THE pioneer valley

REGIONAL BICYCLE and PEDESTRIAN transportation PLAN

September 2000

Engineering
Enforcement
Encouragement
Education

Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
www.pvpc.org

The Pioneer Valley Regional Bicycle and Pedestrian Transportation Plan

Prepared by the
Pioneer Valley Planning Commission

September 2000

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Nancy Rouette, John V. le Alleton, Jr., Albert Shane, Russ Couturier, Barbara Rich, Gerry Paquin, Ralph Kendall, Dan Call, Dave Crout, Denis R. Ouimette, Henry Barton, Henry Desellier, Peter Mancuso, Les Prentice, James Miller, James Lowenthal, Arthur Swift, Niels Lacour, Al Byam, Eleanor Cress, Michael Piscitelli, Don Podolski, Wayne Feiden, Josh Lehman, Craig Della Penna, Harold Akey, Louis and Barbara Spiro, Christine Scott, John Fitzpatrick, Marianne Jakus, Len Fontaine, William Burgart, Steven Thomsen, Carl Lefenier, Elbert J. Bowler, Steve & Linda Hamlin, Olivia Derridinger, Rich Masse.

Table of Contents

INTRODUCTION

"if we build it, they will come..."

It is possible for government and citizens to work together to create an environment where walking and bicycling are sensible and realistic transportation options.

There are many reasons why people might choose to walk or to ride a bicycle to work, school, and play. Walking and riding bicycles instead of driving a car helps the environment and promotes individual health and well being. These environmentally friendly and relatively low cost modes of transportation help build community as they allow citizens to interact with one another. Walking or bicycling by a fellow resident, one has the opportunity to say "Good Morning" instead of zooming by one's neighbor encased in thousands of pounds of metal and plastic. Walking and bicycling help prevent traffic congestion and accompanying feelings of helplessness and frustration that can result in "road rage" or simply impolite, anti-social behavior. Community commitment to bicycling and walking can help prevent downtown deterioration and discourage sprawl as residents reclaim their main streets as places of commerce and public exchange.

Only 0.3 percent of all Pioneer Valley residents commute to work by bicycle and 6.1 percent walk to work.[1] This plan provides a blueprint to encourage more people to walk and bicycle in the Pioneer Valley. It combines policy-related actions and physical projects on which municipal and regional officials and citizens can collaborate to improve conditions for pedestrians and bicyclists. Evidence from communities across the United States proves the success of this dual approach.

In Madison, Wisconsin, for example a mid-sized city with severe winters, 11 percent of all trips are taken by bicycle. In Minneapolis, Minnesota, a city with a similarly severe winter climate, only 1 percent of all trips are made by bicycle. Both communities have large university student populations. Both pride themselves on being "livable" communities. But an important difference between them is that the city of Madison, through strong public policy and government support, has created an environment that encourages bicycling.

[1] "Transportation: A View of our Valley: A Statistical Look at the Pioneer Valley Region, 1993-PVPC.

This regional Bicycle and Pedestrian Transportation Plan offers an overview of how the Pioneer Valley can become a safer and more inviting place for people to walk and ride bicycles. It is ultimately up to individuals to make the choice to walk or ride a bike, but local governments and citizen groups can change existing public policies and practices to make walking and biking to work, school, or play a more attractive option for community residents. A national survey of adults in the United States found that one in five Americans would commute by bicycle if safe space were available.[2]

A successful community approach to making walking and biking realistic transportation options requires a combination of engineering, education, enforcement, and encouragement efforts. Some transportation facilities will have to be modified to allow bicyclists and motorists to share the road. In other cases engineers, planners, and public works officials simply need to be educated about pedestrians' and bicyclists' needs in order to better understand how to design and build facilities where bicyclists and pedestrians feel safe. The public needs to be educated about how to share the limited road space and operate safely. Employers and educational institutions need to learn how to make it easier for employees and students to walk or ride their bikes to work and class. And, of course, police officers must enforce, and people must obey, traffic laws.

This plan outlines a series of goals with accompanying objectives, strategies and actions designed to make the Pioneer Valley a safer place for pedestrians and bicyclists. The success of this plan depends upon all residents of the Valley:

- Municipal governments must take it upon themselves to implement the community-specific recommendations.

- Citizen groups must work with local government to explain how they are affected by government actions and to educate one another about pedestrian and bicycle safety.

- Residents must take the initiative to reduce their reliance on cars, and walk or ride their bikes to work, school, and play.

"We should raise our sights for the moment. What could a residential street - a street on which our children are brought up, adults live, and old people spend their last days - what could such a street be like?"

Don Applewood, "Livable Communities"

[2] Harris Poll—1991

CHAPTER ONE

VISION, GOALS, AND OBJECTIVES

"When I see an adult on a bicycle, I do not despair for the future of the human race."
H.G. Wells

It is true that part of the impetus behind this plan was the federal requirement included in the Intermodal Surface Transportation Efficiency Act (ISTEA)—the landmark Federal transportation legislation passed in 1991—that all Metropolitan Planning Agencies (MPOs) develop regional bicycle and pedestrian plans. It is also true that both municipal and regional planners, and the residents of the Pioneer Valley, understand and believe in the usefulness of a regional bicycle and pedestrian plan. If implemented, this plan will make the Pioneer Valley a better place to walk and bike.

Public Participation in Developing and Revising this Plan

The plan was developed following a traditional strategic planning process. A strategic approach assures the most efficient use of limited resources, both human and financial, while maximizing participation by all affected groups.

The process for the Bicycle and Pedestrian Plan started by identifying key stakeholders and collecting information about the needs and concerns of bicyclists and pedestrians in the Pioneer Valley. The stakeholders included representatives from the Joint Transportation Committee, the Pioneer Valley Chapter of MassBike, the Springfield Cyclonauts, the Franklin-Hampshire Freewheelers, Northeast Sport Cyclists, the Manhan Rail Trail Committee, the Norwottuck Rail Trail Advisory Committee, the Monson Bicycle Committee, the University of Massachusetts (Amherst), the Southwick Rails to Trails Committee, the Connecticut River Walk and Bikeway Task Force, and individual citizens with an expressed interest. Input from this group was used to articulate a vision for the plan and to develop goals and objectives. The PVPC staff compiled and mapped information on existing bicycle and pedestrian facilities and issues concerning these facilities. Injury data was also collected. Using the goals and objects expressed by the stakeholders, the current state of walking and bicycling in the Valley was compared to the expressed needs and desires. This comparison led to the articulation of six strategies to improve conditions for

pedestrians and bicyclists in the Valley. These six strategies were further defined into 33 measurable action steps. Finally, a responsible entity was identified for implementing each of the various action steps to assure implemention of the plan.

A draft of the plan was circulated to everyone that participated in developing the vision goals and objective. Copies of the draft document were also submitted to the Joint Transportation Committee, MassHighway District 1 and 2, MassHighway Planning, and local planners and advocates in the region. Their comments were integrated into this final version. A draft of the plan was made available to the public on the PVPC web site (www.pvpc.org), at local libraries, and at the PVPC office during regular business hours. During the thirty-day period, PVPC received 210 written comments to be incorporated into the document. Readers' comments and suggestions for implementing this plan and for improving future bicycle and pedestrian plans for the region are welcome.

Our Vision

"The Pioneer Valley Region is a safe, convenient place to walk and to ride a bicycle. An expanding network of bikeways, sidewalks, and accommodating roadways provides every resident with a wide variety of transportation alternatives for travel to any destination."

Much has been written about designing transportation facilities for bicyclists and pedestrians. The following excerpts from "Building Better Bicycling, 1999 Edition—the Massachusetts Highway Department's (MassHighway) Manual for Improving Bicycling Conditions," sum up the approach taken by the authors of this plan with respect to meeting bicyclists' needs.

The (roadway) designer should keep in mind that a bicyclist will generally choose the most direct route available. The highest level of accommodation on all roads is encouraged, regardless of parallel facilities available. An off-road bicycle path, while in close proximity to a main road, may not provide all the desired connections to cross streets, commercial and residential destinations. Additionally, levels of maintenance vary throughout the year, as many off-road paths are not cleared of snow.[3]

… a bicyclist should be expected to be riding on any roadway, and therefore should be accommodated.

… bicyclists follow the motor vehicle path of travel. A responsible designer will not expect a bicyclist to follow a roundabout route, making multiple crossings, to arrive at a destination directly in front of him or her. An experienced bicyclist should not be expected to dismount and walk their bicycle across an intersection. An excerpt from Massachusetts Pedestrian Transportation Plan clarifies the role of the pedestrian in transportation planning. Walking is a key to a multimodal transportation system.

… Walking is part of virtually every trip (including those made by automobile). As conditions for walking are improved and more people are willing to walk short distances to bus stops and train stations, transit can become a better choice for more people. Walking can also directly substitute for automobile trips of short length. The result will be a changed balance of automobile and other modes, with benefits for traffic flow and air quality….

Walking contributes to the quality of community life…. A significant part of Massachusetts commerce takes place on the "Main Streets' of our downtown and town centers. Sidewalks are the infrastructure that directly serves these businesses. Making downtowns and town centers more walkable directly benefits these businesses and the region's economy.(p. 1-2)

… Walking is the most basic form of transportation…. The walking environment is shaped by policies and actions at the federal, state, and local levels of government, and by both the public and private sectors. (p. 2-3)[4]

[3] This is true of a popular off-road path in the Pioneer Valley—the Norwottuck Rail Trail. It provides an excellent off-road route between Northampton and Belchertown, through Hadley and Amherst, but is only useful for bicycling in the warm weather months, as it is not cleared of snow in winter.

[4] Massachusetts Pedestrian Transportation Plan, 1998

Goals and Objectives

Given our strategic approach to encouraging walking and bicycling in the Pioneer Valley, this plan is driven by the following seven goals. We elaborated 15 objectives to clarify the goals and in Chapter IV of the plan (Strategies and Actions) we describe 33 specific and measurable actions designed to facilitate accomplishment of the following goals.

Goal #1 *Create a safe and comfortable physical environment for bicyclists and pedestrians in the Pioneer Valley.*

objectives

- Local and regional government and advocacy organizations will build a coordinated, comprehensive network of on-street and off-street pedestrian and bicycle facilities including bike paths, on-street bike routes, and sidewalks.
- Municipalities will identify and incorporate "traffic calming" measures where appropriate to reduce through traffic, reduce truck traffic, reduce traffic speeds, reduce noise, reduce crashes, and provide a safer environment for pedestrians on neighborhood streets and in residential areas.
- All municipal and regional governments will comply with MassHighway Engineering Directive E-98-003, which defines recommended travel lane widths and establishes a benchmark for reasonable bicycle and pedestrian accommodations. The benchmark for pedestrian accommodations is to "provide one continuous paved surface or sidewalk along all roadways where pedestrian access is legally permitted."

Goal #2 *Integrate bicycle and pedestrian needs into the transportation planning process.*

objectives:

- Regional and local planners and pedestrian and bicyclist advocates will review the Regional Transportation Plan and the Transportation Improvement Program to assure that bicycle and pedestrian planning elements of the programs and corresponding funding levels reflect local needs.
- "Effective Cycling[2]" training program (A driver's education for bicyclists) will be offered to interested public officials.

Goal #3 *Integrate bicycle and pedestrian needs into the highway design process.*

objectives:

- Local transportation and public works officials will comply with Massachusetts law, chapter 87 (see appendix) which requires consideration of bicyclist and pedestrian needs on all transportation projects.
- Transportation planners, highway designers and maintenance staff will understand the needs of pedestrians and bicyclists. PVPC will work in collaboration with municipalities and MassHighway to provide training and education on technological advances and best practices.

Goal #4 *Include bicycle and pedestrian needs in highway management and maintenance.*

objectives:

- Highway designers, builders, and maintainers will assure that roads, sidewalks and bikepaths are maintained for bicycle use.
- Highway designers, builders, and maintainers will assure that pedestrians have a place to walk adjacent to major roadways at all times of year, as practical.

(include street sweeping/plowing where needed)

Goal #5 *Integrate bicycle and pedestrian needs into the design of commercial, residential, and industrial developments.*

objectives:

- Government planners, elected officials and developers will onsider the need of bicyclists and pedestrians in all new developments in the Pioneer Valley.
- Local planning board members will be provided training on the needs of pedestrians and bicyclists in the design and construction of developments.

Goal #6 *Decrease the number of pedestrians and bicyclist killed and injured in traffic crashes.*

objectives:

- Schools, colleges and community organizations will provide educational opportunities for children and adults to develop skills that reduce their risk of injury while encouraging lifelong bicycling and walking habits.
- All motorists, pedestrian and bicyclists in the Pioneer Valley will be aware of their responsibilities in relation to one another when sharing the roadway.
- Law enforcement officials will enforce traffic laws, citing motorists, bicyclists, and pedestrians whenever they violate the law. The public will support enhanced police enforcement, community speed watch programs and the use of speed displays. Motorists, pedestrians, and bicyclists will obey existing traffic laws.
- Municipalities and MassHighway will incorporate, where appropriate, traffic calming measures into street designs, including the use of chokers, chicanes, traffic circles, speed humps, edgelines, and raised crosswalks where appropriate.

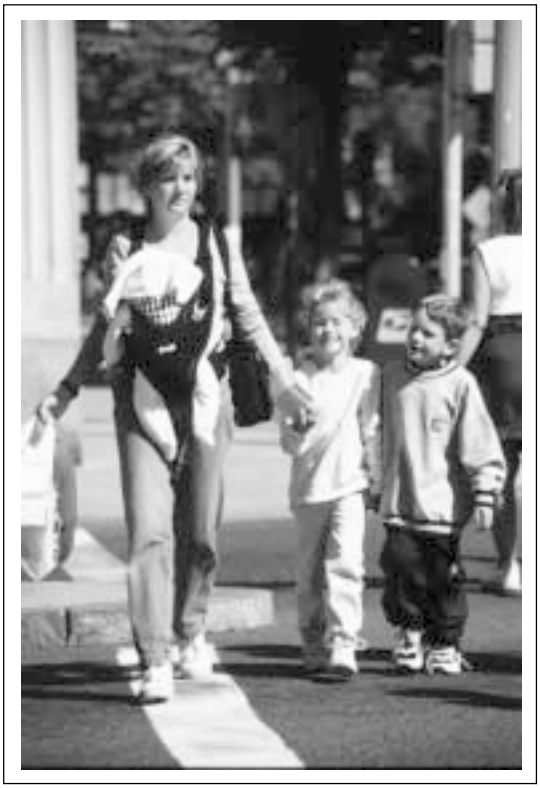
Goal # 7 *Double the percentage of commuting trips made by bicycle or on foot in urbanized areas of the Pioneer Valley by the year 2004—0.6% of commuters will travel by bike and 12.2% of commuters will walk to work.*

objectives:

- Area communities will actively encourage residents to walk and bike to work and school.
- Employers and major educational institutions will actively encourage employees and students to walk and bicycle to work and school.

In 1998, 5220 pedestrians were killed, and 69,000 were injured. Most fatalities occurred in urban areas (69%) at non-intersection locations (78%) and in normal weather conditions. NHTSA, Traffic Safety Facts (www.nhtsa.dot.gov/people/ncsa***)***

CHAPTER TWO



" Affirmative public policy and government support are major factors which increase bicycle use. Having the infrastructure required for the convenient use of bicycles is of greater influence than weather or standards of living."

Minnesota Transportation Study Board, September 1990

CURRENT CONDITIONS

The Pioneer Valley is comprised of 43 cities and towns with diverse travel patterns. Daily commute populations range from more than 63,000 in Springfield, to 107 in Tolland[5]. Because of this great diversity, it is difficult to generalize about the current conditions for bicyclists and pedestrians in the region. Census data and accident statistics provide one measure of current conditions. Infrastructure improvements including bikepaths, sidewalks and bikelanes serve as a barometer. Finally, the policies, regulations and practices of government are a measure of current conditions influencing pedestrian and bicyclist behavior and infrastructure development in the region.

Frequency of Bicycling and Walking in the Pioneer Valley

In the U.S., bicycling accounts for 0.7 percent of all travel trips, and walking accounts for 7.2 percent, (according to the 1990 Nationwide Personal Transportation Study). In the Pioneer Valley, the rate varies drastically by community. Based on 1990 Census journey to work data, the region as a whole has 0.3 percent of its commuters traveling to work by bicycle and 6.1 percent walking to work, below the national average. The only communities that have bicycle commuting rates above the national average are Amherst, Northampton, Brimfield, and Granville. The communities that have walk commuting rates over the national average are Amherst, Northampton, Holyoke, South Hadley, and Williamsburg. (See the Appendix for a summary table showing the rates of commuting to work by bicycling and walking for each community in Hampshire and Hampden County.)

The region generates approximately 1,269,000 vehicle trips a day based on the regional transportation travel model. Using national rates, one in five of these trips are work-related. We do not have measures of how many people walk their children to school or go grocery shopping by bike. But anecdotal information collected in communities across the region suggests that the numbers are lower than they could be, and that more people do walk and bike in the communities that actively encourage bicycling and walking.

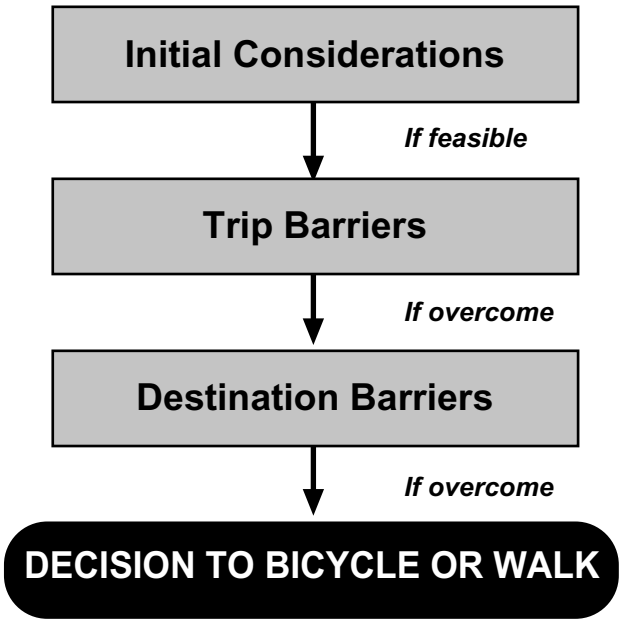
[5] Based on 1990 census data.

Factors Influencing the Decision to Bicycle or Walk

There are many factors that influence the choice to walk or bicycle over other means of travel. The primary reason for not walking or biking, according to the 1990 National Personal Transportation Survey, is distance. This same survey found that 49 percent of commuting trips are three miles, a reasonable biking distance. Distance between important destinations can be addressed by changing local land uses. As mentioned previously, compact development and transit-oriented development can allow land uses that encourage walking and bicycling. Recent trends run counter to this goal. Many communities in the Pioneer Valley have recently built new schools, public libraries, and post offices—important everyday destinations which, instead of being located downtown or near residential neighborhoods, are built on land on the outskirts of town centers. These locations are often on high-speed roadways that do not accommodate pedestrians, especially not young children or elderly people. Distance between destinations is an important factor affecting people's choice to walk or bike, but it is not the only factor.

Other important factors that influence choosing to walk or bicycle include safety concerns, lack of capability, the need to transport large items or additional passengers such as children, the need for a car at work, access to appropriate routes, environmental conditions such as hills and climate, and access to secure bicycle parking, and shower facilities.

Figure 1 **Factors in the Decision to Bicycle or Walk**



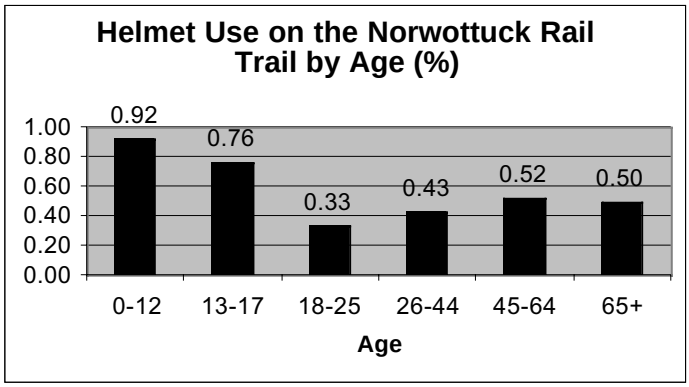
FHWA PD-93-041, the National Bicycling and Walking Study Case Study No. 1: Reasons Why Bicycling and Walking Are and Are Not being Used More Extensively as Travel modes, 1992.

Pioneer Valley Bicycle and Pedestrian Injury Data

Data from the Massachusetts Department of Public Health on inpatient hospitalizations show that 74, out of 611,263 Pioneer Valley residents were hospitalized for a bike or pedestrian injuries in 1997. Of these injuries, 38 (51%) were motor vehicle related. Data from Emergency Departments would give a broader picture of what injuries are sustained and would generate higher numbers than those for inpatient hospitalizations. Emergency room injury data for Hampden/Hampshire County were not available for this report and no statistics were available for people who used health clinics or primary care physicians.

The Massachusetts Bicycle Plan references a 1990 study with estimates that 80 percent of bicyclist injuries serious enough to require emergency room treatment are not reported in statewide statistics and only four percent of bicycle related emergency room visits are admitted to inpatient hospital care. Pioneer Valley accounted for 8.7 percent of reported bicycle hospitalizations statewide in 1994.

Figure 2 **Helmet use by bicyclist on the Norwottuck Rail Trail**



Compiled September, 1998 by the Massachusetts Department of Environmental Management, Connecticut River Greenway State Park

Statistics represent helmet use of bicyclist entering the trail at Damon Road

Table 1 **Hospitalizations for Bicycle and Pedestrian Injuries in the Pioneer Valley Region[6]**

Injuries	1994	1995	1996	1997
Bicyclist	38	35	19	33
Pedestrian	42	56	34	41
All Hospitalizations	73,180	65,900	65,280	63,958

[6] Source: Data from Massachusetts Department of Public, Bureau of Family and Community Health, Injury Prevention and Control Program and Injury Surveillance Program. Specific subset created from uniform hospital discharge data set. Data was extracted using an E-Code matrix from Centers for Disease Control and Prevention. Data for in-state residents only. Individuals discharged during the fiscal year.

Table 2 **Ten Bicycle Crash Facts**

5 crash types that result in 80% of all car-bike crashes*

Motorist unexpected turn (15%) A Motorist turns in front of a bicyclist without yielding.

Bicyclist off-road ride-out (14%) A bicyclist rides onto the roadway without yielding.

Bicyclist ride-out at stop sign or signal (17%): A bicyclist rides past a stop sign or red light without stopping.

Motorist drive-out (19%): A motorist at a stop sign, signal, or in a driveway pulls out in front of a passing bicyclist.

Bicyclist unexpected turn (14%): A bicyclist turns left in front of an overtaking car without looking back or yielding.

5 Major factors involved in most car-bike crashes

Bicyclist riding without lights: Almost 50 percent of bike-related fatalities involve bicyclists riding without lights at night.

Bicyclist riding against traffic: Riding against traffic accounts for about 20 percent of all car-bike crashes.

Bicyclist ignoring traffic control devices: Running stop signs or yield signs is a major crash cause among young riders.

Motorist drinking and driving: The inebriated motorist is a factor in many nighttime cycling deaths.

Motorist failure to yield: Motorists who don't watch for other road users hit many adult cyclists.

Source: Bicycle Safety Education, Facts & Issues; from AAA Foundation for Traffic Safety, 1730 M St. NW, Suite 401, Washington DC 20036

Current Land Use and Impacts of Sprawl

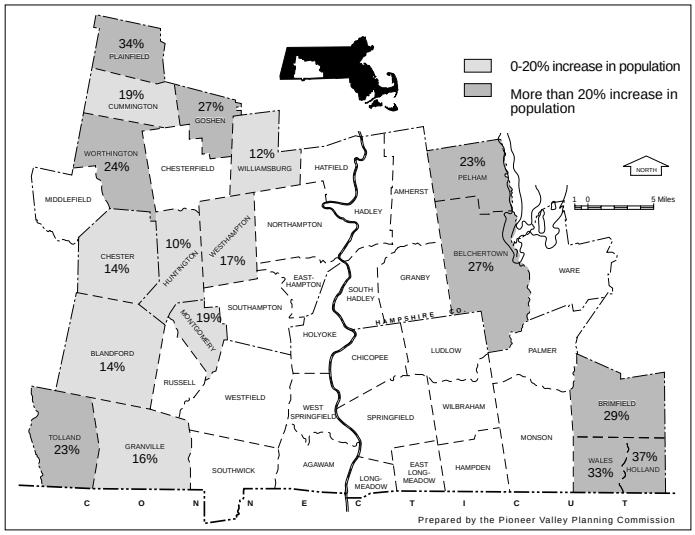
The Pioneer Valley has traditionally had a mixture of land uses, including dense urban and town center development surrounded by sparser rural development. Over the past few decades a different pattern of development has emerged. Rural areas surrounding urban centers have been filled in with sprawling residential growth. Land along state highways has been turned into strip development that is accessible only by car. The population of the urban areas has generally decreased while the population in rural and suburban areas has increased. These sprawling development patterns have made it increasingly difficult to use walking or bicycling as a practical and safe way to get around.

In the Pioneer Valley region, 34,000 acres of land have been developed for urban uses, a 71 percent increase from 1952 to 1985. In the 14 years between 1971 and 1985, 15,542 acres of open land were converted to urban use, a rate of 1,110 acres per year. PVPC estimates that in 1986 to 1995, a total of 113,430 acres of land was developed—1,492 acres per year. The region's total population grew by 3.6 % from 1980-1990, but exurban communities such as Belchertown, Plainfield, Worthington, Holland, Brimfield, Pelham, and Tolland grew more than 20 percent each. Belchertown, the region's fastest-growing community saw its population increase by 40 percent from 1970-1980 and by 27 percent from 1980-90.[7]

Vehicle miles traveled (VMT) in the Springfield-Chicopee-Holyoke area increased 27 percent from 1980-90. Commuting time also increased. As of 1990, 61 percent of the region's workers traveled more than fifteen minutes to work and 21 percent traveled more than 30 minutes. Single occupancy trips also increased. Carpooling declined from 19 percent to 11 percent of all work trips.

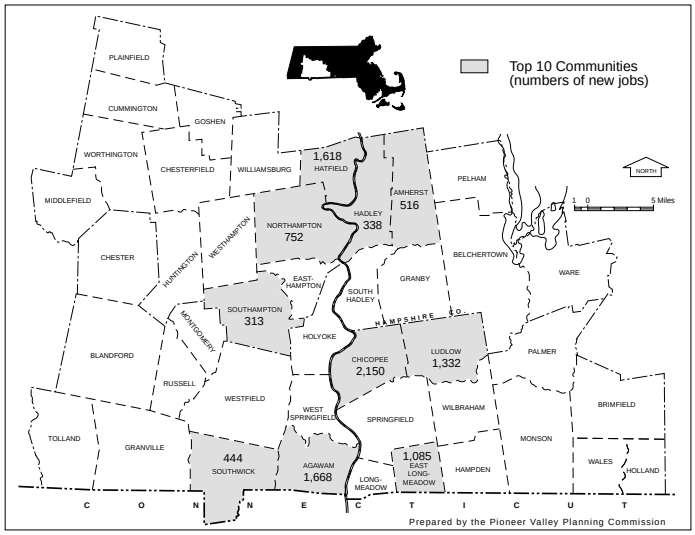
The above statistics reveal that the Valley is, like much of the country, is succumbing to a sprawling, auto-oriented development pattern. Sprawl development is not bicycle or pedestrian-friendly. It is easy to see the inextricable link between land use and walking and bicycling.

Figure 3 **Population Increase (1980-1990)**



Source: US Census

Figure 4 **Employment Change (1986-1995)**



Source: Massachusetts Dept. of Employment and Training

[7] Valley Vision-Regional land Use Plan for the Pioneer Valley 1997

Current Road/Trail Infrastructure

From bicyclists racing down a country road in the hilltowns, to pedestrians on sidewalks in urban areas, and children in school crossings in the suburbs, pedestrians and bicyclists are everywhere in the Pioneer Valley. The infrastructure that accommodates this movement exists in varying degrees and forms. Four communities currently provide multi-use paths or "rail trails' while 14 others have similar projects under design with MassHighway. Many communities have expanded their sidewalk networks by incorporating sidewalk improvements in larger roadway construction projects or through local expenditures of Chapter 90 allocations. In 1996 PVTA installed bicycle racks on buses in the 5 College area and in 1997 purchased parking racks for 400 bicycles to be installed along transit routes. While these efforts have provided new opportunities for thousands of people to walk and bike to destinations, many infrastructure needs still exist.

On- Road Infrastructure

There are 4,282 miles of functionally classified roadway in the Pioneer Valley. Eighty seven miles are Interstate, where walking and bicycling is prohibited. Massachusetts law requires that bicyclists and pedestrians be accommodated on the remaining 4,195 miles of roadway. Local cities and towns maintain the majority of roads in the Pioneer Valley, 3,316 miles, and MassHighway has direct jurisdiction over only the 296 miles of state roads in the region.

In 1996, the Pioneer Valley Planning Commission surveyed experienced bicyclists who ride regularly with the Springfield Cyclonauts and the Franklin Hampshire Freewheelers. The survey asked bicyclists to map the most popular routes and identify challenging roadway conditions. PVPC staff conducting the survey expected to

Table 3 **Existing On and Off Road Bicycle Facilities in the Pioneer Valley Region**

Communities/Locations	Facility name	Length	Description
Connects Northampton, Hadley and Amherst; runs parallel to Route 9	Norwottuck Rail Trail	8.5 miles	The trail parallels portions of Route 9, currently designated a "corridor of critical concern" by the Commonwealth of Massachusetts due to traffic volumes that often exceed the capacity. It provides cyclists and pedestrians with a safe alternative along this busy corridor for the region.
Northampton to Holyoke Route 5	Regional Bikeway Network	8 miles	Route 5 in conjunction with the Connecticut Riverwalk, is critical to the north/south connectivity of the region. The majority of this corridor is already ideal for bicycle travel from a width standpoint, but the shoulders are covered in gravel and sand which require removal. Two improvements are recommended for the corridor: 1) widen the insufficient areas; and, 2) implement a street sweeping program for the shoulders to clear sand, gravel, and other debris.
Amherst, parallel to Route 116 between Amherst & Hampshire College	Amherst Bikeway	3.5 miles	This path forms a part of the Five College bikeway network, outlined in the Pioneer Valley's long range plan developed in the late seventies. It is a 'bi-walk"– a shared sidewalk for bicyclist and pedestrians, and connects with the Norwottuck Rail trail, Hampshire College, Amherst College and Amherst Center.
Amherst/Hadley South Maple Street Rocky Hill Road to Lincoln Street	Five College Bikeway	6 miles	Signed bike route along local low volume roadway. Provide bicyclist with a convenient alternative to the heavily traveled Central Business District and Route 9.
Northampton, between State Street and Look Park	Northampton Bikeway	2.5 miles	Multi-use rail trail built along the abandoned New York New Haven and Hartford line.
Monson, Brimfield, Wales	MBW Trail	8 miles	Combination on-road ans off-road designated route connecting major destination.

hear from bicyclists about the north and south, east and west routes bicyclists used. Instead of identifying a set of roads they used, however, the bicyclists affirmed the statement from "Building Better Bicycling" included in the introduction to this regional plan:

> ***…a bicyclist should be expected to be riding on any roadway, and therefore should be accommodated.***[8]

The bicyclists surveyed rode on all the roads in the Valley!

Many of the bicyclists that completed the survey proclaimed the region "a great place to bicycle." This is clearly good news for bicyclists, planners, engineers, and public works officials. However, research suggests that while many experienced bicyclists feel comfortable riding on roadways, inexperienced bicyclists (including many children) are probably avoiding bicycling due to perceived dangerous and uncomfortable conditions on the region's roadways. Population growth, sprawling development, and new transportation facilities have resulted in regional increases in traffic volume and accompanying increases in vehicle speed without concurrent improvements for pedestrians and bicyclists.

Bridges

There are 673 bridges of the Pioneer Valley. 310 are administered by MassHighway, 85 are the jurisdiction of the MassPike and 278 are administered at a municipal level. While most new or reconstructed bridge projects have followed state and federal guidelines for improving pedestrian and bicycle access, many bridges still lack sidewalks and adequate shoulder width. The roadway system in the Pioneer Valley crosses 7 major rivers including the Connecticut, Westfield and Chicopee. Design and maintenance of the bridges that cross these rivers directly influence people's decision to walk or drive. With 67 of the 673 bridges in the region classified as structurally deficient and/or functionally obsolete (with an ASSHTO rating below 50) bridge reconstruction projects in the near future will provide opportunities to improve bridge sidewalks and add shoulder width for cyclists.

The following tables describe conditions that are challenging for bicyclists and pedestrians and provides examples of potential solutions. This list is by no means complete but these conditions have been found to be the most prevalent in this region.

Table 4 **On-Road Bicycle issues Identified**

On-Road Bicycle Infrastructure Issues Identified	Potential Solution
Broken, rough, rutting, generally poor pavement	Resurface roadway
High traffic speeds	Consider traffic calming measures Evaluate alternate routes and identify / sign alternate routes Enforce posted speed limits
Traffic signals without bicycle compatible loop detectors.	Upgrade loop detectors.
Steep roadway	Modify grade
Poor drainage	Address drainage problems during reconstruction
Poor access / egress to bridge and poor conditions on bridge	Incorporate bicycle and pedestrian considerations into future bridge projects
High frequency of non-controlled vehicle access (on-street parking, driveways, etc.)	Stripe roadway with bike lanes
Poor sight distances for entering vehicles and bicycles	Add shoulder width Reconstruct / realign roadway
No shoulders	If road is wide enough, re-strip travel lanes to define shoulder Add shoulder width
Potholes	Fill them in
Heavy traffic	Assess shoulder width Use "share the road" signage
No alternative route	Assess shoulder width Assess possibility of off-road facility
Poor lane striping	Re-stripe travel lanes
Narrow roadway	Reconstruct roadway to add shoulder width
Improper drainage grates	Replace with bicycle-safe drainage grates

[8] Massachusetts Highway Department Building Better Bicyclist 1999

Off Road Infrastructure (Bikepaths and Shared-use Trails)

Off-road facilities include shared-use trails and traditional bikepaths or rail trails. There are approximately 17 miles of off-road shared-use facilities presently in use in the region. Another 45 miles of off-road multi-use facilities are currently proposed for development in the future.

Off-road facilities including bike paths, neighborhood pathways, hiking and multi-use trails can be an effective component of the transportation network when they:

- introduce new users, including children and the elderly, to the benefits of walking and bicycling;
- isolate users from potential conflicts with motorized traffic and preserve existing corridors for future transportation use like light rail and express transit routes;
- provide economic benefits from shared utility leases, increased property values, and tourism; and, Increase the percentage of bicycling and walking commutes and other utilitarian trips. (In the Northampton and Amherst area where three off-road facilities exist 23.7 percent of commuter trips are by foot or bicycle, compared to only 3.8 percent for the region as a whole.)
- provide access not offered by the roadway system. (shortcuts, links to road segments)

As popular as the region's bikepaths are, there are improvements that would make them more attractive to users. The following table describes conditions that are challenging for users of bikepaths and multi-use trails. Many of these conditions were identified during presentations of the earlier draft versions of this document at public meetings.

Table 5 **Bikepath and Multi-Use Trail Issues Identified**

Bikepath and Multi-Use Trail Issues Identified	Potential Solution
Bikepath widths are too narrow	8-foot widths should be discouraged. Revised ASSHTO guidelines (1999) recommend a 10-foot minimum width in low traffic areas and 12 feet in urban areas.
Bikepaths are too crowded resulting in conflicts among different types of uses.	Bikepath and multi-use trails have grown in popularity. The mix of people using trails now includes: in-line skates, three and four wheeled cycles, trailers, runners, walkers, skateboards and baby carriages. Solutions to conflicts among these users include design improvements to trail width (as mentioned above) and improved signage and pavement marking; educational efforts including "share the trail " campaigns and "bell day" activities; and enforcement of rules and regulations by management staff and local authorities.
Insufficient Parking	Parking issues need to be considered in the early stages of design. Consideration should be given to the recreational nature of these facilities and the high proportion of users that will drive a car to reach the trail.
Broken, rough, rutting, generally poor pavement.	Bikepaths should be included in municipal maintenance programs, including sweeping and resurfacing programs. Currently, bikepaths do not count toward the road mileage totals used to calculate local chapter 90 apportionment. Bikepaths should be included in this calculation.
High traffic speeds	Enforce posted regulations
Dangerous roadway intersections	Conduct traffic study to assess potential redesign of intersection

Pedestrian Infrastructure

Almost everyone walks, even if that trip is only from the parking lot or to the bus stop, and most people walk more than they realize. Many communities in the Pioneer Valley have realized the benefit of encouraging walking through infrastructure improvements. The town of Ludlow constructed sidewalks within a mile of every elementary school. With children walking to school the town revamped its crossing guard program and saved money on busing. With local funding sources in short supply, many communities have had to "get smart" when it comes to pedestrian improvements. To lower costs, East Longmeadow developed a prioritized sidewalk infrastructure improvement plan and began incorporating the cost of sidewalk improvements into larger roadway reconstruction projects. In the Forest Park neighborhood of Springfield, public works officials replaced painted crosswalks with new long wearing themoplastic designs. While more expensive initially, the new crosswalks will last 5 times as long as the ones they replaced.

As previously mentioned, sprawl is the characteristic of current development in the Pioneer Valley. The communities with the ten highest residential growth rates in the decade between 1980 and 1990 were all rural or exurban. This trend presents new challenges and opportunities for infrastructure improvements for pedestrians. Rural communities that previously lacked densities to justify sidewalks are now seeing residential subdivisions and commercial strip development that warrant sidewalks. Planning boards in these towns are reviewing subdivision rules and regulations that might require developers to pay for new sidewalks as demand outpaces municipal budgets.

Table 6 **Common Pedestrian Route Issues and Solutions**

Pedestrian Route Issues	Potential Solution
Sidewalks end / no connectivity	Complete a sidewalk inventory and prioritize sidewalk connectivity
No sidewalk to school	Work with schools to locate new schools where students can safely walk. Add or improve sidewalks as needed
Poor lighting for pedestrians	Locate pedestrian lighting low enough so that light reaches the sidewalk.
No curb ramp	Enforce the Americans with Disabilities Act (ADA) guidelines and Mass Architectural Access Board (MAAB) requirements for designing curb ramps.
Snow not removed from sidewalks especially on bridges	Require that sidewalks be maintained throughout the year.
No buffer strip between sidewalk and busy high speed road	Enforce the American Association of State Highway Transportation Officials (AASHTO) requirement for a 2 foot wide buffer or planting strip between the sidewalk and the street. The NationalHighway Institute suggest that these should be between 4 to 10 feet wide. Telephone poles jutting into sidewalks create barriers for pedestrians and people who use wheelchairs. Relocate utility poles.
No sidewalk or pedestrian facilities across large parking lots	Use local planning and zoning regulations to require developers to provide pedestrian circulation through large parking areas. Transit stops not linked to surrounding area by sidewalks. Prioritize sidewalk construction to link transit stops to the surrounding area.
No marked crosswalk	Locate crosswalks at all signalized intersections and at all school crossing locations, where pedestrians may be confused about the preferred crossing location. Mark crosswalks with pavement stripes, upstream warning signs for motorists, and make sure they are well lighted. Install signs educating motorists of the Massachusetts state law ("Yield to Pedestrian in Crosswalk"). Signs may be located in crosswalks.
Signal is poorly timed or has no pedestrian signals	Change the signal timing to provide an appropriate phase to accommodate large volumes of pedestrians or pedestrians who walk slowly.

Integrating Bicycle and Pedestrian Needs with Transit

In 1997 the Pioneer Valley Transit Authority implemented a bikes on bus program called "Rack and Roll" to improve access to transit. As part of the program bicycle racks were installed on the front of buses serving the Five-College area of Hampshire County. Early surveys of "Rack & Roll" users found that the new service increased transit ridership and also increased the number of bicycle trips, providing a viable alternative to the automobile, the largest source of the region's air quality problems. Many bicyclists use the racks to complete one leg of a journey, while others claim to use the bus for return trips during periods of inclement weather.

UMASS Transit began tracking use of the bicycle racks during the start of the program (3/24/97). Bus drivers inform the dispatcher via radio each time a bicycle is loaded on the rack. Usage has climbed steadily, as shown in the following table. The bus racks on the Sunderland and South Amherst route (31) is the most frequently used accounting for 50 percent of all Rack & Roll users. These two routes access the largest apartment complexes in the Amherst area. Bus service on route 31 provides cyclists with an alternative to a steady two mile climb from South Amherst to the town center and Sunderland follows State Route 116, a roadway with traffic speeds of 55 m.p.h..

In a survey of users, 78% reported that they had used the bus more frequently since the racks were installed. 85% reported riding a bicycle more often after they began using the racks. The combination of a dense central business district and suburban residential areas create short travel distances for trips in and around the town center with the longer journeys to and from residential neighborhoods accessed by bus. Users reported riding their bicycle for short trips to destinations not served by transit while the bus was used for longer trips. Of particular importance, the survey showed that over 28% of the respondents would have driven their car for their specific trip had the Rack & Roll program not been in place.

"All you have to do is make it easier to ride a bike than drive a car. People will take it from there."
Ellen Fletcher, former Palo Alto City Council

Table 7 **Total UMass Transit Rack & Roll Usage (March – November 1997)**

ROUTE	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	97 TOTAL
45	8	8	18	26	30	27	66	55	28	266
36	1	0	3	12	7	2	1	4	0	30
30	6	42	58	99	130	130	128	173	85	851
31	3	71	151	148	348	237	245	300	116	1,619
46	0	0	2	16	12	13	11	12	18	84
TOTAL	18	121	232	301	527	409	451	544	247	2,850

Table 8 **PVTA Rack and Roll Ridership Northampton Routes (Aug-98 thru Dec-00)***

Route		Aug	Sep	Oct	Nov	Dec
B43	Start Up	41	225	346	166	
B48						
M40			64	113	66	
R41			12	25	14	
R42			1			
R44		1	10	12	14	
sub total:		42	311	497	260	

1998 Total: 1,110

PVTA Rack and Roll Ridership Northampton Routes (Jan-99 thru Dec-99)*

Route	Jan	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
B43		48	208	231	331	301	294	331	349	232	3
B48									1	82	
M40		10	88	65	50	59	59	110	103		1
R41		5	27	30	27	36	53	51	39	27	
R42		1	5			2	1		1		
R44			38	23	29	17	21	16	24	14	
sub total:		64	366	349	437	415	428	508	517	355	

1999 Total: 3,445

PVTA Rack and Roll Ridership Northampton Routes (Jan-00 thru Dec-00)*

Route	Jan	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
B43		147	276	324	355	275	360	625	549	309	70
B48				1							
M40	6	62	79	103	57	55	46	200	237	142	64
R41		6	44	52	47	50	62	122	93	39	8
R42			1								
R44		11	22	28	31	29	43	17	21	6	
sub total:	6	226	422	508	490	409	511	964	900	496	142

2000 Total: 5,068

Data on bike rack usage provided by Hampshire County Transit, Inc.
*Not all transit routes are equiped with bike racks in December, January, and February

CHAPTER THREE

POLICIES, REGULATIONS, AND PRACTICES

There are no regional policies governing pedestrian and bicycle use and infrastructure development in the Pioneer Valley. Federal and state policies and regulations stipulate technical standards and guidance and provide the funding for the implementation of many bicycle and pedestrian projects, but it is the local unit of government that oversees, and in some cases actually designs and builds transportation infrastructure—bikeways, trails, sidewalks, intersections, bridges, etc. Federal programs provide funding for transportation and transportation enhancement projects that include many bicycle and pedestrian projects. State regulations and policies affect highway projects and some local roadway projects through the provision of Chapter 90 funding that communities can choose to use for implementing bicycle and pedestrian projects. This section provides a brief overview of the state and federal policies and regulations that can impact bicycle and pedestrian projects in all the communities of the Pioneer Valley.

Federal Policies, Regulations, and Practices

Since the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, the federal government has played an historically unprecedented role in promoting walking and bicycling. In his introduction to the National Bicycling and Walking Study, then-Secretary of Transportation Federico Pena stated, “We (The United States Department of Transportation) want to improve mobility by promoting strategies that give people more choices … especially by making better connections to public transit and by providing safer ways to bicycle and walk. The goals of the National Study are: to double the current percentage (from 7.9 percent to 15.8 percent) of total trips made by bicycling and walking, and to simultaneously reduce by 10 percent the number of bicyclists and pedestrians killed or injured in traffic crashes.” Federal regulations, plans, policy statements and planning guidelines issued since 1991— including the latest transportation law, the Transportation Equity Act of the 21st Century (TEA 21) — continue to support walking and bicycling as important transportation choices that should be available to all Americans who want them. The reality of TEA-21 is that pedestrian and bicycle projects can be funded with almost all sources of federal transportation dollars.

Federally-funded transportation projects (including bicycle and pedestrian projects) are prioritized in the region through the Transportation Improvement Program (TIP). This annually updated document matches available federal funds with local projects. The Region's Joint Transportation Committee prioritizes projects for TIP. Since the beginning of ISTEA the JTC has programmed $12,178,279 for bicycle and pedestrian projects. This amount is in addition to the sidewalks, roadway shoulders, crosswalks and transit shelters constructed as part of regular roadway and transit improvement projects.

In keeping with a national trend, the largest source of federal funding for bicycle and pedestrian projects in the region is the Transportation Enhancement Program (described in the Appendix). Transportation Enhancement Funds account for nine of every ten dollars programmed on the TIP for bicycle and pedestrian projects. Yet the Transportation Enhancement Program accounts for just 1.7% of the total authorization of TEA-21. Other funding programs, including the Congestion Mitigation Air Quality Program (CMAQ), are outlined in a table included in the Appendix. CMAQ funds were used by the Pioneer Valley Transit Authority to create the bikes on bus program (Rack & Roll), and PVTA used CMAQ funding to purchase parking racks for 400 bicycles in downtown Amherst and Northampton. Scenic Byway funding was used by Jacobs Ladder Trail Scenic Byways Inc. to develop and publish a 127 page map guidebook; "Jacob's Ladder Trail by Bicycle or Car," funded the "Eastern/Western Region Off-road Bicycle and Multi-use Trail Map", and planning efforts on Route 47 for a tri-state scenic byway initiative. In addition, the Pioneer Valley Planning Commission was awarded CMAQ funds in FFY 2000 through the Massachusetts Transportation Demand Management Program to coordinate region-wide efforts that encourage bicycling and walking. Given the current shortfall in available federal funding, the region will need to continue seeking funds through a variety of federal programs in order to implement the goals of this plan.

23 USC 217 (e): In any case where a highway bridge deck is being replaced or rehabilitated with Federal financial participation that is located on a highway, other than a highway access to which is fully controlled, on which bicycles are permitted to operate at each end of such bridge, and the Secretary determines that a safe accommodation of bicycles can be provided at reasonable cost as part of such replacement or rehabilitation, then such bridge shall be so replaced or rehabilitated as to provide such safe accommodations. Title 23 of the United States

Commonwealth of Massachusetts Policies, Regulations and Practices

(including regulations which might affect pedestrian and bicyclist planning and subsequent access to infrastructure)

The Commonwealth of Massachusetts has undertaken major initiatives to encourage bicycling and walking. The Department of Public Health, Governor's Highway Safety Bureau, and the Massachusetts Department of Economic Development/ Office of Travel and Tourism actively promote safe travel for bicyclist and pedestrians in the Commonwealth. In 1998 the Executive Office of Transportation and Construction finalized the Statewide Bicycle and Pedestrian Plans. Under the direction of MassHighway the plan outlined 15 "Action Items" and 74 "recommendations" that directly impact bicycle and pedestrian transportation in every community in the Commonwealth. As a Regional Planning Agency, the Pioneer Valley Planning Commission is identified as an implementing agency for 19 of the 74 recommendations. These recommendations include; actively preserving former railroad corridors for bicycle and pedestrian use, encouraging increased bicycle use on transit, and the promotion of events and activities that encourage bicycling, among others. The recommendations of the state plan are incorporated into the action and strategy section of this plan. As with the Pioneer Valley Bicycle and Pedestrian Plan, each of the State Plans require a "con-

certed effort of state, regional, and local agencies, private organizations and businesses, and the public" for implementation.

Chapter 87

In 1996, the Massachusetts legislature took a significant step toward accommodating bicyclists and pedestrians in the Commonwealth, enacting Chapter 87 [MA ST 90E s 2A] of the Massachusetts General Laws. This legislation and the MassHighway Engineering Directives that followed directly influence the design and construction of public roadway project in the state.

Engineering Directive E-98-003 (dated 5 May, 1998) defines recommended travel lane widths, and establishes a benchmark for reasonable bicycle and pedestrian accommodations. The benchmark for pedestrian accommodations is to "provide one continuous paved surface or sidewalk along all roadways where pedestrian access is legally permitted." The MassHighway benchmark for reasonable bicycle accommodation is to provide a continuous usable paved shoulder adjacent to the outside travel lane in each direction on roadways where bicycles are legally permitted:

"The desirable width of the outside travel lane plus the paved usable shoulder (curb lane) is at least 5.0 meters (plus 0.5 meter "guardrail" offset). "When this width cannot be reasonable accommodated, the minimum width of the outside travel lane plus the paved usable shoulder (curb lane) for the accommodation of bicycles is 4.5 meters (plus 0.5 meter "guardrail" offset). For roadways with low speeds of less than 45 m.p.h. (85^{th} percentile speeds) combined with low volume of less than 2000 AADT, the minimum roadway widths as defined in Chapter 8 of the Highway Design Manual may be used to conform with bicycle accommodation. Bicycle lanes and shoulder bikeways are encouraged and should be considered early in the design process."

The directive applies to full depth reconstruction projects funded through the Chapter 90 Program. The Directive does not apply to maintenance and resurfacing projects, and a waiver may be requested.

"Project design engineers shall use sound engineering practice in making reasonable provision to accommodate bicycles and pedestrians in project designs. This generally includes assuring continuous paths of travel with smooth surfaces without obstructions or impediments. This Directive must be addressed on all projects at the 25% design level."

MassHighway Engineering Directive E-98-003

CHAPTER 87
H.B. No. 1940
PUBLIC WAYS—BICYCLE, PEDESTRIAN ACCESS

AN ACT relative to BICYCLE and PEDESTRIAN access in construction of public ways.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

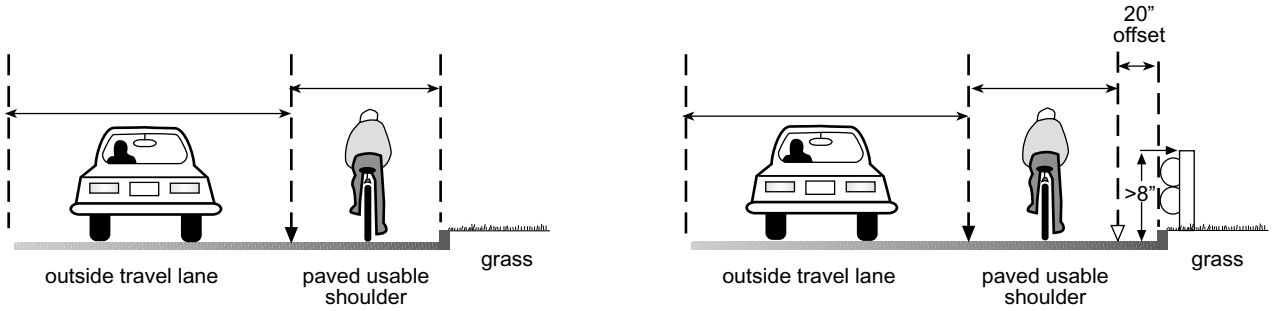
Chapter 90E of the General Laws is hereby amended by inserting after section 2, as appearing in the 1994 Official Edition, the following section: —<< MA ST 90E s 2A>>
Section 2A. The commissioner shall make all reasonable provisions for the accommodation of BICYCLE and PEDESTRIAN traffic in the planning, design, and construction, reconstruction or maintenance of any project undertaken by the department. Such provisions that are unreasonable shall include, but not be limited to, those which the commissioner, after appropriate review by the bicycle program coordinator, determines would be contrary to acceptable standards of public safety, degrade environmental quality or conflict with existing rights of way.

Approved May 20, 1996
Chapter 87 and MassHighway Directive E-98-003

Low Speed/Low Volume Road Standards

Not every road in the region warrants a 4-foot shoulder. Many roads in the Pioneer Valley are sought out by bicyclists for their rural character, scenic views, and low traffic volumes. To protect the character of these roads, the MassHighway established a low speed/low volume design standard. The low speed/low volume standard applies to the resurfacing, rehabilitation and reconstruction of existing low speed/low volume roadways. Under this design standard, roads with volumes below 2000 and with speeds below 70km/hr may be designed with less overall width than a conventional roadway. Only roadways functionally classified as collectors and local roads are subject to low speed/low volume roadway criteria. A copy of the low speed/low volume table from the MassHighway Metric Design Manual (1997 Edition) is included in Table 8.

Table 9 **Roadway Design Widths**



▼ Single white line (pavement marking)

▽ 20 inches offset required from guardrail, curb or other vertical element taller than 8 inches

Recommended Roadway Widths

Functional Class	Urban/ Rural		Travel Lane [4] (minimum)		Usable Shoulder[3]		
					Right[4] (minimum)		Left[4] (minimum)
			Desired	Minimum	Desired[2]	Minimum	
ARTERIAL	URBAN	WITH MEDIAN	12' 4"	11' 6"	9' 10"	8' 2"	4' [1]
	URBAN	WITHOUT MEDIAN	12' 4"	11' 6"	9' 10"	8' 2"	N/A
	RURAL	WITH MEDIAN	12' 4"	11' 6"	9' 10"	8' 2"	4' [1]
	RURAL	WITHOUT MEDIAN	12' 4"	11' 6"	9' 10"	8' 2"	N/A
COLLECTOR	URBAN		12' 4"	10' 8"	8' 2"	4'	N/A
	RURAL		12' 4"	10' 8"	8' 2"	4'	N/A
LOCAL[2]	URBAN		12' 4"	9'	4'	2' 6"	N/A
	RURAL		12' 4"	9'	4'	2' 6"	N/A

Notes:
1. Use 9' 10" when 3 or more lanes in each direction.
2. Widths are to be determined based on traffic, bicycle and pedestrian volumes. Parking requirements, right of way restrictions and environmental impacts. The wider shoulder width is preferred for parking and turning, and/or bicycle or pedestrian use.
3. Shoulder dimensions are for "usable" shoulder. The offset dimensions (20 inch minimum) is to be added to the usable shoulder dimension to allow for vertical elements (guardrail, bridge rail, concrete barrier, etc.) over 8 inches high at the edge of the "graded" shoulder.
4. Design waivers must be obtained for roadway widths below these minimum standards. See Chapter 8 of the MassHighway Metric Design Manual 1997 edition for information on design waivers.

Low Speed/ Low Volume Road Widths (minimum width)

	85th % Operating Speed[2]					
	< 31 MPH		31 - 37 MPH		40 MPH	
Design Year AADT[1] (Average Annual Daily Traffic)	Travel Lane	Paved Usable Shoulder	Travel Lane	Paved Usable Shoulder	Travel Lane	Paved Usable Shoulder
1501-2000	9' 10"	3' 3"	10' 8"	3' 3"	10' 8"	3' 3"
401-1500	9' 10"	1' 8"	10' 8"	1' 8"	10' 8"	1' 8'
251-400	9' 10"	0.00	9' 10"	1' 8"	9' 10"	1' 8"
101-250	9'	0.00	9'	0.00	9' 10"	1' 8"
<=100	9'	0.00	9'	0.00	9'	1' 8"

Notes:
1. Design Year Average Daily Traffic – 20 years for reconstruction, 10 years rehabilitation, 5 years resurfacing
2. 85th% operating speed – speed at which 85% of traffic is operating at or below. (Frequently the posted speed)

Source: MassHighway Metric Highway Design Manual, 1997 edition. Table 5.1 and 8.2

Chapter 90

Chapter 90 funds consist of state revenues appropriated through the Massachusetts Legislature as part of the Transportation Bond Bill and through supplemental budget agreements. The vast majority of local road projects are funded using monies available through the Chapter 90 program. This locally administered funding source is used for maintenance, resurfacing, sidewalk repair, traffic signal improvements and many local improvements. A table of the Chapter 90 apportionment for Pioneer Valley Municipalities is included in the Appendix.

Massachusetts Scenic Roads Law

(Mass. Gen. Laws Ann. Ch. 40, § 15C (West Supp. 1994)) Citizens can urge their conservation commission, planning board, or historical commission to recommend to the town or city that any road, other than a state highway, be designated as scenic. If one of these bodies makes such a recommendation, the town or city can make the designation. A numbered route, however, can be designated as scenic only if it is entirely located within the town or city and no part of it is owned or maintained by the state.

Once a road has been designated as scenic, trees or stone walls along it can be destroyed only after a public hearing and the approval of the planning board. Municipalities can use state funds to repair scenic roads, and they may pass an ordinance or bylaw to fine persons who violate the scenic roads law.

Massachusetts Environmental Policy Act

This law requires the Secretary of Environmental Affairs to review projects, including road projects, above a certain size that are funded by state agencies, require a state permit, or involve acquiring rights to state property. This review can be used, as an important tool to require the consideration of less environmentally damaging alternatives to a road project and to commit to measures that will mitigate the project's environmental impact. Review under MEPA begins with the filing of an Environmental Notification Form (ENF). For example, MassHighway must file an ENF with the MEPA Unit of the Executive Office of Environmental Affairs if it is funding a road project and the project will:

i. increase the total pavement width of a road four feet or more for an aggregate of 1000 feet or more;
ii. alter the bank or terrain (other than alteration of bank or terrain required for the installation of equipment or structures) at a distance of 10 feet or more from the existing pavement;
iii. require the cutting of five or more living trees, 14 inches or more in diameter at breast height; or
iv. eliminate 300 feet or more of stone wall.

To find out whether an ENF has been filed, call the MEPA Unit in Boston (Tel. 617/727-5830.) If you believe that a road project will have a significant impact on your community and environment, you should urge the Secretary to require the preparation of an Environmental Impact Report (EIR). An EIR is a much more detailed document than an ENF, and must analyze in detail all reasonable alternatives to a project and identify all feasible mitigation measures. In your comments, you should describe any project alternatives that you think might accomplish the goals of the project with fewer harms to your community and environment. At the end of the comment period, the Secretary will decide whether she will require the preparation of an EIR. During that time, a public meeting may be held to discuss the project. Citizens have an opportunity to comment on a draft EIR and then on a final EIR.

Historic Preservation

This law requires state agencies to notify the Massachusetts Historical Commission ("MHC") about projects they are planning to undertake, license or fund "as early as possible." Notice must be given on a Project Notification Form or on an Environmental Notification Form. Once MHC has received a complete form, it has 30 days to determine whether the project will have "adverse effects" on a district, site, building, or structure included in the State Register of Historic Places. The state register, by definition, includes all properties included in the National Register of Historic Places. Citizens may submit comments to the MHC during the 30-day period. If you believe that a road project will have a significant impact on a state historic district or place, you should describe the impact and request the Commission to make a "determination of adverse effect." If the Commission makes such a determination, it must begin a formal consultation process to consider project alternatives that would minimize the adverse effects. That process must involve the public and the local historic commission.

Shade Trees Act

Under this law, all trees within a public way are considered public shade trees. With certain exceptions, these trees may be cut, trimmed, or removed only by a town's tree warden or by obtaining a written permit from the tree warden. Before any public shade tree is cut down, a public hearing must be held. Notice must be given seven days prior to the hearing in a newspaper of general circulation and posted on the tree itself. (Ibid.) If any person objects to the removal of a public shade tree before or at the hearing, the tree may not be cut down without the approval of the selectmen or the mayor. The law, however, does allow the removal of "any tree if so ordered by the proper officers for the purpose of widening the highway."

Local Policies, Regulations, and Practices

There are a variety of policies, regulations and practices that can be implemented at the local level to create environments that encourage walking and bicycling. These include:

- Having a dedicated staff person or person working on pedestrian and bicycle issues.
- Developing a community bicycle/pedestrian plan.
- Creating a Pedestrian/Bicycle Advisory and/or Review Committee composed of municipal staff, citizens or a combination of the two:
  Municipal staff (planning, public works, traffic, engineers, housing, etc.)—to assure consideration of pedestrians' and bicyclists' needs in all develoments.
  Citizen representatives—to assure community involvement and understanding.
- Implementing pedestrian and bicycle-friendly regulations and ordinances, such as requiring bicycle parking and sidewalks in all new developments, using bicycle-friendly drainage grates (as specified in the MassHighway Design Manual), installing pedestrian

controls at traffic signals, and installing bicycle-activated traffic signals.
- Signing and striping bike lanes.
- Slowing traffic on neighborhood streets though traffic calming measures including the use of traffic circles or a community speed watch program.
- Developing and disseminating a community bicycle plan.
- Sponsoring pedestrian and bicycle safety programs and campaigns.
- Dedicating law enforcement officers to enforce traffic laws and citing motorists, as well as pedestrians and bicyclists, who violate the law.
- Encouraging municipal employees to commute to work by bicycle.
- Providing a "fleet" of bicycles to municipal employees, such as meter readers, who have to travel around the community for their work. (A bicycle/pedestrian friendly checklist for municipalities is included in the Appendix)

In 1998, bicycle deaths and injuries accounted for 2 percent of all people killed or injured in car crashes. The average age of bicyclists killed in crashes has increased from 24 years old in 1988 to 32 years.[9]

Land Use and Zoning—general patterns of land use

Given that the goal of this regional bicycle and pedestrian plan is to make the Pioneer Valley a safer and more pleasant place to walk and ride a bicycle, it is important to address the connection between land use and transportation planning. As we have seen in previous sections of this plan, there are two land use approaches to promoting bicycling and walking.

- Given existing land uses, adapt the transportation facilities to include accommodations for pedestrians and bicyclists, and change the environment so that people feel comfortable walking and bicycling, for example stripe lanes and build facilities for bicyclists and pedestrians on and off roads, build sidewalks, and educate pedestrians, bicyclists, and motorists on how to share the road.
- Use land differently, so that people do not have to travel such long distances to get to the places they need to go, thereby making it more sensible to walk or ride a bicycle than it is to drive.

In the Pioneer Valley, we can take advantage of both approaches described above, to make it easier to walk and bicycle here. Chapter IV, Strategies and Actions, details ways that both regional and local bicycle and pedestrian advocates can build and adapt existing transportation facilities and political environments to accommodate pedestrians and bicyclists. Local zoning ordinances and subdivision regulations can help communities use land in such a way that bicycling and walking are sensible transportation options.

Research on people's transportation behavior suggests that most people will not travel more than two miles by bicycle. Thus, it is important that places of employment, recreation, and commerce be not more than two miles from places where people live. Providing housing close to places of employment, schools, educational institutions, and commercial developments is called compact growth/development.

Compact development not only fosters better for walking and biking; it creates a more efficient transit system with buses quickly connecting clustered areas of activity. Building more accessible pedestrian and bicycle connections between transit stops and neighborhoods, schools, commercial areas, and places of employment is a key factor in making transit more popular in the region. Providing bicycle racks and lockers at transit stops and bicycle racks on buses will also increase the number of people that can use transit conveniently. By increasing the use of transit, traffic congestion can be decreased and neighborhoods will become more attractive for walking and biking.

[9] Traffic Safety facts 1998, NHTSA Center for Statistics and Analysis

Tools to facilitate compact growth include community master plans, mixed use zoning, transit-oriented development, traditional neighborhood development, village center zoning, creative/open space/cluster development, commercial infill in neighborhoods, brownfields development incentives, farmland protection zoning, commercial strip development controls, downtown development incentives, Planned Unit development (PUD) business villages with on-site housing, accessory apartment bylaws, green belt open space acquisition programs, inclusionary zoning, environmental protection provisions, and limits imposed on infrastructure expansion. (For detail on these tools, and copies of model ordinances, see the ***Pedestrian, Transit and Bicycling Workbook*** available the American Institute of Certified Planners). To change existing land uses, it will probably be necessary for local communities to change their existing zoning ordinances.

Table 10 **Land-use Measures that impact levels of bicycle & pedestrian use**

Municipal Regulations	How They Can Affect Bicycle & Pedestrian Travel
Dimensional	Maximum setbacks of 30 feet or less bring buildings close to pedestrians, for a more comfortable and appealing streetscape. Zero lot lines foster pedestrian-scale development by reducing the distances between uses.
Traffic Control	Requirements for large development projects to include traffic studies can lead to the identification and mitigation of negative impacts on cyclists and pedestrians.
Site Plan Approval	Requirements for approval may include provisions for safe and attractive pedestrian and bicycle circulation (i.e. paths leading to main building entrances, pedestrian and bicycle access to adjacent uses).
Parking Regulations	As with a Site Plan Approval Bylaw, parking regulations may require pedestrian and bicycle accommodations, including: • Bicycle parking • Marked pedestrian and bicycle paths through the parking facility • Connections with adjacent parking lots, sidewalks, and off-site trails • Requirements that parking be in the rear of buildings • Rear parking also allows uses to be closer together, reducing distances • Regulations can minimize the amount of land devoted to parking by setting limits on the amount of space which can be developed, encouraging uses to share parking lots, and promoting the development of parking garages • Landscaping requirements for parking lots to increase the attractiveness of an area for pedestrians and cyclists.
Phased Growth Bylaws	Phased growth bylaws may be structured to reward developments that facilitate bicycle and pedestrian travel. Growth management can encourage compact develoment.
Subdivision Regulations	Regulations may include requirements for bicycle and pedestrian accommodations, such as sidewalks or walkways, off-road bicycle paths and on-road bicycle lanes, street grids or connections between cul-de-sacs, connections with adjacent uses, and road, sidewalk and path grades of 5 % or less.
Mixed Use Development Bylaws	Bringing living, working, shopping, and entertainment areas into close proximity increases the practicality of bicycle and pedestrian travel.
Density Zoning Measures	Increased density reduces the distances between uses and the development and maintenance of sidewalks is more feasible in densely settled areas. (Examples of density zoning include upzoning, density bonuses, and accessory apartments.).
Transit Overlay Districting	the provisions in a transit overlay zoning district are designed to increase densities and pedestrian access within a 1/4-mile radius (i.e. walking distance) of a transit stop.

Traffic Calming in Residential Neighborhoods

Recently, there has been a greater interest in the study and implementation of traffic calming measures in the Pioneer Valley. Several communities, including Easthampton, Springfield, and Northampton, have implemented education and enforcement efforts that include enhanced police enforcement and speed displays. Several communities are also reviewing changes to roadway design that slow vehicles. In 1999 Wilbraham installed chokers at an intersection in the town center, and Amherst moved the painted edgelines of several roads to reduce travel lane width. Other design alternatives include chicanes, traffic circles, speed humps, and raised crosswalks.

For many communities, traffic calming represents a change in the way transportation systems are evaluated. Planners and engineers must balance traditional performance measures of speed, capacity and traffic safety the need to reduce noise, reduce truck traffic, and provide a safer environment for pedestrians and children.

In 1999 the Pioneer Valley Planning Commission, FHWA and MassHighway hosted a FHWA Pedestrian Road show "Train the Trainers" technology transfer training program that allowed public works officials and planners in New England to learn current practices for improving the pedestrian environment. This three-day workshop including presentations by engineering experts in field the field of traffic calming, and a site visit to neighborhoods in Springfield where pedestrian/traffic issues had been identified. The implementation section of this of this plan includes additional action items that directly address the growing issue of traffic as it relates to safety in the pedestrian and bicycle environment.

Institute of Transportation Engineers' definition: " Traffic calming is combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users" ITE Journal, Vol. 67, July 1997, pp. 22-24.

Table 11 **Generalized Assessment of Traffic Calming Measures. (Phoenix, AZ)**

Traffic Management Device	Traffic Reduction	Speed Reduction	Noise & Pollution	Safety	Traffic Access Restrictions	Emergency Vehicle Restrictions	Maintenance Problems	Level of Violation	Cost
Speed Humps	Possible	Limited	Increase Noise	No Documented Problems	None	Minor Problems	None	Not Applicable	Low
STOP Signs	Unlikely	None	Increase	Unclear	None	No Problems	None	Potentially High	Low
NO LEFT/ RIGHT TURN signs	Yes	None	Decrease	Improved	No Turn(s)	No Problems	Vandalism	Potentially High	Low
One-Way Street	Yes	None	Decrease	Improved	One Direction	One Direction	None	Low	Low
Chokers	Unlikely	Minor	No Change	Improved for Pedestrians	None	No Problems	Trucks Hit Curbs	Not Applicable	Moderate
Traffic Circle	Possible	Likely	No Change	Unclear	None	Some Constraint	Vandalism	Low	Moderate
Median Barrier	Yes	None	Decrease	Improved	Right Turn Only	Minor Constraint	None	Low	Moderate
Forced Turn Channelization	Yes	Possible	Decrease	Improved	Some	Minor Constraint	Vandalism	Potentially High	Moderate
Semi-Diverter	Yes	Likely	Decrease	Improved	One Direction	Minor Constraint	Vandalism	Potentially High	Moderate
Diagonal Diverters	Yes	Likely	Decrease	Improved	Thru Traffic	Some Constraint	Vandalism	Low	Moderate
Cul-de-sac	Yes	Likely	Decrease	Improved	Total	Some Constraint	Vandalism	Low	High

ITE. Traffic Calming State of The Practice, Reid Ewing. 1999, pg. 20.

CHAPTER FOUR

STRATEGIES AND ACTIONS, CHANGES TO POLICIES, REGULATIONS AND PRACTICES

All highways, except those where cyclists are legally prohibited, should be designed and constructed under the assumption that they will be used by cyclists. Therefore, bicyclists should be considered in all phases of transportation planning, new roadway design, roadway reconstruction, and capacity improvement and transit projects.

Facilities are only one of several elements essential to a community's overall bicycle program. Bicycle safety education and training, encouraging bicycle use, and the application and enforcement of the rules of the road as they pertain to bicyclists and motorists should be combined with facilities to form a comprehensive community approach to bicycle use.

"Guide for the Development of Bicycle Facilities", American Association of State Highway and Transportation Officials,1999, p.2.

Bicycling and walking in the Pioneer Valley can be enhanced through policy and program changes including engineering, education, enforcement, and encouragement efforts. The actions described below are designed to change either the physical or the policy environment for pedestrians and bicyclists in the Pioneer Valley or to directly affect the behavior of pedestrians, bicyclists, and motorists.

Strategy 1: Engineering / Infrastructure

The physical environment directly affects the decision to walk or ride a bicycle. If people believe that there is a safe place for them to go, they will walk and ride their bikes. In the Pioneer Valley, there are many governmental and non-governmental entities that can contribute to making the environment more comfortable for bicyclists and pedestrians.

Regional Responsibilities

Action 1—The Pioneer Valley Planning Commission will systematically identify and assess roadway conditions throughout the region and create a database of road characteristics that affect bicyclists' comfort level. The database will include (but will not be limited to) width, shoulder width, average daily traffic (ADT), and speed, and be designed to identify and document the need for, and appropriate kind of, pedestrian and bicycle facility improvements for all roadways in the Pioneer Valley. (This effort may coincide with regional and local pavement management efforts, to maximize use of limited regional planning agency staff.) PVPC will update and expand the Pioneer Valley Regional Bikeway Map by classifying roadways based on the shoulder width specification defined in MassHighway Directive E-98-003 (5/5/98).

Action 2—PVPC will work with affected communities to secure financing from MassHighway and alternate funding sources, and to build new facilities, based on the list of projects and needs identified in the Appendix of this plan.

***Action 3*—**PVPC will facilitate community efforts to provide opportunities for bicycle access to other modes of transportation, including

- Working with the Pioneer Valley chapter of MassBike, a statewide bicycle advocacy organization and with the League of American Bicyclists to eliminate handling fees for bicycles on inter-regional bus carriers, Amtrak and on major airlines .
- Working with the Pioneer Valley Transit Authority and others to install long term parking facilities at park-and-ride lots, provide short-term parking on local transit routes, and install bicycle transport racks on transit coaches.

Local Impact Pilot Programs

While it is clear that the regional planning agency has an important role to play in encouraging walking and biking in the Pioneer Valley, it is ultimately up to city and town governments to create a friendly environment for residents to walk and bike. For this reason, there are a number of actions proposed which local government can only implement. PVPC will support these efforts.

Action 4—At least one community in the valley will secure funding for and develop a local "spot safety improvement program" (Cambridge, Massachusetts has a program that could serve as a model) so that the public can identify situations of concern to bicyclists and pedestrians and report their presence to appropriate authorities, and so the local Department of Public Works can remedy these locations in a timely fashion.

Action 5—At least one community will work with PVPC, the Joint Transportation Committee (JTC) and MassHighway to create and implement a model program for reconstruction and retrofitting of area bridges to assure provision of sidewalks and appropriate lane widths for bicycles.

Action 6—At least two communities will work with PVPC and the JTC to improve pavement markings, lighting, and signs at pedestrian crosswalks and intersections.

Strategy 2: Engineering/Policy Strategies

It is not enough to create a physical environment that encourages bicycling and walking. Because the physical environment is constantly changing, it is necessary to assure ongoing support for and encouragement of walking and biking as reasonable transportation options by creating and influencing public policy. It is especially important to establish pedestrian and bicycle-friendly public policy that governs engineering activities in the Valley, including the planning, design, construction, and maintenance of public roadways and transportation projects.

Action 7—PVPC will recruit and add two new members with bicycling and pedestrian expertise to the Pioneer Valley's Joint Transportation Committee (JTC).

Action 8—PVPC will reactivate the non-motorized transportation committee and charge them with oversight of implementation of this plan.

Action 9—PVPC will work with the JTC to institutionalize a process to notify bicycling and pedestrian organizations in the respective MassHighway Districts of public hearings on transportation projects that could include

bicyclist and pedestrian accommodations. This effort will include notification to elected officials of project advertisement and contract awards for transportation projects.

Action 10—At least one area community will adopt a level of service index for bicycling and walking (detail in Appendix). This index would serve the same function as that provided to motorized vehicles through the Highway Capacity Manual: it would systematically identify areas where pedestrian and bicyclists needs could be better met with met by existing transportation infrastructure.

Action 11—At least two area communities will incorporate traffic calming measures into neighborhood streets that reduce the risk of automobile injury to pedestrian and bicyclists. These measures may include the use of chokers, chicanes, traffic circles, speed humps, edgelines, and raised crosswalks.

Action 12—At least two area communities will adapt their application of the Transportation Management System (the mechanism by which communities plan and prioritize expenditures of federal and state highway funding) to include consideration of bicycling and walking.

Action 13—At least two area communities will include pedestrian and bicyclist needs in traffic studies. When a count reveals that pedestrians and bicyclists are not using a facility, an effort will be made to assess potential barriers and identify creative solutions. For example, if a community is conducting a traffic study for a proposed new shopping center, the study would look not only at automobile access to the proposed development, but also at pedestrian and bicyclist access. If there seemed to be a lack of pedestrian and bicyclist access, the community would consider requiring sidewalks, bikelanes, additional striping, bicycle parking, pedestrian and/or bicyclist specific signage, and other means to assure pedestrian and bicyclist access to the proposed development.

Action 14—PVPC will facilitate community efforts to work with the Rails-to-Trails Conservancy and other concerned groups to create a method of quick public response to purchase newly available corridors for future multi-use trails.

Strategy 3: Land Use Planning—Zoning and Development

Zoning ordinances and bylaws are specific forms of public policy that can be used by local governments to support walking and bicycling. The following actions deal specifically with recommended bylaws that can be implemented at the municipal level. PVPC will support local efforts to implement these actions.

Action 15—At least one interested community will create a pedestrian/bicyclist review committee to evaluate all proposed development projects with respect to bicycle and pedestrian access (information on model programs is available in the resources section).

Action 16—PVPC and the JTC will work with at least two area communities to adopt sidewalk maintenance bylaws (model bylaws are available from PVPC, www.pvpc.org) and work to maintain existing roadways with the knowledge that the lack of maintenance is an obstacle for bicyclists and pedestrians.

Action 17—At least one municipality will adopt mandatory sidewalk bylaws for new residential and commercial developments.

Action 18—At least one municipality will adopt inclusion of bicycle parking as part of local parking ordinances.

Action 19—At least one community will encourage land use development patterns (as described in current land use section of this plan) that allow residents the opportunity to walk and bicycle as a means of travel and recreation.

Strategy 4: Education

Action 20—At least two communities will host the "Pedestrian Road Show," the FHWA comprehensive community-based pedestrian accessibility program.

Action 21—At least 5 local planners (paid or volunteer) and public works officials will be trained in bicycle traffic safety through an educational program comparable to advanced driver's education for bicyclists.

Action 22—At least two workshops on transportation related issues, including the design of bicycle and pedestrian facilities, will be held in area communities (the federally funded Local Technical Assistance Program, Baystate Roads, is a resource).

The vast majority of motor vehicle crashes are caused by human error. Comprehensive education programs are necessary to ensure safe use of transportation facilities. It is especially difficult to design transportation facilities for pedestrians and bicyclists because user skills vary so greatly. Unlike people who drive cars, there is no licensing procedure to assure a minimal level of competency when people walk and ride their bicycles. Children and adults have very different abilities and needs. The following actions can enhance safety of bicyclists and pedestrians while encouraging people to walk and ride their bikes. PVPC will support these efforts.

Action 23—Interested citizens, the Northampton Safe Roads program, universities, and the Hampden County Traffic Safety program will launch a valley-wide public information and education effort designed to: 1) educate motorists about their responsibilities to share the road with bicyclists and their obligations to yield to pedestrians in crosswalks, and 2) educate bicyclists and pedestrians about their responsibilities interacting with motor vehicles.

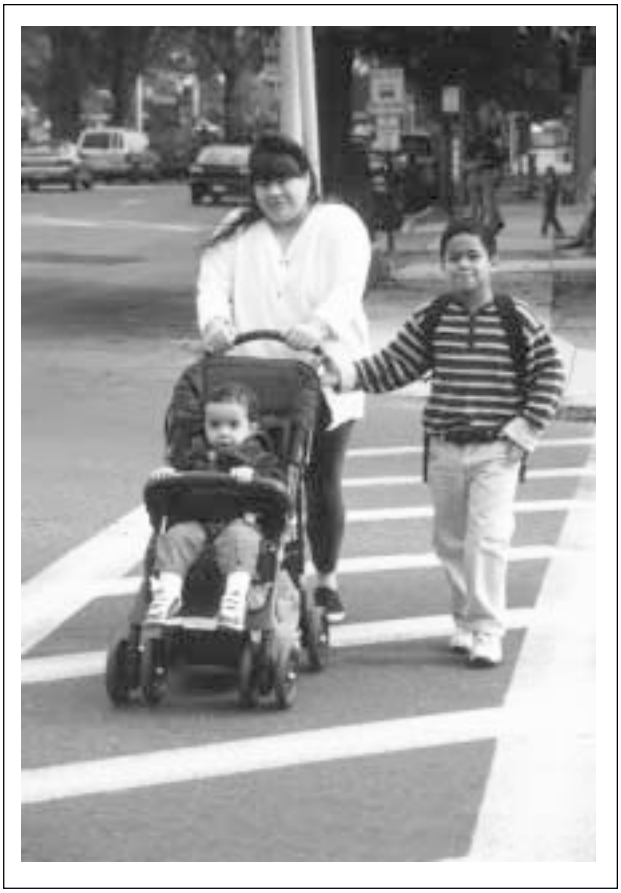
Action 24—Interested citizens, local bicycle clubs, and safety advocates will work with school boards, departments of education, universities, and parent-teacher associations to help municipalities incorporate pedestrian and bicycle safety as part of a comprehensive orientation during the beginning of every new school year. The Northampton Safe Roads program, the Hampden County Traffic Safety program, and the Massachusetts Bicycle Safety Alliance are existing resources for bicycle and pedestrian safety efforts.

Action 25—Concerned citizens, local bicycle clubs, universities, and safety advocates will create a program to encourage bicycle retailers to include helmets as part of all bicycle purchases and to educate customers on the safe use of equipment and traffic rules.

Action 26—Safety advocates will work with local hospitals and departments of public health to develop a region-wide injury database for bicyclists and pedestrians.

Action 27—PVPC will work with local communities, Governors Highway Safety, State and local Police, and safety advocates to incorporate improved crash reporting procedures for bicycle and pedestrian injuries as currently proposed by MassHighway.

Action 28—The Massachusetts Bicycle Safety Alliance, local bicycle clubs, the Western Massachusetts chapter of MassBike, the League of American Bicyclists, and other organizations will work to implement a driver's education for bicyclists. Training will be conducted in educational programs for both children and adults through safety clinics, and adult education outlets.



Strategy 5: Enforcement

Without enforcement of existing traffic laws, motorists, pedestrians, and bicyclists are likely to disregard rules of the road. Enforcement is an essential component of encouraging biking and walking.

Action 29—Interested communities will work with the Governor's Highway Safety Bureau to secure funding and other support necessary to implement law enforcement programs to support enforcement of existing traffic laws, especially pedestrian crosswalk laws, focusing on citing motorists and pedestrians or bicyclists whenever they violate traffic laws.

Action 30—Interested community members will work with local legislators to change state legislation, specifically Massachusetts General Laws (Chapter 90) and the Uniform Vehicle Code (UVC) with respect to the protocol concerning drivers and their duty to stop for pedestrians. The UVC should indicate that the driver must stop or yield for a pedestrian in a crosswalk or who is standing adjacent to a crosswalk indicating a desire to cross by pointing to the other side of the roadway. While the existing code provides pedestrians standing at a crosswalk with the right of way, the pedestrian is forced to venture into the travel lane to exert this right.

Strategy 6: Encouragement

Though often overlooked, encouragement is at the heart of any community's successful efforts to make walking and bicycling viable means of transportation. PVPC, local governments, colleges and universities, businesses, and key community leaders must cooperate to make bicycling and walking viable transportation alternatives.

Action 31—PVPC will work with the non-motorized transportation committee and interested communities and employers and educational institutions to organize a regional "Bike, Bus, or Walk to School/Work Day" to coincide with "National Bike to Work Day" in 2000.

Action 32—PVPC will work with at least three area employers and educational institutions to create incentive programs to encourage employees and students to bike or walk to work or school in the year 2000. (this activity may include Bike to Work Week activities)

Action 33—PVPC will assure implementation of this Regional Bicycle and Pedestrian Transportation Plan via the work of the non-motorized sub-committee of the Joint Transportation Committee.

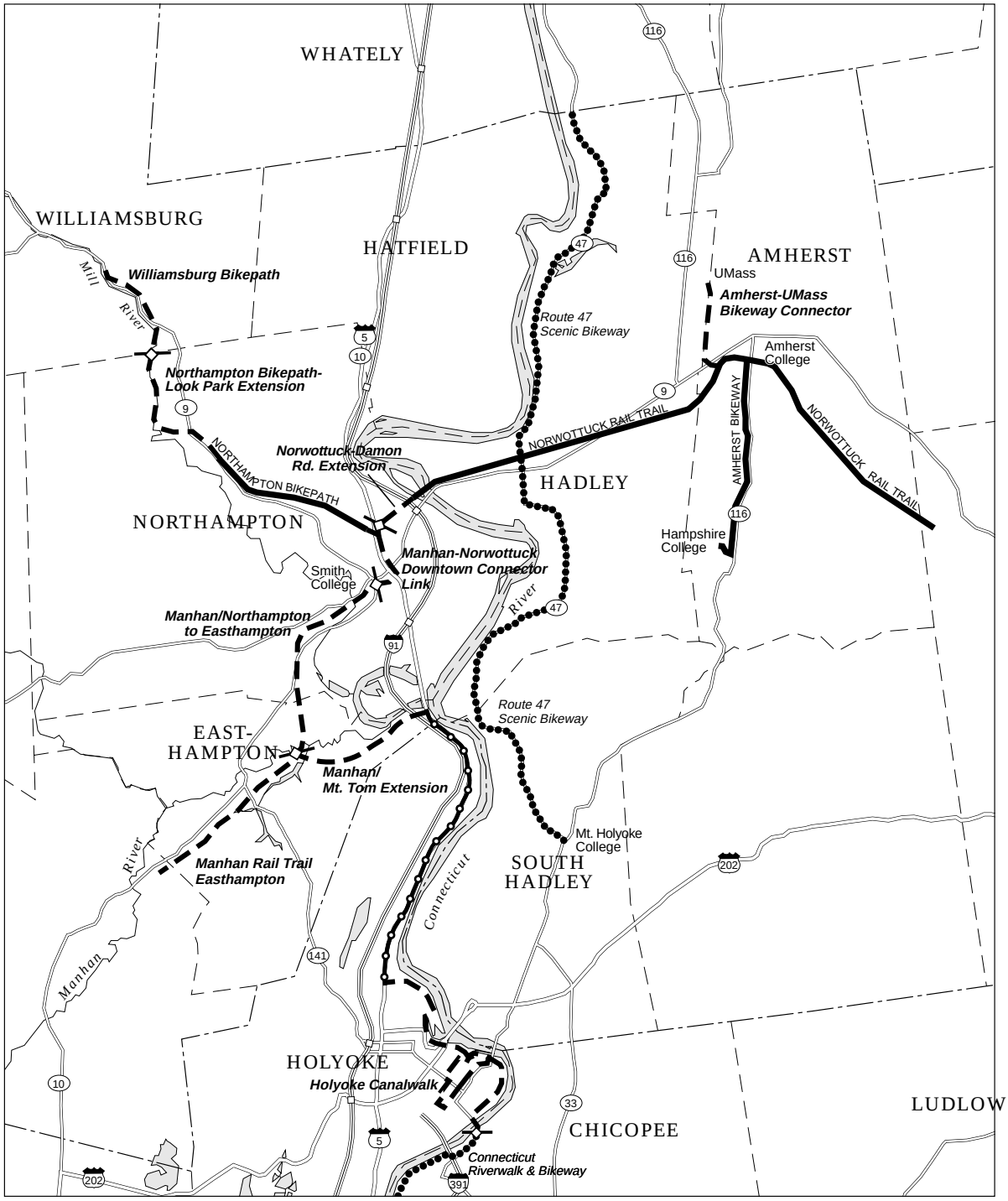
CHAPTER FIVE

PROPOSED ROAD, SIDEWALK AND MULTI-USE TRAIL PROJECTS

Creating a network of safe roads, sidewalks and bikepaths has been a central goal of this plan. The concept that you can bicycle “from here to just about anywhere” has universal appeal and certainly residents want to be able to walk to their favorite destinations. The accompanying table currently identifies 19 proposed bikepaths or multi-use trails and 94 miles of road and bridge improvements.

All of these projects are significant in achieving the goals of this plan. 15 projects have secured the necessary funding to complete engineering or acquire rights of way (see explanation of Transportation Enhancement Funding in appendix) and the Connecticut Riverwalk, in Springfield and the Umass Amherst Bikeway Connector have construction bids awarded. Many of the on-road and sidewalk improvements will be incorporated into larger roadway construction projects in the future. Other projects may face continued delays as competition and funding shortages continue.

Norwottuck Rail Trail Bikepath Extensions in the Pioneer Valley Region



Proposed Projects

The following table identifies projects submitted to the Pioneer Valley Planning Commission by local officials, citizen groups, and local bicycling organizations including members of the Northeast Sport Cyclists, the Springfield Cyclonauts, the Pioneer Valley Chapter of MassBike, and the Franklin/ Hampshire Freewheelers. Projects listed have been mapped to the Bicycle Demand Sketch Model.

Table 12 **Proposed Projects**

Communities/Locations	Facility Name	Length	Description
Agawam, Chicopee, Springfield and West Springfield/adjacent to the Connecticut River	Connecticut River Walk and Bikeway	13 miles	The Springfield portion of this project was advertised for construction in 1999. Proposed under the Connecticut River 2020 strategy in 1994 the project uses public lands and easements on private property to create a linear greenbelt along the river. The path runs through both urban and suburban communities, natural and developed lands.
Agawam/Springfield	Julia B. Buxton	.5 miles	Redesign of the bridge will be necessary to improve Route 57 bicycle access between Agawam and Springfield andprovide a river crossing for the Connecticut RiverWalk, In addition to the bridge improvement, access to River Road, School Street, and Main Street Agawam will need to be enhanced.
Agawam-Downtown Loop; Main Street, School Street, River Road, West Springfield-Dike Segment; Route 5 at Elm to Route 5 at Hayes	Connecticut River Riverwalk & Bikeway	3 miles on road, 3 miles off road	A continuation of the Riverwalk & Bikeway project will connect commercial areas, residential neighborhoods, subdivisions, schools and recreation facilities in densely populated communities. High speed congested traffic and road dividers on Route 5 have severely curtailed opportunities for safe walking and bicycling in the area.
Amherst, parallel to Route 116 between Amherst and Hampshire College	Amherst Bikeway	3.5 miles	This path forms a part of the Five College Bikeway network, outlined in the Pioneer Valley's long range plan developed in the late seventies. It is a 'bi-walk" a shared sidewalk for bicyclists and pedestrians, and connects with the Norwottuck Rail Trail, Hampshire College, Amherst College and Amherst Center.
Amherst/University of Massachusetts	Amherst-UMass Connector	2 miles	In order to maximize the use of the Norwottuck Rail Trail by commuters to and from the UMass-Amherst campus, it will be necessary to establish a more direct link. Efforts to designate on-road bicycle facilities (or a separated path) via University Drive have begun as a part of the regional enhancements program.
Amherst/Hadley South maple Street/Rocky Hill Road to Lincoln Street	Five College Bikeway	6 miles	Signed bike route along local low volume roadway. Provide bicyclists with a convenient alternative to the heavily traveled Central Business District and Route.
Amherst/North Pleasant Street Main Street corridor	Regional Bikeway Network	5.7 miles	This route carries a significant volume of student and university traffic. Improved coordination of bicycle traffic flow is needed in the central business district.
Amherst/University of Massachusetts Extension	Amherst-UMass Connector	3 miles	Extension of the UMass-Amherst Connector project to North Amherst. The project will improve access to the University and downtown Amherst for commuter students and town residents to the North.
Belchertown Route 9	Regional Bikeway	1 mile	Improvements to Route 9 are needed to provide consistent shoulder width the entire length of the corridor between Ware and Amherst. Currently, the section between Warner Road and East Street in Belchertown creates the greatest challenge for bicy clists on the corridor.

Table 12 **Proposed Projects** (continued)

Communities/Locations	Facility Name	Length	Description
Chicopee/ Parallel to the Chicopee River from Depot Street to the Chicopee Industrial Park along an abandoned railroad spar	Chicopee Riverwalk and Bike Trail	2.13 miles	This project is intended to revitalize the riverfront in downtown Chicopee, while providing a valuable link between residential, commercial and recreational open space. It will connect with the Connecticut River Walk and Bikeway.
Connects Northampton, Hadley, Amherst; runs parallel to Route 9	Norwottuck Rail Trail	8.5 miles	The trail parallels portions of Route 9, currently designated a 'corridor of critical concern" by the Commonwealth of Massachusetts due to traffic volumes that often exceed the capacity. It provides cyclist and pedestrians with a safe alternative along this busy corridor for the region.
Easthampton/Central business district to Connecticut River via Penn Central line	Mount Tom Connector	2.8 miles	This facility would link two of the regions largest projects: The Connecticut RiverWalk and the Manhan Rail Trail
Hadley/South Hadley Route 47	Scenic Byway	14 miles	A proposed scenic byway and one of the most popular bicycle routes in the region, Route 47, is the primary north-south connector on the east side of the river and remains as one of the few undeveloped corridors in the region. In order to maintain adequate bicycle suitability, shoulder widths need to be more consistent and the impacts of future development along the corridor should be minimized.
Holyoke Route 202 Corridor	Regional Bikeway Network	2 miles	No facilities currently exist that provide access for bicyclist into the downtown area of Holyoke. The US 202 corridor, if adapted to allow for bicycles, could prove to be useful in satisfying this need. A primary objective would be to establish a signed bicycle route, while improving some of the minor access barriers on the route. Trip generators like the Holyoke Commu nity College, Holyoke Mall, Downtown Area, and South Hadley would all be connected via these on-road facilities.
Holyoke, Chicopee/ adjacent to the Connecticut River. Chicopee to Easthampton	Connecticut River	7.9 miles	Proposed under the Connecticut River 2020 strategy in 1994, the project would provide a North/South connection between urbans centers in the region.
Holyoke/ Adjacent to historic canal system	Holyoke Canal Walk	2 miles	A pedestrian walkway along the historic industrial power canals. This facility provides access to Holyoke Heritage State Park, the central business district, Holyoke Children's Museum, and Holyoke Boys and Girls Club
Holyoke/West Springfield Route 5 Corridor	Regional Bikeway Network	5.2 miles	Route 5 plays a vital role in the north-south connectivity of the region. The portion of the corridor between Holyoke and Springfield, unlike sections to the north, is less appealing from a bicycle suitability standpoint. Though it is probably not feasible to add bicycle lanes to Route 5, access for bicycles should be incorporated into roadway improvements. It may be advantageous to utilize alternate routes including the RiverWalk which parallel the corridor. One possibility is to use Whiting Farms Road, Lower Westfield Road, and Industrial Drive into West Springfield to bypass the Route 5 interchanges with I-90 and I-91.
Holyoke-Chicopee Route 116/141	Regional Bikeway	.24 miles	Redesign of the bridge will be necessary to improve bicycle access between Holyoke and Chicopee and provide a river crossing for the Connecticut Riverwalk.

Table 12 **Proposed Projects** (continued)

Communities/Locations	Facility Name	Length	Description
Longmeadow	Connecticut Riverwalk & Bikeway	3.3 miles	As an extension to the Springfield segment of the Riverwalk, this portion of the path would provide access to Springfield, a commute option for Longmeadow residents.
Northampton to Holyoke Route 5	Regional Bikeway Network	8 miles	Route 5, in conjunction with the Connecticut RiverWalk, is critical to the north/south connectivity of the region. The majority of this corridor is already ideal for bicycle travel from a width standpoint, but the shoulders are covering in gravel and sand which require removal. Two improvements are recommended for the corridor: l)widen the insufficient areas; and, 2) implement a street sweeping program for the shoulders to clear sand, gravel, and other debris.
Northampton/ Central business district	Manhan/Norwottuck Rail Trail Link	1.5 miles	More than 50 percent of Hampshire County residents live within one mile of this bicycle/pedestrian facility. The project will connect the Manhan Rail Trail in Easthampton with the Norwottuck Rail Trail. Northampton has one of the highest percentages of pedestrians and bicyclists in the U. S. Project will include the design of a safe crossing on Route 5, 9 10.
Northampton/ From Damon Road in Northampton to the City's Downtown and the Northampton Bikepath	Norwottuck westward extension to King Street/ Downtown and the Northampton Bikepath	6 miles	Three phases are proposed for this project. The first is construction a bikepath from Damon Road to Woodmont Street. The second bikepath would create a tunnel under the active north-south Conrail line, crossing King Street to the Northampton Bike Path. The last would create a tunnel to assist travelers crossing Damon Road to Elwell State Park.
Northampton/ Look Park to the Williamsburg Town Line parallel to Route 9	Extension of the Northampton Bikepath	2 miles	The extension of the Northampton Bikepath to the Williamsburg town line was designed under a 1996 Transportation Enhancement application.
Northampton/Elm Street Network	Regional Bikeway	1.5 miles	Improvements to Prospect Street are needed to enhance bicycling between the major areas of residence and Downtown Northampton, including the high schools, Cooley-Dickinson Hospital, and Smith College. Width on the roadway is sufficient for bicycling and could be improved with proper pavement markings and signs.
Palmer/adjacent to the Chicopee & Swift River	Palmer River Trail	5.9 miles	This proposed Rail Trail project will provide opportunities for bicycling and walking.
Palmer/Ware Route 32 Network	Regional Bikeway	8 miles	Route 32 serves as a major north/south roadway in the eastern part of the region. The shoulders and pavement on this corridor are not conducive to cycling and should be improved.
Region-wide Improvement of Bicycle Parking Facilities	Bicycle Parking	N/A	In much the same way automobile travel is affected by the amount of available parking, an effective method of encouraging the use of bicycles is to provide ample space for storage at major destinations. Bicycle racks and lockers should be strategically located throughout the region. The downtown areas of Northampton, Springfield and others might encourage more workers to bike to work if more storage areas were established.
Southwick/ Abandoned Penn Central railroad from the Westfield border to the Connecticut State Line	Southwick Rails to Trails	6 miles	This project will connect with the Farmington Valley Greenway in Connecticut and the Multi-state East Coast Greenway. The trail will preserve portions of the historic Northampton to New Haven Canal and provide access to the public beaches, and boat ramps on Congamond Road.

Table 12 **Proposed Projects** (continued)

Communities/Locations	Facility Name	Length	Description
Southwick/Westfield Route 10/202	Regional Bikeway Network	8 miles	Route 10/202 serves as a State Bike Route in Connecti cut with adequate shoulder width and signs. Trip generation statistics show that commuter frequently travel between the states for work and other purposes. The Southwick and Westfield portions of the corridor need added width and signs to encourage a larger percentage of trips by bicycle. Southwick's Central Business District would benefit from improved pedestrian facilities.
Springfield	Highland Neighbor-hood Rail Trail	1.4 miles	This facility is intended to utilize the abandoned B&M rail corridor. It has the potential to relieve traffic congestion in the heavily traveled Sumner Avenue "X" area of Forest Park in Springfield. Portions of this corridor have been purchased for development.
Springfield, East Longmeadow, Wilbraham Southeastern connections	Regional Bikeway Network	12-15 miles	Several corridors in east and southeast Springfield as well as Wilbraham and East Longmeadow will need improvement, in order to encourage bicycle use throughout the area. Roadways such as Sumner Avenue, Cooley and Parker Streets in Springfield, Stony Hill Road in Wilbraham, as well as Elm and North Main Streets in East Longmeadow have enor-mous potential to serve as bicycle routes and improve-the connectivity in the southern part of the region and Connecticut.
Springfield, State Street-Wilbraham Road	Regional Bikeway Network	6 miles	Bike lanes/bicycle boulevards/improved shoulder added to this corridor will connect colleges (AIC, STCC, and Springfield College) and area schools with community centers, major employers and the down town area.
Ware, Hardwick adjacent to Ware River	Ware River Rail Trail and Covered Bridge	3 miles	Separate bikepath along the Ware River using the abandoned railroad corridor. The project will connect neighborhoods to Parks and recreational resources of the river. A design is under way as of 5/2000.
Westfield Route 20 Bypass	Regional Bikeway Network	1.5 miles	An alternative route to Route 20 that will provide access to Westfield from point's west, this project will require the replacement of the current bridge over the Little River.
Westfield Route 202 Corridor	Regional Bikeway Network	1.5 miles	Inadequate bicycle access exists between northern and southern Westfield, largely because of the heavy traffic volumes and the lack of width on and around the Great River Bridge. With the downtown and much of the commercial areas south of the Westfield River and major trip generators north of the river, like the high school and several neighborhoods, the corridor is currently experiencing moderate to heavy periods of congestion. Eliminating the impediments to bicycle use along the corridor will have substantial benefit to the corridor by reducing the need to complete trips in an automobile.
East Longmeadow	Redstone Rail Trail	1.4 miles	This multi-use trail will provide bicycle & pedestrian access to the heavily developed Shaker Road corridor. Including access to major employers, the Post Office, high school and ball fields.

Table 12 **Proposed Projects** (continued)

Communities/Locations	Facility Name	Length	Description
Westfield, Southampton, Easthampton, Northampton/ parallel to Route 10		7 miles	This combination bikepath and bike route will utilize sections of the abandoned Pioneer Valley Railroad corridor and portions of Route 10 to serve as a connection between Westfield, Southampton, Easthampton and Northampton. The project will provide access to Arcadia Wildlife Sanctuary, Smith College, and Mt. Tom State Reservation. The bikepath portion will serve as an alternative to heavily traveled portions of Route 10.
Westfield/ Westfied River Dike and Penn Central Railroad	Westfield Columbia Greenway and Westfield River Dike	3 miles	The Westfield River Dike has made significant progress towards completion. The Columbia Greenway received federal enhancement funds for design in 1999. The project will connect with Southwick's Rail Trail and provide local residents with access to the central business district and connect to a network of pedestrian facilities.
Wilbraham	Regional Bikeway Network	1.2 miles	Traffic calming in the Town Center and improved pedestrian safety. Realignment of Faculty Street/ Springfield Street intersections, sidewalks.
Williamsburg	Williamsburg extension of the Northampton Bike Path	2 miles (approx.)	Plans for this extension of the Northampton Bikepath into Williamsburg are on hold. There are local unresolved issues and a pending court decision with respect to Row ownership. There have been several town meeting votes on this project.

Estimating Demand for Bicycle Trips

In 1999 PVPC began using a Bicycle Demand Sketch Model to identify areas of the region with a high potential for bicycle trips "Bicycle Demand Sketch Model" measures the relative amount of bicycle travel that would occur if there were no bicycle impediments. The model uses demographic data to quantify the proximity and magnitude of bicycle destinations along a road segment. Corresponding demand values from the model are then calculated and mapped using a geographic information system (GIS). In the future, this model may assist planners in prioritizing projects and identifying corridors of critical concern.

The premise for the Bicycle Sketch Model is that short trips are more likely than long trips and that more trips are likely to occur in areas where destinations are clustered near where people live, such as town centers, central business districts, and mixed-use developments. The two building blocks of the model are the travel characteristics of the population and the type and quantity of a destination.

Table 13

Distribution of (all) Person Trips by Type	Total %
Earning a Living:	22.87
Family and Personal Business:	35.60
Civic/Education/Religious	11.80
Social and Recreational:	27.34
Other	2.80
Total	**100%**

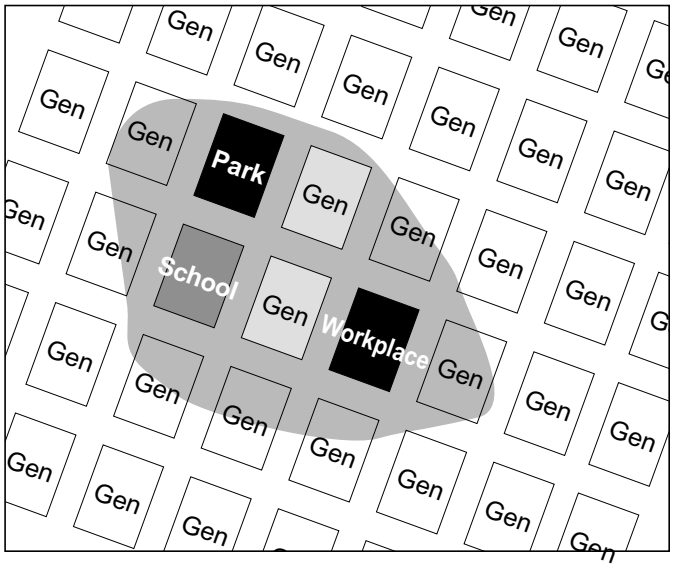
Distribution of Bicycle Trips by Type [1]	Total %
Earning a Living	9.9
Family and Personal Business	19.7
Civic/Education/Religious	14.1
Social and Recreational	55.4
Other	1.0
Total	**100.00**

Using geographical information systems (GIS) 913 census block groups were used along with their corresponding populations to identify trip generation based upon the proximity, frequency and magnitude of adjacent bicycle trip generators and/or attractions. A trip generation factor of 3.86 trips per day (NPTS) to estimate total potential trip generation in a 1/4 square mile area. 3000 destinations were identified and their corresponding location was mapped. A "bicycle demand value" was

calculated for each of the four trip types. These values were added to create a "Bicycle Trip Generation Value" that was assigned to the 1/4 square mile. These values were mapped using GIS. (See MAP)

The model and the represented projects are largely limited to more densely populated areas of the region. Localized demand for bicycle trips in less populated areas are not reflected in the regional model. Communities interested in assessing demand at the local level can apply the same methodology of identifying bicycle destinations population centers and travel distances to estimate the demand for bicycle trips.

Figure 5

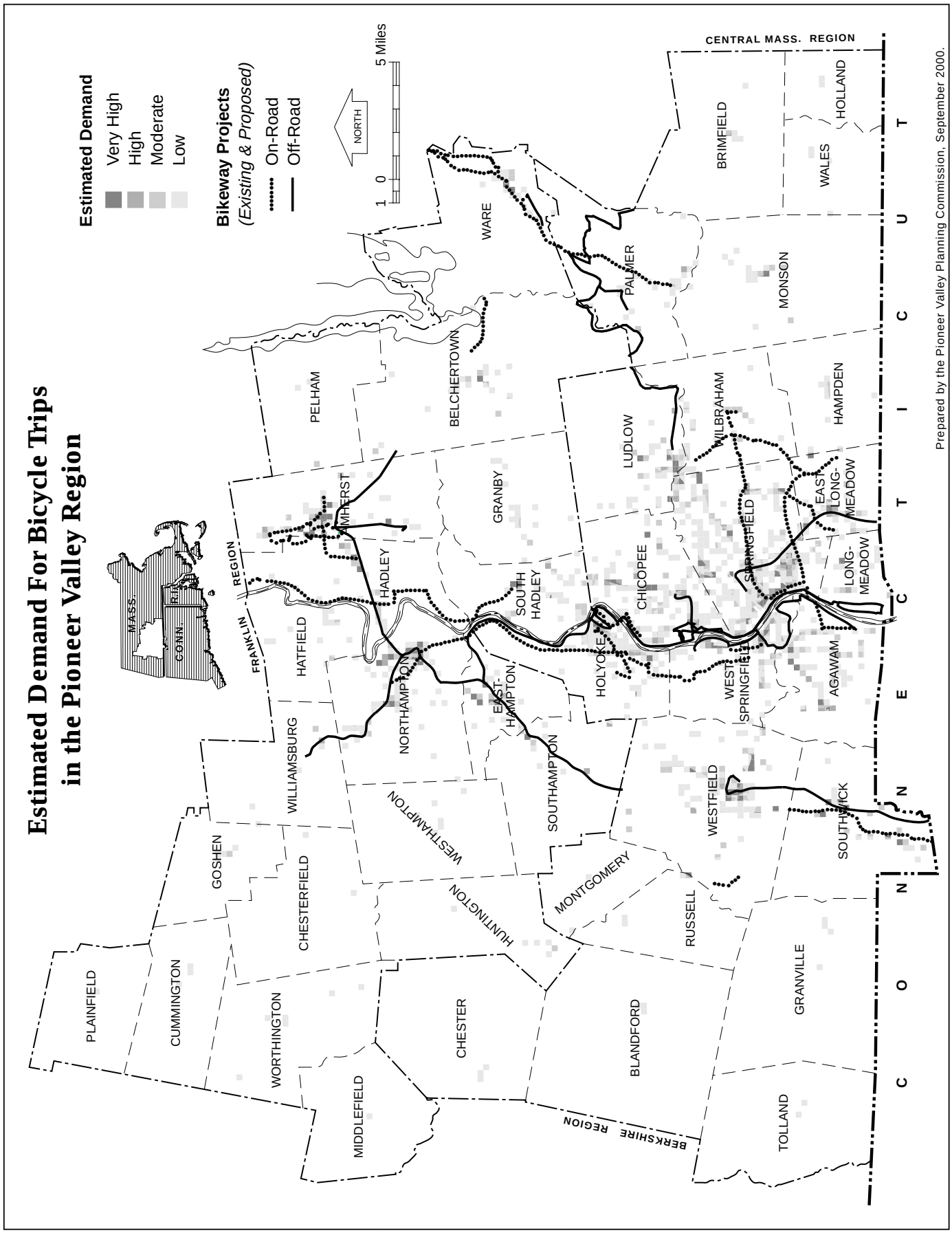


The LDS Model analysis quantifies the potential latent travel demand for four trip purposes (three attaractor-generator types shown here). The grey shading intensity illustrates the increased bicycle activity for the combination of three trip purposes.

"As every introductory transportation course stresses, the demand for travel is a derived demand. That is, travel is largely a means rather than an end in itself. If the "ends" of travel—the activities engaged in outside the home—are more accessible to home and to each other, it is all for the better. Trips will be shorter, walking and bicycling may become viable travel options, a single trip can serve multiple purposes, and auto trips can be more efficiently linked in multipurpose tours." [10]

[10] Transportation and Land Use Innovations, Reid Ewing, pg 11.

Figure 6


Estimated Demand For Bicycle Trips in the Pioneer Valley Region
Estimated Demand
Very High
High
Moderate
Low
Bikeway Projects
(Existing & Proposed)
On-Road
Off-Road
NORTH
1 0 5 Miles
MASS.
CONN.
R.I.
FRANKLIN REGION
CENTRAL MASS. REGION
BERKSHIRE REGION
PLAINFIELD
CUMMINGTON
GOSHEN
CHESTERFIELD
WORTHINGTON
MIDDLEFIELD
WILLIAMSBURG
HATFIELD
NORTHAMPTON
WESTHAMPTON
HUNTINGTON
CHESTER
EAST-HAMPTON
SOUTHAMPTON
BLANDFORD
MONTGOMERY
RUSSELL
PELHAM
AMHERST
HADLEY
SOUTH HADLEY
GRANBY
BELCHERTOWN
WARE
HOLYOKE
CHICOPEE
LUDLOW
WILBRAHAM
SPRINGFIELD
WEST SPRINGFIELD
WESTFIELD
GRANVILLE
TOLLAND
PALMER
MONSON
BRIMFIELD
WALES
HOLLAND
AGAWAM
EAST LONG-MEADOW
LONG-MEADOW
HAMPDEN
SOUTHWICK
Prepared by the Pioneer Valley Planning Commission, September 2000.

CHAPTER SIX

IMPLEMENTATION/EVALUATION

Too often plans are developed and then are not implemented. This plan will be put into action. To that end, the following table reiterates each of the 33 action steps described in the plan, identifies who is primarily responsible for implementation of each action item, and suggests a target date by which each item should be completed. The table also identifies evaluation criteria and questions that can be used to determine if the action item was actually implemented.

As can be seen in action item 33, the non-motorized subcommittee of the Joint Transportation Committee is charged with the responsibility of overseeing implementation of this plan. The Joint Transportation Committee is a representative group of the 43 communities in the Pioneer Valley. In 2000, the Pioneer Valley Planning Commission will be developing the region's three-year Regional Transportation Plan (RTP). It will be particularly important to assure that the contents of this plan are included in that product as the RTP dictates use of transportation funds in the region for the next three years. None of these ideas can be implemented without funding.

While we do identify the non-motorized subcommittee of the JTC as the entity responsible for assuring implementation of this plan, every resident of the Pioneer Valley has an opportunity to take action.

Table 14 **Action Items**

Action	Who?	When?	Status	Evaluation criteria/questions
1) systematically identify and assess roadway conditions throughout the region and create a data base to identify and document the need for, and appropriate type of, pedestrian and bicycle facility for all roadways in the Pioneer Valley	PVPC Transportation section	2001		- Does the data base exist? - How do bicyclist and pedestrians rate the results of the assessments? - Evaluate over time–are facilities being built?
2) secure funding (from Mass Highway and other funding sources) and build new bicycle and pedestrian facilities approval	PVPC in cooperation with localities	ongoing		- How many projects are funded each year? - How many ask for funds? - How long is the internal delay between project and funding; is it consistent with state and national standards, and is it decreasing or increasing?
3) facilitate community efforts to provide opportunities for bicycle access to other modes of transportation	PVPC in cooperation with PVTA Amtrack, Peter Pan, and other transit services	ongoing		- How many buses have the racks? - Has the Amtrack fee for bicyclist been eliminated? - Survey bicyclists and ask them if the racks on buses are adequate.

Table 14 **Action Items (continued)**

Action	Who?	When?	Status	Evaluation criteria/questions
4) recruit and add two new bicyclist and pedestrian experts to the Pioneer Valley's Joint Transportation Committee	PVPC	2000		- Have the two members been added? - Do they feel that their contributions to the JTC are respected?
5) reactivate the non-motorized transportation committee and charge them with oversight of implementation of this plan	PVPC	12/2000		- Has the committee been reactivated? - Is the plan being implemented?
6) institutionalize a process to notify bicycling/pedestrian organizations in the respective MassHighway districts of public hearings on transportation projects which could include bicyclist and pedestrian accommodations	PVPC in cooperation with advocacy groups	2001		- Has the process been implemented? - Survey bicyclist/pedestrian organizations annually to see if they are being notified of MassHighway projects.
7) secure funding for and develop a local "bike/ped Spot Improvement" program	Municipal governments with PVPC technical assistance	2002		- Has the program been implemented? - Survey bicyclist (and pedestrians) in the community with the program and determine their satisfaction with corrections compared with bicyclist in a comparable community with no programs.
8) create and implement a model program for reconstruction/retrofitting of area bridges to assure provision of sidewalks appropriate lane widths for bicycles	PVPC MassHighway and municipal government	2002		- Has at least one community implemented a model program to assure pedestrian and bicycle access on bridges.
9) assure maintenance of pavement markings lighting and signs at pedestrian crosswalks and intersection	Municipal governments with PVPC technical assistance	2001		- Have at least two communities worked to improve pedestrian circulation.
10) adopt a level of service index for bicycling and walking	Municipal governments with PVPC technical assistance	2000	PVPC has provided technical assistance to Amherst, N'hampton toward this end	- Has at least one area community adopted a level of services index for bicycling and walking? - Conduct an impartial assessment of facilities in community to see if there are better facilities compared with a non-target community.
11) incorporate traffic calming measures on neighborhood streets	Municipal governments with PVPC technical assistance	2002		- Have at least two communities improve a neighborhood street through accepted "traffic calming" measures?
12) systematically adapt the Transportation Management System to include consideration of bicycling and walking	Municipal governments with PVPC technical assistance	2002		- Have at least two communities adapted the TMS to include consideration of walking and biking?
13) systematize inclusion of pedestrians and bicyclist in traffic studies	Municipal governments with PVPC technical assistance	2001		- Have at least two communities systemized inclusions pedestrians and bicyclist in traffic studies?
14) work with Rails-to-Trails and other concerned groups to create a method of quick public response to purchase newly available corridors	PVPC in cooperation with municipal governments	9/2001	EOTC has a adopted policy of notifying municipalities and RPAs	- Is a method developed? - Have more corridors been purchased after the method was created than before?
15) create a pedestrian/bicyclist review committee to evaluate all proposed development projects with respect to bicycle and pedestrian access	Municipal governments with PVPC technical	2001	N'hampton has created a committee	- Does at least one community have a pedestrian bicycle review commity? - Survey committee members re-level of satisfaction with their work.

Table 14 **Action Items (continued)**

Action	Who?	When?	Status	Evaluation criteria/questions
				- Survey local governments officials–planners, public works staff, and traffic engineers about their level of satisfaction with the committee. - Compare a years worth of pedestrian and bicycle decisions of community with committee with a comparable community with no committee to determine if the committee seems to make a difference in decisions.
16) adopt sidewalk maintenance bylaws and work to maintain existing roadways	Municipal governments with PVPC technical assistance	2001		- Have two communities adopted sidewalk maintenance bylaws? - Assess condition of community's sidewalks before and after passage of the bylaw.
17) adopt mandatory sidewalk bylaws for new residential and commercial developments	Municipal governments with PVPC technical assistance	9/2001		- Has a community adopted sidewalk bylaws for residential developments? - Compare sidewalks in new residential developments after passage of bylaw with sidewalks in old residential developments.
18) adopt inclusion of bicycle parking as part of local parking ordinances	Municipal governments with PVPC technical assistance	9/2001		- Has at least on community adopted inclusion of parking as part of local parking ordinances? - Compare access to bicycle parking before and after inclusion in local parking ordinances. - Compare access to bicycle parking in target community with a comparable community with no bicycle parking ordinance.
19) encourage land use development patterns which allow residents the opportunity to walk and bicycle as a means of travel and recreation	Municipal governments with PVPC technical assistance	9/2000		- Define land use patterns that allow residence to walk and bicycle. - Has at least one community encouraged land use which allow residents bike and walk? - Compare commuting modes in this community with those in a comparable community to determine relative rates of walking and biking.
20) host the "Pedestrian Road Show"	Municipal governments with PVPC technical assistance	1/2000	PVPC hosted a FHWA Ped Road Show in May '99 with Springfield	- Have two communities hosted the Road Show? - Survey government officials in host communities to determine their assessment of Roadshow. - Conduct a follow-up survey one year after the Road Show to see if action plans developed at Road Show have been implemented.
21) train planners and public works officials in bicycle traffic skills	PVPC with municipal	9/2001	PVPC will organize	- Have 10 people been trained? - Survey participants to determine effect of training-did the training affect the way they do their work?
22) hold two workshops on non-motorized transportation related issues including the design of bicycle and pedestrian facilities	PVPC with municipal governments	9/2001	PVPC will hold at least one workshop in FY '00 as part of TDM project	- Have the workshops been held? - Monitor workshop evaluations-were the workshops well received? - Survey workshop participants 6 months after training-has the workshop had a lasting effect? If so, what is it?
23) launch a valley-wide public information and education effort	PVPC with Municipal governments/ Advocates help apply for funds from Govenor's Highway Safety Bureau	2000	PVPC will launch an effort in '00 as part of TDM	- Has the education effort been launched? - How many times have public service announcements been aired? - How many public information and education materials were distributed? - Survey the public and determine the percent of population that is aware of the effort.

Table 14 **Action Items (continued)**

Action	Who?	When?	Status	Evaluation criteria/questions
24) help municipalities incorporate pedestrian and bicycle safety as part of a comprehensive orientation during the beginning of every new school year	PVPC with Advocates-help Municipal governments apply for highway safety funds	2003		- Is bicycle safety integrated into schools? - Survey students exposed to a program-do they know more about bicycle safety than average children not exposed to program? - Compare crash involvement of target age children in community with program v. comparable children in community without program.
25) create a program to encourage bicycle retailers to include helmets as part of all bicycle purchases	Advocates	2002		- Was a program created? - Compare helmet use rates before program and after -via a helmet observation survey.
26) work with local hospitals and departments of public health and the Registry of Motor Vehicles to develop a region-wide injury data base for bicyclists and pedestrians	Advocates	9/2002		- Was the database created? - Survey health professionals who use database to determine if it makes a difference in their work.
27) work with Governor's Highway Safety, State and Local Police on proposed improvements to crash reporting form	Advocates	9/2000		- Have reporting procedures improved?
28) implement Effective Cycling, Basics of Bicycling and other educational programs for both children and adults	Advocates	9/2002	PVPC will assist with this as part of TDM project in 2000	- Have classes been held? - Survey participants to determine effect of classes.
29) implement law enforcement programs to support enforcement of existing traffic laws	PVPC will help a community apply for highway safety funds	2001		- Has a program been implemented? - Was the program effective-compare pedestrian involvement in crashes before and after program.
30) work with local legislators to work to change state legislation—Massachusetts General Laws (Chapter 90) and the (UVC) with respect to the protocol concerning drivers and their duty to stop for pedestrians	Advocates	2002		- Has the law been changed? - Is there any change in pedestrian crash involve involvement after the law's passage?
31) organize a regional "Bike, bus, or walk to school/work" day to coincide with National"Bike to work day"	PVPC with municipal governments	2000	PVPC will do as part of TDM project	- Has the "Bike to work" day been held? - How many people participated? - Survey registered participants in 6 months after event to determine any long-lasting change in behavior.
32) facilitate development of incentive programs to encourage employees and students to bike or walk to work or school	PVPC with businesses	2001	PVPC will do as part of TDM project	- Were programs created? - How many employees participate-is it more than before program and more at comparably sized employees without program?
33) implement this plan	PVPC-Joint Transportation Committee	ongoing		- Is the plan implemented?

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Oregon Dept. of Transportation Bicycle and Ped. Program: www.odot.state.or.us/techserv/bikewalk/index

Surface Transportation Policy Project: http://www2.istea.org

FHWA Turner-Fairbank Highway Research Center; http://www.tfhrc.gov/

Transportation Action Network; http://www.transact.org/

U.S. Department of Transportation Walk/ Bicycle Information Clearinghouse: http://www.bicyclinginfo.org

APPENDICES

Appendix A

The Transportation Enhancement Program

The Transportation Enhancements (TE) Program is a set-aside program (mandatory for Massachusetts) created under Federal transportation legislation: TEA-21 and ISTEA. TEA-21 authorizes federal-aid transportation funding for six years, FY 1998 - FY2003. The TE funding is 10 percent of the Surface Transportation Program (STP). States may allocate up to their full STP apportionment to Enhancement Projects (Up to 93 million in MA[1]). The Transportation Enhancement program is the single largest source of funding for bicycle and pedestrian infrastructure improvements in the Pioneer Valley. Current funding shortages have resulted in significant delays in the construction of bikepaths and multi-use trails. The Connecticut RiverWalk, the Manhan Rail Trail, the East Longmeadow Redstone Bikepath, the Northampton Norwottuck Downtown Connector and Amherst UMass Bikeway Connector have all experienced significant delays in the obligation and appropriation of federal and state funds under the Massachusetts Enhancement Program.
The following definitions and descriptions of the Enhancement Program are intended to provide readers with some background information into the program.

There are four steps to spending federal transportation dollars; apportionment, programming, obligation, and reimbursement.

Apportionment - Federal transportation are apportioned by Congress to each of the 50 states (and Puerto Rico, and the District of Columbia) based on the authorizing legislation of ISTEA and TEA-21. The TE apportionment in Massachusetts averages $9,369,530 annually. This is the minimum funding commitment established by Congress.

Programming - In Massachusetts federal funds are programmed by the 13 Regional Planning Agencies based on funding targets. Funding targets are assigned by a formula for each region's road mileage and population. The Pioneer Valley is allocated 10.81% of the state total. Using this target, the Pioneer Valley Planning Region develops a six year Transportation Improvement Program consisting of road, bridge, transit**,** and Transportation Enhancement (TE) Projects. (see attached chart) As of 6/98 the State of Massachusetts had programmed $34,931,771 in enhancement projects [1] (62.7% of the apportionment) including $13,715,179 in the Pioneer Valley Region.

Obligation - When a project is ready to be advertised for construction, or a notice to proceed is ready to be issued to a municipality, MASSHighway requests an obligation of the federal funds needed to cover the project cost (or project phase). The Federal Highway Administration has obligated $27,588,695 in TE funds for Massachusetts or 49% of the apportionment. The Pioneer Valley has $2,887,972 in obligations as of 6/30/99.

Reimbursements - Reimbursement is the final piece of the funding loop. MassHighway expedites the municipality's contract, issues a notice to proceed, and reimburses the project proponent as costs are incurred. Massachusetts has reimbursements totaling $6,868,351 [1] (as of 6/98) or 12.3 percent of the apportionment. The Pioneer Valley has reimbursements totalling $2,147,486.

1 Transportation Enhancement Clearinghouse

Average 1998-2003 Apportionment Estimates Pursuant to TEA-21 as Amended by the TEA 21 Resoration Act After Redistribution of Minimum Guarantee Funds8 (Dollars in Thousands

STATE	Interstate Maint.	NHS	IM/NHS Subtotal	STP Program	Bridge Rehab	Appalachian Development	CMAQ	Recreational Trails	Metro Planning	High Priority Projects	Minimum Guarantee	Grand Total
Mass	66,710	67,628	134,338	95,533	152,038	0	51,627	685	5,357	36,811	15,619	492,008

Estimated Annual Sub-allocations for Transportation Enhancements under TEA-21 as Amended by the TEA 21 Restoration Act

MASS	1998	1999	2000	2001	2002	2003	Average
	8,073,174	9,347,835	9,425,821	9,620,349	9,777,681	9,972,322	9,369,530

	ISTEA 6 Year Total	TEA-21 6 Year Total
Massachusetts	$48,666,068	$56,204,593

Massachusetts Transportation Enhancements Funding Estimates under TEA-21 Fiscal Year 1998-2003 (FY 1998 is the actual apportionment, not an estimate.) (010.81)

ISTEA 1997	TEA-21 1998	TEA-21 1999 Est.	TEA-21 2000 Est.	TEA-21 2001 Est.	TEA-21 2002 Est.	TEA-21 2003 Est.
$22,970,497	$8,060,585	$9,347,835	9,425,821	9,620,349	9,777,681	9,972,322
$2,483,110	$871,349	$1,010,500	1,018,931	$1,039,959	$1,056,967	$1,078,008

Pioneer Valley Region Federal Funding Targets (based on the 10.81 formula)

	FFY 99	FFY 2000	FFY 2001	FFY 2002	FFY 2003	FFY 2004
Federal Program	$7,913,342	$5,009,393	$5,261,125	$5,654,562	$14,898,894	$17,679,772
Transportation Enhancements	$791,334	$500,939	$526,113	$565,456	$1,489,889	$1,767,977
Regional High Priority	$4,602,000	$3,186,000	$3,186,000	$3,383,000	$3,363,000	
Total Federal Programming	$12,515,342	$8,195,393	$8,487,126	$9,017,562	$18,261,894	$17,679,772
State Match Funds	$3,128,835	$2,048,848	$2,116,782	$2,254,391	$4,565,473	$4,419,943
Total Funds	$15,644,177	$10,244,241	$10,583,908	$11,271,953	$22,827,367	$22,099,714
High Priority MEGA Projects	$3,048,300	$2,110,000	$2,110,000	$2,226,250	$2,226,250	$0
Non-HP MEGA Projects	$1,500,000	$0	$0	$0	$0	$0
Total MEGA Projects	$4,546,300	$2,110,000	$2,110,000	$2,226,250	$2,226,250	$0
Grand Total (Total Funds)	**$20,190,477**	**$12,354,241**	**$12,693,908**	**$13,498,203**	**$25,053,617**	**$22,099,714**

Appendix B

Potential Funding Assistance For Bicycle and Pedestrian Facilities

The following is an outline of potential federal and state funding sources for bicycle and pedestrian activities. They are presented by activity and eligible source of funding and are followed by a description of each funding source. *Sources marked with an asterisk (i.e. STP*) are part of the Transportation Equity Act for the 21st Century (TEA-21) of 1997. Only bicycle and pedestrian facilities principally used for transportation rather than recreation purposes are eligible for TEA-21 funds.*

According to the Metropolitan Planning regulations, projects seeking state or federal funding must be included in the Regional Transportation Plan (RTP) and the Transportation Improvement Program (TIP) to be considered for funding.

Activity Assistance	Source of Funding
Brochures related to safe bicycle use	STP*, CMAQ*
Construction	NHS*, CMAQ*, STP*, STP/E*, DCS- Urban Self Help, L&WCF
Easement acquisition	DCS - Urban Self Help, L&WCF
Land acquisition	DCS - Urban Self Help, L&WCF, STP/E*
Planning or design	DCS - Self Help, DEM Greenways
Public service announcements related to safe bicycle use	STP*, CMAQ*
Route maps related to safe bicycle use	STP*, CMAQ*
Transit access and other facilities (lockers and racks)	Federal Transit Section 5309*

Description of Federal Funding Sources and Other Areas of Assistance:
Congestion Mitigation and Air Quality (CMAQ)* Program Funds - "may be used for either the construction of bicycle transportation facilities and pedestrian walkways, or non-construction projects (such as brochures, public service announcements and route maps) related to safe bicycle use."

Massachusetts New and Innovative Transportation Demand Management Program (TDM) Funded under the Congestion Mitigation and Air Quality program , the TDM program is a $1.8 million statewide program that provides funds for low-cost, new and innovative TDM projects. The goals of the program are to help the Commonwealth achieve its air quality and traffic congestion objectives (State Implementation Plan) by changing the behavior of motorists, encouraging them to use alternatives to driving alone and supporting strategies that promote the use of these alternatives. Bicycle and pedestrian projects previously funded under this program include; PVTA's Rack & Roll Program (includes bicycle lockers, bicycle racks on buses, and bicycle parking racks) and the Northampton Sheldon Field Park & Ride Project (includes bicycle lockers and parking racks). Other examples of bicycle and pedestrian strategies that may be eligible for funding under this program include:

- Developing new shared ride services, including bike and ride services;
- Making transit more attractive through operational improvements;
- Developing programs that encourage the use of alternative modes, or reduce psychological impediments to their use;
- Devising alternative work hours;
- Implementing parking management strategies;
- Disseminating information and marketing alternatives.

Section 5307 Transit Funds - The funds are channeled through the regional transit agencies and are used for capital expenditures. Transit authorities can work with their member communities to develop pedestrian and bicycle friendly transit stops or add bicycle racks to buses.

Department of Environmental Management (DEM) - has the ability to acquire abandoned rights-of-way.

Department of Environmental Management Greenways Program (DEM Greenways) - has a grants program for the planning and development of trails. The project amounts range from $5-$10,000.

Division of Conservation Services Self Help Program (DCS - Self Help) - reimburses up to 70% of the total project cost for the acquisition of land for conservation and passive recreation purposes.

Division of Conservation Services, Urban Self Help (DCS - Urban Self Help) Program - reimburses up to 70% of allowable costs towards the acquisition of land, undertaking of new construction or rehabilitation of land for park or outdoor recreation purposes.

Federal Lands Highway Funds - "may be used to construct pedestrian walkways and bicycle facilities in conjunction with roads, highways and parkways at the discretion of the department charged with administration of such funds."

Federal Land and Water Conservation Fund (L&WCF) - reimburses projects up to 50% of the total project cost, up to $150,000 for the acquisition, development or renovation of park, recreation and conservation areas.

Federal Transit Title III, Section 25* Funds - "allows transit funds to be used for bicycle and pedestrian access to transit facilities, to provide shelters and parking facilities in or around transit facilities, or to install racks or other equipment for transporting bicycles on transit vehicles."

Governor's Highway Safety Bureau (GHSB) Funds - (Federal NHTSA Section 402) "can be used for small scale physical improvements and bicycle safety programs."

MassHighway Department (MHD)* - can fund projects designed primarily for transportation. Priority is given to projects that have engineering design completed and all permits acquired by the impacted community(s).

Scenic Byways Program Funds- (Administered through MassHighway) may be used for planning activities and promotion of Tourism on designated routes.

National Highway System (NHS)* Funds - "may be used to construct bicycle transportation facilities and pedestrian walkways on land adjacent to any highway on the National Highway System (other than the Interstate System)."

National Park Service (NPS) Rivers and Trails Assistance Program - provides staff services to groups for organization building, education, planning and technical assistance. There are no direct funds available.

National Recreational Trails Funds (NRTF)* - may be used to create trails for use by motorized and/or non-motorized users. Funds under this category are very limited.

Surface Transportation Program (STP)* Funds - " may be used for either the construction of bicycle transportation facilities and pedestrian walkways, or non-construction projects (such as brochures, public service announcements and route maps) related to safe bicycle use."

Transportation Enhancements (STP/E)* Funds - may be used for " provision of facilities for bicyclists and pedestrians" and "preservation of abandon railway corridors (including the conversion and use thereof for pedestrian or bicycle trails)."

B2 Local Funding Sources

Bicycle Registration Fees - Communities can establish a bicycle registration program which charges a fee for each bicycle registered. The revenue from the fees can be earmarked for bicycle-related projects and services.

Sidewalk Accounts - Communities can obtain funding for sidewalks using municipal bonds, or special accounts established to hold contributions from developers of new developments. Rather than requiring sidewalks in places that may not need them, a developer can be asked to donate what would have been spent to the special municipal account for sidewalks. The community can then use the funds for sidewalks where the are needed.
Environmental Impact Review Measures - Localities can ask project proponents whose projects have environmental impacts to consider bicycle and pedestrian improvements as mitigation measures.

Local Support through Volunteers, Schools, Business Groups - Although not a funding source, volunteerism is one of the greatest resources available to cities and town. There are civic clubs, schools, police departments, bike shops, bike accessory manufacturers, medical professionals, youth groups, service organizations, bicycling clubs, and business groups who are willing to take on projects to improve community public space or assist in injury prevention programs. Success in bringing volunteers together is witnessed through adopt a trail groups, local bicycle advisory committees, and bicycle safety programs . (Resource: Community Bike Safety Idea Bank, MA Department of Public Health, Western MA Safe Kids, Kawanis Pediatric Trauma Institute (Guide to Bicycle Rodeos)

Baystate Roads Program - Not a funding source but a resource, The Baystate Roads Program provides public works and engineering staff of local governments and municipalities with information and training on current design practices, and technologies for managing public investments in local roads, bridges, sidewalks, and structures. The Baystate Roads Workshops are provided through a cooperative effort of the Federal Highway Administration, Massachusetts Highway Department, and the University of Massachusetts. (Baystate Roads Program 413-545-5403) Examples include the 2000 Massachusetts Statewide Pedestrian Conference, 1998 Statewide Bike Workshops, 9/ 2000 Bicycle Safety Workshop.

B3 Other State Funding Programs

Community Development Block Grants (CDBG) - The Executive Office of Communities and Development (EOCD) awards CDBG funds that are appropriated by the federal government. Communities must apply for the grant. The CDBG funds can be used for many different projects and can be used as incentives to property owners and developers if approved by the municipality.

Municipal Incentive Grants - The Commonwealth of Massachusetts Executive Office of Communities and Development offers grants to communities for planning projects.

Public Works Economic Development Program Grants (PWED) - The State established this fund for assistance to communities in the design and construction/reconstruction of roadways, sidewalks, lighting systems, bridges, traffic control and service facilities, drainage systems, and other transportation related projects deemed by a municipality to be necessary for economic development. Municipalities must petition the Executive Office of Transportation and Construction (EOTC) which reviews projects according to set criteria.

Appendix C

One Year Apportionment of Chapter 90 Funding by Community

The Chapter 90 highway formula is comprised of three variables: local road mileage (53.33 percent), employment figures (20.83 percent), and population estimates (20.83 percent). Under this formula, those communities with a larger number of road miles receive proportionately more aid.

Community	Allocation — $50 Million Statewide Program	Allocation — $150 Million Statewide Program
Agawam	$173,472.24	$520,416.72
Amherst	$201,233.59	$603,700.77
Belchertown	$142,624.20	$427,872.60
Blandford	$68,373.80	$205,121.40
Brimfield	$73,785.82	$221,357.46
Chester	$63,173.40	$189,520.20
Chesterfield	$57,936.25	$173,808.75
Chicopee	$320,375.78	$961,127.34
Cummington	$53,131.70	$159,395.10
E.Longmeadow	$147,698.90	$443,096.70
Easthampton	$124,963.55	$374,890.65
Goshen	$28,967.20	$86,901.60
Granby	$72,092.21	$216,276.63
Granville	$70,391.48	$211,174.44
Hadley	$91,942.25	$275,826.75
Hampden	$65,462.87	$196,388.61
Hatfield	$68,697.21	$206,091.63
Holland	$40,668.45	$122,005.35
Holyoke	$280,669.90	$842,009.70
Huntington	$43,849.35	$131,548.05
Longmeadow	$124,935.05	$374,805.15
Ludlow	$155,753.33	$467,259.99
Middlefield	$40,935.45	$122,806.35
Monson	$122,771.70	$368,315.10
Montgomery	$33,665.09	$100,995.27
Northampton	$266,259.69	$798,779.07
Palmer	$131,126.39	$393,379.17
Pelham	$26,580.40	$79,741.20
Plainfield	$51,231.47	$153,694.41
Russell	$27,170.31	$81,510.93
South Hadley	$124,034.87	$372,104.61
Southampton	$79,429.00	$238,287.00
Southwick	$84,976.27	$254,928.81
Springfield	$933,730.78	$2,801,192.34
Tolland	$42,654.83	$127,964.49
Wales	$27,830.23	$83,490.69
Ware	$114,131.15	$342,393.45
W. Springfield	$221,908.06	$665,724.18
Westfield	$295,772.16	$887,316.48
Westhampton	$49,138.91	$147,416.73
Wilbraham	$129,551.88	$388,655.64
Williamsburg	$49,272.62	$147,817.86
Worthington	$63,404.87	$190,214.61
Regional Total	$5,385,774.66	$16,157,323.98

Appendix D

Bicycle/Pedestrian Friendly Checklist for Local Municipalities

Local Bicycle Plan

- ❑ Make bicycle plan an interdepartmental effort, establish mechanism to ensure coordination.
- ❑ Basic plan elements include needs assessment, facility projects and a hazard removal program; education and enforcement programs; and a funding and implementation strategy.
- ❑ Refer to the MassHighway document; Building Better Bicycling, Massachusetts Bicycle and Pedestrian Plans; AICP's Pedestrian, Bicycling Workbook, APA Bicycle Facility Planning, and FHWA's Implementing Bicycle Im provements at the local level AASHTO Guide for Development of Bicycle Facilities.
  Inter-Departmental Collaboration
- ❑ Develop ongoing collaboration/ communication between municipal departments to coordinate maintenance, right of way acquisitions, and project development.
- ❑ Establish a traffic safety committee with representation from neighborhood citizen organizations, school safety personnel, DPW staff, community police, chief elected officials, and planning department.
  Master/Comprehensive Plans
- ❑ Incorporate affirmative agreements as needed for acquisition, development and maintenance.
- ❑ Adopt a local bicycle plan or element, including policies and programmed projects.
- ❑ Modify local street standard to accommodate shared bicycle/motor vehicle use.
- ❑ Include ordinances that encourage mixed use; cluster zoning combined with open spaces; dedications of rights of way or trails; and interconnected street patterns.

Capital Improvement Plans

- ❑ Incorporate bicycle projects and establish schedule or implementations.

Transportation/Highway Plans

- ❑ Identify roads in local jurisdiction for preferential development of bicycle activities.
- ❑ Adopt policy to make all roads safer for shared use.
- ❑ Tie in bicycle improvements with highway or city street capital improvement plan.
- ❑ Review all proposed road maintenance and improvement plans including those in the Pioneer Valley Regional Transportation Plan an Regional Transportation Improvement Plan for opportunities to incorporate bicycle-friendly design.
- ❑ Adopt signage such as the "Share the Road" sign to identify bicycle facilities and educate motorists of potential bicycle use on road.

Parks, Open Space and Recreation Plans

- ❑ Incorporate trails and greenway plans as part of a Master Plan.
- ❑ Encourage and use alternate methods of open space, greenway acquisition, including nonprofit purchase and financing options, conservation easements, transfer of title options.
- ❑ Consider using payments in lieu of parkland dedication for bicycle facilities.
- ❑ Adopt a corridor/greenway element that includes bicycle access.
- ❑ Work with adjoining parks and recreation agencies and communities to plan coordinated facilities.
- ❑ Encourage capital planning committees to locate schools, libraries, Post Office, and municipal building within walking distance and provide sidewalks within 1.5 miles of every school. (Ludlow has reduced the need for school bussing by construction sidewalks within a one mile parameter of every public school, the construction cost has been partially offset by lower bussing costs)

Zoning

- ❑ Zone for cluster development, mixed use, and open space preservation.
- ❑ For strip development, consolidate road access but encourage interconnections between developments to encourage pedestrian and bicycle access.
- ❑ Develop a bicycle-parking ordinance.
- ❑ Examine roadway standards and change to allow traffic calming and interconnected narrower, slower roads and paths.
- ❑ Review ordinances that ban bicycles from roadway or shoulder areas-most are not warranted.

Site Design Review

- ❑ Establish a method to amend site designs to improve non-motorized access to and between sites, including commercial areas and new subdivisions.

Local Traffic Efforts

- ❑ Consider traffic calming but maintain maximum access for pedestrians and bicyclists.
- ❑ Enforce local speed limits.
- ❑ Enforce bicycle traffic rules (Amherst Police Department issues citations)
- ❑ Consider traffic-free zones as well as bicycle boulevards and other preferential treatments.
- ❑ Establish hazard reporting system for bicyclists and pedestrians.
- ❑ Establish a regular maintenance program for bicycle facilities and shoulders used by bicycles.
- ❑ Allow bicycle access to shopping centers.
- ❑ Consider pedestrian activated signals and bicycle sensitive loop detectors at major intersections.

School Access Plans

- ❑ Ensure safe routes for bicyclists and pedestrians.
- ❑ Provide adequate bicycle parking.
- ❑ Provide bicycle safety education.

Encouragement Education Efforts

- ❑ Support local cycling and walking organizations. (Hampshire/Franklin Freewheeler, Springfield Cyclonauts, Northeast Sport Cyclists, Morning Glory Walkers)
- ❑ Develop a local bicycle route or suitability map. (PVPC can assist communities through local technical assistance requests)
- ❑ Host a bicycle Safety Rodeo (contact the Springfield Kiwanis) or an Effective Cycling Course cosponsored through the League of American Wheelmen.
- ❑ Work with the local vehicle registration office or vehicle inspection stations to promote motorist awareness training.

Private Development

- ❑ Consider bicycle access incentives such as showers and lockers at employment locations.
- ❑ Provide bicycle access and parking.
- ❑ Provide public access to bicycle facilities whenever possible.
- ❑ Connect bicycle facilities to adjacent developments.
- ❑ Consider adopting a sidewalk ordinance. (Wilbraham has one, some PVPC communities install sidewalks as a “betterment” with a portion of the cost paid by the adjacent property owner)

Appendix E

Pioneer Valley Bicycling and Walking Commuters by Community, 1990 census data

Community	Bicycle to Work	Walk to Work	Total Commuters
Agawam	0.04%	1.11%	14,063
Amherst	1.39%	31.53%	16,419
Belchertown	0.00%	0.88%	5,485
Blandford	0.00%	1.38%	581
Brimfield	0.93%	1.17%	1,287
Chester	0.00%	4.09%	587
Chesterfield	0.00%	3.11%	547
Chicopee	0.18%	3.64%	26,712
Cummington	0.00%	3.35%	388
East Longmeadow	0.00%	2.00%	6,253
Easthampton	0.24%	4.23%	7,975
Goshen	0.00%	4.49%	468
Granby	0.18%	0.88%	2,836
Granville	0.89%	2.68%	671
Hadley	0.61%	3.08%	2,142
Hampden	0.00%	0.43%	2,540
Hatfield	0.26%	4.03%	1,565
Holland	0.20%	1.01%	995
Holyoke	0.27%	7.63%	15,684
Huntington	0.00%	0.87%	918
Longmeadow	0.44%	1.13%	7,315
Ludlow	0.14%	2.40%	9,757
Middlefield	0.00%	0.00%	181
Monson	0.22%	3.67%	3,573
Montgomery	0.49%	1.97%	407
Northampton	1.62%	14.98%	14,939
Palmer	0.11%	4.30%	5,577
Pelham	0.52%	0.78%	769
Plainfield	0.00%	5.33%	244
Russell	0.24%	1.46%	823
South Hadley	0.06%	13.13%	8,555
Southampton	0.00%	0.92%	2,394
Southwick	0.00%	2.37%	4,005
Springfield	0.20%	5.01%	62,892
Tolland	0.00%	3.74%	107
Wales	0.00%	0.71%	709
Ware	0.11%	4.38%	4,450
West Springfield	0.09%	2.51%	13,749
Westfield	0.32%	5.09%	18,334
Westhampton	0.00%	1.10%	730
Wilbraham	0.16%	1.23%	6,278
Williamsburg	0.38%	7.21%	1,303
Worthington	0.40%	2.19%	503
Regional Total	**0.33%**	**6.29%**	**275,710**

Appendix F

Public Participation Legal Notice Pioneer Valley Bicycle and Pedestrian Transportation Plan, A Component of the 2000 Regional Transportation Plan

In accordance with the formal public participation program tied to the Pioneer Valley Region's

Metropolitan Planning Organization (MPO), the Pioneer Valley Planning Commission (PVPC) is holding a thirty (30) day public review period for the following document:

Draft Pioneer Valley 1999 Regional Bicycle and Pedestrian Plan. This document is the bicycle and pedestrian component of the Pioneer Valley Regional Transportation Plan (RTP). The information and recommendations in this document help guide decisions on allocating resources and establishing priorities in the Pioneer Valley Region of western Massachusetts. Projects listed in the Bicycle and Pedestrian Plan are considered part of the Regional Transportation Plan and are eligible for inclusion in the Transportation Improvement Program. Copies of these documents are available for public review at: the West Springfield office of PVPC; Amherst, Agawam, Blandford, Chicopee, Holyoke, Ludlow, Monson, Northampton, Plainfield, Wilbraham, Springfield, and Ware Public Libraries and, on-line from PVPC's web page at www.pvpc.org. The PVPC is accepting written comments during this public review period beginning October 21, 1999 and ending November 22, 1999. The PVPC address is 26 Central Street, 3rd Floor, West Springfield, MA 01089. For questions or additional information, please contact Catherine Ratte or Jeff McCollough at the PVPC at (413) 781-6045.

Appendix G

Norwottuck Rail Trail Daily Counts

The Pioneer Valley Planning Commission began collecting volume counts on the Norwottuck Rail Trail in July of 1996. The volume counts provide transportation engineers and planners with useful information for designing new bikepath facilities. Fifteen minute interval counts provide data for gap studies and the timing and coordination of pedestrian cycles in timing of traffic signals. The counts provide trip generation data for calculating parking requirements and establishing appropriate design widths. Volume data from the Norwottuck Rail Trail has already influenced the design width and intersection of future projects in the region, including the: Amherst-UMass Bikeway Connector, Connecticut River Walk and Bikeway, Manhan Rail Trail, Southwick Rail Trail, and Redstone Bikepath.

In the future, PVPC is planning to collect additional volume counts on the Norwottuck Rail Trail and the Northampton Bikepath to establish a profile of the seasonal fluctuation of uses and to update the comprehensive survey conducted in 1996. The Department of Environmental Management currently has plans to extend the Norwottuck from its current terminus on the outskirts of Northampton into the heart of the city's residential and business district. Plans are currently underway to connect the Norwottuck Rail Trail to the University of Massachusetts parallel to University Drive. These projects, in combination with a major bridge reconstruction project on Route 9, will increase the roll of the Norwottuck Rail Trail as a commuter facility. The PVPC trail traffic counting program will monitor the impact of these new facilities in the years ahead.

For more detailed volume data from the trail, or for a copy of the Norwottuck Rail Trail Users Survey, please contact the PVPC.

Norwottuck Rail Trail Volume Counts
Between West Street and Middle Street (Route 47), Hadley

Dates	Days of The Week	Average Daily Volume
7/26/96 – 7/28/96	Friday 10:00 a.m. – Sunday 11:59 p.m.	1,109
8/2/96 – 8/4/96	Friday 9:00 a.m. – Sunday 7:00 p.m.	1,058
8/9/96 – 8/11/96	Thursday 9:00 p.m. – Sunday 11:59 p.m.	688
8/15/96 – 8/18/96	Thursday 6:00 p.m. – Sunday 11:59 p.m.	1,146
7/22/97 – 7/27/97	Tuesday 6:00 p.m. – Sunday 11:59 p.m.	929
7/28/97 – 7/29/97	Monday 12:00 a.m. – Tuesday 8:00 p.m.	802
8/2/97 – 8/3/97	Saturday 9:00 a.m. – Sunday 11:59 p.m.	1,183
8/4/97 – 8/10/97	Monday 12:00 a.m. – Sunday 11:59 p.m.	910
8/11/97 – 8/14/97	Monday 12:00 a.m. – Thursday 5:00 p.m.	626
9/10/97 – 9/14/97	Wednesday 9:00 a.m. – Sunday 11:59 p.m.	824
9/17/97 – 9/21/97	Wednesday 5:00 p.m. – Sunday 11:59 p.m.	732
10/28/97 – 11/2/97	Wednesday 3:00 p.m. – Sunday 11:59 p.m.	243
11/3/97 – 11/9/97	Monday 12:00 a.m. – Sunday 11:59 p.m.	148
11/10/97 -11/13/97	Monday 12:00 a.m. – Thursday 8:00 p.m.	137
9/13/99 – 9/19/99	Tuesday 12:00 p.m. – Sunday 11:00 p.m.	628

Source; PVPC