



Town of  
**Watertown**  
Bicycle & Pedestrian  
Plan Report



October 2020





# Watertown

## BICYCLE & PEDESTRIAN PLAN

## Acknowledgements

Numerous individuals, including Town of Watertown staff who made up the Plan’s Steering Committee and the Town-appointed Bicycle and Pedestrian Committee members, provided knowledge, assistance, and guidance throughout the process of developing the vision for the Town of Watertown’s Bicycle and Pedestrian Plan. We thank them as well as the greater Watertown community for their enthusiastic participation:

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**And all of the Watertown community members who provided input!**





# Watertown

## BICYCLE & PEDESTRIAN PLAN REPORT

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# 1. Overview



The Town of Watertown encourages active transportation—walking, biking, micromobility, and transit— to help reduce congestion, and improve both air quality and public health. The Watertown Bicycle & Pedestrian Plan was initiated to help achieve those goals by identifying and prioritizing future improvements to the Town’s streets, walkways, and shared-use paths, making it easier for people of all ages and abilities to choose more active forms of transportation. The Plan provides a framework for implementing new and improved bicycle and pedestrian connections in Watertown and to the region’s larger active transportation network to help people get where they want to go easily, safely, and car-free.

The Plan is divided into five sections:

1. Overview
2. Walking & Biking in Watertown Today
3. Public Engagement
4. Community Vision and Goals
5. Recommendations

Development of the Plan was carried out by a Steering Committee consisting of Town staff from the Department of Community Development and Planning and the Department of Public Works; the town-appointed Bicycle and Pedestrian Committee; and consulting assistance by McMahon Associates and Cogent. The Plan was created in conjunction with a series of public meetings, an online survey, and engagement with local community groups. The Bicycle and Pedestrian Plan planning process served as a continuation of the Town’s Complete Streets Prioritization Plan, completed in 2018.<sup>1</sup> The Complete Streets process generated 150 ideas related to improving multimodal safety, and an initial toolbox of treatment options for bicycle and pedestrian infrastructure. The Plan expands on the identification of specific physical needs and recommendations from the Complete Streets planning process to develop a comprehensive and connected bicycle and pedestrian network.

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<sup>1</sup> <http://www.watertowndpw.org/190/Watertown-Complete-Streets>



The recommendations for the Plan, detailed in Chapter 5, provide a path forward, not only for infrastructure improvements, but policy changes, programs, enforcement mechanisms, and maintenance procedures. All of these elements combined are essential to improving walking and biking conditions in Watertown, and continue to be able to improve them and meet the present and future needs of the Watertown community.

## THE BICYCLE AND PEDESTRIAN PLAN PROCESS:



**Understand** the Town's existing networks and past and on-going projects



**Identify and prioritize** new and improved bicycle and pedestrian connections in Watertown and to the region's larger active transportation network



**Develop measurable goals** for encouraging active transportation for all people



**Inform** decision-making associated with implementing bicycle and pedestrian **policies, programs, and infrastructure improvements**

## 2. Walking & Biking in Watertown Today



### 2.1 Travel Trends

The current travel trends in Watertown help inform not only the use of existing walking and biking routes, but the potential to increase walking and biking trips. Mobility town-wide and to neighboring towns is influenced by Watertown's roadway network, which facilitates travel by foot, bike, car, and bus. Currently, driving is the most common form of transportation in Watertown, with approximately 65% of residents driving alone to work. This is a lower drive alone rate than that found in neighboring Belmont, Waltham, and Newton.<sup>2</sup> Overall, approximately one in four Watertown residents choose an environmentally sustainable mode (public transit, carpool, walk, or bike) to get to work, as seen in Figure 1; however, rates of walking and biking to work remain average when compared to rates in surrounding communities. According to Watertown's Transportation Demand

Management (TDM) program, the Town's goal is to reduce single occupant vehicle mode share by 20%, which results in a goal of approximately 50% for residents and 60% for workers.<sup>3</sup>

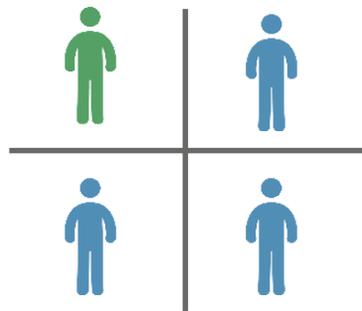
Insight on the potential to increase walking and biking trips is provided by examining travel trends related to where Watertown residents work and where Watertown workers live, shown in Table 1. With almost 20% of Watertown residents also working in Watertown, there is the potential to shift some of these shorter, local trips to walking and biking with creation of a better connected active transportation network. With fewer commuters driving, this can reduce congestion and improve both air quality and public health, fulfilling the Town's goals for the plan and benefiting the community at large.

<sup>2</sup> Metropolitan Area Planning Council (MAPC) Community Profiles, 2012-2016 ACS 5-year estimates <https://datacommon.mapc.org/#community-profiles>

<sup>3</sup> [https://www.watertown-ma.gov/DocumentCenter/View/28504/TDM-Regulations\\_final-10-25-19](https://www.watertown-ma.gov/DocumentCenter/View/28504/TDM-Regulations_final-10-25-19)

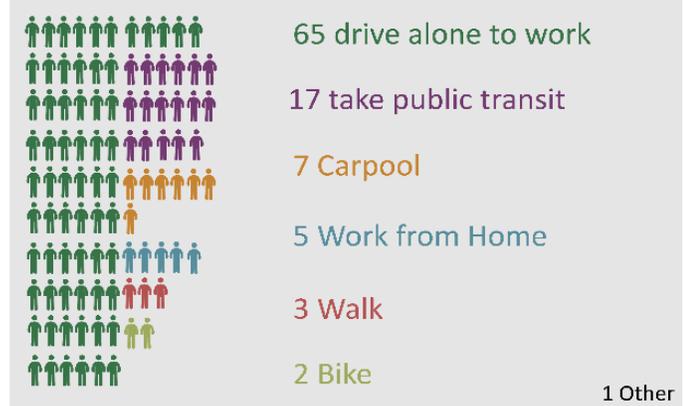
## Mobility in Watertown

How could these trends shift with improved bicycle and pedestrian networks?



**One** in four Watertown residents chooses an environmentally sustainable mode to get to work

Out of every 100 residents...



2013-2017 American Community Survey Journey to Work Data

**Figure 1: Mobility in Watertown**

**Table 1: Watertown Resident and Worker Origins and Destinations**

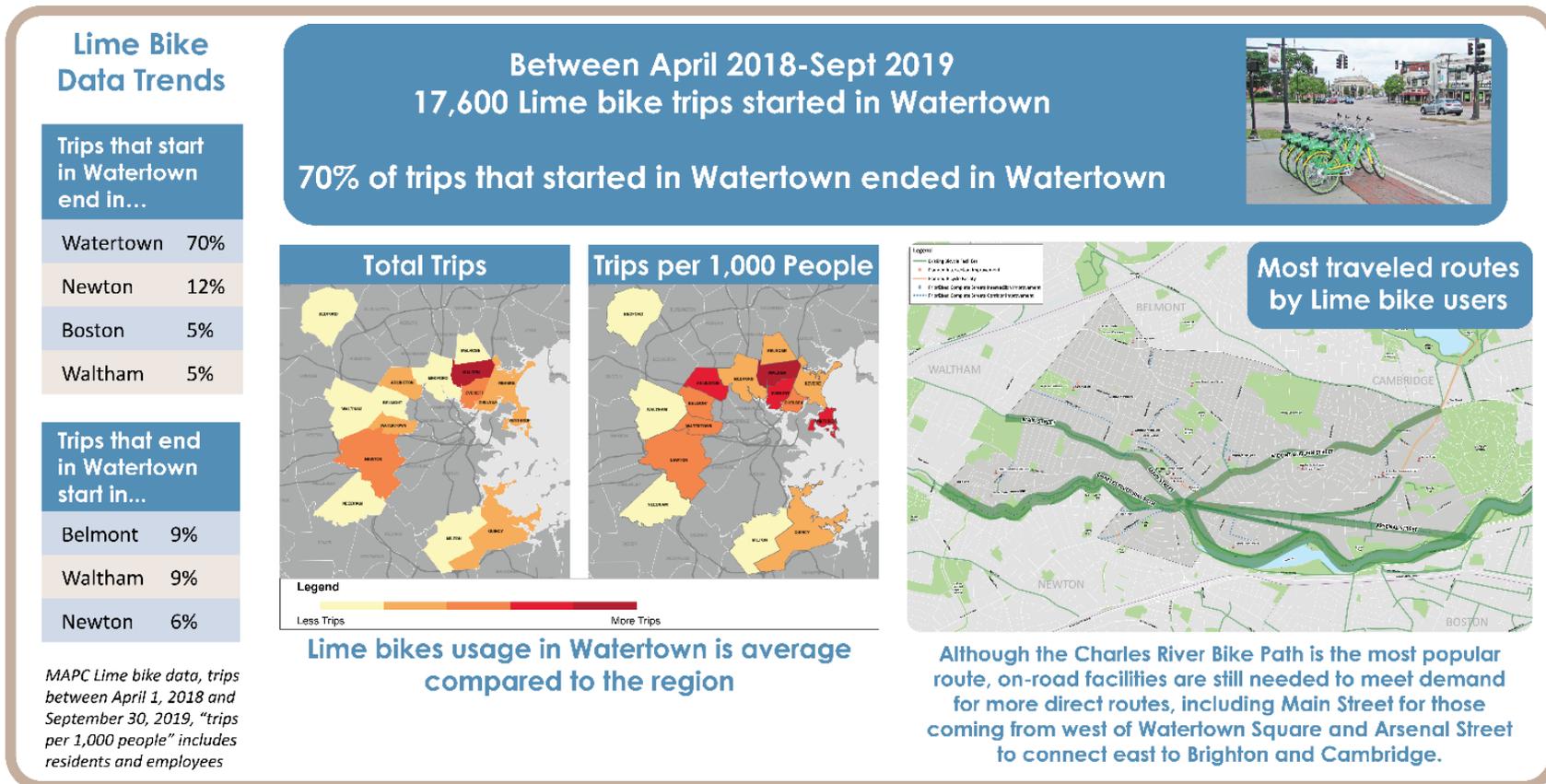
Percentage of Watertown residents who work in...	
Boston	27%
Watertown	19%
Cambridge	11%
Waltham	6%
Newton	5%

Percentage of Watertown workers who live in...	
Watertown	18%
Boston	16%
Waltham	8%
Newton	4%
Cambridge	4%

**Almost 20% of Watertown Workers Live in Watertown**

Additional information on biking trends and behavior has been provided through data analyzed by the Metropolitan Area Planning Council (MAPC) and the regional dockless bike share program provided through Lime to local municipalities. In 2018, Watertown opted to be one of 15 communities in the MAPC region to participate in a regional system. The Lime bike share system was discontinued by the company, but the Town joined the Boston area's Bluebikes bike share program.

One of the major findings from the Lime data is that 70% of Lime bike trips that started in Watertown ended in Watertown, illustrating a demand for short term trips via bike, and the importance of identifying gaps in the local network. When looking at the most used corridors by Lime bike users, the Charles River Bike Path had the most usage; however, Main Street, Mt. Auburn Street, and Arsenal Street were also among the most used corridors, suggesting that on-road facilities are needed to meet demand for more direct routes. These and additional findings are summarized in Figure 2.



**Figure 2: Lime Bike Data Trends**

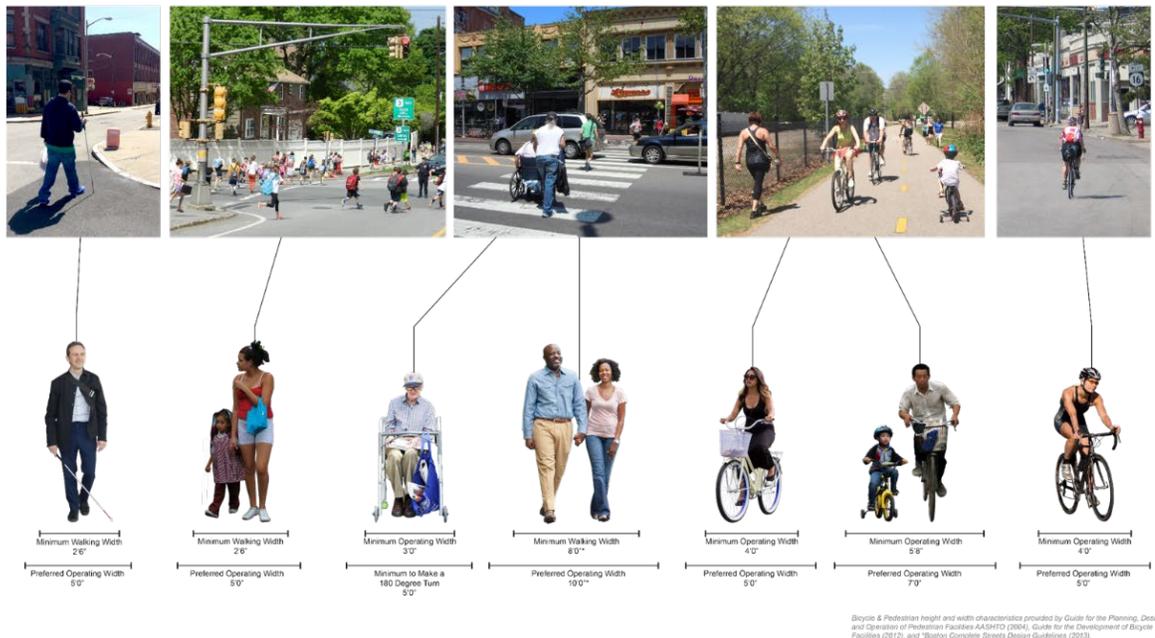
### Accessible for All

As part of the Bicycle and Pedestrian Plan it is important to think about needs of pedestrians with mobility devices such as wheelchairs and walkers, and those who have other mobility challenges including visual impairment. This Plan includes recommendations for facilities that accommodate all users. Such facilities might incorporate tactile surfaces in transition zones, audible pedestrian push buttons at street crossings, and amenities to increase comfort for walking corridors where frequent rest may be desirable (such as seating). The Americans with Disabilities Act (ADA) and the Massachusetts Architectural Access Board (MAAB) provide guidance and requirements for accessibility standards. The Town of Watertown, as home to Perkins School for the Blind, assisted living facilities, an engaged Disabilities Commission, and many school sites, seeks to go beyond minimum accessibility requirements to support active transportation and micromobility for its diverse population.

Under a separate effort the Town engaged MAPC, who collected pedestrian and bicycle count data at 17 locations in Watertown from approximately May to November 2019. This data illustrates that in addition to the corridors that showed high usage from Lime bike users, Coolidge Hill Road and Walnut Street are also key links in the Watertown bike network, reaching over 350 and almost 300 riders per day, respectively, several days per week.<sup>4</sup> While the MAPC data show bicycle volumes on Coolidge Hill Road, the topography is challenging. The Watertown Greenway may provide a more comfortable opportunity as the network is developed.

It is also important to understand who we are planning for: a community with people of all ages, differing physical abilities, and various travel needs, whether one is looking to travel alone on the most direct, quick route as possible, or travel leisurely with family members in a calm environment. All of these user types have differing dimensional requirements, as seen in Figure 3, which all need to be taken into account when planning and designing pedestrian and bicycle facilities.

## Who We Are Planning For



**Figure 3: Dimensional Requirements for Different User Types**

<sup>4</sup> MAPC mid-term, long-term, and manual short term bicycle and pedestrian count data, 2019



## 2.2 Existing Networks

The Town of Watertown’s Department of Public Works (DPW) is responsible for managing the Town’s infrastructure assets, including the roads and intersections used for bicycling and walking. The Highway Division is responsible for maintenance and repair of roadway and sidewalk, while traffic control is the jurisdiction of the Police Department.

As a densely populated community of just over four square miles, Watertown’s compact size and street network provide an excellent framework for bicycling and walking. Approximately 70 of the 72 miles of Town-accepted roads have a sidewalk on at least one side of the street.<sup>5</sup> Figure 4 illustrates the current condition of sidewalks in Watertown, using a ranking system from poor to good. The rankings are based on visual assessments during Pavement Management inspections. Sidewalks are classified as “Good” condition if a continuous bituminous or cement concrete surface is provided and are visibly free of significant cracking or trip hazards, although sidewalks classified as “Good” may not meet ADA standards for width and cross slope. “Fair” is defined as meaning that 50% or less of sidewalk panels need to be replaced to create a “good” condition. “Poor” is defined as meaning that over 50% need to be replaced to create a “good” condition.

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<sup>5</sup> Pavement Management Plan, GIS data from town based on 2015 inspections and updated to assume streets paved through 2019.

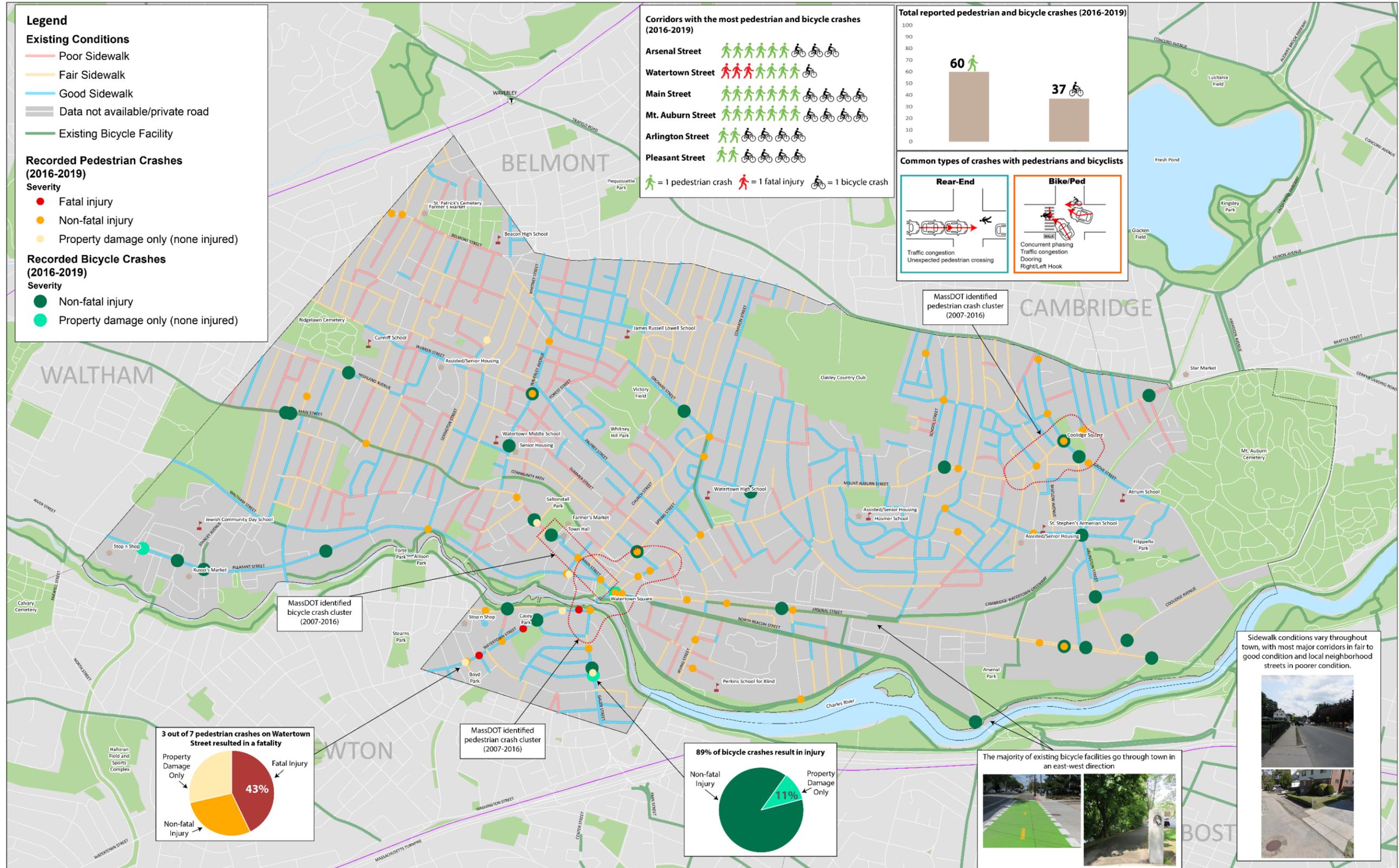


Figure 4: Existing Conditions

Table 2 summarizes the condition of the sidewalk network in Watertown. The condition of sidewalks varies throughout town, though most major corridors have sidewalks in fair to good condition, while it is more likely that local neighborhood sidewalks are in poorer condition. Among issues with sidewalks are cracking, and uneven surfaces, as seen in Figure 5. Due to the close proximity of different land uses such as housing, schools, and commercial centers, walking is a viable option throughout most of Watertown, as long as sidewalks are made accessible for people of all ages and abilities.

Additionally, participants of the community survey conducted as part of the Watertown Parking Management Plan (2019) expressed a preference to park off-street in commercial

centers like Watertown Square and walk to their destinations.<sup>6</sup> Supporting pedestrian infrastructure promotes a park and walk environment, which contributes to a walking culture.

**Table 2: Sidewalk Condition of Town Accepted Roads<sup>7</sup>**

Sidewalk Condition*	% of Town Accepted Roads
Poor	13%
Fair	38%
Good	50%

*\*When condition varied on either side of the roadway, the lower condition was used*



**Figure 5: Existing Sidewalk Conditions in Watertown.**

**The left shows a poor sidewalk condition characterized by lack of curb separation from the roadway, cracking, and uneven pavement, while the right shows a good sidewalk condition with a wide, even surface and curb.**

<sup>6</sup> <https://www.watertown-ma.gov/DocumentCenter/View/27911/Parking-Management-Plan-Executive-Summary-and-Strategies>

<sup>7</sup> Pavement Management Plan, GIS data from town (2017)

It is evident that the majority of existing bicycle facilities through town provide access in an east-west direction, as seen in Table 3, while north-south bicycle facilities are notably absent.

**Table 3: Existing Bicycle Facilities in Watertown**

Location	Facility Type	Direction
Main Street (Waltham line to Bacon Street)	Bicycle Lanes	East to West
Dr. Paul Dudley White Bike Path (Charles River Path)	Bike Path	East to West
Watertown Community Path	Shared Path	East to West
North Beacon Street	Bicycle Lanes	East to West
Arsenal Street	Two-way Separated Bicycle Lane	East to West
Common Street from Mount Auburn Street to Orchard Street	Bicycle Lanes	Northbound Only
Watertown-Cambridge Greenway	Shared Path	Southwest to Northeast
Waltham Street (Waltham line to Edward Road)	Bicycle Lanes	Westbound Only



Two-way separated bicycle lane on Arsenal Street.



Charles River Path in Watertown.



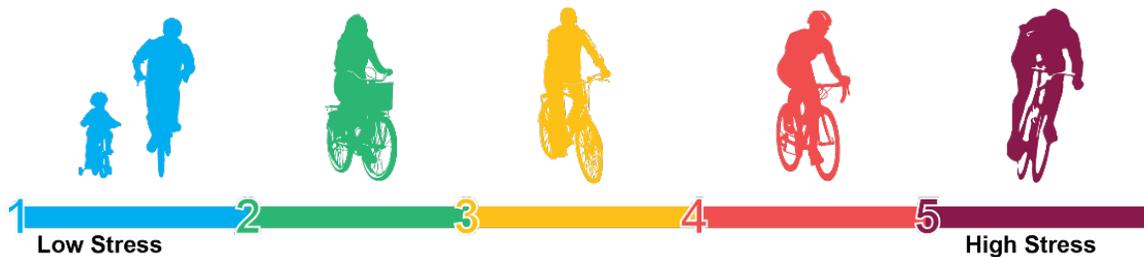
A measure called the “Bicycle Level of Traffic Stress”<sup>8</sup> (BLTS) was used to evaluate the existing bicycle network in terms of the amount of stress someone would experience when biking on a roadway segment. A Level 1 indicates a low level of stress, suitable for a small child or inexperienced bicyclist, while a Level 5 indicates a high level of stress, only suitable for the most experienced bicyclist, and potentially uncomfortable for any bicyclist, as shown in Figure 6. Indicators used to measure stress for the analysis in this Plan include:

- **Bicycle facilities:** A facility separated from traffic, such as an off-road path or bike lane at the sidewalk level separated from the roadway by a curb, would result in a Level 1. Other buffered and on-road bicycle lanes would result in a Level 2 or 3 depending on vehicle speeds, vehicle

volumes, or the presence of on-street parking and transit frequency.

- **Vehicle speed:** The speed of vehicles traveling adjacent to bicycle facilities is a direct contributor to the level of stress a bicyclist will feel. Speeds of less than 30 mph increase bicycle comfort, while speeds above 35 miles per hour create greater stress.
- **Vehicle volumes:** The number of vehicles traveling on a corridor contributes to congestion and greater chances for conflict between vehicles and bicyclists. Roadways with fewer than 2,000 vehicles on average per day, or average daily traffic (ADT), creates a less stressful environment, while over 10,000 ADT creates a high stress environment.

## BICYCLE LEVEL OF STRESS



### CRITERIA

* Separated bike lane	* Buffered bike lane	* Bike lane with parking and/or infrequent bus route	* Shared lane with frequent bus route	* Shared lane with multi-lane vehicular traffic or speed > 35 mph or with ADT > 15,000
* Shared lane with speed < 30 mph and with ADT < 2,000	* Bike lane with no parking and no bus route	* Shared lane with speed between 30 and 35 mph or with ADT between 4,000 and 10,000	* Shared lane with speed between 30 mph and 35 mph or with ADT between 10,000 and 15,000	
	* Shared lane with speed < 30 mph and with ADT between 2,000 and 4,000			

**Figure 6: Bicycle Level of Stress**

<sup>8</sup> Originally developed by researchers at the [Mineta Transportation Institute](#), and advanced by Peter Furth, Professor of Civil and Environmental Engineering, Northeastern University College of Engineering



- On-street parking: On-street parking can create conflict points with bicyclists in shared lanes and in bicycle lanes. Bicyclists are at risk of being hit by a car pulling out of a parking space, and also at risk of being “doored” by a driver or passenger opening their car door into the bicycle lane. An on-street bicycle lane adjacent to a parking lane results in a Level 3 moderate stress environment.
- Transit service: As larger vehicles, buses traveling on a corridor create a higher level of stress for bicyclists. Additionally, buses pulling into and out of curbside bus stops create conflicts with bicyclists traveling in a bicycle lane, as the bus is likely to have to cross the bicycle lane to access the curb. Corridors with infrequent bus service result in a Level 3 moderate stress environment, while frequent bus service results in a more stressful Level 4 or 5 environment.

Figure 7 summarizes the existing BLTS stress on Watertown roadways today. A sampling of data for each roadway class was used to determine a level of traffic stress by class. The level was further refined based on field and desktop review to provide a more contextual level of traffic stress. The full methodology and data sources are provided in Appendix A.

The presence of off-street paths and low-volume, low-speed roadways leads to many low-stress segments throughout town. At the same time, there are several major routes that currently have stressful bicycling environments, including Mount Auburn Street, Galen Street, Arsenal Street east of the Cambridge-Watertown Greenway, Grove Street, Main Street east of Bacon Street, Orchard Street, and Belmont Street. Bicycle improvements are currently planned for the Level 4 and 5 sections of Mount Auburn Street and Main Street, as described in Section 2.5.

Low stress networks facilitating north-south travel are lacking, and only provide short segments of bicycle facilities if any are provided such as Stanley Avenue from Pleasant Street to Waltham Street, and Arsenal Street on the Charles River from Watertown Community Path/Arsenal Street to North Beacon Street.

Safe north-south connections are desired by the community. However, major north-south routes in town such as Grove Street, Arlington Street, School Street, Waverley Avenue, and Lexington Street are between Level 3 and 5 for Bicycle Level of Traffic Stress. This relatively high level of stress illustrates the need for improved north-south bicycle connections to complete a network that is safe and accessible for all users. Further information on the level of traffic stress classifications and analysis can be found in Appendix A.

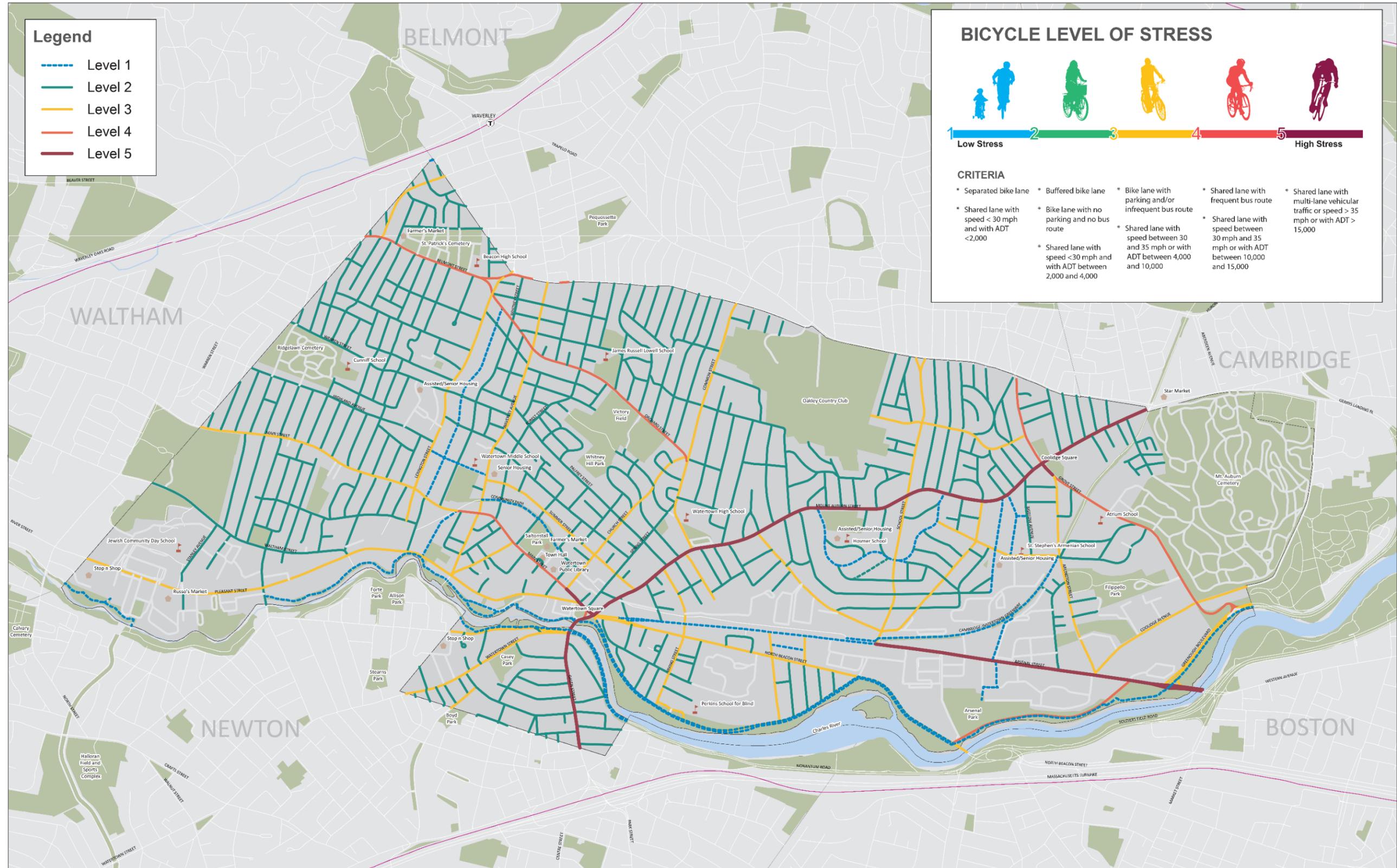


Figure 7: Existing Bicycle Level of Traffic Stress



## 2.3 Safety

Data on bicycle and pedestrian crashes provide insight into priority locations for improvements to bicycle and pedestrian infrastructure. Existing research on safety related to encouraging multimodal travel identifies perceived safety as a significant factor in the likelihood of the general public using new facilities.<sup>9 10 11</sup> This makes it important to not only consider safety in terms of vehicular crashes, but to consider how roadway elements influence feelings of perceived safety for walkers and bicyclists.

The Massachusetts Department of Transportation (MassDOT) Highway Safety Improvement Program (HSIP) identifies crash clusters to signify priority areas for safety improvements. An HSIP crash cluster occurs when the total number of “equivalent property damage only” (EPDO)<sup>12</sup> crashes are within the top 5% of each regional planning agency district. From 2007-2016 two pedestrian crash clusters were identified in Watertown, at Watertown Square and at Coolidge Square, and one bicycle crash cluster, on Main Street from Chestnut Street to Galen Street. The presence of these crash clusters identifies them as priorities for implementing facilities that provide enhanced levels of safety elements for walkers and bicyclists, such as separation from traffic, enhanced visibility, improved lighting, or different types of traffic signalization.

Additional crash data for Watertown were generated from the MassDOT Crash Data portal, which is comprised of reported crashes involving bicyclists and pedestrians for the years 2016-2019. Each reported crash in this period, as well as the crash clusters identified above, are depicted in Figure 8. In this time period, there were a total of 60 reported crashes between vehicles and pedestrians and 37 reported crashes between vehicles and bicyclists. The corridors with the most crashes involving bicyclists and pedestrians are show in Figure 9. A review of crash data reveals the following trends:

- From 2016-2019, three crashes involving pedestrians resulted in fatalities, each of which occurred along Watertown Street, demonstrating a need for safety improvements along this corridor.
- The majority of crashes involving pedestrians on Arsenal Street and Main Street were with pedestrians crossing at marked crossings, suggesting a potential need for additional pedestrian safety measures.
- Crashes involving bicyclists on Arlington Street were with a parked vehicle and with a bus and a right turning vehicle at the intersection of Mt. Auburn Street, illustrating the importance of integrating bicycle facilities with parking lanes and bus stops.

<sup>9</sup> Dill, J., T. Goddard, C. Monsere, and N. McNeil. 2014. “Can Protected Bike Lanes Help Close the Gender Gap in Cycling? Lessons from Five Cities.” Urban Studies and Planning Faculty Publications and Presentations 123.

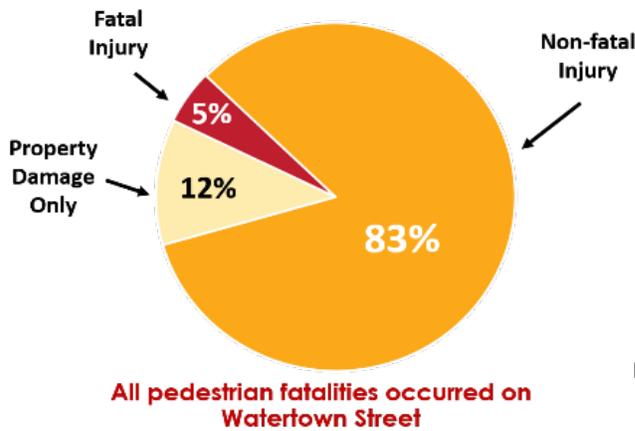
<sup>10</sup> Sanders, Rebecca L., and Belinda Judelman. “Perceived Safety and Separated Bike Lanes in the Midwest: Results from a Roadway Design Survey in Michigan.” Transportation Research Record 2672, no. 36 (December 2018): 1–11. doi:10.1177/0361198118758395.

<sup>11</sup> Cho, Gihyoung; Rodríguez, Daniel A.; Khattakb; Asad J. “The role of the built environment in explaining relationships between perceived and actual pedestrian and bicyclist safety.” 2009. Accident Analysis & Prevention, Volume 41, Issue 4, July 2009, Pages 692-702.

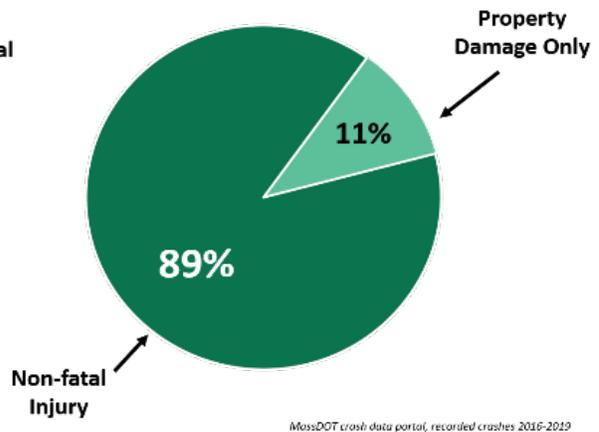
<sup>12</sup> EPDO based on calculated crash costs from a Federal Highway Administration (FHWA) study for 2014-2016 crash clusters. For prior clusters, EPDO was weighted using a factor of ten for a fatal crash, five for an injury crash, and one for non-fatal and non-injury crashes. Source: <https://safety.fhwa.dot.gov/hsip/docs/fhwasa17071.pdf>



**83% of pedestrian crashes resulted in injury and 5% in a fatality**



**89% of bicycle crashes resulted in injury**



**Figure 9: Bicycle and Pedestrian Crash Data**

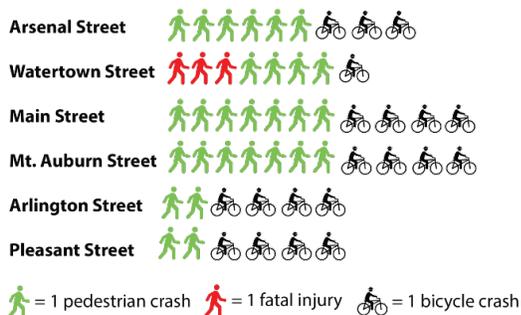
As seen in Figure 8, 83% of pedestrian crashes with a vehicle resulted in injuries and 5% were fatal, while 89% of bicycle crashes with a vehicle resulted in injury. While no number of crashes is an acceptable number, it is important to view safety holistically. As explained in the “Vision Zero” section of Chapter 4, vehicle speed is directly related to crash severity. Reducing vehicle speeds not only contributes to creating the perception of safety, but reduces the chances of a severe injury if a crash should occur. This also shows that safety is not just about putting in a sidewalk or a bicycle lane, but supplementing these facilities with traffic calming measures such as raised crossings,

narrower motor vehicle lanes, on-street parking, and curb extensions, amongst other tools.

### 2.4 Current Projects

It is important that the Bicycle and Pedestrian Plan address current roadway improvement projects, and also fit into the holistic framework of planning in Watertown. Figure 10 summarizes planned projects at the time of the plan’s formation. As Figure 10 shows, several planned projects will address existing gaps in the bicycle and pedestrian networks:

- The Watertown Community Path will be extended from Pleasant Street to Main Street, then connect along Linear Park to Saltonstall Park behind the Administration Building and Library to the separated bicycle facility on Arsenal Street, providing a route through the center of town connecting existing facilities on the east and west sides of Watertown, including the Watertown-Cambridge Greenway and the Charles River Path.



**Figure 8: Corridor Crashes Involving Bicyclists and Pedestrians**



- The reconstruction of Mount Auburn Street will provide curb extensions, traffic signal improvements, and bicycle lanes from Patten Street to Belmont Street at the Cambridge line. This will provide an important connection through northeastern Watertown on a street with a high number of reported bicycle and pedestrian crashes, making it a priority for safety improvements.
- The extension of the Watertown-Cambridge Greenway will provide an off-road connection into Cambridge to Fresh Pond and beyond. This will be an important north-south connection, for commuting and recreation and to promote healthy options for people of all abilities as it will be separated from traffic.
- The reconstruction of Main Street from Waverley Avenue to Thaxter Street will provide bicycle lanes, curb extensions, and traffic signal improvements, which will improve walking and biking conditions from western Watertown into the center of town where people would be able to connect to the Watertown Community Path.
- A bicycle facility in the southbound direction on Arlington Street, between Grove Street and Arsenal Street, is planned. It will consist of bicycle lanes, sharrows, and buffered bicycle lanes.
- As part of future reconstruction of Arsenal Street, a bicycle lane in the eastbound direction will be provided from School Street to Greenough Boulevard.
- The Town's annual road program includes the reconstruction of sidewalks, implementation of ADA-compliant curb ramps, as well as bicycle

lanes, shoulders, or sharrows where feasible. This program can help fund important links in bicycle and pedestrian networks as roads are slated for reconstruction as part of existing town services.

Additional existing projects will address intersection improvements that will provide better connections between links in the network:

- As part of the Complete Streets Prioritization Plan, three projects were funded for construction in 2020 that will improve pedestrian crossings: a raised crosswalk on Warren Street at the Cuniff School, a raised shared path crosswalk on Whites Avenue at Linear Park and extension of the path through Saltonstall Park using the existing sidewalk route, and crosswalk improvements on Watertown Street at Theurer Park, the location of a pedestrian crash in 2017.
- Improved accessibility and safety improvements will be added to the intersection of Galen Street at Watertown Street and Nonantum Road, which was identified as a high crash location by MassDOT (2016-2019). From 2016-2019, three out of the seven reported crashes with pedestrians on Watertown Street resulted in fatalities.
- Watertown Square is being evaluated for multimodal improvements to address safety and circulation for all modes. Watertown Square provides an important connection to existing and planned bicycle facilities on both sides of town and to regional links into Newton and Boston, as well as to the Charles River Path.



**Figure 10: On-going Projects in Watertown**

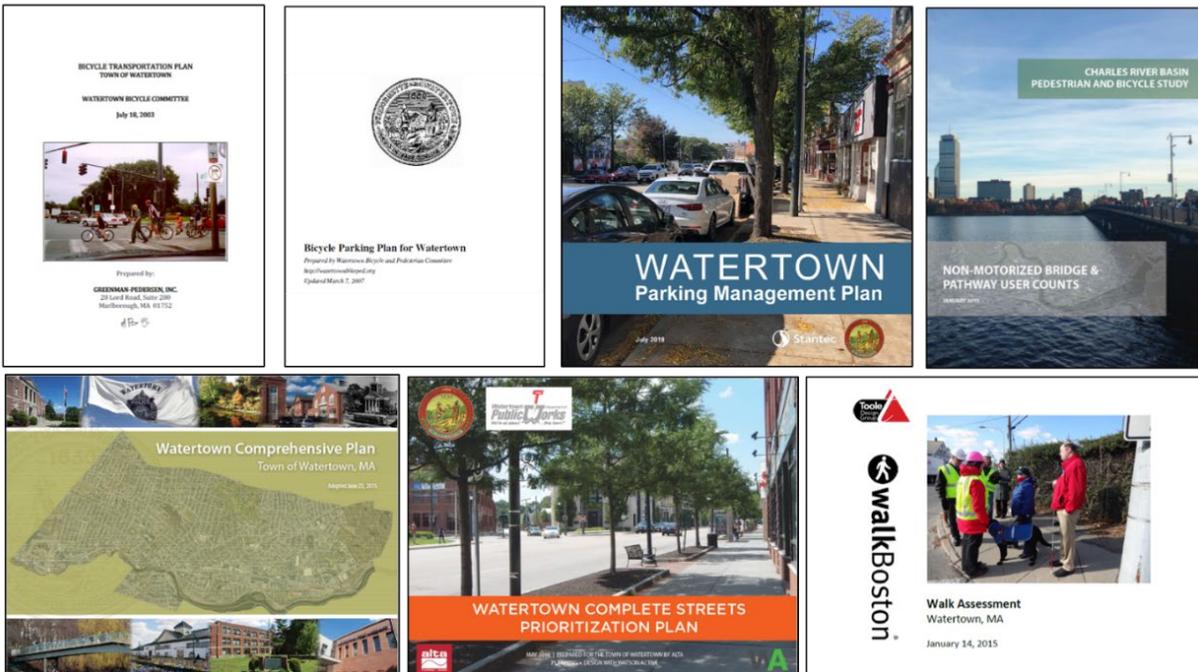
## 2.5 Complete Streets

The Town’s Complete Streets Policy and Prioritization Plan sets an important framework for the Bicycle and Pedestrian Plan. The Watertown Complete Streets Policy was adopted in 2017 and a Prioritization Plan, which selected 24 priority projects for funding, was completed in 2018.

Through the public outreach conducted as part of the Complete Streets process, which included two public forums, interviews and meetings, and an online survey, 150 ideas for improving multimodal safety were generated. These ideas were narrowed to 33 draft projects based on input from Town Officials and consolidating overlapping ideas. The draft ideas were scored based on evaluation criteria developed by the Department of Public Works (DPW) and Community Planning and Development Department. Projects were prioritized that improved both bicycle and pedestrian improvements and connectivity, which resulted

in the selection of 24 projects to submit to MassDOT for funding. The three projects selected for funding during the 2017/18 planning process are highlighted in Figure 11 and discussed in section 2.4.

## EXISTING PLANS



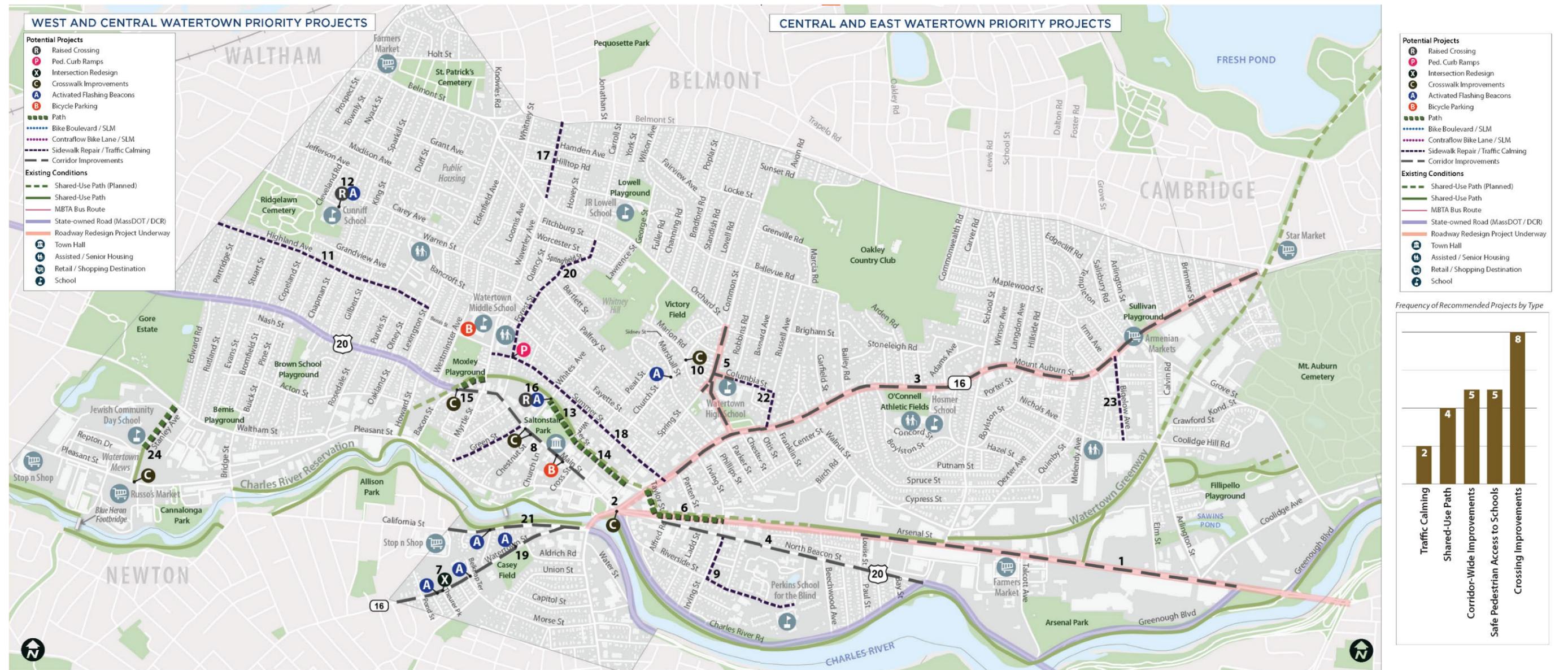


Figure 11: Complete Streets Prioritization Plan (2018)



The Bicycle and Pedestrian Plan builds off of the ideas and recommended projects identified through the Complete Streets Plan, and serves to fill in the remaining gaps in the bicycle and pedestrian networks to improve access, mobility, and safety for all user types. The plan does this by identifying missing links in the networks, exploring a range of treatments to enhance the comfort and safety of facilities, and developing an implementation plan. Several

pedestrian and bicycle facilities were developed as part of a “toolbox” for the Complete Streets Plan, as seen in Figure 12. These facilities also play an important role in the Bicycle and Pedestrian Plan. A toolbox that serves as an extension and supplement to the Complete Streets Toolbox is provided in Chapter 4 of this Plan.



**Figure 12: Toolbox for the Complete Streets Plan**

# 3. Public Engagement



Collecting a wide range of public input was integral to the development of the Bicycle and Pedestrian Plan. As stated previously, the effort was not conducted from a blank slate, but with the acknowledgement of past planning efforts, public feedback, and identification of missing links in the multimodal network. Several tools were used for collecting additional public feedback to develop the plan and focus on the needs and priorities of those who live, work, and play in Watertown:

- Five meetings with a Steering Committee of Town staff from Community Development and Planning, and Department of Public Works and a rep from the Bicycle and Pedestrian Committee
- Four meetings with the town's Bicycle and Pedestrian Committee
- One public meeting; and public review of this final plan
- Online community survey
- Project website
- Outreach to community groups

## 3.1 Committee Meetings

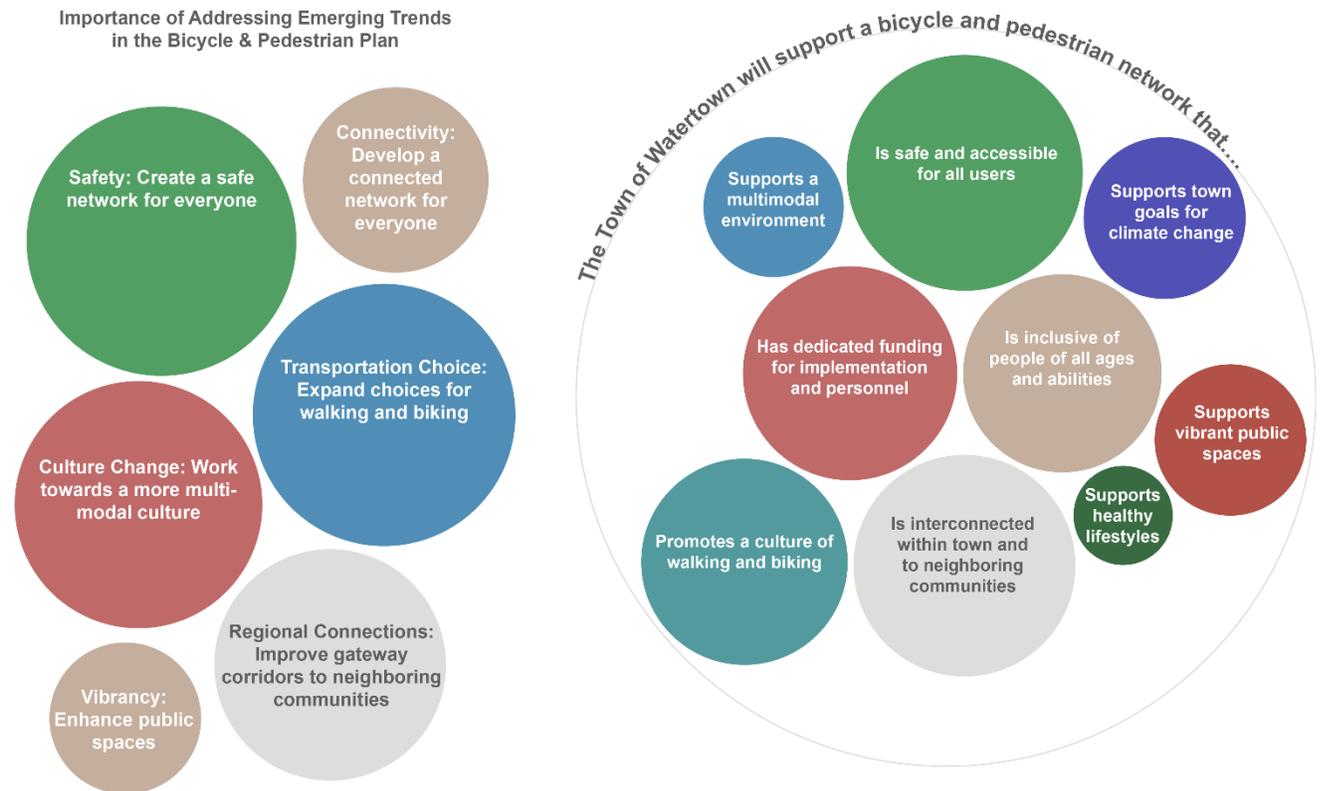
To provide a starting point for the public engagement process, the Steering Committee and Bicycle and Pedestrian Committee were engaged in several activities to understand their concerns, priorities, and goals for walking and biking in Watertown, now and in the future. In an activity, committee members were asked to comment on what they thought the biggest opportunities were, the biggest challenges were, and what a successful plan means. Key words were drawn from this exercise to help inform the overall vision for this plan. Similarly, the committees were engaged in mapping exercises to start to document issues and opportunities related to walking and biking in Watertown. Map layers included existing facilities, planned facilities, and the prioritized Complete Streets Projects to provide a more complete picture of where network gaps may be impeding access through town. From these activities, several key issues and opportunities for each mode arose, and were presented for community input through a public meeting and community survey summarized in the following sections.





asked to rate the importance of specific key words and phrases, selected to summarize emerging trends identified in meetings with the Steering Committee and Bicycle and Pedestrian Committee. These ideas were then presented in the form of draft vision statements for the plan, where participants could rank how important they considered these elements to be for inclusion in the plan’s vision. Figure 14 illustrates the emerging trends and vision elements that were rated most important, symbolized by circle size.<sup>14</sup> Overall, there was general agreement in the importance of all of

the identified vision elements and emerging trends. The trends that generated the most agreement on their importance were safety and culture change, and expanding transportation choice. The ideas that generated the most agreement for their inclusion in the vision were safety, along with providing an interconnected network, inclusive facilities, and dedicated funding.



**Figure 14: Public Priorities for the Bicycle & Pedestrian Plan Vision**

<sup>14</sup> Results were tallied by “very important”, “neutral”, and “not important”. A neutral or not important vote was subtracted from the “very important” total to generate one number per category.



### 3.3 Community Survey

A community survey was released from January 10, 2020 to February 10, 2020. The survey was publicized on the public meeting flyer, available to fill out at the public meeting, and distributed through the Town's and the Bicycle and Pedestrian Committee's existing networks. A community survey is an important element of public engagement, as not everyone has the ability to attend public meetings to express their opinions. The survey generated a total of 821 responses, 574 of which were complete responses. A full set of survey questions and responses is available in Appendix B. The following summary is based on the 574 complete responses, as this provides a more complete understanding of priorities.

The majority of survey respondents (92%) were Watertown residents. Nearly half of respondents (46%) were between 30 and 49 years of age, over a quarter (27%) were between 50 and 64, while one-fifth (21%) were from 65 to 79 years old. Fewer than 5% of respondents were adults under the age of 30. Among those who opted to answer the question about gender identity, respondents skewed female, with 329 women completing the survey and 231 men.

Overall, the survey revealed strong interest in improving conditions for both biking and walking, with several key points highlighted below. A complete summary of the community survey results, along with individual question and results, is provided in Appendix B.

- If conditions improved for walking and biking, people are most interested in taking trips for recreation/fun and exercise, followed by trips for personal errands.
  - Improving walking and biking connections to recreational areas, off-road paths, and schools are the highest priorities.
  - The top rated pedestrian enhancements to improve conditions are better street lighting, Rectangular Rapid Flashing Beacons (RRFBs), and pedestrian refuge islands.
  - The top rated bicycle facilities to improve conditions are shared use paths, grade separated bicycle lanes, and buffered bicycle lanes.
  - The top three things respondents would like the town to do to encourage walking and biking are to improve maintenance of streets and sidewalks, to improve snow removal from sidewalks and paths, and to construct more/safer on-street bike lanes.
- Having important destinations close by is what people like most about walking and biking.
  - Motorist behavior and poor maintenance of sidewalks and streets were reported as the biggest barriers to walking and biking.

## 4. Issues & Opportunities to Shape Community Vision & Goals



With a complete picture in hand of the state of current bicycle and pedestrian infrastructure and the routes that are most desired by the community, issues and opportunities were identified to create a larger framework that integrates Town initiatives with an overall vision for the future. Evaluation of missing links in the system, necessary repairs of existing facilities, and potential improvements to the overall network help establish a mobility foundation for future growth and change, while celebrating and respecting the Town's unique neighborhoods, history, diversity, and treasured assets.

### 4.1 Issues & Opportunities

The process of identifying issues and opportunities for walking and biking in Watertown was initiated by understanding the strengths and challenges presented by the Plan, and what a successful Plan looks like. Key words from exercises with the Steering Committee and Bicycle and Pedestrian Committee asking these questions were reiterated and captured in Figure 15. Both committees also participated in mapping exercises (see Appendix B) to physically locate where issues and opportunities exist in Watertown to improve infrastructure to encourage a safe, well connected system for bicycling and walking.



## Key Words

When the Steering Committee and Bicycle & Pedestrian Committee were asked about challenges, opportunities, and what a successful bicycle and pedestrian plan looks like, the following key words emerged. **Bold words** were heard multiple times.



### What is the greatest opportunity presented with this project?

- Improve safety**
- Focus on all people**
- Enhance vibrancy
- Increase mode shift/**mode choice**
- Increase **local/neighborhood connectivity** (resident trips)
- Incorporate private **development**
- Change culture/educate population
- Remove physical impediments to walking/biking



### What is the biggest challenge this project will face?

- Predominant car culture**
- Dedicated funding
- Post-construction maintenance (snow)
- E-scooters/emerging modes
- Needs of specific populations (aging, blind and low vision)
- Pace of change and development
- Public Support**
- Creating a vision
- Ongoing project coordination (i.e., Watertown Square)



### What does a successful plan look like to you? Now... and 10 years from now?

- Shifting **mode choices** – especially for short trips
- Changing **culture**
- Development of a strategic and measurable plan
- Safe, connected network**
- Short & long term improvements
- Enhance **vibrancy**

Public Meeting, January 27, 2020

**Figure 15: Summary of Key Words Developed by the Steering Committee and Bicycle & Pedestrian Committee**

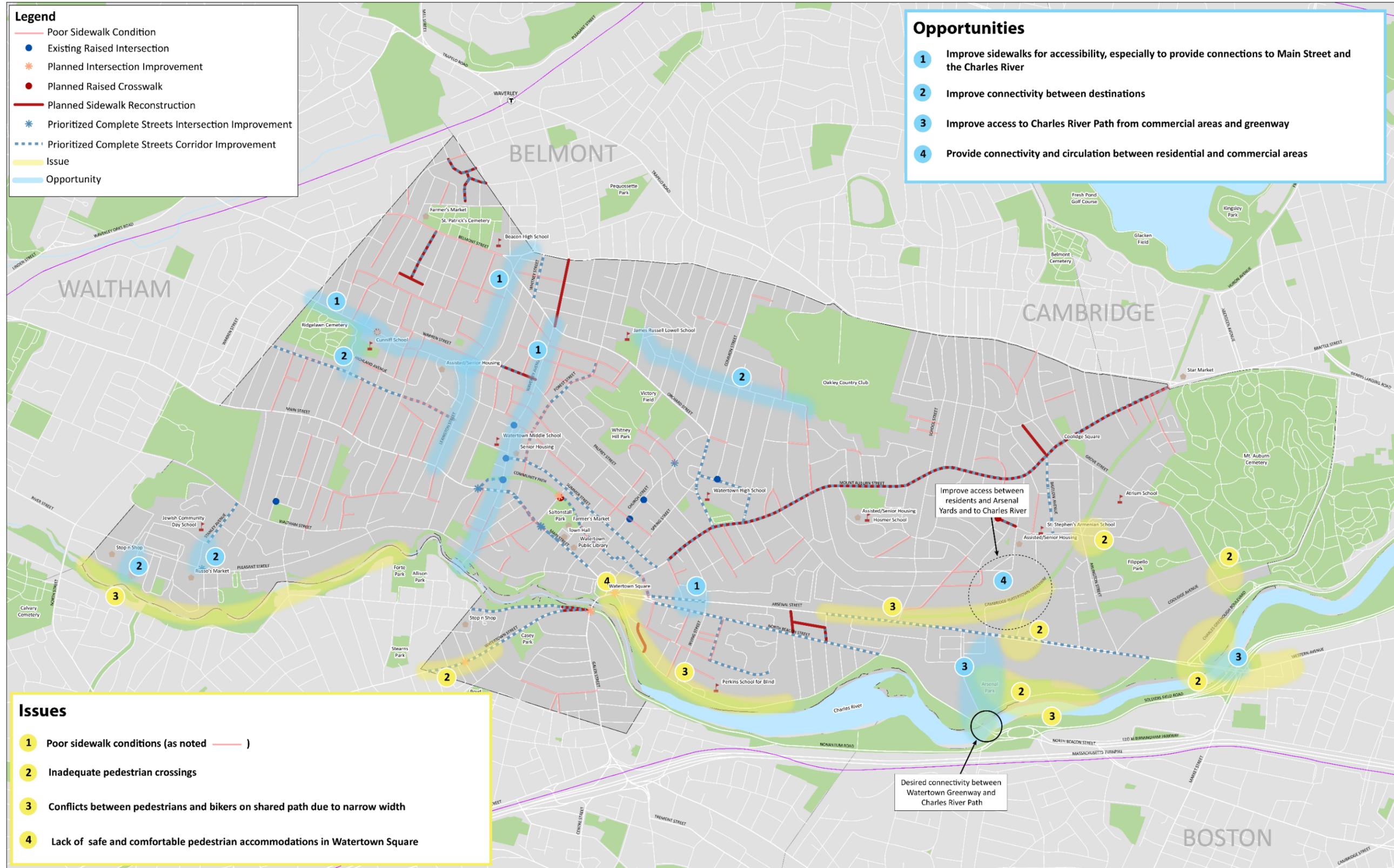


Figure 16: Pedestrian Issues and Opportunities Identified by Steering Committee and Bicycle & Pedestrian Committee

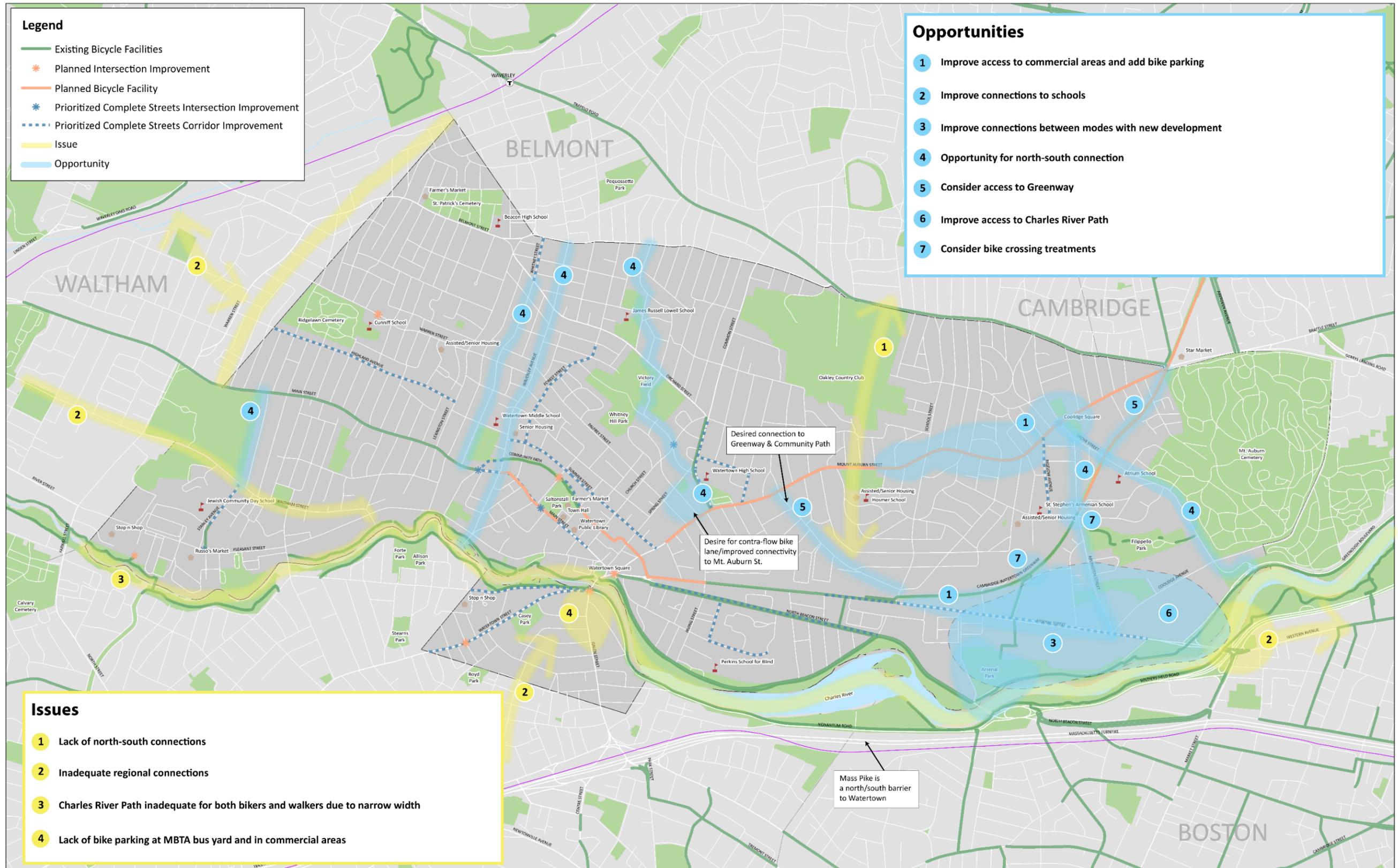


Figure 17: Bicycle Issues and Opportunities Identified by Steering Committee and Bicycle & Pedestrian Committee



Based on the input from the committees and the public process, combined with the analysis of existing conditions, current plans and projects, and best practices for bicycle and pedestrian planning, a series of formative issues and opportunities were identified to form the basis for the recommendations of this plan. These formative issues can be divided into two broad categories of enhanced physical improvements to the bicycle and pedestrian network, and broader policies that inform when and how enhancements are made. Each are described below.

**Curb use Trade-offs**

While the infrastructure improvements for the bicycle and pedestrian network can be identified, a community must have broader goals and policies in mind when designing and implementing these facilities. For example, School Street, Walnut Street, and Orchard Street have been identified as locations that would benefit from bicycle facilities. However, these streets may not be wide enough to accommodate a dedicated bicycle facility without removal of parking. Consideration of curb uses, adjacent land uses, speed of vehicular travel, crash history, and other factors must be included in the assessment of the appropriate bicycle and pedestrian infrastructure.

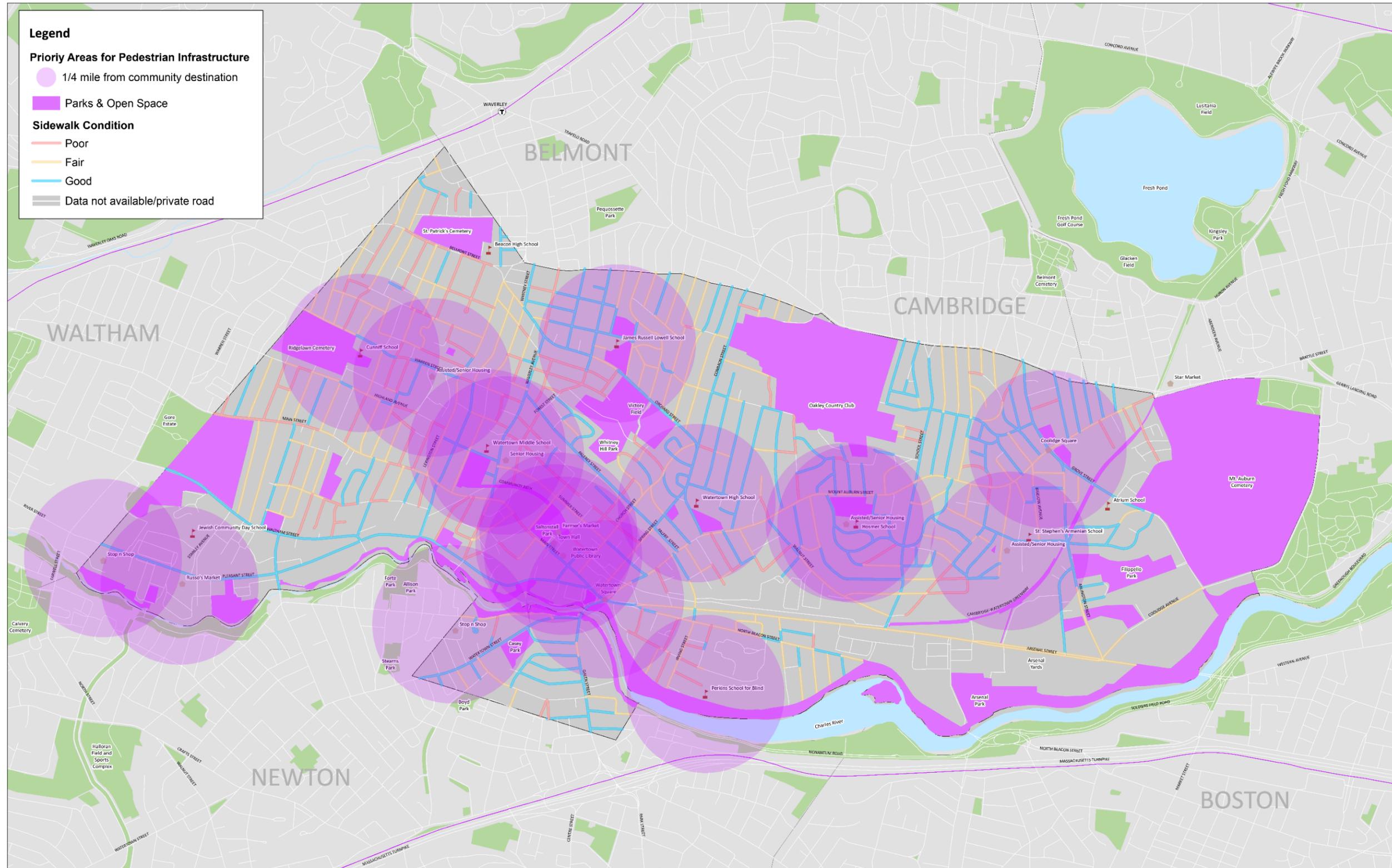
**Physical Improvements**

**Connectivity and North-South Travel**



This includes bicycle and pedestrian connections within Watertown as well as connectivity to the surrounding region. Improved connections to existing off-road paths, recreational areas, schools, senior facilities, and commercial areas were identified as needs. The desire to complete “missing links” between these key nodes through both public and potentially private efforts was also prevalent. The lack of safe, comfortable connections to walk and bike in a north-south direction was noted throughout the process.

The current sidewalk conditions assessment combined with the location of key activity areas is provided in Figure 18. Poor sidewalks in these locations should be designated as the ones with the highest priority for improvement. As the map illustrates, there are walkable destinations throughout town, particularly in an east-west direction through the geographic center. However, many of the circles in the eastern half of town, along Mt. Auburn Street and surrounding Coolidge Square, have sidewalks in good and fair condition. Sidewalks within circles to the northwest of Watertown Square as well as those surrounding the Perkins School for the Blind have a higher number of poorly rated sidewalks. This provides insight into prioritizing improvements on the poor sidewalks that provide access to these destinations.



**Figure 18: Sidewalk Improvements Prioritization**



### Safety



Improving the visibility and communication between pedestrians, bicyclists, and drivers at intersections through design interventions. Prioritizing pedestrian safety in locations such as Watertown Square (currently part of a separate planning and design effort), Coolidge Square, and along Watertown Street were particularly mentioned. It will be essential to work with the Watertown Square Project to integrate bicycle and pedestrian facilities. Prioritizing protected bicycle infrastructure on corridors reporting relatively high numbers of crashes involving bicyclists, including Main Street, Arlington Street, Mt. Auburn Street and Pleasant Street will be important for improving the interactions between these modes and reducing the number of crashes.

### Bicycle and Pedestrian Facility Types



Infrastructure improvements to the bicycle and pedestrian network need to be considered in the context of broader community goals and policies. As mentioned previously, bicycle facilities were found to be desirable on School Street, Walnut Street, and Orchard Street, but they may require the removal of parking. The community must balance the needs of each mode based on the local context. Likewise, walkability factors include more than just the presence and condition of sidewalks. Landscaping buffers between pedestrians and vehicles, pedestrian amenities such as benches, and pedestrian scale lighting contribute to safety and comfort. Consideration of curb uses, adjacent land uses, speed of vehicular travel, crash history, and other factors must be included in the assessment of the appropriate bicycle and pedestrian infrastructure. The feasibility of implementing various facility types are also related to the level of the investment in a street from quick-build demonstration projects, resurfacing of a street, to full reconstruction of a roadway. The Toolbox sections of Chapter 5 Recommendations provides some guidance.

A promising indicator for shifting more trips to walking and biking in Watertown is spotlighted by a finding in the community survey: what the majority of respondents like most about both walking and biking in Watertown is that they can reach important destinations. This demonstrates the potential that policies, maintenance, enforcement, and programs can have for incentivizing more trips to be taken by walking and biking, especially where basic infrastructure is already in place. Enforcement of vehicular traffic rules in particular was viewed as a top concern. Respondents reported not feeling safe walking and biking due to motorist behavior such as running red lights. Snow clearance was also a major concern among survey respondents and public meeting attendees. Policies for snow removal in residential areas in addition to public areas illustrates how a combination of tactics can be used to reach a desired goal.

## 4.2 Design Toolbox

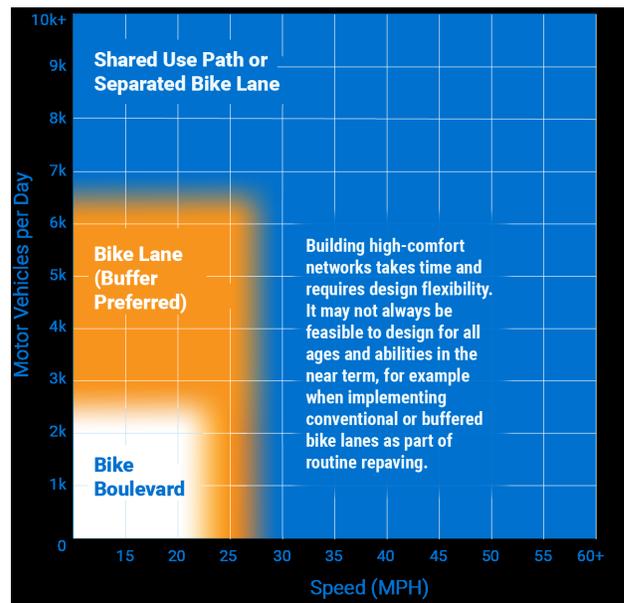
There is not a one-size fits all solution to providing a connected and safe network for walkers and bicyclists. A network is made up of a diversity of environments such as low volume, low speed neighborhood streets, busy commercial thoroughfares, off-street recreational areas, former industrial areas undergoing redevelopment, and the intersections that connect these areas. Having a range of implementable tools, and understanding where and how to use them, is the first step in implementing a Bicycle and Pedestrian Plan.

The following facilities have been identified as feasible options that can be implemented in Watertown to improve walking and biking conditions, many of which are already found throughout town. The toolboxes identify infrastructure that supports prioritized space, visibility, and dedicated crossing times for pedestrians and bicyclists, all leading to increased safety, and therefore better connectivity for these users. Places where these tools are used in Watertown, as well as typical locations for use, are provided. These are meant to supplement the Complete Streets toolbox developed for Watertown, shown in Chapter 2, Figure 12. Each location has its own needs and challenges and each sample tool may not be appropriate for every situation. Capital costs for implementation as well as cost and ease of maintenance must also be considered.

For example, streets that are wide, and serve a high number of vehicles at higher speeds may benefit from separated bicycle lanes and sidewalks with buffers such as a planting strip. Conventional bicycle lanes may be appropriate on streets with moderate volumes and lower speeds. Neighborhood streets tend to have the lowest volume of vehicles with reduced speeds where a bicycle can safely travel in a lane shared with vehicles. While the solutions and



Source: The MassDOT Bicycle Transportation Plan



The MassDOT Bicycle Transportation Plan/Municipal Resource Guide provides guidance on page 28 on how motor vehicular speed and volumes influences bicycle comfort.

tools suggested in this section reflect a planning level analysis for potential applicability in Watertown, the final selection and design of each will require detailed site analysis and supplemental community engagement.



MassDOT's 2019 *Statewide Bicycle Transportation Plan*<sup>15</sup>, 2019 *Statewide Pedestrian Transportation Plan*<sup>16</sup>, and associated Municipal Resource Guides for each provide resources and tools for the selection process of design applications. NACTO's *Urban Street Design Guide*<sup>17</sup> provides tactics and guidelines to make streets safer through complete streets principles. NACTO's *Designing for All Ages & Abilities*<sup>18</sup> provides guidance for selecting bicycle facilities based on the roadway context. The BLTS analysis for Watertown in Figure 7 on page 2-11 provides a framework for decision-making on how to apply these treatments to increase the comfort of bicycle facilities.

### **Pedestrian Facilities Toolbox**

Pedestrian facilities enhance the everyday walking experience for people of all ages and abilities. Every trip includes walking at some point of the journey. For the purposes of this Plan, "pedestrian" is used inclusively of people of all ages and abilities, including those using assistive devices. Typically, pedestrian facilities can positively impact the average person's walking experience in a few different ways: they can make walking on sidewalks a safer, more pleasant, convenient, and attractive experience; they can improve safety by improving the visibility of pedestrians; and they can also encourage people to stay and enjoy the public environment, which can increase the overall vibrancy of a particular neighborhood or commercial area. This Plan is predicated on the fact that pedestrian facilities will be accessible to all in compliance with the Americans with Disabilities Act (ADA).

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<sup>15</sup> <https://www.mass.gov/service-details/bicycle-plan>

<sup>16</sup> <https://www.mass.gov/service-details/pedestrian-plan>

<sup>17</sup> <https://nacto.org/publication/urban-street-design-guide/>

<sup>18</sup> [https://nacto.org/wp-content/uploads/2017/12/NACTO\\_Designing-for-All-Ages-Abilities.pdf](https://nacto.org/wp-content/uploads/2017/12/NACTO_Designing-for-All-Ages-Abilities.pdf)



### Curb Ramp with Detectable Warning Panel



**Description:**

Detectable warning panels are applied at curb ramps to provide a tactile cue where pedestrians will cross into another zone, such as the street or a bicycle lane.

**Example:** Main Street in front of the Watertown Public Library.

**Places to Use:**

Neighborhood Street, Commercial Corridor, Regional Connector, Recreation, Near Schools

### Pedestrian Refuge Island



**Description:**

Pedestrian refuge islands reduce the distance a pedestrian must cross at one time, reducing exposure time in the intersection. They are ideal for locations with high speeds and traffic volumes, and where there are three or more lanes of traffic. Buffered areas on both sides of the island should be considered.

**Example:** North Beacon Street at Watertown Square.

**Places to Use:**

Commercial Corridor, Regional Connector

### Audible Push Button & Signal



**Description:**

An audible pedestrian signal communicates information about the crossing, such as “walk” and “don’t walk” at signalized intersections. Push buttons are located low enough to be accessible for persons with mobility challenges and incorporate vibrotactile surfaces for visually impaired pedestrians.

**Example:** Intersection of Arsenal Street and Irving Street.

**Places to Use:**

Neighborhood Street, Commercial Corridor, Regional Connector, Recreation, Near Schools

### Rectangular Rapid-Flashing Beacon



**Description:**

RRFBs use an irregular flash pattern to alert motorists to a crossing pedestrian at marked, uncontrolled crossings, typically where there are high pedestrian volumes. They can be activated by a push button or through a pedestrian detection system.

**Example:** Main Street in between Watertown Town Hall and Watertown Public Library.

**Places to Use:**

Commercial Corridor, Regional Connector, Near Schools



### Enhanced Street Lighting



**Description:**

Street lighting at a crosswalk increases the comfort and safety for pedestrians traveling at night. Lighting can be placed on both sides of the street at and approaching pedestrian crosswalks to improve pedestrian visibility to drivers.

**Places to Use:**

Neighborhood Street, Commercial Corridor, Regional Connector

### Sidewalk Treatments



**Description:**

Sidewalks provide a paved surface, typically vertically separated from vehicular traffic by curb, exclusively for pedestrians to walk adjacent to streets. Sidewalks should be a minimum of 5 feet wide, excluding the width of the curb, per ADA guidelines. Sidewalks in urban areas are typically constructed with cement concrete and vertical granite curb, although bituminous concrete may be desirable as a lower cost alternative for neighborhood streets with lower volumes of pedestrian activity.

**Places to Use:**

Neighborhood Street, Commercial Corridor, Regional Connector, Recreation, Near Schools,

### Decorative Pavement Crosswalk



**Description:**

Decorative treatments can be used in crosswalks to improve crosswalk visibility, promote traffic calming, and to enhance the vibrancy of public spaces. Treatments may include brick or other patterned surfaces.

**Example:** Decorative crosswalks are used at the intersection of Waverley Avenue and Orchard Street.

**Places to Use:**

Neighborhood Street, Commercial Corridor, Regional Connector, Recreation, Near Schools

### Leading Pedestrian Interval Signal Optimization



**Description:**

A leading pedestrian interval (LPI) gives pedestrians a head start when entering an intersection with a corresponding green signal for traffic traveling in the same direction. This increases the visibility of pedestrians in a crosswalk to turning vehicles.

**Example:** Not currently in use in Watertown

**Places to Use:**

Neighborhood Street, Commercial Corridor, Regional Connector, Recreation, Near Schools when there is not a high volume of turning vehicles compared to the number of pedestrians crossing



### Bicycle Facilities Toolbox

Bicycle facilities are the building blocks for creating healthier, more sustainable alternatives for transportation networks where people rely heavily on automobiles for daily trips. Currently only 2% of Watertown residents bike to work on a regular basis, although almost 20% work within Watertown. The length of a trip in distance and travel time also influences bicycle use. Bicycle facilities can improve convenience and safety to encourage people to shift shorter, local trips to a more sustainable mode. The primary considerations in creating a bicycle network for all ages and abilities is one that is connected, safe, and comfortable. There are a wide variety of bicycle facilities which offer different levels of comfort, and safety for people who wish to ride their bicycles. It is important to think of the types of people who would ideally be using a facility when selecting elements to include in a local bicycle network.

#### Double Buffered Bicycle Lane



**Description:**

Buffered bicycle lanes resemble traditional bicycle lanes with painted markings, but contain a painted buffer separating the bicycle lane from adjacent moving vehicular traffic. A double buffer provides protection from both moving vehicles and parked cars.

**Places to Use:**

Neighborhood Street, Commercial Corridor, Regional Connector

#### Bicycle Signal



**Description:**

Bicycle signals can be used at signalized intersections to provide distinct phases for bicyclists. They can improve the safety and visibility of bicyclists by providing a green signal ahead of vehicular traffic.

**Places to Use:**

Commercial Corridor, Regional Connector

#### Separated Bicycle Lane



**Description:**

Separated bicycle facilities are physically separated from vehicular traffic. They can facilitate bicycle connections along roadways where on-road facilities may be too stressful for users. They may be further protected from traffic with a parking lane or planting strip.

**Places to Use:**

Commercial Corridor, Regional Connector



### Contraflow On-Street Bicycle Lane



**Description:**

Contra-flow bicycle lanes can be installed on a one-way street to allow bicyclists two-way access. This can help prioritize the most direct route possible for bicyclists by providing direct connections in neighborhoods where one-way streets are prevalent.

**Places to Use:**

Neighborhood Street, Commercial Corridor

### Two-Way Bicycle Lane



**Description:**

A two-way bicycle lane allows bicyclists to move in both directions along a roadway. They can be used on streets where contra-flow bicycle travel is desired or where one side of the street provides a more direct connection to another bicycle facility. Buffers or separation should be used to reduce the level of stress experienced by cyclists.

A two-way separated bicycle lane is provided on Arsenal Street.

**Places to Use:**

Commercial Corridor, Regional Connector

### Two Stage Turn Bicycle Box



**Description:**

A two stage turn bicycle box provides a dedicated space and visible way for bicycles to make a turn across traffic, such as turn left from a right-side bicycle lane. Bicyclists are able to make this turn without having to merge into traffic lanes.

**Places to Use:**

Commercial Corridor, Regional Connector

### Bicycle Box



**Description:**

Bicycle boxes are designated areas at the front of a traffic lane at a signalized intersection that provide bicyclists with a dedicated waiting space and visible way to get ahead of vehicles when a traffic signal turns from red to green.

**Places to Use:**

Commercial Corridor, Regional Connector

### Protected Intersection



**Description:**

A protected intersection provides physically separated crossings and designated waiting areas for bicyclists at each intersection approach, using a combination of tools. This increases the level of comfort for bicyclists by increasing visibility and sightlines to turning vehicles and reducing the time and distances bicyclists are exposed to conflict.

**Places to Use:**

Commercial Corridor, Regional Connector



## Policies and Procedures

### Zoning and Development

The Town of Watertown has been proactive in planning for the future through efforts such as its Complete Streets Plan, Parking Management Plan, Design Guidelines, and Comprehensive Plan. As a result, changes to zoning and regulations have been implemented over time that support multimodal transportation and site design that facilitate walking and biking

The Arsenal Overlay Development District (AODD), Pleasant Street Corridor District (PSCD), and Regional Mixed Use District (RMUD) incorporate best practice measures for ensuring pedestrian and bicycle connections are prioritized through the development process, including, but not limited to: incentives for reduced/shared vehicular parking, publicly accessible bicycle and pedestrian paths that provide direct connections to existing facilities, wayfinding signage, streetscape amenities, increased density, and commuter bicycle facilities such as secure bicycle parking, showers, and lockers .

The Watertown Zoning Ordinance currently includes standards for pedestrian and bicycle connectivity in multiple zoning districts and overlays, as well as through requirements for site plan review and parking provisions. Town-wide the Ordinance establishes standards for bicycle parking relative to the number of automobile parking spaces provided. An example of an enhanced connection achieved through the Ordinance is the path provided between the Riverbend on the Charles Apartments and the Charles River Path, which also includes bike parking. The Town should continue to apply developer incentives as found in Sections 5.12, 5.16, and 5.18 of the Ordinance wherever possible to promote north-south connectivity that could be facilitated from the Pleasant Street and Arsenal Street corridors. Applying these incentives also helps implement pedestrian connectivity between residential neighborhoods and commercial destinations, as well as between key development areas and the surrounding street network and recreational areas with off-road paths such as the Watertown-Cambridge Greenway and the Charles River Path (see Appendix C for information on requirements in each zone).

### Sidewalk Maintenance and Implementation

As noted in Section 2.2, Existing Networks, the Town’s DPW oversees roadway related Capital Projects and Planning and maintains a Pavement Management database to track streets in need of upgrades and maintenance. Proper maintenance helps protect the investment of public funds in infrastructure, including bicycle and pedestrian facilities. The Town of Watertown’s Complete Streets Plan is a potential opportunity to prioritize new construction, maintenance and reconstruction of streets that contribute to the bicycle and pedestrian network. A regular review of the routine Pavement Management plan is an opportunity to utilize an existing program to identify instances where bicycle and pedestrian infrastructure may be constructed as part of routine maintenance.

While the tools available through the Ordinance and Development Guidelines already exist in Watertown, participants in the Bicycle and Pedestrian Plan process may not be aware of them. There is an opportunity to highlight and promote the connections that are achieved through these public-private partnerships.



The “connectivity” issue noted in the infrastructure section is supported in the Town’s existing curb and sidewalk ordinance that supports creation of new sidewalks. However, DPW reports that the ordinance requires new sidewalks be concrete, which can be costly and labor intensive to construct. In addition, there are some locations in Watertown that have bituminous (asphalt) sidewalks, which provide a safe, vertical separation between pedestrians and vehicles. The general interpretation of the ordinance is that repair of bituminous sidewalks should include reconstruction in concrete when the sidewalk to be repaired is longer than one property frontage. This may unintentionally create a gap when a bituminous sidewalk is in poor condition but cost considerations prevent it from being replaced with concrete. As a result, repair of bituminous sidewalks is not completed at the same frequency as repair of concrete sidewalks. Some flexibility in interpretation of the ordinance to allow for short-term repairs could assist in enhancing connectivity until a roadway is scheduled for full reconstruction with concrete sidewalks. Further complicating the implementation of new sidewalks is that there is no dedicated funding mechanism to allow for new sidewalks, other than as part of a capital intensive full roadway reconstruction project.

### Snow and Vegetation Maintenance

Routine maintenance in terms of snow clearance and tree trimming for bicycle and pedestrian areas are concerns when considering a bicycle and pedestrian network. The Town’s DPW oversees snow removal according to the Town’s Snow and Ice Removal Program. Publishing a snow clearance schedule to inform residents of which routes receive prioritized snow clearance can help aid in communication. The Town currently has a snow and ice removal ordinance for sidewalks in commercial areas. Communities that have adopted snow clearance policies which cover residential areas include Newton, Cambridge, and Somerville, Belmont and Arlington (see Appendix C for more information). The City of Cambridge developed guidelines for maintenance of separated bicycle lanes specifically.<sup>19</sup> MassDOT’s May 2019 resource guides *Municipal Resource Guide for Bikeability*<sup>20</sup> and *Municipal Resource Guide for Walkability*<sup>21</sup> provide additional guidance on maintenance and repair and snow and ice clearance.

### Safety Concerns and Programs

In addition to the goal of physical safety improvements to support bicycling and walking, vehicular speeding was noted as a safety concern. The legal definition of speeding is set in Massachusetts General Law (MGL), and posted speed limit signs must comply with the Massachusetts Department of Transportation (MassDOT) guidance. When no speed limit is posted, the maximum allowed speed is the “prima facie” speed. Watertown’s prima facie speed is 30 miles per hour. MGL provides cities and towns the ability to set a speed limit of 25 miles per hour in accordance with MassDOT Procedures for Speed Zoning and in “thickly settled” or business districts if the community chooses to do so.<sup>22</sup> However, regardless of the legal speed, people may feel vehicles are “speeding” due to the character and condition of a roadway. Vehicular speeds are related to driver behavior influenced by the physical aspects of a street and its surroundings. Speeds tend to be faster on wide, flat, straight streets. Roadside elements such as on-street parking, street trees, and buildings close to the street can also contribute to lower vehicular speeds by decreasing driver comfort. Slower speeds occur when streets are narrower both physically and visually. Encouraging lower vehicular speeds is best achieved through street design, rather than relying on signs and enforcement. The addition of

<sup>19</sup> <https://www.cambridgema.gov/news/~media/A0A305C766F94E5EA860038A81471227.ashx>

<sup>20</sup> [https://www.mass.gov/files/documents/2019/06/13/2019\\_Municipal\\_Resource\\_Guide\\_for\\_Bikeability.pdf](https://www.mass.gov/files/documents/2019/06/13/2019_Municipal_Resource_Guide_for_Bikeability.pdf)

<sup>21</sup> [https://www.mass.gov/files/documents/2019/06/13/2019\\_Municipal\\_Resource\\_Guide-Walkability\\_0.pdf](https://www.mass.gov/files/documents/2019/06/13/2019_Municipal_Resource_Guide-Walkability_0.pdf)

<sup>22</sup> [https://www.mass.gov/files/documents/2018/07/30/Speed\\_Limit\\_and\\_Advisory\\_Signs.pdf](https://www.mass.gov/files/documents/2018/07/30/Speed_Limit_and_Advisory_Signs.pdf)



dedicated bicycle lanes and sidewalks can help physically and visually “narrow” a street to encourage lower speeds.

**Vision Zero**

In order to raise awareness of safety in specific neighborhoods and promote a culture of reduced vehicular speeds, some communities have developed a “Vision Zero” Plan. Vision Zero” acknowledges that many factors contribute to safe mobility -- including roadway design, speeds, behaviors, technology, and policies -- and sets clear goals to achieve the shared goal of zero fatalities and severe injuries.”<sup>23</sup> As Figure 19 shows, safety is directly related to vehicle speed, which impacts crash severity. Designating Vision Zero areas within Watertown may help achieve the shared goal of reducing vehicular speeds while providing safer bicycling and walking networks in key areas such as near schools and the Main Street corridor. These areas may also benefit from additional consideration to assess trade-offs of how to utilize the curb-to-curb area of a particular street. Balancing safety and the curbside uses of on-street parking, bus stops, and bicycle lanes.

**MassDOT Highway Safety Improvement Program (HSIP)**

MassDOT identified three bicycle and pedestrian crash clusters in Watertown from 2007-2016. Pedestrian crash clusters were identified at Watertown Square and Coolidge Square and a bicycle crash cluster was identified on Main Street from Chestnut Street to Galen Street (see Figure 4 on page 2-6). The MassDOT Highway Safety Improvement Program (HSIP) funding can be used for the Road Safety Audit (RSA) Program, which involves a safety review

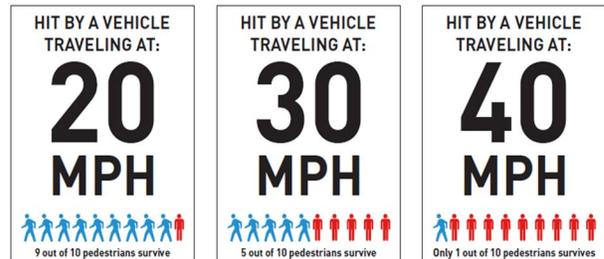


Image source: Seattle Department of Transportation

**Figure 19: Vehicle Speed Related to Crash Severity**

of roads or intersections by an independent, multidisciplinary team and is required for 25% design plans at HSIP eligible locations. An HSIP cluster is where the total number of “equivalent property damage only” crashes are within the top 5% in the region.<sup>24</sup> Improvements on the southside of Watertown Square will be funded through HSIP, and Mt. Auburn Street improvements were implemented following the completion of an RSA to identify deficiencies.

**Safe Routes to School**

Watertown participates in the Safe Routes to School program, which funds educational programs that promote a culture of walking and biking in younger generations, install bicycle racks, and funds pedestrian and bicycle infrastructure and access surrounding schools. Watertown schools that will be renovated in the next five years, including the Hosmer, Lowell, and Cunniff elementary schools and Watertown High School, provide opportunities to incorporate a culture of walking and biking. There is an opportunity to more closely align the Town’s on-going Pavement Management Plan and sidewalk improvement program with

<sup>23</sup> <https://visionzeronetwork.org/about/what-is-vision-zero/>

<sup>24</sup> <https://www.mass.gov/service-details/highway-safety-improvement-program>



the locations of schools, assisted/senior living facilities, and public parks, playgrounds and open spaces.

### **4.3 Vision Statement**

The formative issues and opportunities provide the basis for a vision statement and goals to shape the recommendations in this Plan. The Vision Statement for Bicycling and Walking was formulated as a result of the public engagement process and working with the Steering Committee and Bicycle and Pedestrian Committee, explained in Chapter 3.

### **4.4 Goals**

In order to bring the plan’s vision to reality, the following goals, shown in Table 5, were established for the Plan. A goal represents an aspiration for where the community hopes to be in the future. Each goal has associated measures of effectiveness in order to provide additional clarity of the goal’s intention. These measures are metrics that can be used to evaluate progress towards the achievement of a goal. This provides a way to measure the extent to which a goal is met as the plan’s recommendations are implemented.

#### **Vision Statement for Bicycling and Walking**

The Town of Watertown supports a bicycle and pedestrian network that is safe and accessible for all users, and expands transportation choice through a combination of inclusive, interconnected bicycle and pedestrian facilities, as well as policies and programs that promote a culture of walking and biking. The Town will strive to have dedicated funding for implementation and personnel for the Bicycle and Pedestrian Plan, which will result in a more multimodal environment that supports vibrant public spaces, healthy lifestyles, and the Town’s goals for climate change.



**Table 5: Goals and Measures of Effectiveness for the Bicycle and Pedestrian Plan**

Bicycle & Pedestrian Plan Goal	Measures of Effectiveness
<b>Goal: Safety</b>	
<p>Develop a safe network for all user types</p>  <p><i>How to Implement: Safety Improvements</i></p>	<ul style="list-style-type: none"> <li>• Bicycle level of traffic stress (BLTS) of 3 or less on major corridors</li> <li>• Increase the number of ADA compliant crossings &amp; pedestrian signals</li> <li>• Reduce the number of bicycle and pedestrian crashes</li> <li>• Increase Safe Routes to School participation and funding</li> </ul>
<b>Goal: Connectivity</b>	
<p>Expand regional connectivity by improving gateway corridors to neighboring communities</p>  <p><i>How to Implement: Regional Connections, North-South Connections</i></p>	<ul style="list-style-type: none"> <li>• Bike level of traffic stress reduced on regional routes</li> <li>• Number of improved connections to regional shared use paths</li> <li>• Wayfinding signage on designated regional routes</li> </ul>
<p>Develop a connected network, focused on resident and worker mobility</p>  <p><i>How to Implement: Regional Connections, Missing Links, North-South Connections</i></p>	<ul style="list-style-type: none"> <li>• Number of improved connections to transit facilities, such as new sidewalks, bike lanes, curb cuts</li> <li>• Number of bike signals/protected intersections</li> <li>• Reduce the number of network gaps in residential and commercial areas</li> </ul>
<b>Goal: Culture</b>	
<p>Increase mode choice for walking and biking in Watertown, especially for shorter, local trips</p>  <p><i>How to Implement: Missing Links, Safety Improvements, North-South Connections</i></p>	<ul style="list-style-type: none"> <li>• Increase in the percent of non-vehicular trips</li> <li>• Increase the number of bike racks and other bicycle parking facilities</li> <li>• Number of completed Complete Streets Projects</li> </ul>
<p>Change the car-oriented culture to a more multimodal culture</p>  <p><i>How to Implement: Activity Nodes, Site Connectivity</i></p>	<ul style="list-style-type: none"> <li>• Decrease average car ownership per household</li> <li>• Decrease drive-alone mode share</li> <li>• Increase participation in the Watertown Transportation Management Association (TMA)</li> <li>• Number of recommendations implemented from the Parking Management Plan</li> </ul>



**Goal: Vibrancy**

Enhance the town's vibrancy, both in public spaces and through new development



*How to Implement: Site Connectivity, Activity Nodes*

- Track the number of parking spaces reduced through zoning regulations
- Track the number of new site connections to public land created between new/re-development and surrounding street networks
- Number of new streetscape elements in private developments (benches, parklets, public art, greenery)

# 5. Recommendations



The recommendations in this Chapter serve as a starting point. The Town of Watertown should monitor changing conditions to ensure the Plan is responsive to new opportunities that may arise (partnerships, funding, real estate development, demographic changes, etc.) and shifting priorities of the community. The recommendations are designed to achieve the Plan’s vision and goals, detailed in Chapter 4. The Action Plan to implement these recommendations is provided in Chapter 6.

An essential component of the Bicycle and Pedestrian Plan is identification of Town priorities for infrastructure improvements that together create a connected bicycle and pedestrian network. A connected network facilitates public access to the places where people live, work, and play in a safe and comfortable way, further enabling them to shift these trips from cars to more sustainable modes. It takes a combination of infrastructure on public streets, within private developments, through recreational areas, and connections to transit to fully develop this network. The

recommendations also address related infrastructure that contribute to comfort and safety such as wayfinding signage, intersection treatments, and bicycle parking. The character of the street and surrounding area will also influence the design of a treatment. For example, bicycle facilities in a predominately residential area serving local trips may be implemented through minimal pavement markings and signage. Bicycle facilities along major corridors such as Main Street where the goal is to reduce Bicycle Level of Traffic Stress and accommodate longer trips may benefit from signage and aesthetic treatments that are consistent with the downtown identity and potential branding of a regional bicycle connection.

**The recommendations are grouped by the four primary goals of the plan:**

1. Safety
2. Connectivity
3. Culture
4. Vibrancy



## **5.1 Infrastructure Recommendations**

The infrastructure recommendations that follow are represented in the map in Figure 20. The map illustrates how, combined with existing and planned facilities, each will contribute to bicycle and pedestrian networks that connect within town and to neighboring communities. The numbers in the table below are not a ranking of priorities, but rather a label to correspond to the location on the map.

Several of the recommendations refer to the need to improve the existing bicycle level of traffic stress (a measure of stress felt by bicyclists due to vehicular traffic, speed, and other conflicts) in order to provide a comfortable network. The existing bicycle level of traffic stress for all roads in Watertown is shown in Chapter 2, Figure 7, where a further description of the levels is also provided. Recommendations for the pedestrian network were informed through engagement and activities with the Steering Committee, Bicycle and Pedestrian Committee, and the community. The recommendations are also meant to incorporate elements of the design toolbox, detailed in Section 4.2, to implement infrastructure that accommodates people of all ages and abilities.

## **5.2 Policy, Program, Maintenance, Funding, and Enforcement Recommendations**

Promoting more trips by walking and biking will require a combination of recommendations that address not only the infrastructure on the streets, sidewalks, and paths, but behavioral elements such as law enforcement and public opinion regarding walking and biking.

While policies are generally implemented by the Town of Watertown, coordination within Town Departments is essential for successful outcomes. Some of the policy, program and enforcement recommendations will involve collaboration and cooperation with non-Town entities such as adjacent municipalities, MassDOT, and DCR, as well as private organizations and other partners.

The policy recommendations were informed by data on travel patterns, bicycle and pedestrian crash locations, existing policies, practices and projects, and community concerns.

Subcategories provide a framework for understanding how the recommendations fit into the Town's overall processes and priorities.



**Goal: Safety**

**Infrastructure Recommendations - Safety**

Map #	Recommendation
14	Evaluate options to improve safety at Common Street north of Orchard Street, including measures to mitigate limited sight distances including advance warning signs, such as a Rectangular Rapid Flashing Beacon (RRFB) on Common Street at Bellevue or Grenville Road, and additional traffic calming devices to reduce vehicle speeds. Sight distance requirements may be reduced with the proposed roundabout at Orchard Street that will slow traffic speeds.
8	Coordinate with MassDOT to complete the planned safety improvements for Watertown Street between California Street and the Town/City Line with Newton. Ensure the project prioritizes pedestrian safety measures identified in the Complete Streets Prioritization Plan. Reducing the vehicular travel lane width on Watertown Street should also be considered as a means to provide bicycle facilities and improve safety.
12	Implement intersection/signal design improvements at Summer Street at Church Street intersection to improve pedestrian safety. This has also been identified by the public as a school walking route and location where additional traffic enforcement may be needed.
5	Work with the Town of Belmont to improve crosswalks and bicycle conditions on Belmont Street, currently identified as a level of traffic stress 4. See Policy Recommendation for working with public schools to develop active transportation plans.
10	Improve safety and connectivity for bicyclists and pedestrians on Galen Street, into Watertown Square. This will improve access to commercial destinations in Watertown Square, connect Watertown Yard to Watertown Square, both major bus hubs, and provide a link to Charles River Path. Galen Street currently provides no bicycle facilities, and has a high level of stress (5) due to traffic speeds, traffic volumes, and on-street parking. A separated bicycle facility is recommended for this corridor between Watertown Square and at least Morse Street. A low stress connection on the lower volume Morse Street provides connections to Watertown Street (see recommendation #8). Fifth Avenue provides a low volume, low stress network to facilitate a north-south connector on the southside of Watertown. Extension of a separated bicycle facility on Galen Street between Morse Street and the Town/City Line with Newton should be coordinated with the City of Newton to provide additional regional connectivity.
21	Work with DCR to improve bicycle access to Charles River Path from Grove Street at Greenough Boulevard, currently rated as a level of traffic stress 4 out of 5. Also see Policy Recommendations for working with DCR on maintenance, signage, and funding.
13	Evaluate feasibility of providing bicycle facilities on Orchard Street to reduce level of stress, currently a level 4, with consideration to existing residential parking and curb extensions. This may require the removal of on-street parking for on-street bike lanes and/or obtaining easements when properties are redeveloped to provide a separated facility. See Policy Recommendation for funding to integrate facilities into the Town’s Capital Improvement Program.
3	Provide a bicycle facility for the entire length of Main Street to reduce bicycle level of traffic stress, which currently ranges from a level 3 to a level 5. A separated or protected bicycle lane is preferred. This may require the removal of on-street parking for on-street bike lanes or to provide a separated facility. Coordination with MassDOT for the segment of Main Street from Bacon Street west to the Town Line with Waltham is needed.



17	<p>Integrate the planned improved pedestrian and bicycle facilities on Mt Auburn Street and Cambridge-Watertown Greenway with the intersection improvements of Belmont Street and Mt Auburn Street in Cambridge.</p> <p>Review signals and turn lanes and evaluate potential to widen sidewalks and add curb extensions, at the intersections of Arlington Street, Nichols Avenue, Coolidge Hill Road, Crawford Street, and the Watertown-Cambridge Greenway.</p> <p>Work with City of Cambridge and 705 Mt. Auburn Street to implement access points to Greenway extension and implement wayfinding.</p>
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**Policy Recommendations - Safety**

Recommendation	
<i>Enforcement</i>	
A	Work with the Police Department to promote safety for bicyclists and pedestrians. Request data on enforcement.
B	Develop a Vision Zero policy and action plan with the goal of eliminating all traffic fatalities and severe injuries and increasing safety, health, and mobility for all. Target specific areas in Watertown where strategies to meet this goal include encouraging lower speed limits, traffic calming, intersection safety improvements, and enforcement particularly in areas of high crash incidents as reported through the MassDOT Highway Safety Improvement Program (HSIP).
<i>Maintenance</i>	
C	Promote the availability of the Town’s on-line work order request system for maintenance of bicycle and pedestrian infrastructure. Consider expanding capability for an online community platform such as “SeeClickFix” to supplement the DPW webpage and promote broader awareness to the community.
<i>Programs</i>	
D	Review and improve crash reporting to better identify factors contributing to serious and fatal bicycle and pedestrian crashes. Information on pre-crash maneuvers and crash conditions can help Watertown identify countermeasures for specific types of crashes.
E	<p>Work with Watertown Police Department/Traffic Division and School Department Safe Routes to Schools programs to promote biking and walking by students and staff. Promote awareness and educational programs, including education for drivers, to emphasize the importance of sharing the roadway, abiding by traffic laws, and rules of the road for bicyclists and pedestrians.</p> <p>Safety programs can incorporate schools where they are tied to walk or bike to school days through the Safe Routes to School Program for elementary schools, or tied to incentives to walk or bike to school instead of driving for high school students.</p>



F	Conduct an ADA audit of key corridors in town, working with Council on Aging, Commission on Disabilities, Bicycle and Pedestrian Committee, and the Perkins School for the Blind. Develop prioritization plan for pedestrian improvements such as curbs and curb ramps, crosswalks, and accessible pedestrian signals, especially in relation to schools, senior facilities, and bus stops. Currently identified priority locations are shown in Infrastructure Recommendations #4 and #18 under Connectivity.
<b>Funding</b>	
G	Address bicycle and pedestrian crash clusters <sup>25</sup> by applying for MassDOT Highway Safety Improvement Program (HSIP) assistance to evaluate safety conditions at identified locations and fund improvements.

**Goal: Connectivity**

**Infrastructure Recommendations - Connectivity**

Map #	Recommendation
1	Highlight and continue to prioritize pedestrian connectivity to commercial and recreational destinations, at key development areas in town, particularly along Pleasant Street to the west, and Arsenal Street to the east. Also see Policy Recommendations related to the Town’s Zoning Ordinance.
18	Implement an accessible pedestrian route between Mt. Auburn Street and Watertown-Cambridge Greenway. Engineering study of the route shown on the map is required to determine feasibility. See Policy Recommendations for conducting an ADA audit of key corridors, funding to integrate facilities into the Town’s Capital Improvement Program, and working with public schools to develop active transportation plans.
7	Improve physical access and wayfinding signage for links between Charles River Greenway and Howe Park; and on Bridge Street between Pleasant Street and California Street. Coordination with DCR and the City of Newton is necessary.
11	Implement the missing links of the Watertown Community Path: <ul style="list-style-type: none"> <li>a. Arsenal Street to Mount Auburn Street via Taylor Street</li> <li>b. Mount Auburn Street to Watertown Linear Park via parking lots</li> <li>c. Watertown Linear Park to Watertown Community Path segment on Howard Street</li> </ul>
2	Provide alternative east-west bike route to the Charles River Path in western half of Watertown. Pleasant Street and Waltham Street as it feeds into Pleasant Street, are potential routes with a current bicycle level of traffic stress 3. Potential removal of on-street parking for on-street bike lanes and/or obtaining easements when properties are redeveloped to provide a separated facility would allow for bike lanes to reduce bicycle level of stress along this key corridor.
4	Improve pedestrian connections in west Watertown in order to create an accessible pedestrian route connecting local destinations (schools, senior/assisted living housing), to Main Street (bus connections) and Charles River Path. See Policy Recommendations for conducting an ADA audit of key corridors, funding to integrate facilities into the Town’s Capital Improvement Program, and working with public schools to develop active transportation plans.

<sup>25</sup> An HSIP cluster is where the total number of “equivalent property damage only” crashes are within the top 5% in the region. <https://www.mass.gov/service-details/highway-safety-improvement-program>



16	Reduce level of bicycle stress on Walnut Street (currently Level 3), to provide connection between Mt Auburn Street and Arsenal Street, and Cambridge-Watertown Greenway. See Policy Recommendation for funding to integrate facilities into the Town’s Capital Improvement Program.
6	<p>Implement north-south connections in Watertown, building on planned sidewalk reconstruction and existing raised intersections, to improve access across Town between Belmont Street and Charles River Path, Main Street, Mount Auburn Street, and Arsenal Street.</p> <p>Priority locations include Waverley Avenue connecting Main Street to Belmont Street, Wilson Avenue/George Street connecting through Victory Field to Marion Road, to Church Street and Spring Street to Mount Auburn Street (which would require a contra-flow lane on Palfrey Street). Additional north-south connections include School Street, Templeton Parkway and Grove Street. See Policy Recommendations related to funding and maintenance for implementing new bicycle facilities, funding through the Town’s Capital Improvement Program, and working with public schools to develop active transportation plans.</p>

**Policy Recommendations - Connectivity**

Recommendation	
<i>Maintenance</i>	
A	Integrate maintenance of on-street bicycle and pedestrian facilities into routine street maintenance. Identify opportunities where bicycle facilities may be implemented as part of routine maintenance.
B	Develop maintenance procedures, responsible party, and tracking for off-street bicycle and pedestrian facilities.
C	Provide routine snow clearance in key destinations working with residents and neighborhood groups, business groups, and the MBTA.
D	Coordinate with DCR on better maintenance of Charles River Path and associated connections. See Infrastructure Recommendations #7 (Connectivity), 19 (Vibrancy), and 21 (Safety).
<i>Programs</i>	
E	Advocate to DCR to improve the condition of the Charles River Path and advocate for Little Greenough improvements. This includes providing signage to minimize conflict between pedestrians and cyclists, integration with the Town’s wayfinding program, and snow removal in winter months.
<i>Policy</i>	
F	Develop guidelines for evaluating the trade-offs of implementing dedicated bicycle facilities on roadways with constrained rights-of-way. Use the MassDOT and NACTO resources referenced in the Toolbox section as guides for best practices. Ongoing maintenance of bicycle lanes such as snow clearance, street sweeping, and other maintenance issues should be included.
G	<p>Prioritize neighborhood sidewalk improvements that create continuous connections, and address the following:</p> <ul style="list-style-type: none"> <li>– Existing sidewalks that are currently ranked as “poor” or “fair” in Figure 18</li> <li>– Located within a 0.25 mile of a public school, assisted/senior housing, or recreational areas and commercial areas</li> <li>– Provide a connected network to other pedestrian facilities</li> </ul>



**Goal: Culture**

**Infrastructure Recommendations – Culture**

See policy recommendations below.

**Policy Recommendations - Culture**

Recommendation	
<b>Enforcement</b>	
A	Work with groups including the Watertown Transportation Management Association (TMA), MassBike, and Watertown Bicycle and Pedestrian Committee to promote bicycling town-wide. Special events and programs may include working with employers or grocery stores to provide free breakfast to bike commuters during Bike Week or providing bike valet during Town-wide events. <sup>26</sup>
B	Evaluate and communicate progress on this Plan on an annual basis. Provide information on number and severity of crashes involving bicycling or walking, linear feet of upgraded sidewalks and bike lanes, and town-wide active mode share. Create a Working Group to develop metrics to evaluate success.
<b>Programs</b>	
C	Develop active transportation plans for Watertown schools to promote walking, biking, transit, and other forms of micromobility for school travels. Incorporate more bike parking at all schools, and continue to survey to understand travel behavior of students, employees, and parents and identify impediments to walking and biking. Work with the Watertown School District should seek to reinvigorate the Safe Routes to Schools Program and promote “the six E’s” of equity, education, encouragement, evaluation, enforcement and engineering.  Priority corridors adjacent to schools are depicted in the Infrastructure Recommendations map, #4 (Connectivity), 5 (Safety), 6 (Connectivity), and 18 (Connectivity).
D	Work with employers to highlight and publicize successes of the Watertown Transportation Demand Management (TDM) Program in reducing vehicle trips and supporting walking and biking. Additionally, data generated as part of TDM reporting can be used to understand which TDM measures can be correlated to the most mode shift to walking and biking and reduction in vehicular trips to inform future planning (see Appendix C for information).
E	Work with community and neighborhood groups and other Town programs like Live Well Watertown to host shared events to promote bicycle and pedestrian safety and promote safe neighborhood streets for children. These could take place in neighborhoods or on recreational space that connects to the Community Path or Watertown-Cambridge Greenway and may include free bike inspections by local bike shops, a skills course, safety workshop for children, and town-wide mapping routes.
F	Work with Bluebike to identify new locations for Bluebike stations in compliance with siting requirements.  Explore strategies for future Bluebike expansion, including business sponsorship and additional grants. Additional funding can help secure expansion into western Watertown along Pleasant Street to encourage east-west biking through town and to the Watertown Middle School so that the program is accessible to residents of northwest Watertown.

<sup>26</sup> [https://www.massbike.org/bike\\_valet](https://www.massbike.org/bike_valet)



G	Expand communication with the community when bicycle and pedestrian enhancements are achieved by highlighting in the local news, social media channels, and annual Town reports.
<b>Policy</b>	
H	Develop policy for new micromobility options in Watertown, such as e-bikes and e-scooters. The policy should address where and how micromobility devices can operate. It is recommended to prohibit them on sidewalks to maintain safety for pedestrians and to cap speeds at 15 mph. If a shared micromobility service operates in Watertown in the future, it is recommended to require that the devices be parked on sidewalks in a way that preserve pedestrian accessibility (see Appendix D for more information).
I	<p>In keeping with recommendations from the 2019 Parking Management Plan for Watertown Square and Coolidge Square, reduce or eliminate parking requirements in commercial areas and allow developers to pay fees in lieu of parking and create a Parking Benefit District to fund commercial district improvements.</p> <p>Through creation of a Parking Benefit District, parking revenue could be invested in multi-modal infrastructure such as bike parking, improved pedestrian lighting, new walking paths and wayfinding signs to connect parking lots with stores and recreational areas.</p> <ul style="list-style-type: none"> <li>- This is applicable to Infrastructure Recommendation #9 (Vibrancy), Watertown Square.</li> </ul>
J	<p>Establish snow clearance and other maintenance procedures for bicycle and sidewalk facilities. Review current snow clearance operations and develop procedures that facilitate winter bike access on primary roads and paths. Some facilities may need to be maintained under separate agreements with private partners for snow clearing. Consult MassDOT’s May 2019 resource guides <i>Municipal Resource Guide for Bikeability</i><sup>27</sup>, <i>Municipal Resource Guide for Walkability</i><sup>28</sup>, and 2015 MassDOT <i>Separated Bike Lane Planning and Design Guide</i>.<sup>29</sup></p> <p>Consider publicizing a snow clearance schedule to inform residents of which routes receive prioritized snow clearance.</p> <p>The policy should address snow clearance on Town-owned property, working with the MBTA to provide snow removal at bus stops, and expanding snow removal requirements to residential property owners to maintain sidewalk accessibility in winter months.</p>
K	Highlight accomplishments relating to improving bicycle and pedestrian connectivity and amenities as a result of the Transportation Demand Management (TDM) program, zoning requirements, design guide, site planning requirements, and parking policies. This will spread community awareness of the Town’s efforts and help foster a community culture supportive of walking and biking.
L	Evaluate Parking Requirements (Article VI) of the Watertown Zoning Ordinance to ensure parking regulations are sized right to be consistent with Town goals, to promote alternative modes of transportation, and reduce drive alone trips. For example, the Zoning Ordinance should provide additional incentives for shared parking among existing businesses in older areas such as Watertown Square and Coolidge Square (see Appendix C for information).
<b>Funding</b>	
M	Include maintenance and expansion of walking and biking infrastructure in Town’s Capital Improvement Program and roadway maintenance funding, particularly for improvements to local roads such as those identified in Infrastructure Recommendations. Use this Bicycle and Pedestrian Plan to review proposed and relevant town capital projects to identify opportunities to implement the Infrastructure recommendations of this Plan.

<sup>27</sup> [https://www.mass.gov/files/documents/2019/06/13/2019\\_Municipal\\_Resource\\_Guide\\_for\\_Bikeability.pdf](https://www.mass.gov/files/documents/2019/06/13/2019_Municipal_Resource_Guide_for_Bikeability.pdf)

<sup>28</sup> [https://www.mass.gov/files/documents/2019/06/13/2019\\_Municipal\\_Resource\\_Guide-Walkability\\_0.pdf](https://www.mass.gov/files/documents/2019/06/13/2019_Municipal_Resource_Guide-Walkability_0.pdf)

<sup>29</sup> <https://www.mass.gov/lists/separated-bike-lane-planning-design-guide>



N	<p>Continue to pursue funding for eligible projects through local and state sources including the Complete Streets Program, Chapter 90 funds, development mitigation, Housing Choice Infrastructure grants, MassWorks Infrastructure Program grants, and MAPC technical assistance grants.</p> <p>For example, the portion of the Watertown Community Path through Watertown Square parallel to Main Street through parking lots could be funded through the Complete Streets Program (Infrastructure Recommendation #11B). MassDOT’s Complete Streets funding program accepts Tier 3 (construction) project applications twice a year for up to 5 projects and no more than \$400,000.</p>
O	<p>Pursue grants to fund connections between streets and off-road paths such as the Charles River Path and Watertown-Cambridge Greenway. MAPC has developed the Trail Implementation Toolkit to empower local planners to expand walking and biking networks.<sup>30</sup></p>

**Goal: Vibrancy**

**Infrastructure Recommendations - Vibrancy**

Map #	Recommendation
19	<p>Promote new access points to Charles River Path from Arsenal Street through private development projects in easternmost section where it is currently rated as a level of traffic stress 5, the most stressful condition, through wayfinding signage and public education. Also see Policy Recommendations for working with DCR on maintenance and signage on paths.</p>
15	<p>Implement the reconstruction of School Street from Walnut Street/Dexter Avenue to Arsenal Street, designed as part of Athenahealth’s mitigation. Highlight this project as part of publicity in Recommendation A.</p>
20	<p>Improve sidewalk and pedestrian crossing infrastructure on Church Street between Summer Street and Main Street. Improving pedestrian conditions will encourage a “park once and walk” environment between the municipal parking lots along Winter Street and businesses on Main Street. This is also a recommendation of the 2019 Watertown Parking Management Plan, which documents that residents are interested in parking off-street and walking to their destinations on Main Street.</p>
9	<p>Improve pedestrian and bicycle facilities in Watertown Square to provide connectivity between major corridors including Main Street, North Beacon Street, Arsenal Street, Mt Auburn Street, Galen Street, Pleasant Street and the Charles River Path. Watertown Square is an important local and regional connection and currently lacks bicycle facilities. Separated bicycle facilities are recommended to reduce bicycle level of traffic stress and provide connections to the off-street paths that exist around Watertown Square (see also Recommendation #11). Watertown Square is a priority location for Bluebikes stations and other future micromobility options. See Policy Recommendation related to policies for micromobility, bike parking, and the 2019 Parking Management Plan.</p>

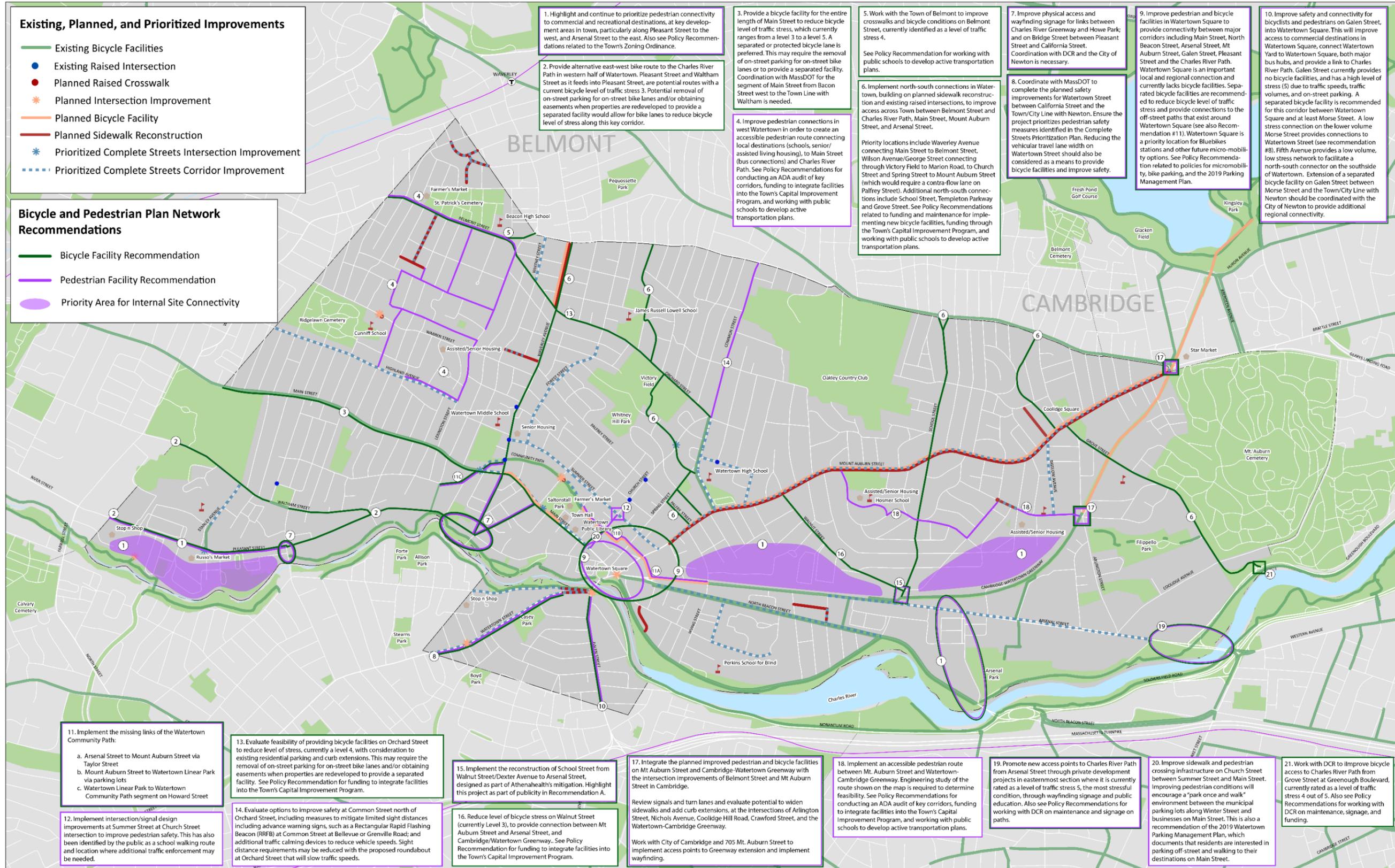
<sup>30</sup> <https://www.mapc.org/resource-library/trail-implementation-toolkit/>

**Policy Recommendations - Vibrancy**

Recommendation	
<b>Programs</b>	
A	Continue to promote site connectivity and bicycle parking on new development sites. Increase wayfinding signage to spread community awareness of bicycle and pedestrian connections and bicycle parking locations. Improve communication with the community when these enhancements are achieved through local news or social media channels.
B	Create a branded wayfinding program and signed bike routes to facilitate walking and biking in Watertown. Signage may include distances and/or travel time to key destinations for both modes, and in commercial areas can build on the recommendations for wayfinding signage in the Parking Management Plan. More frequent signage would be expected in areas such as Watertown Square and Coolidge Square, and on routes that serve as connections to off-road regional paths, for example, connecting between Charles River Path and Watertown Square.
<b>Policy</b>	
C	Continue to encourage, through site plan review, consideration of bicycle and pedestrian movement within sites and in relation to adjacent streets by requiring access points to public streets and community facilities for non-motorized modes. Ensure connectivity between new development and redevelopment projects and existing neighborhoods, e.g. large development sites (see Appendix C for information). Use this Bicycle and Pedestrian Plan to identify opportunities where private development can assist in implementation of infrastructure improvements.  Priority locations are shown in Infrastructure Recommendations #1
D	Review the Watertown Zoning Ordinance and 2015 Watertown Design Guide to streamline requirements for bicycle and pedestrian access, reduce parking requirements, and encourage mode shift to active modes, including transit and micromobility. <sup>31</sup>  Priority locations for bicycle and pedestrian access are included in the Infrastructure Recommendations #1.
E	Build on bicycle parking requirements in the Watertown Zoning Ordinance by developing a Bicycle Parking Guide <sup>32</sup> and provisions for public bicycle parking at key destinations. Priority locations for enhanced public bicycle parking, such as large scale covered parking include express MBTA bus stops (coordinate with MBTA), Watertown Yard and Galen Street (see infrastructure recommendations #9 (Vibrancy) and #10 (Safety)) Watertown Square, Coolidge Square, and at access points to off-road paths. Explore the potential for public-private partnerships (including maintenance agreements) to allow for private organizations to provide public bicycle parking when feasible. The Association of Pedestrian and Bicycle Professionals (APBP) <i>Bicycle Parking Guidelines</i> provides guidance on best practices.  Priority locations are #9 (vibrancy) and #10 (Safety) Infrastructure Recommendations in Watertown Square and on Galen Street, especially in relation to the Watertown Bus Yard.

<sup>31</sup> Elements of these individual zones, including provisions for shared parking, reduced parking, unbundled parking, pedestrian and bicycle access and linkages, enhanced bicycle parking and on-site facilities such as showers, incentives for increased density, and public realm enhancements should be considered, along with additional measures that promote active travel

<sup>32</sup> City of Cambridge Bicycle Parking Guide [https://www.cambridgema.gov/-/media/Files/CDD/Transportation/Bike/Bicycle\\_Parking\\_Guide\\_20130926\\_2017PictureEdits.pdf](https://www.cambridgema.gov/-/media/Files/CDD/Transportation/Bike/Bicycle_Parking_Guide_20130926_2017PictureEdits.pdf)



**Figure 20: Bicycle and Pedestrian Infrastructure Recommendations**

# 6. Action Plan



This chapter presents an Action Plan to assist in the implementation of the detailed recommendations provided in the prior chapter. The Actions mirror the structure of the recommendations, grouping each by the applicable goal of the Plan to aid in the strategic development of bicycling and walking in Watertown. Within each goal heading, the recommendations are sorted by timeframe from on-going to long-term. The order of magnitude cost of each item is the secondary sort category.



**Goal: Safety**

**Measures of Effectiveness**

- Reduce Bike Level of Stress on major corridors
- Provide ADA compliant crossings
- Reduce bicycle and pedestrian crashes
- Support Safe Routes to School

**Infrastructure**

Action	Timeframe	Cost
Evaluate options to improve safety on Common Street north of Orchard Street, such as a Rectangular Rapid Flashing Beacon (RRFB) at Common Street at Bellevue or Grenville Road.	Short-term	1
Coordinate with MassDOT to complete the planned safety improvements for Watertown Street between California Street and the Town/City Line with Newton.	Short-term	2
Work with the Town of Belmont to improve crosswalks and bicycle conditions on Belmont Street, currently identified as a level of traffic stress 4.	Medium-term	2
Improve safety and connectivity for bicyclists and pedestrians into and through Watertown Square. Focus on primary pedestrian and bicycle desire lines such as Church Street and Green Street.	Medium-term	2
Integrate the planned improved pedestrian and bicycle facilities on Mt Auburn Street and Cambridge-Watertown Greenway with the intersection improvements of Belmont Street and Mt Auburn Street in Cambridge.	Medium-term	3
Implement intersection/signal design improvements at Summer Street at Church Street intersection to improve pedestrian safety.	Long-term	2
Work with DCR to improve bicycle access to Charles River Path from Grove Street at Greenough Boulevard, currently rated as a level of traffic stress 4.	Long-term	2
Evaluate feasibility of providing bicycle facilities on Orchard Street to reduce level of stress, currently a level 4.	Long-term	2
Provide a bicycle facility for the entire length of Main Street to reduce bicycle level of traffic stress, which currently ranges from a level 3 to a level 5. A separated or protected bicycle lane is preferred. Coordinate with MassDOT as needed.	Long-term	3



**Policies**

Action	Timeframe	Cost
Promote the availability of the Town’s on-line work order request system for maintenance of bicycle and pedestrian infrastructure.	Short-term	⌘
Work with Watertown Police Department/Traffic Division and School Department, and Safe Routes to School program to promote biking and walking by students and staff.	Short-term	⌘
Review and improve crash reporting to better identify factors contributing to serious and fatal bicycle and pedestrian crashes.	Short-term	⌘
Work with the Police Department to promote safety for bicyclists and pedestrians. Request data on enforcement.	Short-term	⌘
Develop a Vision Zero policy and action plan with the goal of eliminating all traffic fatalities and severe injuries and increasing safety, health, and mobility for all.	Medium-term	⌘
Conduct an ADA audit of key corridors in town, working with Council on Aging, Commission on Disabilities, Bicycle and Pedestrian Committee, and the Perkins School for the Blind.	Medium-term	⌘ ⌘
Address bicycle and pedestrian crash clusters <sup>33</sup> by applying for MassDOT Highway Safety Improvement Program (HSIP) funding to evaluate safety conditions at identified locations and fund improvements.	Medium-term	⌘ ⌘

<sup>33</sup> An HSIP cluster is where the total number of “equivalent property damage only” crashes are within the top 5% in the region. <https://www.mass.gov/service-details/highway-safety-improvement-program>



**Goal: Connectivity**

**Measures of Effectiveness**

- Reduce Bike Level of Stress on regional routes
  - Improved connectivity to regional shared use paths
  - Wayfinding signs
  - Connected network
- Improve connections to transit
- Improve intersections through bike signals and protected intersection design
- Reduce network gaps

**Infrastructure**

Action	Timeframe	Cost
Prioritize pedestrian connectivity between neighborhoods and destinations such as schools, commercial areas, recreational areas, and bus stops.	On-going	\$
Develop a prioritized list of neighborhood sidewalk improvements and implement in coordination with Complete Streets Prioritization Plan.	On-going	\$\$\$
Implement an accessible pedestrian route between Mt. Auburn Street and Watertown-Cambridge Greenway, with consideration to locations of assisted/senior housing, schools and areas of dense commercial development.	Short-term	\$
Improve physical access and wayfinding signage between Charles River Greenway and Howe Park.	Short-term	\$\$
Improve physical access and wayfinding signage on Bridge Street between Pleasant Street and California Street.	Short-term	\$\$
Implement the missing links of the Watertown Community Path: <ul style="list-style-type: none"> <li>• Arsenal Street to Mount Auburn Street via Taylor Street</li> <li>• Mount Auburn Street to Watertown Linear Park via parking lots</li> <li>• Watertown Linear Park to Watertown Community Path segment on Howard Street</li> </ul>	Short-term	\$\$ to \$\$\$
Provide alternative east-west bike route to the Charles River Path in western half of Watertown.	Medium-term	\$\$
Improve pedestrian conditions in west Watertown in order to create an accessible pedestrian route between schools and senior/assisted living housing and Main Street (bus connections) and Charles River Path.	Medium-term	\$\$



Reduce level of bicycle stress on Walnut Street (currently Level 3), to provide connection between Mt Auburn Street and Arsenal Street, and Cambridge-Watertown Greenway.	Medium-term	
Implement north-south connections in Watertown, building on planned sidewalk reconstruction and existing raised intersections, to improve access across Town between Belmont Street and Charles River Path, Main Street, Mount Auburn Street, and Arsenal Street.	Long-term	

**Policies**

Action	Timeframe	Cost
Integrate maintenance of on-street bicycle and pedestrian facilities into routine street maintenance. Maintain and update amenities like bike parking, benches and shelters.	Short-term	
Develop maintenance procedures, responsible party, and tracking for off-street bicycle and pedestrian facilities.	Short-term	
Work with residents and neighborhood associations, business groups, and the MBTA to provide routine snow clearance in key destinations.	Short-term	
Coordinate with DCR on better maintenance of Charles River Path and associated connections.	Short-term	
Advocate to DCR to improve the condition of Charles River Path and advocate for Little Greenough improvements.	Short-term	



**Goal: Culture**

**Measures of Effectiveness**

- Reduce reliance on vehicular trips
- Increase bicycle accommodations
- Implement Complete Streets projects
- Increase awareness of transportation options

**Infrastructure**

See action items in the policies section.

**Policies**

Action	Timeframe	Cost
<b>Enforcement</b>		
Work with groups including the Watertown Transportation Management Association (TMA), MassBike, and Watertown Bicycle and Pedestrian Committee to promote bicycling town-wide.	On-going	\$
Evaluate and communicate progress on this Plan on an annual basis. Create a Working Group to develop metrics to measure success.	On-going	\$
<b>Programs</b>		
Highlight and publicize successes of the Watertown Transportation Demand Management (TDM).	On-going	\$
Work with community and neighborhood groups to host town-wide events to promote bicycle and pedestrian safety and promote safe neighborhood streets for children.	On-going	\$
Develop active transportation plans for Watertown schools.	On-going	\$ \$ \$
Identify additional locations for Bluebike stations and promote the program.	Short to Long-term	\$ to \$ \$ \$
<b>Policy</b>		
Develop policy for new micromobility options in Watertown, such as e-bikes and e-scooters.	Short-term	\$
Implement recommendations from the 2019 Parking Management Plan for Watertown Square and Coolidge Square to reduce or eliminate parking requirements in zoning and create a Parking Benefit District to invest in multi-modal infrastructure.	Short to Long-term	\$ to \$ \$ \$



Establish snow clearance and other maintenance procedures for bicycle and sidewalk facilities.	Medium-term	💰 💰
<b>Funding</b>		
Include walking and biking infrastructure in Town’s Capital Improvement Program and roadway maintenance funding.	Ongoing	💰
Continue to pursue funding for eligible projects through local and state sources.	Medium-term	💰 💰
Pursue grants to fund connections between streets and off-road paths.	Medium-term	💰 💰



**Goal: Vibrancy**

**Measures of Effectiveness**

- Reduce reliance on parking for travel
- Promote access to public land through private development
- Incorporate streetscape improvements into private development

**Infrastructure**

Action	Timeframe	Cost
Promote new access points to Charles River Path from Arsenal Street through private development projects.	Short-term	\$
Implement the reconstruction of School Street from Walnut Street/Dexter Avenue to Arsenal Street.	Short-term	\$ \$
Improve sidewalk and pedestrian crossing infrastructure on Church Street between Summer Street and Main Street.	Medium-term	\$ \$
Improve pedestrian and bicycle facilities in Watertown Square and Coolidge Square, such as bike racks and benches.	Long-term	\$ \$ \$

**Policies**

Action	Timeframe	Cost
<b>Programs</b>		
Continue to promote site connectivity and bicycle parking on new development sites. Identify connections with wayfinding signs.	Short-term	\$
Create a branded wayfinding program and signed bike routes to facilitate walking and biking in Watertown.	Short-term	\$ \$
<b>Policy</b>		
Use the site plan review process to promote bicycle and pedestrian movement within a site and in relation to adjacent streets.	On-going	\$
Perform a comprehensive review of the Watertown Zoning Ordinance and 2015 Watertown Design Guide to coordinate and streamline requirements for improving bicycle and pedestrian access, reducing parking requirements, and encouraging mode shift to active modes, including transit and micromobility.	Medium-term	\$ \$
Build on bicycle parking requirements in the Watertown Zoning Ordinance by developing a Bicycle Parking Guide and provisions for public bicycle parking at key destinations.	Medium-term	\$ \$