

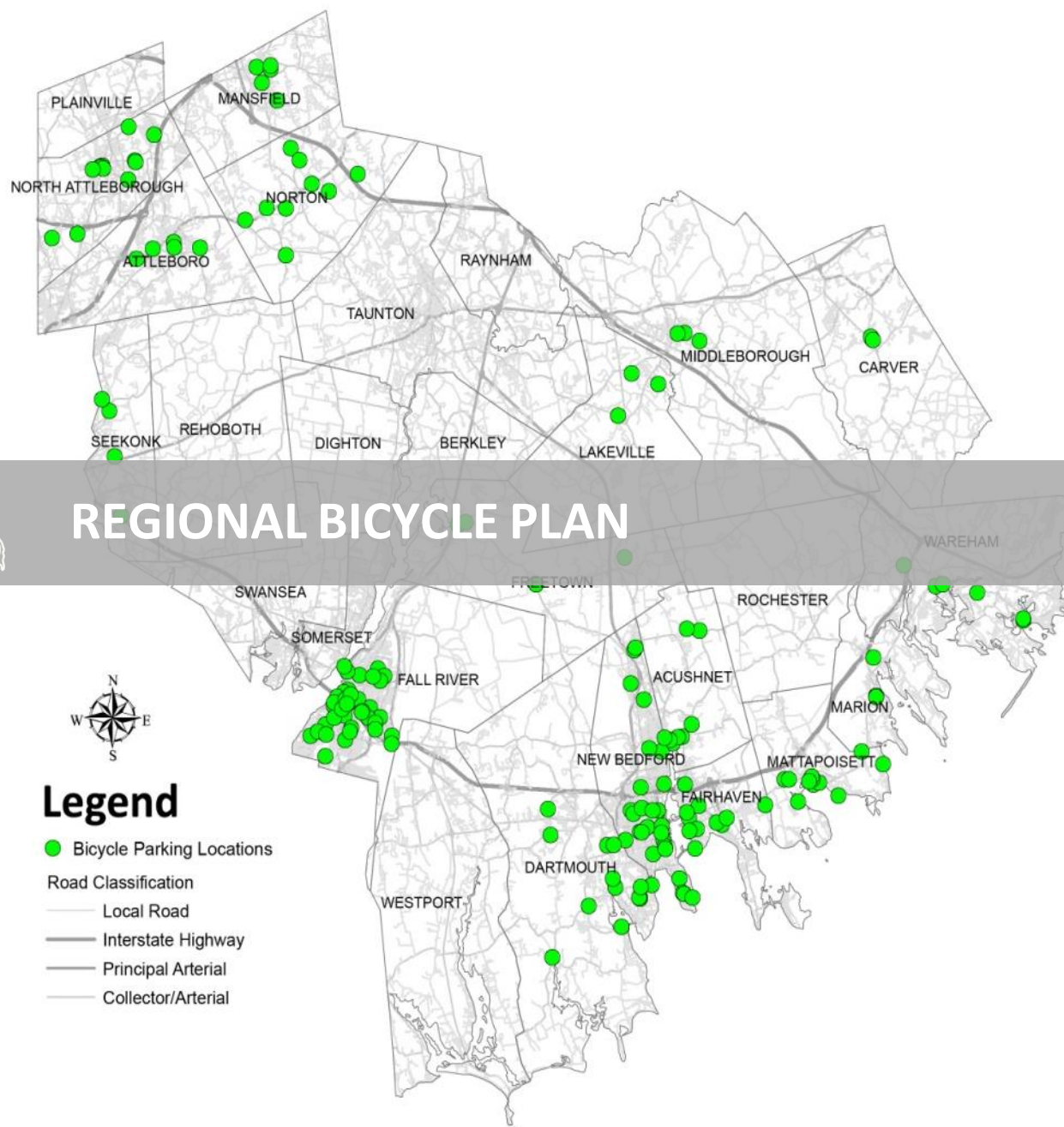


REGIONAL BICYCLE PLAN



Legend

- Bicycle Parking Locations
- Road Classification
 - Local Road
 - Interstate Highway
 - Principal Arterial
 - Collector/Arterial



Final | February 2016, updated June 27, 2019

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What is the Regional Bicycle Plan?

The Regional Bicycle Plan is a study of the existing bicycle infrastructure for the 27 communities that make up Southeastern Massachusetts, and a proposed plan for improving and expanding that infrastructure to create a safe, efficient and connected bicycle network.

The goals of the study are as follows:

1. Encourage more trips by bicycling;
2. Plan for a functional, safe and interconnected network;
3. Facilitate the development of the network by increasing support, knowledge and funding for projects; and
4. Encourage equal access to bicycling for all ages and abilities.

Who contributed to this study?

The study, while composed by SRPEDD, contains input from bicyclists, towns, cities, bicycle advocacy groups, and other members of the community.

What are the outcomes?

The study found that while there are a number of facilities in place, planned for or under construction, there is a need to provide additional connections not only to other facilities but to connect the facilities to priority destinations.

What are the recommendations?

The major recommendations for the study include:

- Closing gaps between existing facilities to create an interconnected, safe and efficient network;
- Promote intermodal connectivity, specifically with walking and transit; and
- Encourage communities through technical assistance to adopt policies that promote bicycle transportation, including facilities, signage and secure bicycle parking.

What else is in the study?

The study also contains guidance on types of facilities, sources of funding, resources, and recommended routes for communities considering bicycle infrastructure.

2016 SRPEDD Regional Bicycle Plan – 2020 Regional Transportation Plan Update

1.0 Introduction

Bicycling is one of the most economical, sustainable, environmentally friendly and healthiest forms of transportation, which yields negligible emissions, negligible operating costs and extensive health benefits. The cost of driving per mile in 2014 ranged from 46.4 cents per mile to 73.6 cents per mile depending on vehicle size and the number of miles driven, according to the American Automobile Association. The cost of bicycling is limited to the cost of a bicycle, minimal bicycle maintenance and/or proper safety gear and a good pair of shoes. No fossil fuels are burned directly by bicycling either, with their only emissions resulting from the production of food consumed by the user. There are numerous health benefits with choosing active transportation including decreased rates of diseases such as obesity and heart disease and lower incidences of adverse health effects due to poor air quality.

Investing in bicycle infrastructure can also have a positive economic impact on a community as well as the region. Research by the Volpe Center for the Federal Highway Administration (FHWA) described potential economic benefits from travel time savings, reduced transportation operating expenses, safety improvements, access to jobs, consumer behaviors of users and health and environmental benefits (Simmons, 2015). Businesses planning to relocate and/or recruit new employees look for locations that provide target employees with healthy transportation options that offer the modes that employees look for, provide a high quality of life and help to keep their employees healthy, therefore reducing the number of sick days taken and health care costs. Bicycle facilities also have an impact on potential tourism opportunities by attracting tourists and providing opportunities for related businesses such as bicycle rentals. Bicycle infrastructure also carries less long-term maintenance requirements compared to motor vehicle infrastructure as bicycles have significantly smaller loading and therefore create less wear and tear.

One way to display the efficiency of bicycling versus other modes of transportation is to use “person-miles per gallon (PMPG).” The higher the PMPG the greater the efficiency of the transportation mode. This takes into account vehicle occupancy rates for vehicles and makes them comparable to single person biking. Table 1 summarizes the average person-miles per gallon for different modes of transportation.

Table 1: Average Person-Miles Per Gallon by Transportation Mode

Mode	PMPG
Bicycling	984.0
Walking	700.0
Automobile	35.7
Light Truck/SUV	31.4

The importance of bicycling is under represented in general transportation statistics. The American Community Survey (ACS) collects information on how respondents get to work, but the respondents are limited to the single mode used for the longest distance, which excludes any potential secondary travel modes. For example, if a commuter rail user travels to the train station by bicycle and then rides the train, the only commuting travel mode collected is the train ride. Adding and enhancing bicycling facilities therefore benefits other forms of transportation, primarily transit, which relies heavily on bicycling and walking to be the “first and last mile” to origins and destinations. The ACS also does not collect data for non-commuting trips such as shopping, appointments, services etc. The minimal data that is collected shows a promising trend. A comparison of 2000 Census data to 2008-2012 data shows that nationally, the number of workers who traveled to work by bicycle as their main mode of transportation has increased from 0.4 to 0.6 percent, an increase of 50%. The data also showed a trend of increased non-motorized transportation in communities that invested in infrastructure for bicycling.

Planning for adequate and regionally connected bicycle facilities is essential to regional transportation planning given the efficiency and positive characteristics of this mode choice. Providing the public with safe infrastructure on which to bike will not only enhance these modes for existing users, but will attract new users. With this Regional Bicycle Plan, the SMMPO hopes to drive the development of a regional bicycle network that will encourage and permit commuting by bicycle that will link important destinations to the areas where people live. To this end, SRPEDD performed public outreach at the outset of this study to identify and take into consideration the region’s priorities. The following goals were identified:

1. Encourage more trips by bicycling;
2. Plan for a functional, safe, and interconnected network;
3. Facilitate the development of the network by increasing support, knowledge and funding for projects; and
4. Encourage equal access to bicycling for all ages and abilities.

This plan describes the current bicycle network in Southeastern Massachusetts and provides a strategy for achieving the goals listed above.

2.0 Design Features

In order to realize the creation of a functional, safe and interconnected regional bicycle network, design improvements and a consistency of purpose and philosophy should exist at the state, regional and local levels. Increased bicycle use has created greater demands on our transportation systems. The language of bicycle planning has also evolved over the past 20 years. Any viable bicycle planning activity or improvement must reflect a familiarity with the following terms, definitions and concepts:

2.1 Design cyclist/Comfort zones

Before discussing specific bicycle infrastructure, it is important to understand the characteristics and comfort level of cyclists. A key concept in the development of bicycle facilities is the “design cyclist”. Similar to a design vehicle, the concept of the design cyclist allows bicycle facilities to be planned for users of varying degrees of skill and cycling ability. The following definitions have been used in bicycle planning when discussing design cyclists:

- Group A - Advanced Bicyclists: Experienced riders who can operate under most traffic conditions and who desire direct routes and high speeds.
- Group B - Basic Bicyclists: Casual or new adult and teenage riders who desire low-speed, low volume streets or designated bicycle facilities.
- Group C - Children: Pre-teen riders whose key destinations are within or adjacent to residential areas and prefer low volume streets with slow traffic or clearly defined separate bike paths.

Within the goal of creating an interconnected network that makes bicycle travel safe for all users, individual projects may be planned, designed, and constructed with consideration given to any or all of these cyclists.

In general, bicyclists level of comfort decreases as motor vehicle volumes and speeds increase. A widely distributed report¹ from the Portland, Oregon Office of Transportation determined that people generally fall into one of four categories based on their relationship to cycling. As shown in Figure 1 on the next page, less than one percent of all riders identify as “strong and fearless”, 7% as “enthusiastic and confident”, 60% as “interested but concerned” and 32% as “no way no how.” The 60% that fall into the “interested but concerned” category are considered to be the “target” market for bicycling. Building better and safer infrastructure would likely encourage this group to choose bicycling as some form of transportation, whether as a main source of commuting, a way to get around locally, or for recreational purposes. Group A could be considered either “strong and fearless” or “enthused and confident.” Groups B and C would generally fall into the “interested but concerned” category.

¹ “Four Types of Cyclists,” Geller, Roger; Bicycle Coordinator Portland Office of Transportation, 2006

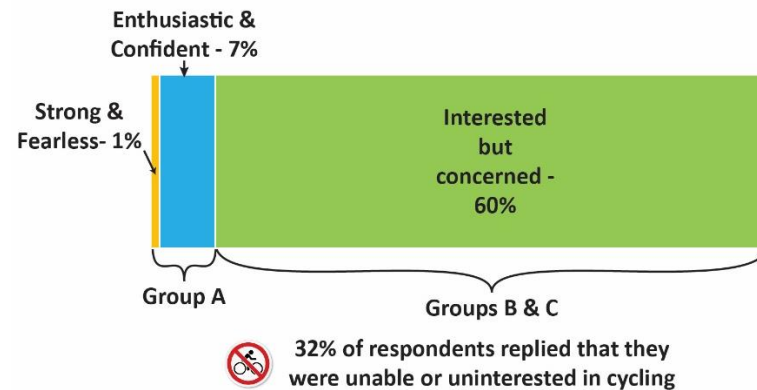


Figure 1: Types and Groups of Cyclists

Another important consideration for bicycle safety is the “comfort zone,” or the width needed to adequately accommodate the cyclist plus the width to operate and/or maneuver a bicycle. The amount of space afforded to cyclists may directly impact their ability to safely navigate a route, as cyclists expend a high amount of mental effort to maintain course in narrow or constrained conditions rather than paying due attention to potential obstacles or harmful conflicts with other facility users.² The space required may vary based on the group the design cyclist falls in, but in general a typical cyclist requires a minimum of 2 feet or width to safely maneuver. Figure 2 from the MassDOT Separated Bike Lane Planning and Design Guide, shows a breakdown of space requirements for a typical cyclist.

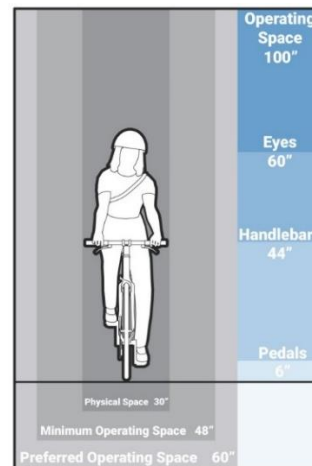


Figure 2: Space requirements for a typical cyclist

² FHWA-SA-12-018: Bicycle Road Safety Audit Guidelines and Prompt Lists, May 2012

2.2 Infrastructure

Bicycle Infrastructure, improvements and provisions made by public agencies to accommodate or encourage bicycling fall into 3 classes:

Class 1: Separate Use Paths and Separated Bicycle Lanes

A **separate use path**, sometimes referred to as a bicycle path, off road path, rail-trail or multi-use path is defined as, “A bikeway separated from motorized vehicular traffic by an open space or barrier within the highway or on an independent right-of-way” (AASHTO). Abandoned Railway right-of-ways are often a top choice for this type of path as they have typically flat grades and long uninterrupted stretches. This is considered the safest option for bicycle travel and would attract Groups B and C or the “interested but concerned” type of cyclists. Bike Paths are generally open to all forms of non-motorized traffic and typically run from 10 to 14 feet in width. Figure 3 shows the Fairhaven Bicycle Path, the first separate use path in the SRPEDD region.



Figure 3: Phoenix Rail Trail, SUP in Fairhaven

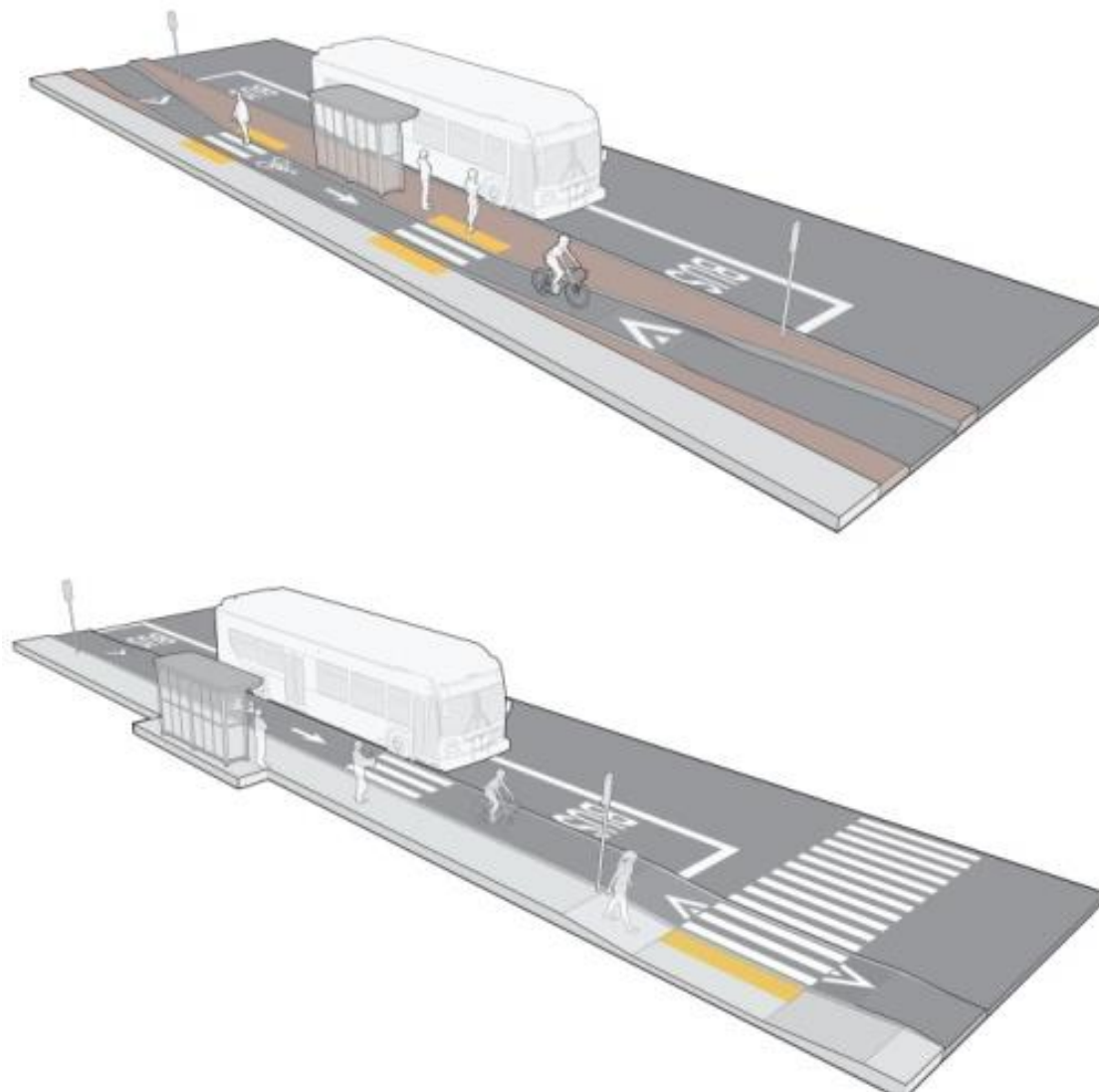
Separated bicycle lanes, sometimes referred to as buffered bicycle lanes, protected bicycle lanes or cycle tracks are defined as “bicycle facilities that follow street alignments where there is a physical separation between the bicycle travel area and the motor vehicle travel area, often through barriers or grade separation³.” Although this concept is relatively new, it is already in use in New York City, Portland, San Francisco, and Washington D.C. and is making its way into design in Massachusetts, most notably on Commonwealth Avenue in Boston. They are gaining in popularity due to the combination of increased accessibility and convenience of riding on the street with the advantages of separation from motor vehicle and pedestrian traffic and the attraction of Groups B and C (“interested but concerned”) riders. Examples of separated bicycle lanes are shown in Figure 4.



Figure 4: Separated Bicycle Lanes (left - Separated bike lanes in Toronto, Canada; right - protected bike lane in Cambridge, MA)

³ American Association of State and Highway Transportation Officials (AASHTO)

Separated bicycle facilities should assure proper access to transit stops along transit routes. Two example of access to a transit stop with a separated bicycle lane from the Draft MassDOT Separated Bicycle Lane Design Guide are shown in Figure 5.



Location Approaches

1. Bike lane routed between transit stop and street
2. Bike lane routed between transit stop and the sidewalk

Figure 5: Transit Access and Separated Bicycle Lanes.

Source: Draft MassDOT Separated Bicycle Lane Design Guide

Separated bicycle facilities have increased short term maintenance requirements for cleaning and snow removal compared to on road facilities and/or traditional motor vehicle facilities, but have reduced long term maintenance costs due to bicyclists creating less wear and tear than motor vehicles.

Class 2: Bicycle Lanes

The term “bicycle lane” refers to a portion of a roadway that has been designated for the preferential or exclusive use of bicyclists by striping, signing, and pavement markings. Bicycle lanes typically range from 4 feet to no more than 6 feet in width. This type of facility generally appeals to Group A riders but could provide an important stepping stone to more advanced riding skills or connection between Class 1 facilities for Groups B and C. At intersections, proper guidance should be given to the bicyclists as well as motorists about right-of-way, lane usage and proper crossing locations. This is generally done with pavement markings and signage. Measures should be taken to prevent parking of vehicles in the bicycle lanes including signage and enforcement. Figure 6 shows examples of bicycle lanes from the SRPEDD Region.



Figure 6: Bicycle Lanes on Acushnet Avenue in New Bedford (left) and Chase Road in Dartmouth (right).

Class 3: Designated Routes and Sharrows

Class 3 facilities can be described as:

- vehicle lanes with bicycle markings on pavement to indicate shared space, typically called sharrows and consisting of a bicycle symbol with two chevron style arrows indicating direction above;
- bicycle shoulders or space along the side of a motor vehicle travel lane for bicycle travel that is separated by a solid white line but less than 4 feet in width; and
- pavement markings or signage to indicate that it is a designated bicycle route. This type of facility is good for providing guidance to more advanced Group A riders and to alert motor vehicle drivers to the presence of bicyclists.

Class 3 facilities should only be implemented on roads with space restrictions and preferably on roads with low motor vehicle speeds and volumes. Figure 7 shows examples of sharrow symbols and signage for class 3 facilities.



Figure 7: Sharrow pavement markings and bicycle route signage in Swansea (left & middle), and bicycle shoulders in Middleborough (right).

Bicycle Boulevards

Bicycle boulevards are a relatively new concept for bicycling and are defined as “a low-speed street which has been ‘optimized’ for bicycle traffic.” Bicycle boulevards discourage cut-through motor-vehicle traffic but allow local motor-vehicle traffic. They are designed to give priority to bicyclists as through-going traffic. They could incorporate Class 1, 2 or 3 features and may attract different ridership groups based on configuration. An example of a bicycle boulevard is shown in Figure 8.



Figure 8: Bicycle Boulevard

Intersections

Intersections can be difficult to navigate for all users, and have a specific set of concerns for bicyclists. Bicyclists have the same rights to travel the roadway along with the same responsibilities. At intersections, bicyclists should follow the same rules as motor vehicles, i.e. stopping, turning, yielding, etc. Cyclists do not always follow these rules possibly because the intersection is designed poorly, they are unaware of bicycle laws, or they do not feel safe. Motor vehicle drivers may also not be aware of the presence of cyclists or what laws apply to cyclists and therefore, may not behave accordingly. Intersections have generally been designed to accommodate automobile traffic and lack sufficient bicycle facilities. As bicycling and complete streets concepts becomes more prevalent, intersection design for all users has started to evolve. The following are design features for bicyclists at intersections:

Signals - With the increased emphasis in recent years of safety for bicycle users, many advances have been made in traffic signal design to aid the safe passage of bicyclists including:

- **Bicycle Signal Detection and Actuation** - Bicycle detection is used at actuated signals to alert the signal controller of bicycle crossing demand on a particular approach. Bicycle detection occurs either through the use of push-buttons or by automated means (e.g., in-pavement loops, video, microwave, etc). For automated means, there are pavement markings and signage to alert the bicyclist to the correct positioning for detection as shown in Figure 9.



Figure 9: Bicycle Detection signage (left) and pavement markings (right)

- **Bike Boxes** – Bike boxes, also referred to as advanced stop lines, are pavement markings at signalized intersections that allow bicycles a head start when the light changes from red to green. The “box,” typically painted green, is located in front of the motor vehicle stop line at the intersection and should be associated with an exclusive bicycle lane to allow bicycles to get into the box when the light is red. An example of a bicycle box is shown in Figure 10.



Figure 10: Bicycle box in Portland, OR

- **Bicycle-Specific Traffic Signals/Faces** - A bicycle signal is an electrically powered traffic control device that is typically used to improve identified safety or operational problems involving bicycle facilities or to provide guidance for bicyclists at intersections where they may have different needs from other road users (e.g., bicycle only movements, leading bicycle intervals). Bicycle signal heads may be installed at signalized intersections to indicate bicycle signal phases and other bicycle-specific timing strategies. In the United States, bicycle signal heads typically use standard three-lens signal heads in green, yellow, and red lenses and can also have bicycle symbols in the faces as shown in Figure 11. Typical uses include bike path crossings, to split signal phases at intersections where bicycle movement conflicts with motor vehicle movement during the same phase, to indicate an exclusive bike phase where bicycle turning movements are high and at complex intersections that may be difficult for bicyclists to navigate.



Figure 11: Bicycle Traffic Signal in Cambridge, MA

- **Hybrid Beacon** - A hybrid beacon, also known as a High-intensity Activated Crosswalk (HAWK), consists of a signal-head with two red lenses over a single yellow lens on the major street, and pedestrian and/or bicycle signal heads for the minor street. (See Figure 12.) Hybrid beacons are used to improve non-motorized crossings of major streets in locations where side-street volumes do not support installation of a conventional traffic signal (or where there are concerns that a conventional signal will encourage additional motor vehicle traffic on the minor street). Hybrid beacons may also be used at mid-block crossing locations (e.g., trail crossings).

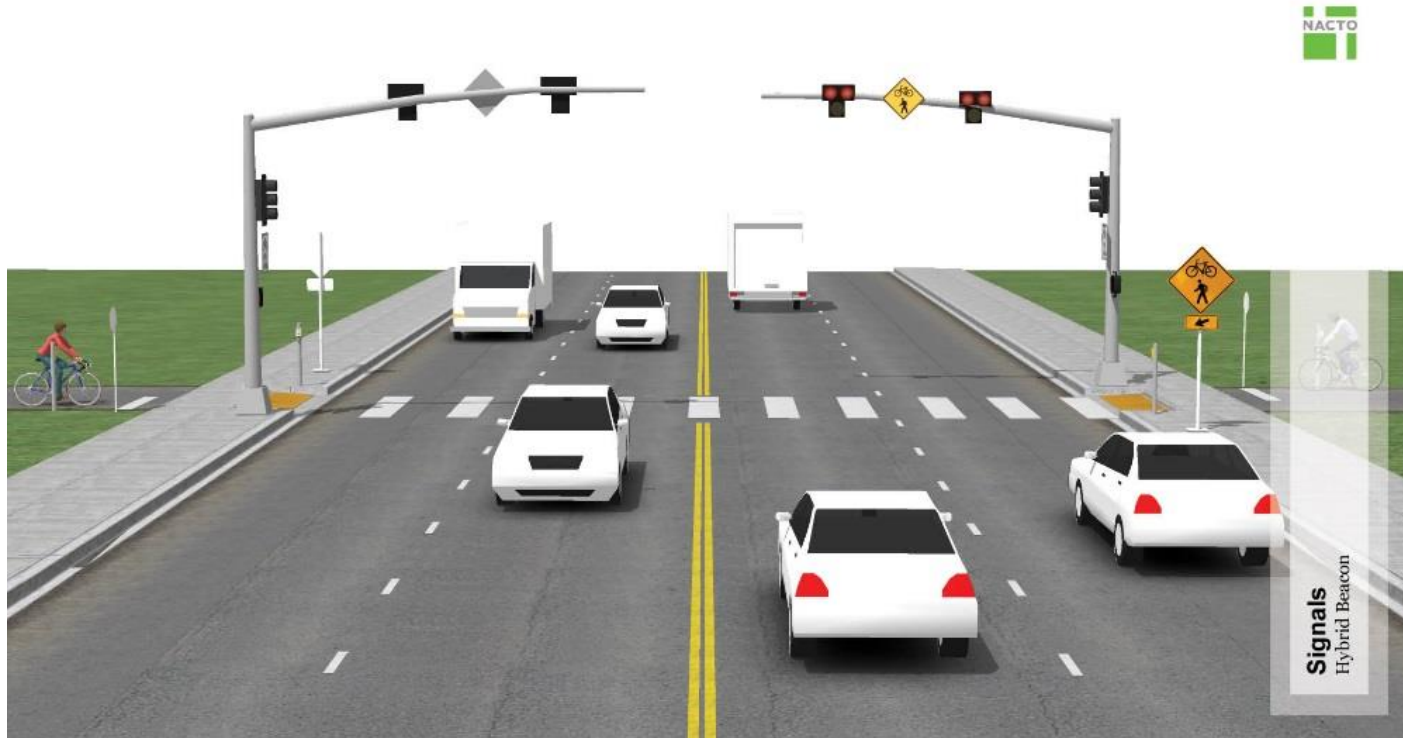


Figure 12: HAWK System, source: NACTO Guide

According to the MassDOT Separated Facilities Design Guide, intersection design for bicycle facilities should separate potential conflict points, provide adequate sight distance and encourage predictable behaviors. Red light compliance for bicyclists is typically low; the use of bike boxes, Bicycle Signal Detection and Actuation, and bicycle-specific traffic signals could help increase compliance by providing safe options and reducing frustration.

Parking

Any good investment in bicycling infrastructure should include secure bicycle parking. Bicyclists need a safe and secure place to store their bicycle at the start and end of every trip. Properly designed bicycle facilities should be conveniently located near entrances/exits and should be accessible for everyone. Several resources are available for the design of bicycle parking facilities; the most commonly used is the Association of Pedestrians and Bicycle Professionals (APBP) Bicycle Parking Guide. Some communities have adopted their own guidelines or bylaws including the Town of Dartmouth, and the cities of Cambridge and Boston. Generally, all devices should meet the following criteria to provide the best facilities possible:

1. Support for the bicycle by its frame horizontally in two or more places;
2. Design that prevents the bicycle from tipping over;
3. Ability to support a variety of bicycle sizes and shapes;
4. Space to secure the frame and one or both wheels to the rack; and
5. Allows access to each bicycle space when the racks are full (should follow ADA guidelines).



Figure 13: Bicycle Parking at UMass Dartmouth

Bike Share Programs

Bike Share Programs are services that allow a rider to rent a bike from either a docked self-serve station or GPS located dockless bike. This service is often combined with transit hubs and is most beneficial for short distance point to point trips. Implementation of programs should give careful consideration to demographics, environmental justice, proximity to transit stations/stops and other generators. The City of New Bedford launched a docked bikeshare system at several points in the city in 2017 through a partnership with Zagster, the docking station at Fort Rodman is shown in Figure 14. The Towns of Mattapoisett and Fairhaven and the University of Massachusetts Dartmouth launched dockless bike share programs through VeoRide in 2018. Dockless bicycles in Mattapoisett are shown in Figure 14.

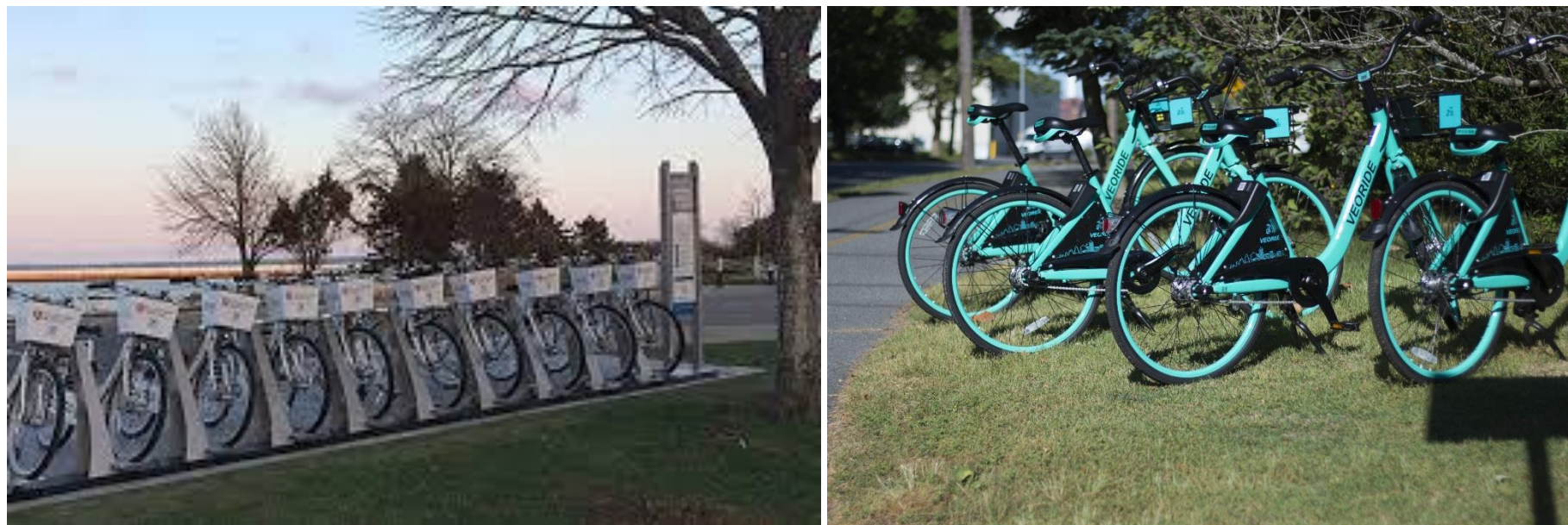


Figure 14: Docked Zagster Bicycles in New Bedford on the left and Dockless Bicycles in Mattapoisett on the right

2.3 Education, Enforcement and Encouragement

Education, enforcement and encouragement are critical to the success of bicycle safety. Facilities designed to provide safe, convenient access for bicyclists must be used appropriately to be effective. For example, bicycle facilities are designed under the assumption that bicyclists ride the correct direction on streets, yield to pedestrians, and stop at red traffic lights. It is also assumed that motorists yield to bicyclists when turning and do not drive or park in designated bicycle lanes. Therefore, it is not acceptable for road users to disregard traffic rules. Breaking these laws puts all road users at risk. Efforts must be made to encourage, among motorists and bicyclists alike, a culture of respect and shared usage in any situation. Education programs should be implemented along with the addition of any new facilities to ensure that all users have knowledge of how to properly and safely use the facilities. Combined education and enforcement programs should be considered for locations with frequent bicycle safety issues to increase understanding and compliance of laws. For more information on enforcement and education please see the bicycle safety section on page 36.

2.4 Reference Guides

The following guidelines and reference manuals are recommended for bicycle infrastructure design:

- Federal Highway Administration (FHWA) Separated Bike Lane Planning and Design Guide, 2015;
- National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide, Second Edition, 2014;
- American Association of State and Highway Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 4th edition, 2012; and
- MassDOT Separated Bike Lane Planning and Design Guide.

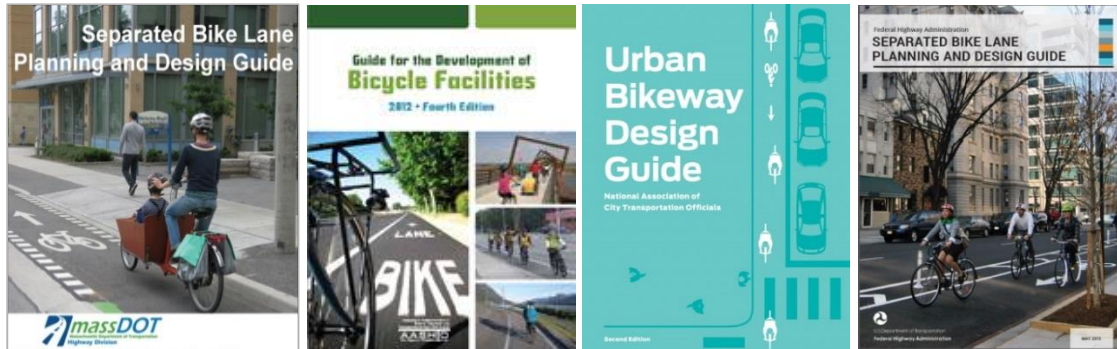


Figure 15: Bicycle Design Guides

3.0 Statistics and Demand

3.1 Bicycling activity has increased in recent years, both statewide and regionally. In the SMMPO region, approximately 569(0.2%) of workers age 16 or above commuted to work by bicycle as their primary form of transportation according to 2013-2017 American Community Survey (ACS) data. This is a 27% increase from 2000 Census reporting of 440 workers. These numbers do not reflect non-commuting trips such as recreational or local shopping or end user trips such as a commuter who rides their bike to a transit stop. Although most bicycle trips are primarily attributed to recreational purposes, these numbers reflect the growing nationwide trend towards bicycle commuting. Regardless of the nature of bicycle trips, bicycling must now be considered and planned for as a viable transportation alternative. Table 2 shows bike-to-work statistics by town in the SRPEDD region according to the 2013-2017 United States Census American Community Survey data.

SMMPO Region Bicycling Statistics

The communities with the highest numbers of bicycle commuters are Taunton, New Bedford, North Attleborough, and Fall River. The ACS data also shows that the gender of commuters is heavily skewed towards men, who make up 88% of the region's bicycle commuters.

The Massachusetts Travel Survey (MTS), a comprehensive study of the demographic and travel behavior characteristics of residents of the Commonwealth of Massachusetts, was released in June 2012 and covers from June 2010 to 2011. The project involved a sample size of 15,000 households with a subsample of those households equipped with global positioning system (GPS) equipment to collect travel data. The survey results can be broken into two major groupings, current bicycling patterns and the target audience for encouraging bicycle usage with improved infrastructure and education.

Table 2: SMMPO Region Bicycle Commuting

Community	Number of Bicycle Commuters	Percent of Regional Bicycle Commuters
Acushnet	0	0.00%
Attleboro	164	0.72%
Berkley	13	0.35%
Carver	11	0.07%
Dartmouth	0	0.00%
Dighton	33	0.43%
Fairhaven	122	0.32%
Fall River	0	0.00%
Freetown	16	0.12%
Lakeville	115	0.27%
Mansfield	0	0.00%
Marion	0	0.00%
Mattapoissett	0	0.00%
Middleborough	20	0.29%
New Bedford	15	0.18%
North Attleborough	0	0.00%
Norton	0	0.00%
Plainville	48	0.17%
Raynham	0	0.00%
Rehoboth	0	0.00%
Rochester	12	0.21%
Seekonk	0	0.00%
Somerset	0	0.00%
Swansea	0	0.00%
Taunton	0	0.00%
Wareham	0	0.00%
Westport	0	0.00%
Region Total	569	0.20%

Current Bicycling Patterns:

- Of all trips made, 1.1% were made by bicycle
- For those who did use a bicycle for non-recreational purposes, 23% used on-road bike lanes, 22% used on and off-road bike lanes and trails, while 10% used off-road trails.
- For trips to school, 1.1% were made by bicycle. For those respondents who work or attend school, there was an almost even split between those for whom bicycle facilities are available (43%) and for whom bicycle facilities are not available (42%) at work or school. Many schools are usually within an easily bike-able distance, encouragement of parents and school age children through programs such as Safe Routes to School could increase trips to school by bicycle.
- Overall, the majority of respondents (68%) had not used a bicycle for recreational purposes during the week prior to their travel day. Of those who had biked recreationally, 6% did so on one day only, 4% did so on two days, and 2% did so on three days.
- Similar to recreational biking, the majority of respondents (77%) reported not using a bicycle for transportation in the week prior to their travel day. Of those who did, the majority used a bicycle for transportation for one or two days only. For trips to work, 1.7% were made by bicycle.

The following survey results suggest a target audience for encouragement/improved infrastructure:

- Just over half of all households (56%) reported having at least one household bicycle; of those, 18% reported having two bicycles available to the household, and 16% reported one bicycle.
- 37% of households reported having two vehicles available to the household, 36% reported having one vehicle available, while 12% reported having no vehicles.
- Nearly half of all households reported having two licensed drivers in the household, while another 33% reported having one licensed driver. 7% reported having no licensed drivers.

The MTS data shows a baseline for measuring bicycle usage and demand, and shows potential for increasing bicycle commuting. The popularity of bicycle infrastructure for non-recreational purposes shows that adding bicycle infrastructure would likely increase the percentage of people who choose to use bicycles for trips.

3.2 Demand in the SMMPO Region

Nationally, motor vehicle travel is on the decline. Reports show that the demand for automobile traffic has decreased due to an aging population, rising fuel prices, increasing urbanization, improvement in travel options, increasing health and environmental concerns, and changing consumer preferences. National trends also show that fewer and fewer younger people are choosing to drive. The SMMPO region still has a high dependence on motor vehicle traffic due to the rural nature of member communities and the lack of multimodal accommodations. This trend may change as improvements are made to the transit, pedestrian and bicycle networks. ACS data from 2007-2011 reports that 9% of all households in the SMMPO region have no access to a motor vehicle. This increases the demand for alternate modes, including bicycling.

It is difficult to estimate the demand for bicycle facilities due to the lack of data but evidence of the support for bicycling infrastructure in the SMMPO region is demonstrated by the following:

- A survey of Wareham residents, conducted through the town's website, shows a high demand for bicycle facilities, with over 98% of respondents showing support for a bicycle path.
- A public hearing held for Phase 1B of the Mattapoisett Rail Trail had an attendance of over 150 people, with an overwhelming majority showing support of the project. This highlights the increase support and demand for bicycle facilities.
- In 2011 the South Coast Bikeway Alliance was formed to help facilitate the development of a regional network for bicycling across the South Coast, with the ultimate goal of creating an off-road path connecting to trails in Rhode Island and Cape Cod to connect Providence, RI to Provincetown, MA.
- In 2014 the South Coast Bikeway was designated as the coastal route of the East Coast Greenway through Massachusetts.
- In 2014 SRPEDD launched a Regional Bicycle Parking Program, which was well received by communities. See page 35 for more information on the program.
- Mass-in-Motion program implementation and success in New Bedford, Fall River and Taunton.
- Improvement and addition of bicycle facilities, especially in the cities of Fall River and New Bedford including the following notable projects:
 - Fall River- Quequechan River Rail Trail, Plymouth Avenue bicycle lanes, Route 79/Braga Bridge Project Bicycle Improvements, Scholarship City Bicycle Route
 - New Bedford – Priority Bicycle Lane Plan and Implementation, Harbor Walk
- Creation and evolution of bicycle committees in several communities in the SRPEDD Region including Carver, Dartmouth, Fairhaven, Fall River, Mansfield, Marion, Mattapoisett, New Bedford, Norton, Wareham and Westport.

- Private advocacy for the healthy transportation bill by area non-profits such as the YMCA, Voices for a Healthy Southcoast, and local bicycle advocacy groups.

Since October 1994, SMMPO staff has conducted research on the state of bicycling regarding proposed and existing bicycle facilities in our member communities. Initial data was collected through direct survey and via data sheets. Since the initial survey, responses from more than 100 public meetings involving municipalities, cycling organizations and others has contributed to the regional overview on bicycling. SRPEDD also held two Regional Bicycle Plan open houses in early 2015 to gain public input on the region's priorities regarding bicycle destinations and routes. Also taken into consideration has been information collected through numerous site visits, aerial photography and recommendations from recently revised and updated local open space and master plans. SRPEDD also maintains a dialogue with surrounding Regional Planning Agencies, as well as officials from the Rhode Island Department of Transportation (RIDOT), in pursuit of inter-regional and interstate connections.

Improved avenues for communities and individuals to express their desire for improved conditions and tracking of current bicycle usage would be beneficial to understanding demand.

3.3 Bicycle-Related Destinations

Participants of SRPEDD Regional Bicycle Plan Open Houses were asked what destinations they currently bike to or would like to be able to access by bicycle. Responses included transit connections, employment, education centers, medical facilities, social service programs, Councils on Aging, fitness facilities, retail centers, local business, transit routes/stops, recreational, historical and open space destinations. A selection of priority destinations are shown in Figure 16. Transit connections, employment, education, medical and retail designations were identified as the highest priority among participants. Participants also cited the need for secure bicycle parking at these locations.

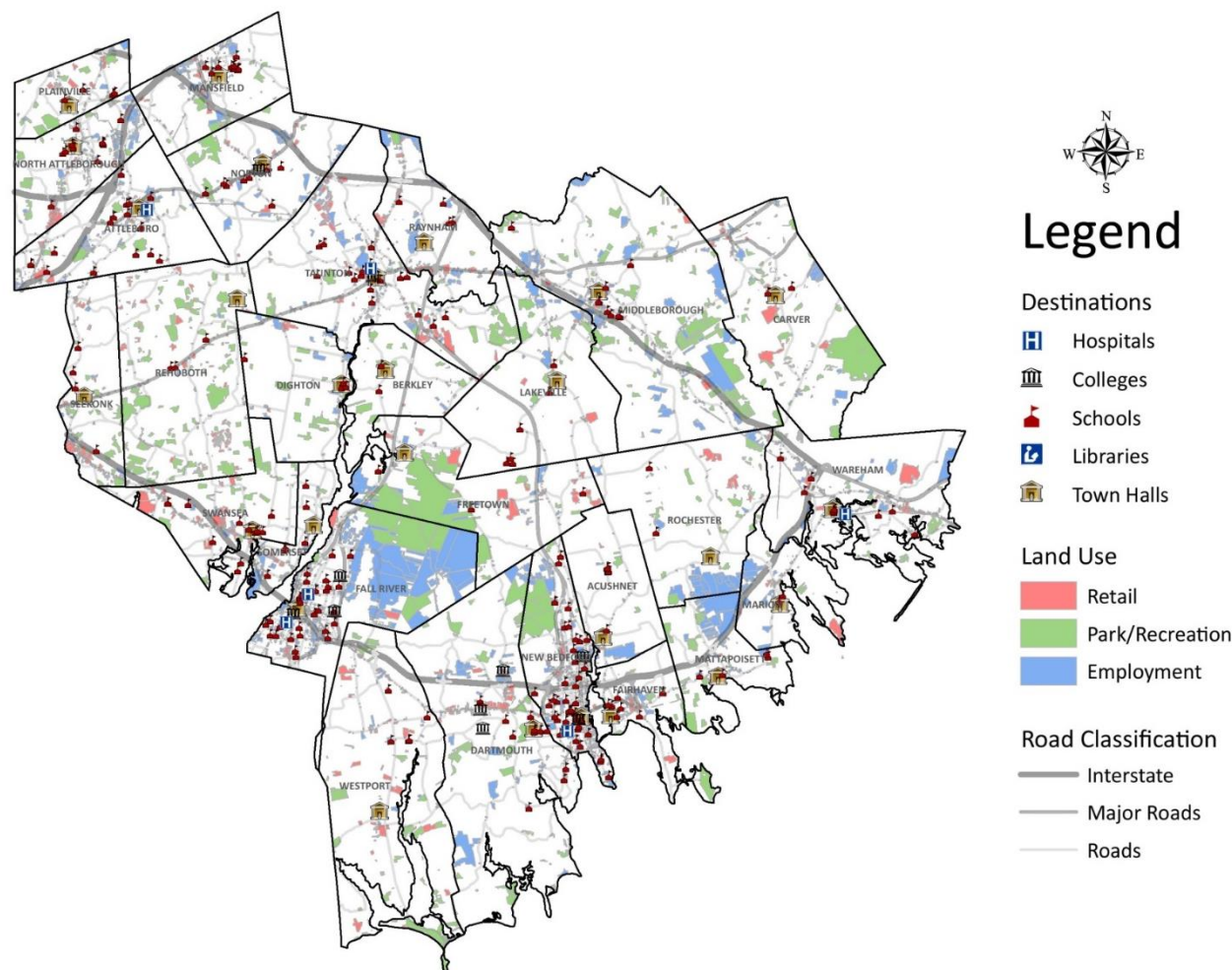


Figure 16: Priority Bicycle Destinations

3.4 Counts

Several Bicycle Counts were conducted across the region as part of the National Bicycle and Pedestrian Documentation Project. SRPEDD also started collecting bicycle volume counts in conjunction with motor vehicle and pedestrian intersection turning movement counts in 2013. A map of bicycle volume count locations is shown in Figure 17.

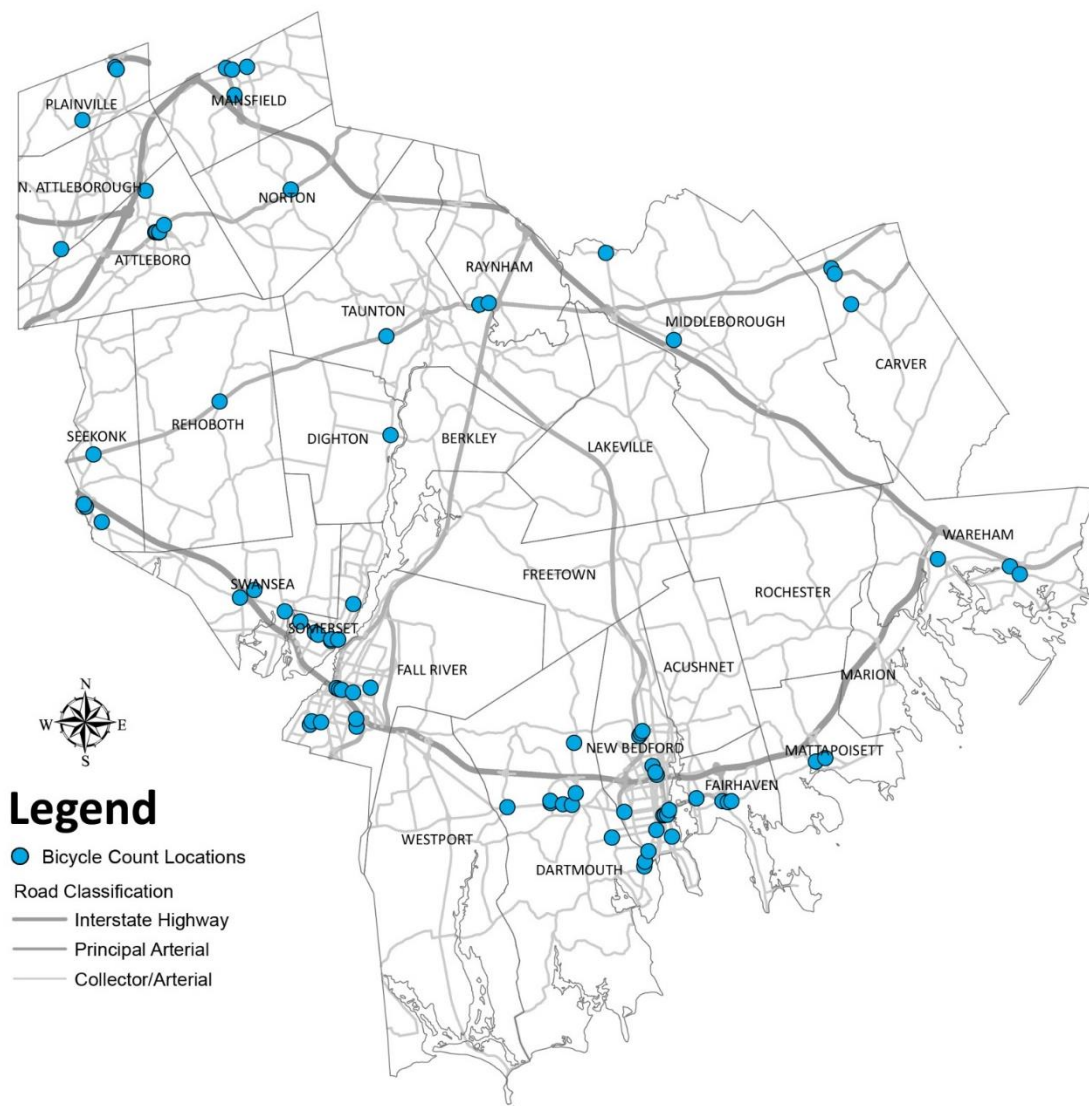


Figure 17: Bicycle Count Locations in the SRPEDD Region

4.0 Regional Bicycle Facilities, Plans, and Projects

4.1 Intercommunity Facilities

South Coast Bikeway

The South Coast Bikeway, once realized, will be a 50-mile continuous system of Class I (separate use paths) and Class II (bicycle lanes) facilities that will connect to existing paths in Rhode Island and Cape Cod. Cities and towns included in this plan are Swansea, Somerset, Fall River, Westport, Dartmouth, New Bedford, Fairhaven, Mattapoisett, Marion and Wareham. Several segments of the bikeway already exist in Swansea, Fall River, New Bedford, Fairhaven, Mattapoisett and Wareham. The South Coast Bikeway was designated as part of an East Coast Greenway route from Providence to Provincetown in 2011 and is also part of the Massachusetts Bay State Greenway, MassDOT's proposed long distance bicycle transportation network. Please see Figure 18 for a map showing the proposed routing and status of individual segments. Table 3 on the following pages outlines each section of the bikeway including the length, status and potential cost of each segment.

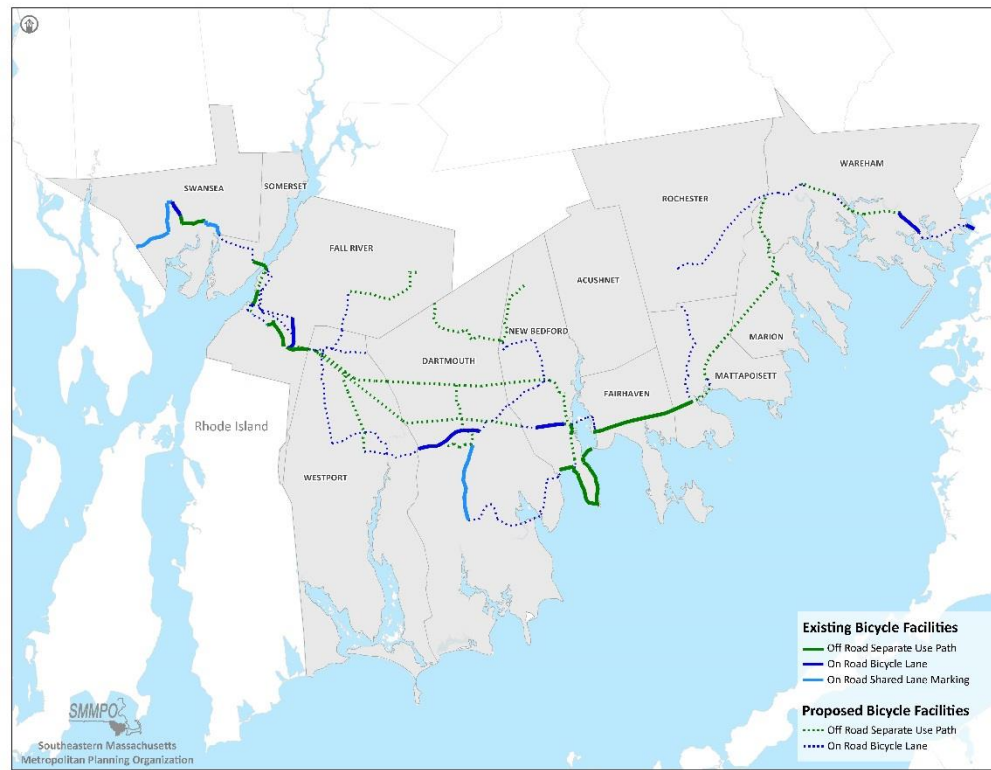


Figure 18: Proposed South Coast Bikeway Routing

Table 3: Descriptions, Statuses and Cost Estimates for Individual Segments of the Proposed South Coast Bikeway

Town	Segment	Description	Class I Miles	Class II Miles	Status	Construction Cost Estimate	Design Cost Estimate
Swansea	Swansea Bikeway	Old Warren Road - Maple Avenue - Wood Street - Swansea Mall Drive - Milford Road Path - Hortonville Road - Main Street - Elm Street	1	9.9	Complete		
Somerset	Swansea-Brightman St Bridge	Read Street to Brayton Avenue		1.83	Pre-design	\$76,860	\$9,992
Somerset / Fall River	Bouthot Bike Path (Vets Bridge)	Veteran's Memorial Bridge	0.36		Complete		
Fall River	Fall River Waterfront - Route 79 Blvd	From terminus of Bouthot Path along Route 79 Blvd to terminus of Route 79/Route 138 Bike Path			Route 79 under study		
Fall River	Fall River Waterfront - 138/Braga Bridge Area	Route 79 side path - Central Street - Milliken Blvd - Water Street - New Path	1.64		Complete		
Fall River	Downtown Fall River	Route 79/Route 138/Braga Project Bike Path to Quequechan River Rail Trail via Rodman Street		1.6	Routing not finalized	\$67,200	\$8,736
Fall River	Alfred J. Lima Quequechan River Rail Trail	Britland Park/Rodman Street to Martine Street	1.4		Complete		
Fall River	Quequechan River Rail Trail	Martine Street to Westport Town Line	1.6		Complete		
Fall River / Westport / Dartmouth / Fall River	Route 6 Alternative Routing	Separate Use Path along Route 6 from terminus of Quequechan Trail in Fall River to Hawthorn Street in New Bedford	9		Alternative Routing, Conceptual		
Westport / Dartmouth / New Bedford	Fall River-New Bedford (Rail Line)**	Fall River Terminus along Rail Line to Mount Pleasant Street in New Bedford	10.6		Alternative Routing, conceptual	\$15,900,000	\$1,363,584
Westport	Phase 1	Fall River Terminus along Rail Line to Blossom Rd			Conceptual		
Westport	Northern Alternative	Blossom Road to Dartmouth			Conceptual		
Westport / Dartmouth	Rail Line Alternative	Westport Town Line to Dartmouth Town Line	5.1	2.3	Conceptual	\$7,746,600	\$657,559
Dartmouth	Dartmouth Southern Routing	Remaining On Road			Conceptual		
Dartmouth	Dartmouth Northern Routing**	Westport/Fall River Town Line to New Bedford City Line	3.7		Conceptual		
Dartmouth	UMASS Spur	From rail alternative to UMass Dartmouth	3.1		Conceptual	\$ 4,650,000	\$398,784

Town	Segment	Description	Class I Miles	Class II Miles	Status	Construction Cost Estimate	Design Cost Estimate
Dartmouth	UMASS Campus	Routing through UMass Dartmouth	1.4			\$2,100,000	\$150,080
Dartmouth	Old Westport Rd (1 mile)			1	Complete		
Dartmouth / New Bedford	Chase Rd-New Bedford Hurricane Barrier			8.36	Conceptual	\$351,120	\$38,038
New Bedford	New Bedford Bikepath		3.2				
New Bedford	Rte 18 (JFK Hwy) Project (planned)		3.2				
New Bedford / Fairhaven	New Bedford-Fairhaven Bridge			0.84	Bridge Replacement Study underway	\$35,280	\$17,428
Fairhaven	Phoenix Trail Connection			0.6	Conceptual	\$25,200	\$12,449
Fairhaven	Phoenix Trail		3.1		Complete		
Mattapoisett	Mattapoisett Trail Phase 1A		0.8		Complete		
Mattapoisett	Mattapoisett Bikepath Phase 1B		1.1	0	Under Construction		
Mattapoisett	Mattapoisett Bikepath Phase II	Depot Street to North Street	2.4	0.3	Conceptual	\$3,612,600	\$314,960
Mattapoisett	Mattapoisett Bikepath phase III	North Street to Marion Town Line					
Marion	Marion Bikepath Phase I		3.84		Under Design, FY2023 Statewide TIP	\$5,760,000	\$493,978
Marion	Marion Bikepath Phase II	Point Road to Wareham Town Line	1.33		Conceptual	\$1,995,000	\$171,091
Wareham	Minot Avenue/Narrows Road	From terminus of Onset Avenue lanes to Sandwich Road (Route 6)			Pre-25% Design, FY2024 TIP		
Wareham	Wareham Bikepath	several possible alternatives	8.9	1.6	Alternatives, Conceptual	\$13,417,200	\$1,178,093

There are several options for routing for the sections in Westport, Dartmouth and New Bedford which are currently under examination. Option 1 is the classic version and travels along the railway right of way through the three towns. Option 2 is on-road routing through south Dartmouth and Option 3 is Route 6. Option 4 is a “Northern” routing through the Fall River Bioreserve, along publically owned land in Dartmouth and into New Bedford through New Bedford Water Department and the Department of Conservation and Recreation’s Acushnet Cedar Swamp property. Option 4 is considered highly conceptual and requires further study. The SCBA is currently in the process of funding a feasibility to determine the best routing option. Figure 19 shows the routing options through the four towns.

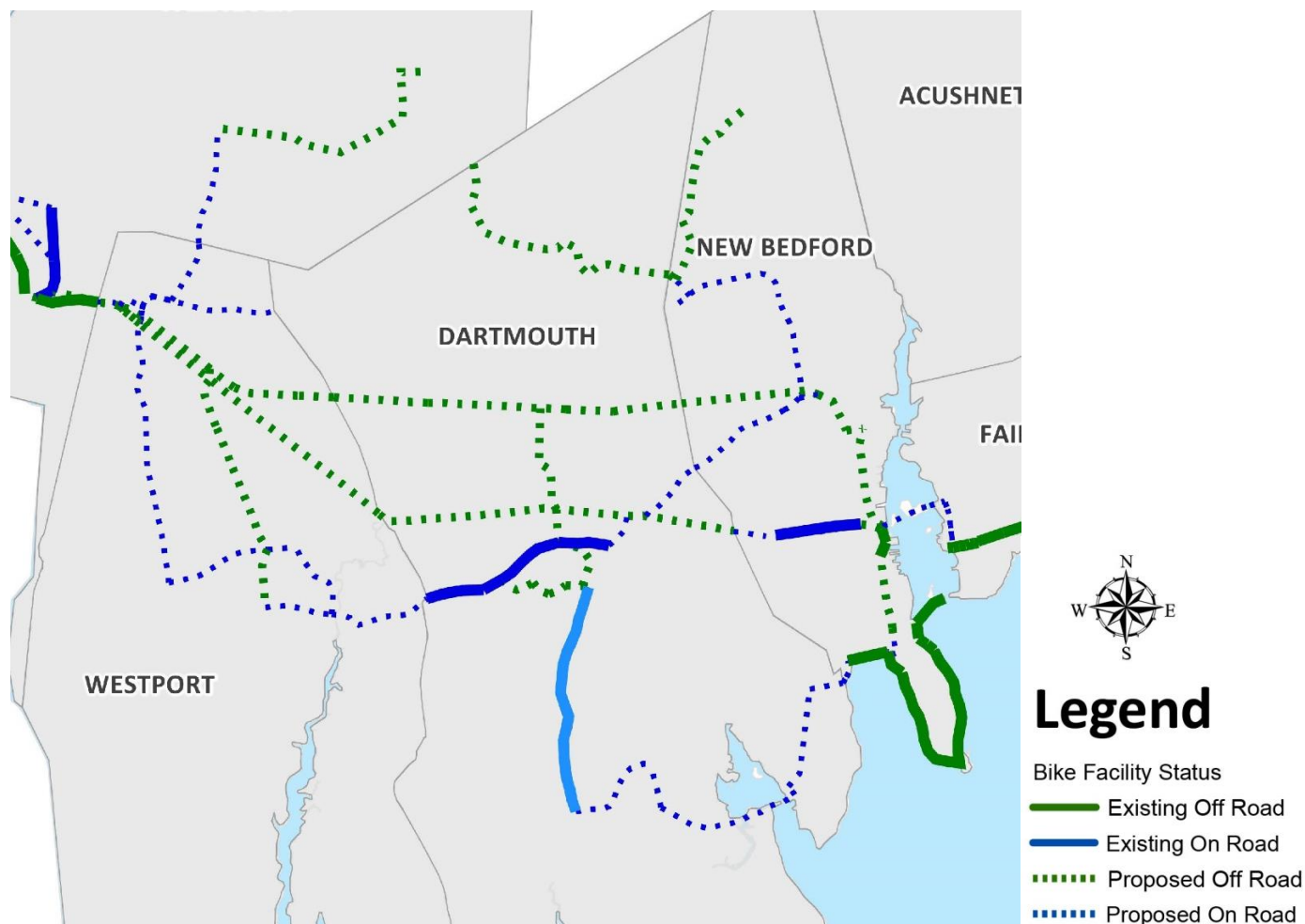


Figure 19: Routing Alternatives for the South Coast Bikeway through Fall River, Westport, Dartmouth and New Bedford

UMass Dartmouth is a priority destination of the South Coast Bikeway, and several options for routing to and through the campus are under evaluation. One alternative for routing through the campus is shown in Figure 20.

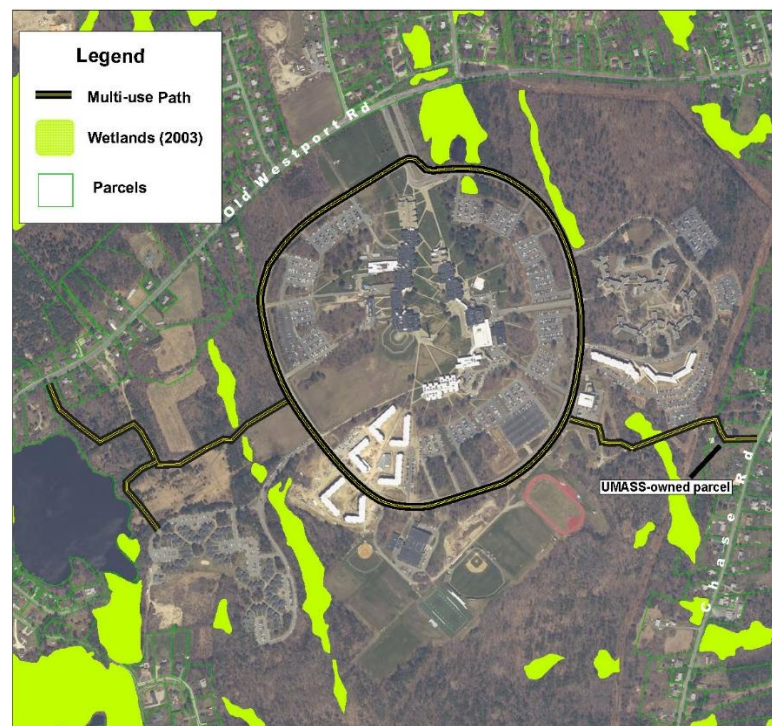


Figure 20: Routing through UMass Dartmouth

The South Coast Bikeway Alliance is a non-profit organization made up of community representatives and groups that work with local leaders and organizations to advocate for and build bikeway networks throughout the South Coast region. Their overall goal is to promote active transportation and recreation. More information on the South Coast Bikeway and the South Coast Bikeway Alliance can be found at the project's [website](#).



**Figure 21: South Coast Bikeway
Logo**

Taunton River Trail

The proposed Taunton River Trail would be a 22+ mile network of off-road trails and on-road bike lanes extending from Somerset northward through the city of Taunton along the Taunton River. The highlight of the trail will be a 2-mile segment in Dighton through Sweets Knoll State Park, with pristine views of the federally designated Wild & Scenic Taunton River and access to a new state car-top canoe and kayak put-in facility at Sweets Knoll. The Sweets Knoll canoe/kayak put-in, along with facilities in Dighton (Town Boat Ramp and put-in) and Somerset (Broad Cove put-in), will allow for “blueway” (water based) opportunities along the Taunton River Trail as well. The National Parks Service commissioned a concept design of a multimodal trail along the rail bed in Sweets Knoll State Park in 2015. Proposed routing of the trail is shown in Figure 22.

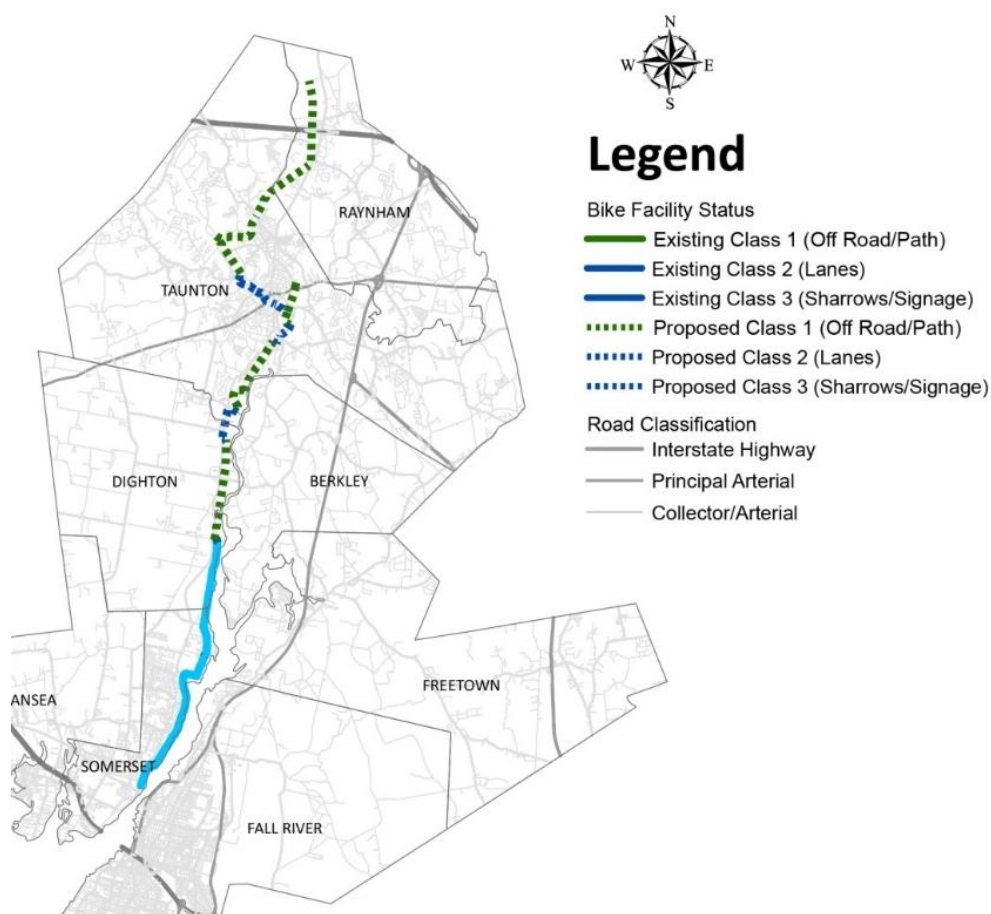


Figure 22: Taunton River Trail

The trail is currently in conceptual design with an active Taunton Pathways Committee meeting regularly to plan it, segment by segment. This core Committee also works with other municipal and non-profit partners on localized issues. The original concept for the trail was first completed in 1994 by the *Conway School of Design* for SRPEDD. The Committee is also exploring future potential connections to the Norton-Mansfield Rail Trail at the Myles Standish Industrial Park in Taunton, as well as connections into Easton and Brockton from the Norton-Mansfield route. New signage for the on-road portion of the route through Dighton and Swansea were designed and printed in 2015.

Mansfield/Norton Rail Trail

This proposed trail is an extension of the World War II Memorial Trail in Mansfield, MA through the town of Norton, MA. This is a 4.7 mile trail with a 10 to 12-foot wide multi-use path. The trail follows an abandoned rail line and Mansfield Sewer right-of-way with detours to safely traverse under Interstate 495. It has the potential of connecting the Mansfield Commuter Rail Station to the Myles Standish Industrial Park once complete. It is currently programmed in the TIP for FY2022 at \$3.8 million with Statewide Congestion Management Air Quality (CMAQ) funds. Proposed routing of the trail is shown in Figure 23 on the following page.

North/South connection

This north/south routing proposes connections between the communities of Mansfield to the north with Somerset to the south. It is a culmination of proposed paths including the Norton Rail Trail and the Taunton River Trail. These routes will provide connection to major destinations as previously mentioned and to other multi-use paths such as the existing East Bay Bike Path (East Providence, RI) and Warren Bike Path (Warren, RI), Swansea Bike paths and the Veteran's Memorial Bridge over the Taunton River. These connections are also part of the proposed South Coast Bikeway.



Figure 23: Proposed Routing for the Mansfield/Norton Trail

The city of New Bedford has been investigating the feasibility of constructing a bikeway/boardwalk along the Acushnet River from Coggeshall Street to abandoned property north of Wood Street. Acushnet and Fairhaven have also been investigating a riverwalk along their respective banks of the river as well. A rendering of the proposed trail is shown in Figure 24.



2016 SMMPO Regional Bicycle Plan - 2020 RTP Update

4.2 Community Projects and Facilities

Several communities in the SRPEDD region have been making progress with planning and implementing bicycle facilities, the following pages contain examples from several of the region's communities.

Carver

The town of Carver has an active bicycle committee that advocates for bicycle infrastructure. The committee has had success in recent years with the development of a bicycle facility plan (see Figure 25) and installation of several bicycle racks through SRPEDD's Bicycle Parking Program.

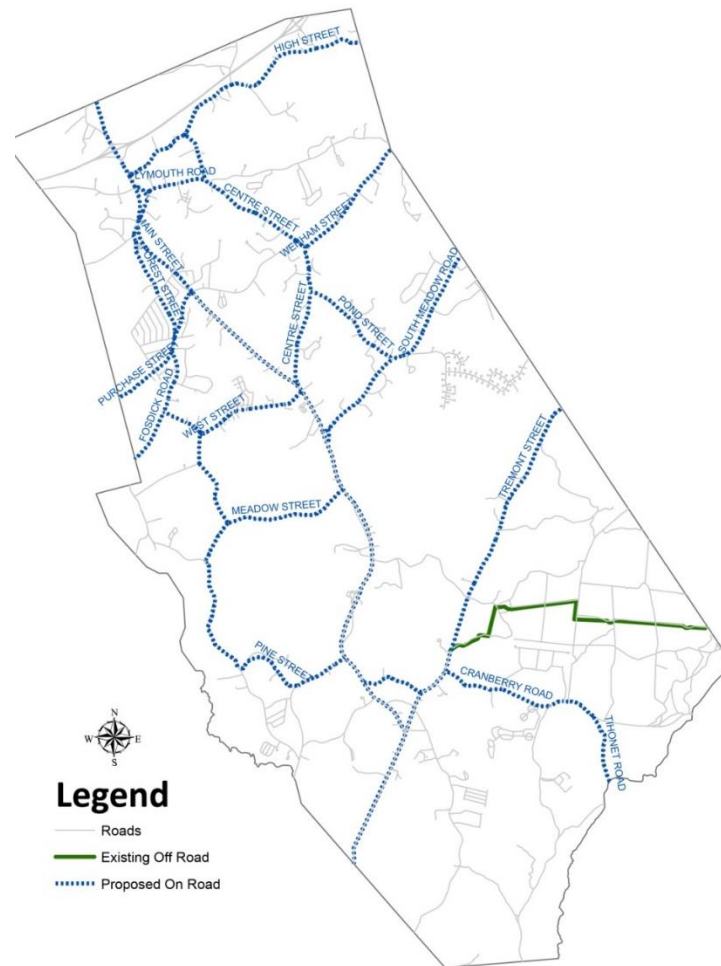


Figure 25: Carver Bicycle Plan

Fall River

The City of Fall River has two groups that oversee and promote bicycle infrastructure and safety, a bicycle advocacy group – Bike Fall River, and an official Bicycle Commission. The City has made great strides with planning and implementing bicycle facilities. A map of the city's existing and proposed bicycle facilities can be found in Figure 26.

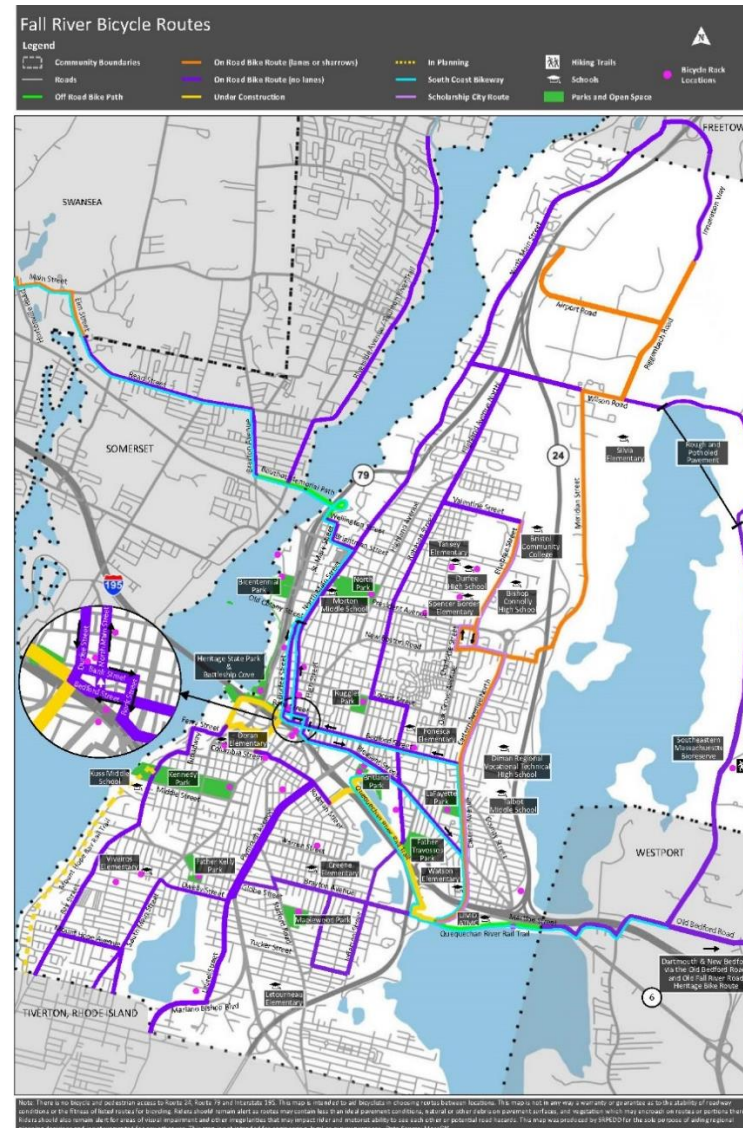


Figure 26: Fall River Route Map

Bike Fall River is very active with promoting bicycle safety with other entities including Mass-in-Motion Fall River, the Fall River Police Department, and Partners for a Healthier Community. Together they have had success with educating school-age children through bicycle safety rodeos, a bicycle safety video contest, and helmet giveaways. A bicycle safety rodeo hosted by this group is shown in Figure 27.



Figure 27: A Fall River Police Officer fits a helmet on a child at a bicycle safety event. Photo Credit: Partners for a Healthier City

New Bedford

The City of New Bedford, Mass in Motion New Bedford and the New Bedford Bicycle Committee have had great success with planning and implementing bicycle facilities. The New Bedford Bicycle Plan (see Figure 29 next page) shows existing and proposed bicycle lanes throughout the City along with the priority in relation to the city's plans. The City has recently completed the construction of the New Bedford Harbor and Cove Walks, Class 1 facilities along the Hurricane Barrier on the east and west sides of the peninsula as shown in Figure 28

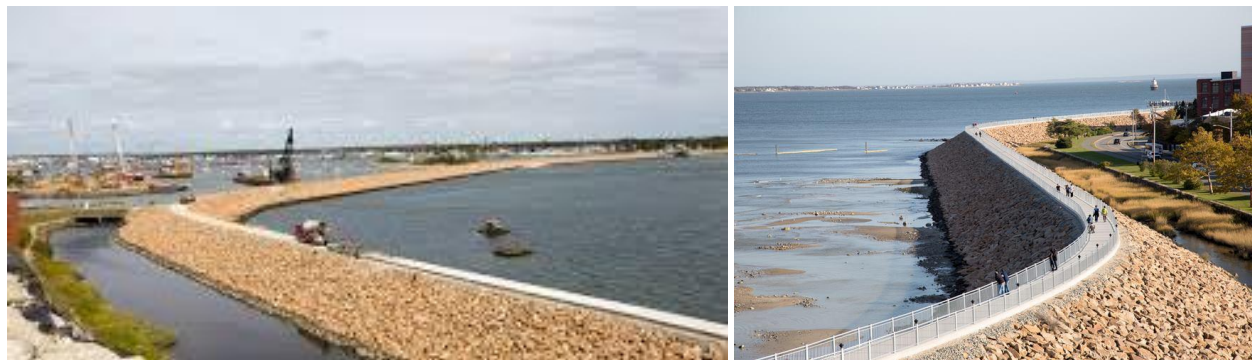


Figure 28: New Bedford Harbor Walk and Cove Walk

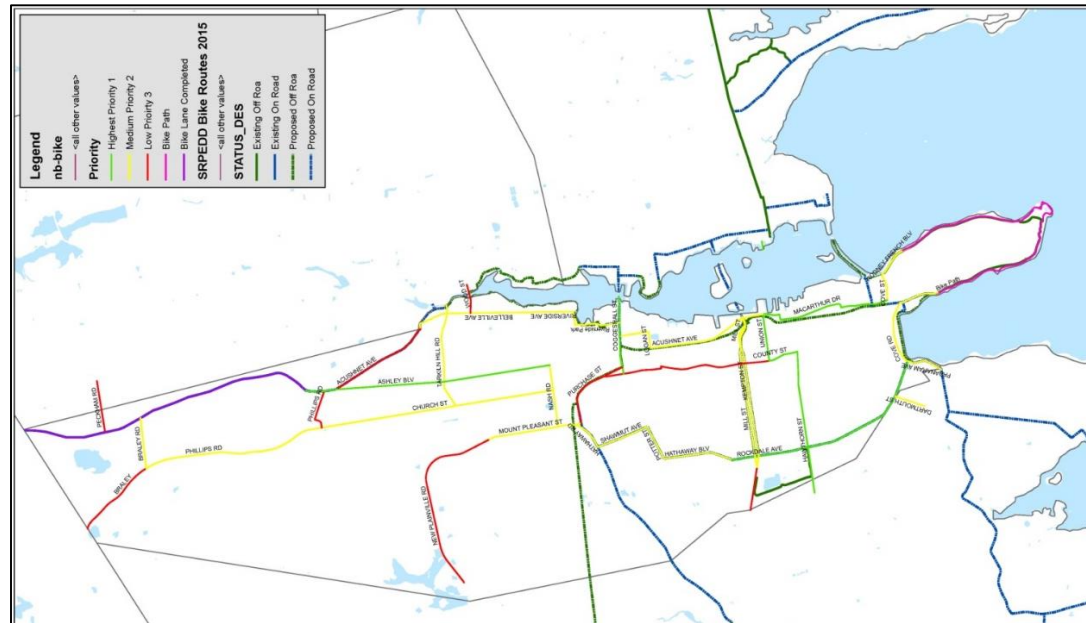


Figure 29: New Bedford Bicycle Lane Priority Map

Through Mass in Motion New Bedford (MiM NB), the city has installed several bicycle repair stations throughout the city and provides a plentitude of information on bicycling in New Bedford including an interactive map of bicycle parking locations and other information on the New Bedford Bicycle Committee website. MiM NB also works with the New Bedford Police Department and School System to provide programs and trainings related to bicycle safety. Figure 30 shows a bicycle repair “fix-it” station at Fort Taber in New Bedford. The city has also recently installed over 157 bicycle racks as part of SRPEDD’s Bicycle Parking Program.



Figure 30: Fort Taber Fix-it Station

Attleboro

The city of Attleboro has a number of planned and implemented facilities as shown in Figure 31. Two notable Class 3 bike routes have been designated by the City and Bike Attleboro, funded by the Attleboro Foundation. The first route, known as the “Family Route,” is 3.2 miles long and travels along: Rome Boulevard, Rathbun Willard Drive, Dennis Street, Mechanic Street, Riverbank Road, Watson Avenue, Hodges Street, Water Street, West Street, and North Avenue. The second route, known as the “Adult Route,” is 7.2 miles long and travels along: South Main Street, Thurber Avenue, Oak Hill Avenue, Locust Street, Thacher Street, County Street, and Tiffany Street. The City of Attleboro recently installed 7 racks throughout the city as part of the SRPEDD Regional Bicycle Parking Program.

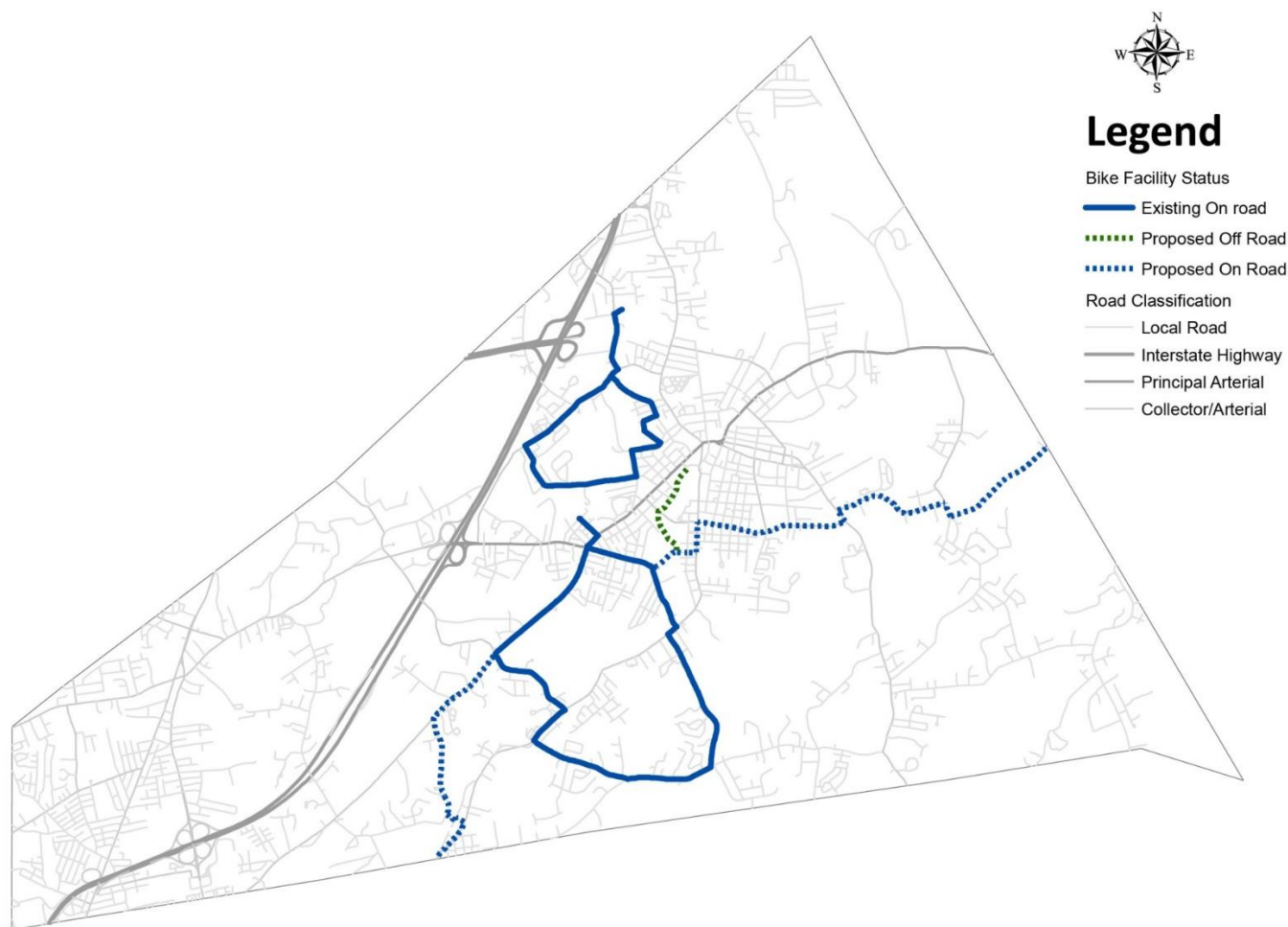


Figure 31: City of Attleboro Bicycle Routing

4.3 SMMPO Region Existing and Proposed On Road Facilities

SMMPO communities have made large strides in accepting the concept of and installing Class 2 and 3 facilities. Figure 32 shows all existing and proposed on road facilities in the SMMPO Region.

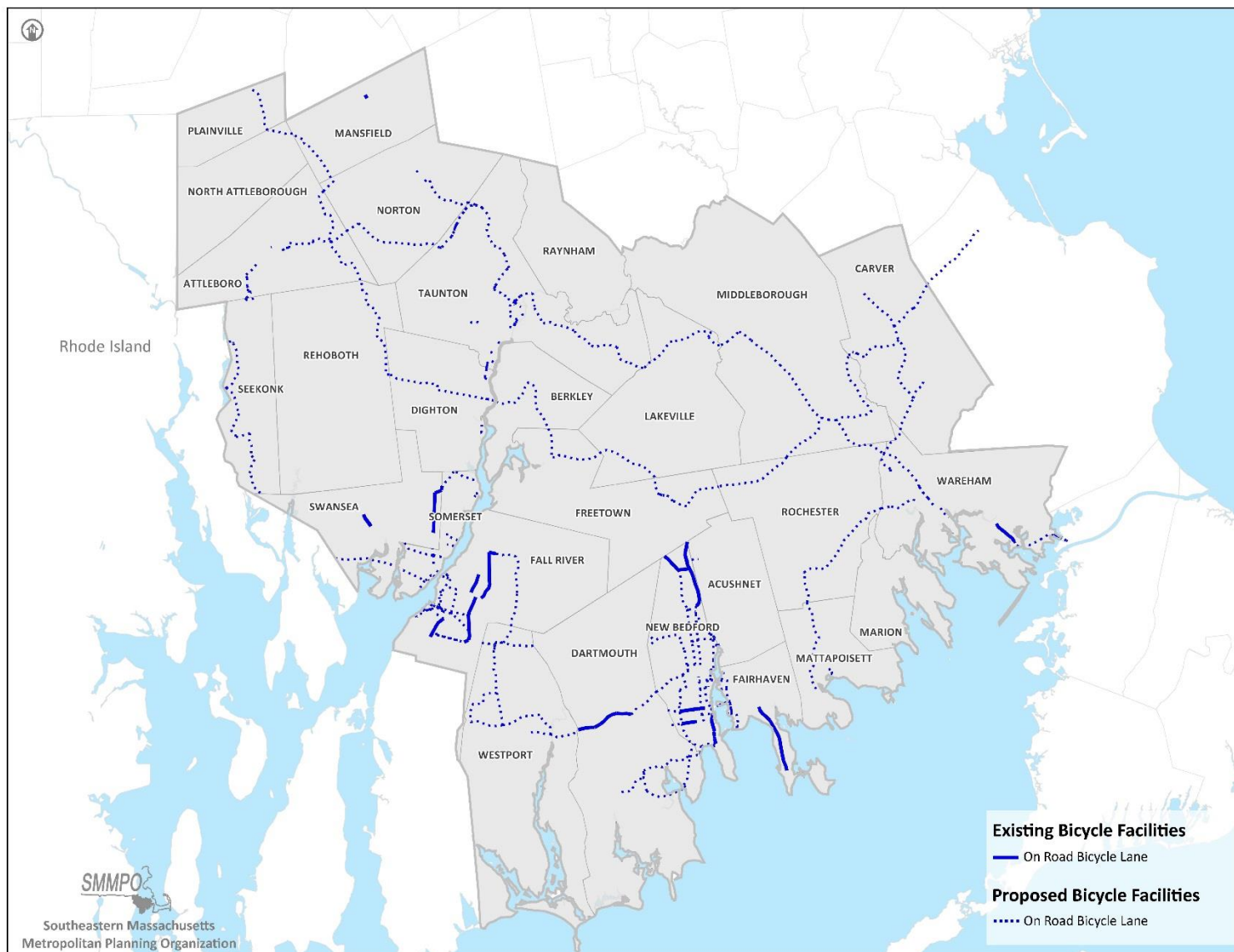


Figure 32: Existing and Proposed On Road Facilities

4.4 The Role of Our Local and Regional Bicycle Plans in State and Federal Planning

2008 Massachusetts Bicycle Plan and the Bay State Greenway - The goal of the Massachusetts Bicycle Transportation Plan (MBTP), prepared by MassDOT, is to continue to advance bicycle transportation by providing a complete and current inventory of existing on-road and off-road facilities (shared use paths), projects in development stages, and long-term facility proposals. The major recommendation from this study is the 740-mile, seven-corridor Bay State Greenway (BSG) network consisting of on-road and off-road facilities. The BSG routing was selected in order to maximize both bicycle transportation and recreational purposes and connects the urbanized areas with the greatest density of trip-making activity and rail transit stations. The BSG as a whole includes approximately 152 miles of existing shared-use paths, along with 300 additional miles of proposed shared-use paths. Due to the large amount of new paths, MassDOT identified the highest priority shared-use path projects: 100 miles of new paths that would make connections to urban centers, extend existing paths, and maximize the transportation network. These projects are the BSG Priority 100. The SRPEDD Region is represented in the BSG Priority 100 with the following projects:

- Fall River Quequechan River Rail Trail Phase II;
- Mattapoisett Rail Trail Phase II;
- Marion Bike Path; and
- Wareham Bike Path.

Other recommendations from the MBTP include better identifying state roads and bridges where bicycles are legally permitted to travel but do not currently have bicycle facilities, use of federal funds and other resources to expand bicycle programs, develop bicycle tourism publications, improve safety through education and enforcement initiatives and further quantify the benefits of investments in bicycle related projects and programs. MassDOT is currently in the process of updating the MBTP.

The 2007 *Massachusetts Statewide Bicycle Transportation Plan*, developed by MassDOT with input from a number of public, private, and non-profit organizations and agencies and citizens throughout the Commonwealth, laid out 7 different cross-state bike routes that connected existing bikeways and other logical destinations. In the SRPEDD region, a Buzzards Bay route was outlined from Rhode Island to Cape Cod. The route utilizes existing bikeways, such as the Phoenix Trail in Fairhaven, and outlined temporary on-road (Class II and III) routes that could suffice until off-road (Class I) routes could be implemented. The routing mirrors SRPEDD's South Coast Bikeway plan (see page 17) with a few exceptions. In the short term, the Plan calls for the implementation of signage along the existing bikeways and temporary routes. In the long term, the plan calls for the construction of Class I and II bikeways to replace the temporary routes. No action has been taken as of yet by the state to implement the signage along the temporary routes.

4.5 Bicycle Parking

There is a lack of bicycle parking in general within the SRPEDD Region, and many of the locations that have bicycle parking have racks in poor condition, with outdated designs or inadequate accessibility. The lack of accessible and secure bicycle parking could be a deterrent to many potential bicyclists. To assist communities with addressing the lack of adequate bicycle parking infrastructure, SRPEDD launched a bicycle parking program in 2014.

This program provided communities the opportunity to be reimbursed for bicycle racks purchased through the program and installed on municipally owned property including schools, parks, town halls, health services etc. Proposed locations were evaluated and ranked by SRPEDD on the basis of proximity to transit, environmental justice areas, population density and other factors.

The program was funded with Congestion Mitigation and Air Quality (CMAQ) funds in the amount of \$100,000. Shipping costs were not covered under the program and acted as the local match. The program was very successful, with the installation of 470 racks, adding 1642 bicycle parking spaces at 174 locations across the region as shown in Table 4 and Figure 33.

**Table 4: Bicycle Parking Program
Community Participation**

TOWN	Locations	Racks	Spaces
Acushnet	6	7	51
Attleboro	7	7	53
Carver	4	4	28
Dartmouth	15	138	276
Fairhaven	11	15	99
Fall River	35	38	394
Freetown	4	6	20
Lakeville	3	4	36
Mansfield	5	13	34
Marion	3	4	18
Mattapoisett	10	24	48
New Bedford	36	157	314
North Attleborough	12	15	105
Norton	10	28	56
Seekonk	4	4	44
Wareham	6	6	66
TOTAL	171	470	1642

While the SRPEDD program added many racks at priority locations, this plan encourages local communities to promote the addition of bicycle racks as much as possible. Communities could consider a group or discounted rack purchasing program to promote the installation of racks at local businesses. They could also require the addition of bicycle racks at new development through the use of a local bylaw or ordinance.

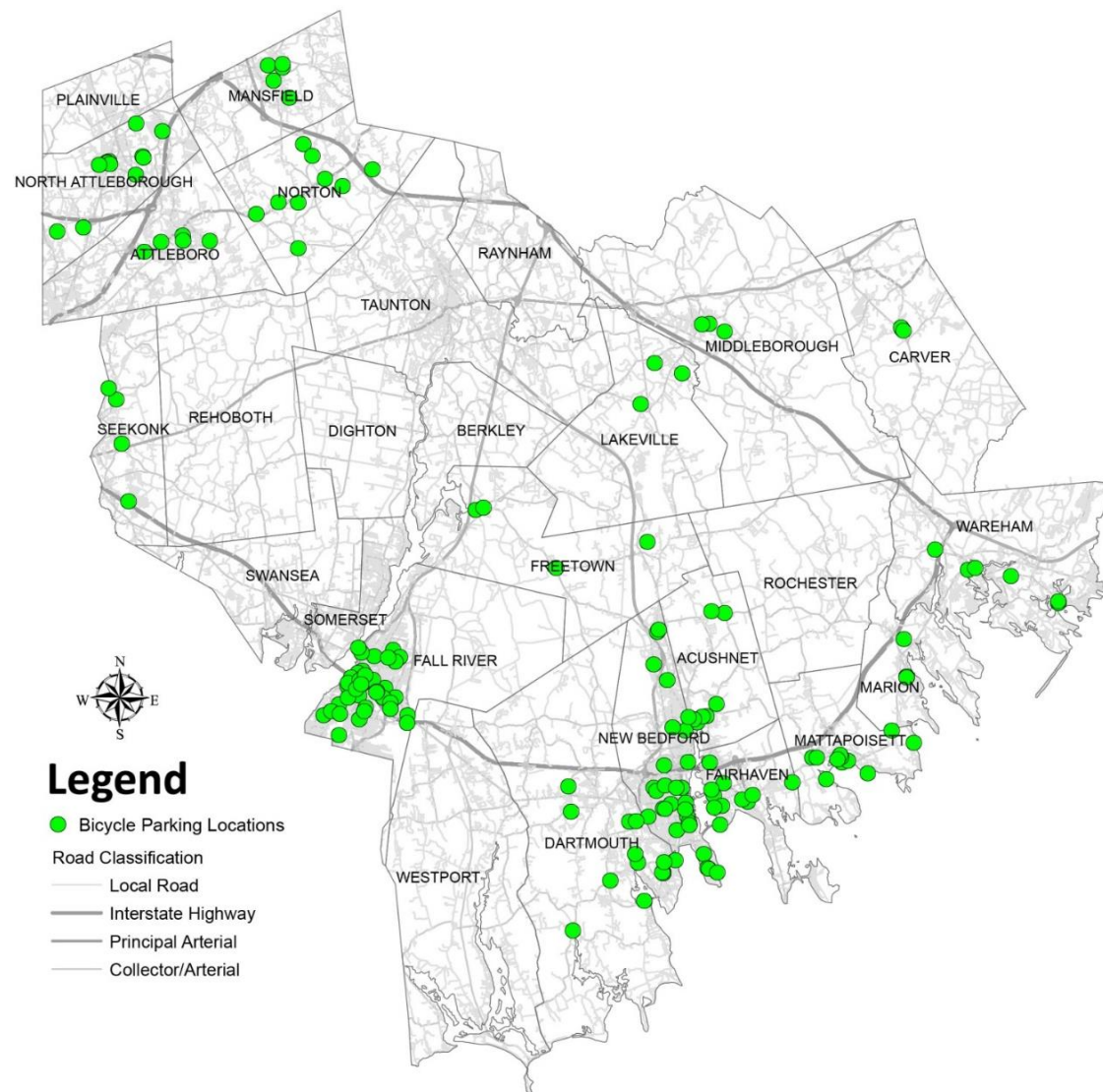


Figure 33: SRPEDD Bicycle Parking Program Locations

For bicycle parking at transit connections please see the *Link between Bicycling and Transit* section page 40.

5.0 Bicycle Safety

5.1 SMMPO Region Bicycle Crashes

From 2014 to 2016, there were 335 crashes reported involving a motor vehicle and a bicycle, resulting in 257 injuries and four deaths. These statistics show an increase from the previous reporting period of 2010-2012 which had a total of 333 crashes, 245 resulting in injury and two deaths. 156 (47%) of the 2014-2016 crashes occurred along roadway sections, and 179 (53%) occurred at intersections. Many of these crashes were concentrated along specific corridors in the region. Table 5 lists corridors with significant bicycle crash history and the number of crashes that occurred along each corridor.

Table 5: Bicycle Crash Corridors 2014-2016

Community	Corridor	Crashes at Intersections	Crashes at Mid-Block Locations	Total Crashes
Wareham	Cranberry Highway	3	7	10
New Bedford	County Street	9	0	9
New Bedford	Purchase Street	4	4	8
Taunton	Broadway	5	3	8
Fall River	Pleasant Street	5	2	7
Fall River	Bedford Street	4	2	6
Fall River	South Main Street	3	3	6
New Bedford	Acushnet Avenue	6	0	6
New Bedford	Rockdale Avenue	3	3	6
Attleboro	Washington Street	2	3	5
Mansfield	East Street	2	3	5
New Bedford	Union Street	4	1	5
Attleboro	Maple Street	4	0	4
Fall River	North Main Street	1	3	4
New Bedford	Pleasant Street	4	0	4
Rehoboth	Fairview Avenue	0	3	3

Most of these roadways do not have proper bicycle accommodations along them and force bicyclists to share lanes with heavy traffic or utilize sidewalks. Route 6 in Dartmouth and Fairhaven and the Cranberry Highway in Wareham are especially problematic due to their high vehicle speeds and multiple lane layouts. Properly designed and designated bicycle lanes and adjacent or parallel bicycle paths would provide a much safer route in which bicyclists could travel.

Massachusetts has taken an active role in providing bicycle accommodations at actuated signalized intersections. The 2006 MassDOT Project Development & Design Guide states:

“Bicyclists are required by law to obey control devices at intersections. Therefore, traffic control devices need to account for bicycle activity. Traffic signals which operate using detection systems (such as loop detection, video camera, and microwave) must be designed and field tested to be sensitive to bicycles.”

5.2 Education and Enforcement

Education and enforcement are vital to improving bicycle safety. Implementing safe and convenient access must be combined with education to ensure the facilities are used appropriately and effectively. Combined education and enforcement programs should be considered for locations with frequent bicycle safety issues to increase understanding and compliance of laws.

MassDOT Bicycle and Pedestrian Awareness and Enforcement Program (BPAEP)

The BPAEP was launched in 2014 to reduce the number of crashes involving bicycles and pedestrians and enhance safe travel. The first year provided a total of \$461,851 in federal highway safety funding to support partnerships with Regional Planning Agencies, local officials and police departments in 12 communities statewide. Two of the communities selected, New Bedford and Fall River, fall within the SRPEDD Region. Communities were selected based upon several factors, including the highest number of reported non-motorist crashes per capita and high proportion of trips made by bicycles and walking. The program has 3 parts: enforcement, awareness and infrastructure. The enforcement part provides funds for stepped-up enforcement for drivers, bicyclists, and pedestrians and to gather important information and feedback about local infrastructure issues. The awareness part involves a comprehensive awareness campaign targeted at all motorists, pedestrians and bicyclists to provide information about changes in transportation infrastructure and policy, such as the introduction of sharrows, bike boxes, bike lanes, and pedestrian countdowns. The infrastructure part of the program will use feedback collected from the enforcement portion of the program to identify and potentially fund infrastructure improvements that are needed to improve safe travel for all modes in each community in future years.

As part of the BPAEP, the Massachusetts Bicycle Coalition (MassBike) received a contract to perform bikeability assessments in Fall River and New Bedford to build local knowledge and capacity to improve bicyclist safety, to provide guidance for specific projects, policies and programs and to identify opportunities for further study. To this end each community picked a specific study area. Assessment of the area was conducted by a multidisciplinary group including local police, fire and city officials, SRPEDD, MassBike, and the Toole Design Group, and a report of observations and recommendations was produced.

6.0 Challenges and Barriers to Bicycling and Infrastructure Improvement/Development

6.1 Physical Challenges/Barriers to Using a Bicycle for Transportation

The following routes and intersections were identified as major barriers to bicycle transportation through the regional bicycle plan open houses, transportation surveys, meetings with regional and local bicycle groups, outreach meetings with Boards of Selectmen and City Councils and observation:

- Highways/Ramps – Highways in the SMMPO region, specifically Interstates 495, 95, 195, and Routes 140 & 24, prohibit bicycle access due to high speeds and volumes. While access should be prohibited for those reasons, there are also significant challenges present for crossing these highways and for crossing access ramps along roads.
- Routes 1, 28, 6, 44, 105, 123 and 138 – These corridors have very limited bicycle facilities but are, in many cases, the only option for accessing major employment, retail, transit and other priority destinations. They vary in composition in regard to lane layout, speed and other factors, but they all present a challenge for cyclists due to lack of safe infrastructure, safe crossing mechanisms and general bicycle friendliness. In some cases, bicycle travel is prohibited. Specific sections that have been highlighted as a challenge include:
 - Route 44 - Dean Street bottleneck from Arlington Street to Route 104 in Taunton.
 - Route 44 - cross access at intersections in Middleborough and Carver.
 - Route 105 - considered a high priority for access due to the proximity of the Middleborough/Lakeville Commuter Rail Station.
- Proposed trail crossing for the South Coast Bikeway, the Taunton River Trail and the Mansfield/Norton/Taunton Trail could create potential challenges based on the volume and speed of the road crossing. Specific crossings of concern include the proposed crossing for the South Coast Bikeway of Route 6 in Fall River or Westport and the crossing of the proposed Norton Rail Trail of Route 123.
- County Road – A locally classified road that runs through Rochester, Marion, and Wareham that is currently under consideration for reclassification. This road is a high priority for the South Coast Bikeway and any planned improvements could have major impact on potential routing.

These locations should be considered priorities for future infrastructure due to frequency of use, importance in relation to other bicycle planning efforts and community needs.

6.2 Challenges/Barriers for Improving and Developing Bicycle Infrastructure

An informal survey of bicycle path proponents and input from the Regional Bicycle Plan Open Houses also identified significant challenges for community bicycle path development. These were the overall cost of design, environmental permitting and rights-of-way acquisition, knowledge and clarity of the MassDOT Design Process, level of design/construction requirements for bicycle infrastructure (bridges), attitude towards bicyclists and the spending of funds on bicycle infrastructure, lack or amount of dedicated funding for bicycle infrastructure and lack of a regional level of design and implementation for regional trails.

7.0 The Link between Transit and Bicycling

While bicycle transportation is an efficient and healthy mode of transportation by its own merit, it is also a very important connection mode for transit applications. Improved access to bus stations, commuter rail and other forms of transit could increase the reach and effectiveness of transit stations while reducing parking demand, congestions and associated expenses at transit stops.

7.1 Bicycle Parking at Transit Hubs/Commuter Rail Stations

With the planned extension of the MBTA's commuter rail line into the region, bicycle access to transit facilities should become a key element of transportation planning, particularly for host communities. Presently, there are limited accommodations and access for bicycles to transit facilities and parking facilities, as well as mass transit vehicles.

A survey of bicycle parking at Commuter Rail Stations within the SRPEDD region revealed the following:

Commuter Rail Station	Number of Bicycle Parking Spaces
Attleboro	28
South Attleboro	2
Mansfield	12
Middleborough	8

A survey of bicycle parking at Regional Transit Authority Stations revealed the following:

Bus Terminal	Number of Bicycle Parking Spaces
SRTA Fall River Terminal	6
SRTA New Bedford Terminal	6
GATRA Taunton Terminal	6
GATRA Attleboro (Intermodal Center)	28

These numbers do not reflect accessibility, convenience, condition or usage of racks. Many of these locations are woefully inadequate to handle the bicycle parking demand, as several bikes were observed attached to fences and other structures due to lack of parking availability. Many of the observed racks had outdated design. During a survey of Mansfield commuter rail passengers in April of 2015 the existing bicycle racks were observed to have a large number of abandoned and/or broken bicycles. The MBTA website shows the number of bicycle parking spaces at each commuter rail station but does not specify where they are located at the station. GATRA and SRTA websites do not have information on bicycle parking. Access to this information would be beneficial for bicycle trip planning and could encourage use of these facilities.

Little data currently exists on the availability of bicycle parking in relation to fixed route bus stops. SRPEDD inventoried GATRA and SRTA fixed routes stops in 2015 and 2016 including collect data related to any available bicycle parking and other features such as bicycle facilities and ADA accessibility.

Overall, transit stations should be considered priority areas for bicycle access.

7.2 Transit Bicycle Related Policies and Programs

The following is a summary of existing mass transit-related bicycle policies and/or programs:

MBTA - The MBTA sponsors the “Bikes on the T” program, which operates through a permit system. Current MBTA policy allows bikes on the commuter rail Monday through Friday, except during rush hour, and all day on Saturdays and Sundays. Collapsible or foldable bicycles are allowed at all times.

The MBTA launched CapeFLYER service in 2013, with weekend train service Friday evenings, Saturdays and Sundays from Boston to Cape Cod from Memorial Day to Labor Day. Service to the Cape is offered between South Station in Boston to Hyannis and allows bicycles on board for no additional charge on all trains.

AMTRAK - (via Providence) Amtrak currently permits only boxed bicycles on its trains in baggage cars between stations with baggage service.

BUS SERVICE - The Greater Attleboro Taunton Regional Authority (GATRA) and the Southeastern Regional Transit Authority (SRTA) have bicycle racks on the front of all active service buses. The racks generally accommodate two bicycles per bus.

7.3 Bicycle Access to Existing Commuter Rail Stations

While pedestrian access to the Lakeville MBTA station has recently been improved in conjunction with the Middleborough Route 105 at Interstate 495 Intersection Signalization project and the Route 79 relocation project, no improvements were made for bicycle access beyond providing bicycle detector markings at the intersections. There are no constructed or designated bike routes to the station (although possible via Route 105 from the Lakeville side). GATRA’s Middleborough Shuttle provides service to the train station from downtown Middleborough with racks on the shuttle that accommodate 2 bicycles.

The Attleboro and South Attleboro MBTA stations have improved bicycle access to the stations by providing bicycle racks on all buses and bicycle parking spaces at the stations. There are no bicycle lanes or other infrastructure that connect to either station.

The Mansfield Commuter Rail Station has direct bicycle access to the station by way of the Mansfield World War II Veterans Memorial Trail. The planned extension of this trail through Norton to the Myles Standish Industrial Park will open up commuting options for people who work or live in proximity of the trail.

7.3 South Coast Rail station area access analysis: Summary of Bicycle Route Recommendations

Stations included in the planned *South Coast Rail Project* also have limited existing or planned bicycle connections with the exception of Fall River's Battleship Cove Station, which would be connected via the Fall River Bikeway's proposed route. Connections to these locations by bicycle have been evaluated in a South Coast Rail Technical assistance study released in 2015.

The *South Coast Rail Station Area Access Analysis* assesses walking, bicycling, and transit conditions around the proposed commuter rail station sites in the SRPEDD region. The assessments begin by identifying the major local origins and destinations within biking distance of the future train stations. These include Priority Development Areas designated in the South Coast Rail Corridor Plan, employment centers, dense residential areas, and tourism sites. New bicycle route links and improvements are recommended to connect the stations as well as destinations into the existing regional bicycle network, including the South Coast Bikeway.

Overall route design recommendations

- Prioritize routes connecting major origins/destinations to each other and connecting into existing facilities (i.e. give people someplace to bike to).
- Consider using separated facilities and traffic-calmed neighborhood streets or "bike boulevards" as route designs that welcome more users. Research suggests that no more than 7% of the general population feels comfortable using bicycle lanes or "sharrows."⁴
- Create bicycle parking at major origins/destinations and way-finding signage at stations and key intersections.

Fall River Area Recommendations (shown in Figure 34)

- Improvements to routes on Bedford, Pleasant, Durfee, and North Main are essential to link more potential biking populations into the bike network.
- The New Boston Road bicycle route should be extended west (with either more lanes or bike boulevard facilities) to access Charlton Memorial Hospital as well as the quieter neighborhood streets of the Highlands.
- While Robeson Street is designated as an o- road bike route (no lanes), quieter Madison Street would be a good candidate for a bike boulevard, needing very little intervention (such as way-finding signage) to link the Highlands neighborhoods north-south. Alternatively, Highland Avenue has width for lanes but generally experiences higher speeds.

⁴ "Four Types of Cyclists," Roger Geller, Portland Office of Transportation 2006, updated 2009

- A route on Stafford Road would link Plymouth Avenue to a dense residential area. This road is already narrow and unlined, factors which promote slower car speeds, and further traffic calming and bicycle markings would produce a more accessible route.
- Laurel Street to Mariano Bishop Boulevard is the preferred route south from Plymouth Avenue, based on community input, and should be upgraded.
- South Main Street is the only relatively direct (and flat) route accessing the businesses, hospital, and dense neighborhoods in this area. It merits careful street design interventions to balance multiple modes and user needs – bus transit, people on foot and shopping, people driving to access shops, through auto traffic, and people on bicycles. It is important to note that comfortable biking and walking routes are beneficial for businesses. The existing on-street parking improves the walking and shopping environment and should be retained. Appropriate bicycle improvements could include traffic calming, sharrows, and bike boxes rather than lanes.
- Ensure easy accessibility from the proposed Fall River Depot station to the future Davol Street path as well as to North Main Street.
- Unfortunately, eastward routes from the station site are not practical for most riders given the steep slope.

Fall River Area: Recommended Bicycle Network Improvements

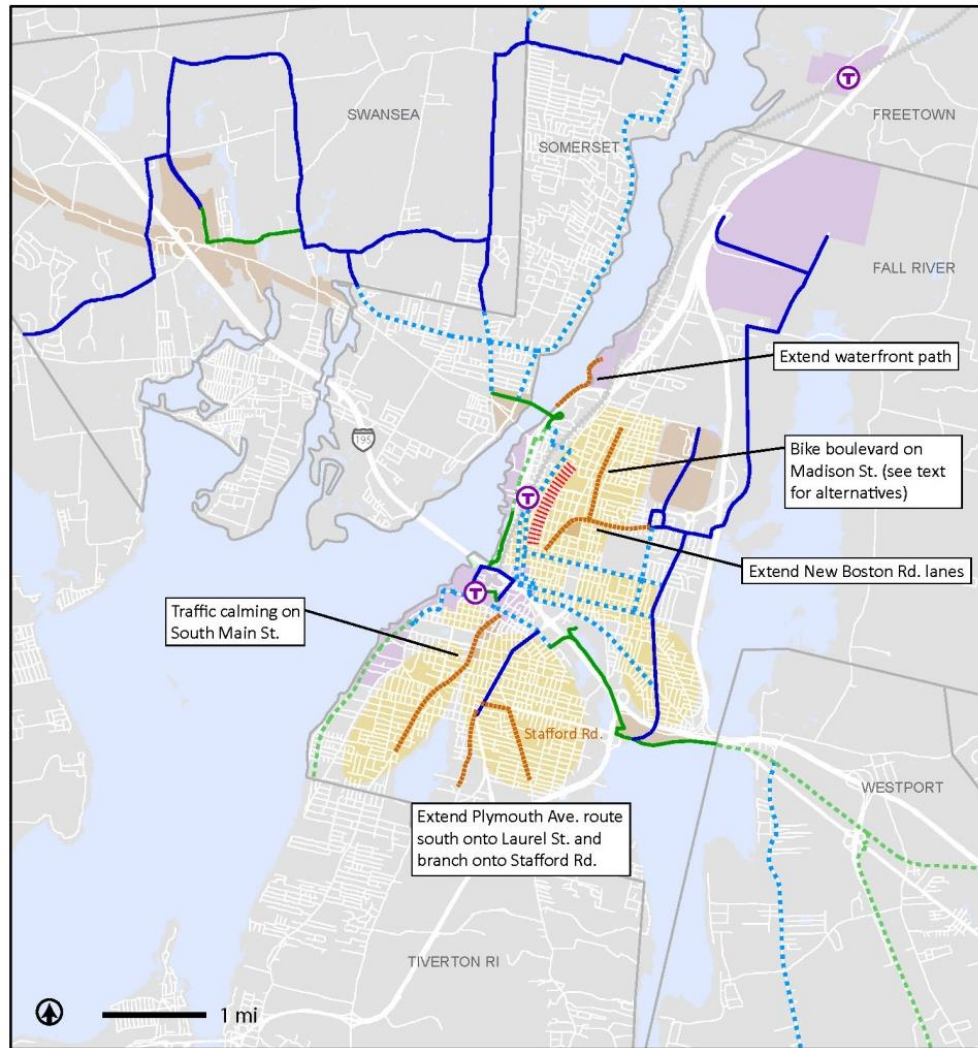
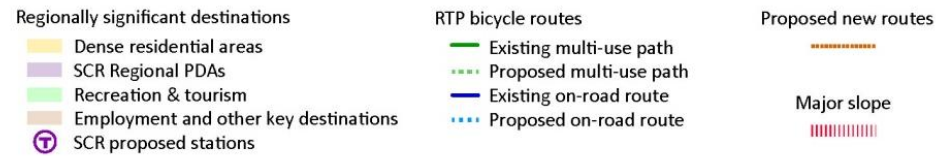


Figure 34: Fall River Area Recommended Improvements

New Bedford Area Recommendations (shown in Figure 35)

- The “High Priority” lanes (according to the City of New Bedford’s Bicycle Plan) on County Street and Union Street connecting the existing Hawthorn Street lanes through downtown and to the waterfront should be implemented.
- Implement an east-west route on Potomska Street, Purchase Street, and Rivet Street to connect the dense Ashley Park neighborhood and Goodyear Park Redevelopment Priority Development Area (PDA) eastward to the existing bicycle lanes.
- For connectivity southward from the King’s Highway SCR station site, add the planned bike lane (the City of New Bedford’s Bicycle Plan) on Church Street linking King’s Highway all the way to Purchase Street. Alternatively, create a bicycle boulevard on Lafayette Street and Brook Street using signage, markings, and minor intersection treatments.
- Redevelopment of the existing commercial plazas in the King’s Highway station area should be coordinated with road improvements currently in design phase that create an appealing environment for biking on King’s Highway (also see pedestrian assessment and the South Coast Rail Corridor Plan⁵).
- Create a route eastward from King’s Highway towards Acushnet Avenue neighborhoods, the waterfront, and the Town of Acushnet either A) using Tarkiln Hill Road as proposed in the NB Bike Plan; B) with a bike boulevard on Wood Street; or C) combining a bike boulevard on Brooklawn Street with the Brooklawn Park path.
- A comfortable westward connection from the Whale’s Tooth SCR station to the future multi-use path along the Acushnet River and into the neighborhoods is essential, although there is a steep slope to contend with. To access the neighborhoods, bicyclists would likely walk up the steeper part of Pearl Street before continuing north or south on quiet residential streets.
- Implement the lanes on Union Street and County Street proposed in the New Bedford Bike Plan to enhance connectivity through downtown and to the State Pier.
- Create a safe and comfortable commuting connection from the Acushnet Avenue area to the working waterfront on North Front Street /Melville Street /MacArthur Boulevard. A fully separated route could be appropriate, especially on the west side of North Front Street where there are no curb cuts. Other useful facilities may include a button actuated signal for vehicles to stop for bicycles on North Front Street waiting to cross Coggeshall Street.
- East-west connectivity south of the Whale’s Tooth station should be provided by the planned lanes on Route 6, including improvements to the “Octopus” intersection (see SRPEDD New Bedford study, South Coast Rail Report on Bicycle and Pedestrian Connections to Proposed Stations).

⁵ South Coast Rail Corridor Plan, June 2009, p.66 Guidelines for Station and Station Area Development and p.78 King’s Highway Concept Plan

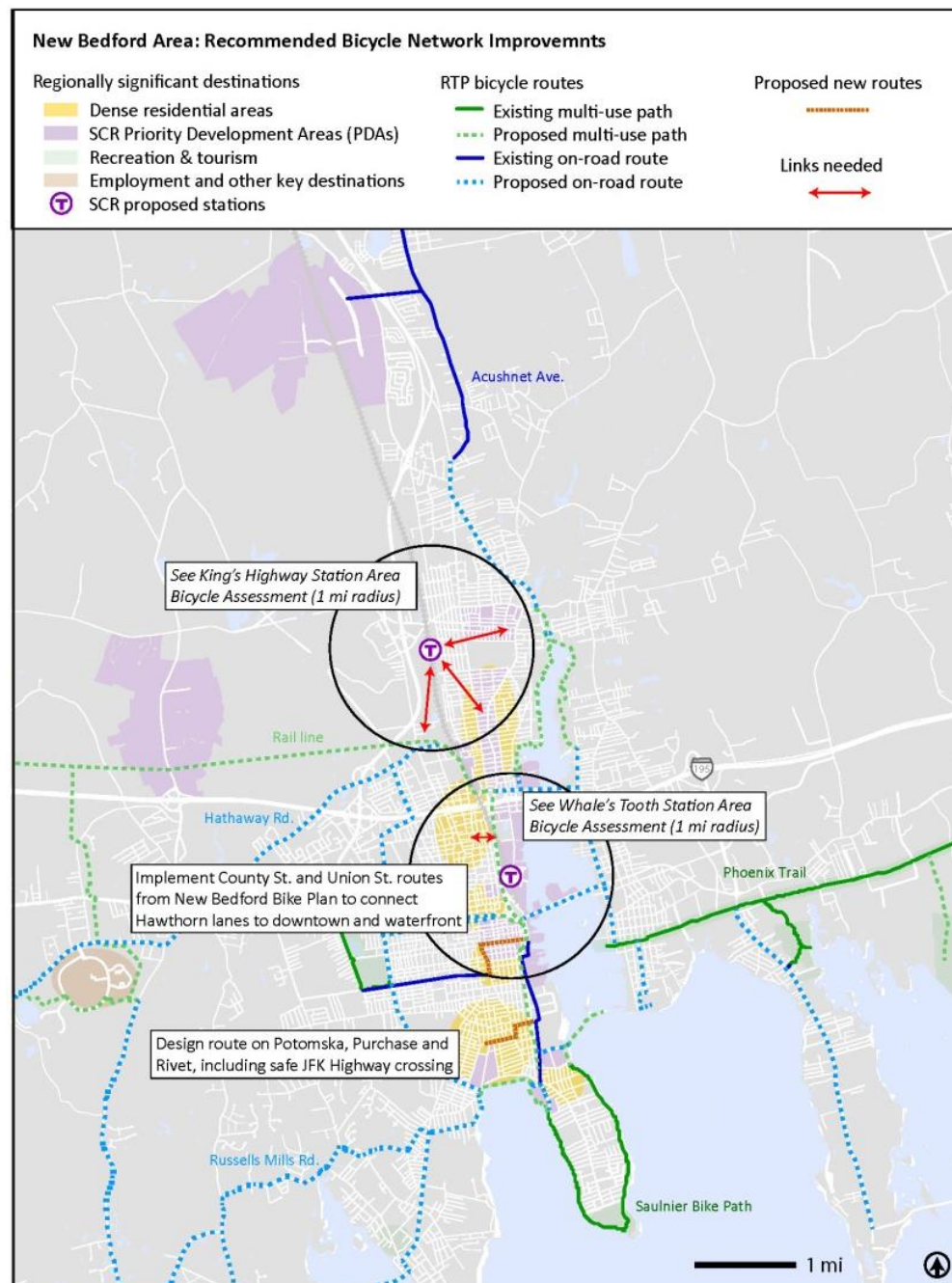


Figure 26: New Bedford Area: Recommended Bicycle Network Improvements

Taunton Area Recommendations

- Develop a route between Central Taunton population areas and the Taunton River Trail.
- Connect Taunton SCR Station on Arlington Street with dense neighborhoods to the west. Proposed route: Ashland Street, Bennett Street, Grant Street, Church Street, Hamilton Street.

Freetown Area Recommendations

- Create routes on Main Street and to the Industrial Park.

8.0 Bicycle Related Policies and Programs at the Federal State and Local Levels

There are numerous policies and programs in place at the Federal, State and Local levels that have an impact on bicycle transportation, connectivity, planning, design, construction and funding.

8.1 Federal

MAP-21 - On July 6, 2012, President Obama signed into law the Moving Ahead for Progress in the 21st Century Act (MAP-21). Dedicated funding for bicycle and pedestrian programs was significantly reduced in MAP-21 from previous highway authorization bills; however MAP-21 does build on and refine many of the highway, transit, bike, and pedestrian programs and policies established in 1991. The most significant impact of MAP-21 on bicycle transportation is the formation of the Transportation Alternatives Program (TAP) by combining the Transportation Enhancements, Recreational Trails, and Safe Routes to School programs. While streamlining the process for funding, the combination of these sources of funding means higher competition between projects for a smaller amount of funding. More information on the TAP program can be found in the financing section on page 49.

8.2 State

Over the past several years the Massachusetts Legislature and the Massachusetts Department of Transportation (MassDOT) have developed several programs and policies that help promote safe passage and increased access for bicycle travel. These policies and programs include but are not limited to:

Massachusetts General Law Chapter 87 of the Acts of 1996 - as passed on May 20, 1996. The basic text of MGL 87 amends Chapter 90E of the General Laws, as follows:

“The commissioner shall make all reasonable provisions for the accommodation of bicycle and pedestrian traffic in the planning, design, and construction, reconstruction or maintenance of any project undertaken by the department. Such provisions that are unreasonable shall include, but not be limited to, those which the commissioner, after appropriate review by the bicycle program coordinator, determines would be contrary to acceptable standards of public safety, degrade environmental quality or conflict with existing rights-of-way.”

Specific regulations and design standards have been developed for Ch. 90E. The law, as revised, provides the impetus for MassDOT to incorporate bicycle and pedestrian facilities into the planning of projects or to prove that such facilities are inappropriate for a specific project(s). Design standards for bicycle facilities are included in the 2006 *MassHighway Project Development and Design Guide*. This

important step towards multimodal access provided a strong foundation for more recent policies and programs including Complete Streets and the Healthy Transportation Compact.

Another significant legislative action undertaken by the Governor and the General Court, which had a direct impact to the region when the Old Colony commuter rail line began operation in 1997, was the 1994 Transportation Bond Bill. This legislation contained specific language regarding bicycle planning related to commuter rail, as written in the following sections:

Section 96. “The general manager of the Massachusetts Bay Transportation Authority, or a designee of the general manager, is hereby authorized and directed to provide for the accommodation of bicycle patrons and pedestrians in the planning, design, reconstruction and construction of any project undertaken by the authority unless the general manager, or a designee of the general manager determines that the inclusion of such accommodations in such project would be contrary to acceptable standards of public safety, would be incompatible with an assessment of the costs and benefits involved, would degrade environmental quality, or would conflict with existing rights-of-way.”

Section 112. “The Massachusetts Bay Transportation Authority and each regional transit authority are hereby authorized to develop a plan for the transportation of bicycles on all rolling stock and heavy rail vehicles used by the authority.”

The Healthy Transportation Compact / Transportation Policy Directive- As part of transportation reform legislation signed in law in 2009, the Massachusetts Healthy Transportation Compact, an inter-agency initiative designed to facilitate transportation decisions that balance the needs of all transportation users, expand mobility, improve public health, support a cleaner environment and create stronger communities, was formed. A result of the Healthy Transportation Compact was the Healthy Transportation Policy Directive issued in September of 2013. The purpose of the policy directive is to ensure all MassDOT projects are designed and implemented in a way that all customers have access to safe and comfortable healthy transportation options at all MassDOT facilities and in all the services provided. To this end, all MassDOT funded and or designed projects now must provide safe bicycle passage unless an exemption is obtained from the Secretary of Transportation. In order to receive an exemption, the proponent must be able to prove that providing safe passage for all modes is not physically or economically feasible.

GreenDOT Policy, Directive and Implementation Plan - The GreenDOT Policy is MassDOT’s comprehensive environmental responsibility and sustainability initiative, which aims to promote sustainable economic development, protect the natural environment, and enhance the quality of life for all of the Commonwealth’s residents and visitors by reducing greenhouse gas emissions, promoting healthy transportation modes and smart growth development and supporting environmental stewardship. From this policy, the GreenDOT Policy Directive and GreenDOT Implementation Plan were developed. These both provide guidance and incentive to improve and promote pedestrian travel. The

GreenDOT Policy also outlines MassDOT's Mode Shift Goal, which aims to triple the share of travel in Massachusetts by bicycling, transit and walking by 2020.

Complete Streets - a nationwide effort to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities by designing facilities to balance safety and convenience for everyone using the road. In 2014 the Massachusetts Legislature approved \$50 million in the Transportation Bond Bill to be used for the Complete Streets Certification Program which provides competitive funds to cities and towns to adopt policies and create streets that fit the complete streets principle. Several communities in the SRPEDD region have taken steps towards creating Complete Streets and/or adopting complete streets policies including Acushnet, Carver, Dartmouth, Dighton, Fall River, Mansfield, Marion, Mattapoisett, Middleborough, New Bedford, North Attleborough, Norton, Plainville, Rehoboth, Seekonk, Somerset, Taunton and Westport. Of these communities, Dartmouth, Taunton and Mansfield have had projects approved for funding.

8.3 Local

Over the past several years, a number of municipalities within the Commonwealth have enacted local bylaws, subdivision rules and regulations, and licensing/permitting requirements in order to address the needs of bicyclists and pedestrians within the context of local land use planning. These provisions have largely been adopted in heavy use and/or user-friendly bicycling areas such as Cape Cod, the South Shore and Metro Boston areas. Examples of these types of land use-related provisions may be found in the bylaws and regulations of towns such as Brewster, Barnstable, Sandwich, Truro, Wellfleet, Falmouth, and Mashpee on the Cape, Kingston, Halifax, Hingham, Hull, Marshfield, Norwell, and Scituate on the South Shore, and Concord, Cambridge, Brookline, Lexington, Natick, and Boston within the Greater Boston and Metro areas. The Town of Dartmouth has recently enacted a local bylaw governing the encouragement and design of bicycle parking facilities as a direct outcome of the SRPEDD Bicycle Parking Program.

9.0 Potential Funding Sources

Many of the proposed bike routes in the region will require further study and design. Part of this study will involve the pursuit of funding for feasibility, planning, design and construction. State and federal funds for the study, design, construction or improvement of bicycle and pedestrian facilities include:

- **Federal Highway Administration, Transportation Alternative Program (TAP):** The TAP provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; safe routes to school projects; and projects for planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways. Under MAP 21 legislation and continued in the FAST Act, previously separated categories of Safe Routes to School (SRTS), Recreational Trails and Transportation Enhancements have been rolled into this program. The state of Massachusetts receives a bulk amount of funding for this program but has chosen to divide the funding into three categories, TAP, SRTS and Recreation Trails, maintaining the original separation of the programs at the state level. In FY2016, the SMMPO region received about \$857,000 in TAP funds, for FY2020 the regional target is \$393,944. On average, a mile of class 1 facility costs anywhere from \$667,000- \$900,000. Due to the combination of several categories, this source of funding can be used for a wide variety of projects, leading to a highly competitive project selection process for very limited funding.
- **Surface Transportation Program (STP):** funds from this program may be used for construction of bicycle and pedestrian facilities or for safety-related non-construction activities such as maps and pamphlets/brochures. Activities must be primarily transportation rather than recreation-oriented and consistent with the plans of the SMMPO and the state.
- **Highway Safety Improvement Program (HSIP):** this program makes funds available to projects that improve the safety of bicyclists and pedestrians. Overall funding for the program is significantly higher than in the previous federal legislation. HSIP funds are available at a regional level via the TIP, and at the state level via the Statewide HSIP program allocated through the State Transportation Improvement Program (STIP). Although the statewide source is not commonly used for bicycle-related projects alone, distribution could be made through MassDOT's Bicycle and Pedestrian Safety Awareness and Enforcement Program.
- **Congestion Mitigation and Air Quality Improvement Program (CMAQ):** this program is available in Massachusetts although the state has attained the clean air standards established under the Clean Air Act. Funds may be used for activities aimed at increasing the use of non-motorized modes of transportation including bicycle and pedestrian facilities as well as information and educational materials related to transportation safety issues. Activities must be primarily transportation rather than recreation-oriented and consistent with the plans of the SMMPO and the state. Activities seeking funding must also demonstrate, using statistical data, a projected reduction in airborne pollutants directly related to the proposed activity. Securing CMAQ funds is becoming increasingly competitive

given the increased number of non-attainment areas nationwide. CMAQ funds are available at a regional level via the TIP, and at the state level via the Statewide CMAQ program allocated through the State Transportation Improvement Program (STIP)

- **National Highway System Funds:** may be used to construct bicycle and pedestrian facilities adjacent to any highway on the National Highway System. Activities under this program must be primarily for transportation purposes and be consistent with the plans of the FHWA, MassDOT and the SMMPO. If available, funds may be transferred to the Surface Transportation Program that specifically lists bicycle and pedestrian facilities as eligible activities and has broader parameters for the application of such funds.
- **Scenic Byways Program:** funds may be used for bicycle and pedestrian facilities as directly related to the program's primary purpose of supporting and developing state and national scenic byways.
- **Recreational Trails Program:** funds from this program are for recreation-oriented trails. Federally the funding for this program has been rolled into the TAP program, but retains its structure at the state level. 30% of the funds must be used for non-motorized trails, 40% is discretionary, and the remaining 30% is for motorized trails. (A 1996 provision caps the federal share of the program at 50%.) To date projects ranging from creation of equestrian and snowmobile trails to trail maintenance and access improvements for people with disabilities have been funded under this program. Though administered by the Department of Environmental Management (DEM), proposals are subject to review by the Massachusetts Recreational Trails Board. Activities proposed for funding under this program must be consistent with the Statewide Comprehensive Outdoor Recreation Plan (SCORP).
- **Transportation, Community and System Preservation Program (TCSP):** funds from this program are made available to bicycle and pedestrian projects.
- **Section 402 Highway Safety Program:** this program addresses the state and community highway safety grant funds. The priority status of safety programs for bicyclists and pedestrians expedites the approval process for these funds. A program guideline has been developed to offer states guidance in developing and managing a statewide bicycle and pedestrian safety program.
- **Alternative Transportation in Parks and Public Lands Section 3021:** funds are available through FTA to promote healthy transportation modes in or in the vicinity of federally managed parks, recreation areas or refuges. Healthy transportation modes include all non-automobile forms of transportation.
- **Safe Routes to School Program:** these funds may be used for infrastructure projects or non-infrastructure projects that enable and encourage children to walk and bike to school. Potentially eligible activities include infrastructure projects within two miles of an elementary or middle school (sidewalks, traffic calming, pedestrian crossing improvements, bicycle facilities, bike parking, traffic diversion) and non-infrastructure projects such as public awareness campaigns, traffic education and enforcement around schools, student sessions on bicycle and pedestrian safety, health and environment and training volunteers and managers of safe routes to school programs. Currently in Massachusetts, the Safe Routes to School program is being administered by MassRides under an agreement with MassDOT. MassRides has formed partnerships with numerous schools across the state and provided educational

materials regarding biking and walking to school. An on-call consultant has also been hired to design low-cost infrastructure improvements around partnered schools. Given the small amount of funding available, however, this program is not anticipated to be a large funding source for bikeway construction.

- **Section 5307** – Federal Transit Authority (FTA) Urbanized Formula Grants: Provides transit authorities with annual funding to be used for both operating expenses and capital projects. Eligible projects include bicycle parking facilities and bicycle racks on transit vehicles.
- **Section 5311** – FTA Rural Formula Grants: Provide transit authorities with funds for public transit capital costs and job access and reverse commute projects. In the SMMPO region, Section 5311 is administered by MassDOT and is typically used to fund the Community Transit Grant program.
- **Section 5309** – Program funds may be used to purchase, replace, or rehabilitate transit buses and vans as well as to modernize or construct bus facilities (such as intermodal facilities) in urban, suburban, and rural communities. **Massachusetts Department of Environmental Management (DEM) Greenways and Trails Demonstration Grants Program:** DEM awards grants of between \$1,000 and \$5,000 for projects that create and promote greenways and trails in Massachusetts (requests of up to \$10,000 are also considered for regional trail projects). Special consideration is given to projects that involve community youth, highlight river greenways and feature historic corridors. This program has been a good source of funding for planning, feasibility and materials for trail projects.
- **Local State Aid Chapter 90 Program:** these funds are primarily used locally for roadway improvement projects. They may also be used for bike path engineering and right-of-way acquisition (and may be applied as the local match to funding under several of the above-mentioned programs). As a general rule, federal funds cannot be matched with other federal funds from a different program. However, they can be matched with state or local funds.

As part of the development of original Regional Bicycle Plan in 2016, the JTPG proposed and the SMMPO approved a goal to allocate at least 10% of the annual TIP target funds for bicycle and pedestrian infrastructure improvements. To date this goal has not been fully realized.

While there are many sources of funding available for creating bicycle infrastructure, the amount of funding is low and the overall amount of funding has been decreased in recent years. There are also many more projects competing for funding than there are available funds. Given the many benefits of bicycling and the overall efficiency as a transportation mode, an increase of funding for bicycle infrastructure would be beneficial to the future of the transportation system.

10.0 Recommended Facilities

In order to help realize a regionally connected bicycle system, SMMPO staff has identified gaps in the region's existing bicycle network. Staff also identified important destinations such as planned commuter rail stations that should have good multi-modal connections. The most important area to fill gaps in this region is along the South Coast, where numerous bikeways already exist in densely populated areas. If connected, this will complete the "South Coast Bikeway", connecting Rhode Island to Cape Cod. A regional bikeway along the dense South Coast would help the region to be more livable and open up a new transportation commuting option and tourist attraction. Another vital connection is Mansfield to Taunton to the Taunton River Trail, as this could serve as an important north-south connection through the region. Gaps in the region include the following areas:

- **Norton->Taunton/Raynham->Dighton->Somerset** – to connect Mansfield to the emerging South Coast Bikeway, the East Bay Bike Path/Warren Bike Path in Rhode Island and planned Commuter Rail stations in Taunton and Raynham.
- **Middleborough** – Planning efforts are being considered by the town to connect to the downtown to the Middleboro/Lakeville Commuter Rail Station.
- **Somerset** - to connect the Swansea Bike Lanes/Warren Bike Path and Broad Cove to the bike lanes that are part of the new Veterans Memorial Bridge.
- **Westport->Dartmouth** – to connect the Fall River Bike Path to the New Bedford Bike Path, the UMASS Campus and downtown New Bedford.
- **Downtown New Bedford->Fairhaven** – to connect the existing New Bedford Bike Path to the Phoenix Trail in Fairhaven and the bike lanes along Acushnet Avenue.
- **Mattapoisett->Marion->Wareham >Carver**– to connect the Phoenix bike trail and the Mattapoisett Rail-Trail to the Cape Cod trails and Carver trails in the Myles Standish State Forest.
- **Fall River** – This proposal intends to connect the Veterans Memorial Bridge with the Fall River Bike Path Phase 3 and is dependent on the Route 79 Boulevard project in Fall River. A connection of downtown Fall River to the South Coast Bikeway is proposed along with the Quequechan River Rail Trail to the proposed Aquidneck Island Bikeway in Rhode Island. The connection is likely be a combination of Class I and Class II accommodations and include a 2- mile section along the partially active Mount Hope Bay rail corridor currently estimated at \$1.2 million. The project is not currently programmed for any implementation of funds as cooperation is needed from Rail Division and MassCoastal, and final routing has not been determined due to construction on the Route 79/Route 138 Interchange Project.
- **Seekonk/Attleboro** – The intent is to provide a connection to the Mansfield bike path, the Blackstone River Bikeway and the Ten Mile River Greenway in Rhode Island. No specific routing or project has been identified. This would connect the communities of Seekonk and Attleboro into networks that would allow for commuting between neighborhoods and employment, health and retail centers.

The Massachusetts Statewide Bicycle Transportation Plan recommends that RPA's assess bicycle accommodations on roadways. To help achieve this goal, SRPEDD has identified roadways that, according to MassDOT design standards, can be striped for bicycle lanes within their existing pavement widths. These roadways have several purposes:

- 1) to serve as the bikeway connection filling a gap area where no land exists for multi-use paths (Class I bikeway);
- 2) to serve as cheaper, short-term solutions for biking in unserved areas until parallel multi-use paths can be constructed along rail corridors, utility easements, or roadways with wide right-of-ways; or
- 3) to serve as "last mile" connectors to destinations for commuting bicyclists and to improve the overall road network for all users.

Figure 32 on the next page illustrates the roadways in the region that can accommodate bike lanes within their existing paved widths. The region's four urban centers have great potential for bike lane striping, as is evident from the map. Issues such as on-street parking, however, would have to be assessed on a case by case basis. Certain roadways, such as Broadway in Taunton, could accommodate both bike lanes and parking lanes. Roads such as these would be good candidates for protected bike lanes where the bike lane is between the parking lane and the sidewalk, offering a degree of protection from vehicles in travel lanes. This concept, thought already in use throughout the country, would have to be investigated further in order to deal with conflicts at intersections with right-turn lanes and driveways. Several long distance numbered routes with wide shoulders but high traffic speeds could also be good candidates for protected bike lanes if they proved viable, such as Route 44 from Seekonk to Taunton, Route 28 in Middleborough, Route 123 from Attleboro through Norton and Route 18 in Lakeville. Several low volume local roads and neighborhood streets also were identified as part of the analysis. These roads tend to be wider due to local bylaw requirements and would make great neighborhood routes/loops for local use.

Roads highlighted in Figure 36 could accommodate Class II bicycle facilities (bike lanes) according to 2006 MassHighway Design Guide criteria for bike lanes and minimum land widths depending on functional classification of roadway. The above analysis does not take into effect issues such as on-street parking or traffic volume.

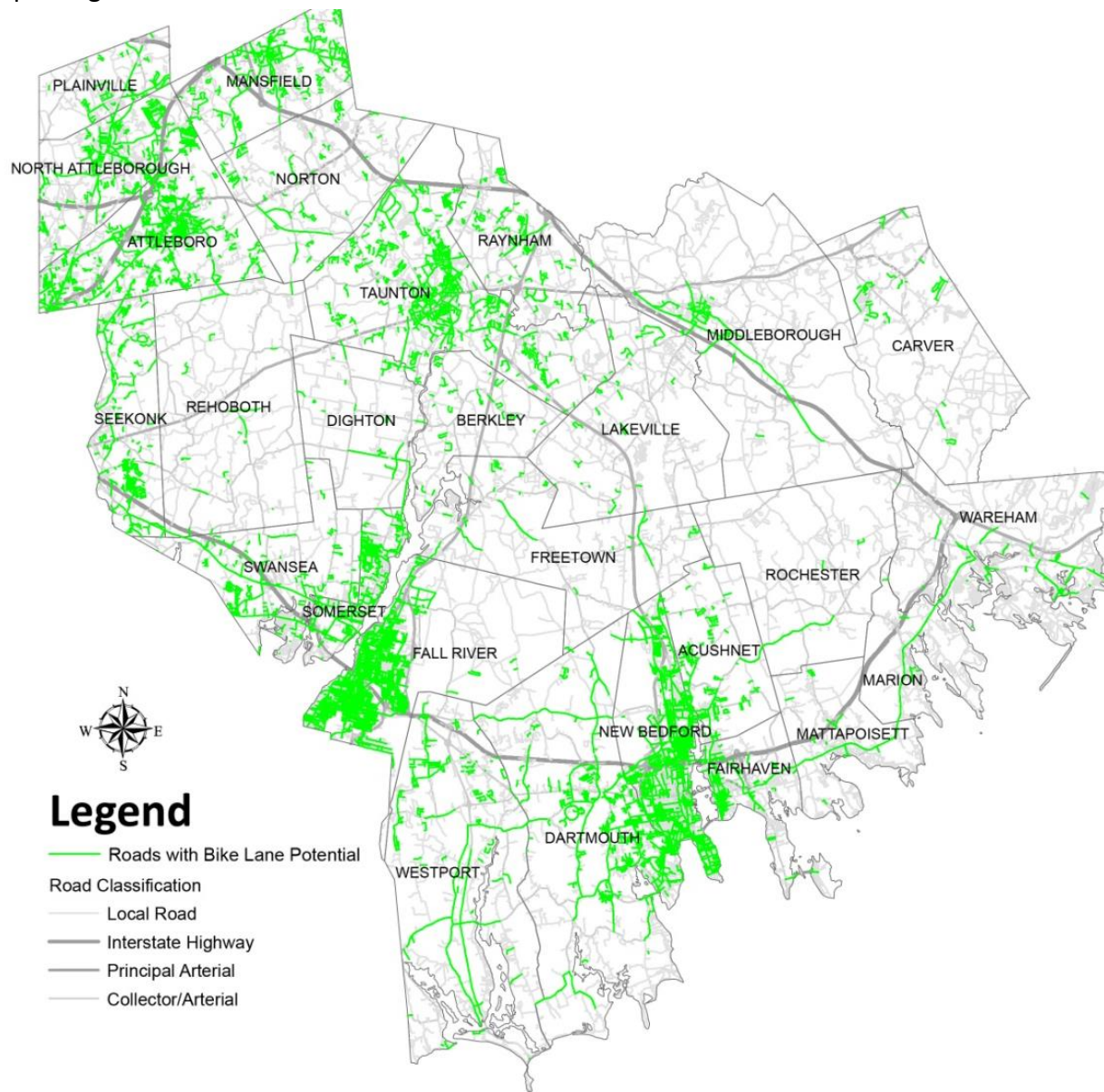


Figure 36: Roads with Bike Lane Potential

Strava Heat Map

As new technologies emerge and gain popularity, specifically mobile phone exercise tracking applications, data on route choice is becoming more available. The map in Figure 37 comes from a popular exercise tracking app and shows the most popular bicycle routes in the form of a “heat map.” Similar to thermal imaging, the more popular the route is, the “hotter” it appears on the map. While this data collection is still in its early phases and is limited to the users of the application, it can give an overall indicator of the routes that bicyclists prefer and can be used to target routes for improvement.

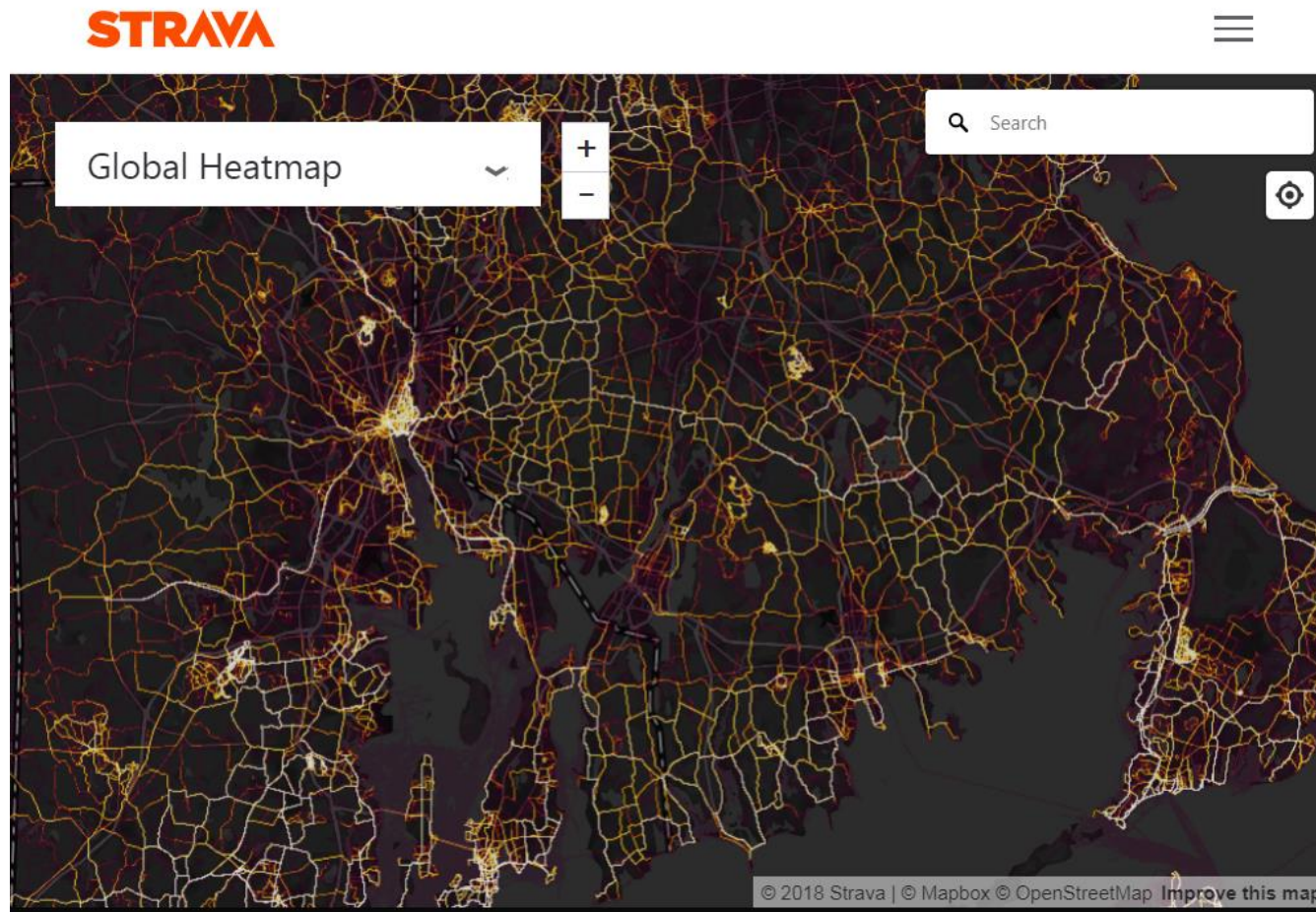


Figure 27: Strava Heat Map

Table 6 lists potential routes to fill the gaps in the region's bikeway system. Bicycle lanes along roadways and multi-use paths are included. In some areas, such as Norton/Taunton and Westport/Dartmouth, on-road bicycle lane routes parallel to potential multi-use paths are included as potentially cheaper or temporary alternatives. The designation and/or construction of bike lanes and multi-use paths along these routes is recommended. These routes have been identified based on the following criteria:

- Bicycling demand (connections to schools, retail, employment centers, recreation and residential areas);
- Roadway geometry (outside lane/shoulder widths data);
- Average Daily Traffic;
- Railroad rights-of-way/Utility easements for Class I facilities; and
- Alternatives to identified high crash corridors.

Table 6: Recommended Bicycle Connections in the Region

Connection	Possible Routes to Consider
South Coast Bikeway: Somerset	Brayton Ave, Read St and Riverside Ave
South Coast Bikeway: Fall River	<ul style="list-style-type: none"> • Fall River Branch right-of-way, Quequechan River, Wordell St, • CSX Fall River Sub to proposed Aquidneck Island Bikeway in RI
South Coast Bikeway: Westport, Dartmouth	<ul style="list-style-type: none"> • On-road Route: Sanford Rd, Briggs Rd, Tickles Rd, American Legion Highway, Gifford Road, Old County Rd, Old Westport Rd (with a connection up Cross Rd to Route 6), Chase Rd, Russells Mills Road, Rogers St., Pandaram Ave and then along hurricane barrier to Rodney French Blvd. • Fall River Branch rail right-of-way into New Bedford to Coggeshall St • Spur: Utility easement to UMASS Dartmouth
South Coast Bikeway: Downtown New Bedford/Fairhaven /Acushnet	<ul style="list-style-type: none"> • Cove Rd, Grit St, Rte 18 (JFK Hwy Path); Coggeshall St, Mitchell St, Acushnet Riverwalk, Mill Rd, Acushnet Ave; Route 6 and Main St. in Fairhaven. Laurel St, Doane St, Green St OR utility property to Ft. Phoenix
South Coast Bikeway: Mattapoisett, Marion, Wareham, Carver	<ul style="list-style-type: none"> • Proposed Mattapoisett Rail-Trail, Marion Bikeway and Wareham Bikeway • Main St, Rte 58, Tremont St to Myles Standish State Forest • Multi-use path to Nasketucket Bay
Norton, Taunton, Dighton, Somerset	<ul style="list-style-type: none"> • Abandoned rail corridor/Middleborough Secondary from Mansfield through Norton and Taunton to Danforth St • On-road Route: E Main St, S Washington St, N Boundary Rd into Taunton, the use of Bay St, W. Britannia St., Danforth St. Tremont St., Frederick Martin Pkwy, High St, Spring St, Dean St to proposed Commuter Rail station • Railroad right-of-way, Ingell St, W Water St, Third St, Railroad right-of-way, Railroad Ave, Somerset Ave, Railroad right-of-way, Pleasant St., High St, South St., Riverside Ave, Bourne Ave, County St., Buffington St. and Riverside Ave to Veteran's Memorial Bridge • Abandoned Raynham Branch rail corridor to proposed Commuter Rail station
Taunton, Lakeville, Middleboro	Owen Riverway, County St, Hart St, Middleboro Ave, Caswell St, S Precinct St, Rhode Island Rd, Captains Way, Rte 105, Bridge St, Wood St, Rte 28
Seekonk, Attleboro, Taunton	<ul style="list-style-type: none"> • County St, Phillip St, Bridge St, Webber St, S Main St, Oak Hill Ave, East Junction Railroad, Newman Ave, Brook St into Rhode Island • Thatcher St, Lamb St, Ten Mile Riverwalk, South Main St, Maple St, Park St, Bishop St, Pike St, Peckham St, Union Rd, S. Worcester St, John Scott Blvd, Eddy St, Norton Ave, Harvey St, Myles Standish Blvd • The Seekonk Bikeway

Issues to consider while planning bike routes include on-street parking restrictions, average daily traffic volumes, average daily truck traffic volumes, highway signage and utility poles. Other specific issues to consider include:

- A major crossing of Route 6 in Westport to extend the Fall River Bikepath through the town. A narrowing of Route 6 to two lanes with a wide refuge median may be necessary to facilitate this crossing.
- A connection to UMASS Dartmouth would be imperative to the success of any bikeway through Dartmouth.
- The use of active rail corridors, as suggested in Seekonk, Westport, Dartmouth, Taunton and Wareham would have to gain approval from MassDOT's rail division and the operators on those lines. A right-of-way width of 52 feet or wider would be the minimum amount necessary for a multi-use path to fit within an active rail corridor according to MassDOT's *Project Development and Design Guide*⁶.

⁶ Assuming rail bed is in center of right-of-way, this includes an 11' minimum distance between center of tracks and barrier, 3' shoulder, 10' path and another 2' shoulder.

Figure 38 displays the recommended bicycle connections in the region.

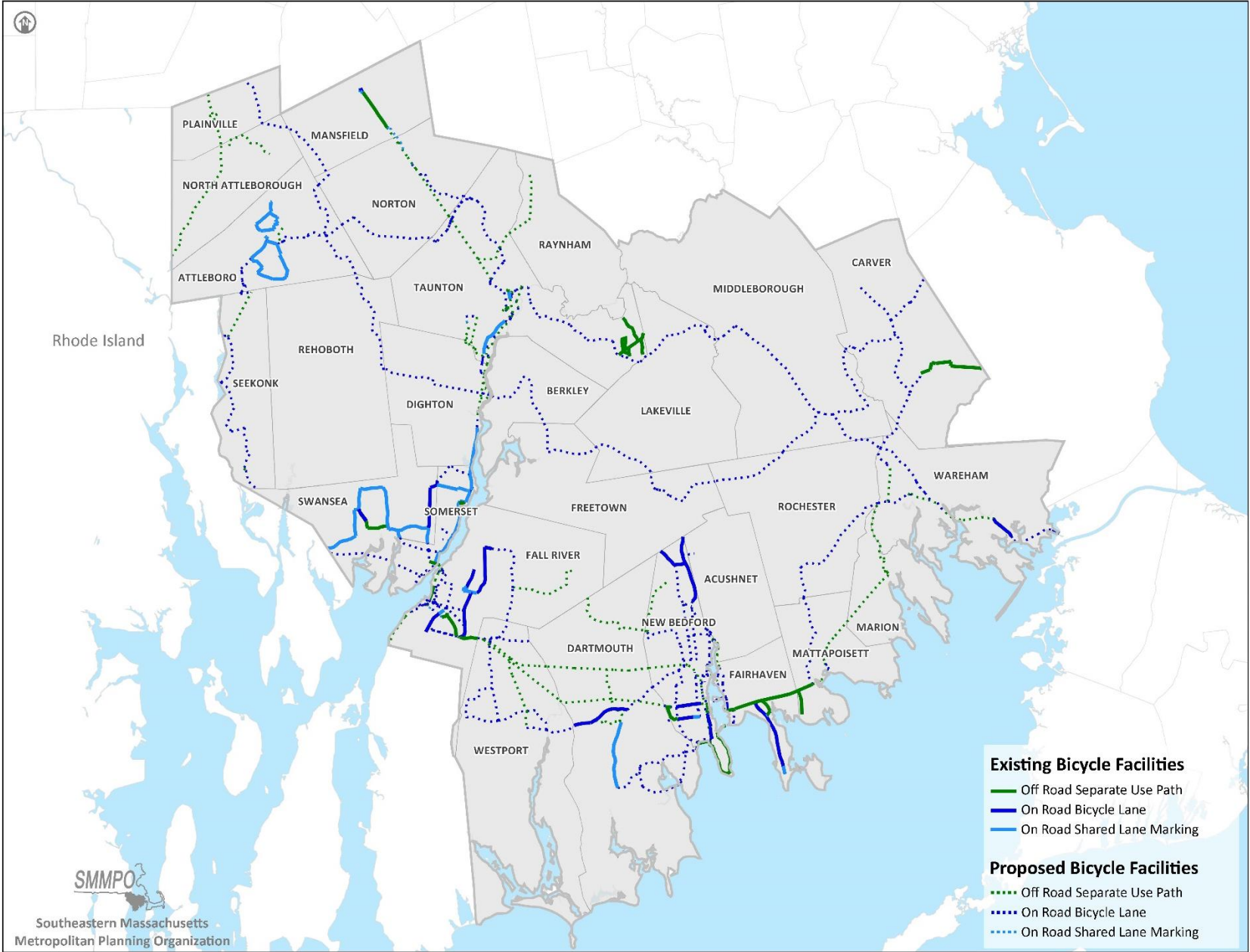


Figure 38: Recommended Bicycle Facilities

Figure 35 displays proposed Class 2 lanes that were added to the SRPEDD bicycle inventory as a result of community and public input as part of this study in 2016.

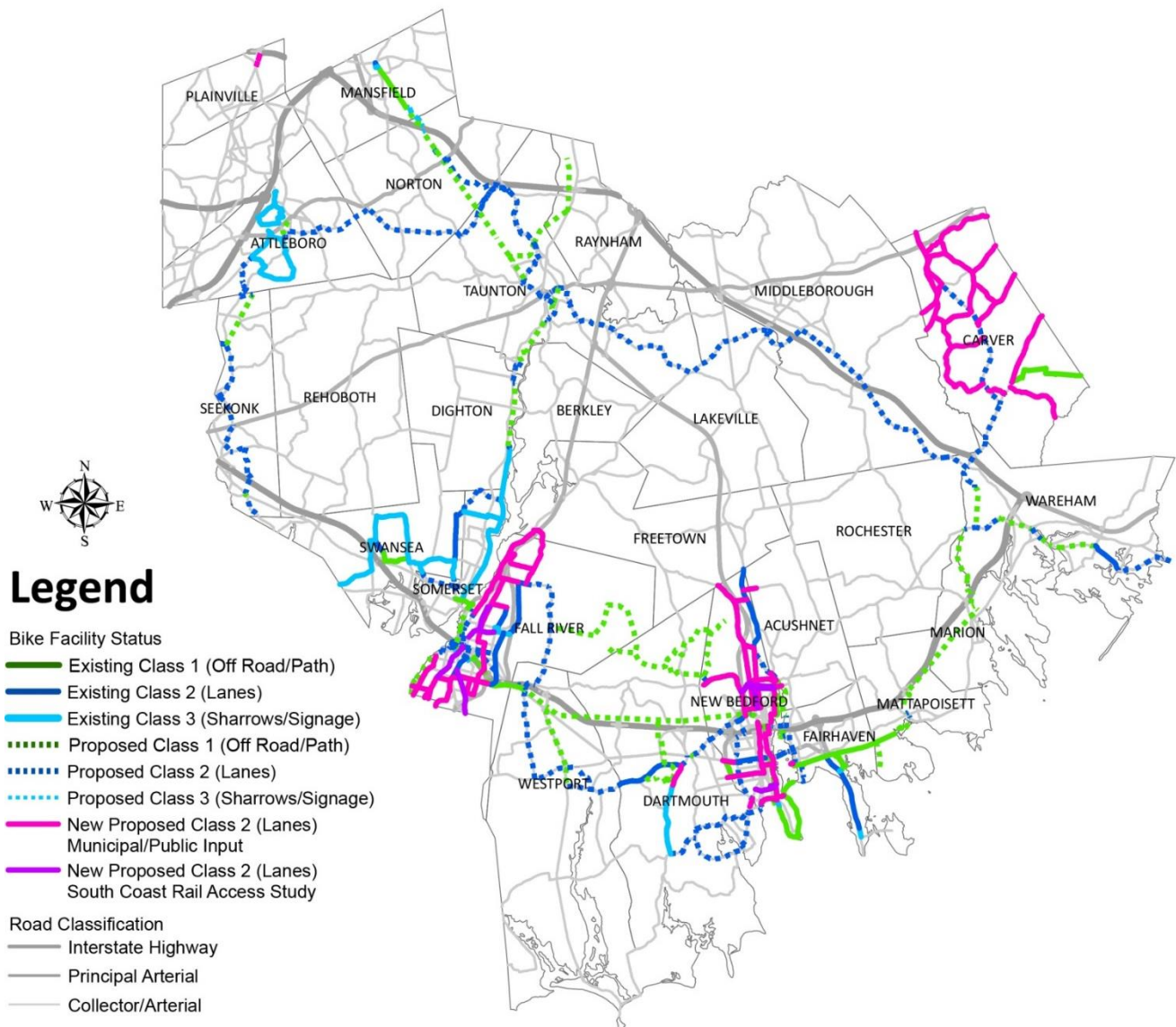


Figure 39: 2016 proposed routes

11.0 Recommendations

- Close gaps in network as identified in Table 6 on page 59.
- Encourage the development of a dedicated state level source of funding with state standards for design and construction specific to bicycle paths.
- As part of the original development of this plan, the JTPG proposed and the SMMPO approved a goal to allocate at least 10% from the annual TIP target funds for bicycle and pedestrian infrastructure improvements. This goal should be tracked and fully implemented.
- Promote intermodal connectivity by:
 - Improving bicycle access to transit stations. Improve signage, encourage bicycle-friendly developments and support facilities around transit stations through Transit Enhancements funding.
 - Encourage the MBTA to investigate the possibility of allowing bicycles on peak-hour trains by installing bicycle holders or racks on trains. Also work with MBTA to inventory bicycle accommodations at commuter rail stations and assess the needs for additional accommodations (bicycle lockers or racks).
 - Encourage the MBTA, GATRA and SRTA to provide more and better bicycle parking and provide information on bicycle policies and infrastructure on websites and other materials (ride guides/schedules).
- Continue to support, through technical assistance, local and regional bicycle groups. Consider a region-wide bicycle group or yearly summit with representatives from local groups to share knowledge and promote interconnectivity between communities and planned routes.
- Provide technical assistance to communities (especially those identified as having “gaps”) that wish to further analyze bicycle demand in their community and that desire to plan for and implement a bicycle master plan that will tie into a regional network for their community.
- Provide technical assistance to municipalities during the development of local subdivision rules, regulations and bylaws related to pedestrian and bicycle access.
- Encourage, through the MEPA process and the development of local bylaws, all new commercial developments and large multi-unit residential developments to include bicycle amenities such as class 1, 2 or 3 facilities, proper signage, and bicycle rack.
- Encourage communities to develop bicycle parking programs and/or support addition of bicycle parking at new developments through bylaws or ordinances.
- Ensure that all bicycle and pedestrian facilities are planned and constructed in accordance with the Americans with Disabilities Act (ADA).
- Maintain a regional bicycle projects mapping database through local interaction.
- Consider examining the feasibility of implementing a bicycle sharing program within the region.