

CONNECTICUT

ACTIVE TRANSPORTATION PLAN



January 2019

*A Plan for the Connecticut
Department of Transportation*



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CHAPTER ONE: BACKGROUND

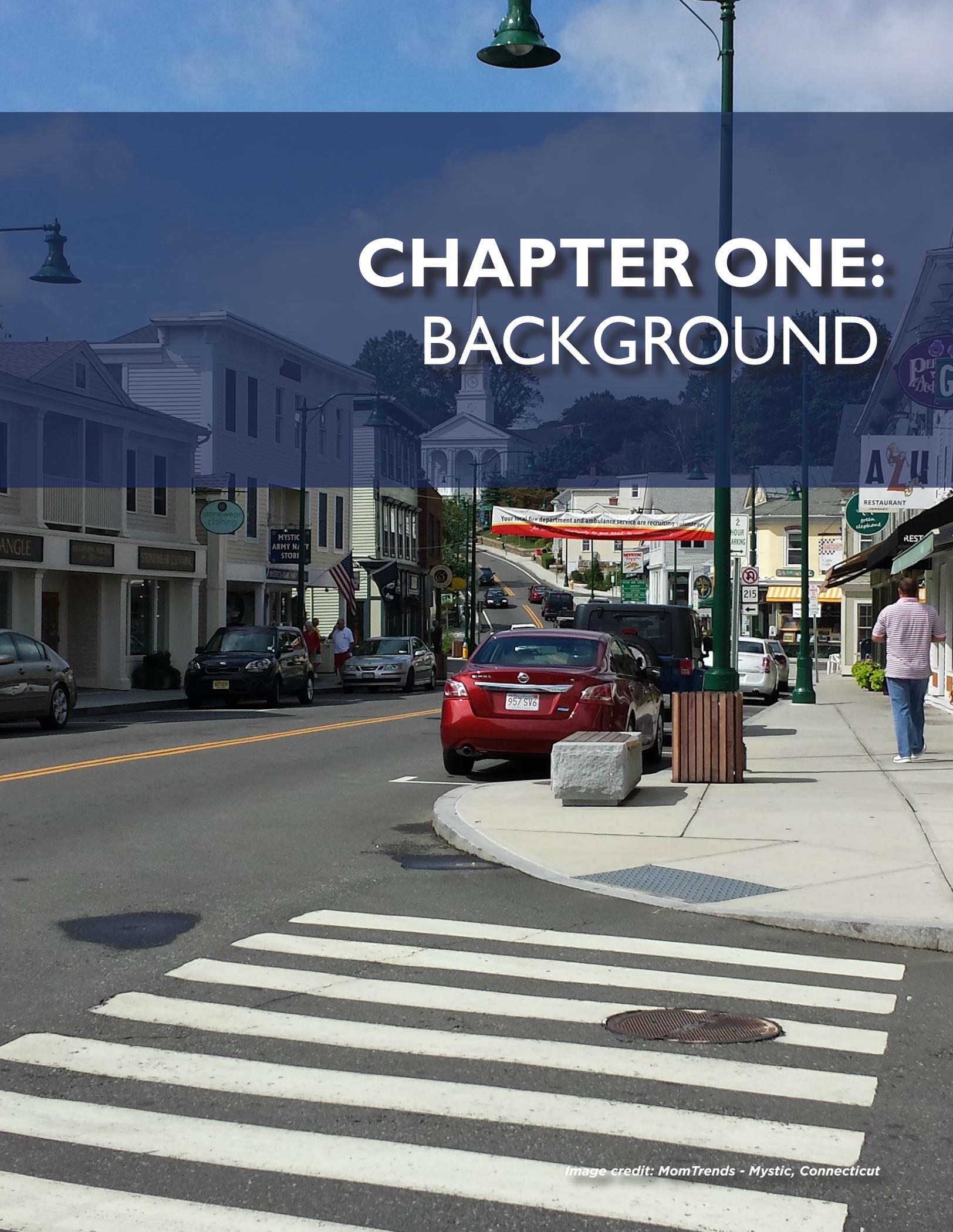


Image credit: MomTrends - Mystic, Connecticut

A. INTRODUCTION

The *Connecticut Active Transportation Plan*, known hereinafter as the “*Plan*”, is an action-oriented blueprint for meeting the needs of pedestrians and bicyclists in Connecticut. This includes their commuting, errands, and recreational trips. Connecticut’s population continues to diversify and with that diversity comes increasing variability in how people move through the State to meet their daily needs.

In recent years, the Connecticut Department of Transportation (CTDOT) has adapted its work-flows, priorities, and programming to better meet the needs of active transportation users. This *Plan* outlines these efforts as well as how it will continue to do so over the next six years.

Specifically, the *Plan* presents the multitude of process-driven changes underway at CTDOT that will transform the way designers incorporate elements of active transportation facilities into construction projects. The result is safer, more accessible transportation systems. This *Plan* outlines CTDOT’s near-term goals in the areas of programs and infrastructure investments. It presents construction projects to be initiated over the next six years to improve safety and accessibility for pedestrians and bicyclists in the most critical locations in the State. It also incorporates new strategies and actions for these policies, programs, and infrastructure improvements as well as presents the first ever Statewide Bicycle Planning Network Map that designates routes based primarily on where bicyclists want to travel to.

The development of the *Plan* occurred over a 30-month period in 2016 - 2018. **Appendix A** provides more information on the *Plan* development process, including an overview of the public outreach efforts.

B. VISION AND GOALS

CTDOT is committed to the principle that walking and bicycling promote healthy lives, strong communities, and more sustainable environments. CTDOT’s vision for active transportation in Connecticut is:

Connecticut Department of Transportation will encourage, promote, and improve walking, bicycling, and other forms of active transportation, so that any person, regardless of age, ability, or income will be able to walk, bicycle, or use other types of active transportation modes safely and conveniently throughout Connecticut.

An integrated network of on-road facilities and multi-use trails will connect key destinations, municipalities and regions, while strengthening Connecticut’s links to neighboring states.

The three goals to support the vision include:

Goal #1 – Improve Pedestrian and Bicyclist Safety

Goal #2 – Enhance Mobility for Pedestrians and Bicyclists

Goal #3 – Utilize Resources to Achieve Meaningful Improvements

Chapters 2, 3, and 4 provide information on the existing setting and how CTDOT will work to make progress on these goals over the next six years. After that time, a new plan will be developed.

C. PEDESTRIAN AND BICYCLE ACCOMPLISHMENTS

The *Plan* builds on the many successes of the *2009 Connecticut Bicycle and Pedestrian Transportation Plan (2009 Plan)*. The *2009 Plan* started to bring active transportation needs into CTDOT’s design, construction, and operations offices.

Since the *2009 Plan*, there have been changes in federal laws and funding, state laws and policies, infrastructure design, as well as awareness of pedestrian and bicycle needs in Connecticut. The result is that many strategies and implementation options of the *2009 Plan* were realized.

SUCCESS FROM THE 2009 PLAN

✓ The establishment of the Bicycle and Pedestrian Advisory Board allowed CTDOT to “coordinate with a Statewide Bicycle and Pedestrian Advisory Committee.” One key accomplishment of this group has been to work with the Department of Motor Vehicle to **include bicycle and pedestrian safety-related questions on the driver license exam.**

At the regulatory level, the State Legislature passed three landmark laws aimed to improve the travel experience for pedestrians and bicyclists. They include:

- An Act Improving Bicycle and Pedestrian Access (Public Act 09-154)
- Vulnerable User Law (Public Act 14-31)
- Bicycle Safety Bill (Public Act 15-41)

An Act Improving Bicycle and Pedestrian Access, (Public Act 09-154) included the Complete Streets legislation. When passed, Connecticut was only the 10th state to pass a Complete Streets law. **Appendix B** includes a description of these laws.

CTDOT PLANS, POLICIES, AND PROGRAMS

CTDOT’s plans, policies, and programs related to active transportation have matured over the past decade. From the implementation of plans and

policies to support pedestrians and bicyclists to regular engagement with stakeholders to training for the agency’s engineers and planners, CTDOT has advanced its capacity for planning, designing, and constructing projects that support and encourage active trips. Examples of CTDOT accomplishments are described on the following pages.

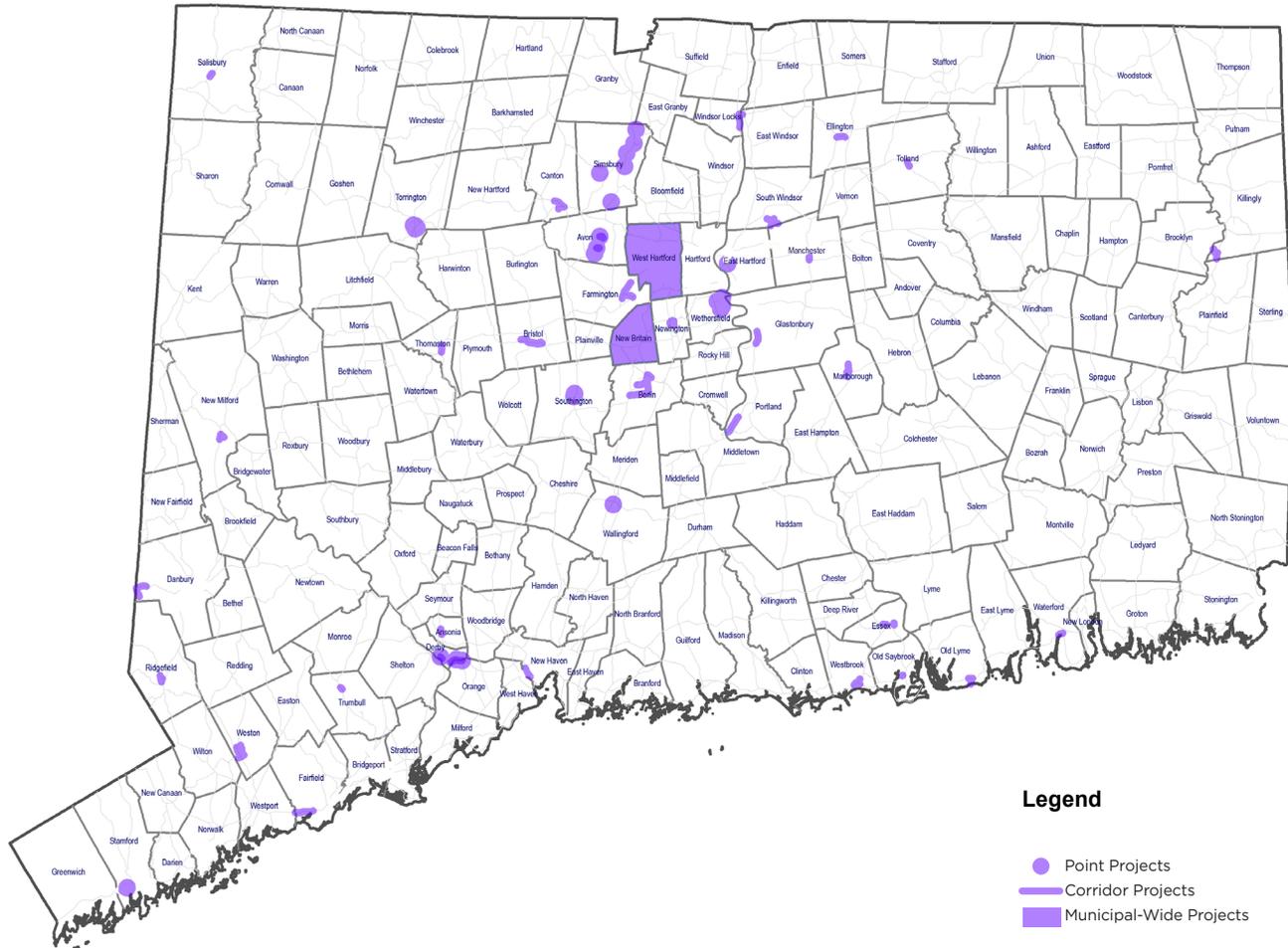
Let’s GO CT! - Connecticut’s Bold Vision for a Transportation Future (CTDOT, February 2015)

The *Let’s GO CT! - Connecticut’s Bold Vision for a Transportation Future* provides the “transportation foundation for the future of Connecticut’s economy” and emphasizes the need to secure dedicated transportation funding. It outlines long-term investments for the state’s transportation system and presents the “Connecticut 30-Year Vision.” The long-term pedestrian and bicycle planning projects, and their associated funding, are listed in **Table 1**.

Table 1: Long-term Investment: Pedestrian and Bicycle Planning

Project Description	Funds
<p>Community Connectivity Grant Program</p> <p>This program funds approximately \$10 M annually to construct sidewalks and on and off-road bicycle improvements in the state’s urban centers making them more walkable, livable, and safe.</p> <p>The program began in 2016 with Road Safety Audits (RSAs). The RSAs identified pedestrian and bicyclist needs at important corridors and intersections and recommended low-cost (short term) and high-cost (longer term) solutions to improve their conditions. More than 80 municipalities applied for and had RSAs completed through the summer 2017. These occurred on state and local roads in all areas (including rural) of the state.</p> <p>Many Connecticut communities, including those who completed RSAs, requested additional funding for infrastructure improvements through the Community Connectivity Grant Program (CCGP). Grants were awarded in August 2018. Figure 1 displays the communities and corridors that received the 40 grants. The program’s website (http://ctconnectivity.com) includes more information on the program and the communities involved in it.</p>	\$250,000,000
<p>Multi-Use Trail Program</p> <p>This program funds \$10 M per year for 25 years and allows for gaps in the state’s prioritized trail network to be filled, including the East Coast Greenway (ECG) and major regional trail systems. Completing gaps in the statewide and regional trail system enhances opportunities for recreation as well as providing transportation options for non-motorists, increasing their access to employment as well as to other urban, suburban, and residential areas. Example projects funded through this program include:</p> <ul style="list-style-type: none"> • Charter Oak Greenway from Finley Street in Manchester to the Hop River Trail at Bolton Notch Pond in Bolton • Upgrades to the Hop River State Park Trail to ECG standards in Columbia and Coventry • Farmington Canal Heritage Trail from Red Hill Road in Farmington to just south of the Plainville Town Line • Three new segments of the Moosup Valley State Park Trail in Plainfield and Sterling, totaling 14,000 feet <p>More information on this program and projects is available at http://www.transformct.info/RampUpDashboard.html</p>	\$250,000,000
<p>Trail Maintenance Program</p> <p>This program aims to maintain a state-of-good repair on the statewide regional trail network by funding \$1.2 M per year for 25 years for trail maintenance. The program addresses longstanding issues of deferred maintenance on trails, as many towns don’t have resources or specialized equipment necessary for routine maintenance.</p> <p>This program will mostly address surface condition, typically the most expensive component of trail maintenance. This effort includes the inventory, assessment, prioritization, and correction of surface-related maintenance issues to ensure proper serviceability of the trails. The program supports the current system of ADA accessible trail miles as well as the Connecticut Department of Energy & Environmental Protection (CT DEEP) trail maintenance efforts.</p> <p>The State will be funding some of the trail maintenance efforts through this program, and the responsibility to oversee/complete the work is the obligation of the municipalities. This program is not yet authorized.</p>	\$30,000,000
<p>Route 15 / Merritt Parkway Trail Construction</p> <p>This program funds the construction of a multi-use trail along the Merritt Parkway to accommodate non-motorized transportation. A draft feasibility study of the corridor is underway.</p>	\$250,000,000
TOTAL	\$780,000,000

Figure 1: Let's GO CT! - Connecticut's Bold Vision for a Transportation Future - CCGP Awards



Let's GO CT! - 5-Year Ramp Up Plan

The Let's GO CT! - 5-Year Ramp Up Plan is the first funding phase of the 30-year vision. It outlines immediate, short-term investments to be completed through 2020. **Table 2** displays the pedestrian and bicycle planning appropriations for years 2016-2020.



Image credit: Norwalk River Valley Trail

Table 2: Short-term Investment: Pedestrian and Bicycle Planning (2016 - 2020)

Capital Category	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	TOTAL
Bike / Ped Trails	\$14,200,000	\$17,200,000	\$20,200,000	\$23,200,000	\$26,200,000	\$101,000,000

Dedicated pedestrian and bicycle funding beyond 2020 is subject to future authorization by the state legislature.

FHWA STEP Program: Every Day Counts-4

Through the Safe Transportation for Every Pedestrian (STEP) program, the Federal Highway Administration (FHWA) promotes the following pedestrian safety countermeasures through Every Day Counts (EDC-4):

- Road diets,
- Rectangular rapid flash beacons (RRFB),
- Pedestrian hybrid beacons,
- Pedestrian refuge islands,
- Raised crosswalks, and
- Crosswalk visibility enhancements.

In 2017, CTDOT began assessing countermeasures promoted through the program, as well as other opportunities to institutionalize changes which will improve pedestrian safety. CTDOT is also partnering with the CT Technology Transfer Center to launch an educational program that will provide training for public officials and technical professionals on the implementation of the safety countermeasures as well as raising awareness amongst the public.

Walk It Bike It: Connecticut Safe Routes to School Program

The Safe Routes to School (SRTS) Program began in 2005 with the goal to empower communities to make walking and bicycling to school a safe and routine activity for children in kindergarten through eighth grade. The program has provided infrastructure projects and non-infrastructure services to over three dozen schools, as well as a statewide Crossing Guard Curriculum for the State Police and trainers since it was initiated. One SRTS project, on Main Street in Coventry, began as a walk audit through the non-infrastructure program and resulted in over 2,200 feet of sidewalks and driveway crossings constructed in 2015. This work provided safer walking for students headed to / from Capt. Nathan Hale Middle School and Coventry Village.

While this dedicated funding source is no longer available, there are still many initiatives to promote walking and bicycling to schools. For example, the program's website includes a collection of resources, such as a "Champion Toolkit" that contains ideas, templates, and other information to assist communities and schools in implementing a successful SRTS Program.

Rectangular Rapid Flash Beacon (RRFB)

A RRFB is a pedestrian-activated traffic control device that uses an irregular flash pattern similar to emergency flashers on police vehicles to increase driver awareness of potential pedestrian conflicts at unsignalized intersections or mid-block crossings.



Image credit: FHWA Safety Strategies Study - Michael Frederick, City of St. Petersburg, FL

Complete Streets Policy

In October 2014, CTDOT responded to Public Act 09-154 by adopting its own Complete Streets Policy. The policy states how CTDOT will integrate Complete Streets into its work. In addition, a Complete Streets Standing Committee was established in 2017. With the adoption of the policy and establishment of the committee, the following key aspects are being implemented:

- Adherence to the Complete Streets Law throughout CTDOT
- Ongoing training on Complete Streets for CTDOT staff and partners
- Revisions to eligibility criteria to make complete streets easier to fund
- Improved designs that are supportive of pedestrians and bicyclists

With the establishment of the statewide Complete Streets Policy, CTDOT has set a precedent regarding the accommodation of all users, including pedestrians and bicyclists, in the design of any transportation facilities. The policy has encouraged municipalities and Regional Councils of Governments across the state to develop similar Complete Streets policies.

Conventional street design prioritizes mobility for automobiles. **Complete Streets** are designed for everyone, including pedestrians, bicyclists, motorists and transit riders. Complete Streets policies require or encourage a safe, comfortable, integrated transportation network for all users, regardless of age, ability, income, ethnicity, or mode of transportation.



Road Diet

An example of the incorporation of Complete Streets principles into practice is the 2016 implementation of a road diet on Burnside Avenue (Route 44) in East Hartford. Traffic has diminished on this road in recent years. The four 12-foot lanes were transformed into an 8-foot parking lane, 5-foot striped bicycle lane, and 12-foot travel lane in each direction. More importantly, other state roads are under review for road diet conversions.

CTDOT also incorporated bicycle education into the Burnside Avenue conversion through its SRTS program. CTDOT developed Individual information fliers specific to motorists, bicyclists, and police officers on how different modes can safely share the road.

A classic **road diet** typically involves converting an existing four-lane, undivided roadway segment to a three-lane segment consisting of two through lanes and a center, two-way left-turn lane. The primary benefits of a road diet include enhanced safety, mobility and access for all road users.



Image credit: CTDOT

Vendor-In-Place Paving Program

One way CTDOT has implemented Complete Streets is by reducing lane widths to 11 feet through the Vendor-In-Place (VIP) Paving Program. CTDOT Offices of Maintenance and Traffic determine whether it is appropriate to reduce the lane width, allowing for wider shoulders, during the repaving and restriping of roads. This practice has allowed for many roadways to become more pedestrian- and bicycle-friendly.

There have been measurable differences in lane widths statewide since the 11-foot lane practice began in 2012. In recent years, the following mileage of two-lane secondary roadways have been restriped to 11 feet:

- 144 of 148 miles of VIP paved roads (97 percent) were restriped to 11-foot lanes in 2013
- 192 of 216 miles of VIP paved roads (89 percent) were restriped to 11-foot lanes in 2014
- 201 of 209 miles of VIP paved roads (96 percent) were restriped to 11-foot lanes in 2015
- 210 of 216 miles of VIP paved roads (97 percent) were restriped to 11-foot lanes in 2016

Statewide Sidewalk Policy (Policy No. E&C-19)

The sidewalk policy at CTDOT historically was to consider whether sidewalks were needed for a project and / or requested by local municipalities. Upon such request, the municipality was required to provide the non-federal share of the cost of any new sidewalk, which was typically 20 percent.

This policy was updated in February 2011 and now states that funding for new sidewalks is regarded the same way as any other eligible feature of a project. For example, when 80 percent of a project is federally funded and the remaining 20 percent is provided by the state, the cost of a new sidewalk would be included in that funding and the municipalities would not be responsible for its construction. Municipalities are, however, responsible for its maintenance.

The policy also requires the reconstruction of any existing sidewalks that are disturbed during construction. It encourages the construction of new sidewalks when road construction occurs and a sidewalk is deemed appropriate and safe. In addition, CTDOT now allows for exclusive sidewalk projects, which are prioritized along with traditional road projects.

New Signal Technology Adoption

CTDOT has utilized innovative technology to enhance pedestrian and bicycle safety through various signal projects. For example, in 2014, CTDOT approved the first HAWK beacons in Connecticut by allowing them in Cheshire and Stamford. HAWK beacons are now considered on state transportation projects on a case-by-case basis.

HAWK (High-intensity Activated crossWalk) beacons

are traffic signals that are installed where pedestrian or bicyclist paths cross a road and that turn red only when a person wishing to cross activates them.

Painted Bike Lane Installation

In 2014, CTDOT received federal approval to install green-painted bike lanes and bike boxes along a section of Broad Street in Hartford. The purpose is to improve the safety for bicyclist along this highly congested street.

Bike boxes

are areas where bikes wait ahead of cars at a light for positioning. CTDOT continues to evaluate the performance of both features and will consider their use in other parts of the state.



Image credit: Streetsblog USA

Crash Data Collection Initiative

In 2015, CTDOT developed a Connecticut Uniform Police Crash Report (PR-1) for police to use at crash scenes. The goal was to align Connecticut's system with national crash data guidelines and to leverage efficiencies gained with electronic reporting. These forms identify crashes that involve pedestrians and bicyclists. In some cases the forms also include the contributing factors that caused these crashes.

STATEWIDE AND REGIONAL FACILITIES

Since 2009, some of the greatest progress for bicycle and pedestrian travel in Connecticut has been around statewide and regional trail planning.

Prior to 2009, the construction of multi-use trails in Connecticut relied heavily on municipalities and regions to coordinate the planning, design, and construction of any segments of trails that are routed through their respective communities. This approach left many gaps in the overall network that are proving difficult to complete largely because of funding. CTDOT recently shifted its practice to assist communities in the pursuit of closing gaps in the trail network of statewide significance. CTDOT has initiated and/or advanced the design and construction activities on several projects, many of them smaller in size but costlier in nature because of design and / or right-of-way challenges.

An important element of the *Let's GO CT! - Connecticut's Bold Vision for a Transportation Future* is to develop a more complete and connected multi-

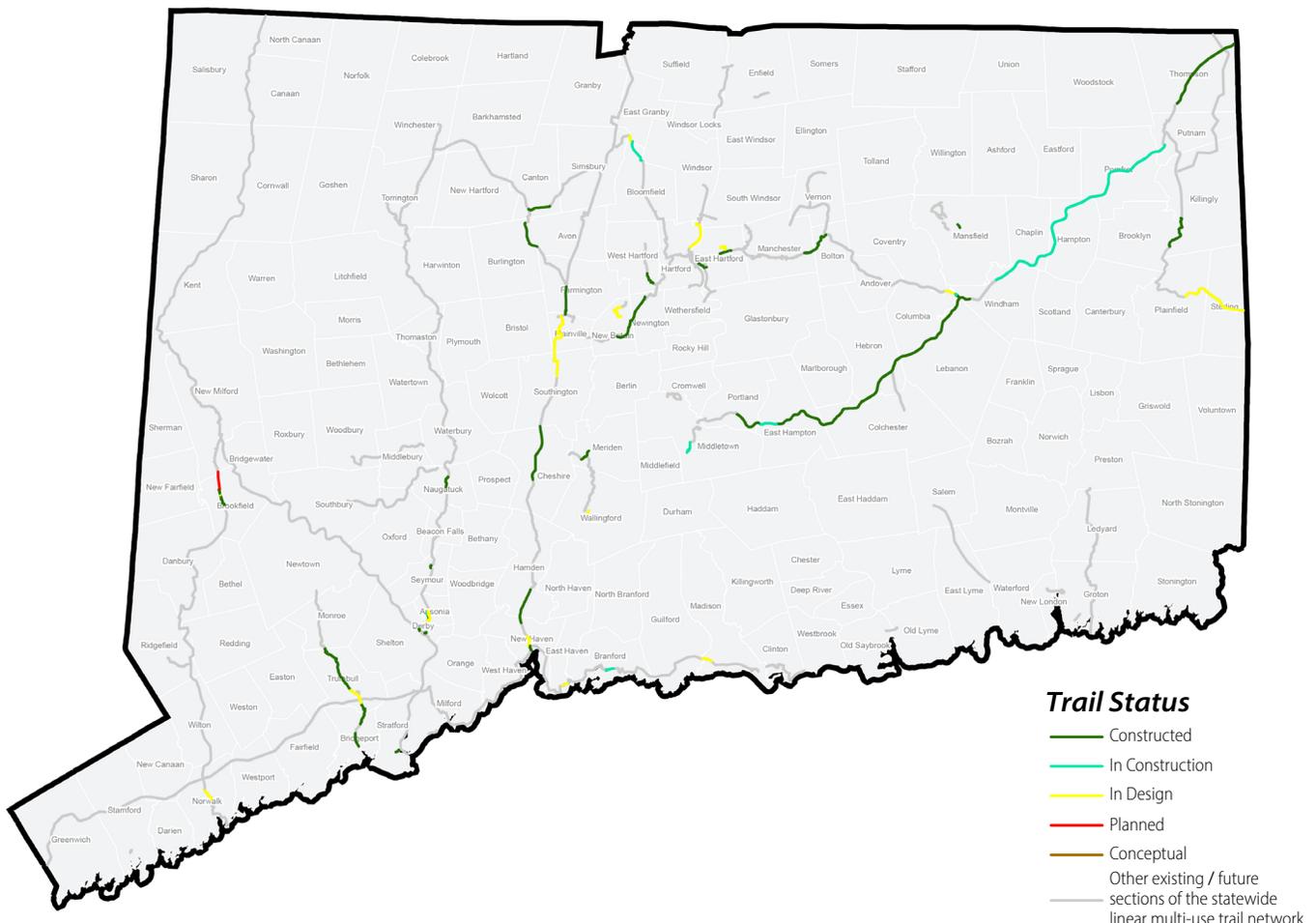
use trail network that is comparable to the state's vehicular roadway system.

Resources are focused on completing the East Coast Greenway, which is a trail of statewide significance, and secondly on trails of regional significance. **Figure 2** displays the trail sections that have received transportation funding since 2009.



Image credit: Out and About Mom Blog - Rails-to-Trails in Connecticut: The Farmington Canal Heritage Trail

Figure 2: Multi-Use Trail Sections Funded and Constructed Since 2009 (Last updated: October 14, 2018)



STATEWIDE, REGIONAL, AND MUNICIPAL PLANNING EFFORTS

CTDOT has collaborated with other state agencies and organizations to advance pedestrian and bicycle causes. For example, CTDOT has collaborated with the Department of Health (DPH) and BikeWalk CT to create a Share the Road brochure. **Appendix C** includes CTDOT and other state agency examples related to pedestrian and bicycle transportation.

Regions, municipalities, and other organizations have also become more proactive in their planning and design for pedestrians and bicyclists. For example, municipalities have their own pedestrian and bicycle plans, advisory committees, and Complete Streets ordinances and policies. Many are repainting their roadways to be more inclusive to active users. **Appendix D** includes regional planning examples related to pedestrian and bicycle transportation. **Appendix E** includes municipal planning and accomplishments related to pedestrian and bicycle transportation. **Appendix F** includes other examples of collaborative planning efforts.

EDUCATION PROGRAMS AND ADVOCACY GROUPS

Education programs and advocacy groups have contributed to enhanced knowledge and awareness of pedestrian and bicyclist safety. For example, *Watch for Me CT* is a comprehensive program that began in 2018 and is run by CTDOT in partnership with Connecticut Children’s Injury Prevention

Center. Its purpose is to reduce the number of pedestrians and bicyclists struck and injured in crashes with vehicles. It involves two key elements:

1. Safety and educational messages directed toward drivers, pedestrians and bicyclists, and
2. Enforcement efforts by area police to crack down on some of the violations of traffic safety laws.

Appendix G includes examples, descriptions, and accomplishments of several of these programs and groups.

These examples are some that highlight the progress seen in pedestrian and bicycle travel in Connecticut over the past decade. While there are continued challenges, the strategies and actions of the next three chapters identify additional ways to achieve safer, more connected walking and bicycling environments in Connecticut.



Image credit: Connecticut Metropolitan Council of Governments (MetroCOG)



Image credit: Simsbury Pedestrian and Bicycle Master Plan

CHAPTER TWO: IMPROVING PEDESTRIAN AND BICYCLIST SAFETY



Image credit: New Canaanite

Actual and perceived pedestrian and bicycle safety can affect those considering these activities. For example, news of injuries and fatalities can aid perceptions that walking and bicycling are unsafe and discourage the public from engaging in these activities. Understanding the causes of crashes can lead to more effective road design countermeasures as well as guidelines to improve safety. Improving safety can ultimately encourage more people to walk and bicycle as a means of transportation.

A. CRASH DATA AND ANALYSIS

Despite the growing popularity of walking and bicycling across the United States, National Highway Traffic Safety Administration (NHTSA) data reports that pedestrian and bicyclist safety continues to be a serious concern. About 17 percent of highway fatalities that occur in Connecticut, and nationwide, involve a pedestrian. In addition, the percentage of crash fatalities that involve bicyclists has remained steady at 1-2 percent since the 1960s.

CTDOT collects and monitors crash data on an annual basis for all roadway classes (interstate, U.S. route, state highway, and locally owned and maintained). CTDOT updated to an electronic data collection system in January 2015 and has been using this since that time.

While crash data is an important tool for researching problem areas, there are limitations to the data. Only crashes that are reported to the police are included in this data. Typically, only crashes involving motor vehicles, and those having fatalities, injuries, or property damage, are reported. Crashes involving bicycles-only or bicycles and pedestrians, as well as those that do not have fatalities, injuries, or property damage can often go unreported. The police are responsible for filing the crash reports, which are then entered into the statewide crash database.

CRASHES INVOLVING PEDESTRIANS

Between 2013 and 2017 there were 533,842 reported crashes on all roadways in Connecticut. Of these 6,652 (1.2 percent) crashes involved pedestrians. Notably, in the 5-year span between 2013 and 2017 there was a 39 percent increase for all reported crashes involving pedestrians, and a 50 percent increase in reported fatal crashes involving pedestrians. This compares to a 20 percent increase in all reported crashes between 2013 and 2017.

In Connecticut, approximately four percent of crashes that involve pedestrians result in fatalities. The largest percentage of pedestrian crashes for all years occurred on local roads (60 percent). The smallest percentage of pedestrian crashes for all years occurred on interstate highways. **Appendix H** includes crash information categorized by road classification and municipality.

Pedestrian crashes are disproportionately high in the more urbanized areas of the state where large numbers



Image credit: Erik Trautmann, The Hour

of users (pedestrians, bicyclists, and motorists) are all utilizing the same facilities. The cities of New Haven, Hartford, Bridgeport, Waterbury, and Stamford have the highest number of pedestrian crashes (each with more than 65 in any one year of the 2013- 2017 period). Forty-five percent of all crashes that involve pedestrians occurred in these five cities over the five-year period.

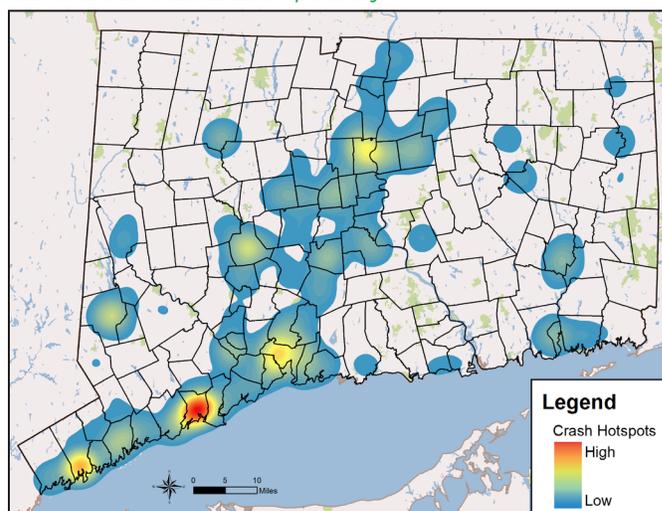
Suburban areas in Connecticut received the next greatest proportion of crashes. The municipalities of New Britain, Danbury, Norwalk, Meriden, Manchester, New London, and West Haven have all had a minimum of 15 crashes in any one year of the 2013-2017 period. Seventeen percent of all pedestrian crashes occurred in these seven municipalities over the five- year period.

Figure 3 displays hot spots of the pedestrian crashes on interstates, U.S. routes, and state roadways for years 2013 through 2017.

Pedestrian Priority Crash Areas

The *Plan* development included a process to identify corridors with a history of frequent crashes involving pedestrians. **Table 3** displays these top 15 pedestrian crash corridors. These corridors total 28.5 miles and include 80 fatal and severe injury crashes (16 percent of state highway total) and 389 other crashes involving pedestrians (24 percent of state highway total),

Figure 3: Concentrations of Pedestrian Crashes on Interstates, US Routes, and State Roadways (2013-2017); Source: Connecticut Crash Data Repository



Identifying High Pedestrian Crash Corridors

The following steps were used to identify high pedestrian crash corridors:

- 1) Use CTDOT-generated road segments (less than 100-foot in length).
- 2) Identify crashes involving pedestrians within 1/4 mile of each segment.
- 3) Highlight the segments which were within the top fifth percentile of a combined weighted crash score, weighted such that fatal and severe injury crashes counted three times that of other reported crashes involving pedestrians. A score of 17 or higher placed a segment into this category (i.e. 17 or more crashes involving pedestrians, not fatal or severe injury, within 1/4 mile of segment).
- 4) Combine the highlighted segments into an aggregate segment if segments were within 1/4 mile of each other.
- 5) Identify all crashes involving pedestrians within 100 feet of the aggregate segments and rank based on the weighted crash score.

between the five-year study period of 2012 – 2016. Due to availability of data at the beginning of the priority crash area analysis, 2017 crash data was not used.

CRASHES INVOLVING BICYCLISTS

Between 2013 and 2017 there were 533,842 reported crashes on all roadways in Connecticut. Of these, 2,891 (0.6 percent) crashes involved bicyclists. During this

five-year span, there were an average of four fatal crashes involving bicyclists reported per year. During this period, there was a 11 percent decrease in crashes involving bicyclists, from 605 in 2013 to 539 in 2017.

In Connecticut, crashes that involve bicyclists are fatal in less than 0.7 percent of instances. Approximately 81 percent of all crashes that involve bicyclists result in injuries, often to the bicyclist. The largest percentage of bicycle crashes for all years occurred on local roads (61 percent and greater). The smallest percentage of crashes occurred on interstate highways (less than 0.7 percent), where bicyclists are legally not allowed.

Appendix H includes crash information categorized by road classification and municipality.

Crash reports that involve bicyclists include the age of the bicyclist involved. In the three-year period since the new crash report form was introduced (2015 – 2017), 39 percent of victims were 19 years old or younger. Another 15 percent of victims were 20-29 years of age. Approximately 86 percent of the bicyclists involved in crashes were male.

Figure 4 displays hot spots of the bicycle crashes for years 2013 through 2017. Like pedestrian occurrences, bicycle crashes are disproportionately high in the more urbanized areas of the state where large numbers of the users (pedestrians, bicyclists, and motorists) are all utilizing the same facilities. The cities of New Haven,

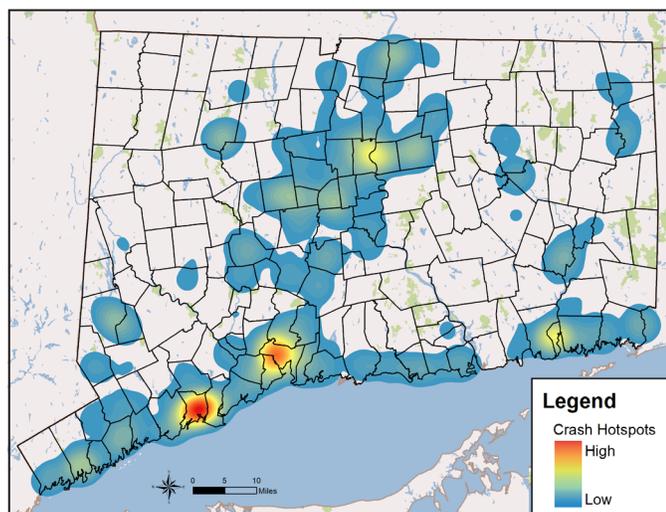
Table 3: State Road Segments with High Crashes Involving Pedestrians (2012 – 2016)

Rank	Municipality	Route	Segment Begin	Segment End	Length (Mile)	Fatal / Severe Injury Crashes	Non-fatal/non severe injury crashes	Weighted Total
1	Stamford	1	Alvord Ln.	Seaside Av.	3	12	59	95
2	Hartford	44	Columbus Blvd.	Westbourne Pkwy.	2.3	7	49	70
3	Bridgeport	127	Stratford Av.	Alpine St.	2	7	33	54
4	Danbury	53	South St.	Downs St.	1.5	6	30	48
5	Bridgeport	1	North Av.	Otis St. (Stratford)	2.3	6	21	39
6	New Haven	1	Admiral St. (West Haven)	Brown St.	2.5	4	27	39
7	Stamford	137	Tressor Blvd.	7th St.	1.2	4	25	37
8	Norwalk	1	0.1 Mi. South of Rampart Rd.	France St.	2.8	5	21	36
9	Bridgeport	130	Water St.	Florence St.	1.8	7	15	36
10	Bridgeport	700	Commerce Dr.	Water St.	1.7	5	21	36
11	Waterbury	847	Mill St.	0.5 Mi. North of Main St.	1.8	1	32	35
12	East Haven	80	Middletown Av.	Highland Av.	1.1	7	13	34
13	Bridgeport	1	Pacific St.	River St.	1.6	2	18	24
14	Bridgeport	130	Railroad Av.	Water St.	1.7	3	15	24
15	New Haven	10	Derby Av.	Fitch St.	1.2	4	10	22

Bridgeport, and Hartford have the highest number of bicycle crashes, each with more than 40 in any one year of the 2013-2017 period. These three cities represented thirty-three percent of the statewide total of bicyclist related crashes in this five-year period.

Other urban and suburban areas in Connecticut that had the next greatest proportion of crashes include Stamford, Waterbury, New Britain, Manchester, Norwalk, New London, and East Hartford. These municipalities have all had a minimum of nine crashes in any single year

Figure 4: Concentrations of Bicycle Crashes on Interstates, U.S. Routes, and State Roadways (2013-2017); Source: Connecticut Crash Data Repository



of the 2013-2017 period. Approximately 18 percent of all the crashes involving bicyclists occurred in these seven municipalities over the five-year period. This crash data was taken into consideration in the development of the statewide bicycle planning network. Chapter 3 contains more information on the statewide bicycle planning network.

Bicyclist Crash Priority Areas

The *Plan* development included a process to identify corridors with a history of frequent bicycle crashes. **Table 4** displays the top 15 bicycle crash corridors. These corridors total 18.6 miles and include 13 fatal and severe injury crashes involving bicyclists (10 percent of state highway total) and 151 other crashes involving bicyclists (14 percent of state highway total), between the five-year study period of 2012 - 2016. Due to availability of data at the beginning of the priority crash area analysis, 2017 crash data was not used.

Identifying High Bicycle Crash Corridors

Steps used to identify high bicycle crash corridors:

- 1) Highlight the Tier I segments (less than 100 feet) in the statewide bicycle planning network. See Chapter 3 for more information on the statewide bicycle planning network.
- 2) Combine the Tier I segments into an aggregate segment if segments were within 1/4 mile of each other.
- 3) Identify crashes involving bicyclists within 100 feet of these aggregate segments and ranked based on the weighted crash score.

Table 4: State Road Segments with High Crashes Involving Bicyclists (2012 - 2016)

Rank	Municipality	Route	Segment Begin	Segment End	On Bike Planning Network	Length (Mile)	Fatal / Severe Injury Crashes	Non-fatal/non severe injury crashes	Weighted Total
1	Stamford	1	Virgil St.	Lawn Av.	Yes	2.1	4	14	26
2	New Haven	1	Howard Av.	Tomlinson Bridge	Yes	1.8	2	12	18
3	New Haven	10	Edgewood Av.	Blake St.	No	1.2	1	13	16
4	Hartford	44	Morgan St.	Oakland Tr.	No	1.4	0	15	15
5	Bridgeport	127	Clarence St.	Berkshire Av.	No	1.4	0	15	15
6	Stonington	1	0.2 Mi. North of Mellow Ct.	CT / RI State Line	Yes	1	0	12	12
7	Bridgeport	130	Kings Hwy. (Fairfield)	Commerce Dr.	Yes	1.9	2	6	12
8	Manchester	6	W. Center St.	Holl St.	Partial	1.1	1	9	12
9	New London	641	Jefferson Av.	Gov. Winthrop Blvd.	No	0.7	0	12	12
10	New Haven	63	Fitch St.	Glenview Tr.	Yes	1.2	1	8	11
11	Stratford	1	N. Bishop Av. (Bridgeport)	California St.	No	1.2	0	9	9
12	Fairfield	1	Fairfield Pl.	0.2 Mi. North of Unquowa Rd.	Yes	0.9	0	8	8
13	Bridgeport	1	Colonial Av.	Brooks St.	No	0.8	1	5	8
14	Bridgeport	130	Wordin St.	Middle St.	No	0.9	0	8	8
15	Norwich	82	N. High St.	Banes Ct.	No	0.9	1	5	8

PEDESTRIAN AND BICYCLIST SAFETY IMPROVEMENTS

Planners, engineers, and road designers next analyzed the top pedestrian and bicycle corridors in detail, displayed in Tables 3 and 4, to further identify the most critical ones in need of near-term improvements. From those corridors, recommendations and associated cost estimates were developed for a selected number of pedestrian and/or bicycle corridors. These top ten corridors were selected based on the corridor having one or more of the following:

- Very high crash history and severity
- Overlapping bicycle and pedestrian crashes and needs in the same area
- Potentially straightforward solutions, without the need for additional detailed planning studies

Appendix I includes more information on the corridor analysis.

Table 5 lists the top pedestrian and bicycle safety project corridor recommendations. The recommendations generally fall into four categories of improvements:

1. Striping / painting
2. Signal upgrades
3. Network / facilities
4. Other (programmatic, plan development)

B. EDUCATION AND AWARENESS INITIATIVES

An important goal of CTDOT is to continue to work with its partners to educate key stakeholders, designers, those traveling along the state’s roadways, and all residents and visitors of Connecticut about the laws and policies related to pedestrians and bicyclists. Increased education and awareness campaigns can promote walking and bicycling as a means of safe and active transportation.

There are several other on-going collaborative efforts between CTDOT, different levels of government, and other non-profit organizations to educate and increase awareness about walking and bicycling. These efforts are summarized in **Appendix G**. These successful efforts can be expanded, and new ones can be developed, to enhance safety in the coming years.



Image credit: CTDOT

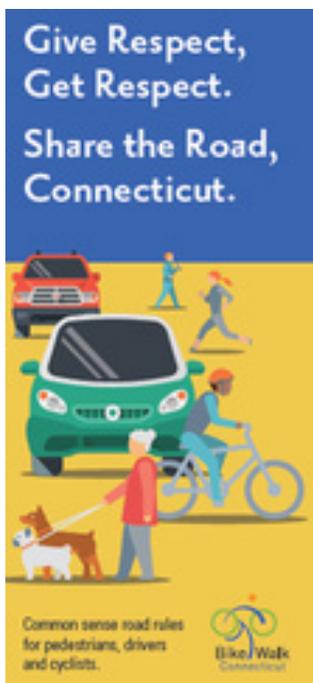


Image credit: Bike Walk Connecticut



Image credit: Bike East Bay

Table 5: Top 10 Pedestrian and Bicycle Safety Corridors

Rank	Municipality	Route	Segment Begin	Segment End	Length (Feet)	Proposed Improvements	Engineering Cost	Pedestrian / Bicycle Facilities Cost*	Resurfacing & ADA Ramp Cost	Total Construction Cost	Engineering + Pedestrian / Bicycle Facilities Cost	Total Cost
1	Stamford	1	Alvord Ln.	Seaside Av.	15,420	<ul style="list-style-type: none"> Sidewalk and ADA ramp upgrades Roadway resurfacing Road diet Traffic and pedestrian signal upgrades 	\$1,200,000	\$11,500,000	\$4,500,000	\$16,000,000	\$12,700,000	\$17,200,000
2	Hartford	44	Bedford St.	Morgan St.	4,475	<ul style="list-style-type: none"> Sidewalk and ADA ramp upgrades Roadway resurfacing Road diet Traffic and pedestrian signal upgrades 	\$800,000	\$1,600,000	\$1,600,000	\$3,200,000	\$2,400,000	\$4,000,000
3	Bridgeport	127	Cedar St.	Kingsbury Rd.	8,770	<ul style="list-style-type: none"> Sidewalk and ADA ramp upgrades Roadway resurfacing Pavement markings to formalize shoulders Pedestrian signal upgrades Illumination 	\$1,200,000	\$1,100,000	\$2,300,000	\$3,400,000	\$2,300,000	\$4,600,000
4	New Haven	1	Gilbert St.	Brewery St.	11,990	<ul style="list-style-type: none"> Sidewalk and ADA ramp upgrades Selective roadway resurfacing Road diet Traffic and pedestrian signal upgrades Curbing 	\$1,400,000	\$7,600,000	\$1,700,000	\$9,300,000	\$9,000,000	\$10,700,000
5A	Bridgeport	130	Seaview Av.	Bruce Av.	6,230	<ul style="list-style-type: none"> ADA ramp upgrades Road diet for bicycle lanes On street parking (both sides) Sidewalk bump outs Signal upgrades 	\$1,000,000	\$4,800,000	\$3,200,000	\$8,000,000	\$5,800,000	\$9,000,000
5B	Bridgeport		Kings Hwy.	Wordin Av.		<ul style="list-style-type: none"> ADA ramp upgrades Road diet for bicycle lanes Dedicated left turning lane Shoulder markings for on street parking Signal upgrades 	\$1,200,000	\$9,400,000	\$3,400,000	\$12,800,000	\$10,600,000	\$14,000,000
6	Danbury	53	South St.	Liberty St.	3,720	<ul style="list-style-type: none"> Sidewalk and ADA ramp upgrades Roadway resurfacing Road diet for bicycle lane Traffic and pedestrian signal upgrades 	\$800,000	\$800,000	\$1,700,000	\$2,500,000	\$1,600,000	\$3,300,000

* Includes all “proposed improvements” listed in table other than “resurfacing and ADA ramp costs”

Table 5: Top 10 Pedestrian and Bicycle Safety Corridors (continued)

Rank	Municipality	Route	Segment Begin	Segment End	Length (Feet)	Proposed Improvements	Engineering Cost	Pedestrian / Bicycle Facilities Cost*	Resurfacing & ADA Ramp Cost	Total Construction Cost	Engineering + Pedestrian / Bicycle Facilities Cost	Total Cost
7	Bridgeport	1	Bruce Av.	Seaview Av.	4,790	<ul style="list-style-type: none"> • Sidewalk and ADA ramp upgrades • Roadway resurfacing • Traffic and pedestrian signal upgrades • Selective full depth reconstruction • Concrete curbing 	\$1,100,000	\$9,300,000	\$2,600,000	\$11,900,000	\$10,400,000	\$13,000,000
8	Norwalk	1	Richards Av.	I-95 SB Ramps	6,020	<ul style="list-style-type: none"> • Sidewalk and ADA ramp upgrades • Roadway resurfacing • Traffic and pedestrian signal upgrades • Selective full depth reconstruction • Curbing 	\$1,000,000	\$2,500,000	\$2,500,000	\$5,000,000	\$3,500,000	\$6,000,000
9	Stonington	1	May Flower Av.	CT/RI State Line	3,840	<ul style="list-style-type: none"> • Sidewalk and ADA ramp upgrades • Roadway resurfacing • Road diet for bicycle lane • Roundabout • Selective full depth reconstruction 	\$800,000	\$3,500,000	\$1,200,000	\$4,700,000	\$4,300,000	\$5,500,000
10A	Manchester	6	Goodwin St.	Vernon Rd.	21,860	<ul style="list-style-type: none"> • Sidewalk and ADA ramps upgrades • Road diet for two bicycle lanes, two travel lanes, and parking on alternating sides of roadway • Bump-outs • Minor intersection improvement at Porter St • Major intersection improvement at Pine St / West Center St 	\$1,100,000	\$8,600,000	\$4,300,000	\$12,900,000	\$9,700,000	\$14,000,000
10B	East Hartford	5	Burnside Av.	Pitkin St.	4,140	<ul style="list-style-type: none"> • Sidewalk and ADA ramps upgrades • Roadway resurfacing • Road diet for bicycle lane • Pedestrian signal upgrade • Selective full depth reconstruction • Curbing 	\$700,000	\$1,000,000	\$2,200,000	\$3,200,000	\$1,700,000	\$3,900,000
Total										\$74,000,000	\$105,200,000	

* Includes all “proposed improvements” listed in table other than “resurfacing and ADA ramp costs”

C. STRATEGIES AND ACTIONS PLAN

Improving safety is the most important pedestrian and bicycle related goal for the Department. As such, CTDOT has outlined four strategies to support this goal. Key actions are identified for each of the four strategies. Implementation of these actions will allow the Department to realize its associated goal and make progress toward the ultimate vision of the *Plan*. To assist in implementation, a responsible office(s) and / or group(s) within the Department is identified to lead each action.

Table 6 displays the strategies and actions to enhance safety for pedestrians and bicyclists.

Table 6: Strategies and Actions Plan for Goal #1

Goal #1 – Improve Pedestrian and Bicyclist Safety		
Strategy	Action	Lead Office(s) / Group
1.1 Develop and advance manuals, plans, and strategies to reduce bicycle- and pedestrian-involved crashes on state roads	1. Update the Traffic Control Signal Design Manual with guidelines for appropriate uses / contexts of exclusive vs. concurrent (with and without lead pedestrian intervals) phase signaling, with one goal to reduce turning movement pedestrian crashes	• Engineering and Construction - Traffic Engineering
	2. Discontinue the use of side street green for pedestrian crossings at new traffic control signals and at existing locations receiving full replacement. Review other existing locations with side street green indications for modification whenever the intersection is reviewed or when traffic signal modifications are proposed. Update the Traffic Control Signal Design Manual to reflect these changes for state-owned traffic control signals	• Engineering and Construction - Traffic Engineering
	3. Building upon the efforts of the Route 1 Road Safety Audit, conduct similar studies on portions of other needed corridors in the state	• Policy and Planning - Intermodal Planning
	4. Advance manuals, plans, and strategies that will improve pedestrian and bicyclist safety	• Complete Streets Standing Committee
1.2 Implement infrastructure and facility improvements to reduce bicycle- and pedestrian-involved crashes on state roads	1. Complete the upgrade of pedestrian warning signs and mid-block crossings on state roads	• Engineering and Construction - Traffic Engineering
	2. Include pedestrian elements with new traffic signal installations and major modifications	• Engineering and Construction - Traffic Engineering
	3. Implement countermeasures from the Federal Highway Administration's Safe Transportation for Every Pedestrian (STEP) initiative	• Engineering and Construction - Traffic Engineering, Traffic Safety Unit
	4. Implement recommendations from the Route 1 Road Safety Audit that address walking and bicycling deficiencies	• Engineering and Construction - Highway Design • Policy and Planning - Intermodal Planning
	5. Prioritize and implement improvements from the top ten pedestrian / bicycle safety corridors as identified in Table 5	• Engineering and Construction - Highway Design • Policy and Planning - Intermodal Planning
1.3 Improve pedestrian and bicycle safety near rail stations, transit hubs, and bus stops	1. Conduct safety audits at rail and transit facilities with high crash numbers	• Policy and Planning - Intermodal Planning
	2. Incorporate pedestrian and bicycle elements when upgrading rail and transit facilities	• Public Transportation • Engineering and Construction - Highway Design
1.4 Develop and provide education for all	1. Provide pedestrian and bicycle rights and responsibilities training for law enforcement classes annually	• Policy and Planning - Highway Safety, Law Enforcement Liaison
	2. Coordinate with existing (e.g. Watch for Me CT) or new advertising campaigns to influence and support future content	• Policy and Planning - Highway Safety
	3. Promote the completion of pedestrian and bicycle safety projects to the public and stakeholders through the Office of Communications	• Engineering and Construction - Highway Design
	4. Educate the public on the traffic movement changes and promotion of key bicycle improvements (e.g. road diets)	• Engineering and Construction - Highway Design • Policy and Planning - Intermodal Planning

CHAPTER THREE: ENHANCING MOBILITY FOR PEDESTRIANS AND BICYCLISTS



Image credit: Stamford Downtown

The increasing number of residents and visitors who bicycle and walk for recreation and transportation have encouraged an expansion of facilities by which to do so. CTDOT has incorporated progressive facilities and street design into its projects that focus on the incorporation of bicycle and pedestrian improvements. These include lane narrowing to allow for greater shoulder width where applicable, implementation of the first road diet on a state highway, installation of new bike lane designs, and adoption of new signal technology.

Existing laws allow for the feasibility of these facilities and their appropriate use. The laws in place determine the location and type of facilities built as well as provide potential incentives to increase the development of such facilities. They also provide safety protections to bicyclists and pedestrians and assist in the enforcement of such laws. A complete list of statewide laws pertaining to bicyclists and pedestrians is in **Appendix J**.

In addition, programs and projects identified in *Let's GO CT! - Connecticut's Bold Vision for a Transportation Future* have assured that funds spent on pedestrians and bicyclists prioritize safety and connections. This is apparent in those projects selected as part of the *Community Connectivity Program* and the *Multi-Use Trail Program*.

The construction of on-the-ground facilities for pedestrians and bicyclists is an exciting visual indication of progress toward strengthening the walking and bicycling environment across the state. As part of the plan development process, four needs related to enhancing mobility were highlighted by stakeholders and agency representatives. They include access to transit, Americans with Disabilities Act (ADA) compliance, defining a statewide bicycle network, and closing the gaps in the trail network.

A. ACCESS TO TRANSIT

To achieve a truly integrated multi-modal transportation network across Connecticut, facilities for pedestrians and bicycles need to be integrated with transit services. This includes providing comfortable and efficient pedestrian and bicycle networks to access transit stations as well as accommodating these users on transit services. Existing bicycle accommodations on transit vehicles and at stations are displayed in **Table 7**.

During the development of the *Plan*, the public and key stakeholders expressed a need to strengthen the accessibility and connections for pedestrian and bicyclists to transit stations. Input focused on the lack of pedestrian facilities, such as crosswalks, near transit stations, which impedes safety. Many cited difficulties following the different rules and times of the day that various transit services can or cannot accommodate bicyclists. In addition, municipalities have voiced a desire for CTDOT to gather and provide use data at bus stops at state roads.



Image credit: CTfastrak Year One Report, CTDOT Bureau of Public Transportation



Image credit: Ability Tools Blog

B. AMERICANS WITH DISABILITIES ACT COMPLIANCE

Active transportation is more than just walking and bicycling for transportation. It includes any form of human-powered transportation including walking, bicycling, in-line skating, skateboarding, and using a wheelchair. Recently, CTDOT focused its efforts on supporting those who use wheelchairs and have other disabilities that require specific needs of the transportation system. Thus, CTDOT is overhauling its *ADA Transition Plan*, and it is expected to be released in 2020.

The ADA requires all public agencies with fifty or more employees (including CTDOT, CT municipalities, and transit agencies) to develop an *ADA Transition Plan*. The *ADA Transition Plan* helps ensure that the state-maintained transportation system, other publicly provided capital facilities, and state services are accessible to all. The *ADA Transition Plan* will evaluate existing practices and facilities and develop a framework for implementing the accessibility requirements across all CTDOT Bureaus.

Because of the overlapping interests and goals, several of the actions proposed for the development of the *ADA Transition Plan* are incorporated into the actions of this *Plan*.

Table 7: Bicycle Accommodations On Select Transit Services and Stations

Service	On-Board Accommodations	Station Accommodations
	<p>Bicycles are allowed on trains. They should be stored on the train in a safe and secure manner that allows for emergency egress for passengers</p>	<p>Bike racks are available at many of the stations along the Hartford Line.</p>
	<p>All buses are equipped to carry bicycles on a first-come, first-served basis:</p> <ul style="list-style-type: none"> • 60-foot and 40-foot buses accommodate two bicycles inside each bus • 30-foot buses have bike racks on the front of the bus 	<ul style="list-style-type: none"> • All stations have bike racks • A five-mile multi-use trail runs along the alignment connecting the Downtown New Britain Station and the Newington Junction Station. Pedestrians and bicyclists may use the trail to get to a CTfastrak station or simply for recreation
	<p>All buses are equipped to carry bicycles on a first-come, first-served basis:</p> <ul style="list-style-type: none"> • Each bus has a rack attached to its front with a capacity for up to two bicycles 	<p>Automatic Vehicle Location (AVL) technology exists on all buses. This technology uses open source location data to provide transit patrons with accurate arrival and departure information via a smartphone application</p>
<p>CTrail, </p>	<p>Bicycles are allowed on trains operating between New Haven and New London only. They should be stored on the train in a safe and secure manner that allows for emergency egress for passengers</p>	<p>Bike racks are available at many stations along the Shore Line East.</p>
<p>CTrail New Haven Line and Branch Lines </p>	<ul style="list-style-type: none"> • Permit holders may bring bicycles aboard trains under certain conditions. Conditions include but are not limited to: restrictions on days of the year (including holidays), times of the day during which bicycles are permitted on outbound and inbound trains from / to Grand Central Station, and the maximum number of bicycles allowed • Older rail cars have begun to be replaced with updated M8 railcars that have been designed with bicycle hooks to assist bicyclists • Folding bicycles are allowed at any time on trains and do not require a permit 	<p>Bike racks are available at many stations along the New Haven Line.</p>
	<p>Options for traveling with bicycles depend on the available equipment and loading procedures that is specific to each train. These options include:</p> <ul style="list-style-type: none"> • <i>Carry-on bicycle service:</i> Standard full-size bicycles may be carried on and stored onboard in bicycle racks on some trains. Some trains provide this service on a first-come, first-serve basis, while others require a reservation in advance with the potential for additional service fees • <i>Folding bikes as carry-on baggage:</i> True folding bicycles are allowed onboard certain passenger trains in lieu of a piece of carry-on baggage. Bikes must be folded before boarding the train and may not be stored in overhead racks • <i>Train-side checked bicycle service:</i> At select stations, standard full-size bicycles may be transported in bicycle racks located in the baggage car. Space is limited and must be reserved for a fee • <i>Boxed bicycles in checked baggage:</i> Bicycles may be checked on Amtrak if both the trip destination and origin stations are equipped to handle checked baggage. Bicycles / bicycle trailers must be checked in a bicycle container for a fee and passengers must supply their own bicycle container • <i>Bicycles on Amtrak Express:</i> Regular bicycles and unicycles may be shipped on Amtrak Express. Bicycles are generally exempt from Amtrak Express size requirements 	<p>Bike racks are available at many of the stations along Amtrak routes.</p>

C. STATEWIDE BICYCLE PLANNING NETWORK

The statewide bicycle planning network was developed to serve three purposes. First, the network was developed to identify key routes and connections which bicyclists want to travel on throughout the state. The network was not to be simply an inventory or reflection of all the bicycle facilities that currently exist. Second, the network also needed to provide CTDOT guidance on where future improvements should occur. Third, the statewide bicycle planning network should ultimately provide a foundation for regions and municipalities to expand upon and make local connections to.

The statewide bicycle planning network was developed with considerable input from the Steering Committee, the Regional Councils of Government (Regions), and the public. **Appendix K** describes this process in detail. **Figure 5** displays the statewide bicycle planning network.

Once the draft network was developed and refined, a methodology was created to evaluate the network and ultimately prioritize segments, or corridors, for improvements. The evaluation for each bicycle network segment assessed such factors as safety, demand, equity, existing facilities, and opportunities. Each segment was ultimately placed into one of three categories, or tiers.

Tier 1: Segments that CTDOT could consider for stand-alone bicycle improvements

Tier 2: Segments that CTDOT could consider the incorporation of bicycle improvements as part of maintenance and other road projects

Tier 3: Segments that generally meet criteria and should not be a Department priority, however, CTDOT should maintain existing level of service for bicyclists on these routes in future road projects

Appendix L describes this analysis in detail. **Figure 6** displays the priority tiers.

EXISTING STATE FACILITIES NOT ON THE NETWORK

Planners, highway designers, and engineers must also recognize the need for and realize opportunities for improvements and connections on roadways and state-maintained facilities that are not part of the statewide bicycle planning network. Many of the greatest needs on roads that are not part of the network are those related to safety. These needs are reflected in Chapter 2 and in the priority tiers.

Other needs not on the network are those connections that can, and should be, considered during planning for regular maintenance and reconstruction projects, such as facilities that may be candidates for road diets based on roadway width and average daily traffic volumes. In addition, those connections that are simply not on the network because there is an impassible area (e.g. limited access highway only) in that location should also be considered for improvements when opportunities arise. Both categories above were identified in the priority tier development process and should be referenced or consulted during planning and maintenance of roadway projects.



Image credit: Tom O'Brien, Adventure Cycling Blog



Image credit: Gap Closure Trail Study: Farmington Canal Heritage Trail Section, Mobility Tour, July 2016

Figure 5: Statewide Bicycle Planning Network

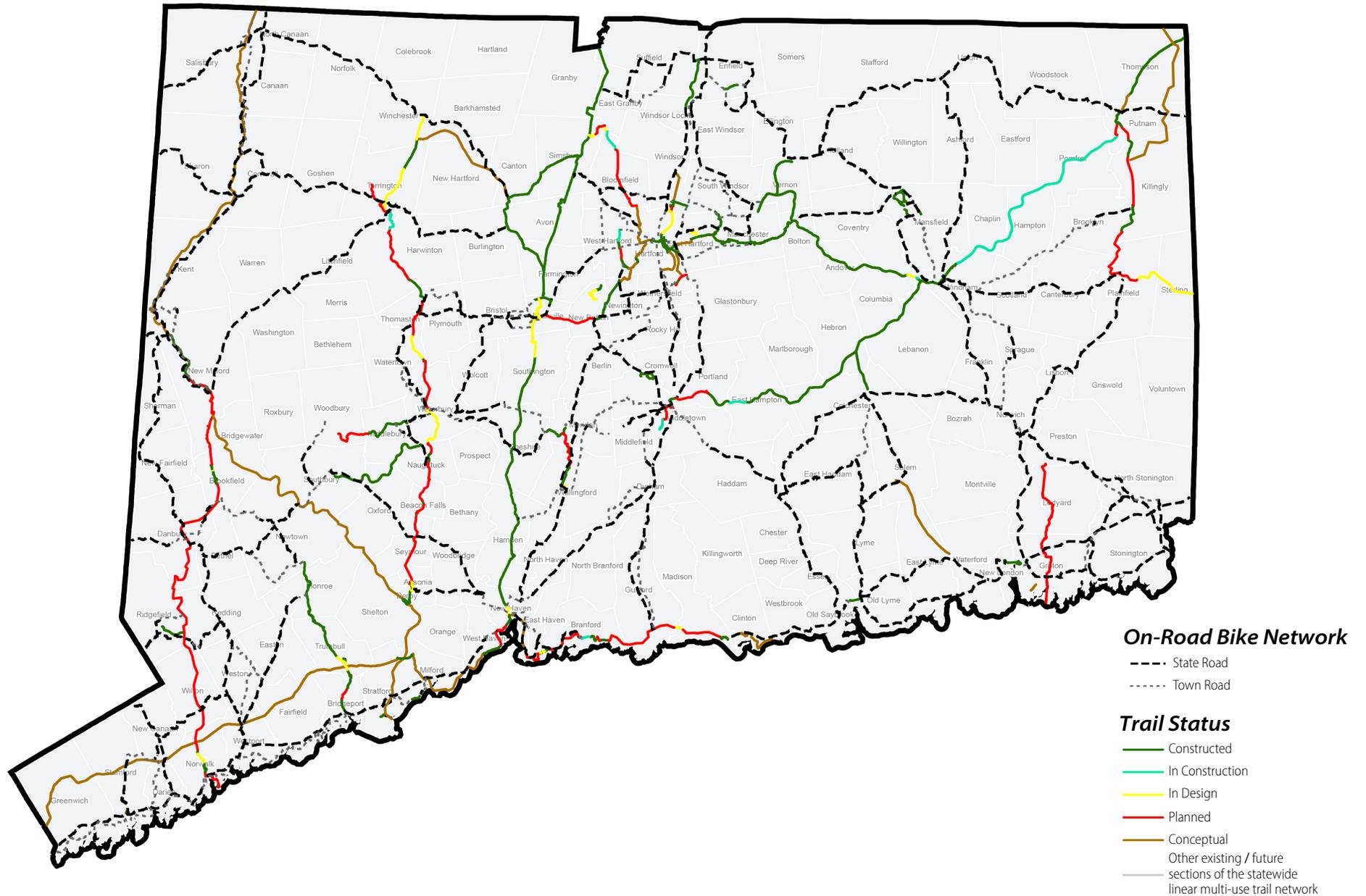
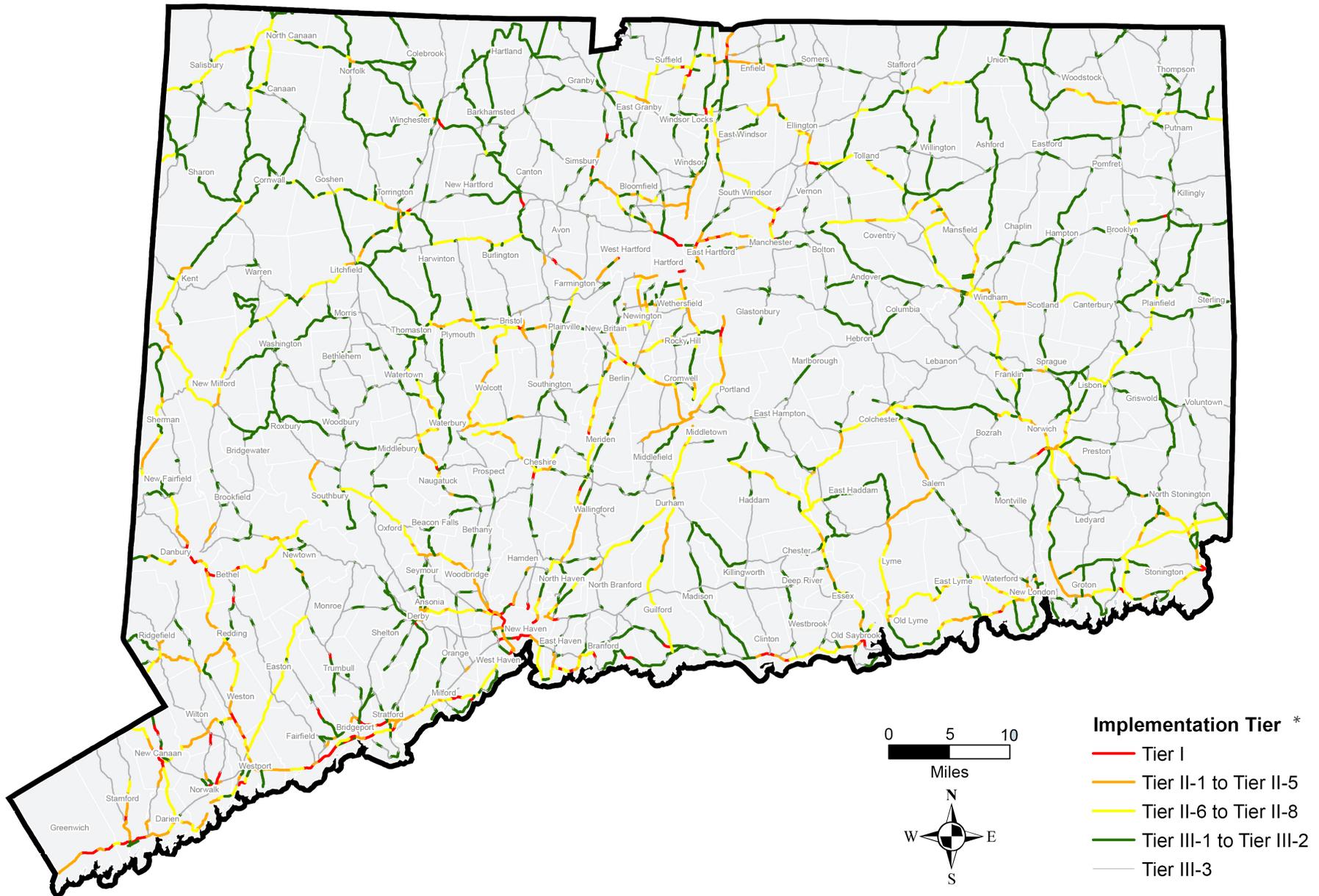


Figure 6: Implementation Priority Tiers



*Please see Appendix L for more details on the priority tiers.

D. TRAIL PLANNING

Closing the gaps in the trail network continues to be a significant priority of CTDOT. Many of these gaps are smaller in size but costlier in nature because of such factors as design or right-of-way challenges. CTDOT is particularly committed to closing gaps in the trails of statewide and regional significance.

Figure 7 displays the statewide linear multi-use trails, which include the trails of statewide and regional significance as well as those trails that are included in the statewide bicycle network. **Appendix M** includes descriptions of key trails of statewide and regional significance and recent changes to their networks.

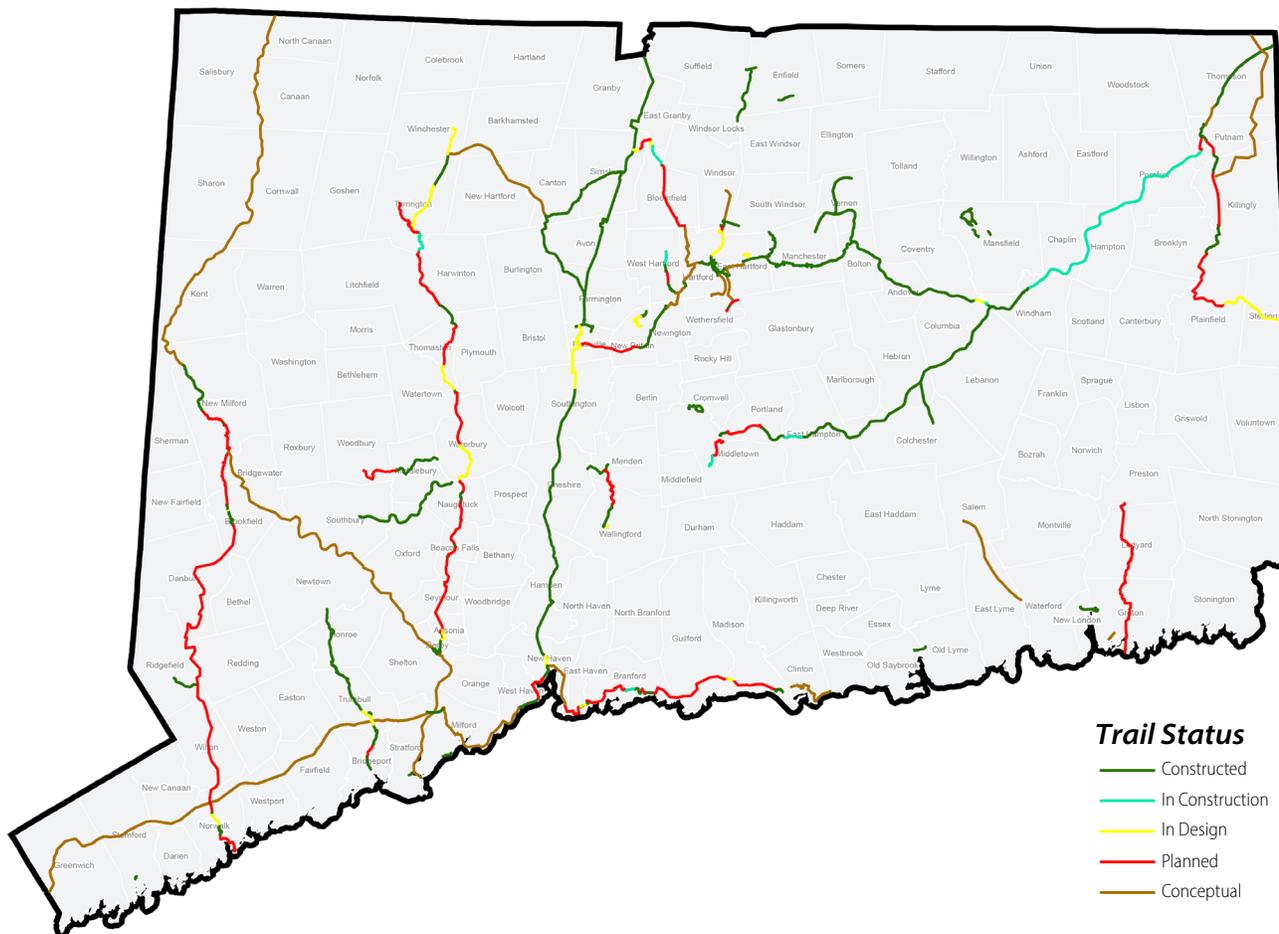


Image credit: East Coast Greenway Alliance

Connecticut Trails of Regional Significance (as of early 2012)

- Air Line Trail (both north and south of the ECG alignment)
- Farmington River Trail
- Five Mile River Greenway
- Housatonic River Trail
- Naugatuck River Greenway
- Pequonnock River Greenway
- Norwalk River Valley Trail
- Route 11 Extension Trail
- Shoreline Greenway Trail
- Tri-Town Trail

Figure 7: Statewide Linear Trails



E. STRATEGIES AND ACTIONS PLAN

Enhancing mobility is a key goal for the CTDOT. As such, CTDOT has outlined four strategies to support this goal. In addition, key actions are identified for each of the four strategies. Implementation of these actions will allow CTDOT to realize its associated goal and make progress toward the ultimate vision of the *Plan*. To assist in implementation, a responsible office(s) and / or group(s) within CTDOT is identified to lead each action.

Table 8 displays the strategies and actions to enhance mobility for pedestrians and bicyclists.

Table 8 Strategies and Actions Plan for Goal #2

Goal #2 – Enhance Mobility for Pedestrian and Bicyclists		
Strategy	Action	Lead Office(s) / Group
2.1 Improve pedestrian and bicycle access and connections to rail stations, transit hubs, and bus stops	1. Assess Department maintained bus stops and shelters for accessibility barriers	• Public Transportation • Highway Operations
	2. Inventory and assess the need for bicycle storage facilities (racks and/or lockers) at transit stations	• Public Transportation
	3. Provide needed bicycle storage facilities (racks and/or lockers) to accommodate the demand at transit stations	• Highway Design
	4. Maintain, via an asset management program, bicycle storage facilities (racks and/or lockers) at state-operated transit stations	• Public Transportation
	5. Gather use data at transit stops on state roads and provide to municipalities	• Public Transportation
	6. Incorporate pedestrian and bicycle elements when upgrading rail and transit facilities	• Public Transportation • Engineering and Construction - Highway Design
	7. Provide wayfinding signage for pedestrian and bicycle amenities at state owned rail and transit facilities	• Public Transportation • Engineering and Construction - Highway Design
2.2 Enhance mobility for those with disabilities	1. Create a committee to set priorities, assign responsibilities, and establish deadlines for the development and implementation of ADA policies	• Commissioner • Bureau Chiefs
	2. Complete a field inventory of curb-ramps, sidewalks, and traffic signals within the State right-of-way to assess barriers	• Engineering and Construction - Highway Design • Highway Operations
	3. Fund a priority-based ADA accessibility program to install curb ramps and remove other barriers	• Engineering and Construction - Highway Design
	4. Adopt and implement the <i>ADA Transition Plan</i>	• Commissioner • Bureau Chiefs
2.3 Enhance the on-road statewide bicycle planning network to better accommodate the needs of commuting, recreational, touring, and utility bicyclists of all ages, abilities, and incomes	1. Establish a public interactive, online mapping resource for the statewide bicycle planning network	• Policy and Planning - Intermodal Planning
	2. In new local applications, include a scoring or mechanism to prioritize to those project applicants that include a segment of road designated as a 1) “Tier 1” segment or 2) “Potential Local Alternative” route on the Statewide Bicycle Planning Network	• Policy and Planning
2.4 Improve the linear network of multi-use trails	1. Complete a trail inventory for trails of statewide and regional significance. Include such information as facility description, condition, past funding description, funding year, maintenance responsibility, etc	• Policy and Planning
	2. Create a video log of the State’s trails of statewide and regional significance	• Policy and Planning - Roadway Information Systems
	3. Advance maintenance projects through the Trails Maintenance Program	• Policy and Planning
	4. Develop Proposed Project Summary Reports for non-passable state highway sections to evaluate opportunities for multi-use trail connections in these corridors	• Engineering and Construction - Highway Design

CHAPTER FOUR: UTILIZING RESOURCES TO ACHIEVE MEANINGFUL IMPROVEMENTS

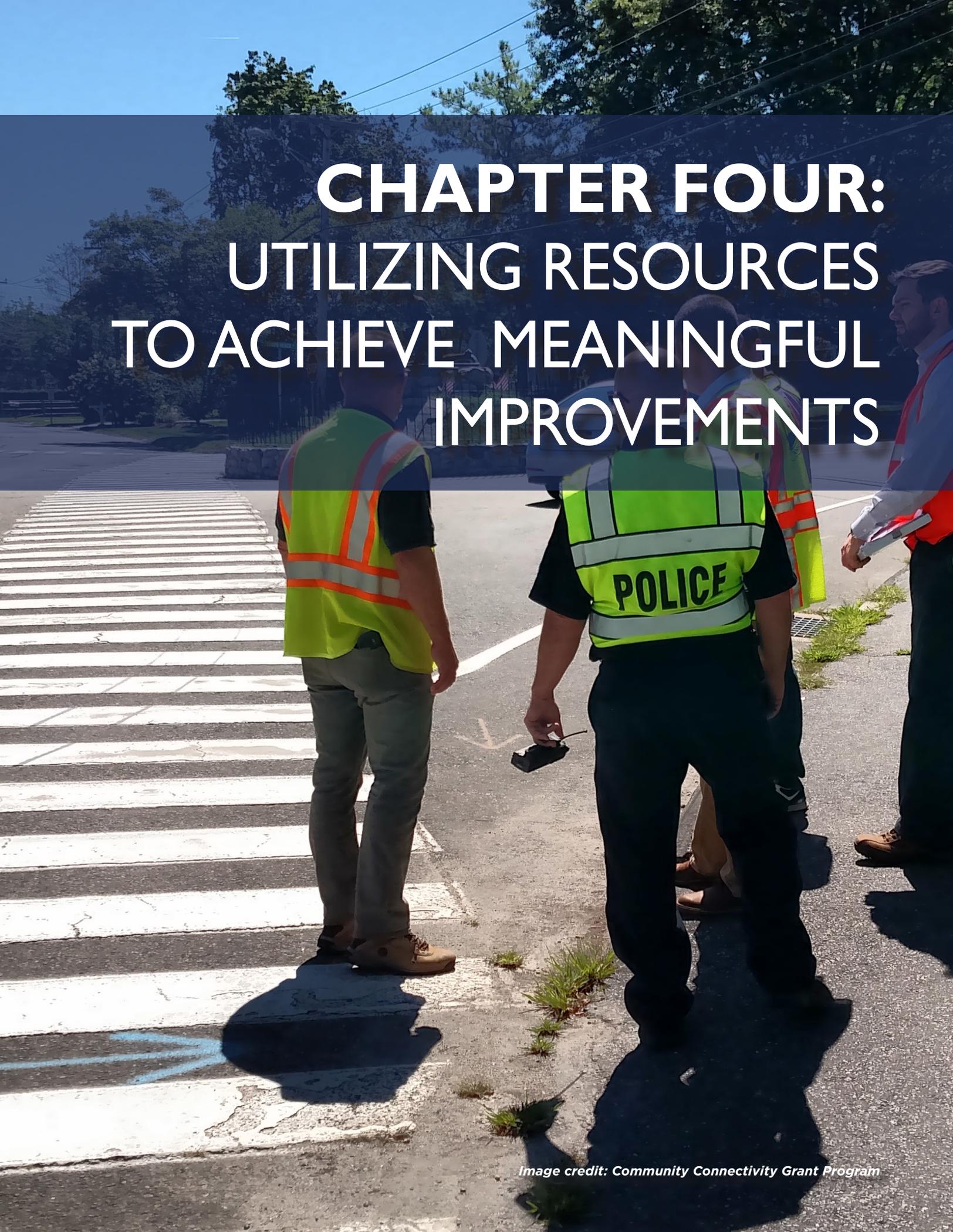


Image credit: Community Connectivity Grant Program

CTDOT has had several accomplishments related to policy shifts and infrastructure improvements for pedestrians and bicyclists. There is, however, a finite amount of staff resources and funding to draw from. During the *Plan* development process, several stakeholders cited the need to continue to enhance the current processes and tools. These enhancement strategies could be the most consistent opportunity to improve safety and mobility for pedestrians and bicyclists.

Three major topics should be considered when exploring opportunities to enhance processes and tools. They include best practices and guidelines, internal and external CTDOT collaboration, and financing.

A. DESIGN STANDARDS FOR FACILITIES IN CONNECTICUT

CTDOT refers to a collection of documents to provide guidance when designing transportation facilities. These guides, displayed in **Table 9**, are not strict standards, but guidelines for the development of facilities that accommodate all users and are sensitive to the surrounding environment. Some of these guidelines are in the process of being updated. These updates are necessary to ensure the principles of Complete Streets are a systematic part of CTDOT's project and design development process.

Designers must also rely on their experience, technical expertise, and judgment. As such, FHWA published a memorandum in August 2013 that expresses explicit support for "taking a flexible approach to bicycle and pedestrian facility design."

Regular updates to process reporting as well as continual training and other educational opportunities will ensure designers utilize the appropriate guides to develop context-sensitive and innovative designs that ensure the accommodation of pedestrians and bicyclists within Connecticut's transportation network.

B. INTERNAL AND EXTERNAL COORDINATION

CTDOT COORDINATION

Bicycle and Pedestrian Coordinator

At CTDOT, bicycle and pedestrian planning efforts and issues fall under the responsibility of the Intermodal Planning Unit. This unit is responsible for effective coordination both internally with other CTDOT offices and externally with other state agencies, COGs, local governments, and interest groups to ensure bicyclists and pedestrians are considered when planning transportation facilities.



Image credit: Bike Walk CT

A Bicycle and Pedestrian Coordinator is a position described under the Federal Highway Administration's Bicycle and Pedestrian Program, which promotes safe, comfortable, and convenient walking and bicycling for people of all ages and abilities. Through this program, each state is directed to use a portion of its Federal surface transportation funding to maintain a Bicycle and Pedestrian Coordinator position in its State DOT.

Typical responsibilities include the promotion and facilitation of pedestrian and bicycle facilities; facilitation of public education and safety programs; development of connected pedestrian and bicycling networks; management of the collection of data on the use of pedestrian and bicycle facilities; and the evaluation of the performance of such facilities. **Appendix N** includes a detailed list of these tasks. Due to the significance, and the ever increasing importance of these responsibilities, no one individual is tasked with all these, rather it is a team effort taken on by all staff members in the Unit.

Bicycle and Pedestrian Travel Needs Assessment Form

The Bicycle and Pedestrian Travel Needs Assessment Form and process ensures that the various Bureaus and Offices within the CTDOT consider pedestrian and bicycle needs when planning and designing their projects.

The form requires documentation and information to determine the "...need and extent of bicycle and pedestrian features." It requires such information as a description of existing bicycle and pedestrian facilities within or near the project limits, a review of bicycle and pedestrian crash data in the project area, and a review of existing or planned bicycle or pedestrian traffic generators, such as parks and schools. The form is expected to be completed to the extent possible during a project's scoping phase with continual review throughout the Preliminary Design. Upon completion

Table 9: Design Guidelines and Standards for Facilities in Connecticut

Sponsoring Agency	Publication	Description	Date
CTDOT	Highway Design Manual	<ul style="list-style-type: none"> Contains design standards for streets and highways 	2019 update in progress
AASHTO	Guide for Development of Bicycle Facilities 4th edition (aka: “Green Book”)	<ul style="list-style-type: none"> Provides information on the development of facilities to enhance and encourage safe bicycle travel Illustrates how to accommodate bicycle traffic in most riding environments, including roadways and shared use paths 	2012
AASHTO	Guide for the Planning, Design, and Operation of Pedestrian Facilities	<ul style="list-style-type: none"> Identifies effective and appropriate measures for accommodating pedestrians on various public rights-of-way Includes information on the effect that land use planning and site design have on pedestrian mobility 	2004
FHWA	Planning, Design, and Maintenance of Pedestrian Facilities	<ul style="list-style-type: none"> Provides information on pedestrian facilities for purposes of planners and engineers Identifies additional relevant publications for more in-depth information " 	1989
FHWA	Manual on Uniform Traffic Control Devices (MUTCD)	<ul style="list-style-type: none"> Guides the appropriate signage and lane markings to ensure safe and efficient travel for all users 	2009 (Revision 1 and 2, May 2012; ongoing revisions online)
CTDOT	The Connecticut Strategic Highway Safety Plan (SHSP)	<ul style="list-style-type: none"> Coordinates statewide safety initiatives of the Highway Safety Improvement Program, the Highway Safety Plan, and the Commercial Vehicle Safety Plan Serves to achieve long-term crash reduction goals and performance measures 	2010 Adoption (revised in 2013); updated SHSP released for 2017-2021
NACTO	Urban Bikeway Design Guide	<p>Provides cities with state-of-the-practice solutions to create Complete Streets for bicyclists. For each treatment, three levels of guidance are provided:</p> <ul style="list-style-type: none"> 1) Required - elements for which there is a strong consensus that the treatment cannot be implemented without; 2) Recommended - elements for which there is a strong consensus of added value; 3) Optional - elements that vary across cities and may add value depending on the situation" 	2011
ITE	Designing Urban Walkable Thoroughfares guide	<ul style="list-style-type: none"> Provides guidance on context sensitive solutions for roadway improvement projects that are consistent with physical settings, especially where community objectives support walkable communities, compact development, mixed land uses, and support for pedestrians and bicyclists 	
NACTO	Designing for All Ages and Abilities	<ul style="list-style-type: none"> Provides guidance on types of bike infrastructure to build bike networks that are safe and comfortable for riders of all ages and abilities Focuses on two key safety factors —vehicle speeds and traffic volume—in addition to design factors like street width" 	2017
FHWA	Small Town and Rural Multimodal Networks	<ul style="list-style-type: none"> Applies existing national design guidelines in a rural setting and highlights small town and rural case studies Addresses challenges specific to rural areas, recognizes how many rural roadways are operating today Focuses on opportunities to make incremental improvements despite the geographic, fiscal, and other challenges that many rural communities face 	2016
FHWA	Designing Sidewalks and Trails for Access-Part 2, Best Practices Guide	<ul style="list-style-type: none"> Provides guidance on how to design and regularly maintain sidewalks and trails for all users 	2001

of Preliminary Design, the form is also completed and attached to the Preliminary Design Report for each project. **Appendix O** displays the blank 2018 version of the form.

Environmental Review Form

The Environmental Review Form continues to be improved to better accommodate pedestrians and bicyclists in projects. In years past, the Environmental Review Form only required that the Bicycle and Pedestrian Travel Needs Assessment Form be completed if a project was in an urbanized area. Since 2017, it now must be completed for all projects that “contain, or has the potential to contain, design elements that could impact the function of the facility by non-motorized users, as defined by CTDOT’s Complete Streets Policy.”

EXTERNAL COORDINATION

CTDOT currently coordinates with various other agencies to promote pedestrian and bicycle safety and awareness. These agencies include DPH, CT DEEP, and Department of Motor Vehicles (DMV). **Appendix C** includes descriptions of these efforts. CTDOT also coordinates with the Regions regularly in the areas of short- and long-term project planning.

Continuing and strengthening these existing coordination efforts, as well as seeking out new opportunities, is imperative to enhancing safety and mobility for pedestrians and bicyclists.

C. FUNDING

The landmark Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 was the first federal transportation funding law that required state Departments of Transportation to adopt a more collaborative and multi-modal paradigm. Many of ISTEA’s provisions have been carried forth in subsequent federal transportation laws, including the Fixing America’s Surface Transportation (FAST) Act that was adopted in 2015.

Appendix P provides a summary of current funding sources for pedestrian and bicycle transportation.

In addition, CTDOT, regional agencies, and local agencies should consistently consider evaluating and providing information on new and innovative funding sources and / or strategies for bicycle and pedestrian projects. Examples of innovative funding strategies being used in other states are listed below.

- The East Coast Greenway Adopt-a-Mile Program offers sponsors an opportunity to adopt a mile of the trail that spans approximately 3,000 miles from Maine to Florida. Each donor is recognized at the kiosks in each State along the Greenway. This strategy could be applied in Connecticut for trail projects requiring funding. Individual paving

stones or naming rights to a trail could also be sold to raise funds.

- The *National Scenic Byways Program* provides grants and technical assistance for projects that are on highways designated as National Scenic Byways. This funding source could be used to plan, design, and develop bicycle and pedestrian facilities along Connecticut’s National Scenic Byways, which include the Merritt Parkway and Route 169.
- The *Transit-Oriented Development Technical Assistance Initiative* supports efforts to create mixed-use and walkable communities near transit centers. In 2017, the States of Alabama, Nebraska, New Mexico, North Carolina, and Washington all received funding to improve bicycle and pedestrian infrastructure around rail and bus stations.
- A *Dedicated Sales Tax* was issued in Mammoth, California to secure a stable funding source for the development and maintenance of local trails, parks, and recreation. The city increased the local sales tax by half a percent. The revenue is used only for the construction, operation, and maintenance of recreational infrastructure around Mammoth Lakes. This has also been implemented in San Diego, California.
- A *Moving Violation Surcharge* is being used in Portland, Oregon to help fund Portland’s pedestrian education and advocate programs. Traffic fine revenues are distributed to local jurisdictions to dedicate to programs that focus on increasing awareness of pedestrian and bicycle safety as well as Safe Routes to School.
- *Tolling Strategies* have been implemented by numerous international cities around the world to raise money for bicycle and pedestrian infrastructure along major corridors. In London, private vehicles are charged a fee to enter the central district of the city. This money is then allotted to transit, bicycle, and pedestrian improvements on the same corridor that they were driving.
- A *Bicycle Tax* has been implemented in Colorado Springs, Colorado which mandates a \$4 charge on each newly sold bicycle in the State. This tax goes towards funding bicycle trails and facilities across the Town of Colorado Springs.

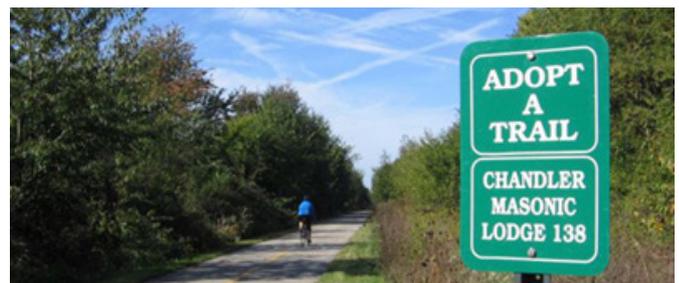


Image credit: Friends of Madison County Parks and Trails

D. STRATEGIES AND ACTIONS PLAN

Working with and expanding on existing resources is a key goal for CTDOT. CTDOT has outlined four strategies to support this goal. In addition, key actions are identified for each of the four strategies. These may include actions such updating existing manuals to include bicycle friendly policies, providing guidance to the Bureau of Highway Operations to discuss maintenance topics, and regularly updating existing plans to stay current with trends.

Implementation of these actions will allow the Department to realize this third major goal and make progress toward the ultimate vision of the *Plan*. To assist in implementation, a responsible office(s) and / or group(s) within the Department is identified to lead each action.

In most cases, any number and / or combination of the actions can be implemented to build toward the overall vision of the *Connecticut Active Transportation Plan*. **Table 10** displays the strategies and actions to enhance mobility for pedestrians and bicyclists.

Table 10: Strategies and Actions Plan for Goal #3

Goal #3 – Utilize Resources to Achieve Meaningful Improvements		
Strategy	Action	Lead Office(s) / Group
3.1 Explore best practices and develop select design, construction, and maintenance manuals or procedures	1. Develop Connecticut Bicycle Design Guidance for eventual incorporation into the Highway Design Manual. Include information on such features as signage, shared lane markings, dashed lines through intersections, shared right turn lanes, other pavement markings, and a flexible design for facilities that serve as emergency alternates to interstates (e.g. Route 1 to I-95)	<ul style="list-style-type: none"> • Engineering and Construction - Highway Design • Engineering and Construction - Traffic Engineering • Policy and Planning - Intermodal Planning
	2. Incorporate best practices, including the National Association of City Transportation Officials (NACTO) guidelines and treatments, into the Bicycle Design Guidance	<ul style="list-style-type: none"> • Engineering and Construction - Highway Design • Policy and Planning - Intermodal Planning
	3. Prepare and issue guidance on ADA standards to be used to evaluate facilities and design projects	<ul style="list-style-type: none"> • Engineering and Construction - Highway Design • Policy and Planning - Intermodal Planning
	4. Develop a new sidewalk policy to address ADA, side paths, and municipal maintenance responsibilities	• Complete Streets Standing Committee
	5. Develop maintenance guidelines for the Office of Operations for bicyclist facilities on existing roadways	• Complete Streets Standing Committee
	6. Establish maintenance guidelines for all trails of statewide significance to ensure trails remain in an appropriate state of good repair	• Complete Streets Standing Committee
3.2 Provide guidance on the use of federal and state program funds for bikeway, trail, and walkway projects	1. Develop a clearinghouse of information on traditional and non-traditional funding sources for pedestrian and bicycle projects	• Policy and Planning
	2. Develop training, guidance, manual(s) on: successful submissions for pedestrian and bicycle projects; project development process, and others as needed	• Complete Streets Standing Committee
	3. Communicate with regional planning agencies and municipalities at the COG Coordination Meetings on any new clearinghouses, trainings, and / or guidelines	• Policy and Planning - COG Coordination

Table 10: Strategies and Actions Plan for Goal #3 (continued)

Goal #3 - Utilize Resources to Achieve Meaningful Improvements		
Strategy	Action	Lead Office(s) / Group
<p>3.3 Provide regular information, technical assistance, and training on pedestrian and bicycle maintenance, planning, and design practices to CTDOT staff, regional and municipal staff, consultants, and other members of the public</p>	1. Attend a minimum of two Maintenance Managers Meetings per year to discuss current pedestrian and bicycle topics (e.g. VIP paving program expectations and benefits, ADA inventory requirements, new / revised guidelines)	<ul style="list-style-type: none"> • Policy and Planning - Intermodal Planning • Complete Streets Standing Committee
	2. Attend the annual District Inspector Training classes scheduled through the Office of Construction and discuss such current pedestrian and bicycle topics (e.g. new / revised guidelines, lessons learned)	<ul style="list-style-type: none"> • Policy and Planning - Intermodal Planning • Complete Streets Standing Committee
	3. Encourage RPOs to make pedestrian and bicyclist priorities part of their study processes and selection criteria	<ul style="list-style-type: none"> • Policy and Planning - COG Coordination • Policy and Planning - Intermodal Planning
	4. Attend RPO transportation committee (or Board) meetings quarterly to report on the scheduled VIP paving projects in the coming year	<ul style="list-style-type: none"> • Policy and Planning - COG Coordination
	5. Send 6-month look ahead letter for VIP paving projects to Local Traffic Authority (LTA) in addition to the first elected official	<ul style="list-style-type: none"> • Highway Operations
	6. Establish a public, online resource that includes information related to VIP paving	<ul style="list-style-type: none"> • Policy and Planning - Intermodal Planning • Highway Operations
	7. Participate in regular community walk and bike audits across the state with community leaders and advocates	<ul style="list-style-type: none"> • Complete Streets Standing Committee
<p>3.4 Regularly update critical pedestrian and bicycle resources to keep them effective and relevant</p>	1. Review / update the Statewide Sidewalk Policy annually	<ul style="list-style-type: none"> • Engineering and Construction - Highway Design • Complete Streets Standing Committee
	2. Review /update the Bicycle and Pedestrian Travel Needs Assessment Form annually	<ul style="list-style-type: none"> • Engineering and Construction - Highway Design • Complete Streets Standing Committee
	3. Schedule and update the <i>Connecticut Active Transportation Plan</i> , including the safety analysis and implementation tiers, every six years	<ul style="list-style-type: none"> • Policy and Planning - Intermodal Planning
	4. Establish public, interactive, online mapping resource for the Statewide Bicycle Planning Network	<ul style="list-style-type: none"> • Policy and Planning - Intermodal Planning
	5. Review and update the public, interactive, online mapping resource quarterly	<ul style="list-style-type: none"> • Policy and Planning - Intermodal Planning
	6. Coordinate with responsible parties (e.g. regional planning agencies, other state agencies, interest groups) through regular, on-going meetings to maintain current mapping data	<ul style="list-style-type: none"> • Policy and Planning - COG Coordination • Policy and Planning - Intermodal Planning
	7. Expand the capabilities / features of the interactive resource with newly available information	<ul style="list-style-type: none"> • Policy and Planning - Intermodal Planning
	8. Coordinate with the State Legislature to authorize pedestrian and bicycle funding in <i>Let's GO CT! - Connecticut's Bold Vision for a Transportation Future</i> beyond 2020.	<ul style="list-style-type: none"> • Commissioner • Bureau Chiefs

CHAPTER FIVE: MEASURING PROGRESS



Image credit: Weston and Sampson

The strategies and actions set forth in Chapters 2, 3, and 4 provide specific direction to continue to improve the conditions for walking and bicycling on state-maintained roadways and statewide linear multi-use trails.

It is critical to track the progress of these strategies and actions in the coming years. The *Plan* will only be implemented if there is a CTDOT Office responsible for tracking progress. Thus, the Intermodal Planning Office in the Bureau of Policy and Plan will track the fulfillment of actions. This reporting will occur to the Complete Streets Standing Committee on an annual basis. This information will be included in the plan updates, which are scheduled to occur every six years.



Image credit: Christian Abraham / Hearst Connecticut Media

Table 11: Strategy and Action Plan to Measure Progress

Chapter 5: Measuring Progress		
Strategy	Action	
5.1 Develop metrics	1. Assess available data to determine possible and appropriate measures	• Policy and Planning-Performance Measures Unit
5.2 Conduct progress reviews of the <i>Connecticut Active Transportation Plan</i>	2. Track and report on the fulfillment of actions annually	• Policy and Planning - Intermodal Planning



Image credit: Fitzgerald & Halliday, Inc.



Image credit: Community Connectivity Grant Program

This *Plan* was developed under the leadership and direction of Commissioner James Redeker, who's vision and dedication to pedestrian and bicyclist safety will have a lasting effect on the residents of and visitors to Connecticut.

This *Plan* was prepared by staff from the Connecticut Department of Transportation and Fitzgerald & Halliday, Inc.

