attendance: 55, representing the Boston Metropolitan Planning Organization, and the municipalities of Concord, Sudbury, Hudson, Lincoln, Acton, Dunstable, Burlington, Framingham, Lexington, Littleton, Acton, Shirley, Bedford, Maynard, Westford, Chelmsford, and Cambridge. A large contingent of attendees was present to voice an opinion on the Bruce N. Freeman Memorial Path.
Comments:

- State Senator Pam Resor mentioned that she has worked with the Legislative Bicycling, Walking and Trail Caucus. Mentioned the various trail projects in progress, and interest in building a trail along Rt. 2 in Harvard.
- Does the state have a separate pot of money to implement this plan? How will the limited funds be spread around so that bike/ped needs are also accommodated?
- Do the bicycle facilities meet ADA requirements for on-road segments?
- Welcome the opportunity to enhance the experience for bicyclists and inline skaters. Member of the White Pond Advisory Committee. Concerned about environmental considerations. Submit plan to ease the impact of environmental impacts. Issue with the Bruce Freeman regarding the intersection at Powdermill Rd. An older bridge was removed, and then a corrugated steel tube was put in on the assumption that a trail would eventually go through.
- Clarification on potential sources of funding; CMAQ. Set up separately from on-road projects. Kate Fichter (EOT) answered that almost anything can be done with CMAQ so long as it is shown to provide air quality benefits.
- Nashua River Trail – Serves more than a recreational, as many people use it to commute to the MBTA Ayer commuter rail station.
- Would like to see the Minuteman Commuter Bikeway connected to the Bruce Freeman as a paved trail. Should consider hard surfaces that allow use by

strollers, wheelchairs, etc. Lehman answered that there has been research on pavement surfaces. MassHighway's contractor will be testing some alternative surfaces.

- In Germany, the bicycle facilities are both off-street and off-sidewalk as a separate facility. Consider implementing this type of facility here. Reference was made to the City of Cambridge off-road facility along Vassar St.
- What about demand estimation of usage of future trails?
- Would like the Bruce Freeman to have a rural and narrow soft surface trail.
- Cross country skiing is now heavily used. Heard Rt. 2 rotary is not going to be funded until 2020 so the Bruce Freeman may be disconnected until then.
- Concord is a very popular place for bicyclists. Share the road signs have been installed. That has not changed the mindset of motor vehicle operators. Suggest the plan have a component to introduce the concept of roads are shared with motor vehicles and bicycles. Want to have more to say about safety of shared use on roadways.
- Over 1,000 interested residents who support completion of the 25 miles of Bruce Freeman trail. Wide enough to be safe for all users and appropriate for all users. Rt. 2 crossing was 2012.
- Westford, Carlisle, Acton, and Concord have all tapped into community preservation funding. Should work with the groups to secure that money. Lowell and Littleton have major commuter rail stations. There are no bicycle facilities connecting those stations.
- The State will often rebuild the highway then turn it back to the town. Anything the state can do to encourage the towns to follow the state guidelines when the project is not state funded?
- We have roadways that go everywhere in the state. Of the money that is going to be competed for, how roadways can be maintained to be more accommodating to cyclists?
- Oppose the Bruce Freeman. Would rather see money spent on highways. Can really commute to save time. White Pond is a beautiful place.
- Annual cost of oversight repair and maintenance.
- Great to see this bike plan. Urge the plan to target users. Who is going to use this network? Should have solutions that are one size fits all. Question of Concord and $4.1 million designated for Concord only? How will the CMAQ money be distributed from different towns?
- How do greenways (as mentioned in the MassHighway *Project Development and Design Guide*) fit in?
- Environmental component. All have to file an environmental notification form. Whether any bike trail has gone beyond that level?
- Bike trails are inconsequential. Roads need to be safe.
- Errors in map – west of Assabet, Assabet complete to Rte 62. Potential connection right through the wildlife refuge along the Assabet River.

Haverhill Meeting

Location: 2nd Level Auditorium, Haverhill Public Library
Date: October 23, 2006
Attendance: 24, representing Merrimack Valley Planning Council, Northern Middlesex Council of Governments, Malden, Methuen Transportation Management Association, Georgetown, Danvers, Essex National Heritage Corridor, Newbury, Topsfield, Haverhill, Andover, Merrimack, and Wenham
Comments:

- What is the prioritization process going to be like in terms of which projects get funded first?
- Getting across the Merrimack River is difficult. Several older bridges are in need of repair. Need to connect business centers.
- There are many proposals on the North Shore, but where is the funding?
- Which state agencies are most involved? How will the mission of a wildlife conservation agency fit with recreational trail development? The Assabet River Wildlife Refuge allows the bicycles to go through the roads but not all such facilities agree with doing this.
- Disconnected land uses - why are the activity centers disconnected – Newburyport station and downtown example.
- Concern about maintenance. Is some of the CMAQ money going unused? According to MVPC, some CMAQ funds are being used for rail trail programs in Newburyport and Salisbury. Want to make sure that there are no unused funds.
- Danvers – Route 62 gradually being upgraded, but MassHighway projects don't accommodate bicycles yet. How to deal with the changes?
- Gap – 128 and Haverhill St – rotary there is a gap.
- Crossing the Mystic River is a big problem. Route 99 is very hostile to bicyclists.
- Bike to the Sea – critical facility coming out of Boston to the north. DCR has conducted a study.
- Connecting the East Coast Greenway. Getting in and out of Boston through Sullivan Square is a key gap.
- Along the shore from Deer Island to Marblehead could be a wonderful route. But Rt. 1A through Lynn is very difficult for bicycling. Try to get that connection through the Lynn waterfront plan.
- Revere Beach Boulevard is a dangerous spot. Revere Street is a main route to the beach, also a tough place to bicycle.
- Eight bicycle shops north of Boston have gone out of business in recent years. How do we provide services, bike shops, etc. that people can use? Losing the sales and repair infrastructure.
- One of the most effective ways to increase bicycling is to increase bicycle parking at the rail stations. What is the status with that?
- Opportunity for a bike car on commuter trains. Need to provide more bicycle capacity on the trains.

- Newburyport and Salisbury have rail trails ready to go. But the gap across the Merrimack River is an issue.
- Topsfield trail segment of the proposed Border to Boston across the Topsfield Fairgrounds is a gap. Crossing I-95 in Boxford is an impediment.
- Automated bicycle parking machines are used in Japan. Why not here?
- Need to make the connection between the communities. Tewksbury
- MBTA has signed leases with communities along the Border to Boston Trail. Need to get the National Grid on board. It has been very frustrating to deal with them. Need more push from higher ups. Also, NH border to Danvers is well defined. Danvers to Boston is less well defined.
- On-road network – seen references to other on-road bike routes.
- Stone dust example in West Boylston (Mass Central Rail Trail).
- A cantilevered bicycling and walking facility on the bridge over I-93 (Merrimack River) is important to provide connections. Example of mitigation efforts on I-93 widening in NH to provide bicycle trails as part of the project. Bridge connection here would be really helpful.
- Haverhill- a downtown loop is being established, using two bridges that cross over the Merrimack River. Concerned about having enough space for bicycles on those bridges. Getting a new downtown intermodal center for Merrimack Valley Transit in a few years. Consider bicyclists in that facility.
- Amesbury-Salisbury-Newburyport-Newbury – vision of a 30 mile system of on and off road connections. Principal on road connections, foremost is Route 110. Already popular with the bicycling clubs. Have a map of the route.
- Ipswich had an intern prepare a bicycle plan two years ago. Have not been able to get the Planning Department to finish it. Route 133 in town now has nice shoulders.
- Working with Maynard to develop the Assabet River Rail Trail. Have an earmark. Why do they require that a bridge be designed to support the weight of an ambulance?

Northampton Meeting

Location: Community Room Forbes Library
Date: October 25, 2006
Attendance: 45, representing MassHighway, Pioneer Valley Planning Commission, Franklin County Planning Council, communities in Lenox, Northampton, Holyoke, Florence, Greenfield, and Williamsburg. Joe Wynn was also in attendance. He is a Westfield City Councilor and aide to Rep. Donald Humason.
Comments:

- Lovefield Road is a good candidate for riding.
- We need equity throughout the state.
- Does the map identify all of the typologies that you are going to identify? What are you leaving out of the maps? Up to the meeting, focus has been on state projects and information from regional planning agencies.

- Route 112 between Shelburne and Ashland has a bike route that is not indicated here.
- What is the role in the PVPC in the plan? Explained coordination on mapping as well as interaction with MARPA.
- What is missing is that a lot of statewide routes are going to be funded by local land trusts. Mass GIS data layer has everything you need.
- In Greenfield, we have had only one mile of shared paths completed in the last 20 years. Need to focus on the on-road sections. Trails are expensive and long term projects.
- A number of the shared use paths will be inaccessible in the winter.
- Response to *Project Development and Design Guide*: like the idea of narrowing travel lanes.
- Like racks on the front of buses. Not enough room for all the bikes on the buses. Are there plans for snow removal? Even on-road facilities become unusable.
- Spot cleanups need to be done on the roadways. Need to sweep the roads.
- Neighbor of Norwottuck Trail. The unfinished trail damages the credibility of the state agencies.
- How do the agencies deal with future traffic issues on corridors? Route 20 west out of Westfield as just been paved. A lot more traffic can be expected due to energy facility development.
- Why were there unforeseen right of way issues on Damon Rd?
- Question of maintenance. Ride Norwottuck every day. Hope that maintenance and signage is installed. What about repaving? Why does it take four years?
- Nobody has the patience it takes for the long process of planning and actual construction. Also have missed so many opportunities. Plan included bicycle facilities in the Berkshires, but contractor constructed it wrong.
- Does the Route 2 expansion have bicycle facilities, particularly near Erving?
- If a state route is identified, what does it mean in terms of cycling accommodation? What about the road that does not get selected?
- What is the advantage of having a line on this map? It could be explosive in certain corridors. For example in West Stockbridge.
- Berkshires – we are well connected but, some towns do not want state involvement.
- Some route numbers are missing on the regional maps.

New Bedford Meeting

Location: Lecture Room, New Bedford Public Library (3rd Floor)
Date: October 30, 2006
Attendance: 16, representing Southeastern Regional Planning and Economic Development District, and Mattapoisett, Fairhaven, Fall River, New Bedford, and a local Venturing group, consisting of 3 adults and 4 teens.
Comments:

- In Fall River, the most difficult challenge is the narrow neck between Fall River and Westport. This is the Quequechan River Trail corridor, which needs to be completed. Route 6 is the only option and it is not safe for cycling.
- The regional vision is to have a continuous route from the RI border to the Cape Cod Canal.
- Show the RI facilities, particularly the East Bay trail.
- More Share the Road signs are needed.
- Trail mapping in the Myles Standish State forest is incorrect.
- Fog lines are not properly located and are not always followed by motorists.
- The Brightman Street Bridge over the Taunton River is being replaced. The old bridge will be for pedestrians and bicycles.
- How do we convince local officials to install bike lanes on city streets? Route 6 sections in New Bedford and Fall River are good candidates but are under City control.
- Clarify what you mean by "off road?" – Shared use paths.

Hyannis Meeting

Location: Hyannis Transportation Center Meeting Room
Date: November 1, 2006
Attendance: 25, representing Cape Cod Commission, Nantucket Planning and Economic Development Commission, the Cape Cod National Seashore Advisory Committee, the towns of Barnstable, and Mashpee, MassBike, and residents from Falmouth, Barnstable, Centerville, and Brewster.
Comments:

- Orleans—link from South Orleans to Orleans along Route 28 Corridor. 28 is too narrow. Also Bay Ridge Road. Route 6A through to the Cape Cod Rail Trail needs widening.
- Connecting activity centers. Big picture. Dennis to Barnstable is a good example. Barnstable to Falmouth. Only Route 28 is an option. Ways around the corridor.
- Falmouth-Bourne—the state owns the right of way (ROW) east of the northbound lanes and also owns the military reservation. This is the perfect place to extend the Shining Sea Path to the Canal Path.
- The current Hyannis Access Study is looking at bicycle accommodation.
- Cannot get funding for roads and bridges. Real problem is not having funds for shared-use paths. Department of Conservation and Recreation (DCR) is pushing for local agreements for maintenance on projects they want to advance.

- Where's pot of gold? How's the state going to pay for it? Not going to get funding without a plan. Big step is to identify how the money ought to be spent.
- Has anyone considered that there's a good thing going here? Not all connected. Would like to be able to ride to Eastham then bus it home. Provide more racks on buses with more frequency.
- Maintenance is a major problem. We need a funding source.
- Funding. Establish credit card donation boxes on bike trails. Raise millions that way through donations Potential options: DCR's Office of Public-Private development. Looking at outside funding sources. Naming rights.
- Maintenance problem on the Minuteman Commuter Bikeway. Roots lifted portions of trail pavement. Got $200,000 for fiber optic installation. Joint development of corridor.
- Perhaps we should use the gas line corridor.
- Route 28 in East Falmouth. State came in with a 3' widening project. Was pitched as traffic safety and traffic relief. Not pitched as bicycle accommodation. Town rejected it. State is now repaving. No widening. Would like to see the state impose a solution. This is counter to the Communities First policy. Refer to the *Project Development and Design Guide*.
- Looking ahead. With cheap gasoline bicycling is losing. Price going up, more people would be riding to work. Won't be able to go anywhere with all the future traffic. Most of the off-road facilities are not best for transportation but for "plodders." Will start with children. Rail trail advocates. Have to ride Route 6A. Don't understand why speed limit is 45 miles per hour when there are mailboxes and bus stops along the way. No sidewalks. Very unsafe conditions. Speed limit should be lower. Missing sidewalks. Creates a real problem.
- Maybe in 3-5 years we can come up with an alternative widening plan for Route 28. Difficult to advance things locally unless project gets into comprehensive plan. Each town has to include bicycling improvements in their plans.
- Falmouth-will have 12-mile long bike path, 86 acres of beautiful park land nearby, 6 miles of path in the park. Need a signal on Route 28 to bridge the gap to Goodwill Park.
- Real problem of beach parking as a result of erosion. Most times on weekends, very difficult to get to the beaches, parking is limited. Establish bicycling routes to the beach as well as bicycle parking at the beach.
- Power line corridors. Huge rights of way. Parking for cars.
- Service road. Already is used as a signed bike route on the map.
- Safety—two police chiefs have told them that they cannot enforce laws unless they accept the laws. This is actually not the case, however. Only the registration provision has a local option. Need to communicate this with MA Association of Chiefs of Police.
- Getting enforcement is difficult.
- Utility lines. Companies get bought and sold very quickly. Existing power companies have agreed to allow bicycle access in some instances.

- Power lines—isn't this a health issue, with electromagnetic fields? No data to support. Will look at the corridor if you can get from point A to B
- EOTPW has control of the Barnstable rail ROW, why not extend bike paths along its length? VHB conducted a study that determined a path was viable but only to a certain point beyond which there are significant environmental issues.

Boston Meeting

Location: State Transportation Building, Conference Room 2 & 3
Date: November 8, 2006
Attendance: 47 (signed-in), representing EOT, Cities of Boston, Quincy, Somerville, and Cambridge, Towns of Watertown, Mansfield, and Arlington, Metropolitan Area Planning Council, MassBike, and other committees and groups, plus others. Kate Fichter of EOT, and Andy Rubel and Jessica Eckhardt of the Team were also in attendance.
Comments:

- What is the difference between the statewide network and regional plans like the MAPC plan?
- Are you considering "cycle tracks?" They are used in Montreal and give those bicyclists that do not like riding in mixed traffic an alternative.
- How much money will be spent to implement this plan?
- How will this plan fit into the long range transportation plans for each of the MPOs?
- Will the plan result in changes in the way that projects are processed within 10 Park Plaza? I'm also worried that the plan won't look at projects being developed on the environmental side. How do we get the checkerboard of projects into the plan?
- There is a big difference between densely settled areas and rural areas. How will you address the facilities in these different areas? Develop a broad strategy for three tiers: urban, suburban, and rural. Want to maintain on-road access in urban dense areas.
- Consider using designation of signage of shared lane markings.
- Bicycling is much more a local matter than a regional or local matter. Most bicycling takes place on local roads. Something done on a state level will not serve all the routes. There are long distance bike routes. Holland has routes that cover the city and towns, and use all the same signs. If the state wants to make it better for bicycling, it should incentivize local activity to improve intersections, etc. If you want a nice bicycle network over the state, the support will come from the local level. The Safe Routes to School program is one example of how this is being done.
- How will we treat a road that is owned locally but is funded and managed for reconstruction with state funds?
- Not riding across the state or going long distances but going locally. There are Longfellow Bridge crossing troubles. Should have strings attached that say you have to make necessary improvements. In Hull the state just got involved in a

project. No thought was given to establish a bicycle route on that road. It's a small town road that should have a bike lane. It should be automatic.

- Is there a designation that prohibits bike lanes next to parked cars?
- MA is a great tourist destination for cyclists. I would like to see a really good coastal route in the network.
- We need to have more money for maintenance. This is an acknowledged problem. DCR has a dedicated pot of money for maintenance for Cape Cod.
- I like the maintenance focus. This helped get a path cleared along Spot Pond connecting Stoneham to Wakefield to Melrose and Malden
- DCR has a new Facilities Committee, which is open to new membership.
- What about an idea of "adopt a bike trail?"
- Do you have a sense of the top five priorities for the network?
- Need to have outreach along corridors. The Newburyport bike lane had lots of opposition. Part of the plan would have to include public education of what to do in those facilities.
- Travel per mile by bike is much cheaper than by car. Will we be identifying reliable transportation studies?
- There are a lot of different types of systems: urban, rural, suburban, holiday, etc. The urban transportation system is broken. Many in government are trying to fix the problem. People want change. But what we need to do with this plan is determine how to help from the state level to fix this system. For example: on Commonwealth Ave., we have to work with 10 agencies who are talking to each other. Plan needs to outline what is the public process to get this all together.
- Recognize the needs of inline skaters. Need a paved path.
- Somerville is looking at bicycle crash data to identify the worst locations. Projects are easier to sell if a safety improvement. The Somerville Bike Committee has done analysis. They just completed a feasibility study on how to connect the Community Path.
- Those who use a bike lane are very different than bike path only. Signage should tell people how much longer they have until the path will end.
- Some recent good projects are on Route 109 Medway and Route 138 in Canton, which have nicely paved shoulders. I feel safer on those facilities than on some pathways.
- Bridge accommodation is a very expensive option.
- Signs shown were about direction. Would also like signage about usage. Stay to the right, obey rules of the road, etc. Need to have consistency.

Appendix 4
Development of the
Massachusetts Bicycle Facility Database

A system of shared use pathways and on-road long-distance bicycle routes was developed by MassBike in 1995, under contract to MassHighway. An inventory of bicycle facilities, primarily consisting of existing trails, was developed several years ago by a private citizen, Bryce Nesbitt. This information was entered into a geographic information system (GIS) and given to Mass GIS, the state office responsible for managing state geographic data. This layer became the starting point for the new bicycle facilities layer. In 2003, the Data Resources Group of EOTPW developed a map of bicycle facility projects for which EOTPW and MassHighway were responsible.

The Team developed a comprehensive inventory and GIS-based maps of all known existing and proposed bicycle facility projects throughout the state. Facility types identified include shared use paths, bicycle lanes, and bicycle routes. The inventory is used to establish the extent of a bicycle network that has been developed and for aiding in development of the statewide bicycle network. The inventory includes existing and future bicycle facilities in various stages of development.

The list of facilities and projects was compiled from a number of sources including state agencies, local government, public input, and published reports. Finally, all information has been compiled into a database and GIS-based map.

Bicycle Facility Mapping

The Team worked with the EOTPW Data Resources Section to develop the facilities database and to create line work in GIS for each of the facilities. The ultimate goal is to develop a bicycle facilities layer as part of the overall EOTPW transportation efforts.

EOTPW GIS then contacted all 13 of the RPAs to obtain GIS data (digitized project line segments, and project descriptions) for their respective bicycle projects. The data received was entered into the database. Follow-up contacts were made with selected state and town officials to gather more information. Line work accuracy and facility endpoints were verified by checking aerial photos for specific segments.

The final product of this data collection effort is a database and corresponding map of all known existing and proposed bicycle facilities. The database includes the facility name, location, length, status (existing, proposed, etc), pavement surface, PROJIS or other project number where applicable, owner, and project TIP year (where applicable). The map identifies facilities by type, surface, and project status.

Project Team Research

State Agencies: Facility and project information and development occur at a number of different state agencies. Those stakeholders were contacted over the course of the plan development process.

MassHighway: Most bicycle projects include the involvement of MassHighway through funding, design, and/or construction. In order for a project to receive state funding, it is typically passed through the regional planning organization, then assigned to the TIP program and finally through MassHighway and assigned a project number. Design and construction may be led by MassHighway or by the local agency with MassHighway funding.

PROJIS – This is the MassHighway project database of all active projects. PROJIS has been queried to identify recently completed bicycle projects as well as future funded projects and those projects seeking funding.

MassHighway Bicycle Contacts: Representatives from each of the five MassHighway regional offices have been designated by MassHighway to be the contact person for all bicycle projects within the specific district. The Team met with the designated bicycle contacts on November 16, 2006 in Worcester. The facilities map was presented for review, and the districts compiled a list of projects with which they are involved. The Team followed up by sending an updated map and inventory to the districts for corrections.

Massachusetts Bicycle and Pedestrian Advisory Board: The MABPAB is a state-level board chosen from a group of bicycle and pedestrian interests and representatives from a number of state agencies to guide the state on policy and development of non-motorized transportation resources.

Department of Conservation and Recreation (DCR): The DCR is responsible for development and maintenance of a number of trail corridors throughout the state. Examples include the Charles River paths, the Nashua River Trail, Cape Cod Rail Trail, Norwottuck, and Ashuwillticook trails. The DCR has a number of projects in various stages of development including upgrading existing trails and new facilities at Revere Beach, Mystic River, and the Earhart Dam. Railroad corridor acquisition continues where feasible, particularly through long-term leases with the MBTA, including the Mass Central corridor and Hanover branch.

Massachusetts Bay Transportation Authority: The MBTA has identified a number of surplus rail corridors that are not currently scheduled for conversion to passenger or freight service. The MBTA has been working with the towns and with DCR to either deed the corridors or sign a long-term lease (99 years) for the primary purpose of developing a trail corridor.

RPA Plans: Each RPA has an active transportation plan and TIP list and in some cases, a bicycle or non-motorized plan. GIS staff at each of the RPAs was contacted to acquire the latest data layers for their respective projects.

Adjacent States: All adjacent state DOTs were contacted to identify facilities and projects that border Massachusetts. Connection to established bicycle networks in New York and Rhode Island, as well as long distance trail corridors in Vermont, Connecticut and New Hampshire, will be established.

Public Input

A public process was developed to give and receive input on the Plan Update as well as to educate the public on the goals of the Plan.

Public Involvement Process: Eight public meetings were held throughout the state in October and November of 2006. The bicycle inventory and maps were presented at the meetings and feedback was solicited. Feedback was received on comment forms given to all attendees, during the question and answer period, and after the meetings by email, phone, and submission through the project website.

Website: The Team developed the project website (massbikeplan.org) to facilitate public comment, provide project documents and maps available for download, and provide links to other related sources. The website is updated on a continuous basis, as new products are available for public viewing and comment.

Organizations and Advocacy Groups: Input was received from various bicycle groups, primarily through the project email list. Groups that responded included:

- The Massachusetts Bicycle Coalition (MassBike)
- Friends of the Bruce Freeman Rail Trail
- East Coast Greenway Alliance
- Essex National Heritage Commission
- Falmouth Bikeways Committee
- Natick Pedestrian and Bicycle Advisory Committee
- Northeast Greenway Solutions
- Wakefield Rail to Trail Committee

Publications

Newspaper Articles – Articles from local newspapers on bicycle projects were collected continuously throughout the plan process.

Commonwealth Connections is a vision for a coordinated network of greenways and trails in Massachusetts, and includes specific steps for making this vision a reality. It was developed by DCR in partnership with the Appalachian Mountain Club, the National Park Service and a broad group of stakeholders from across Massachusetts.

Published Guidebooks – Existing design standards for bicycle facilities were consulted, including the MassHighway *Project Development and Design Guide*, and the AASHTO *Guide for Development of Bicycle Facilities* (1999)

Bicycle Maps – Bicycle maps were obtained from throughout the state and cross-referenced with data from other sources. Significant maps include the Rubel Bike map

series that indicate bicycle suitability, the Pioneer Valley Bicycle Map, and the 1995 Massachusetts Bicycle Facilities Inventory.

Appendix 5
Massachusetts Investments in Shared Use Facilities Since 1997

ID No	Shared Use Path Name	Municipalities Served	Expended[1]
Completed Projects			
1-1	Ashuwillticook Trail	Adams, Cheshire, Lanesborough	$4,150
1-4	Canalside Trail (Turners Falls)	Greenfield, Montague, Deerfield	$4,200
2-3	Manhan Rail Trail	Easthampton	$950
2-5	Norwottuck Rail Trail	Northampton, Hadley, Amherst, Belchertown	$800
2-6	Art Swift Bike Connector	Amherst	$800
3-1	Connecticut Riverwalk 2	Agawam	$1,700
3-2	Connecticut Riverwalk 1	Springfield	$2,900
4-1	North Central Pathway 2	Gardner, Winchendon	$800
4-6	Nashua River Rail Trail	Ayer, Dunstable, Groton, Pepperell	$3,050
4-7	Assabet River Rail Trail 1	Hudson, Marlborough	$6,500
4-8	Upper Charles Trail 1	Milford	$1,950
5-1	Shining Sea Bikeway 1	Falmouth	$450
5-10	Eel Point Road Path	Nantucket	$550
5-15	Fairgrounds Road Path	Nantucket	$1,050
6-8	Cape Cod Rail Trail	Dennis, Harwich, Brewster, Orleans, Eastham, Wellfleet	$3,100
6-9	Harwich-Chatham Rail Trail	Harwich, Chatham	$2,550
7-7	Amesbury Riverwalk	Amesbury	$550
7-14	Bruce Freeman Trail	Westford, Chelmsford, Lowell	$4,250
8-1	WW II Veterans Memorial Trail	Mansfield	$500
9-1	Swansea Path	Swansea	$2,200
9-2	Fall River Regional Bikeway 1	Fall River	$550
9-4	Phoenix Bikeway	Fairhaven	$500
9-5	Little Bay Conservation Area Trail	Fairhaven	$550
9-7	Seaside Trail	Plymouth	$650
12-1	P. D. White Charles River Path	Waltham	$400
12-2	Minuteman Bikeway	Bedford, Lexington, Arlington, Cambridge	$4,400
12-20	East Boston Greenway 1	Boston	$1,450
Recently Advertised Projects			
1-11	Southwick Rail Trail	Southwick	$4,350
2-10	Manhan Rail Trail N Extension	Easthampton, Northampton	$1,300
2-11	Downtown Connector	Northampton	$2,200
5-16	Bartlett Road Path	Nantucket	$350
5-20	Shining Sea Bikeway	Falmouth	$4,000
7-13	Clipper City Rail Trail	Newburyport	$2,800
7-15	Peabody Bikeway	Peabody	$3,500
9-8	Fall River Regional Bikeway	Fall River	$550
9-9	Mattapoisett Path	Mattapoisett	$550
Total			**$71,100**

[1] * Thousands of actual dollars not adjusted for inflation, rounded to nearest $50,000 and not including all investments in a given project. *Data Source:* All information from MassHighway Project Information System (PROJIS) except for ID 3-1

Appendix 6
Bay State Greenway (BSG)
Primary Corridor Route Descriptions

Chapter 4 presents maps and overview descriptions of each of the seven BSG corridors. The following provides a detailed discussion of the streets and shared use paths that comprise the proposed routing for each corridor

Mass Central Corridor -Proposed Routing

The MCC proposed route begins in western Massachusetts, where it traverses the scenic Berkshire Mountains. This important tourist area also features the Commonwealth's most rugged terrain. The on-road portion of the route in western Massachusetts follows Route 20 from the New York border in Hancock (where it links to New York State Bike Route 5) into downtown Pittsfield, to East Housatonic Street, Appleton Avenue and then East Street into Dalton. Through Dalton the route follows South Street, Grange Hall Road into Hinsdale, where it turns into Robinson Road. The route then follows Curtis, Bridge, Main, and Maple Streets onto Route 143, which carries it through the towns of Peru, Worthington, Chesterfield, and Williamsburg. The route travels Route 9 from Williamsburg to Northampton where it joins the Northampton Bikeway (ID 2-1) off Bridge Street. From this point, the MCC Route follows the existing path through the towns of Hadley, Amherst, and into Belchertown along the Northampton Bikeway and the Norwottuck Trail (ID 2-5) (providing connections to the extensive local bicycle network in the Pioneer Valley's Five College Area). A short on-road stretch in downtown Northampton (along State, Summer, and North Streets) connects the Northampton Bikeway to the Norwottuck Trail). The route intersects with the BSG's Berkshires Corridor in Pittsfield, and with the BSG's Connecticut River Corridor (West and East) in Northampton and Amherst.

From Belchertown, the proposed route follows Warren Wright Road and Bay Road before it reconnects with Route 9, which it follows to Ware with a brief detour into the DCR Quabbin Reservoir Reservation.

In Ware, the route turns onto Route 32, traversing Hardwick and Barre, then Vernon Avenue to Route 122 to Oakham where it joins an existing stretch of the Mass Central Rail Trail (ID 1-7, 4-2, 4-9). The route remains on this trail through most of this rural and scenic stretch of Worcester County in Rutland and Holden until reaching the Wachusett Reservoir in West Boylston, with the following on-road alignment in Holden—Route 68 to Bryant Road to Whitney Street to Princeton Street. An unimproved section of the Mass Central Rail Trail (ID 4-9) can carry the route from Princeton Street to Mill Street and from there back onto the improved Greenway.

From West Boylston to Route 128, the route is primarily an on-road facility passing through suburban communities along the Old Boston Post Road west of Boston. The route goes through the communities of West Boylston (Thomas, Beaman, Pleasant, and

Prescott Streets), Sterling (Bean, Gates, Campground, Squareshire and Chace Hill Roads and Route 110), Clinton (Route 110), Berlin (Route 62), Hudson (Route 62 and Main Street), Stow (State and Hudson Roads), Sudbury (Hudson Street and Route 27), Wayland (Route 27 and Route 20) and Weston (Route 20, Boston Post Road, Church Street, and Route 117). Along this portion of the route, there are currently two completed shared use path segments of the Mass Central Route—an unimproved stretch of the Mass Central Rail Trail (ID 4-9) between downtown Clinton and Berlin, and a section of the Assabet River Rail Trail (ID 4-7) in Hudson. The MCC route follows Route 117 from Weston into Waltham, where it reconnects with Route 20 until Central Square. There it follows Moody Street to the Charles River and joins the proposed and existing shared use Dr. Paul Dudley White Charles River path system (ID 12-1) along the south side of the river for the remainder of its length into Boston (passing through Newton, Watertown and Cambridge), with a short stretch on the river's north side after North Street in Waltham. The MCC Route intersects with the BSG's Nashua River-Buzzards Bay Corridor in Sterling, and with the BSG's Boston-Cape Cod Corridor in Boston.

Mass Central Corridor: Long-Term Route Development Changes

A number of new projects, when implemented, would become part of the ultimate MCC routing as follows:

A funded westward extension of the Northampton Bikeway (ID 2-8) would ultimately shift another 1/2 mile of the route off Route 9.

The alignment from Belchertown to Ware could shift to the south, with the completion of the proposed sections of the Mass Central Rail Trail through Belchertown, Palmer, and Ware (ID 1-22) and the funded Ware River Valley Rail Trail (ID 1-14) before rejoining the proposed route.

The route would follow proposed shared use path extensions of the Ware River Valley Rail Trail (ID 1-26) and Mass Central Trail (ID 1-22), as well as the proposed Hardwick Rail Trail (ID 1-15) through Ware, Hardwick, New Braintree and Barre with short on-road segments.

A proposed section of the Mass Central Rail Trail (ID 4-22) would eliminate some on-road sections in West Boylston and Sterling.

The alignment could change to the east of Interstate 495 if all proposed projects are built. Beginning in Berlin, Mass Central Rail Trail projects including the Mass Central and Wayside Trails (ID 4-27, 10-12, and 12-30) bring the route into Waltham. From there, the route would follow the proposed Fitchburg Cutoff (ID 12-29, 12-22) through Belmont to Cambridge, where it will join the existing Red Line Linear Path and Extensions (ID 12-13). In Somerville, the route follows the existing, funded, and proposed Somerville Community Path (ID 12-14, 12-23, 12-34). The route would then reenter Cambridge on the path system through the funded North Point Park (ID 12-24) before ending at the Charles River.

Long-Term Vision: If the proposed paths that comprise the MCC were fully implemented, the route would ultimately feature approximately 110 mi of shared use paths and 40 mi of on-road routes.

Berkshires Corridor: Proposed Routing

The Berkshires Corridor (BC) begins in the northwestern corner of the Commonwealth with two spurs. The first starts at the Vermont border in Clarksburg and follows Route 8 and Middle Road into North Adams, and then Franklin and Eagle Streets into downtown. There it joins the second spur that connects downtown Williamstown with North Adams via Route 2, Galvin Road, Massachusetts Avenue, and River Street. From North Adams, the route heads south along Route 8A and South Church Street to Adams where it follows East Road to East Hoosac Street before joining the existing segment of the Ashuwillticook Trail (ID 1-1) through Adams, Cheshire, and Lanesborough.

From the Pittsfield line to the Connecticut border, the proposed route is an on-road facility passing through Pittsfield (Route 8, Merrill Road, merged with the BSG's MCC Route on East Street, and then diverging south onto Elm Street, Holmes Road, and Chapman Road), Lenox (East and Walker Streets), Lee (Mill and Columbia Streets to the center of Lee, and then Center, Main and West Park Streets and Stockbridge Road), Stockbridge (Lee and Yale Hill Roads, Main Street, Glendale Middle Road, and Route 183), Great Barrington (Van Duesenville Road and Route 41), Egremont and Sheffield (along Route 41).

Berkshires Corridor: Long-Term Route Development Changes

A number of new projects, when implemented, would become part of the ultimate BC routing as follows:

The Williamstown spur would be shifted over to a proposed shared use path extension of the Ashuwillticook Trail) (ID 1-16).

On-road sections of the route north of East Street in Pittsfield would ultimately be shifted to the proposed Ashuwillticook Pittsfield Extension (ID 1-17).

The on-road sections of the route south of East Street in Pittsfield are expected to be shifted to the proposed adjacent Berkshire Bike Path shared use path facility in the future (ID 1-18).

Long-Term Vision: If the proposed paths that comprise the BC were fully implemented, the route would ultimately feature approximately 62 mi of shared use paths and 3 mi of on-road routes.

Connecticut River Valley Corridor (East and West): Proposed Routing

Connecticut River Valley Corridor (West). Beginning at the Vermont border, the proposed CRVC West route is primarily an on-road facility through Northfield (Route 142), Bernardston (Route 10, Shaw and Hoe Shop Roads), Greenfield (Lampblack, Log Plain, Barton, and Country Club Roads; Silver and Nash's Mill Street, Riverside Drive, Colrain Street, Solon Street, Route 2A, River Street, Mill Street, and Route 5), Deerfield

(Route 5, Main Street, Mill Village Road, North Main Street, South Main Street, Long Plain Road, Route 116, Sugarloaf Street, and River Road), Whately (River Road), and Hatfield (Main, Maple and Elm Streets), with short shared use path segments of the Greenfield Paths in downtown Greenfield (ID 1-3).

After passing from Hatfield to Northampton, the proposed route follows King Street and Hatfield Street where it joins the Northampton Bikeway. The route follows existing or funded sections of the Northampton Bikeway (ID 2-1), Downtown Connector (ID 2-11), William Nagle Sr. Walkway (ID 2-4) and Manhan Rail Trail (ID 2-10, 2-3) through Northampton and Easthampton (with a short on-road connection from the Northampton Bikeway to the Downtown Connector along State, Summer and North Streets), after which it continues on-road to Southampton and Westfield on South Street and Route 10. In Westfield, the route will continue on Route 10 to Tannery, Hollow and Shaker Roads and onto to the Southwick Rail Trail (ID 1-11) which will carry it through Southwick to the Connecticut border.

Connecticut River Valley Corridor (East). The proposed CRVC East route is an on-road facility from the New Hampshire border to Chicopee, passing through several towns as follows: Northfield (Route 63 and Pine Meadow Road), Erving (River Road), Montague (East Mineral, Plains, Lake Pleasant, Old Northfield, and Turners Falls Roads; Main Street, North Leverett Road, and Route 63), Sunderland (Route 63), Leverett (Route 63, Montague, Depot, Long Hill, and Amherst Roads), Amherst (Leverett Road; Bridge, Pine, East Pleasant, North Pleasant, and South Pleasant Streets; and Route 116), Granby and South Hadley (Route 116).

After crossing into downtown Holyoke, the route will follow Route 116 to North Canal Street and back onto Route 116 where it will cross into Chicopee. The route will remain on Route 116 into Chicopee where it will follow Meadow, McKinstry, and Grattan Streets, and Granby Road, from where it joins Springfield Street into Springfield. At the Bay State Medical Center, the route will follows Chestnut Street, Noble Street, Main Street, and Wason Avenue to the northern end of the existing Connecticut Riverwalk.

The route will continue through the existing portions of the Connecticut Riverwalk (ID 3-1) in downtown Springfield to the South End Bridge. The route will cross the South End Bridge (bicyclists are advised to walk their bicycles across the bridge and its access roads) into Agawam where it will continue south on River Road to the existing portion of the Riverwalk (ID 3-2) in that town before reaching the Connecticut border via a short on-road segment along Route 159.

Connecticut River Valley Corridor (East and West): Long-Term Route Development Changes

A number of new projects, when implemented, would become part of the ultimate CRVC routing[2] as follows:

The funded Columbia Greenway (ID 1-27, 1-12) would eliminate on-road sections in Westfield and connect to the Southwick Rail Trail. The funded Manhan Rail Trail Southern Extension (ID 2-9) would carry that shared use facility to the Southampton line. These, together with the proposed New Haven and Northampton Corridor (ID 1-21), would result in a continuous shared use path facility along the CRVC West from the Northampton Bikeway to the Connecticut border.

In Amherst and Granby, the CRVC East would shift to the proposed Holyoke Range Trail (ID 2-14) should that proposed shared use path facility be built.

The CRVC East route will join the Holyoke Canalwalk (ID 3-3) through Holyoke.

The CRVC East route would join the proposed Chicopee-Holyoke Connection (ID 3-9) and Chicopee's proposed section of the Connecticut Riverwalk (ID 3-7) on the east side of the Connecticut River where it would connect with the existing section of the Connecticut Riverwalk in Springfield (ID 3-1).

Long-Term Vision: If the proposed paths that comprise the CRVC were fully implemented, the route would feature approximately 49 mi of shared use paths and 71 mi of on-road routes.

Nashua River-Buzzards Bay Corridor: Proposed Routing

The proposed NRBBC route begins at the New Hampshire border with the Nashua Rail Trail (ID 4-6) running from Dunstable south through Pepperell and Groton until the trail terminates in downtown Ayer. From Ayer, the Nashua-to-Buzzards Bay Route follows the AC on-road routing through Harvard and Bolton before shifting onto Green Road and Forbush Mill Road into Lancaster. The route joins Route 110 for a brief stretch in Lancaster before following Bolton Road, Main Street, and Sterling Roads into Sterling where it merges onto Route 62.

In Sterling center, the route shifts onto the Mass Central Rail Trail Sterling Spur (ID 4-4) via Wauschacum Avenue before merging with on-road sections of the MCC west into West Boylston. The route then diverges from the MCC and follows Thomas, Crescent, Central, Worcester, Maple, and Shrewsbury Streets into Worcester.

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[2] A connection north of Route 10 at the site of the Schell Bridge, which is scheduled for demolition and has been closed since 1985 due to its severely deteriorated condition, may potentially serve as a second crossing option. No funding source has been identified to implement a crossing at this site. The potential connection route (via West Northfield Road in Northfield) is currently identified in Appendix 7 as a desirable secondary route. Given the distance to the next comfortable river crossing for bicyclists in Massachusetts (2 miles to Route 10 or 10 miles to the French King Bridge), this classification may be upgraded to the primary network as part of the Connecticut River Route system should preservation efforts in support of this potential connection eventually result in a refurbished bridge.

The NRBBC route alignment in Worcester initially follows the city's eastern boundary along Briar Lane, East Mountain Street, NE Cutoff, Plantation Street, Lincoln Street and Lake Avenue to the western shore of Lake Quinsigamond. In Lake Quinsigamond State Park the route heads west towards downtown Worcester along Hamilton Street.

As currently proposed, the route will be on-road along the following alignment: Worcester (Plantation, Massasoit, Heywood, and Providence Streets, and Route 122A), Millbury and Sutton (Route 122A), Grafton (Route 122A, Route 122), Northbridge (Route 122; School, Quaker, Church, Douglas and Fletcher Streets), Uxbridge (Rivulet Street, Hartford Avenue, Granite Street, Oak Street, Route 16, Hecla Street, Elmdale Street, Bacon Street, Blackstone Street, and Route 122), Millville and Blackstone (Route 122). Before passing from Worcester into Millbury, the route will travel along the existing stretch of the Blackstone River Bikeway (ID 4-5).

After following the alignment of bicycle facilities cutting across the northeastern corner of the Rhode Island from Woonsocket to Warren via Providence, (ID RI-1 and RI-4) the NRBBC Route reenters Massachusetts in Swansea along Route 103 (Wilbur Avenue), which it follows through Somerset to the Brightman Street Bridge. Once crossing the bridge into Fall River, the route follows Brightman Street to North Main Street to President Avenue to Robeson Street. Robeson Street turns into 13th Street before crossing over Interstate 195 and becoming Plymouth Avenue. The route turns off Plymouth Avenue onto Stafford Street and then onto Brayton Avenue and the section of the Fall River Regional Bikeway (ID 9-8) that is currently ready to be advertised for construction. The bikeway will carry the NRBBC Route onto Route 6 and into Westport.

As currently proposed, the route follows Sanford Road and Old Bedford Road in Westport, which becomes Old Fall River Road in Dartmouth and New Plainville Road in New Bedford. In New Bedford, the route follows the following roads to the Acushnet River—New Plainville Road; and Mount Pleasant, Nauset, Purchase, and Coggeshall Streets. Once in Fairhaven, the route follows Howland Street to Main Street to the Phoenix Bikeway (ID 9-4) into Mattapoisett where it follows the funded Mattapoisett Path (ID 9-9). At the end of the funded Mattapoisett Path, the route follows Mattapoisett Neck Road to Route 6 to River Road, to Acushnet Road, to Crystal Spring Road, to North Street, which becomes Mattapoisett Road after entering Rochester.

In Rochester, the route follows New Bedford, Marion, and Mary's Pond Roads before entering Wareham (at which point Mary's Pond becomes Fearing Hill Road). In Wareham, the route follows Fearing Hill to Main Street, Sandwich Road, Narrows Road, and Minot Avenue to Onset Avenue, which it follows onto Route 6 for connections to the Cape Cod Canal (Service Road) Paths, the Bourne Bridge, and connections with the BSG's Boston-Cape Cod Corridor.

Nashua River-Buzzards Bay Corridor: Long-Term Route Development Changes

A number of new projects, when implemented, would become part of the ultimate NRBBC routing as follows:

The on-road section of the NRBBC merged with the MCC may be shifted over to a proposed shared use section (ID 4-22).

The entire length of the proposed NRBBC route from Worcester to the Rhode Island border will be along the shared use trail network of the Blackstone River Bikeway (ID 4-24, 4-13, 4-12, and 4-31).

The proposed section of the Fall River Regional Bikeway (ID 9-12) would carry the route between 13th Street and Westport.

NRBBC route may follow the proposed Fall River to New Bedford Path (ID 9-13) east to New Bedford.

The Mattapoisett Path extension proposal (ID 9-14) and the proposed Marion-Wareham Rail Trail (ID 9-15) would bring the route to its terminus in Buzzards Bay.

Long-Term Vision: If the proposed paths that comprise the NRBBC were fully implemented, the route would ultimately feature approximately 77 mi of shared use paths and 63 mi of on-road routes.

Boston-Cape Cod Corridor: Proposed Routing

The proposed BCCC route begins in downtown Boston and follows Summer Street into the South Boston neighborhood where it changes into L Street. L Street terminates at the L Street Beach where the route follows completed sections of the Harborwalk (ID 11-8) into the Dorchester neighborhood. South of Columbia Point, the Harborwalk terminates at Morrissey Boulevard, which the route follows for a short stretch to a portion of the Neponset River Greenway (ID 11-9) along Tenean Beach. Short on-road sections south of the beach (Conley, Tenean, Water and Taylor Streets) carry the route through the Port Norfolk neighborhood to the remainder of the completed Neponset River Greenway (ID 11-9).

As currently proposed, the route will shift onto Central Avenue at the end of the Greenway and then onto River Street to Mattapan Square, where it crosses into Milton along Blue Hill Avenue, and then onto Truman Parkway. The route crosses back into Boston's Hyde Park neighborhood before returning to Milton along the Neponset Valley Parkway.

From this point the proposed BCCC route primarily follows the Claire Saltonstall Bikeway to Cape Cod. In Milton and Canton the route follows Route 138 before turning onto Randolph Street (which becomes Canton Street upon entering Randolph). The route follows Route 28 south out of Randolph into Avon. From there it travels the following towns and streets: Avon (East High Street), Holbrook (Spring, South and Linwood Streets), Abington (Boundary and North Quincy Streets), Brockton (Quincy Street, Hammond Avenue, and Thatcher Street), and East Bridgewater (Summer, Elm, North Central, Chestnut, Crescent, Washington and Pond Streets).

After entering Halifax, the BCCC route follows Pond and Elm Streets, Old Plymouth Street, Route 106, Carver Street, South Street and Franklin Street into Plympton, where it

runs along Center Street, Route 58, Mayflower Street, Colchester Street and Brook Street. The route takes Elm Street to Route 80 from Kingston to Plymouth and in Plymouth the route uses the following streets—Route 80, Route 44, Carver Road, Summer Street, Route 3A, South Street, Long Pond Road, and Hodges Pond Road.

The route follows State Road and Old Route 3A to Bourne, where it crosses the Sagamore Bridge and follows the Cranberry Highway to Route 6A to Route 130 to the Route 6 Service Road. Presently, the route passes through Sandwich and Barnstable before following Route 132, Phinney's Lane, Hyannis Road and Route 6A into Yarmouth. In Yarmouth the route turns onto Setucket Road. In Dennis the route follows Mayfair Road to Old Bass River Road to Main Street to Upper County Road to Route 134 to the existing portion of the Cape Cod Rail Trail (ID 6-8). The route runs along the rail trail through Harwich, Brewster, Orleans, and Eastham to its end in Wellfleet (ID 6-8). The journey to Provincetown is completed on the following Lower Cape roads—Wellfleet (Lecounts Hollow Road, Ocean View Drive, Long Pond Road and West Main Street), Truro (Old County Road, Depot Road, Route 6A, Castle Road, Route 6 and then Route 6A again into Provincetown).

After crossing the Cape Cod Canal on the Sagamore Bridge, a spur of the Claire Saltonstall Route follows the Cape Cod Canal (Service Road) Paths (ID 6-1) to Woods Hole via County and Quaker Roads and the funded and existing sections of the Shining Sea Bikeway (ID 5-24 and 5-1) into Falmouth.

Boston-Cape Cod Corridor: Long-Term Route Development Changes

A number of new projects, when implemented, would become part of the ultimate BCCC routing as follows:

Proposed sections of the Harborwalk (ID 11-16) would eliminate the need to use Morrissey Boulevard for the connection to Tenean Beach.

Proposed extensions of the Neponset River Greenway (ID 11-14) would carry the BCCC Route into Milton.

The Route 6 Service Road section could be shifted to the proposed Barnstable/Yarmouth Bikeway (ID 6-16).

The route would merge onto the funded portion of the Cape Cod Rail Trail (ID 6-15) in Yarmouth.

A proposed Cape Cod Rail Trail extension (ID 6-19) would extend the shared use path portion of the route to West Main Street in Wellfleet.

The entire route from the Cape Cod Canal to Woods Hole would be on shared use paths if the proposed portion of the Shining Sea Bikeway (ID 6-18) is built.

Long-Term Vision: If the proposed paths that comprise the BCCC were fully implemented, the route would ultimately feature approximately 78 mi of shared use paths and 72 mi of on-road routes.

North Shore Corridor: Proposed Routing

The proposed NSC route begins at the New Hampshire border following Route 1A along the coast in Salisbury to Ferry Road, March Road, and the Route 1 Bridge over the Merrimack River into Newburyport. There it follows Winter and Washington Streets to the new Clipper City Rail Trail (ID 7-14) (currently advertised for construction). At the end of the rail trail it will follow Parker Street into Newbury where it joins Scotland Road. Once on Scotland Road, the route continues to Topsfield via the following roads: West Newbury (South Street), Newbury (Main Street), Georgetown (North Street, Route 97 and Nelson Street), Boxford (Baldpate Road, Ipswich Road, Pond Street, Depot Road and Bare Hill Road), Topsfield (Bare Hill Road and Route 97). The North Shore Route then follows Route 97 into Beverly by way of Wenham.

In Beverly, the route follows Route 97 to Route 1A to Dane Street to Route 127 to the Route 1A bridge over the Danvers River and into Salem. The following streets are used in Salem—Bridge Street, Winter Street, Washington Square, Hawthorne Boulevard, Derby Street, Lafayette Street, Loring Avenue, and Leggs Hill Road into Marblehead. The route cuts over from the end of Leggs Hill on Tedesco Street and Tufts Street to Humphrey Street where it turns back towards Swampscott. In Swampscott the route follows Humphrey to Route 129 through downtown Swampscott into Lynn.

The interim route passes through Lynn on Eastern Avenue (Route 129A), Western Avenue, Chestnut Street, Broadway, Parkland Avenue, Dungeon Avenue, Myrtle Street and Boston Street. Ultimately, the route will join the Northern Strand Community Trail in Saugus for the remainder of the journey into Boston. Until that shared use path facility is completed, the route follows an on-road system of streets to connect in with BSG's other Boston routes as follows: Saugus (Hamilton Street, Main Street, and the Lynn Fells Parkway), Melrose (Lynn Fells Parkway), Stoneham (Pond Street, South Street, North Border Road, Park Street and Marble Street), Winchester (Forest Street, Highland Avenue and Mystic Valley Parkway), and Arlington (Route 60 to the Minuteman Commuter Bikeway (ID 12-2) and the BSG's MRCRC.

North Shore Corridor: Long-Term Route Development Changes

A number of new projects, when implemented, would become part of the ultimate NSC routing as follows:

The Salisbury Rail Trail (ID 7-16) and Clipper City Rail Trail, Phase I (ID 7-14) will carry the route from New Hampshire and through Salisbury and Newburyport to Parker Street.

The proposed Border to Boston trail system (ID 7-23) would run from Main Street in Newbury to downtown Danvers, with a short on-road section in Boxford.

The connection from Danvers to Lynn is challenging because the most direct link to the Northern Strand Community Trail (ID 12-36, 12-42) avoids key population centers along the coast in Salem, Marblehead, and Swampscott, and the routing that would make the most use of existing and proposed shared use facilities is comparatively meandering.

The ultimate alignment of the NSC through this area may be determined more by which of the two long-distance share use projects is implemented first (Border to Boston or Northern Strand). For that reason, this Plan does not recommend the detailed alignment of the ultimate North Shore Route[3]. Whichever connection is identified would carry the route to the proposed Northern Strand Community Trail for the remainder of its length into Boston (via Saugus, Revere, Malden, and Everett).

Long-Term Vision: If the proposed paths that comprise the NSC were fully implemented, the route would ultimately feature approximately 43 mi of shared use paths and 12 mi of on-road routes.

Merrimack River - Charles River Corridor: Proposed Routing

The proposed MRCR route begins in Salisbury at the Salisbury Rail Trail (ID 7-16, 7-12) and follows the Salisbury Point Ghost Trail (ID 7-8) to Amesbury. From Amesbury to Lowell, the route follows several roadways that roughly correspond to the Merrimack River's alignment. In Amesbury the route follows Merrill Street, Evans Street, Main Street, Merrimac Street and Pleasant Valley Road. In Merrimac the route joins River Road and Merrimac Street, which becomes Broadway in Haverhill. The route follows Broadway, to Groveland Street, Water Street and Route 125 through Haverhill and into North Andover. Before entering Lawrence, the route shifts onto Sutton Street.

In Lawrence, the proposed MRCR follows Merrimack Street, Canal Street, the O'Leary Bridge, Water Street and Riverside Drive when traveling west. Eastbound travelers are diverted from a one-way section of Canal Street onto Lawrence, Methuen, and Union Streets before rejoining Canal Street as a two-way roadway. After Riverside Drive crosses into Methuen, the route follows Route 110 again through Dracut into Lowell. In Lowell the route crosses the Central Bridge onto Bridge Street. The route follows French Street, Arcand Drive, Dutton Street, and Thorndike Street to Route 110. From Route 110, it turns onto Plain Street, which takes it under the Lowell Connector Highway to the northern end of the funded portion of the Bruce Freeman Trail (ID 7-10).

The proposed MRCR runs the length of the funded portion of the Freeman Trail (ID 7-10), beginning in Lowell and passing through Chelmsford and Westford. The route will depart from the Freeman Trail in Carlisle and onto West Street. After entering Acton, the route follows Pope Road and Strawberry Hill Road to Concord, and Barretts Mill Road and Lowell Road into Concord center.

In Concord center the interim MRCR route follows Route 2A to the Battle Road Trail (ID 10-2). At the end of the trail, it follows Massachusetts Avenue to Lexington Center where it joins the Minuteman Commuter Bikeway (ID 12-2) through Lexington and

[3] A potential routing that would take advantage of existing and proposed shared use facilities would follow a short on-road connection in Danvers that would link the Border to Boston trail to the proposed Essex Railroad Rail Trail (ID 7-22) which would carry the route into Salem. From there, the proposed route includes: the proposed Salem Multipurpose Trail (ID 7-25), unimproved Marblehead Trail (ID 7-11), proposed Swampscott Rail Trail (ID 7-28), and Lynn Nahant Beach Reservation Trail (ID 7-9) to the Northern Strand Community Trail.

Arlington to its terminus in Cambridge. From this point, the route is on-road along the Alewife Brook Parkway to the Fresh Pond pathway system to Huron Avenue. From Huron, southbound travelers can use Sparks Street to access the Charles River. Northbound travelers coming off the Charles River would use Mount Auburn, Lowell and Appleton Streets to access Huron Avenue. At the Charles River, the route would connect with the BSG's MCC.

Remaining on the north side of the Charles River, the proposed MRCR continues to the Boston University Bridge, where it crosses into Boston and onto Essex Street to Mountfort Street to Park Drive (northbound bicyclists will use Carlton Street rather than Essex for accessing the Boston University Bridge). Park Drive carries the route onto the section of the Emerald Necklace Trails (ID 11-4) running along the Back Bay Fens before turning onto Louis Prang, Ruggles, and Tremont Streets. From there the route follows the existing portion of the South Bay Harbor Trail (ID 11-7). The interim route will end where the existing trail ends near Boston Medical Center.

Merrimack River - Charles River Corridor: Long-Term Route Development Changes

A number of new projects, when implemented, would become part of the ultimate MRCR routing as follows:

A portion of the on-street alignment could be shifted with the construction of the proposed Amesbury Rail Trail (ID 7-27). Some on-road connections in Lowell to the Freeman Trail may ultimately be replaced by the proposed Concord River Greenway (ID 7-29).

The route will follow the proposed Freeman Trail extension (ID 7-18) to the proposed and existing portions of the Reformatory Branch Trail (ID 10-10, 10-3) once those two shared use path facilities are extended and join in Concord, and then continue into Bedford center where it will join the Minutemen Commuter Bikeway (ID 12-2).

The route would continue to Boston Harbor along the funded section of the South Bay Harbor Trail (ID 11-11) and existing sections of the Harborwalk (ID 11-8) where it would connect with the BCCC.

Long-Term Vision: If the proposed paths that comprise the MRCR were fully implemented, the route would ultimately feature approximately 43 mi of shared use paths and 12 mi of on-road routes.

Appendix 7
Bay State Greenway (BSG)
Secondary Network Descriptions

Chapter 4 describes the rationale for the Bay State Greenway and provides an overview of the 740-mile, seven route primary corridor system. Connections between the primary system and key population and activity centers will be provided by a secondary network of BSG routes. These routes, which are represented in the network maps in Chapter 4, are described below. The routes are identified by number in Figure A7-1. The names associated with each for the most part identify the beginning and ending point of a particular route.

1. ***Connecticut River Route Spurs***
   Two spurs beginning in Northampton and Easthampton join and follow the Connecticut River south to Holyoke, before continuing south to West Springfield, eventually along the proposed Connecticut Riverwalk project, and across the river into downtown Springfield. Additional spurs would take shape with the completion of the Highland Division Rail Trail and the Redstone Bikeway Extension through Springfield and Longmeadow to the Connecticut border, and the renovation of the Schell Bridge with an on-road route into New Hampshire.

2. ***Springfield to Blackstone***
   The route follows an on-road alignment from Springfield east to Southbridge where it joins the Southern New England Trunkline Trail (SNETT) in Dudley, before passing through a portion of Connecticut and then returning to Massachusetts in Douglas. From there it follows the SNETT and on-road routes to Blackstone where it ends at the BSG's Nashua River to Buzzards Bay Route. Ultimately sections of the route could be shifted onto the Quinebaug River Trail in Southbridge and Dudley and the Blackstone River Bikeway in Uxbridge, Millville and Blackstone. This section also incorporates elements of the South Central Massachusetts Trails (Appendix 12).

3. ***Greenfield to Worcester***
   This route primarily follows Route 122, connecting Greenfield and Worcester, intersecting the BSG's Mass Central Route in Barre and Oakham.

4. ***Northfield to Sterling***
   This corridor is on-road from its beginning at the BSG's Connecticut River Route (East) in Northfield to Winchendon. From there it runs along existing sections of the North Central Pathway to Gardner. The route continues on-road to the east through Fitchburg and Leominster to Sterling where it ends at the junction with the BSG's Nashua River to Buzzards Bay Route. Ultimately, additional sections of the route could be shifted onto the proposed Fitchburg Trail System and Twin City Rail Trail. Proposed extensions of the North Central Pathway and

Winchendon Trails could carry two route spurs north to the New Hampshire border.

5. ***Ware to Palmer***
   This route provides an on-road connection from the proposed and ultimate alignment of the BSG's Mass Central Route to the BSG's secondary Springfield to Blackstone route.

6. ***Dudley to Northbridge***
   This short on-road connector route runs from the Connecticut border in Dudley to Northbridge where it joins the BSG's Nashua River to Buzzards Bay Route.

7. ***Worcester to Berlin***
   This short route runs along the southeastern edge of the Wachusett Reservoir, connecting the BSG's Nashua River to Buzzards Bay and Mass Central Routes.

8. ***Worcester to Boston***
   An on-road route from Worcester to Boston, following the route of the Boston Marathon (Routes 135, 16 and 30) from Hopkinton east.

9. ***Harvard to Hull***
   This corridor starts at the BSG's Nashua River to Buzzards Bay Route in Harvard and follows the Adventure Cycling Boston spur from Ayer to Acton. An interim on-road route parallels the proposed Bruce Freeman and Cochituate Trails to Natick. From there, the route is on-road through Norwood and Randolph to Hull, via the Weir River Path in Hingham and Hull. Ultimately, the route could shift over to proposed shared use paths in Braintree, Weymouth and Hingham (Greenbush Rail with Trail) and Hull (Hull Rail Trail).

10. ***Hudson to Acton***
    This short route connects the BSG's Mass Central Route in Hudson with the BSG's Merrimack River and Charles River Route in Acton. Ultimately, much of the route would shift onto proposed sections of the Assabet River Trail.

11. ***Blackstone to Waltham***
    This corridor starts in Blackstone following the SNETT to Franklin, then on-road up through Dover, Wellesley, to the Charles River in Waltham.

12. ***Pawtucket, RI to Norwood***
    This proposed route would run along an abandoned railroad corridor beginning along the Blackstone Bikeway in Pawtucket, Rhode Island, and through North Attleboro, Wrentham, and Walpole to Norwood. Northern connections with Boston-oriented routes would be identified if this proposed route becomes a reality.

13. ***Lowell to Bedford***
    This route runs on-road from Lowell to the end of the Minuteman Commuter Bikeway in Bedford, making use of the Narrow Gauge Rail Trail in Bedford and ultimately the proposed Yankee Doodle Bikeway in Billerica.

14. ***Lawrence to Lexington***
    The route follows an on-road alignment for much of the route between Lawrence and Lexington, with some shared use path sections along the Burlington Bikeway and Vine Brook Trail System in Lexington.

15. ***Winchester to Danvers***
    This route follows the proposed alignment of the North Suburban Bikeway from Danvers to Wakefield and then the proposed Tri-Community Bikeway to Winchester where it joins the existing Aberjona Bikeway. Interim on-road routes would connect the route with the BSG's North Shore Route in Topsfield.

16. ***Boston Urban Ring***
    This route generally follows the alignment of the proposed MBTA Urban Ring transit line, beginning at Maverick Square in East Boston and passing through Chelsea, Everett, Somerville, Cambridge, and Brookline before returning to Boston and ultimately ending at Boston Harbor in South Boston.

17. ***Claire Saltonstall – Boston Section***
    This route follows the alignment of the Claire Saltonstall Bike Route from the Charles River in Boston, through Brookline and the Jamaica Plain, Roslindale and Hyde Park neighborhoods to Milton where it connects into the Boston to Cape Cod Route. The route includes a parallel route along the Pierre Lallemont Bike Path through Roxbury and Jamaica Plain.

18. ***Newburyport to Beverly***
    An on-road route that follows the North Shore from Newburyport to Beverly, providing connections to all Cape Ann communities.

19. ***Boston to Bourne***
    Beginning in Dorchester, this on-road route follows the South Shore to the Cape Cod Canal.

20. ***Wareham to Plymouth***
    The BSG's Nashua River to Buzzards Bay and Boston to Cape Cod Routes will be connected via a short route using on-road routes and the Myles Standish State Forest trail system.

21. ***Falmouth to Chatham***
    This on-road route provides a southerly crossing of Cape Cod, beginning at the Boston to Cape Cod Route's Falmouth spur in Woods Hole and continuing across the Nantucket Sound coast of the upper Cape to Chatham. The route uses a short section of the Cape Cod Rail Trail in Dennis and Harwich and could ultimately use the proposed Harwich-Chatham Rail Trail.

22. ***Martha's Vineyard***
    This route makes use of existing facilities on the island—the Edgartown-Vineyard Haven Path and the Edgartown-Oak Bluffs Path, making connections

between the ferry terminals in Vineyard Haven and Oak Bluffs and passing through the towns of Tisbury, Oak Bluffs and Edgartown.

23. ***Berkshires Corridor (Sheffield to Springfield)***

    Representing the western Massachusetts portion of a potential Grand Trunk Trail, this route would travel from Sheffield to Springfield via: Berkshire School Road, Route 7, Route 7A, School Street, Clayton Road, Canaan Road, Canaan Southfield Road, Hadsell Street, Mill River, Southfield Road, New Marlborough Southfield Road, Route 57, Springfield Street, Mill Street, Route 75, and Route 147 to Springfield

Appendix 8
EOTPW and MPO Evaluation Criteria

Existing Evaluation Criteria

EOTPW in building upon the earlier efforts of the Commonwealth's RPAs, developed objective evaluation criteria in 2003 to guide decision-making at three key steps in project development: project initiation; at the completion of significant planning milestones (such as environmental assessments); and whenever funding is allocated among projects (such as the Regional Transportation Plans and Transportation Improvement Programs). The criteria were developed cooperatively with other transportation stakeholders in Massachusetts, including MassHighway, the MBTA, and the RPAs.

The following existing evaluation criteria are applicable to bicycle projects, pedestrian projects, and transportation enhancement projects:

- *Condition and Service Quality*: measures include the magnitude of surface condition improvement and the magnitude of improvement of other infrastructure elements such as drainage systems and bridges
- *Mobility*: measures include number of new users, effect on travel time/access/connectivity for existing users, and consistency with the 1998 *Massachusetts Statewide Bicycle Transportation Plan*[4]
- *Safety and Security*: effect on transportation security and evacuation routes
- *Cost Effectiveness*: cost per user and cost per linear mile

Evaluation Criteria Used by Commonwealth RPAs

As mentioned above, the Commonwealth's efforts to develop evaluation criteria to determine the merit of various transportation projects began at the regional level with work conducted by Massachusetts MPOs. The Boston MPO in particular has developed evaluation criteria. The criteria are specific to each mode of travel. The Boston MPO evaluates bicycle and pedestrian projects using an eight-category rating system. Each category includes several sub-categories incorporating a variety of data inputs. These eight categories are:

- Existing conditions
- Safety
- Mobility
- Community impacts
- Environment
- Land use
- Economic development
- Cost effectiveness

[4] This would be updated to reflect consistency with the *Plan*

Suggested Evaluation Criteria for BSG Implementation

Table A8.1 presents suggested evaluation criteria for on-road and shared use path projects as part of BSG implementation. The criteria are flexible in that they can be applied to projects at various stages of the planning and development process. For example, the criteria can be applied to the universe of projects identified as key components of the BSG to determine overall state priorities. The criteria can also be used, perhaps most practically, to assist decision-makers in selecting among multiple BSG projects that enjoy support and are fully designed, but for which funding is not available to build all of them. The use of the criteria at the programming stage is critical because informed decisions can be made on competing projects before they proceed to full implementation.

Table A8.1
Evaluation Criteria for On-Road and Shared Use Path Projects

Criterion	Description
Mobility Criteria	
Expands network continuity	Projects that provide connections between at least two other completed sections of the BSG or extend an existing section should be prioritized.
Usage characteristics	This measure favors projects that would serve multiple travel markets: commuting, other necessary travel such as school trips, as well as recreation, tourism, and other purposes.
Multimodal connections	Projects that improve or provide a direct connection to any rail (subway, light rail, commuter rail), ferry, airport, or intercity bus facility. Connections to key fixed route bus stops would also qualify.
Existing degree of bicycle accommodation	This measure favors those projects that incorporate bicycle facilities onto roadways without any existing accommodation for bicycles, or on which pavement conditions require improvement.
Equity and Environmental Criteria	
Supports sustainability	Since increased bicycle travel can help reduce reliance on private automobile transportation, projects that serve areas where sustainable land use planning is being practiced should be favored.
Geographic equity	Projects would receive a positive rating if there had not been a recent bicycle project (past 3 years) implemented in their MPO region.
Environmental justice	Projects would receive a positive rating if they served an identified environmental justice community (within 2 miles).
Cost effectiveness	Construction cost per mile should be given extra consideration to ensure that high-cost projects advance only if they have other substantial positive benefits.

As is the case with all of EOTPW's work in the area of project analysis, the evaluation criteria presented here represent an approach to prioritizing projects at this time. The criteria are likely to evolve as the amount of available data grows and as the benefits of newly opened projects is quantified.

As stated in Section 5.4.1, the *Plan* recommends that the priority for implementing new shared use path facilities should first emphasize funded projects on the BSG and funded off-network projects. In general, proposed BSG projects should be given priority over proposed off-network projects except in circumstances where certain off-network projects are expected to meet other important transportation policy objectives.

Table A8.2 presents the proposed rating scale to be applied to the proposed Evaluation Criteria. Although each of the criteria represent important goals for the BSG, weights should be assigned to elevate the most critical goals—network connectivity, connectivity with transit, multiple travel markets served, and improvements relative to current conditions.

Table A8.2
Proposed Rating Scale for BSG Evaluation Criteria

CRITERION	RATING RANGE
Usage Characteristics	1 point for each of the following markets likely to be served by the improvement: work, school, transit access, recreation/tourism, other.
Multimodal Connections	5 points if it connects to a rail station (commuter rail or rapid transit) or any fixed route terminal, 2.5 points if it connects to stops along a fixed route (bus or light rail), and 0 points otherwise.
Existing Conditions	5 points if the current conditions for bicycling in the corridor are considered deficient, 2.5 points if conditions are in need of improvement, 0 points if conditions are already suitable for bicycling.
Supports Sustainability	5 points if the project serves areas targeted for sustainable development, 2.5 points if the project serves areas that already feature high density, mixed-use development, 0 points otherwise.
Geographic Equity	1 point for every year that has passed since the most recent start of construction on a BSG component in that RPA region (up to 5 points)
Environmental Justice	5 points if the project passes through an environmental justice community, 0 points otherwise
Cost Effectiveness	5 points if the projected costs per mile are below the range for that project type, as defined by National Cooperative Highway Research Project Report 552[5]; 2.5 points if the project is within the range; 0 points if the project costs exceed the range.

[5] With considerations for inflation.

Sample Project Evaluation

Tables A8.3 and A8.4 demonstrate how the evaluation criteria can be applied to rate competing projects, one a BSG project that is a conversion of a rail corridor, and the second a combined on-road and shared use path project. Note that this comparison is for the purpose of demonstration only—just as the criteria themselves are subject to change. Over time as more is learned about their effectiveness in measuring project merit, the rating scale for each criterion and the weights assigned to each criterion are also expected to be adjusted as needed over the life of the *Plan*.

Table A8.3
Application of the Evaluation Criteria to Conversion of Rail Corridor

CRITERIA	RATING (0-5)	WEIGHT	TOTAL SCORE
Network Capacity	5	2	10
Usage Characteristics	3	2	6
Multimodal Connections	5	1.5	7.5
Existing Conditions	5	2	10
Supports Sustainability	0	1.5	0
Geographic Equity	1	1.5	1.5
Environmental Justice	0	1	0
Cost Effectiveness	2.5	1.5	3.75
TOTAL SCORE			**38.75**

Table A8.4
Application of the Evaluation Criteria to Combined On-Road/Shared Use Path Project

CRITERION	RATING (0-5)	WEIGHT	TOTAL SCORE
Network Capacity	5	2	10
Usage Characteristics	3	2	6
Multimodal Connections	5	1.5	7.5
Existing Conditions	2.5	2	5
Supports Sustainability	2.5	1.5	3.75
Geographic Equity	1	1.5	1.5
Environmental Justice	0	1	0
Cost Effectiveness	1.5	1	1.5
TOTAL SCORE			**35.25**

Other Considerations for Prioritizing Projects

The evaluation criteria described in this appendix are a first step toward providing a transparent and objective system for prioritizing projects that will comprise the BSG. Not all project benefits lend themselves easily to measurement by criteria. There is also a desire on the part of EOTPW to prevent the application of criteria from becoming too complex, which is why only eight measures have been proposed[6].

In addition to the importance placed on these project benefits, other important issues remain for EOTPW and Commonwealth policymakers to consider. One of these would be how best to address bicycle projects that are not a part of the BSG during the period when the network is being implemented. Another consideration is the need to coordinate with MassHighway's bridge and roadway reconstruction projects. Roadway projects would most likely be driven by those projects being undertaken by or funded by MassHighway. In those cases, it is suggested that the project review process undertaken by MassHighway add a criterion that gives weight to a project that is within a BSG corridor.

[6] Other criteria to consider could include: projected usage (recognizing the difficulty in generating reliable estimates), number of major activity centers served (recognizing the difficulty in defining such centers), links to other states' networks, or whether the project is a segment of the other long distance routes

Appendix 9
Status of Recommended Actions from the 1998 Massachusetts Bicycle Plan

The following table lists the *1998 Plan*'s Recommended Actions (excluding those already described in the preceding table), organized by 14 program areas:

RECOMMENDED ACTION	STATUS	COMMENTS
Program Area: Implementation		
Recommend implementation measures through the Massachusetts Bicycle Advisory Board	Done	
Continue to provide state-of-the-practice information to state, regional and local entities; and incorporate new material into the design manual	Done	*Guide* is important tool. *Moving Together* promotes tech transfer. MassHighway staff provide technical expertise
Coordinate *Bicycle Plan* implementation with *Pedestrian Plan* implementation	Done	
Program Area: Assessing Bicycle Accommodate on Roadways		
Identify traffic flow, roadway cross section, and other characteristics that affect bicycle travel within existing corridors	Incomplete	Work varies on a project by project basis
Identify other agencies that use these traffic and roadway data for planning and engineering applications	Ongoing	
Institute data collection and management activities to meet the needs of the methodology developed as part of the 1998 *Plan*	Addressed	The methodology was not embraced, but the *Guide* now governs the practice
Compile existing data in database format that meets the needs of all involved agencies	Incomplete	This has been partially done for the *Plan* but not all roads and bridges are included
Tie this database to the Commonwealth's existing GIS	Incomplete	This has been partially done for the *Plan*, but not all roads and bridges are included
Institute a long-term roadway data collection and management program that meets the bicycle program needs of state, regional and local agencies	Incomplete	This has been done on a project-specific basis, but not diagnostically. The goal is to accomplish this in the future with pictometry.
Evaluate bicycle accommodation on roadways as part of ongoing transportation planning work	Ongoing	Per the *Guide*
Identify roadway segments with lower accommodation ratings in corridors of existing and potential higher demand for bicycling	Ongoing	Part of the gap identification work on the *Plan*
Identify and make improvements in the roadway segments identified above	Ongoing	Per *the Guide*
Prioritize projects and implement in conjunction with ongoing construction program	Ongoing	As part of the work on this *Plan*

RECOMMENDED ACTION	STATUS	COMMENTS
Continue to monitor developments in the evolving field of assessing bicycle accommodation	Ongoing	Per the *Guide*
Program Area: Bicycle Path Development		
Continue to conduct a complete statewide assessment of former rail and other potential corridors	Ongoing	As part of the work on the *Plan* and in conjunction with DCR[7]
Prepare a State Trails Plan	Done	*Commonwealth Connections*
Continue to work to obtain railroad corridors proposed for abandonment	Ongoing	Through rail-banking efforts
Continue to act upon offers from railroad companies proposing to sell corridors	Ongoing	Subject to fiscal resources
Preserve physical integrity of former railroad corridors with potential to become bicycle paths	Ongoing	Through EOTPW RR ROW canvass process, MBTA leases and other mechanisms
Develop and distribute guidelines that identify state, regional and local roles in the development, operation and maintenance of bicycle path facilities	Ongoing	Workshops on these issues offered regularly at *Moving Together*; expertise also available from MassHighway District Offices.
Program Area: Bicycle Facility Design		
Continue to recognize the AASHTO *Guide for the Development of Bicycle Facilities*	No longer applicable	*Guide* now takes precedence
Continue to incorporate bicycle facility design guidance into the MassHighway *Design Manual*	Done	Updated *Guide*
Incorporate into Chapter 90E the AASHTO definition of a bikeway	Done	
Revise other definitions in 90E as needed to be consistent with new definition of bikeway	Done	
Expand 90E definition of "public way" to include shared use paths and other bikeways	Done	
Develop and adopt standards for the detection of bicycles by actuated traffic signal systems	Done	
Specify bicycle detection in new and retrofit projects involving actuated traffic signals	Done	
Provide appropriate treatments to improve bicycle travel across bridges	Ongoing	As part of the *Plan* and *Guide*
Develop bicycle-oriented construction criteria	Done	Addressed *in Guide*
Continue current grate modification program to incorporate bicycle-safe grates	Done	Addressed in *Guide*

[E] Abbreviations: EOTPW-Executive Office of Transportation and Public Works; EOPSS HSD-Executive Office of Public Safety and Security Highway Safety Division; MDPH-Massachusetts Department of Public Health; RMV-Registry of Motor Vehicles; RTA-Regional Transit Authority; RPA-Regional Planning Agency; MOTT-Massachusetts Office of Travel and Tourism; DCR-Department of Conservation and Recreation; TDM-transportation demand management; TOD-transit-oriented development.

RECOMMENDED ACTION	STATUS	COMMENTS
Program Area: Construction and Maintenance Packages		
Use wet skid-resistant pavement markings	Done	Addressed in *Guide*
Provide proper vertical and horizontal clearances	Done	Addressed in *Guide*
Encourage railroad personnel to consider bicycle use in design/maintenance of railroad crossings	Done	Addressed in *Guide*
Establish a mechanism for reporting maintenance needs	Done	District Office contacts
Program Area: Transit and Multimodal Connections		
Ensure that new roadways leading to multimodal facilities are designed to accommodate bicycles	Underway	Addressed by TOD program and *Plan*. The proposed pilot Safe Routes to Transit program was superseded by the TOD program, but may offer opportunities to improve bicycle – transit access.
Ensure that all new bikeways and transit centers provide connections between these facilities	Ongoing	*Plan* and TOD program
Provide/update inventories of bicycle parking facilities at all transit centers and major bus stops	Ongoing	MBTA and RTAs are doing this
Install bicycle parking facilities at transit centers and major bus stops based as needed	Ongoing	TDM funds are available and have been used by municipalities
Provide safe and adequate bicycle parking at park-and-rides, airports and other multimodal facilities	Ongoing	Case by case basis
Increase monitoring of parking sites to reduce vandalism and theft	Ongoing	MBTA and RTAs
Encourage increased convenience of transportation bicycles on Amtrak and on private buses	Ongoing	EOTPW is working with non-state transportation providers
Facilitate transportation of bicycles on ferries	Ongoing	EOTPW and the MBTA
Investigate adaptation of existing rolling stock and other equipment to better accommodate bicycle conveyance	Incomplete	MBTA pilot program for North Shore travel has been in seasonal use. New rolling stock with space for bicycles is being specified by MBTA.
Assess bicycle/transit usage on a regular basis and address how system improvements can be provided	Ongoing	Bicycles on the T Committee addresses these issues regularly

RECOMMENDED ACTION	STATUS	COMMENTS
Program Area: Bicyclist Education		
Implement a comprehensive, statewide school-based bicycle safety education program for children	Underway	The Safe Routes to School program has been providing education, encouragement and enforcement services. Infrastructure improvements at and around partner schools are expected to begin later in 2007; a contractor has been selected.
Develop and evaluate a model program for adult bicyclist safety training and education	Not done	
Program Area: Motorist Education		
Develop a "Share the Road" campaign to increase motorist and bicyclist awareness	Underway	The Franklin and Pioneer Valley regions have implemented programs to educate bicyclists and motorists alike. Their products are available for use by other regions and localities.
Educate motorists through the driver license process and driver training programs	Incomplete	Some work has been done by RMV in this area, but ongoing outreach is required
Enforce traffic laws, targeting those which improve motorist/bicyclist interaction	Incomplete	Some work has been done in this area, but additional training of state and local law enforcement personnel is required.
Program Area: Bicycle Helmet Use		
Continue to promote public awareness and acceptance of the statewide helmet use law	Ongoing	EOPSS/HSD is the primary delivery agency and has developed media materials and promotional programs. MDPH also involved.
Promote helmet use among bicyclists of all ages	Ongoing	EOPSS/HSD is the primary delivery agency, and has developed media materials and promotional programs. MDPH also involved.
Program Area: Enforcement		
Encourage law enforcement agencies to incorporate bicycle enforcement into their training and education programs	Varies by community	EOPSS/HSD is the primary delivery agency
Encourage law enforcement officers to educate bicyclists about their responsibilities	Varies by community	EOPSS/HSD is the primary delivery agency

RECOMMENDED ACTION	STATUS	COMMENTS
Review current status of Massachusetts General Laws pertaining to bicycling	On a recurring basis, depending on the issue(s)	General Court purview
Promote police-on-bicycles programs	Done	EOPSS/HSD and localities have direct responsibility
Involve local police whenever bicycle facility planning is being done within a community	Ongoing	Case by case basis
Program Area: Use of Bicycle Accident and Injury Data		
Strengthen statewide reporting of bicycle-motor vehicle crashes	Ongoing	Continue to work with EOPSS/HSD and RMV
Track bicycle-motor vehicle crashes	Ongoing	Continue to work with MassHighway, EOPSS/HSD, MDPH, and RMV
Supplement accident data with hospital injury data	Ongoing	Continue to work with EOPSS/HSD and MDPH
Implement GIS techniques to track bicycle crash locations and injury severity	Incomplete	Continue to work with MassHighway, EOPSS/HSD. RMV and MDPH
Provide training related to crash reconstruction and typology	Incomplete	Continue to work with EOPSS/HSD
Program Area: Bicyclist Safety		
Update and widely disseminate the Bicycle Safety Resource Kit developed by MDPH	Ongoing	Continue to provide state-of the-practice safety material
Establish an on-line user group for sharing of bicycle safety information	Ongoing	EOPSS/HSD and MDPH
Host an annual bicycle safety conference	Ongoing	Safety is a key component of annual Moving Together conference. The Safe Routes program also initiated a statewide bicycling and walking safety forum in 2007.
Expand the Massachusetts Bicycle Safety Alliance role	Ongoing	The MA Bicycle—Pedestrian Advisory Board now serves this purpose
Program Area: Tourism		
Continue to update, print and distribute State Bicycle Guide	Ongoing	Web based information is available from MOTT, DCR and EOTPW
Develop a multi-page brochure as a companion piece to the State Bicycle Guide that is oriented to the needs and interests of bicyclists	Ongoing	Web based information is available from MOTT, DCR and EOTPW
Continue to feature bicycling in existing tourism promotions and publications	Ongoing	Web based information is available from MOTT, DCR and EOTPW

RECOMMENDED ACTION	STATUS	COMMENTS
Program Area: Bicycle Promotion		
Sponsor and promote bicycle to work days	Ongoing	EOTPW funded Bike to Work Week 2000 in the Pioneer Valley Region. That program is still successfully run with regional and local sponsorship. Material developed through this program is available for use statewide. MassHighway District Two sponsors an annual Bike to Work Day event in Amherst. Mass*RIDES* also works with employers to promote bicycle commuting events.
Produce state, regional and local bicycle maps	Ongoing	The *Plan* will provide multiple maps for bicycling purposes. EOTPW funded the Pioneer Valley Regional Bicycling Map through the TDM program. Information on developing regional maps is available to RPAs as a result of that program.
Develop a statewide multi-media campaign promoting bicycling	Ongoing	Franklin and Pioneer Valley's Share the Road program ha provided a comprehensive and portfolio of promotional products for use in other regions. The Plan also proposes strategies to promote local and long-distance bicycle travel.
Designate regional and local agency bicycling contacts	Done	RPAs, MassHighway Districts, and EOTPW all have contacts
Develop a Clean Air/Bike-to-Transit pilot program	Ongoing	The TOD program serves this purpose by funding improvements designed to improve bicycle access to transit locations.
Designate regional and local agency bicycling contacts	Done	RPAs, MassHighway Districts, and EOTPW all have contacts
Develop a Clean Air/Bike-to-Transit pilot program	Ongoing	The TOD program funds improvements designed to improve bicycle access to transit locations.

Appendix 10
Construction Cost Estimates for Ultimate Bay State Greenway

Because the ultimate BSG as envisioned will likely take 25 years to build out, decisions will be required as to which shared use paths are constructed over two periods—over the next 10 years, and the subsequent 15 years.

To determine the costs of pursuing the BSG, the following assumptions have been made:

- Years 1-10 would be dedicated to completing the 28 projects that are either advertised or funded (6.24 mi/year)
- Years 11-25 would be dedicated to the 32 proposed BSG facilities (16.67 mi/year)
- The assumed base year cost for path construction is $1Million/mile with an annual escalation of five percent

The analysis presented in Table A10-1 shows that spending on design and construction of bicycle facilities would need to more than double, from a projected $302 million if the status quo is maintained for 25 years to the $677 million necessary to implement the 32 proposed BSG facilities in that time. Right of way acquisition, planning, permitting, and design costs are not included in this table.

Table A10-1
25-Year Construction Cost Comparisons ($1,000)

		Current Program		Current +BSG	
Year	**Cost/Mile**	**Miles**	**Total**	**Miles**	**Total**
Year 1	1,000	6.24	9,040	6.24	9,040
Year 2	1,050	6.24	9,040	6.24	9,040
Year 3	1,103	6.24	9,040	6.24	9,040
Year 4	1,158	6.24	9,040	6.24	9,040
Year 5	1,216	6.24	9,040	6.24	9,040
Year 6	1,277	6.24	9,040	6.24	9,040
Year 7	1,341	6.24	9,040	6.24	9,040
Year 8	1,408	6.24	9,040	6.24	9,040
Year 9	1,478	6.24	9,040	6.24	9,040
Year 10	1,552	6.24	9,040	6.24	9,040
Year 11	1,630	6.0	9,780	16.67	27,172
Year 12	1,712	6.0	10,272	16.67	28,539
Year 13	1,798	6.0	10,788	16.67	29,972
Year 14	1,888	6.0	11,328	16.67	31,472
Year 15	1,982	6.0	11,892	16.67	33,039
Year 16	2,081	6.0	12,486	16.67	34,690
Year 17	2,185	6.0	13,110	16.67	36,423
Year 18	2,294	6.0	13,764	16.67	38,240
Year 19	2,409	6.0	14,454	16.67	40,158
Year 20	2,529	6.0	15,174	16.67	42,158
Year 21	2,655	6.0	15,930	16.67	44,258
Year 22	2,788	6.0	16,728	16.67	46,475
Year 23	2,927	6.0	17,562	16.67	48,793
Year 24	3,073	6.0	18,438	16.67	51,226
Year 25	3,227	6.0	19,362	16.67	53,794
Total			**302,000**		**677,000**

Source: Planners Collaborative, Inc.

Appendix 11
Railroad Corridor Maps

Appendix 12
South Central Massachusetts Trails