

CAPITOL REGION COUNCIL OF GOVERNMENTS

Regional Pedestrian and Bicycle Plan



The CRCOG Commitment
to a Walkable Bikeable Region

April 2008

TABLE OF CONTENTS

Purpose of Document	1
Chapter 1 Introduction	2
Chapter 2 Vision	5
Chapter 3 Current Conditions.....	6
Current Walking and Biking Patterns in the Region	6
Current Policies and Practices	8
Pedestrian and Bicycle Safety	9
Survey Results: What Pedestrians and Bicyclists Want	10
Comparing our Region to Others	11
Chapter 4 Benefits of a Walkable Bikeable Region	16
Making the Case: What Can Be Achieved?	16
Quantifiable Benefits We Can Achieve.....	22
Chapter 5 Recommendations	26
Engineering	26
Education	36
Encouragement	38
Enforcement.....	39
Chapter 6 Next Steps and implementation.....	40
List of Figures:	
Figure 1: Existing and Proposed Multi-use Path System	
Figure 2: Recommended Multi-use Path Links	
Figure 3: On Road Bicycle Network	
Figure 4: On Road Bicycle Network and Multi-use Path System	
Appendices	
Appendix A: June 2001 CRCOG Policy Statement: Biking and Walking	
Appendix B: Pedestrian Safety Study	
Appendix C: Active Transportation Initiative Survey Results	
Appendix D: Estimation of Mode Shift	
Appendix E: On Road Bicycle Network (listing of roads)	
Appendix F: Summary of Public Outreach	

Purpose of Document

This document is the result of a concentrated six month effort, the *Active Transportation Initiative*. What is *Active Transportation*? It is a movement that recognizes the importance of active modes of travel, walking and bicycling, as integral parts of our transportation system. This document, the region's new Pedestrian/Bicycle Plan builds upon our current regional bicycle and pedestrian plans (adopted in 2000 and 2005, respectively), to create a results oriented program that will make the region more bikeable and walkable. The goal of this document is quite simple, to create a plan that will lead to significant shifts in the numbers of people who choose to walk and bicycle for regular transportation. Success will be measured in the numbers of pedestrians and bicyclists on the streets, sidewalks and multi-use paths in the region.

Acknowledgements

Since 1998, pedestrian and bicycle planning in the Capitol Region has been overseen by the Bicycle and Pedestrian Planning Committee. This group has met faithfully, shepherding the current Bicycle and Pedestrian Plans to adoption. The members of the Committee have been instrumental in raising awareness throughout the region of the importance of addressing pedestrian and bicycle needs. For this plan update, several members of the Bike/Ped Planning Committee were joined by an enthusiastic group, representing advocates, senior citizens, towns, businesses, agencies, and institutions, to form the Active Transportation Working Group. Their interest and enthusiasm for the effort allowed this plan to go from idea to an actual working document in less than six months.

Organization of the Plan:

This document is organized into the following chapters:

1. Introduction

2. Vision

Where are we headed? What kind of region will we have if this plan is successful?

3. Current conditions

How many people walk and bike in the region today? What are the obstacles that pedestrians and bicyclists encounter today? What progress have we made since the previous plans were adopted?

4. Benefits

What can we learn from other communities? What might we accomplish in our region?

5. Recommendations

What actions can be taken to enable more people to walk and bicycle on a regular basis?

6. Next Steps and Implementation

Chapter 1 Introduction

Why Walking and Biking Matter

Walking and bicycling are low cost forms of transportation that are non-polluting, energy-efficient, and provide health benefits. For many years, however, they have not been considered legitimate forms of transportation and little attention has been paid to the pedestrian and bicycling environment or to the needs of pedestrians and bicyclists. Frequently walking is not considered a form of transportation, even though most trips, whether via automobile or transit, involve some element of walking. By the same token, bicycling is often perceived less as an option for transportation and more as a vehicle for recreation. These views have led to a limited transportation system and have prevented the region from reaping the benefits of more walking and biking. On the positive side, the Hartford region, like many other regions in the country and the world, is beginning to recognize the value of active transportation and to take steps to improve pedestrian and bicycle access and safety.

The societal benefits of a walkable bikeable region fall into many categories: **mobility, public health, economic, environment, and community livability**. In addition, there are many benefits that accrue to the **individual**, in the areas of **health and finances**. These are discussed in more detail in Chapter 4, Benefits.

Status of Pedestrian and Bicycle Planning in the Region

In the late '90s, CRCOG began to focus on bicycling and walking as part of the region's transportation system. At that time, it was decided to first focus on the production of a Bicycle Plan with a Pedestrian Plan to follow. The Bicycle Plan was adopted in April 2000, the Pedestrian Plan (entitled *Walking Matters*) in May 2005. During this time frame, the agency has also undertaken several studies and projects that addressed issues of walkability and bikeability. These include: the *Picture it Better Together: Taking Transportation Goals from Policy to Reality* initiative (1999 to 2002) that focused on how to create livable communities; the *Walkable Community Workshops* (2003); the *Station Area Planning Project* (2004), and the *Pedestrian Safety Study* (2004). In addition, all recent CRCOG transportation planning studies, corridor studies and transit studies consider the needs of bicyclists and pedestrians.

Adoption of this plan will enable us to continue our progress and will also position the region to apply for funding which may become available on the federal and state levels. This document is designed to build upon the earlier work, to reinvigorate the region's commitment by clearly quantifying the benefits of becoming walkable and bikeable, and to provide a clear road map to a

walkable, bikeable region. It is our intent that this document will lead the way to a fully walkable and bikeable region, characterized by complete streets, which serve all users.

There are many indicators in the region that enable us to predict success with this plan.

- Bike to Work: CRCOG hosted a Bike to Work day in May 2000, which expanded to a program with multiple events taking place six months of the year. The program was recently taken over by the Central Connecticut Bicycle Alliance and CRCOG continues to support this effort.
- In June 2001, the CRCOG Transportation Committee adopted a policy entitled *Accommodating Bicycle and Pedestrian Travel: A CRCOG Policy Statement on Integrating Bicycling and Walking into the Transportation Infrastructure*. (See Appendix A for this document.)
- A regional bicycle advocacy group, the Central Connecticut Bicycle Alliance, was formed in 2005. This organization has taken over responsibilities for the Bike to Work program developed by CRCOG, is currently running a “bike everywhere” promotion, and held a bicycling and walking tour in Hartford in September 2007 that attracted over 1,300 participants.
- The state wide AARP chapter has expressed an interest in the development of walkable communities locally.
- Local trail advocacy groups have been active in urging completion of existing trails and extensions to new areas.
- The Active Transportation Initiative Working Group created to oversee the development of this plan included individuals with a variety of interests and from all areas of the region.
- State legislation relating to bicycling passed in the 2008 session. This defines a safe passing distance for overtaking bicycles of 3 feet, requires the Commissioner to improve bicycle and pedestrian access throughout the state, and to undertake a state wide “Share the Road” campaign.
- Heightened interest in all of the region’s towns has been evidenced in meetings with town staff and elected officials. Several towns have appointed bicycle and pedestrian committees (task forces, advisory committees and the like).
- In 2007 the state legislature approved the development of a fund for bicycle facility development. This fund, when implemented, will provide \$6 million per year.

- The state DOT has formed a statewide Bicycle and Pedestrian Advisory Committee.
- The state is currently updating its bicycle and pedestrian plan.
- Share the road language was added to the Department of Motor Vehicles manual: CRCOG was instrumental in working with the CT Department of Transportation and the CT Department of Motor Vehicles in drafting new language that has been incorporated in the latest version of the DMV Driver's Manual. This text addresses pedestrian and bicyclist rights and responsibilities and related motorist responsibilities on state roads.
- Bike racks have been installed on all CTTransit buses in the Hartford division. CRCOG helped to insure that this happened.
- A CMAQ grant has been awarded to the City of Harford for the purchase of bike racks and lockers.
- Safe Routes to Schools efforts have taken place in the City and several towns.
- Significant progress has been made with the construction of the Farmington Canal Greenway and the Farmington River Trail.
- CRCOG has sponsored several design workshops to educate planners and engineers on bicycle and pedestrian design. Topics have included accessible pedestrian design and bicycle facility design.
- Towns have adopted or are studying the adoption of Bike and or Pedestrian Plans.
 - Glastonbury has formed a bicycle advocacy group, Glastonbury Bikeways, Inc. This group, along with the Town of Glastonbury , has developed a master plan for developing multi-use trails and making Glastonbury a bicycle friendly community.
 - West Hartford, Hartford, and South Windsor have developed, or are in the process of developing bicycle plans.
- CRCOG developed and printed Share the Road brochures, in English and Spanish.

Chapter 2 Vision

Our vision is an expression of the region's dreams for its future relative to walking and bicycling.

Our Vision

We envision a Hartford region where people will choose and be able to walk and bicycle as a way to travel, to be healthy and to relax. This will be a region where authorities, organizations and individuals have:

- recognized the value of walking and bicycling;
- made a commitment to healthy, efficient and sustainable communities; and
- worked together to overcome the physical, social and institutional barriers that often limit individuals choice to walk and bicycle.

Our vision enables us to imagine a transformed region:

Imagine being able to ride your bike or walk throughout the region on dedicated bike and pedestrian paths and ways.

Imagine being able to travel free of the high and ever increasing costs of using an automobile.

Imagine less pollution and less noise.

Imagine a healthier population.

Our Specific Goals: By 2015

- Complete Streets will be the standard for road design.
- All major commute routes to employment concentrations will have appropriate bike facilities (bike lanes, bike shoulders, wide curb lanes, or parallel multi use paths.)
- The East Coast Greenway will be completed through the region.
- All commercial developments will have safe and convenient pedestrian access.
- All new residential development will provide the option of non-motorized access to surrounding neighborhood destinations.
- Standards for bicycle and pedestrian facilities will have been adopted throughout the region.
- All the region's towns will have adopted bicycle and pedestrian plans.
- Bicycle commuting in the region will have increased significantly (to 5000 individuals.)
- One percent of all non-commuting automobile trips will have shifted to bicycling or walking (a shift of 67,000 vehicle miles of daily travel.)
- A robust regional trails fund will insure the ongoing construction of multi use paths.

Chapter 3 Current Conditions

Current Walking and Biking Patterns in the Region

It is useful to examine the trends in walking and bicycling in the region over the past 20 years. The US Census data provides information on the numbers of commuters choosing to walk or bicycle to get to work. There is no data source that enables us to understand travel mode choice for other trip purposes, so the following discussion focuses on work trips only. Also, it should be noted that the Hartford Metropolitan Area definition changed from the time of the 1990 Census to the 2000 Census. The following three tables provide data on the Hartford region and several other regions in the country. Note, the metropolitan region definition changed in these other regions also.

Tables 1 through 3 show that the Hartford region had a relatively low rate of bicycling and walking for commute trips in 1990. In 2000, the bike rate is still low, having increased just 0.01% while the other region with a similar bike mode share in 1990, our neighbor Providence, Rhode Island, posted a significant increase of 50% in the same time period. On the walking side, all regions, including Hartford, experienced a decline in the rate of walking to work between 1990 and 2000. This is likely due to the disappearance of manufacturing sites and mills within older neighborhoods through the 1990s. It is likely also due to continued suburbanization taking place through the 1990's. In the 2006 Census update, the American Community Survey, most regions posted increases in walk and bike commute rates. Portland, Oregon shows the most significant gain in the bike mode rate, an increase of 100%. On the walk side, the 2006 results indicate that the decline in the walking rate may have bottomed out with most regions, including Hartford, posting gains.

This data causes us to be optimistic that biking and walking rates in Hartford can continue to increase. Over the past 10 years, rates of walking and bicycling to work have increased slightly. The rates achieved in other regions with similar weather patterns to ours cause us to believe that continued gains are possible.

Table 1: 1990 Census Journey to Work Data

1990 US Census Data					
Town	Number of workers	bike	Bike Mode Rate	walk	Walk Mode Rate
Burlington, VT MSA	70,491	560	0.79	4,976	7.06
Colorado Springs, CO MSA	197,436	781	0.40	12,278	6.22
Denver--Boulder, CO CMSA	964,912	6970	0.72	31,637	3.28
Hartford**	561,969	884	0.16	17,060	3.04
Madison, WI MSA	204,399	3970	1.94	16,859	8.25
Minneapolis--St. Paul, MN--WI MSA	1,307,624	5476	0.42	42,069	3.22
Portland--Vancouver, OR--WA CMSA	724,532	4409	0.61	23,725	3.27
Providence--Pawtucket--Fall River, RI--MA CMSA	544,668	897	0.16	21,144	3.88
AVERAGE	4,505,540	23,387	0.52	169,748	3.77

Hartford ** = Hartford--New Britain--Middletown, CT CMSA

Table 2: 2000 Census Journey to Work Data

2000 US Census Data					
Town	Number of workers	bike	Bike Mode Rate	walk	Walk Mode Rate
Burlington, VT MSA	90,903	440	0.48	5588	6.15
Colorado Springs, CO MSA	263,805	1,114	0.42	9,778	3.71
Denver--Boulder--Greeley, CO CMSA	1,346,025	9,341	0.69	32,044	2.38
Hartford, CT MSA	573,114	951	0.17	14,523	2.53
Madison, WI MSA	242,542	4,216	1.74	14,924	6.15
Minneapolis--St. Paul, MN--WI MSA	1,595,550	6,973	0.44	38,897	2.44
Portland--Salem, OR--WA CMSA	1,105,133	8,390	0.76	32,949	2.98
Providence--Fall River--Warwick, RI--MA MSA	555,540	1,332	0.24	18,240	3.28
AVERAGE	5,772,612	32,317	0.56	161,355	2.80

Hartford, CT MSA = Hartford--New Britain--Middletown, CT CMSA

Table 3: 2006 ACS Journey to Work Data

2006 American Community Survey					
City/MSA	Numer of workers	# Bikers	Bike Mode Rate	walk	Walk Mode Rate
Burlington-South Burlington, VT Metro Area	109,856	792	0.72	8,107	7.38
Colorado Springs, CO Metro Area	302,405	1,291	0.43	12,224	4.04
Denver-Aurora, CO Metro Area	1,224,406	8,922	0.73	28,128	2.30
Boulder, CO Metro Area	148,251	5,417	3.65	6,878	4.64
Hartford *	588,830	1,509	0.26	18,385	3.12
Madison, WI Metro Area	303,050	5,379	1.77	15,785	5.21
Minneapolis-St. Paul-Bloomington, MN-WI Metro Area	1,669,299	10,697	0.64	39,457	2.36
Portland-Vancouver-Beaverton, OR-WA Metro Area	1,057,060	16,706	1.58	33,286	3.15
Providence-New Bedford-Fall River, RI-MA Metro Area	778,226	2,015	0.26	21,591	2.77
AVERAGE	6,181,383	52728	0.85	183,841	2.97

Hartford * = Hartford-West Hartford-East Hartford, CT Metro Area

Current Policies and Practices

In June of 2001 the CRCOG Transportation Committee adopted a policy entitled *Accommodating Bicycle and Pedestrian Travel: A CRCOG Policy Statement on Integrating Bicycling and Walking into the Transportation Infrastructure* (see Appendix A.) The policy was intended to guide the design and implementation of projects funded through the metropolitan planning organization process (federal funds that flow through the region) so that each project would improve bicycle and pedestrian safety. In fact, the policy has proven to be weak and has had little effect on new street construction and reconstruction projects over the past 7 years. While the intent was good, the policy needs reworking to be effective. There have been successes, however, in the past several years. Bike racks are now standard equipment on all CTTRANSIT buses in the region, allowing for bike/transit trips. The City of Hartford has installed bike lanes in numerous locations, as part of a broad traffic calming project and as part of regular repaving. Town planners and engineers have attended the bicycle and pedestrian design seminars and workshops sponsored by CRCOG.

Pedestrian and Bicycle Safety

In 2004, as part of the development of the region's first Pedestrian Plan, an extensive evaluation of pedestrian safety statistics was conducted (the safety study is included in Appendix B.) It was not possible to perform the same sort of analysis for bicycle accidents, however, because of the low incidence and/or reporting of such accidents. Our survey of pedestrians and bicyclists (see section below) does indicate that perception of safety for would be bicyclists can be a strong deterrent to bicycling.

The findings from the pedestrian study are summarized briefly below:

In the state of Connecticut, pedestrians are overrepresented in terms of severity of accidents and rate of accidents per mile of travel as compared to motor vehicle operators and passengers. Pedestrians involved in accidents are over 25 times more likely to be killed than a driver or passenger, over 12 times more likely to have a disabling injury, and over 7 times more likely to have a visible injury.

The City of Hartford ranks third among New England cities in terms of pedestrian fatalities per 100,000 population. Fifty percent of all pedestrian accidents in the region are attributed to unsafe behavior on the part of the pedestrian, 20% are caused when drivers fail to grant the right of way. For young pedestrians (under the age of 15), 75 % of the accidents are attributed to unsafe use of the highway by a pedestrian. Where the driver was determined to be at fault in an accident, the majority of the accidents involved a pedestrian crossing the road at an unsignalized intersection. 80% of all pedestrian accidents occur when the pedestrian is crossing the street, with half of these crossing accidents occurring between intersections. Most pedestrian accidents occur on minor arterials, but most fatal accidents occur on principal arterials. We found that pedestrian accidents are most prevalent on commercial arterials, places with retail attractions that pedestrians want to access, and which are often not designed for pedestrian safety. The detailed safety study concluded that the following actions can improve pedestrian safety in the region:

- Need to concentrate on making crossings safer (80% of accidents involve a pedestrian crossing the road)
- Need to educate pedestrians
 - How to legally cross the street
 - What the pedestrian signals mean
 - How to cross at unsignalized intersections
- Need to educate motorists
 - Duty to yield to pedestrians at unsignalized intersections
 - Duty to yield to pedestrians when turning and when turning right on red

- Need to watch for pedestrians
- Need for enforcement: both pedestrians and motorists
- Need for a physical environment that enhances pedestrian safety.

Survey Results: What Pedestrians and Bicyclists Want

The Active Transportation Initiative survey was developed to learn about the barriers to walking and bicycling in the region. The survey was not administered in a way as to be statistically significant, but rather we sought to learn the viewpoint of individuals with some interest in walking and biking. The survey and the full survey report are included in Appendix C of this document.

The survey was posted on the CRCOG website, and was conducted during the three months from mid-November 2007 to mid-January 2008. The survey collected statistics on bicycling and walking habits, as well as perceived barriers to bicycling and walking in the Capitol Region. There were also several opportunities for respondents to comment freely on their bicycling and walking experiences. The survey was promoted via email and through the monthly CRCOG newsletter. Respondents came from both inside and outside the CRCOG region. Only responses from individuals who either live or work in the region were tallied.

The survey design enabled us to distinguish responses from those who walk or bike regularly and those who walk or bike infrequently. We learned about trip purpose, personal and system factors that limit walking and biking, and desired improvements. The survey enables us to understand barriers to bicycling and walking and interventions/improvements, which are likely to result in more people using these modes of transportation.

Looking first at walking, we can conclude that the Capitol Region is not designed for walking as a chief mode of transportation. There are certainly exceptions, such as town centers and downtown areas, but by and large, development patterns and the built environment do not support walking. Affecting true change and movement toward a pedestrian culture will require changes in development patterns to promote shorter walking distances and put desirable destinations within a reasonable walking distance from homes and offices. Increased availability of multi-use paths and sidewalks will also encourage more walking. Changes in development and infrastructure and stronger enforcement of motor vehicle violations, will also encourage more walking. Finally, improvements to the bus system will allow more walk/transit trips.

On the bicycling side, we find that bicycling in the region is primarily occurring on roads shared with motor vehicle traffic. This leads to many issues as cyclists and motorists attempt to share the road. Experienced bicyclists can overcome many of the hazards related to riding on the road but are looking for their own space on those roads. Specifically, they want more striped bike

lanes and wider outside lanes and shoulders in which to ride. These riders are bicycling frequently, but currently not necessarily using their bicycles for transportation instead of recreation. Increased availability of secure bicycle storage and shower facilities at specific destinations could lead to increased use of bicycles for transportation.

These riders also want to educate motorists on safe driving rules around bicycles and the rights of cyclists. Enforcement and improvement of traffic regulations and development practices would also improve the transportation system for cyclists. Key concerns include safe vehicle passing distances and safe crossings over rivers in the region.

More novice riders have not overcome all of the hazards on our roads and paths, and feel much less safe riding on the roads. They want bike lanes as well, but are also looking for separate space away from vehicles on multi-use paths.

These riders may benefit, not only from more facilities, but also from educational opportunities that will lead them to feel more comfortable using a bicycle as a mode of transportation. Riding events that highlight existing routes and path systems would also increase their knowledge of and comfort with all aspects of cycling. Events that mix novice and experienced riders also improve novice riders' understanding and comfort level.

In summary, we conclude that the following efforts are likely to have the greatest impact in encouraging more walking and bicycling:

- Changes in development patterns that result in shorter walking distances.
- Investments in sidewalks, bike lanes, wide shoulders, wide outside lanes, and multi use trails. Focus should be on overcoming barriers.
- Provision of bicycle parking facilities throughout the region, with a mix of lockers and racks.
- Provision of shower facilities convenient to employment locations.
- Expansion of transit service with bike and pedestrian access to stops, stations, and commuter lots.
- Enforcement of traffic regulations.
- Printing and promotion of maps showing safe and convenient bicycle routes.
- Education on safe riding skills.
- Education on sharing the road, for bicyclists, pedestrians and motorists.
- Events which encourage individuals to try biking and to try walking.

Comparing our Region to Others

It is important to check the results from our survey against findings in other regions of the country to determine if the improvements identified by survey respondents have actually resulted

in mode shifts in other places. We have examined information from several areas to investigate this.

One way to examine what has been successful in other communities is to look at places that are recognized as being bicycle friendly. The League of American Bicyclists' (LAB) Bicycle Friendly Community Campaign awards medals to communities that actively support and promote bicycling. Designations of bronze, silver, gold and platinum are awarded based on a rigorous application process that reviews all aspects of transportation planning in a community. Communities that have earned a Bicycle Friendly designation from the LAB have made great strides toward integrating cycling as a form of both transportation and recreation. Much can be learned by examining their policies and practices.

To date, the only community to earn the Platinum designation is **Davis, CA**. As early as the 1970s, the town of 65,000 was promoting the bicycle as an integrated solution in its transportation planning. As a result, 14.4% of commuting trips in Davis were made by bicycle in 2000. It is difficult to compare Davis's riding environment to Hartford's given the California climate, but cold climate cities have also embraced bicycle transportation.

Madison, WI has a history of high bicycle and pedestrian transportation, and has maintained a bicycle mode rate of at least 1.7% (ten times the rate in our region in 2000) for twenty years by integrating bicycle planning into every aspect of city development. The bicycle is recognized as a major mode of transportation and a vehicle for recreation. Specific bicycle policies include provision for bicycle facilities when constructing or reconstructing city streets and inclusion of bicycle traffic considerations in the design of all traffic control devices. In 1988 Madison passed an ordinance requiring the provision of off-street bicycle parking for new developments, expansion of existing developments, and changes in use that would require additional car parking. Madison continues to be a leader in bicycle-friendly development. In the fall of 2006, Mayor Dave Cieslewicz formed the Platinum Biking City Planning Committee charged with the goal of achieving a Platinum medal from the Bicycle Friendly Community Campaign and having Madison recognized as the best city in the country for bicycling. Currently Madison is recognized at the Gold level.

Portland OR is also pursuing the Platinum medal, with a wide range of alternative transportation programs and improvements. The network of bicycle paths and lanes in Portland has grown from 60 to 260 miles since 1990. During the same period, bicycle use has quadrupled. Some neighborhoods have a bike mode rate as high as 9%, and the average for the entire city in the 2006 ACS is 1.6%, or four times the national average of 0.4%.

Portland supports a large bicycling community and has fostered the bicycle culture. They established a "Community Cycling Center" that provides basic maintenance for bicyclists and runs education programs for riders of all ages and experience levels. Their motto, "bikes: a tool

for empowerment, a vehicle for change” is embodied in their “Create a Commuter” program. After completing a basic bicycle safety and maintenance workshop, low-income adults receive a basic commuter bicycle complete with lights, a lock, a helmet, a rack, basic tools and all the other accessories needed for successful year-round bicycle commuting. A similar program provides bikes to low-income children who complete a 12 week course.

Additional excitement is growing in Portland through its SmartTrips program. SmartTrips is a comprehensive approach to reduce drive-alone trips and increase biking, walking and public transit. Started with a small pilot project in 2003, this highly effective encouragement program has grown to target over 20,000 households each year. Moving from neighborhood to neighborhood throughout greater Portland, SmartTrips staff and volunteers hand-deliver individualized packets of information to residents who wish to learn more about their transportation options. Key components include biking/walking maps and workshops, organized walks/rides and activities that get people out in their neighborhoods or places of employment to shop, work and discover how many trips they can easily and conveniently make without using a car. Telephone surveys and trip diaries show this program has yielded a reduction of 9 to 13 percent in drive-alone car trips by residents with a corresponding increase in walking, biking and public transit mode shares in the affected neighborhoods.

Boulder CO has achieved a bike mode rate of 3.65% (2006 ACS.) Boulder demonstrates the important role bicycling plays in its transportation plan by investing \$3.1 million, or 15% of its approved 2004 transportation budget, on bicycle mode operations, maintenance and enhancements. 95% of Boulder’s arterial streets have bike lanes or trails, and multi-use paths receive formal inspections twice a week. Boulder’s Bike to Work Day attracted 5,000 participants last year. It is clear Boulder is committed to bicyclists and pedestrians. Bike use and other non-automotive modes have limited the growth in vehicle miles of travel in Boulder to about 1 percent annually since 1990.

In its 2007 report, *Bicycling and Walking in the U.S.*, the Thunderhead Alliance cites **Minneapolis, MN** as second only to Portland in Bicycle mode rate for American cities (this report ranks large cities, and therefore does not consider Davis CA.) Minneapolis has developed an extensive network of trails and bike lanes leading into its downtown region in an effort to specifically encourage the bicycle as a transportation alternative. They continue to expand this network and are currently one of four communities selected to be a part of the Non-Motorized Transportation Pilot Program. This program awarded Minneapolis \$25 million in federal funds for bicycling and walking projects in Minneapolis and other Twin Cities communities. With this funding, the region has a goal of eventually doubling the amount of bicycle riding in the city.

Arlington VA, a silver medal winner, is another example of a small city working to make cycling a reasonable commuting choice. FreshAIRE: Arlington Initiative to Reduce Emissions is a collaboration between county government, businesses, organizations, and individuals in an

effort to increase awareness of “climate disruption” and reduce greenhouse gas emissions throughout Arlington County. One piece of this effort is encouragement of bicycle and pedestrian commuting. Arlington residents have a vast array of services available to them to assist in alternative commuting solutions specifically Washington DC’s MetroRail and MetroBus transit services, which include extensive bike links.

There are several bicycle advocacy groups including the BikeArlington initiative and WABA, the Washington Area Bicyclist Association. WABA provides free Confident City Cycling Classes for bicycle commuters and will help cyclists plan routes or connect with a “bikepool” of others in a neighborhood who bike to work.

The Metro Washington Council of Governments also runs Commuter Connections. This group not only oversees Ride Share, but also runs the Guaranteed Ride Home (GRH) program. GRH is an “insurance policy” for alternative commuters that will provide a free ride home, up to four times a year, in the event of a personal emergency or unscheduled overtime. Participants must register and certify that they either bicycle or walk to work at least two days a week.

An article in the March 2008 Planning summarizes a key aspect of investment in bicycle and pedestrian facilities. They quote the San Francisco Bike Coalition’s Leah Shahum: “bicyclists tend to be a vocal group, they might ask for change first, then we all realize there are a ton of other related issues...(a major bicycle infrastructure project) started out as a bicycling issue, and has grown into a livability issue.”

The CROCG Active Transportation Survey conducted in late 2007 showed that residents in the Greater Hartford Region are looking for similar facilities and programs to encourage alternative transportation in the area, but can we say that improved facilities will result in increased ridership? A review of previous scientific studies of bicycle ridership lends credibility to this relationship.

A 1997 study entitled *If You Build Them, Commuters Will Use Them* by Arthur C. Nelson and David Allen¹, began to make this connection. They used data on 18 U.S. cities and attempted to explain the relationship between bicycle commuting and bicycle paths. Controlling for extraneous variables, they found that for each additional mile of path per 100,000 people, there was an increase of .069 percent in bicycle commuting. However, they questioned the cause and effect relationship and suggested a more extensive study was needed. Their selected cities also included a large number of “college towns” where bicycling is a convenient and inexpensive transportation solution for young adults.

¹ Nelson, A.C. and D. Allen. *If You Build Them, Commuters Will Use Them*. *Transportation Research Record*, 1997. **1578**: p. 79 – 83.

In 2003, Jennifer Dill and Theresa Carr of Portland State University attempted a larger study.² They analyzed 35 U.S. cities and selected them to avoid a predominance of college towns. They also made the connection between bicycle facilities and bicycle commuters, but suggested additional factors are important as well. They found: “Higher levels of bicycle infrastructure are positively and significantly correlated with higher rates of bicycle commuting...However, bicycle lanes and paths *alone* are not likely to increase bicycle commuting. Bike lanes and paths need to connect popular origins and destinations, greater efforts should be taken to educate commuters about bicycling as an option, and commuters need adequate and safe parking at work.”

In 2005 the Florida Legislature requested that the Florida Department of Transportation identify ways to increase use of bicycles to promote saving energy and achieve health benefits. Based on the findings of the “Conserve by bicycle program study”, it concluded that four factors were found to influence shifts from motoring to cycling in Florida roadway corridors: perceived safety of cycling on the roadway, greater extent and perceived quality of cycling accommodation in the street network (bicycle level of service) in the area surrounding the roadway, shorter average trip length, and greater density of the (arithmetic) product of population and employment in the area surrounding the roadway. For recreational trips, five factors corresponded to increased recreational cycling in a corridor: greater length of bicycle facility, presence of a shared-use path or roadway conditions with higher (perceived) quality of accommodation for cycling, better aesthetic quality (including landscape interest) of a route, more points of interest along a route, and a greater distance-weighted density of population near the facility. Existing programs to market cycling in the context of multimodal trip options were also reviewed. This found that properly targeted and funded system improvements, programs and partnerships, combined with behavior change incentives, can induce a shift from motoring to cycling and also increase recreational and fitness cycling.

Coming back to our CRCOG region, we can use the above analysis to enhance our recommendations. The CRCOG Active Transportation Survey tells us that our people want more and improved bicycle facilities and want greater choice in transportation solutions. Other cities around the U.S. show us that improvements are possible and effective. Numerous engineering projects and encouragement programs have successfully increased the bike mode share in these communities. The scientific studies tell us there is a relationship between facilities and ridership, and encourage us to plan improvement and encouragement projects. There are many residents of Greater Hartford who are looking for alternatives to driving their cars. Improving bicycle and pedestrian facilities in the CRCOG region will provide them with more choices and flexible solutions to their transportation needs.

² Dill, J and T. Carr. *Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them, Commuters Will Use Time – Another Look*. TRB 2003 Annual Meeting CD-ROM.

Chapter 4 Benefits of a Walkable Bikeable Region

Making the Case: What Can Be Achieved?

Numerous studies and research projects have established the benefits of a walkable/bikeable region. The societal benefits fall into five categories: mobility, public health, economy, environment, and community livability. In addition, there are several benefits that accrue to the individual.


- **Mobility:** Until recently, transportation officials viewed mobility in terms of movement of vehicles and not movement of people. When we focus on the movement of individuals, it is clear that walking and biking are essential elements in a region's mobility.
 - **Everyone is a pedestrian:** Walking, sometimes considered an “alternate” form of transportation, might better be considered the primary form of transportation. **Most trips involve some element of walking**, whether from the home to the car, from the home to the bus stop, or from the vehicle to the final destination.
 - **Some depend on walking:** Certain segments of the population are more likely than others to depend upon walking for much of their travel: **the young, the elderly, many members of the disabled community, those who can't afford a car**. It is estimated that 30% of the population cannot or does not drive. It should be noted that safe and accessible pedestrian facilities are essential for the mobility of individuals who are disabled. **In the City of Hartford, a full 35% of households do not own a car.**
 - **Some depend on bicycling:** Likewise, certain segments of the population are more likely than others to **depend upon bicycling** for much of their travel: particularly the **young and those who cannot afford a car**. Surveys show that 87% of Americans over the age of 16 walk for outdoor recreation and 41% bike.
 - **A balanced transportation system** must address motor vehicle needs along with public transit, walking, and bicycling. Our region cannot thrive if everyone drives for all their transportation needs. We cannot afford to build enough roads and highways for this. In fact, **walking and bicycling infrastructure make public transit more effective** in meeting travel needs. Public transit is dependent upon safe and convenient pedestrian access to get patrons to and from their ultimate destinations. In addition, bicycle access to transit can expand transit's reach, especially in suburban communities.
 - **We are too dependent on the automobile.** One of the main challenges we face is that we have designed our communities around the automobile and we have grown dependent on cars for our daily lives.

- **Public Health:** An obesity epidemic, fueled by sedentary lifestyles has created new urgency for providing close-to-home opportunities for physical activity.
 - **The way we travel is making us less healthy.** According to the Thunderhead Alliance 2007 Benchmarking Report, between 1960 and 2000, levels of bicycling and walking to work fell 67% while adult obesity levels rose 241%. At the same time, the number of children who bike or walk to school fell 68% as levels of overweight children rose 367%. According to the National Household Travel Survey, Americans spent an average of just over an hour a day in a vehicle in 2001. This number varied greatly by age, but even children younger than 5 years old spent an average of three-quarters of an hour a day in vehicles. (<http://nhts.ornl.gov>; note: the travel of children under 5 was measured for the first time in 2001). **A recent estimate indicates that in the City of Hartford, as many as 52% of adults and 32% of children are obese.**
 - **Approximately 300,000 U.S. deaths a year currently are associated with obesity** and being overweight, and the total direct and indirect costs attributed to these conditions amounted to \$117 billion in 2000 (Rails-to-Trails Conservancy, “Healthy Places for Healthy People: Active Transportation and Health” 2007). **It is estimated that Medicaid and Medicare costs in the state of Connecticut attributable to overweight and obesity are in excess of \$650 million annually**
 - **The Surgeon General recommends moderate physical activity**, including walking, as one of the best antidotes to the obesity epidemic. Just ½ hour of walking, 5 times a week, can greatly change an individual’s health status (*Physical Activity and Health, A report of the Surgeon General*, November 1999).
 - **Physically active people tend to have better mental health.** Compared with inactive people, the physically active had higher scores for positive self-concept, more self-esteem and more positive "moods" and "affects." These findings seem similar in both young people and adults. Physical activity has also been used to treat mental health problems such as depression according to the American Heart Association (<http://www.americanheart.org>).
 - **Trails are beneficial in promoting physical activity.** According to a Center for Disease Control funded study, this is especially true among those groups traditionally at highest risk for inactivity, especially women and individuals in lower socioeconomic groups (Rails-to-Trails Conservancy, “Healthy Places for Healthy People: Active Transportation and Health” 2007).
 - **Today, about 60% of children are being driven to school by their parents** motivated by security and traffic safety concerns however, this has had several unfortunate consequences. Children are heavier than ever and at greater risk of developing

hypertension, diabetes and heart disease at young ages. Children have become far more sedentary which can also affect their behavior and ability to learn. Studies show that children who engage in moderate to vigorous physical activity show improved concentration, memory, learning, creativity and problem solving, as well as mood, for up to two hours after exercise.

Also, with more children being driven to school, traffic congestion has mushroomed which has increased stress to drivers and risks to pedestrians and cyclists, as well as air pollution, especially in and around schools. Parents who drive their children to school make up about a quarter of morning commuters. More traffic also means more vehicular accidents, endangering the lives of children and the adults who drive them (NY Times, “Turning the Ride to School Into a Walk”, by Jane E. Brody 2007).

- **Air pollution is costly.** According to the American Lung Association, health costs of air pollution are estimated at a minimum of \$10 billion a year, much of which comes from cars, trucks, and SUVs. Road traffic is a major contributor to air pollution. Fortunately for most healthy people, the symptoms of air pollution exposure usually go away as soon as the air quality improves. However, certain groups of people are more sensitive to the effects of air pollution than others. Children experience more illness, such as bronchitis and earaches, in areas of high pollution than in areas with cleaner air. People with heart or lung disease also react more severely to polluted air. During times of heavy pollution, their condition may worsen to the point that they must limit their activities or even seek additional medical care (<http://familydoctor.org>). **The City of Hartford has extremely high rates of asthma: 41% for children.**
- **Trails promote physical activity.** A study funded by the West Virginia University Prevention Research Center and the Centers for Disease Control and Prevention, **evaluated the physical activity patterns and trail use** among new and habitually active exercisers using onsite trail interviews. 414 adults who accessed two new trails that bisect a rural community of 26,809 residents were interviewed during the first summer of the trails' official operation in 2001. The trails comprise 12 miles of level and paved surface and run parallel to adjacent water sheds, businesses, and neighborhoods. Data were compared between newly adopted exercisers (new exercisers) and individuals active prior to development of the trails (habitually active exercisers). Twenty-three percent of the trail users were new exercisers. **New exercisers were more dependent on the trails as a primary outlet for physical activity than were habitually active exercisers.** New exercisers traveled shorter distances to access the trails and rated convenience as a primary reason for using them. Both safety and terrain issues emerged as enablers for trail use and unsafe conditions emerged as a concern among new exercisers. **The study concluded that a community trail may be an important vehicle for promoting physically active lifestyles.** However, new exercisers must overcome issues of proximal

and safe access from residential areas in addition to other safety concerns to achieve regular physical activity (“Use of a Community Trail Among New and Habitual Exercisers: A Preliminary Assessment”, Paul M. Gordon, PhD, MPH,  Samuel J. Zizzi, EdD, and Jeff Pauline, EdD, 2004).

- **Economy:** Bike and pedestrian facilities bring customers to the front door of businesses. Safe and convenient pedestrian and bicycle access enables more individuals full participation in the economy and bike paths can create economic vitality in the towns and neighborhoods through which they pass.
 - **Developments that support walking and bicycling are highly valued.** A recent study of market appreciation for clustered housing in Amherst and Concord, Massachusetts **found that clustered housing with permanently-protected open space appreciated at a higher rate than conventionally-designed subdivisions.** In both Amherst and Concord, the homes in the clustered developments yielded a higher rate of return, even though the conventional subdivisions had considerably larger lot sizes (<http://www.nps.gov/pwro/rtca/propval.htm>)
 - **Communities that enable biking and walking have lower transportation costs per capita, leaving more disposable income available to go into the local economy.** It is estimated that the average annual cost to get around in a car oriented city (Houston) is \$8000 versus a cost of \$5000 in a walkable/bikeable city (Chicago).
 - **Walkable and bikeable communities are communities of choice.** Richard Florida in his research and books on the creative class, indicates that a disproportionate number of educated, creative knowledge workers choose to live in dense communities that enable walking and bicycling.
 - **Convenient walking and bicycling enables more individuals to participate in the economy.** Those who are unable to drive or who cannot afford a car are limited in their ability to access our economy. Walkable and bikeable development and infrastructure provides access to jobs and commercial areas, enabling everyone to participate in the economy.
 - **Trail-Oriented Development (TrOD)** is an emerging planning tool that seeks to combine the active transportation benefits of a trail with the revitalization potential associated with well-designed and well-managed urban parks to help create more livable communities. In much of the same way that transit oriented development (TOD) aims to build places where people can live, shop and travel from a string of centralized community centers, TrOD aims to provide a network of local business and housing

choices within a web of safe and enticing trails. The amenity of the trail provides a pull for home buyers and a new market for local businesses (Rails-to-Trails, “From Trail Towns to TrOD: Trails and Economic Development”, 2007).

- **Trails revitalize neighborhoods.** In Minneapolis, the Midtown Greenway has spurred development of new housing and businesses to take advantage of the desirable location adjacent to the trail (Rails-to-Trails, “From Trail Towns to TrOD: Trails and Economic Development”, 2007). Most communities report increases in property values along trails.
- **Bicycle tourists**, a growing, affluent segment of the tourist market, **contribute significantly to local businesses** that are well-connected to trails. Along the Virginia Creeper Trail, a 17 mile (one way) "retired" railway corridor of the Virginia - Carolina Railroad in southwest Virginia, visitors spend \$1.59 million annually providing an estimated 27 full time jobs (Rails-to-Trails, “From Trail Towns to TrOD: Trails and Economic Development”, 2007). A study of the Farmington Canal trail in our region indicates the annual impact of this trail may be \$4 million or more. (Farmington Valley Trails Council).
- **A variety of bicyclists provide smaller economic impacts.** Large group rides, bicycling events, local visitors, and day-trippers all purchase food and drinks along a trail and prompt return trips to visit other interesting features in the neighborhood. These impacts will probably not lead to new businesses or jobs, but they can **make existing businesses more profitable** (“The benefits of Bicycling in Minnesota”, Final Report, pg 21).
- **Environment:** Motor vehicles are the chief producers of greenhouse gases. Providing safe bicycle and pedestrian facilities provides more people with the opportunity to forego automobile trips.
 - **Private automobiles are responsible for 62% of transportation-related CO2 emissions** (EPA, 2006).
 - **Larger highways lead to increased CO2 emissions.** Although some suggest adding lanes to a highway will reduce greenhouse gas emissions by easing congestion, the reality is that the **increased emissions from highway construction and additional vehicle travel over time can increase CO2 emissions.** In other words, adding one mile of new highway lane will increase CO2 emissions by more than 100,000 tons over 50 years in an urban area. At current rates of emissions, 100,000 tons of CO2 equals the 50-year climate footprint of about 100 typical residents (Sightline Institute, 2007).

- **Vehicle Miles Traveled (VMT) drives increasing emissions.** While improved fuel efficiency and alternative fuels are a vital part of a comprehensive transportation climate change strategy, rising VMT has long been the driver of increased emissions. VMT is forecast to grow by 59% by 2030 and can be reduced by 20 to 30 percent from increased transit use, walking and bicycling as modes of transportation (Rails-to-Trails, “The Short Trip with Big Impacts: Walking, Biking and Climate Change” 2007). The state of Connecticut, in its Climate Change Action Program has identified increasing vehicle miles traveled (VMT) as a key area for continued growth in greenhouse gas emissions. And the report goes on to say that **“Connecticut’s increasingly cleaner cars will be overshadowed by the fact that we continue to drive more.”** Providing safe bicycle and pedestrian facilities will provide more people with the opportunity to forego automobile trips. Studies have found that 5 to 15 percent fewer vehicle miles are traveled in communities with good walking and cycling conditions than in more automobile dependent areas.
- **Investments in facilities DO lead to mode shift.** Portland has built more than 100 miles of trails and bike lanes since 2001. This and earlier investments in infrastructure and programming have resulted in a quintupling of bike miles traveled over the last 15 years (Rails-to-Trails, “Walking and Biking as Mainstream Transportation Choices” 2007).
- **Five to 15 percent fewer vehicle miles are traveled in communities with good walking and cycling conditions than in more automobile dependent areas** (Rails-to-Trails, “The Short Trip with Big Impacts: Walking, Biking and Climate Change” 2007).
- **Family and Community:** Quality of life, providing a safe place to learn to ride a bike, spending time with family away from the TV, making connections with your neighbors, fostering pride: walkability and bikeability build community. Surveys, both national and local, have consistently shown that more people want to live in walkable and bikeable communities.
 - **People want to live in walkable and bikeable communities.** A recent survey conducted by Smart Growth America and the National Association of Realtors indicates that for 72% of the population, having sidewalks and places to walk is an important factor when buying a home. A 2000 Regional Development Issues Survey, conducted for CRCOG by the Center for Survey Research and Analysis at the University of Connecticut indicated that in all three communities surveyed (Hartford, West Hartford, and Suffield), strong majorities (86%, 81% and 65% respectively) agreed that more places where people can walk, rather than drive, from their home to shops, work, and recreation are needed.

- **Providing places to walk, bicycle and congregate builds the social capital of a community.** Sidewalks connect neighborhoods and people with places, they enable neighbors to meet and connect with each other. Trails create active transportation and recreation opportunities by providing people of all ages with attractive, safe, accessible places to bike, walk, hike, jog, skate or ski (Rails-to-Trails Conservancy, “Healthy Places for Healthy People: Active Transportation and Health” 2007).
- **Automobile transportation levies a community cost:** in downtown Hartford and throughout the region significant land parcels lay fallow, serving only as parking lots.
- **Bike facilities can create “quality of life benefits” or “option value benefits”.** A bicycling facility can create recreational and even transportation options for residents that were not previously available. Having the options available has value to people even when they are not using them; the possibility of a bicycle ride is one valuable option, and bicycle facilities can also be used for other activities such as walking, running, and skating (“The benefits of Bicycling in Minnesota”, Final Report, pg 20).
- **Individual Benefits:** The benefits that accrue to an individual who changes their mode of travel to biking or walking are significant.
 - **Health Benefits:** Whether normal weight, overweight, or obese, physically inactive persons are 2 to 3 times more likely to die prematurely than those who are active (Journal of the American Medical Association, 1999).
 - **Economic Benefits:** Many people think that the cost of driving a car is the cost of gas alone. According to the AAA’s 2006 edition of “Your Driving Costs” study shows the overall **average cost of owning and operating a passenger vehicle is \$6,500 a year** based on 10,000 miles of driving and \$3 a gallon gas. This includes costs related to licensing, registration, taxes, insurance, routine maintenance, finance charges and interest if the vehicle is financed. This translates into the average family spending 15% to 20% of its income on automobile ownership and operation.

Quantifiable Benefits We Can Achieve

To analyze the potential for a shift in travel choice from motor vehicle to walking and biking, we looked at the transportation patterns in the CRCOG region, other communities in the United States, and the United States as a whole. A combination of three different sources of data was used in our analysis: the CRCOG Transportation Model, US Census figures, and the National Household Travel Survey. Each data source has its own strengths and weaknesses, but by combining the information, we estimate that we can realize significant savings in emissions and

fuel costs by achieving a reasonable mode shift to walking and bicycling. (Appendix D includes a detailed summary of how the estimates were derived.)

The CRCOG Transportation Model is the best estimate we have of travel within our local region. These numbers were culled specifically from the 29 CRCOG towns only. The model gives a good approximation of current commuter trips made by car or transit, but does not include bike and pedestrian trips. In addition, it is not designed to address short trips and therefore underestimates trips less than one mile.

The US Census figures give specific transportation numbers for our cities and towns, including bicycle and pedestrian statistics, but report commuting trips only. We used data from both the 1990 and 2000 Census, as well as the 2006 American Community Survey (ACS). The ACS is completed in between official census years, and provides more current, but less detailed travel statistics. Like the Decennial Census, it does not report non-work related trips. The definition of “Greater Hartford” can shift between census years making it difficult to get some data on the level of individual CRCOG towns. That said, the US Census and ACS data is the most complete data we have on commuting trips.

The National Household Travel Survey (NHTS) is a national survey performed most recently in 2001 in an attempt to give a comprehensive picture of all personal travel by Americans, including all modes and reasons for travel. This data includes bicycle and pedestrian counts and is our best estimate of short distance and non-work related trips.

Shifts from commuter trips: Using these three sources, we estimated the potential mode shift to bicycling and walking in the region. Looking first at work trips, we estimate that **5,000 to 10,000 commuters** can be expected to **shift to bicycling**, if investments are made in bicycle facilities and encouragement, education, and enforcement programs. While this represents a four to eightfold increase in bike commuters over the 2006 census update, we believe that this is realistic. Achieving the lower estimate is based upon the region having equivalent growth in its bicycle commute mode rate as was experienced in Portland, Oregon from 2000 to 2006, a time in which Portland focused on creating a network of bicycle lanes. Achieving the higher number is based upon the region achieving the actual mode share experienced in these other cities in 2006: Madison, WI, Portland, OR, and Boulder, CO. Each of these comparison cities experience inclement weather in the winter, so the comparison does not seem far fetched. Looking closer to home, we examined the bicycle commute mode rate for the census blocks accessible to the Charter Oak Greenway in Manchester. Looking only at workers who commute to downtown Hartford, we find that in the 2000 Census (we are unable to get detailed town by town information in the 2006 update), this group already had a mode share for bicycling 10 times the regional average, again making our high estimate appear reasonable. Finally, we used a method recommended by the Federal Highway Administration to estimate possible bike commuters by

looking at the potential bicycle commuting population, those between the ages of 22 and 44. This again resulted in an estimate of 10,000 likely additional bike commuters.

Commute trips are extremely important when we consider shifting trips to other modes. While many more miles of travel are made on a daily basis for trip purposes other than work, work trips occur in the time periods that our roads are most heavily used, and subtracting trips during these periods has the greatest positive impact upon the operation of the transportation system.

Shifts from non-work related trips: Even though non-work related trips have less of an effect on peak travel periods, they are still important to consider if we want to understand the potential impact of investing heavily in bike and pedestrian facilities and programs. According to the National Household Travel Survey, work related trips represent less than 20% of all the trips that take place on a daily basis. Furthermore, the NHTS indicates that approximately 40% of trips are 2 miles or less and 70% of all trips are under 5 miles in length with over 80% of all trips under 5 miles being made in a motor vehicle. This indicates a vast pool of trips that might be converted to bicycling and/or walking. To estimate the potential shift in trips, we examined the mode share for walking, bicycling and motor vehicle (according to the NHTS) for trips of various lengths. Assuming that we could **increase bicycling and walking** mode share for **non-work trips** less than 5 miles by 10%, we estimate that we could eliminate **32,000 daily vehicle miles travelled (VMT)**. Looking at auto trips and assuming that we might shift as many as 1% of auto trips under 5 miles to biking and walking results in a daily **VMT savings of 67,000**. Finally estimating “reasonable” mode split percentages for bicycling and walking in each trip length category under 5 miles, we estimate the same daily savings of **67,000 VMT**.

It should be noted that the above estimates do not include estimations of increases in walk/transit and bike/transit trips, which we would expect to be significant, if this plan is implemented.

To assure that our calculations of resultant benefits are conservative, we have evaluated a range of savings in total VMT, fuel, and emissions saved, by assuming a low of 5,000 commuters and 32,000 daily VMT savings to a high of 10,000 commuters and 67,000 VMT. We expanded the daily estimates of change in travel to annual numbers by assuming that the daily totals can be applied 3 days a week and 40 weeks out of the year. This acknowledges weather issues. We also assume that the average bike commute trip length is 4 miles in each direction. The results of this calculation are summarized on the next page.

Table 4

Estimate of Benefits

Estimated Reduction in Emissions and Fuel Use for Mode Shift to Bicycling and Walking	
Greenhouse Gas Emissions (lbs.)	8.8 to 17.4 million
NO_x (lbs.)	11,000 to 21,000
Hydrocarbons (lbs.)	7,000 to 14,000
Carbon Monoxide (lbs.)	142,000 to 278,000
Fuel (gallons)	440,000 to 870,000
Fuel (cost)	\$1.3 to \$2.6 million

How significant are these savings? This savings is based on an annual reduction in vehicle miles of travel (VMT) of 8.8 to 17.4 million. This compares quite favorably with projections for VMT reductions estimated for transit investments such as the New Britain Hartford Busway. Investments in a walkable/bikeable region are likely to enable even higher mode shifts for such transit projects.

Chapter 5 Recommendations

What needs to be done?

How can our region become a truly walkable and bikeable place, a place where walking and bicycling are feasible modes of transportation? This chapter summarizes the actions that need to be taken to transform the region. The actions are listed in topical areas and not in priority order (with the exception of the Trails recommendations, listed in Recommendation 4). A proposed implementation schedule is contained in Chapter 6.

Studies and experience in other regions have demonstrated that, in order to be successful, a pedestrian and bicycle plan must include strategies in the four “Es”, Engineering, Education, Encouragement, and Enforcement. While improvements to infrastructure are vital, if they are not accompanied by efforts in the other areas, the infrastructure improvements will not realize their full potential. What is meant by the 4 “Es”?

- **Engineering** – building a better environment for walking and biking. This also includes tasks related to reaching out to decision makers and designers and planners regarding bicycle and pedestrian design.
- **Education** – teaching pedestrians, bicyclists and motorists how to operate safely.
- **Encouragement** – special events and activities that get individuals on their feet or on their bikes. These efforts can raise awareness of the possibilities for walking and bicycling and help individuals get over qualms they have about changing their travel habits. An important element in encouragement is emphasis on the benefits of walking and bicycling to the individual and to the community.
- **Enforcement** – enforcing existing traffic laws to make it safe to walk and bicycle. Enforcement is an important supporter of education, reinforcing share the road messages.

Our Recommendations are arranged by the 4 Es in the listing below:

Engineering

Complete Streets: The best strategy for the creation of a world class bicycle and pedestrian infrastructure is the region wide adoption of a **Complete Streets policy**. Complete Streets is a movement that has been gaining steam over the past several years with many states and cities around the country adopting complete streets policies. Put quite simply, complete streets acknowledges that our roads and streets have many users and can only be considered complete if they meet the needs of all users. A road that handles motorized traffic effectively and efficiently, but does not provide for bicyclists, pedestrians, or transit users, is incomplete. **A complete**

street is one that provides safety and convenience for all road users: pedestrians, bicyclists, transit users, and motorists.

Recommendation 1: CRCOG will work with three towns per year to encourage the **adoption of Complete Streets policies**. We will develop information on the basics of such a policy, the impact and benefits of complete streets, and how complete streets can be implemented. We intend to make presentations to Planning and Zoning Commissions and Town councils to help them understand the importance of bike and pedestrian facilities, in particular, the importance of sidewalks. CRCOG will also work with a subcommittee of town engineers and bicycle/pedestrian advocates to develop a regional complete streets policy, that will take the place of the June 2001 *CRCOG Policy Statement on Integrating Bicycling and Walking into the Transportation Infrastructure*.

Pedestrian Facilities: This plan does not attempt to identify all the deficiencies in the existing pedestrian infrastructure, but lays out a framework for identifying and prioritizing needs so that as funding becomes available, we can select the most critical projects to move forward.

Our survey told us what pedestrians in the region are looking for, and our pedestrian safety study emphasized the need for safer facilities:

- New development patterns that make walking feasible
- Improved facilities:
 - Providing safe and convenient access to commercial areas
 - Wider sidewalks
 - Sidewalks with better separation from cars
 - More sidewalks
 - Pedestrian crossings that are safe and convenient
 - Improved access to transit
 - Other amenities: benches and lighting

Already, many of the region's towns have identified sidewalk gaps and localized areas where pedestrian safety is a concern. We know that safe and accessible pedestrian facilities are essential for all but are particularly necessary for the mobility of disabled individuals. In developed town centers and downtowns with extensive sidewalks already in place, the issues are largely related to midblock crossings, and convenience and accessibility (especially for persons with low or no vision) of signalized intersections. In more suburban, developing communities there is a recognition of the need for completion of sidewalk systems in traditional town centers, with many concerns about providing for safe crossings. Also, there is growing awareness that

suburban developments of all types – retail, hotel, office – require pedestrian infrastructure. Examples of this need include:

- Route 75 near the airport. The restaurants and hotels in this corridor are staffed by many individuals who rely upon the bus to get to work, but there are no sidewalks or designated crossings enabling them to safely access the bus stops. In addition, hotel patrons are limited in their ability to walk to nearby restaurants.
- Day Hill Road corporate office area. This area was designed assuming that all employees would arrive via private automobile. However, many employees rely upon transit, or would like to use transit to get to work. In addition, with increasing development, it is important for the continued success of this area that it not be solely dependent upon auto access. A lack of sidewalks and pedestrian infrastructure limits the ability of transit to effectively serve the area.
- Route 44 shopping areas in Avon, Simsbury and Canton illustrate the problems faced by many retail corridors in the region. While primary access to the area is via automobile, there are individuals who attempt to walk to retail locations or between retail locations and there is little infrastructure to safely accommodate them.
- Berlin Turnpike in Newington. This high speed roadway has heavily used commercial and shopping areas and many individuals access the commercial areas via public transit. It is very difficult to safely cross the road or walk along side the road. In addition, residents of nearby neighborhoods cannot safely walk to the businesses along the corridor.

Recommendation 2: CRCOG will **provide resources to towns** to assist them in developing listings of pedestrian facility needs:

Recommendation 2.1: Create a **survey document** that can be used by town staff or advocacy groups to identify pedestrian infrastructure needs. This will be based upon available survey documents and checklists and will be modified for local use. With this instrument, municipalities will be able to identify specific pedestrian projects needed in the region.

Recommendation 2.2: Develop **regional design guidelines** and guiding principles for pedestrian facility design. These will be based upon published sources and CRCOG will work with the towns to develop a document specific for our area. They will address the need for pedestrian infrastructure to provide for safety, convenience and comfort. They will address considerations when developing Plans of Conservation and development. This will also include the production of a **checklist for siteplan review**. The developed documents will be

suitable for use by staff and policy makers. This task will include the compilation of ordinances and policies from the region having to do with sidewalks.

Recommendation 2.3: Data collection: currently there is a scarcity of data on pedestrian volumes and data on pedestrian/motor vehicle crashes is difficult to access. CRCOG will develop a biennial program for sampling pedestrian volumes to provide a measure of pedestrian activity and to allow a focus upon areas with high levels of activity. CRCOG will also work with our Public Safety committee and an ongoing DOT effort to improve access to crash data to create more readily available pedestrian accident data.

Recommendation 2.4: Develop **selection criteria** for pedestrian infrastructure projects. This will be used to prioritize identified projects so that as funding becomes available, we are ready with a list of needs. Priorities that will be reflected in the criteria include access to commercial areas, transit, schools (including colleges), parks, and municipal facilities.

Recommendation 2.5: CRCOG will continue to offer its **Safe Routes to Schools workshop series** on an annual basis. This program helps towns to identify pedestrian safety issues on routes to schools.

Recommendation 2.6: CRCOG will serve as a **clearinghouse for grant information** for pedestrian projects, and will disseminate information to towns.

Bicycle Facilities: Facilities are extremely important in getting more people bicycling for regular transportation. Our survey results affirm what much research has shown – for those who do not bicycle regularly, riding on the road mixed with traffic is a frightening proposition. Those who ride more regularly develop skills and confidence for riding with traffic, but they still desire that the roads have facilities that provide space for them, like bicycle lanes or wide shoulders. In addition, those who bicycle for regular transportation note the need for secure bicycle parking facilities and for bicycle commuters, there is a need for shower facilities.

Recommendation 3: CRCOG will **provide resources to towns** to assist them in understanding bicyclist needs and in designing bicycle facilities:

Recommendation 3.1: Develop **regional design guidelines** covering trails, on road bicycle facilities, and bike parking facilities (including signage). Utilizing published sources (including the AASHTO Guides for bicycle and pedestrian design, and Institute of Transportation Engineers resources) and working with the region's towns, CRCOG will develop a guideline that compiles information in an easy to use format and that references the published guides for more detailed information. This guide will reflect local experience with bike facility

development and will include a **checklist for site plan review**. It will address considerations when developing Plans of Conservation and Development. The developed documents will be suitable for use by staff and policy makers.

Recommendation 3.2: Develop **regional trails maintenance guidelines**: Maintenance of trails is an ongoing task which can pose difficulties for both small towns and large municipalities. This guide will highlight positive approaches undertaken in the region, through volunteers and cooperative efforts, to minimize maintenance costs and the burden upon local government.

Recommendation 3.3: Data collection: currently there is a scarcity of data on bicycle volumes and data on bicycle/motor vehicle crashes is difficult to access. CRCOG will develop a biennial program for sampling bicycle volumes to provide a measure of bicycle activity and to allow a focus upon areas with high levels of activity. CRCOG will also work with our Public Safety committee and an ongoing DOT effort to improve access to crash data to create more readily available bicycle accident data.

Recommendation 3.4: Develop **selection criteria** for bicycle infrastructure projects. This will be used to prioritize projects so that as funding becomes available, we are ready with a list of needs. Priorities that will be reflected in the criteria include access to commercial areas, transit, schools (including colleges), parks, and municipal facilities.

Recommendation 3.5: CRCOG will continue to offer its **Safe Routes to Schools workshop series** on an annual basis. This program helps towns to identify bicycle safety issues on routes to schools.

Recommendation 3.6: CRCOG will host a **regional workshop** on how to become a League of American Bicyclists recognized **Bicycle Friendly community**. The LAB recognitions are highly sought by towns and are useful in identifying the kind of actions needed to become bicycle friendly. Consider developing a friendly competition among towns as to who is the most bicycle friendly.

Recommendation 3.7: CRCOG will serve as a **clearinghouse for grant information** for bicycle projects, and will disseminate information to towns.

Recommendation 4: Complete Multi-use Path Systems in the region. Figure 1 shows the multi-use path system as it currently exists. Figure 1 also shows those paths that are currently under consideration by the region's towns (some of these are further along in development than others.) Currently the path (or trail) system is incomplete, with trail segments constructed but many gaps that limit usefulness. The Farmington Canal system, which runs in a north south direction in the Farmington Valley, and the Manchester and Vernon trail systems are the most complete. It should be noted that while the multi-use trail system provides for both pedestrians and bicyclists, we address it here under bicycle facilities because of its ability to accommodate longer trips.

The discussion below gives an overview of the current plans for trail development in the region. The trail recommendations are listed in priority order. Recommendation 4.1, complete the East Coast Greenway, is the highest trail priority. Recommendation 4.2 is the next priority, and so on. Depending upon funding availability and community support, trails with a lower priority might jump to the top of the list after this plan is adopted. But the intent is to focus upon the higher priority trails initially and to make funding decisions based upon these priorities. It is important to recognize that in some cases, closure of very small gaps in bike access can have a very large payoff in enabling large numbers to bicycle. Further, it is important to note that attention needs to be paid to trail heads and parking needs, in order to have a well functioning trail system.

Recommendation 4.1: Complete the **East Coast Greenway** through the region. The East Coast Greenway is a multi-state multi-use trail proposed to be built from Maine to Key West. The proposed route through the Hartford region will link the Hop River trail in Bolton, the Charter Oak Greenway in Manchester and East Hartford, and the Farmington Canal trail in the Farmington Valley. The gaps are illustrated in Figure 2 and consist of the following:

- The link from Bolton Notch to the current trail end in Manchester. Much of the design work has been completed for this section and funding is available to extend from the current Manchester terminus to Porter Street. Funding for remaining design and construction is needed.
- The link from the Forbes Street terminus in East Hartford to downtown Hartford. Much of this segment has been designed and some funding is available for construction, but there appears to be about a \$2 million dollar gap.
- From downtown Hartford the trail will proceed in a northwesterly direction, making use, possibly, of the North Branch of the Park River corridor and the Griffin Rail corridor. This link will go through Bloomfield to Tariffville and

link with the Farmington Canal Trail in the vicinity of Route 315 and Route 10. Preliminary feasibility and design work needs to be done on this trail.

- Small gaps on the Farmington Canal trail (bridges in Suffield and East Granby) are slated to be completed this summer, but there may be a funding gap (in 2007, bids for this work had to be rejected for lack of sufficient funds.) While these trail segments are actually outside of the East Coast Greenway designated portion of the Farmington Canal Trail, they are essential for the completion of the Canal Trail.
- The Farmington Canal trail has a gap at its southern end, through southern Farmington and Plainville (note: Plainville is outside of our region). In Plainville, the trail corridor has active rail complicating the development of a trail. Preliminary feasibility and design work needs to be done on this trail.

Recommendation 4.2: Complete trails that can serve as **effective bicycle commute routes** focusing upon downtown Hartford. See Figure 2 for general trail locations. This recommendation includes trails extending north and south along the Connecticut River. The Town of Windsor has recently received funding for a trail that would extend from the Bissell Bridge to the Hartford line. Riverfront Recapture is interested in linking this trail to its existing trail system. This connection, from the Bissell Bridge to downtown Hartford, will open up large areas for convenient and safe bicycle commuting on both the east and west sides of the Connecticut River. Goodwin College, as part of their riverfront campus development, plans to create a system of bicycle paths. Their proposed bicycle path, extending from their campus to the vicinity of High Street in East Hartford, creates a convenient link to neighborhood streets in both East Hartford and Glastonbury.

Recommendation 4.3: Extend other existing trail systems. These links are illustrated generally in Figure 2 and include the following:

- The Farmington River Trail: This trail is missing a vital link that will connect Farmington to Collinsville, without the need to cross Route 4. The Route 4 underpass is already in place, but the trail terminates right after the underpass. Construction funding is needed for this link.
- The Trout Brook Trail: This trail will provide a north south spine in the Town of West Hartford. This link is important because it will provide off road access to the town center. Pieces of the trail have been constructed, a segment

will be built using federal STP funding, and the town is planning to use its own capital funding for some segments.

- The New Britain Busway trail: This trail will be built as part of the New Britain Busway project; the trail will extend from downtown New Britain to Newington Junction (near Willard Avenue and the railroad tracks.)
- The South Branch of the Park River Trail: this trail, when complete, will link Capitol Avenue (near Laurel Street) to Newfield Avenue, just north of New Britain Avenue. The first segment is slated to be built in the summer of 2008. Funding is needed for construction of the remainder of the trail.
- Hebron Avenue Path: Glastonbury has plans to construct a trail that will provide a pathway that generally parallels Hebron Avenue. This roadway is very threatening for bicyclists so the path will provide a much needed connection. A small segment is already complete and the town is proceeding with designing a second segment. Funding for construction is needed.
- Connecticut River Trail: connection from the Bissell Bridge north to Windsor Center.

Recommendation 4.4: Continue local trail development. Several towns have plans to develop trail systems. These are identified generally in Figure 2 (Figure 1 shows some of the specific trail proposals, but not all). This includes:

- Continuation of the Connecticut River Trail south and north from Hartford, on both sides of the river.
- Development of trails in South Windsor utilizing open space land and utility rights of way.
- Development of a town center trail in Tolland linking the high school with the town center.
- A trail linking Glastonbury and Marlborough, where the limited access nature of Route 2 in this location prohibits bicycle use of the roadway and results in lengthy detours for cyclists.
- Development of a trail system in Marlborough, utilizing various open space and park land.

- Continue the investigation of potential trails (these are not shown in Figure 6), including:
 - The rail line through South Windsor, East Windsor and Enfield.
 - The Beaver Brook Corridor in Wethersfield.
 - A corridor in Tolland that roughly parallels I-84 between exits 67 and 68.

Recommendation 4.5: Create a **regional trails fund**. This fund will provide a vehicle for private donations for the development of trails. This fund might be housed in the CRCOG Foundation. There has been no concentrated effort in the region to solicit or allow for individual and corporate donations to trail development and there appears to be great potential for this.

Recommendation 4.6: Coordinate inter-town and inter-regional cooperation on bicycle facility development.

Recommendation 5: Create an **on road bicycle network**. While this plan recommends a system of multi use paths, the road network will continue to serve as the backbone of the region's bicycle infrastructure. Ideally, all roads will eventually include safe pedestrian and bicycle accommodations. Until that time, every transportation project should be considered an opportunity to improve bicycle and pedestrian accommodation. The on road bike network, described below, focuses attention upon the main routes needed to link the region. We will place a special emphasis on these routes, evaluating how they can be made safer for bicyclists. In some cases, the use of short road segments to fill gaps in trails or bike lane systems can have a very large payoff in enabling large numbers to bicycle.

This on road network should not preclude designers, planners, or engineers from considering possible bicycle improvements on roads that are not included on the network. Every transportation project should be considered an opportunity to improve bicycle and pedestrian safety.

Recommendation 5.1: Adopt on road bicycle network. Figure 3 identifies the on road network, those roads that are needed to provide effective linkage for bicyclists between towns and to commercial locations within towns. Figure 4 shows the on road network plus the multi use path network, illustrating the linkages between these two systems. It should be noted that the on road network

does not represent recommended bicycle routes. These roadways need to be examined to determine if they are currently adequate for bicyclists and if not what improvements will be needed. It is an important planning tool for the towns and for the state Department of Transportation. The map, with a list of roadways, will be provided to the towns and the DOT so that they take a serious look at bicycle needs when new developments are proposed. These roads are important to bicyclists and new developments on these roadways should consider bicycle access. While all road improvement projects should examine whether bicycle safety can be improved as part of the project, these routes should receive special attention, and improvements in bike accommodations on these roads are essential if we wish to have an effective bicycle network.

It should be noted that the recommended on road network is currently deficient in downtown Hartford. Roads that access downtown are identified, but routes within downtown have not been identified. This will require further work with the City of Hartford.

Recommendation 5.2: Evaluate on road network, evaluate the suitability of the roads on the on road network and identify needed improvements. Begin with a focus upon access to jobs, evaluating the segments of the on road network that serve major employment locations. Special attention should also be paid to those locations where topography and road layout limit options for bicycle travel (for example, Route 4 in Farmington, where there are no parallel suitable roads for travel to the east.) Using the bicycle level of service tool identify deficiencies. Based upon road type (volume, speed), identify preferred bike facility. Where roads are currently adequate for bicycle use, identify them as bicycle routes. The interim on road route for the East Coast Greenway should be designated with signs.

Recommendation 6: Provide other needed bicycle facilities.

Recommendation 6.1: Develop a campaign for a proliferation of bicycle racks. Currently the region has a deficiency of bicycle racks and other secure bicycle parking. The City of Hartford was recently awarded Congestion Mitigation and Air Quality (CMAQ) funding for the installation of bicycle racks and lockers. There are no other ongoing programs promoting the installation of bicycle racks.

Recommendation 6.2: Provide **bike stations** at two locations. A bike station is a facility providing indoor bicycle storage and shower and locker space for bicycle commuters. Frequently, bike maintenance shops are also provided. In

Chicago a police substation is co-located in a bike station. We propose two bike stations, one to be located in downtown Hartford, and one in the Day Hill Road corridor, where there is a concentration of employment, second only to downtown Hartford, and where many residential neighborhoods are located within easy bicycling distance.

Education

Building bike lanes, trails, sidewalks and other facilities are important, but providing facilities alone will not cause vast numbers of people to change their travel mode. One of the big stumbling blocks in encouraging individuals to try bicycling and walking for regular transportation is that they feel very vulnerable to motor vehicle traffic, even with facilities provided. Furthermore, many pedestrians, bicyclists and motorists do not have a clear understanding of their respective rights and responsibilities on the streets and highways. Therefore, educational programs targeting all three groups: motorists, pedestrians, and bicyclists, are essential. Efforts designed to educate system users about basic traffic laws need to be made regularly and will require ongoing collaboration between citizens, interest groups, and government agencies.

Getting the public to safely use the facilities by teaching safe user skills and demonstrating that walking and biking provides real benefits are equally important and support behavior change.

Our strategy in the education area is to build upon existing programs and to build coalitions where this is possible.

Recommendation 7: Educate Pedestrians: The focus will be upon the City, where there are more pedestrians and will focus on crosswalk law, the meaning of pedestrian signals, and how to be visible at night.

Recommendation 7.1: Elementary level: Create a **pedestrian safety education resource kit** to be distributed to each town. This will show where resources can be obtained, types of resources, curriculum, and local resources. This will include an investigation of current elementary education programs on pedestrian safety (and will be done in combination with the development of the bicycle safety education resource kit.)

Recommendation 7.2: Modify the FHWA Pedestrian Safety Campaign Planner for use locally. The initial focus will be on developing signs that can be used as posters that can be distributed to social service and city agencies.

Recommendation 8: Educate Bicyclists: This recommendation has several different elements, focusing upon different types of bicyclists

Recommendation 8.1: Elementary level: Create a **bicycle safety education resource kit** to be distributed to each town. This will show where resources can be obtained, types of resources, curriculum, and local resources. This will include an investigation of current elementary education programs on bicycle safety (and will be done in combination with the development of the pedestrian safety education resource kit.)

Recommendation 8.2: Middle and high school level: Build on the success of the Berlin High School bicycle education program. This will involve reaching out to other schools with a proven program that can be included as part of a high school physical education class. The Berlin program operates in this way – the school has a fleet of bicycles and helmets that can be used in the program. Students sign up for the class as a physical education class. The curriculum has been developed and is available for use by others. For the program to be successful, funding is needed to cover the Berlin teacher’s cost when he travels to other schools to explain the program, and to cover the cost of refurbishment of bicycles to be used in the program. The Central Connecticut Bicycle Alliance will be a partner in the development and implementation of this program.

Recommendation 8.3: Adult Education. Adopt the League of American Bicyclists Cycling Instruction Program as the regional standard. In cooperation with the Central Connecticut Bicycle Alliance, work to train 10 League Cycling Instructors (LCIs) in the first 12 months of this plan. Subsequently work with the CCBA to insure that at least 5 basic cycling classes are taught in the region each year. Utilize all opportunities (biking events, bike shops, bike cooperatives) to distribute share the road literature.

Recommendation 9: Educate motorists and the general public: There is compelling need for education of motorists of the rights and responsibilities of road users, including bicyclists and pedestrians. Many motorists believe that bicycles should not be on the road at all. Few motorists recognize their obligation to yield to pedestrians at crosswalks. The most effective campaign to educate motorists would be one conducted statewide (which would include education of drivers at the time of drivers license renewal), but for lack of such a program, we recommend the following actions be taken locally:

Recommendation 9.1: Print additional **Share the Road brochures** that show how motorists and **bicyclists** can share the road.

Recommendation 9.2: Develop a **pedestrian Share the Road brochure** and have copies printed.

Recommendation 9.3: Create a **media outreach campaign** based upon the share the road brochures.

Encouragement

Encouragement activities are essential if we want to convince individuals to give bicycling and walking a try for regular transportation. Our culture has become so accustomed to the car as the primary means of getting around that those considering biking and walking need an extra push that convinces them that walking and bicycling are doable and are effective ways to get around. For those considering bicycling, frequently they need to get some practice riding in group rides to develop confidence in their skills and abilities. Traffic can be daunting, so encouragement combined with education is usually needed. There are many encouragement activities already taking place in the area and we propose building upon them. It is important the encouragement activities target a variety of ages and income classes and that they take place throughout the region.

Recommendation 10: Build upon programs already existing in the region.

Recommendation 10.1: CRCOG will continue to offer its **Safe Routes to Schools workshop series** annually. This program can be extremely effective in encouraging children to walk and bicycle.

Recommendation 10.2: Work with the **Central Connecticut Bicycle Alliance** to promote its existing programs. The CCBA has taken over the CRCOG **Bike to Work** program and in 2007, held its first annual **Discover Hartford Walking and Bicycling Tour**. These ongoing programs are extremely important in encouraging more bicycle use.

Recommendation 10.3: Provide **towns with resource kits on encouragement programs**. CRCOG will collect information on encouragement programs (organized rides, maps, walkable districts, walking clubs) for distribution to towns. Already our region has some innovative tools: The Manchester Trail Mix Guides (guides to walks around town), Bloomfield Historic Bike Ride guides and others. We will collect information on these programs and others implemented outside our region and put the information into an easy to use format.

Recommendation 10.4: Build on existing wellness programs. Many of the region's large employers have wellness programs in place that encourage employee activity, including walking and bicycling. We will document these programs in a guide that can be distributed to other businesses. We will also work with employers to encourage them to open some of their programs (walking clubs, for example) to others in their neighborhood. We will create a network of companies with active walking and bicycling programs. This will include the development of guidelines for employers on how they can facilitate bicycle commuting.

Recommendation 11: Create a **regional bicycle map**. This task should not be tackled until more of the region's bicycle infrastructure is in place.

Recommendation 12: Develop a centrally **available bicycle rental program**, much like Vel-lib available in Paris.

Enforcement

Enforcement is the final E and it is an essential element in a bicycle and pedestrian plan. Enforcement increases awareness of pedestrians and bicyclists and improves driver behavior. Partnered with a strong share the road campaign, it reinforces the share the road message. Bicyclists and pedestrians told us in our survey that they are very concerned with inattentive drivers. There is a particular need for enforcement related to yielding at crosswalks.

Recommendation 13: Insure that **police officers are well informed** regarding bicycle and pedestrian rights and responsibilities on the road.

Recommendation 13.1: Create a **bicycle and pedestrian law fact sheet** that can be distributed to police officers in the region. This will be designed to fit in a shirt pocket.

Recommendation 13.2: Using successful programs from other states, develop **resources** that can be used for **teaching bicycle and pedestrian safety in the police academy**.

Recommendation 14: Develop a **targeted crosswalk enforcement** program.

Recommendation 14.1: Develop guidelines for targeted crosswalk enforcement.

Recommendation 14.2: Implement a targeted crosswalk enforcement program in at least one municipality per year.

Chapter 6 Next Steps and implementation

The following listing provides a summary of how we expect that this plan can be implemented. It should be noted that if funding becomes available to cover staff cost and design and construction cost, the pace of implementation could be accelerated. This is our best estimate of what can be accomplished year by year. Construction of trails and other facilities will be dependent upon obtaining grant funds.

Items for Implementation in Year 1:

Recommendation 1: CRCOG will work with three towns per year to encourage the **adoption of Complete Streets policies** (year 1 and ongoing).

Recommendation 2: CRCOG will **provide resources to towns** to assist them in developing lists of pedestrian facility needs:

Recommendation 2.1: Create a **survey document** that can be used to identify pedestrian infrastructure needs.

Recommendation 2.4: Develop **selection criteria** for pedestrian infrastructure projects.

Recommendation 2.5: Continue to offer the **Safe Routes to Schools workshop series** on an annual basis (year 1 and ongoing).

Recommendation 2.6: CRCOG will serve as a **clearinghouse for grant information** for pedestrian projects, and will disseminate information to towns (year 1 and ongoing.)

Recommendation 3: CRCOG will **provide resources to towns** to assist them in understanding bicyclist needs and in designing bicycle facilities:

Recommendation 3.4: Develop **selection criteria** for bicycle infrastructure projects. This will be used to prioritize projects so that as funding becomes available, we are ready with a list of needs.

Recommendation 3.5 (same as rec. 2.5): Continue to offer the **Safe Routes to Schools workshop series** on an annual basis (year 1 and ongoing).

Recommendation 3.6: **Regional workshop** on how to become a League of American Bicyclists recognized **Bicycle Friendly community**.

Recommendation 3.7: CRCOG will serve as a **clearinghouse for grant information** for bicycle projects, and will disseminate information to towns (year 1 and ongoing).

Recommendation 4: Complete Trail Systems in the region.

Recommendation 4.6: Coordinate **inter-town and inter-regional cooperation** on bicycle facility development (year 1 and ongoing).

Recommendation 5: Create an on road bicycle network.

Recommendation 5.1: Adopt on road bicycle network.

Recommendation 8: Educate Bicyclists

Recommendation 8.3: Adult Education: train 10 League of American Bicyclists Cycling Instructors (LCIs).

Recommendation 9: Educate motorists and the general public:

Recommendation 9.1: Print additional **Share the Road brochures** that show how motorists and **bicyclists** can share the road.

Recommendation 10: Build on encouragement programs already existing in the region.

Recommendation 10.1 (this is the same as recommendations 2.5 and 3.5): Continue to offer the **Safe Routes to Schools workshop series** on an annual basis (year 1 and ongoing).

Recommendation 10.2: Work with the **Central Connecticut Bicycle Alliance** to promote its existing programs (year 1 and ongoing).

Items for Implementation in Year 2

Recommendation 2: CRCOG will **provide resources to towns** to assist them in developing listings of pedestrian facility needs:

Recommendation 2.2: Develop **regional design guidelines** and **guiding principles for pedestrian facilities** and a **checklist for site plan review**.

Recommendation 2.3: Pedestrian **data collection**

Recommendation 3: CRCOG will **provide resources to towns** to assist them in understanding bicyclist needs and in designing bicycle facilities:

Recommendation 3.1: Develop **regional design guidelines** for bicycle facilities and a **checklist for site plan review**.

Recommendation 3.2: Develop **regional trails maintenance guidelines**.

Recommendation 3.3: Bicycle **data collection**.

Recommendation 5: Create an **on road bicycle network**.

Recommendation 5.2: Evaluate **on road network** (year 2 and ongoing)

Recommendation 7: Educate Pedestrians:

Recommendation 7.1: Elementary level: Create a **pedestrian safety education resource kit** to be distributed to each town.

Recommendation 8: Educate Bicyclists

Recommendation 8.1: Elementary level: Create a **bicycle safety education resource kit** to be distributed to each town.

Recommendation 8.2: Middle and high school level: facilitate development of classes and clubs.

Recommendation 8.3: Adult Education: with the newly trained cycling instructors, facilitate the conduct of regular adult bicycling classes.

Recommendation 9: Educate motorists and the general public:

Recommendation 9.2: Develop a **pedestrian Share the Road brochure** and have copies printed.

Items for Implementation in Year 3

Recommendation 6: Provide other needed bicycle facilities.

Recommendation 6.1: Develop a **campaign for a proliferation of bicycle racks**.

Recommendation 7: Educate Pedestrians:

Recommendation 7.2: Modify the FHWA Pedestrian Safety Campaign Planner for use locally.

Recommendation 9: Educate motorists and the general public:

Recommendation 9.3: Create a **media outreach campaign** based upon the share the road brochures.

Recommendation 10: Build on encouragement programs already existing in the region.

Recommendation 10.3: Provide **towns** with **resource kits on encouragement programs**.

Recommendation 10.4: **Build on existing wellness programs**.

Recommendation 13: Insure that **police officers are well informed** regarding to bicycle and pedestrian rights and responsibilities on the road.

Recommendation 13.1: Create a **bicycle and pedestrian law fact sheet** that can be distributed to police officers in the region. This will be designed to fit in a shirt pocket.

Items for Implementation in Year 4

Recommendation 13: Insure that **police officers are well informed** regarding to bicycle and pedestrian rights and responsibilities on the road.

Recommendation 13.2: Using successful programs from other states, develop **resources** that can be used for **teaching bicycle and pedestrian safety in the police academy**.

Recommendation 14: Develop a **targeted crosswalk enforcement** program.

Recommendation 14.1: Develop guidelines for targeted crosswalk enforcement.

Recommendation 14.2: Implement a targeted crosswalk enforcement program in at least one municipality per year.

Items for Implementation in Year 5

Recommendation 11: Create a **regional bicycle map**. This task should not be tackled until more of the region's bicycle infrastructure is in place.

Multi-year efforts:

Recommendation 4: **Complete Trail Systems in the region**.

Recommendation 4.1: Complete the **East Coast Greenway** through the region.

Recommendation 4.2: Complete trails that can serve as **effective bicycle commute routes**.

Recommendation 4.3: **Extend other existing trail systems.**

Recommendation 4.4: Continue **local trail development.**

Recommendation 4.5: Create a **regional trails fund.**

Recommendation 5: Create an **on road bicycle network.**

Recommendation 5.2: **Continued evaluation of the on road network.,.**

Recommendation 6: Provide other needed bicycle facilities.

Recommendation 6.2: Provide **bike stations** at two locations.

Recommendation 12: Develop a **centrally available bicycle rental program.**