Burlington Mall Road Area Mobility Action Plan

The Mall Road area is one of Burlington's busiest and most important destinations. It's home to major employers, restaurants, housing, and, of course, the Burlington Mall – a regional shopping destination with 8 million annual visits. The area is home to more than 30,000 jobs and nearly 4,500 residents. To maintain this economic engine, Burlington is working to keep people moving safely and comfortably for years to come.

What This Plan Will Do

The Burlington Mall Road Area Mobility Action Plan lays out a vision for a more connected, walkable, and easy-to-navigate district. As the area grows, this plan focuses on giving people more choices for how they travel — whether walking, cycling, taking transit, or driving. The goal is to enhance the area's appeal by creating a safer, more attractive and intuitive travel experience.

Key Highlights of the Plan

- A unified vision to guide future investments and redevelopment
- Safer streets and crossings for pedestrians, cyclists, and drivers
- Better transit access, including improved bus stops and future mobility hubs
- New and improved local streets to support mixed-use development for living, working, and playing
- Greenways and shared-use paths linking neighborhoods, businesses, parks, and retail

Explore the Full Report

For a deeper look at the long-term transportation vision, view the full Burlington Mall Road Area Mobility Action Plan below.

Burlington Mall Road Area Mobility Action Plan

Prepared by the Metropolitan Area Planning Council for the Town of Burlington

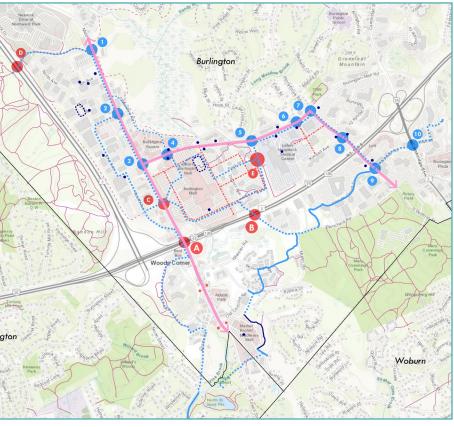
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Contents

ist of Figures	. 3
Executive Summary	. 4
Plan Purpose	. 5
Гhe Vision	. 5
ntroduction	. 11
Purpose of Plan	. 12
Existing Conditions and Challenges	. 14
Opportunities	. 19
/ision, Recommendations, and Action Items	. 22
Γhe Vision	. 22
Recommendations and Actions	. 27
Action Item 1: Burlington Greenway Network	. 27
Greenway Standards	. 29
Shared-Use Path	30
Foot Trails	32
Action Item 2: Key Pedestrian and Bicycle Crossingss	. 33
Action Item 3: Key Crossings – Overpasses and Underpasses	. 36
Action Item 4: Complete Street Improvementss	. 39
Action Item 5: New Streets and Internal Connections	. 52
Action Item 6: Open Space and Public Realm	54
Action Item 7: Transit Options	. 57
Action Item 8: Policies and Guidelines	60
Next Steps	. 62
References and Resources	. 66
Acknowledgements	68
Appendix: Existing Conditions	69

List of Figures

Figure 1. Connection Challenges in Mall Road Area	16
Figure 2. Crash Clusters and Pedestrian/Bicycle Crash Clusters in Mall Road Area	18
Figure 3. Transportation Vision for Mall Road Area	23
Figure 4. Proposed Greenway and Foot Trails	28
Figure 5. Examples of Shared Use Paths	30
Figure 6. Examples of Shared Use Paths & Directional Bicycle Lanes at Roadway Level	31
Figure 7. Key Crossings for Proposed Pedestrian and Bicycle Safety Improvements	34
Figure 8. Elements of Complete Street Intersection	35
Figure 9. Proposed New and Improved Overpasses and Underpasses	37
Figure 10. Examples of Pedestrian Bridges	38
Figure 11. Proposed Complete Street Improvements Map	40
Figure 12. South Bedford Street Existing and Future Conditions (Section 1) 41, 42,	43
Figure 13. Burlington Mall Road Existing and Future Conditions (Section 2)	46
Figure 14. Middlesex Turnpike Existing and Future Conditions (Section 3) 48,	49
Figure 15. Second Avenue Existing and Future Conditions (Section 4)	51
Figure 16. Proposed New Streets	53
Figure 17. Open Space and Public Realm Map	55
Figure 18. Transit Options Map	59

Executive Summary

For over 50 years, the Mall Road area has been an economic engine for Burlington. The Burlington Mall, Lahey Hospital, and other office and retail developments have provided jobs and prosperity for the Town and region. Over the years, the Mall Road area has evolved to include not only retail and office but also life-science and research facilities, and newer developments have created a more walkable, vibrant neighborhoods with offices, retail, and new housing. Today, the Mall Road area hosts over 30,000 jobs and nearly 4,500 residents.¹

The growth in employment and housing in the Mall Road area, combined with recent economic and demographic shifts, are changing traffic and travel habits in the region. E-commerce has transformed the face of retail; many offices have adopted hybrid/work from home schedules; older adults are aging in place; and Millennials and Gen Z are more likely to live in multi-family housing. These changes impact traffic patterns, travel demands, and how people move about.

The Town is actively working to manage these changes sustainably by instituting new zoning and development criteria that will help shape streets, public spaces, and buildings as the Mall area redevelops. In January 2025, the Town rezoned a portion of the study area from General Business to the Mixed Use Innovation



(MIX) district which lays the groundwork for creating more housing and mixed-use development around Burlington Mall. Other changes include MBTA Communities rezoning, redevelopment along the District and Van de Graaf Road, and completion of planned developments districts along Second and Third Avenues.

^{1.} Census Block Group 1 of Tract 3324.01 and Block Groups 1 and 2 of Tracts 3324.02. U.S. Census Bureau.

Plan Purpose

The purpose of this Mall Road Area Mobility Action Plan is to create a **transportation vision** that will support redevelopment in the Mall Road area by providing alternatives to automobile traffic congestion by supporting more walking, cycling, rolling, and transit options.

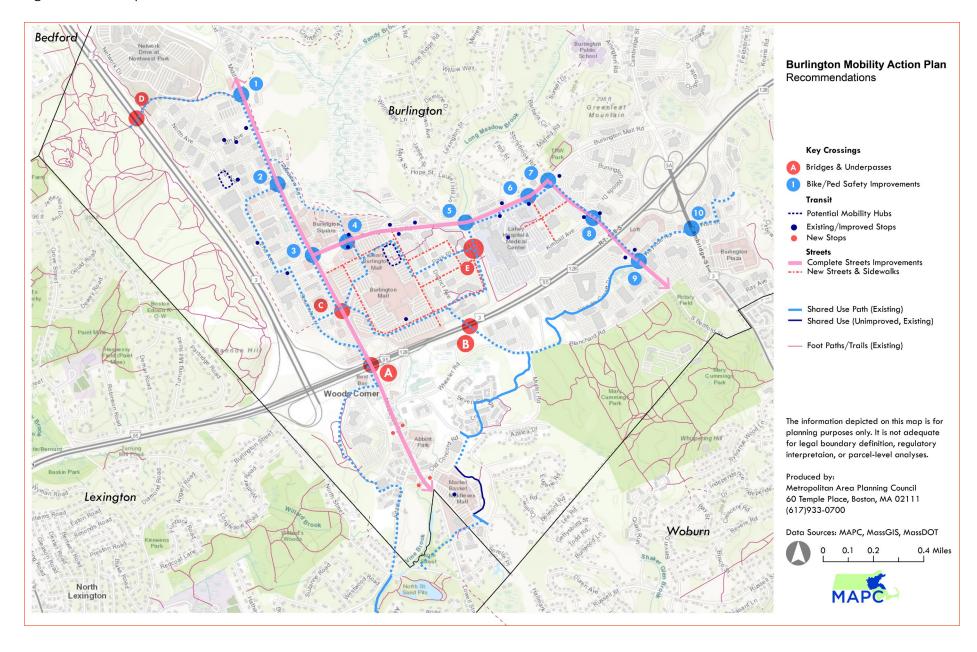
The vision reflected in this Mobility Action Plan creates a **transportation network that will allow workers, shoppers, residents, and visitors to "park once" and not rely on a car for every trip.** The Plan's action areas include steps to establish a network of sidewalks, greenways, crosswalks, transit stops, and local streets. This new transportation network will enable safe and effective travel for all modes – driving, transit, walking, cycling, and rolling – as the Mall Road area evolves as a mixed-use district for live, work, and play.

The Mobility Action Plan also gives an opportunity for the Town to consolidate and coordinate the various recommendations and visions from varied plans into a more unified and consistent transportation vision. This vision can then guide Town staff, residents, businesses, and developers as the Mall Road area continues its evolution into a more mixed-use area that supports safe streets, walking, cycling, and rolling.

The Vision

The map in Figure ES-1 on the following page illustrates the vision of a multimodal network in the Middlesex Turnpike and Burlington Mall Road area. A map of the Burlington Mall Area with mobility recommendations. The map labels key crossings like bridges, bike safety improvements, new streets and sidewalks, and more.

Figure ES-1. Transportation Vision for Mall Road Area



Below are descriptions of the vision for the Mall Road area shown.

Greenways will connect existing and future neighborhoods. This proposed network will be the backbone for safer walking, cycling, and rolling in the area.

Complete Streets Improvements are recommended on Middlesex Turnpike, Burlington Mall Road, and South Bedford Street. All Complete Streets should include a landscaped buffer between the sidewalk and travel lanes, following Town and MassDOT guidelines. Portions of these streets will include shared-use paths as part of the overall greenway network described above.

New Streets will be added as the area redevelops. These new streets should follow Burlington's requirements for new local and commercial streets. The locations of new streets and block sizes will be decided through the redevelopment process.

Foot Paths are proposed to provide added connections to green spaces and parks. These paths can be either hard surface path, typically in city park or campus environments, or a natural surface like a hiking trail, or boardwalks in wetlands.

Key Crossings — **Bridges and Underpasses** will provide new or enhanced safe, accessible crossings.

- A. Middlesex Turnpike/Rt 128 Underpass add a shared-use path under the existing underpass for safer conditions around this busy interchange.
- B. Vine Brook/Rt 128 Underpass construct a new pedestrian/bicycle underpass for a greenway near the current Vine Brook. This would connect to Wheeler Road/Blanchard Road and to Marry Cummings Park.

Greenways, Paths, and Trails

The Mobility Action Plan includes recommendations for a Burlington Greenway network. "Greenway" is inclusive term for a corridor of travel for the widest variety of users including people walking, biking, and rolling. When needed, a greenway can consist of shared-use paths, separated bike lanes and sidewalks, or even be on the street on low traffic streets (known as a shared street).

For the purposes of this Plan, the Burlington Greenway network recommendations include:

Shared-use paths, typically 10 to 12 feet wide on a hard surface, and often adjacent to streets.

Foot paths/trails, typically natural surface linear corridors, through natural surroundings, particularly parks and conservation lands.

- C. Connector Bridge to Burlington Mall construct a new greenway bridge over Middlesex Turnpike connecting AMC Theater and businesses along South Ave to Burlington Mall.
- D. Landlock Forest Bridge construct a greenway bridge over Rt 3 to the Landlocked Forest near Network Dr and North Ave. This will provide a direct connection from Burlington to the Landlocked Forest.
- E. Lahey/The District/Vine Brook construct a greenway bridge over the Vine Brook. This greenway and bridge provide a more direct link between Burlington Mall, The District, and Lahey Medical.

Key Crossings — **Bike/Ped Safety Improvements** will provide safe signalized pedestrian and bicycle crossings at major streets, and will better connect neighborhoods. Most will include more visible crosswalks, sidewalks, improved lighting, signalized pedestrian crossing phases, and tighter turning radii to reduce crossing distances and slow down vehicles.

- Terrance Hall Ave & Middlesex Turnpike
- 2. 3rd Ave & Middlesex Turnpike
- 3. Middlesex Turnpike & Mall Rd
- 4. Mall Entrance/Great Meadow Rd and Mall Rd
- 5. Vine Brook/Lahey Emergency entrance & Mall Rd
- 6. and 7. South Bedford St/Stony Brook Rd & Mall Rd
- 8. Kimball Av and & South Bedford St.
- 9. Van de Graaff Dr & South Bedford St
- 10. Wayside Rd/Wall St and Cambridge St

Transit Improvements include shelters at busier stops, and better signage. A Mobility Hub should be added in the area to integrate MBTA, LRTA, and Lexpress bus services. The Town should consider two options: 1.) at or near the Burlington Mall, and 2.) near Wegman's. Transit stop improvements should be added with the complete street improvements on Middlesex Turnpike between Rt 128 and Lowell St.

Open Space Connections. The Greenways, shared use paths, and foot trails will provide Burlington residents and workers with connections to active and passive recreation areas — the Land Locked Forest, the Vine Brook, Great Meadow, and Mary Cummings Park.

Neighborhood Connections and Gateways. As the Mall Road and Middlesex Turnpike area redevelops and the Greenway and shared-use path network is built out, the Town should create priority connection points with existing neighborhoods. The connections can also include placemaking such as landscaping, seating, signs indicating the neighborhood name, and wayfinding to connect with the Greenway. These improvements will not only connect older, established neighborhoods with the new amenities, but also create key "gateways" that will let visitors know about the unique aspects and communities in Burlington.

To implement this transportation vision, this Plan consists of **Action Areas** the Town can act and implement with interested developers today and in the future while also improving the Town's zoning, development guidelines and policies, and local ordinances.

As immediate next steps, the Town can start this Vision with these actions.

- 1. Design the first section of the Burlington Greenway network through multimodal improvements along Middlesex Turnpike to Route 128, using the recent MassWorks grant award.
- 2. Conduct a complete street plan for Middlesex Turnpike south of Route 128 to reduce congestion and improve safety along this busy retail corridor.

- 3. Design and construct a leg of the Burlington Greenway network between the Mall and Lahey Hospital.
- 4. Undertake community innovation sessions with residents, students, and artists for key locations such as the greenway crossing at Mall Road and future bridges over Middlesex Turnpike and Route 3 to envision distinctive gateways in the area.

Many of the recommendations in this Mobility Action Plan are similar to recommendations in previous area plans and studies, and build upon significant work already completed by the Town.

Introduction

The Vision

For over 50 years, the Mall Road area has been an economic engine for Burlington and the region. The Burlington Mall, Lahey Hospital, and other office and retail developments have provided jobs and prosperity for the Town



and region. Over the years, the Mall Road area has evolved to include not only retail and office but also life-science and research facilities. Today, employers in the area include life-science companies of Millipore-Sigma, Vericel, and the Broad Institute, Keurig/Dr. Pepper, and several software companies. New mixed-use development west of Middlesex Turnpike along Second and Third Avenues have created a more walkable, vibrant area with offices, retail, office, and new housing including the Tremont, the Huntington, and Lifetime Living. With this growth in the area, Burlington Mall has thrived as other similar retail hubs have become vacant. Today, the Mall Road area hosts over 30,000 jobs and nearly 4,500 residents.²

The growth in employment and housing in the Mall Road area, combined with recent economic and demographic changes, are changing traffic and travel habits in the region. E-commerce has transformed the face of retail, shifting how and when people shop in-person; many offices have adopted hybrid/work from home schedules; Baby Boomers and Gen Xers are aging in place; and Millennials and Gen Z are more likely to live in multi-family housing. These changes have shifted traffic patterns, travel demands, and how people move about.

^{2.} Census Block Group 1 of Tract 3324.01 and Block Groups 1 and 2 of Tracts 3324.02. U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of QuarterEmployment, 2nd Quarter of 2002-2022)

The Town is actively working to manage these changes sustainably by instituting new zoning and development criteria that will help shape streets, public spaces, and buildings as the Mall area redevelops. In January 2025, the Town rezoned a portion of the study area from General Business to the Mixed Use Innovation (MIX) district which lays the groundwork for creating more housing and mixed-use development around Burlington Mall. This MIX district is one of several recent rezonings and changes in the area, including MBTA Communities rezoning, redevelopment along the District and Van de Graaf Road, and completion of planned developments along Second and Third Avenues.

Purpose of Plan

The purpose of this Mall Road Area Mobility Action Plan is to create a transportation vision that will support redevelopment in the MIX district and other changes in the Mall Road area by providing alternatives to automobile traffic congestion by supporting more walking, cycling, rolling, and transit options.

The vision reflected in this Mobility Action Plan is a transportation network that will allow workers, shoppers, residents, and visitors to "park once" and not rely on a car for every trip The Plan's action areas The Mall Road Area Mobility Action Plan is sourced from several plans for the area to create a unified and coordinated transportation vision. Sources include:

- Lahey Hospital & Medical Center **Expansion Plan**
- The District Burlington Modified Master Plan
- Burlington 128 District Site Readiness Concept Plan
- **Burlington Mall Road Rezoning and** Mixed Use Innovation (MIX) District
- **MBTA Communities Zoning Districts**
- Burlington Vine Brook Greenway Path plan
- Middlesex 3 Coalition Transportation Study
- MAPC LandLine Vision and Trail Network
- Blanchard/ Wheeler Corridor Vision Plan
- **Burlington Comprehensive Master Plan**

include steps to create a network of sidewalks, greenways, crosswalks, transit stops, and local streets. This new transportation network will enable safe and effective travel for all modes — driving, transit, walking, cycling, and rolling — as the Mall Road area redevelops as a mixed-use district for live, work, and play.

The Mobility Action Plan also provides an opportunity for the Town to consolidate and coordinate the various recommendations and visions from varied Planned Development Districts, 3A Zoning/ MBTA Communities rezonings, the MIX district, and other plans into a more unified and consistent transportation vision. This vision can then guide Town staff, residents, businesses, and developers as the Mall Road area continues its evolution into a more mixed-use area that supports safe streets, walking, cycling, and rolling.

Existing Conditions and Challenges

The current street and transportation system in the Mall Road area reflects the development standards from the era in which the region developed, primarily from the 1960's to the early 21st century. During the 1960's through the 1990's, these standards typically produced separated land uses, wide commercial streets, a limited street connections with larger blocks, and few ways for people to move about without driving. Since 2000's, Planned District Developments (called PDDs), such as the Northwest Park around Second Ave have begun to create more walkable, mixed-use neighborhoods in the study area. Nonetheless, the newer mixed-use neighborhoods are separated from other areas but geographic barriers (topography, wetlands) or the built environment (wide commercial streets and highways).



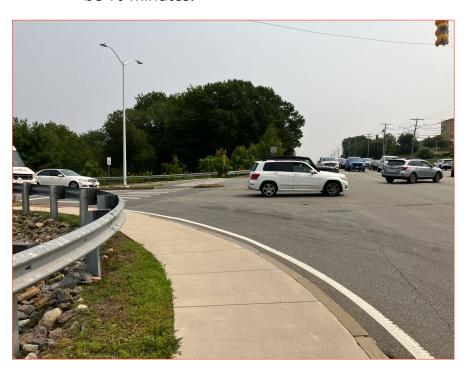
The existing conditions in the area result in number of challenges related to mobility, connectivity, and pedestrian safety (Figure 1):

Lack of mobility options. Bus services to Boston/Cambridge, Lowell, and Lexington are limited, with most routes offering service every hour. The nearest commuter rail stations in Winchester and Woburn are 6 miles away. There are almost no bicycle facilities. While most streets in the Mall Road area have sidewalks, most are narrow, and without a landscaped buffer to separate them traffic, and/or are overgrown with vegetation or have other obstructions.

The area is an employment hub (nearly 33,500 jobs, full and part-time). While a vast majority drive to work, a third of area workers travel fewer than 10 miles.³ These data suggest that some workers who commute shorter distances in the area could commute via transit, bicycle, e-bike, or walking, if safe, convenient, and enjoyable non-driving infrastructure was in place.

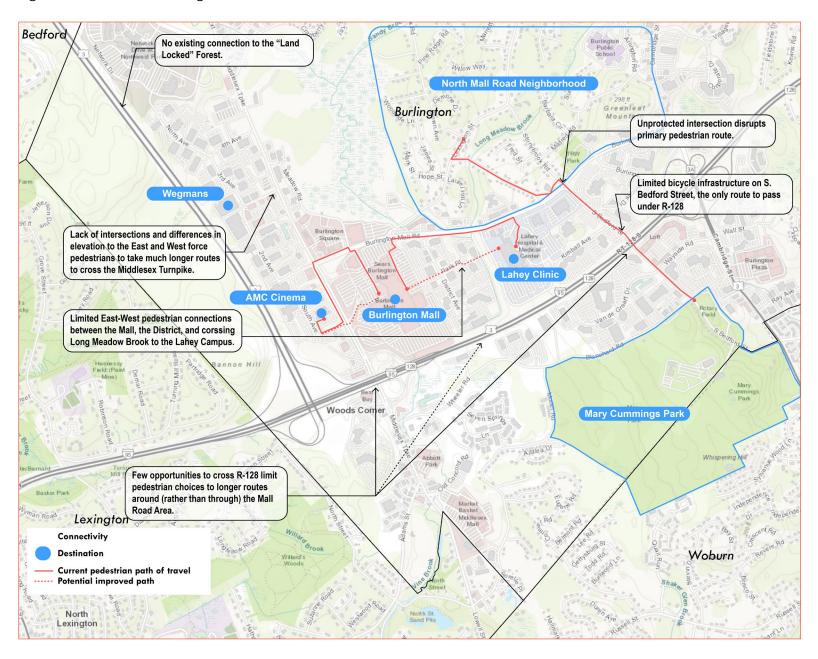
^{3.} U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics for Census Tracts 3324.01 and 3324.02 (Beginning of Quarter Employment, 2nd Quarter of 2002-2021).

- **Lack of connectivity.** Limited street connections require workers and residents to either drive or walk along circuitous, and at-times dangerous, routes to reach destinations. For example:
 - Walking from Lahey Clinic to the Burlington Mall is less than one mile but it takes nearly 20 minutes and requires trekking along Burlington Mall Road. If there were a direct path or street, the connection would he 10 minutes.



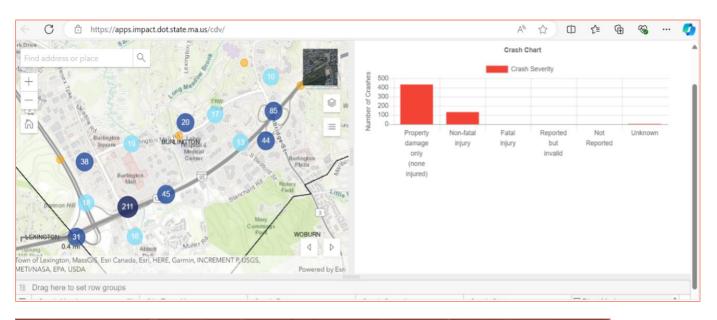
- Despite the AMC cinema on South Street and the Mall being less than a quarter-mile apart, anyone traveling between the two must walk over three-quarters of a mile to cross Middlesex Turnpike. One reason for the lack of direct street connections is topography. The second reason is the lack of a signalized crossing and sidewalk leading into the Mall from Middlesex Turnpike. Though the crossing at Second Avenue is signalized and marked, people walking/rolling/ biking must cross five lanes of traffic at one of the busiest intersections in the area.
- Some residents north of Mall Road cannot easily reach Mary Cummings Park by foot or bicycle without going around the Mall area and Rt 128. Signalized crosswalks on Mall Road are spaced less than one-quarter mile. In contrast the distance between the two crossing points under Rt. 128e — South Bedford Street and Middlesex Turnpike — is over one mile.

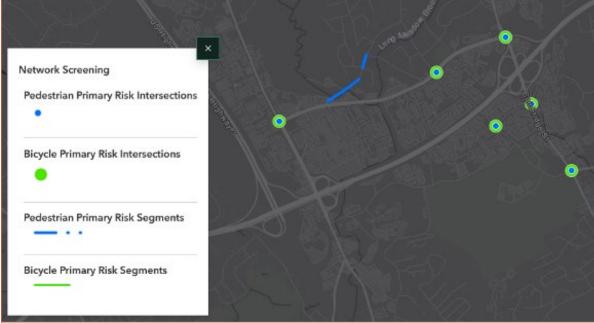
Figure 1. Connection Challenges in Mall Road Area



- Traffic congestion. The area has morning and afternoon traffic congestion, as well as weekend congestion around retail cores along Burlington Mall Road and Middlesex Turnpike. Congestion around the Mall is greater in November and December during the holidays. However, 2022⁴ traffic counts for Burlington Mall Road (24,700 to 33,000) are similar to 2011 and 2013 counts on the roadway, even with recent expansion of Lahey Hospital and The District. Portions of Middlesex Turnpike (25,000 44,000 vehicles per day) are similar or lower than average daily vehicle volumes in 2016. The similar traffic volumes over the last 10 years are likely due to shifting traffic patterns with increased online retail purchases and hybrid/work-from-home changes since 2020. Congestion is exacerbated by the lack of street connections to disperse traffic, the lack of internal streets and walking networks, as well as the overall lack of comfortable options for walking, cycling, and rolling.
- Unsafe conditions. MassDOT records show approximately 570 crashes in the study area from 2022-2024, with 160 injuries and zero fatalities. Many of the crashes occurring in clusters around interchanges and intersections (see chart and map in Figure 2). While some of these crashes occur on Rt. 128/I-95, traffic congestion from the crashes on the interstate can still "spill over" and impact local streets. MassDOT's Vulnerable Road User Safety Assessment also has identified intersections in the study area as safety risks for those walking/cycling/rolling, including three intersections along Burlington Mall Road.
- **Demographic changes with changes in travel demand.** Studies show that younger adults Millennials and Gen Z drive less and prefer more walkable, mixed-use environments.⁵ Older generations Boomers and Gen X are also looking for ways to age in-place, or downsize but remain close to friends and family. Moreover, as average family sizes are now smaller, more workplaces adopt hybrid work environments and as households switch to more online shopping, the number of vehicle trips per household has fallen from over the last 30 years.⁶ As travel needs shift, the built environment, including streets, needs to evolve to meet these needs.
- 4. Counts from MassDOT; The District Modified Master Plan, VHB (February 2023); Traffic Impact and Access Study, NEEP Renovations and Expansion, VHB (2014); Lahey Hospital & Medical Center, 41 Burlington Mall Road Burlington, Massachusetts Traffic Evaluation, VHB (2014).
- 5. Ming Zhang and Yang Li, "Generational Travel Patterns in the United States: New Insights from Eight National Travel Surveys". Cooperative Mobility for Competitive Megaregions at The University of Texas at Austin, April 2022.
- 6. S. Bricka, et al. "Summary of Travel Trends: 2022 National Household Travel Survey". US Department of Transportation, January 2024.

Figure 2. Crash Clusters and Pedestrian/Bicycle Crash Clusters in Mall Road Area. Source: MassDOT





Opportunities

Though the area has mobility, connectivity, and safety challenges, the Mall Road area has many opportunities for improvement.

- The area has several elements that support improved walking/rolling/cycling infrastructure and that will help people travel the area without always driving. These include:
 - A high concentration of employment, with around a third of workers travelling fewer than 10 miles.⁷
 - · An oversupply of surface parking in areas, providing opportunity for infill development.
 - Areas with redevelopment opportunities, which can prompt new housing to attract workers who want to live close to their place of employment.
 - Candidate roadways for multimodal improvements including Burlington Mall Road and South Beford Street.
 These streets are good candidates for right-sizing, which would free up space
 for greening the streets (trees, plantings) as well as for walking, cycling, rolling infrastructure and would reduce excessive speeding.⁸
 - Rezoning and new form-based codes by the Town that lay the groundwork for an improved mix of uses, and multimodal streets.
- Though most trips to the district will continue to be by car, transportation improvements can support visitors and residents to "park once" and move about without getting back in their car. Given the area's limited transit options, and its location at regional highways, most people will continue to access the area by automobile. However, the Mall Road area is about one mile from the Middlesex Turnpike to South Bedford Street, and one mile from Third Avenue to Wheeler Road. (For comparison, this is approximately the size of Boston's Back Bay neighborhood.) These distances show that many of the destinations in this area could be reached by walking or riding, if safer, convenient, pleasant and more direct routes were available.

^{7.} U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics for Census Tracts 3324.01 and 3324.02 (Beginning of Quarter Employment, 2nd Quarter of 2002-2021).

^{8.} US Department of Transportation Federal Highway Safety Programs. Road Diet Safety Measures. https://highways.dot.gov/safety/other/road-diets.

- Improvements in the Plan can support mixed-use development that shifts trips from driving to transit, walking, cycling, and rolling. Mixed-use development — combining residential, commercial, and office into more walkable neighborhoods — often have more trips by non-driving modes, due to their more compact designs. A study of sites in the US found that well-designed mixed-use developments have more than 50 percent of internal trips by walking, even in areas without rail transit. This Mobility Action Plan can support mixed-use developments in the area and help create significant mode shift from driving to walking/ cycling/ rolling.9
- The Mobility Action Plan can provide clarity for development and redevelopment. Having a plan with identified connections and design guides, along with new zoning bylaws should help remove uncertainty and expedite proposal review for developers and for the Town.
- The Mobility Action Plan can build upon other plans. New zoning and design codes recently adopted by the Town create good groundwork for an improved mix of uses, and guidelines for safer multimodal streets. This Mobility Action Plan builds upon the previous work for the area, including the Burlington 128 District Plan and the Burlington Vine Brook Greenway Path plan, the MBTA Communities Multi-family Overlay District, the MIX District, and Planned Development Districts adopted in the study area.
- The Plan can help ensure safe streets are a priority. Infrastructure improvements recommended by this Plan can help address priority crash/safety areas identified by the Town and MassDOT, and support the regional Vision Zero plan to eliminate deaths and serious injuries on streets and roads.
- **Improvements can benefit the entire Town.** The Plan can help ensure connections are not made just for new residential and commercial development, but connect and extend to existing neighborhoods and residents.
- 9. Guang Tian, et al. Traffic generated by mixed-use developments—A follow-up 31-region study. Transportation Research, January 2020.

- The Plan can create improvements should be for all users. This includes children, seniors, and persons with disabilities and differently abled, including those using mobility devices such as wheelchairs. In addition to accessible streets, sidewalks, and paths, signage and wayfinding should be easily readable and understood by all.
- The Plan can help ensure connections are both local and regional. Improvements should be made not only within the Mall Road area but also should connect to established neighborhoods and to the regional greenways and parks in Lexington, Woburn, and Bedford.
- The Plan can create placemaking throughout the Mall Road area. Infrastructure improvements should include placemaking such as green space, trees, benches, and should connect with parks and forests.

Vision, Recommendations, and Action Items

Based upon the analysis of existing conditions, discussions with Town staff, and input from Town stakeholders, MAPC developed recommendations for Mall Area Mobility Action Plan that include the following:

- A more defined greenway and pathway network.
- Greenway and pathway design standards.
- New local and commercial street connections as the area redevelops.
- Recommendations on right-sized streets, and identification of crash areas that street improvements should address.
- Improved transit infrastructure to support better regional connections.
- · Right-sized parking requirements.
- Guidelines and policies for private development and Town staff, including links to local and national best practices.

The Vision

The map in Figure 3 on the following page illustrates the vision of a multimodal network in the Middlesex Turnpike and Burlington Mall Road area. This network will allow residents, workers, and visitors to "park once" (if driving) and move about safely without the need to drive to reach critical destinations in the area. This plan will support development by providing safer and convenient alternatives for driving, and reduce traffic congestion.

Greenways, Paths, and Trails

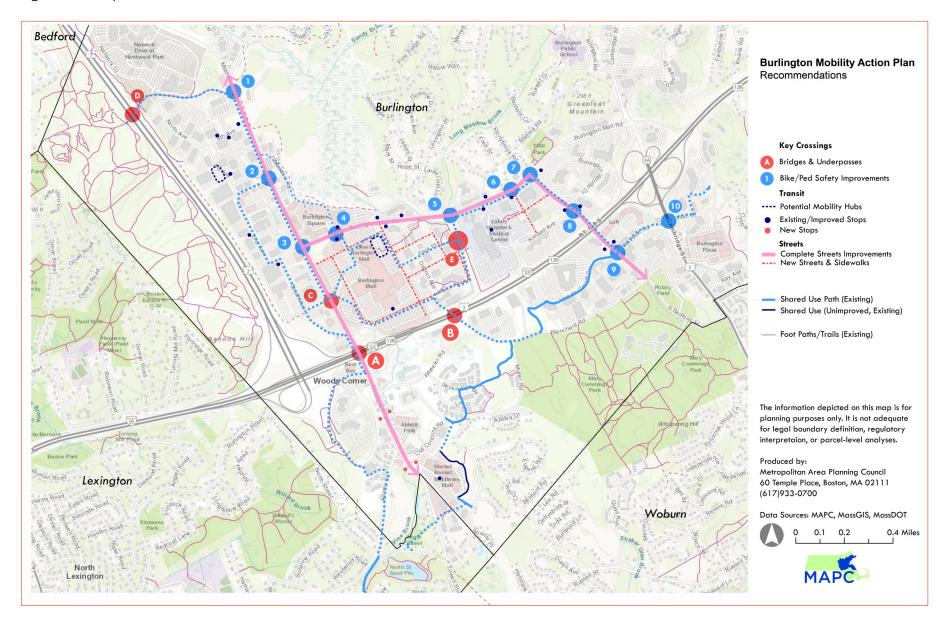
The Mobility Action Plan includes recommendations for a Burlington Greenway network. "Greenway" is inclusive term for a corridor of travel for the widest variety of users including pedestrians, cyclists, wheelchair and stroller users. The surface is firm and stable, and wide enough for users to pass each other. The corridor is ideally on its own reservation (such as a rail trail). When needed, a greenway can consist of shared-use paths, separated bike lanes and sidewalks, or even be on the street on low traffic streets (known as a shared street).

For the purposes of this Plan, the Burlington Greenway network recommendations include:

Shared-use paths, typically 10 to 12 feet wide and often adjacent to streets.

Foot Paths/Trails, typically natural surface linear corridors, through natural surroundings where possible, particularly parks and conservation lands.

Figure 3. Transportation Vision for Mall Road Area



Below are descriptions of the vision for the Mall Road area shown.

- **Greenways** will connect existing and future neighborhoods, and this network will be the backbone for safer walking, cycling, and rolling in the area. Greenways will follow MassDOT and FHWA design standards, including 12 feet wide accessible paths with minimum two-foot buffers. Shared-use paths should be a minimum of 10 feet wide with two-foot buffers.
- Complete Streets Improvements are recommended on Middlesex Turnpike, Burlington Mall Road, and South Bedford Street. Middlesex Turnpike and Burlington Mall Road are proposed to be two travel lanes in each direction with a center turn lane/landscaped median. South Bedford Street is recommended to be altered from 4 to 3 lanes. All Complete Streets should include a landscaped buffer between the sidewalk and travel lanes, following Town and MassDOT guidelines for complete streets. Portions of these streets will include shared-use paths as part of the overall greenway network described above.
- New Streets will be added as the area redevelops. These new streets should follow Burlington's requirements for new local and commercial streets. Pedestrian passages between buildings, per the Town's Code, are also possible ways to make block sizes at a more human scale and provide connections for people walking and rolling. These new streets also connect with the proposed Greenway and Shared Use Path network. The Mobility Action Plan includes suggested new streets around Burlington Mall and other areas. These new streets are based on previous plans created for the area, and are illustrative only. The locations of new streets and block sizes will be determined through the redevelopment process.
- Foot Paths are proposed to provide additional connections to green spaces and parks. These paths
 can be either hard surface path, typically in city park or campus environments, or a natural surface
 like a hiking trail, typically found in conservation areas. The footpaths proposed in and around the
 Great Meadow and the Vine Brook could be boardwalks.

- **Key Crossings Bridges and Underpasses** will provide new or enhanced safe, accessible crossings.
 - Middlesex Turnpike/Rt 128 Underpass add a shared use path under the existing underpass.
 - Vine Brook/Rt 128 Underpass construct a new pedestrian/bicycle underpass for a greenway near the current Vine Brook. This would connect Burlington Mall and The District to Wheeler Road/Blanchard Road and to Marry Cummings Park.
 - Connector Bridge to Burlington Mall construct a new greenway bridge over Middlesex Turnpike connecting AMC Theater and businesses along South Ave to Burlington Mall.
 - Landlock Forest Bridge construct a greenway bridge over Rt 3 to the Landlocked Forest near Network Dr and North Ave. This will provide a direct connection from Burlington to the Landlocked Forest.
 - **Lahey/The District/Vine Brook** construct a greenway bridge over the Vine Brook, to span the Brook and address the elevation difference between Lahey Medical Center and The District. This greenway and bridge provide a more direct link for walking/cycling/rolling between Burlington Mall, The District, and Lahey Medical.
- Key Crossings Bike/Ped Safety Improvements will provide safe signalized pedestrian and bicycle crossings at major streets. Most of these will include more visible crosswalks, sidewalks, improved lighting, signalized pedestrian crossing phases, and tighter turning radii to reduce crossing distances and slow down vehicles. These safety improvements will better connect neighborhoods to retail, parks, transit, the greenway network, and jobs.
 - 1. Terrance Hall Ave & Middlesex Turnpike
 - 3rd Ave & Middlesex Turnpike
 - Middlesex Turnpike & Mall Rd
 - Mall Entrance/Great Meadow Rd and Mall Rd
 - Vine Brook/Lahey Emergency entrance & Mall Rd

- 6. and 7. South Bedford St/Stony Brook Rd & Mall Rd
- 8. Kimball Av and & South Bedford St
- 9. Van de Graaff Dr & South Bedford St
- 10. Wayside Rd/Wall St and Cambridge St

- **Transit Improvements** include shelters at busier stops, and better signage. A Mobility Hub should be added in the area to integrate MBTA, LRTA, and Lexpress bus services. The Town should consider two options: 1.) at or near the Burlington Mall, and 2.) near Wegman's. Transit stop improvements should be added with the complete street improvements on Middlesex Turnpike between Rt 128 and Lowell St. Adding transit stops and pedestrian crossings along this stretch of Middlesex Turnpike will allow buses to more easily serve businesses in that area and reduce transit travel time.
- **Open Space Connections.** The Greenways, shared use paths, and foot trails will provide Burlington residents and workers with connections to several active and passive recreation areas — the Land Locked Forest, the Vine Brook at Great Meadow Road, the Vine Brook, and Mary Cummings Park.
- Neighborhood Connections and Gateways. As the Mall Road and Middlesex Turnpike area redevelops and the Greenway and Shared Use Path network is built out, the Town should create priority connection points with existing neighborhoods. The connections include the Key Crossings shown in the Recommendations map, but can also include placemaking such as landscaping, seating, signs indicating the neighborhood name, and wayfinding to connect with the Greenway. They could also include markers noting the Town's history, or important past residents of Burlington. These improvements will not only connect older, established neighborhoods with the new amenities, but also create key "gateways" that will let visitors know about the unique aspects and communities in Burlington.

Recommendations and Actions

This Plan consists of eight recommendations to shape the transportation infrastructure for the Mall area as new zoning and redevelopment occurs. The recommendations are noted as "Action Items" since the Town can act and implement many of these with interested developers today and in the future while also revising the Town's zoning, development guidelines and policies, and local ordinances. Many of the recommendations are modifications and expansion of recommendations in previous area plans and studies, and build upon significant work already completed by the Town.

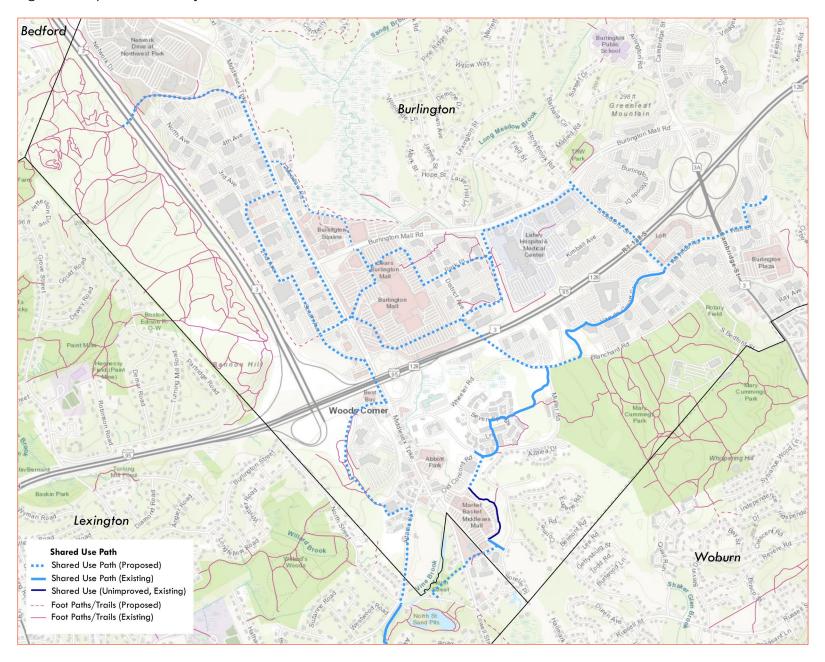
Action Item 1: Burlington Greenway Network

The backbone for the plan is a greenway and pathway loop connecting existing and future neighborhoods along Middlesex Turnpike, Mall Road, South Bedford Street, and Wheeler and Blanchard Roads (Figure 4). The future greenway connects various existing greenways, such as the shared use path along Van der Graff Road.

This greenway network will provide safe connections over and under existing barriers such as Route 3 and I-95/Route 128. Constructing these connections will require significant infrastructure such as bridges or culverts, and planning and design should begin to determine which design options are most appropriate and feasible.

In addition, this greenway network will connect Burlington to other existing and planned regional greenways and trails that are parts of greater Boston's Landline Network. These connections include the Lower Vine Brook Trail in Lexington to the regional Minuteman Trail, and the Boston Greenbelt in Woburn. The greenways and trails will also link to several parks and natural areas in town, including the Landlocked Forest and Mary Cummings Park, as described in Action Item 6.

Figure 4. Proposed Greenway and Foot Trails



The expanded greenway network will also provide critical connections to existing neighborhoods and across existing streets. Safety and traffic calming measures must be included in these neighborhood connections, including improved sidewalks and crosswalks, pedestrian signalized crossings, and pedestrian scale lighting.

Greenway Standards

Design standards from MassDOT and FHWA state that shared use paths that allow bicycles and pedestrians should be 12 feet wide with 2 foot shoulders on both sides. In constrained areas and lower traffic paths, 10 feet wide may suffice. Wider greenways allow for cycling, walking, and rolling on both directions and for easier passing. The surface should be hard (asphalt and/or concrete) in urban environments and follow designs that allow use for all mobility types, including Public Right-of-Way Accessibility Guidelines (PROWAG).

Where possible, greenway lighting should be included for security and to encourage evening use. Signage and branding are important to help residents and visitors know how to access the greenway and destinations. The branding should be simple, such as the Burlington Greenway Network, and signage should also be welcoming and language inclusive. Signage should follow MassTrails Bike Wayfinding Design Guide.

Signage examples from the MassTrails Bike Wayfinding Design Guide.



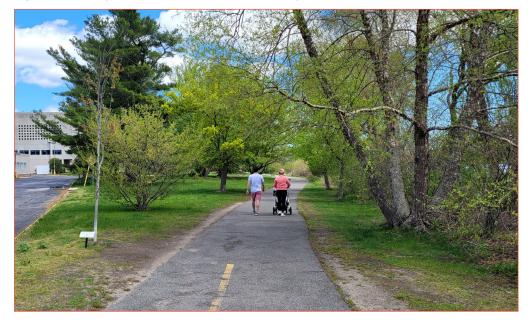
Parking for access to the Greenway network should be shared parking with other uses such as retail centers or office. Shared parking will minimize impervious surfaces, reduce trail maintenance costs, and discourage trail users from driving short distances and creating congestion on local streets.

Shared-Use Path

The greenway network will be constructed in segments, and will at times be separated from the street network, while in other segments the greenway will operate as a shared use path (similar to a wide sidewalk) along streets including Middlesex Turnpike, Great Meadow Road, Mall Road, Van Der Graff Drive, and Blanchard Road.

Design standards from MassDOT and FHWA state that greenways and paths that allow bicycles and pedestrians should be a minimum of 10 feet wide, not including any buffer or landscaping.

Figure 5. Examples of Shared Use Paths, Wakefield



MAPC recommends 12 feet to allow for side-by-side walking and riding and passing, where feasible. Shared use paths should follow design standards including PROWAG and MassTrails Signage guidelines. Figure 5 illustrates examples of other shared-use paths in the region.

Along South Bedford Street, the greenway/shared use path can be added by right-sizing the street from four and five lanes to two and three lanes. Repurposing the travel lanes can be done relatively easily with flexposts and smaller concrete barriers; long-term, the street should be reconstructed to create a 10 to 12 foot shared use path at the sidewalk level. Reducing the vehicular travel lanes also will discourage speeding and create a safer street for all users.

Figure 6 shows examples of streets where a shared use path and/or bi-directional bicycle lanes have been constructed by repurposing street space to create safer conditions for all.

Shared use path, Route 126, Ashland



Figure 6. Examples of Shared Use Paths & Directional Bicycle Lanes at Roadway Level



Repurposed roadway for pedestrian and bicycle, Commonwealth Avenue, Natick



Below: Separated bi-directional bicycle path and sidewalk, Everett

Foot Trails

Foot trails are pathways that can be paved or unimproved that can be used by walkers or joggers, but which may not be designed for cyclists or rolling. Foot paths also typically do not meet federal accessibility requirements for persons with disabilities. Foot trails serve as connectors to recreational areas and other destinations, but because they are not fully accessible they should be secondary connections and not primary pathways. Existing foot trails include the path between the District and Lahey Hospital, as well as trails in the Landlocked Forest and Mary Cummings Park.

Example foot trails





Action Item 2: Key Pedestrian and Bicycle Crossings

Intersection improvements are needed to provide safe crossing points on busy streets such as Middlesex Turnpike and Mall Road. Crosswalks should follow the Town's Crosswalk Design Standards and Guidelines. The key crossings identified in this Action Plan (Figure 7), and others in the area should be signalized and should include pedestrian only signal phases for added safety.

- 1. Terrance Hall Ave & Middlesex Turnpike
- 3rd Ave & Middlesex Turnpike
- Middlesex Turnpike & Mall Rd
- Mall Entrance/Great Meadow Rd and Mall Rd
- Vine Brook/Lahey Emergency entrance & Mall Rd
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- Kimball Av and & South Bedford St.
- Vande Graaff Dr & South Bedford St
- 10. Wayside Rd/Wall St and Cambridge St



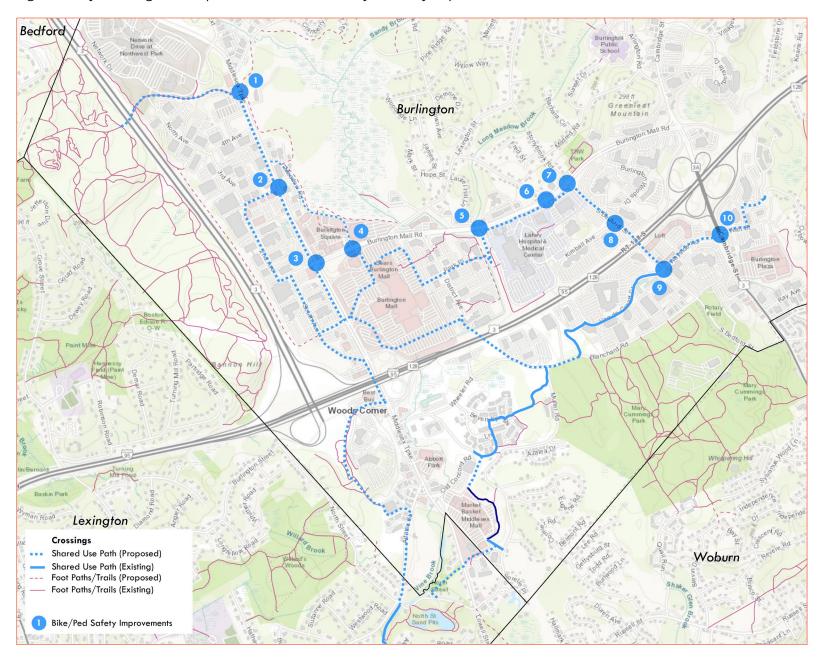


Arsenal Street and Intersection Improvements, Watertown

The City of Watertown has made improvements along Arsenal Street to make the corridor safer for all users and to support greater walking, cycling, rolling, and transit. Improvements include a shared-use path and ped/bike crossings with well-marked crosswalks and pedestrian-only phases for added safety when crossing Arsenal Street.

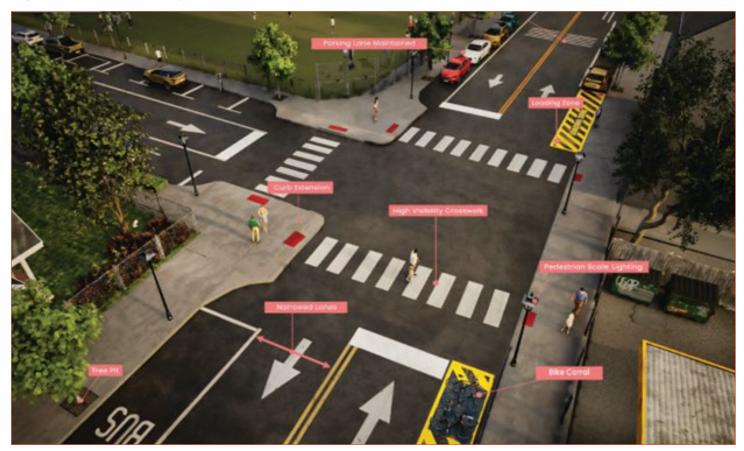
The complete street improvements are funded through developer mitigation funds, city funds, and MassWorks grants, and support the transformation of shopping centers into a vibrant, mixed-use development at Arsenal Yards and the Watertown Mall. The street improvements also connect with local and regional greenways as well as public space along the Charles River.

Figure 7. Key Crossings for Proposed Pedestrian and Bicycle Safety Improvements



Crossings with bicycle facilities should follow MassDOT guidelines for separated bicycle facilities. Where possible, intersections should be reconstructed for tighter turn radii, which slows down vehicles and reduces the chance of vehicle/pedestrian crashes. NACTOs <u>Urban Street Design Guide</u> provides additional guidelines for safe intersections. Figure 8 shows an example of elements of safer intersections for these key crossings.

Figure 8. Elements of Complete Street Intersection



Source: Harrison Streets for All 2024 Design Guide (New Jersey)

Action Item 3: Key Crossings — Overpasses and Underpasses

The Action Plan identifies five locations where there should new or improved grade separated crossings (over or under) to improve neighborhood connectivity (Figure 9).

Two locations are suggested where the greenway network should pass under Route 128/I-95.

- For the existing Middlesex Turnpike underpass, the Town received a MassWorks grant to design retrofitting a shared-use path along the existing underpass. The shared-use path should be a minimum of 10 feet wide, preferrable 12 feet.
- A new proposed greenway underpass is proposed along the Vine Brook at Rt. 128. This underpass will be more difficult to construct, given the lack of an existing grade separation in the area. Earlier plans have indicated that this crossing could be an overpass. Additional alternatives analysis should be undertaken to determine the most suitable route and design for this crossing.

Three overpasses are proposed as part of the overall Burlington Greenway network.

- Over Route 3 connecting the Landlocked Forest and a future greenway near Network Drive.
- Over Middlesex Turnpike, connecting South Avenue near AMC Burlington Cinemas to Burlington Mall.
- Over the Vine Brook, to span the Brook and address the elevation difference between Lahey Medical Center and The District. This greenway and bridge provide a more direct link for walking/cycling/rolling between Burlington Mall, The District, and Lahey Medical.

Both overpasses should be 12 feet wide minimum, and be load bearing to allow a smaller "golf cart" sized vehicle for maintenance and emergency access. The bridges should also follow MassDOT and FHWA design requirements, PROWAG, and MassTrails signage guidelines.

The overpasses also provide the Town an opportunity to create signature gateways that give unique identity to Burlington and the area. Examples of similar bridges are shown below in Figure 10.

Figure 9. Proposed New and Improved Overpasses and Underpasses

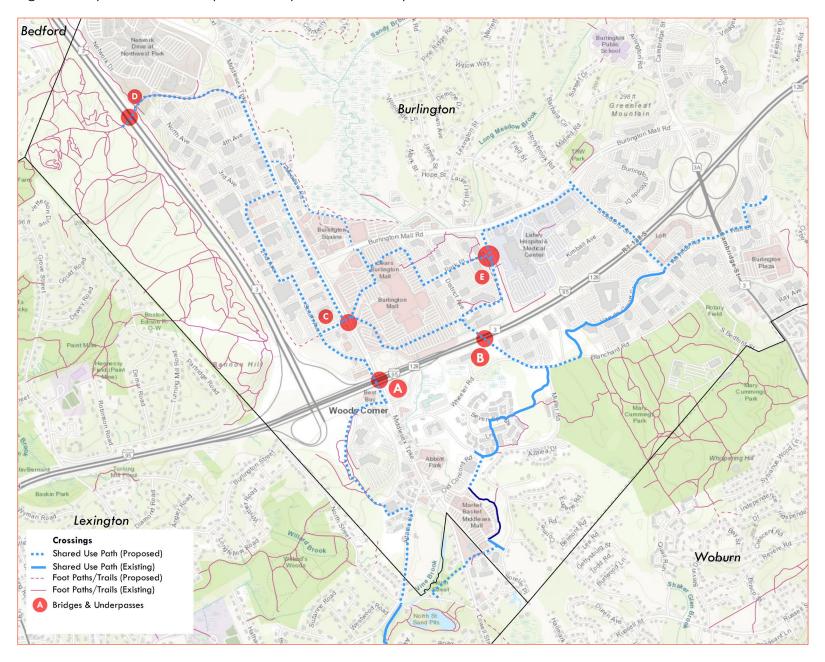


Figure 10. Examples of Pedestrian Bridges



South Coast Plaza Mall Bridge, Costa Mesa, CA



Liberty Bridge, Greenville, SC (Nicolas Henderson / Wikimedia)



Neponset River Trail



Route 2 Rail Trail Bridge, Leominster (John Phelan / Wikimedia | CC BY-SA 4.0)

Action Item 4: Complete Street Improvements

Complete Streets improvements should be implemented along these key streets in the Mall Road area. Most of these improvements and changes would occur over time as adjacent parcels redevelopment. Figure 11 shows the Complete Streets proposed for the Mall Road Area and identifies four proposed cross sections described below.

South Bedford Street (Figure 12) is recommended to be restriped from 4 to 3 lanes with separated bike path from Van de Graaff Drive to Burlington Mall Road. The bi-directional bicycle route should be separated from vehicular traffic by flex posts or similar separators as a quick-build project. This separated bike path and sidewalk will be part of the Burlington greenway network. Long-term (full-build), the roadway could be reconstructed to three vehicular lanes and a shared-use path on the side of the street.

Figure 11. Proposed Complete Street Improvements Map. Note: Numbers in Figure refer to street cross sections, described in following pages

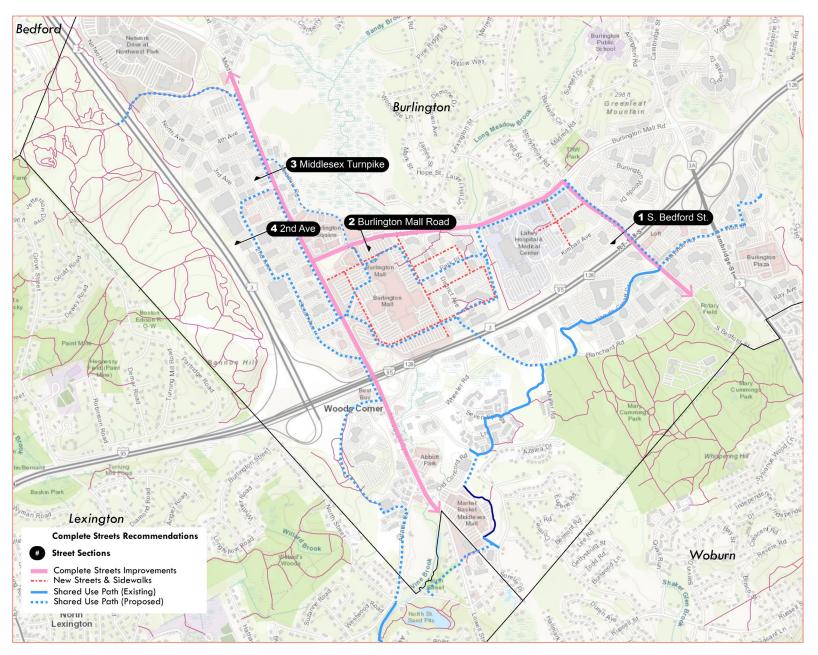


Figure 12. South Bedford Street Existing and Future Conditions (Section 1)

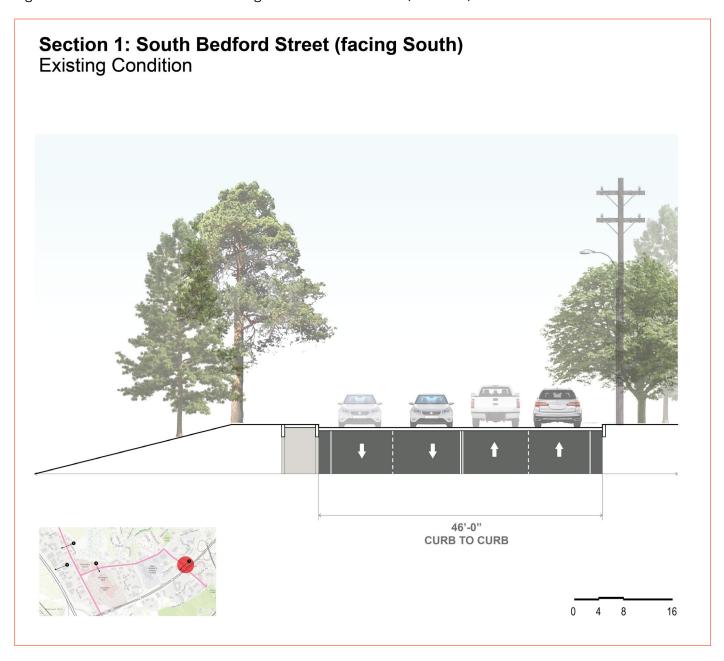


Figure 12. South Bedford Street Existing and Future Conditions (Section 1)

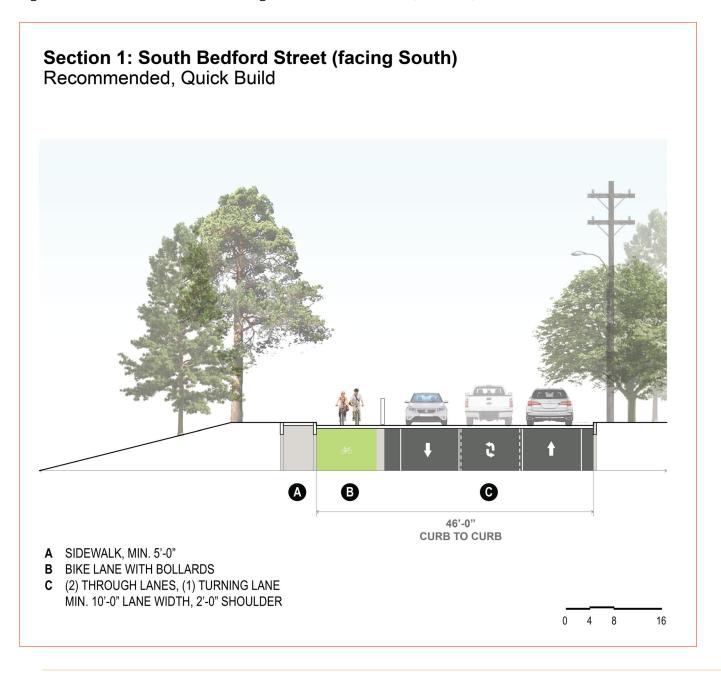
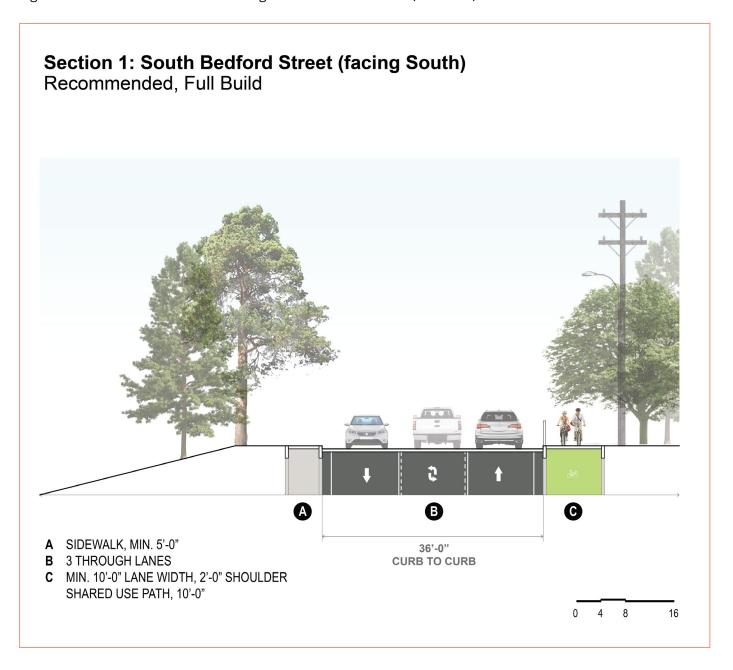


Figure 12. South Bedford Street Existing and Future Conditions (Section 1)



Burlington Mall Road is proposed to be reconstructed with four through-lanes with a landscaped median, as well as sidewalks with and landscaped buffer, and tighter turning radii at driveways and intersections. Intersections should have signalized crosswalks and other safety improvements (Figure 13). These improvements are proposed from South Bedford Street to Middlesex Turnpike. A portion of the Burlington Greenway network is proposed from Lahey Hospital to South Bedford Street.

Figure 13. Burlington Mall Road Existing and Future Conditions (Section 2)

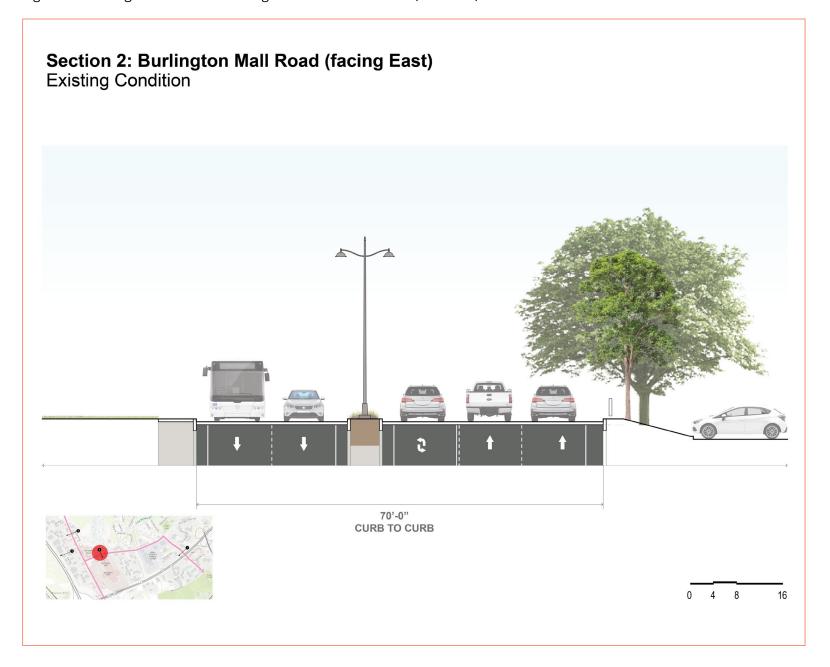
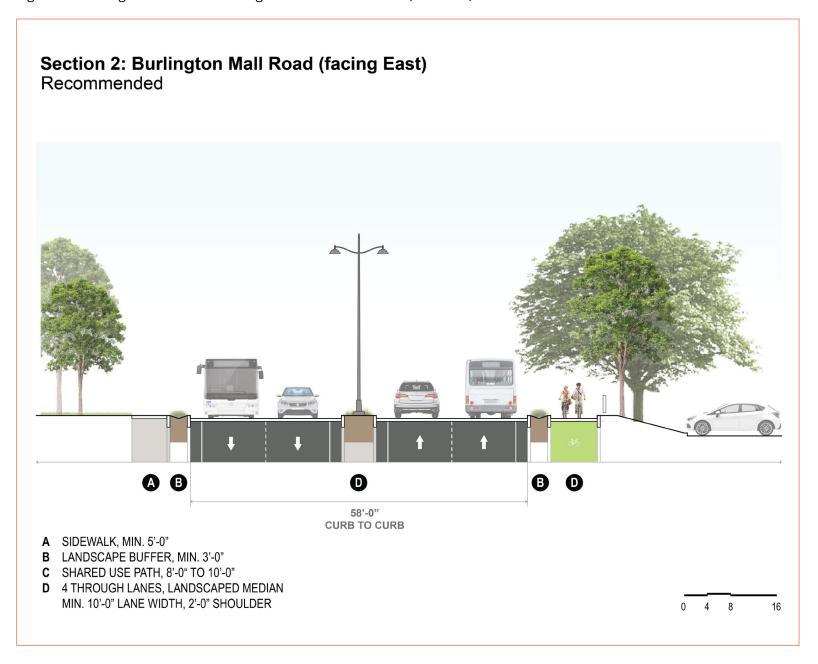


Figure 13. Burlington Mall Road Existing and Future Conditions (Section 2)



Middlesex Turnpike should be reconstructed with four through-lanes with a landscaped median, as well as sidewalks with landscaped buffers, and tighter turning radii at driveways and intersections. Intersections should have signalized crosswalks and other safety improvements (Figure 14). A portion of the Burlington Greenway network is proposed from Terrace Hall Avenue to the Great Meadow Road.

Figure 14. Middlesex Turnpike Existing and Future Conditions (Section 3)

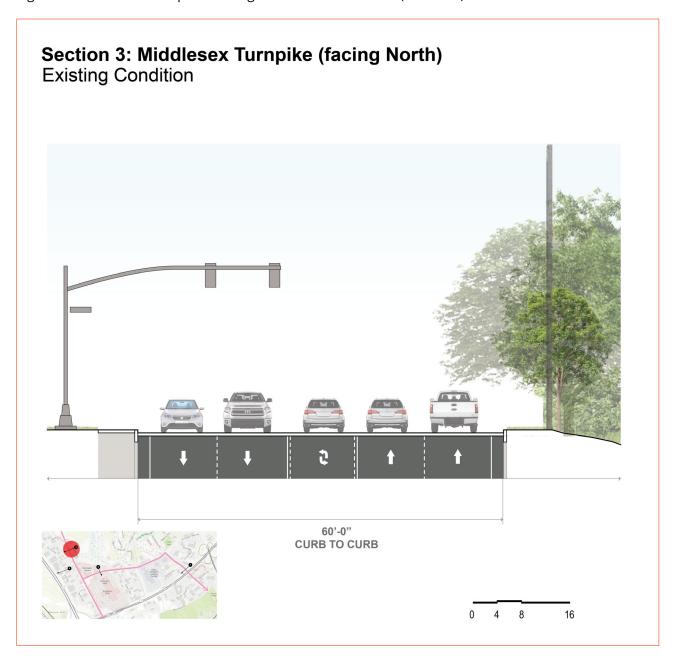
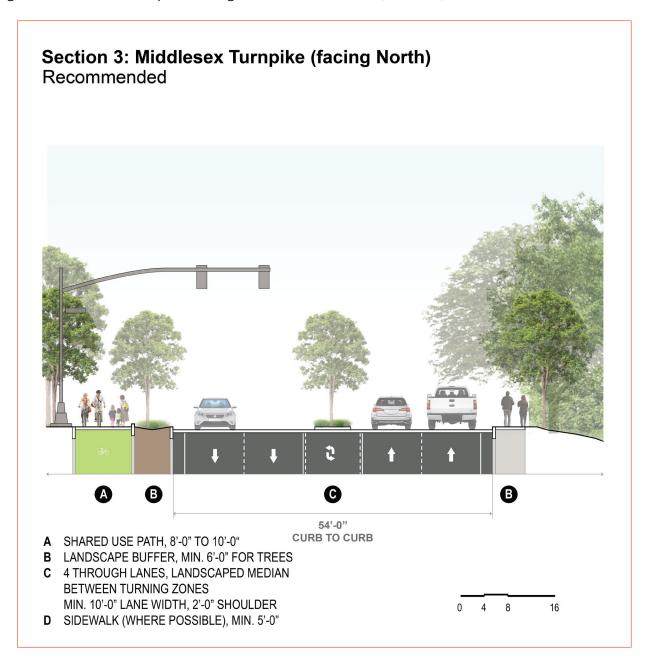
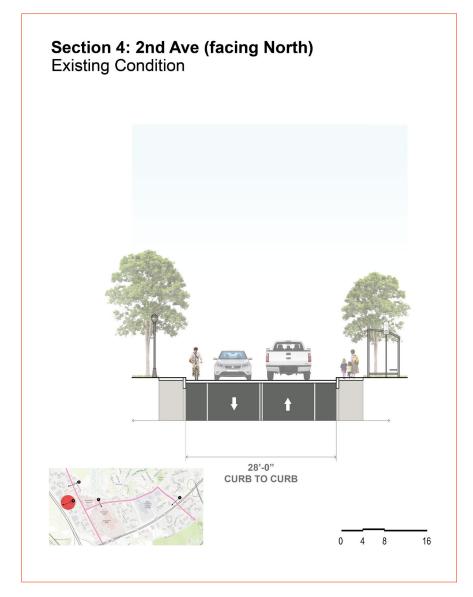


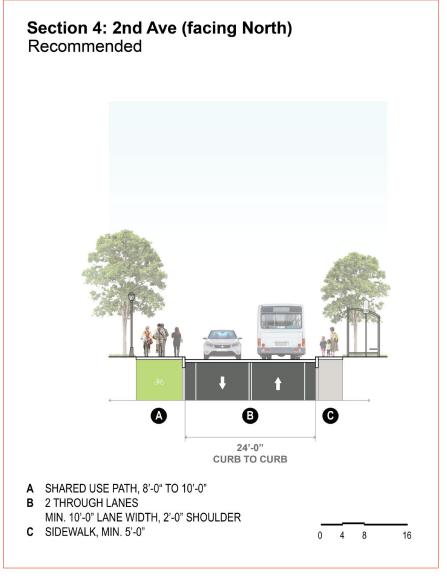
Figure 14. Middlesex Turnpike Existing and Future Conditions (Section 3)



For those portions of Middlesex Turnpike where the topography might not meet PROWAG requirements for a 5% slope, alternative pedestrian routing could be provided via Second Avenue and South Avenue and new local streets to be constructed with redevelopment in the area (Figure 15).

Figure 15. Second Avenue Existing and Future Conditions (Section 4)





Resources for the design of Complete Streets are included in the References and Resources Section.

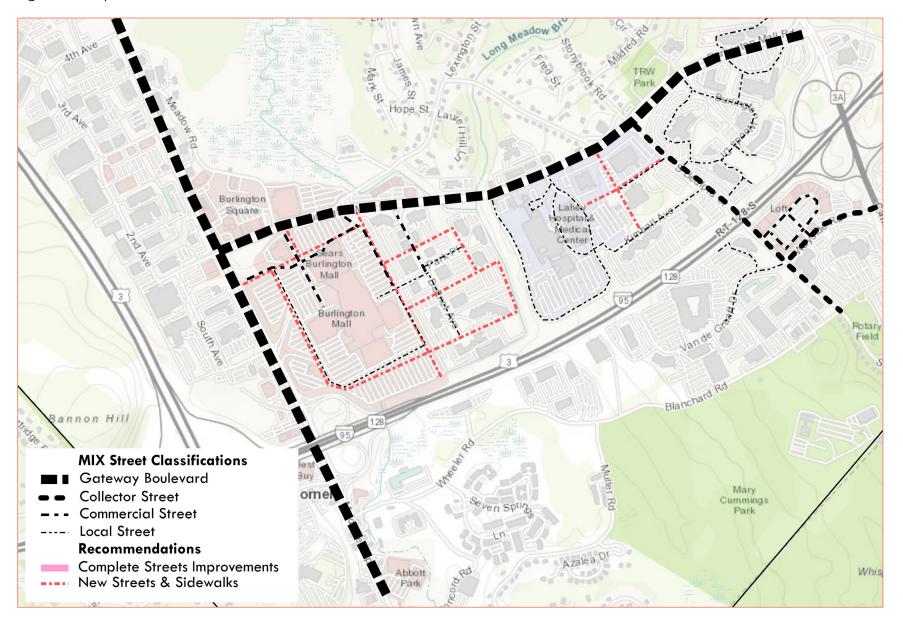
Action Item 5: New Streets and Internal Connections

New streets will primarily be added as larger parcels redevelop. These new streets should follow MIX Form Based Code Amendments for new streets, likely Local Streets. The Town's Local Street standards are that travel lanes should be between 10 and 11 feet. MAPC recommends 10 feet to slow down traffic and create a safer environment for all users. Pedestrian passages between buildings, per the Town's new Code, are also ways to make block sizes at a more human scale and provide connections for people walking/rolling.

If the new street includes a shared-use path, MAPC recommends a minimum of 10 feet width. Alternatively, a separated bicycle lane at sidewalk level could be added, either at sidewalk level or at street level. If at street level, MAPC recommends a physical separation with vehicular traffic. If the street includes on-street parking, the bicycle lane should be between the parking and the sidewalk to provide a safer environment and buffer the cyclists from vehicular traffic and to minimize cyclists being hit by open doors of parked vehicles.

The Mobility Action Plan's vision includes suggested new streets around Burlington Mall and other areas (Figure 16). These new streets are based on previous plans created for the area, and are illustrative only. The locations of new streets and block sizes will be determined through the redevelopment process. The Town may consider a neighborhood plan to guide redevelopment through a sub-district approach.

Figure 16. Proposed New Streets

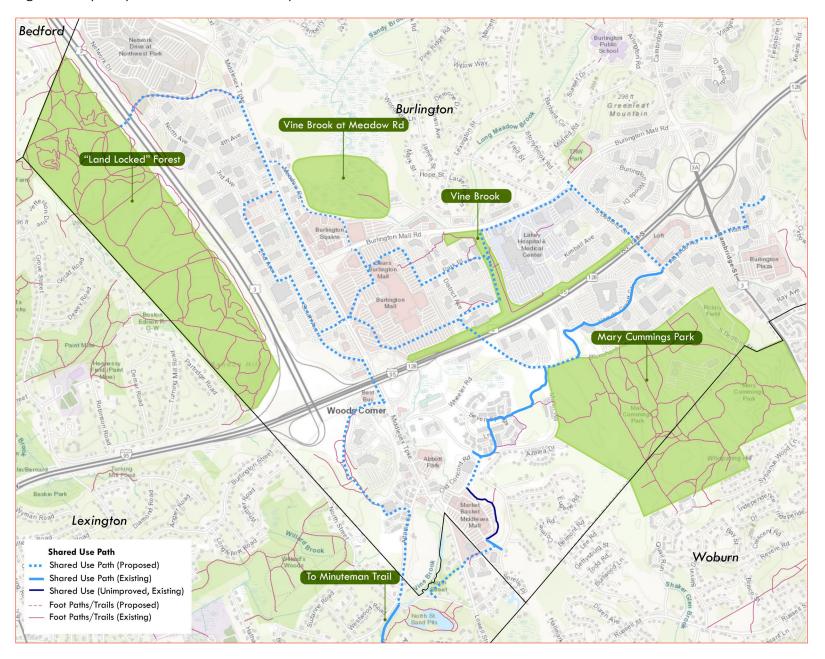


Action Item 6: Open Space and Public Realm

The Greenways, Shared Use Paths, and Foot Trails will provide Burlington residents and workers with connections to several active and passive recreation areas, including the Land Locked Forest, the Vine Brook at Great Meadow Road and beyond, and Mary Cummings Park (Figure 17).

As recommended in recent area plans, the Burlington 128 District can include unique public spaces linked by a network of paths, greenways, and streets. These spaces will act as gathering places for work colleagues, friends and neighbors, places for recreation and pop-up events, and the arts.

Figure 17. Open Space and Public Realm Map



Examples of these public spaces in Burlington include The District and the Nordbloom development along 3rd and 4th Street, which has a series of landscaped spaces that are assets that can be built upon as the Mall Road area redevelops.

Market Street Lynnfield is a good example of a public realm that can be used year-round, including iceskating in the winter. The Watertown Arsenal Street redevelopment has included trails and open-space recreation, as well as smaller pocket areas with hardscape that provide places for seating and gathering. These smaller areas can include open areas that can be used for ad-hoc events like food trucks and performances, to more structured spaces such as playgrounds. Greenways and shared-use paths should include benches, and places for users to gather, such as on places to view the Vine Brook.

The Town should continue to work with developers to find opportunities to expand these smaller public spaces as the Mall Road area evolves, while also linking the larger parks and conservation areas.





Both existing art and benches on Second Avenue and Vine Brook Meadow (above) are examples of open space and public realm that can be connected as part of the Greenway network.





Action Item 7: Transit Options

Improving transit stops in the Mall area and creating one or more mobility hubs are recommended to help with regional connections to Lowell and Greater Boston.

Transit stops should include shelters, preferably for stops served by two or more bus routes. Stops should follow the Town's MIX District Design Guidelines as well as NACTO Transit Street Design Guide.

A Mobility Hub should be added in the area to integrate MBTA, LRTA, and Lexpress bus services. This hub should also include a place for ride hail and taxi pick up/drop off, locations for car share, and an area map with important destinations and connections. The hub should also be on or near the proposed Burlington Greenway network. The Town should consider two options: at or near the Burlington Mall, and near Wegman's.

Burlington Mall: A Mall Road Mobility Hub option should be close to Burlington Mall Road. This location would allow buses to connect both the District and the Mall. as well as close to the development and neighborhoods north of Mall Road. A hub close to Mall Road will help minimize circuitous routing for MBTA and LRTA buses, allowing the bus routes to serve the hub without adding travel time to current routes.





Current bus stops near the Mall (above) and on Second Avenue (below) could be expanded and reconfigured as Mobility Hubs.

Wegman's: An alternative location for a Mobility Hub would be near the Wegman's on Fourth Avenue, where both MBTA and LRTA stop. Coordination with Lexpress would also be needed to see whether the Lexpress B route could be extended to this site.

Transit stop improvements should be added with the reimagining of southern Middlesex Turnpike between Route 128 and Lowell Street. Adding transit stops and pedestrian crossings along this stretch of Middlesex Turnpike will allow Lexpress buses to more easily serve businesses in that area and reduce transit travel time.

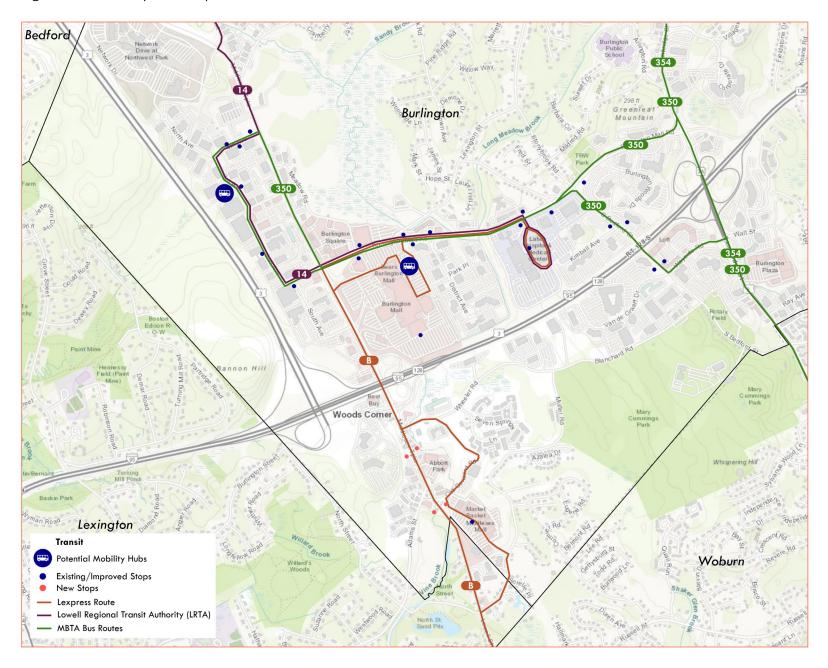


Example of Bus Mobility Hub, Minneapolis

During the development of this plan, stakeholders suggested a shuttle linking the Mall area destinations, perhaps as an interim step while the other recommended improvements are made. Burlington previously operated its own transit system, the B Line, which connected several destinations in the Town.¹⁰ The service operated until 2019, when the Town discontinued it due to low ridership and increasing operating costs. A new service's annual operating costs to the Town would likely be \$200,000 or more for a single route. Lexington, Beverly, and Stoneham have municipally operated transit services that could be examples for Burlington. The Town could also contract with Lexpress to improve the B route connecting Mall area destinations. If the Town is interested in creating a new shuttle loop, the Town should first update its Transportation Demand Management policies to facilitate the service (see Action Item 8).

^{10.} For a description of the former B Line service, see the 2003 Suburban Transit Opportunities Study by the Central Transportation Planning Staff.

Figure 18. Transit Options Map



Action Item 8: Policies and Guidelines

Recent adoption of the MIX District Design Guidelines and revisions to the Town's Zoning Bylaws will support the changes in the Mobility Action Plan. Below are recommendations regarding additional policies and guidelines the Town should consider when implementing the Plan.

- **Greenways, Shared-Use Paths, and Bicycle facilities:** The Town should refer to <u>MassDOT's Separated Bike Lane Planning and Design Guide</u>, NACTO's <u>Urban Street Design Guide</u> for design. Greenway and trail signage should follow MassTrails <u>Bike Wayfinding Design Guide</u>. The Town's design standards should be updated to include shared-use paths at 10 feet minimum, with 2-to-5-foot buffers for utilities, street trees, and signage. Shared-use paths can be at 8 feet if there are right-of-way constraints in specific areas.
- Complete Streets and Safe Streets: The Town should consider refining street standards for maximum 10 foot travel lanes (particularly on local streets), and minimum 6 foot sidewalks (especially on commercial streets). MassDOT's updated Project Development and Design Guide includes standards on complete street elements such as sidewalk width. Street designs should discourage speeding and unsafe behavior by drivers, and should pay particular attention to safety measures at pedestrian crossings and other interactions between vehicles and vulnerable roadway users (people walking, cycling, rolling). The Boston Region MPO is adopting a regional safe streets (vision zero) plan that will include resources on safe streets designs. The Town can work with the MPO after the adoption of the regional Vision Zero Plan (anticipated Fall 2025) on which streets and intersections should be prioritized for treatments.
- The Town adopted a Complete Streets policy in 2018 and a Complete Streets Prioritization Plan in 2019. The Town should revisit the Prioritization Plan to make sure it's in agreement with the priorities of this Mall Road Area Mobility Plan and the regional Vision Zero Action Plan. The Town should also consider undertaking a local Safe Streets study and adopt a Town-wide Vision Zero Action Plan.

- Parking and other Transportation Demand Management (TDM) measures: The Town's updated zoning bylaws includes revised parking minimums and maximums, shared parking guidelines, and steps that the Town's Planning Board can take to waive or reduce parking requirements. The Town should monitor parking utilization in the Mall Road area, and adjust the parking regulations as needed to discourage areas of unused surface parking that make walking, cycling, and rolling more difficult and that encourage more automobile traffic. MAPC is currently updating emerging and best practices on residential and commercial parking, which can assist the Town in applying new requirements for parking.
- The Town should consider updating its TDM to require businesses to join the Middlesex 3 Transportation Management Association (TMA) to collectively work to encourage carpooling and active transportation, and other steps to reduce traffic congestion. Some TMAs in greater Boston operate employee shuttles that connect to satellite parking and/or rail transit stations. These shuttles can make jobs in the area more attractive to workers who may not own their own automobile, and provide an alternative to traffic congestion. Examples of local TDM ordinances include the City of Everett and Woburn.
- Maintenance plans for greenways, trails, shared-use paths and other public realm: The Town should enter into agreements with abutters for shared agreements on maintaining greenways, trails, and shared-use paths that form the Burlington Trail network. These agreements can also include agreements on pocket parks, benches, and other public realm. The maintenance agreements would include activities such as landscaping and snow removal, while repairs and capital improvements would be the responsibility of the Town. The Rails to Trails Conservancy has guidance on trail maintenance best practices, including leases, easements, liability, and working with volunteers and non-profits.
- The Town could also encourage property owners and developers to form Business Improvement District (BID) that would assist in maintenance. Both the Commonwealth and MassDevelopment have guidance and best practices for BIDs.

Next Steps

- 1. Create the first leg of the Burlington Greenway network via a shared-use path along Middlesex Turnpike to Route 128. The Town recently was awarded funding from MassWorks to design multimodal improvements along Middlesex Turnpike extending under Rt. 128. The Town should continue the design and develop this as the first leg of the Town's Greenway network. Other funding options include development mitigation (including funding and mitigation from new 3A/MBTA Communities development proposed along Middlesex Turnpike), and MassWorks.
- 2. Undertake a complete street and safety plan for Middlesex Turnpike from Route 128 to Lowell Street in Lexington. This stretch of roadway has multiple conflicts and is often congested during morning and afternoon peak periods, as well as weekends when many drive to the multiple grocery stores in this area. A more detailed plan is needed to address these challenges. The plan should include recommendations to consolidate driveways and coordinate traffic signals, as well as provide sidewalks or shared-use paths on both sides. A Complete Street transformation of this section of Middlesex Turnpike should also include signalized crosswalks and bus stops to create better connections for walking and transit. This study should be done in coordination with the Town of Lexington, which both operates Lexpress transit and is developing new public housing on Lowell Street south of Middlesex Turnpike.
- 3. Create a portion of the Burlington Greenway network between the Mall and Lahey Hospital. Currently there are disjointed paths and sidewalks around Lahey Hospital, the District, and Burlington Mall. The Town should first create signage to link these areas with the existing paths and sidewalks. The early path would use the current sidewalk on Mall Road, an early step would be to create a ped/bike crossing of the Vine brook between the District and Lahey between Mall Road and Route 128 for a more direct connection. As The Mall redevelops, an expanded and more permanent connecting shared-use path can be constructed.

4. Undertake community innovation sessions with residents, students, and artists for key locations such as the greenway crossing at Mall Road and future bridges over Middlesex Turnpike and Route 3 to envision and develop near-term steps to create distinctive gateways in the Mall Road area. Constructing larger capital projects in the Plan will take time and funding to construct, and will likely occur as part of the redevelopment process. The Town can start this process by undertaking charettes with residents and artists to "dream" what these key locations might look like to generate interest and community feedback for the larger vision for the Mall Road area. The 128 District Plan stated that a new pedestrian bridge spanning the Middlesex Turnpike can create a "distinctive gateway into Burlington." Engaging the community on what this bridge and other distinctive gateways might look like can establish what smaller, nearterm actions can take place to implement this vision, while also creating a network of engaged community members who can help shepherd this Plan through implementation.

Bridge over Middlesex Turnpike, from the Burlington 128 District Plan (2022)



The following table shows the near-term, mid-term, and long-term actions the Town might undertake to implement the recommendations of the Mall Road Area Mobility Action Plan.

Action Area	Near-Term Actions (1 to 3 years)	Mid-Term Actions (4 to 7 years)	Long-Term Actions (7 years +)
1. Greenway Network	Design shared-use path along Middlesex Tpk to Rt. 128 (incl. 2nd St option) Meadow Rd design options (including boardwalk option)	Construct Middlesex Tpk shared-use path Paths on S. Bedford St, Wheeler Rd, Blanchard Rd (connecting Mary Cummings Park)	Greenway connections to Lexington, Woburn Shared-use paths on Mall Rd and through Mall via redevelopment
2. Ped/Bicycle Crossings	Crossings at Meadow Rd (#2 & #4)	S Bedford St /Stoney Brook Rd and Mall Rd (#6 & #7)	Remaining crossings, via redevelopment
3. Key Crossings (Underpasses & Bridges)	Design of underpass improvements at Rt. 128 and Middlesex Tpk interchange as part of shared-use path design (A)	Construct Tpk/Rt. 128 underpass improvements (A) Design workshops for bridges at Mall Road/ Middlesex Tpk (C) Rt. 3 (D) and Vine Brook underpass (B)	New bridges and underpasses through redevelopment
4. Complete Streets	Complete street and safety plan for Middlesex Tpk Quick build right-size demonstration on S. Bedford St	Implementation of complete street improvements on Middlesex Tpk	Remaining complete street improvements through redevelopment

Action Area	Near-Term Actions (1 to 3 years)	Mid-Term Actions (4 to 7 years)	Long-Term Actions (7 years +)
5. New Streets & Internal Connections	Design Greenway network between Mall and Lahey Hospital	New streets & connections via redevelopment	New streets & connections via redevelopment
6. Open Space / Public Realm	Identify places for art, benches, signage, pocket parks, etc. during design of projects	New connections along Vine Brook & Meadow Rd (Great Meadow)	New bridge/link over Rt. 3 to Land locked forest
		Better connections to Mary Cummings Park Public spaces via redevelopment	Public spaces via redevelopment
7. Transit Options	Design workshop for new mobility hub near Wegmans	Evaluate additional transit services (shuttle/Lexpress)	Implement transit hub, improved bus stops
8. Policies & Guidelines	Review/update of complete street policies and priority plan Design safety improvements incl. demonstration projects at key locations	Review and modify and form-based codes as needed Prioritize street safety projects Strengthen TDM policies	Review zoning, codes & policies, as needed to ensure project implementation

References and Resources

Complete Streets Prioritization Plan and Design Guidelines

- Boston Region Vision Zero Action Plan https://bostonmpo.org/visionzero
- Harrison (NJ) Streets for All 2024 Design Guide https://www.njtpa.org/NJTPA/media/Documents/Planning/Regional-Programs/Emerging-Centers/ Harrison%20Complete%20Streets%20Policy%20Implementation/Harrison-Streets-For-All Design-Guide FINAL.pdf?ext=.pdf
- MassDOT Project Development and Design Guide https://www.mass.gov/manual/massdot-project-development-and-design-guide
- MassDOT Separated Bike Lane Planning & Design Guide (2015) https://www.mass.gov/lists/separated-bike-lane-planning-design-guide
- NACTO Transit Street Design Guide https://nacto.org/publication/transit-street-design-guide/
- NACTO Urban Street Design Guide https://nacto.org/publication/urban-street-design-guide/
- U.S. Access Board Public Right-of-Way Accessibility Guidelines https://www.access-board.gov/prowag/complete.html

Greenway/Trail Design Guidelines

- MassTrails Bike Wayfinding Design Guide (2022) https://www.mass.gov/doc/masstrails-bike-wayfinding-design-guide/download
- Rails to Trails Conservancy Trail Building Toolbox (includes planning, design, management and maintenance) https://www.railstotrails.org/trail-building-toolbox/

Complete Streets Prioritization Plan and Design Guidelines

- Cambridge PTDM Ordinance https://www.cambridgema.gov/cdd/transportation/fordevelopers/ptdm
- Everett TDM Ordinance
 https://static1.squarespace.com/static/621fba385738cc25bb282634/t/625894470cc70f4122d204
 fd/1649972295523/TDM+Ordinance+User+Guide+2021+-+Final.pdf
- Woburn Zoning Code (including Woburn Loop Bikeway/Greenway Overlay District)
 https://woburnma.gov/wp-content/uploads/2017/06/Woburn-Zoning-Code-Complete-as-of-5-6-2022.pdf
- 2015 MAPC Transportation Demand Management study https://www.mapc.org/wp-content/uploads/2017/10/TDM-FINAL-REPORT-7_15_0.pdf
- Parking Demand Resources https://perfectfitparking.mapc.org/

Funding Resources

- MAPC Technical Assistance Program (TAP)
 https://www.mapc.org/about-mapc/funding-opportunities/
- CTPS Technical Assistance Program <u>https://www.ctps.org/technical-assistance-program</u>
- Massachusetts Transportation Grants Central https://transportationgrantcentral.mass.gov/s/
- MassDevelopment (planning & financing) https://www.massdevelopment.com/products-and-services/services-by-industry/municipalities/
- Boston Metropolitan Planning Organization (project planning and construction) https://www.ctps.org/

Acknowledgements

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- David Loutzenheiser, Senior Transportation Planner
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- Eric Bourassa, Director of Transportation
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Town of Burlington:

- Melisa Tintocalis, Economic Development Director
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Appendix: Existing Conditions

Burlington Mall Area Mobility Action Plan

David Loutzenheiser, Senior Transportation Planner Compiled by Metropolitan Area Planning Council Updated January 31, 2025

The purpose of this Appendix is to document the existing conditions of the Burlington Mall area, as well as the relevant planning work completed to date. Documenting the existing conditions in the Mall area is an early step in understanding the scope of the transportation challenges that face the area as it redevelops.

The study area for this Mobility Action Plan focuses on the southern corner of Burlington roughly consisting of Route 3A to the east, Burlington Mall Road to the north, I-95 to the south, and Route 3 to the west. A secondary focus of the study is better pedestrian and bicycle connections to redevelopment occurring along the Middlesex Turnpike Road from Network Drive to Burlington Mall Road.

Existing Conditions — Demographics

The study area is within two Census tracts (3324.01 and 3324.02)¹¹. The Census tracts include approximately 33,500 jobs (full and part-time), illustrating the draw of employment clusters including Burlington Mall, The District, Lahey Hospital, Keurig, and other businesses along the Middlesex Turnpike, Mall Road, and Van de Graaff Drive. Figure 1 shows the distance and direction for these workers who commute to the Census tracts in the study area. Most workers commute more than 10 miles, primarily from population centers such as Somerville, Cambridge, and other parts of Greater Boston's inner core: 46% commute 10 to 24 miles, and 15% commute between 25 and 50 miles. One-third commute less than 10 miles, with many of those workers residing in Burlington.

^{11.} These two Census tracts are larger than the study area but represent the smallest geography with available demographic data.

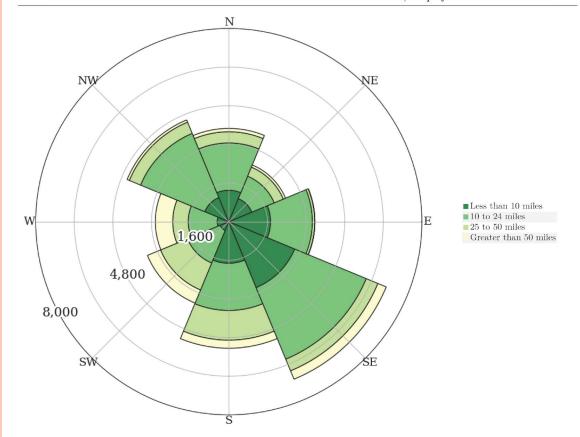
These data suggests that some workers who commute shorter distances in the area could commute via bicycle, e-bike, or walking, if better non-driving infrastructure was in place. Similarly, better transit options connecting to the Red Line could serve a sizable number of workers commuting in from Somerville and Cambridge.

Figure 1. Distance and direction for workers who commute to the Census tracts around the Burlington Mall Road area.

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics for Census Tracts 3324.01 and 3324.02 (Beginning of Quarter Employment, 2nd Quarter of 2002-2021).

All Jobs for All Workers in 2021

Distance and Direction from Work Census Block to Home Census Block, Employed in Selection Area



All Jobs for All Workers in 2021 Distance from Work Census Block to Home Census Block, Employed in Selection Area

	2021	
Distance	Count	Share
Total All Jobs	33,515	100.0%
Less than 10 miles	10,698	31.9%
10 to 24 miles	15,396	45.9%
25 to 50 miles	5,076	15.1%
Greater than 50 miles	2,345	7.0%

The two Census tracts that include the Mall area have far fewer residents compared to the number of jobs in the area — approximately 4,600 residents, or 17% of the Town's population (compared to over 33,500 jobs in the Census tracts). The area is 71% white and 17% Asian and Pacific Islander, which are similar demographics to the entire Town. Of the 1,800 households in the area, over 60% are considered family households (two or more persons).

Of the 2,500 Burlington residents in the area who work, 16% commute to Boston and 15% commute to jobs in Burlington. (The remainder of residents commute to other locations in Greater Boston.) Over three-quarters drive to work, with the remainder working from home, riding transit, walking, and cycling.¹²

Existing Conditions — Land Uses and Zoning

Most of the study area is currently zoned as General Business (primarily focused around Burlington Mall), General and High Rise Industrial, and Planned Development (primarily the District and newer development west of the Middlesex Turnpike). Open Space areas adjacent to the study area include Vine Brook and wetlands north of Burlington Mall Road, Burlington Town Forest west of Route 3, and Mary Cummings Park south of Blanchard Road. Housing is mostly not permitted under the current zoning, apart from Planned Development areas. The Town in 2025 adopted a new mixed-use zoning district, known as the Mall Road Mixed-Use Innovation (MIX) District, for portions of the Mall area with new Form-Based Zoning Code. The Town also in 2024 adopted MBTA Communities Multi-Family Overlay District, which includes three areas adjacent/near Middlesex Turnpike. Both of these recently adopted rezonings are described later in this Appendix.

^{12.} Due to small sample size, some of the commuting data includes significant margins of error. Nonetheless, most resident workers in the study area drive to work.

Currently the Town's parking requirements include the following:

- Minimum of 2 spaces for one-family dwellings
- Minimum and maximum of 1.5 spaces for each dwelling in multi-family dwellings
- Minimum of 4 parking spaces and a maximum of 4.5 parking spaces for every 1,000 square feet of Gross Floor Area of retail use
- Minimum 2.5 parking spaces and a maximum of 3 parking spaces for 1,000 square feet of Gross Floor Area of office use

Burlington, like most municipalities in the US, often require developers to construct more parking spaces than are necessary. Parking minimums are often based on guidelines developed decades earlier, and might not be based upon local empirical data on the actual number of parking spaces used in similar developments. This over-abundance of parking is becoming more prevalent as many employers have embraced hybrid work schedules, and when online shopping and food delivery options are reducing parking demands around retail and restaurants. Moreover, parking oversupply adds to the separation of buildings and land uses, and gives cars priority in an area and makes walking, cycling, and transit less viable and safe. Finally, too much parking adds to construction costs, making affordable housing more difficult, and contributes to water pollution when rain and snow runoff from parking lots flows into nearby creeks and streams. For these reasons, right-sized parking requirements, including shared parking, are critical when rezoning the Mall Road area.

Town staff noted that there has been some resistance to reduced parking requirements from developers in recent rezoning and new projects. Developers have stated that parking availability is a selling point for tenants, particularly in a suburban environment with limited transit options. The Burlington Mall, like many multi-tenant shopping sites, has Reciprocal Easement Agreements (REAs) between Simon Properties and the anchor tenants for shared parking. Similar REAs could be one method to have shared parking, particularly for redevelopments that have multiple uses

(residential, office) where different parking needs can be met with shared parking (for example, the same parking area is used overnight and weekends for residential, and then occupied by office workers during weekdays). MAPC recommends continued evaluation of parking use in new developments to refine parking requirements to minimize parking costs and impacts.

Existing Conditions — Transportation

Streets

The study area consists of few connecting roadways, with Burlington Mall Road and Middlesex Turnpike (5 to 6 lanes) and South Bedford Road (4 lanes) supporting most of the vehicular traffic in the area. Other connectors are Wheeler Road and Blanchard Road at the southern end of the study area and North Avenue/3rd Avenue/Second Avenue, which are mostly 2 lane streets.

Below are the Average Annual Daily Traffic estimates for select streets from MassDOT and other sources from 2022¹³:

- Middlesex Turnpike North of Burlington Mall Road: 23,475
- Middlesex Turnpike at South Avenue/Mall Entrance: 44,244
- Middlesex Turnpike south of South Avenue: 25,220
- Middlesex Turnpike at Wheeler Road: 38,667
- Burlington Mall Road (between Great Meadow Road and Lexington Road): 29,800-31,400
- Burlington Mall Road (at District Avenue): 32,033

^{13.} Counts from MassDOT; The District Modified Master Plan, VHB (February 2023); Traffic Impact and Access Study, NEEP – Renovations and Expansion, VHB (2014); Lahey Hospital & Medical Center, 41 Burlington Mall Road Burlington, Massachusetts Traffic Evaluation, VHB (2014).

- Burlington Mall Road (at Lahey): 24,700-28,000
- Burlington Mall Road (at South Bedford Street): 33,278
- South Bedford Street (at Wayside Road): 22,000
- Blanchard Road and Wheeler Road: 7,870
- Second Avenue: 1,150

The 2022 counts for Burlington Mall Road are similar to 2011 and 2013 counts on the roadway, even with recent expansion of Lahey Hospital and The District. The 2022 counts on Middlesex Turnpike are 10,000 lower than average daily vehicle volumes in 2016. The similar vehicular traffic volumes over the last 10 years are likely due to shifting traffic patterns due to increased online retail purchases and a hybrid/work-from-home changes since 2020.

Segments of Burlington Mall Road and South Bedford Street are candidates for right-sizing (sometimes called a road diet), which would free up space for walking, cycling, rolling infrastructure and would reduce excessive speeding.¹⁴

Examples of similar road changes in the region include:

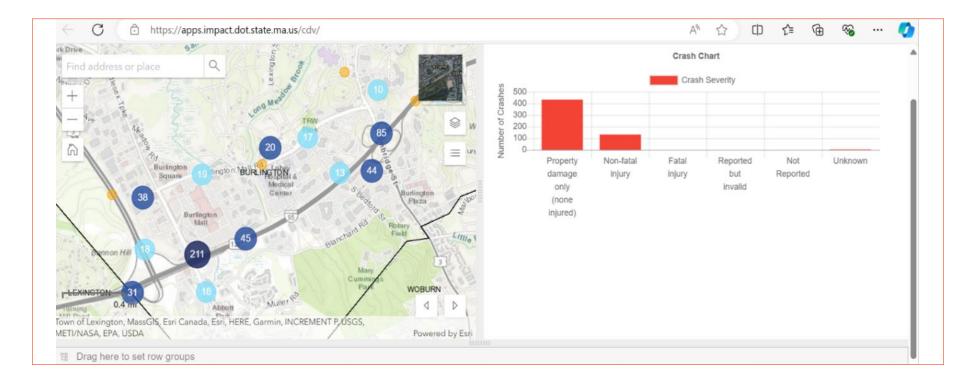
- <u>Centre Street in West Roxbury</u> was a 4-lane street with 15,000 vehicles per day that was
 reconstructed in 2023 to two vehicular travel lanes, separated bicycle lanes, and safer pedestrian
 crossings. The project reduced speeding by 75%, while adding only on average one to two
 minutes to vehicular travel time and did not induce spillover traffic to neighborhood streets.
- Main Street/Route 128 in Reading was changed from four travel lanes to two through lanes and a center turn lane. The changes did not increase travel time for the 12,000 drivers who use the road daily, while reducing the number of crashes.

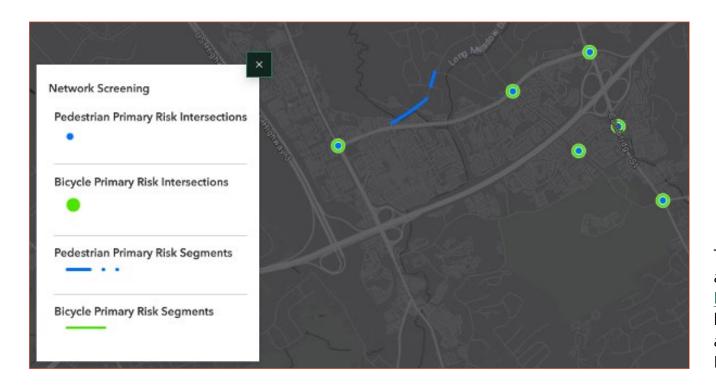
 $^{14. \ \}underline{\text{https://safety.fhwa.dot.gov/road_diets/resources/pdf/fhwasa17021.pdf}}$

 Hammond Pond Parkway in Newton (16,000-21,000 daily vehicles) is being reduced from four lanes with no sidewalk or bicycle lanes, to two travel lanes and a multiuse path to provide safer access to adjacent parkland.

The above examples illustrate that roads of similar size and vehicular traffic to those in the Burlington Mall area have successfully implemented safety and multimodal infrastructure changes, with minimal changes in vehicular travel time.

MassDOT records show approximately 570 crashes in the study area from 2022-2024, with 160 injuries and zero fatalities, with many of the crashes occurring in clusters around interchanges and intersections (see chart and map). MassDOT's Vulnerable Road User Safety Assessment also has identified intersections in the study area as safety risks for those walking/cycling/rolling, including three intersections along Burlington Mall Road (see map).





The Town adopted a Complete Streets Policy in 2018 but has not adopted a Complete Streets Prioritization Plan.

Transit

The Mall area has limited MBTA and LRTA transit service. MBTA Bus Routes 350/351 provide hourly service between the Mall area, Arlington Center and Alewife Station (Red Line). Bus frequencies are every 30 minutes during the morning and afternoon on weekdays. MBTA does not publish ridership data on individual bus routes. However, according to data from Transit Matters, ridership on MBTA routes 350/351 is between 50-65% ridership prior to COVID-19 (2019), even with similar bus frequency and service levels.

Under the MBTA Bus Network Redesign, the Burlington Mall Area will have service every 30 minutes during much of the day with an extended Route 80 that will replace Route 350, and redesigned Route 351.

The Lowell Regional Transit Authority (LRTA) also provides service connecting Lahey Clinic, the Burlington Mall and downtown Lowell via Route 14. Buses operate hourly, Monday through Saturday. Prior to COVID-19, this route had the third highest ridership in the LRTA system; data was unavailable on current ridership.

Relevant Plans

The Town in recently adopted rezonings in portions of the Burlington Mall Road area, and has completed other plans and studies for the area that are shaping redevelopment in the area:

- Burlington 128 District Site Readiness Concept Plan (August 2022)
- Burlington Vine Brook Greenway Path (April 2023)
- Mall Road Rezoning Initiative and MIX Form Based Code Amendments (adopted 2025)
- MBTA Communities Multi-Family Overlay District (adopted May 2024)
- Fiscal Impact Analysis, Burlington Mall Road Rezoning (draft November 2024)

Summaries of these plans and zoning area below.

Burlington 128 District Site Readiness Concept Plan — August 2022

This study identifies the potential for infill development, a vision of a 15-minute neighborhood that includes housing, strategies for public realm investment, and the framework for form-based zoning. Key findings and recommendations from the Concept Plan include:

- Redevelopment and infill, including Burlington Mall Road and south of Rt. 128
- · Vision of 15-minute neighborhood with more housing, public realm, and form-based zoning
- New parks and greenways
- The current street infrastructure is not interconnected, leading to vehicular traffic congestion on major roads; there is a lack of safe and inviting walking, cycling, rolling pathways
 - Vine Brook is asset that could be a future transportation linear path and water/flood storage
 - New pedestrian and greenway connections can be added to connect infill and redevelopment, but almost no recommendations for a new street network

Burlington Mall Road and Middlesex Turnpike should be redesigned to include on-street bicycle lanes and sidewalks with green buffers (but without reduction in width or number of vehicular lanes).

The study area map from the Concept Plan (labeled as Figure 3.1 in the Plan) and the recommended greenways and pathways, including new network of pedestrian paths, a pedestrian bridge from Cinema to Mall over Middlesex Turnpike, and regional greenway connections (labeled as Figure 5.6).



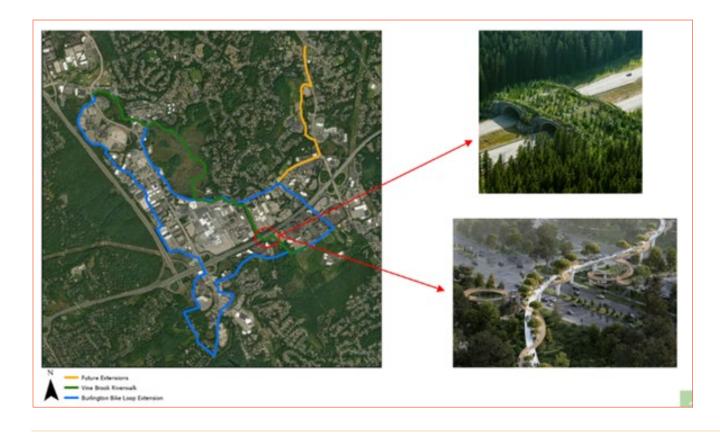
Figure 3.1. The subdistricts within the Route 128 District each have slightly different characteristics that could be clarified as distinct destinations while strengthing connections between



Figure 5.6. Burlington could become known for its system of pedestrian pathways across the district, each with a variety of distinct design characters.

Burlington Vine Brook Greenway Path, April 2023

The study recommends two multi-use paths: (1) a riverwalk along the Vine Brook and (2) a bike path connecting separate parcels through the Mall Road commercial district. The study recommends concentrating on designing the Vine Brook Greenway as the first phase, since this phase had nearly universal approval in a town survey, can be more easily designed, and portions could be constructed prior to redevelopment. The bicycle path would be constructed as the area redevelops and would eventually connect to other regional greenways. Two crucial pieces of this greenway network include redesigning the Middlesex Turnpike/I-95 interchange to create a separate multiuse path, and a new non-vehicular crossing over I-95/Rt. 128 near the Vine Brook (see map).



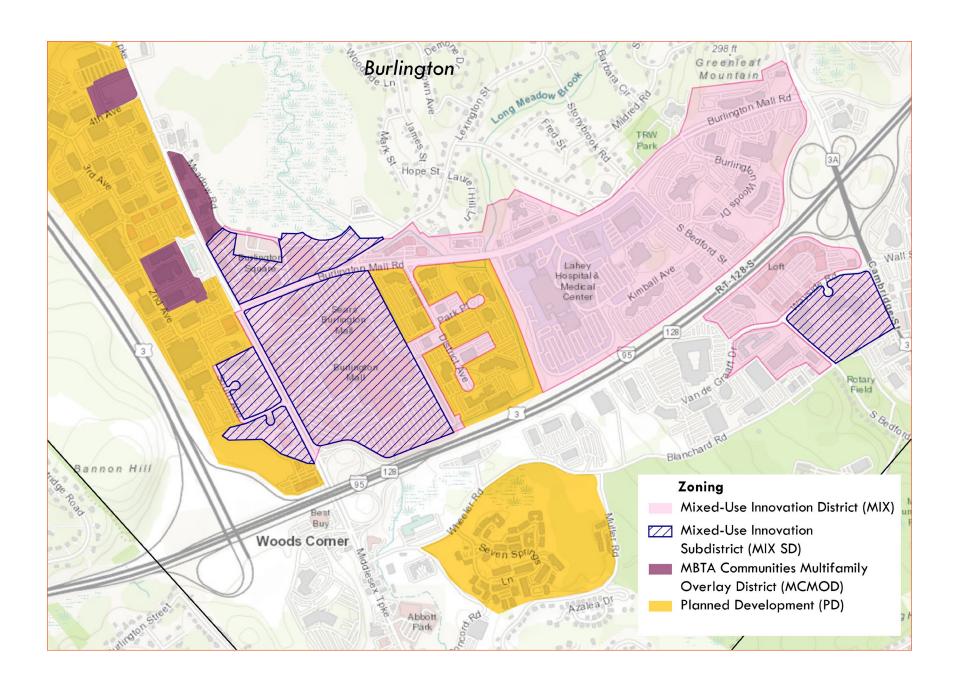
Mall Road Rezoning Initiative and MIX Form Based Code Amendments (adopted January 2025)

The Town is currently creating a new mixed-use district zoning and form-based code to support the redevelopment of the Burlington Mall Road area (MIX District and MIX Subdistrict). In summary, the proposed amendments are intended to:

- 1. "Promote development that is consistent with Burlington's land use plans and initiatives to facilitate new investment and create a vibrant, diverse, connected, and resilient district.
- 2. Guide the physical character of development by providing context-based building and site development standards that reflect scale, design characteristics, and development patterns envisioned for the district.
- 3. Create a public realm with high quality streetscapes, enhanced outdoor recreation areas, and active public and publicly-oriented gathering spaces that enhance development and reinforce pedestrian orientation and multi-modal transportation in the district.
- 4. Provide for a range of business development opportunities using the advantages of access to Interstate 95/Route 128, Middlesex Turnpike (Route 3), Route 3A, and other major town roads.
- 5. Provide opportunities for housing production for a variety of age groups, household types, and income ranges in strategic locations within the MIX District."

The Mix District and Mix Subdistrict (MIX SD) areas are shown below. The new MIX District and Subdistrict includes portions of the proposed Vine Brook greenway in its plan. The proposed form based code that supports the new districts include new street design requirements. The plan and code classifies Burlington Mall Road and Middlesex Turnpike as Gateway Boulevards, Bedford Street as Collector Street, and other streets in the area as Commercial or Local Streets. The code sets form-based standards for streets including streetscape, block length, street frontage, 5 ft minimum sidewalk width; 8 ft minimum for shared paths; on-street and off-street parking (behind buildings). The proposed street design standards for these are shown below following the district map.

The Town adopted the MIX SD rezoning on January 27, 2025.



COMPLETE STREETS

Application.

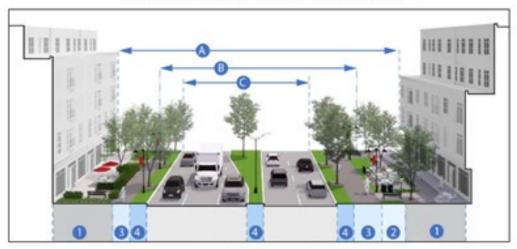
- 1. Applicability.
- 2. Public Infrastructure Projects.
- 3. Private Participation.
- 4. Waiver and Alternative Compliance.

Complete Street Zones and Components.

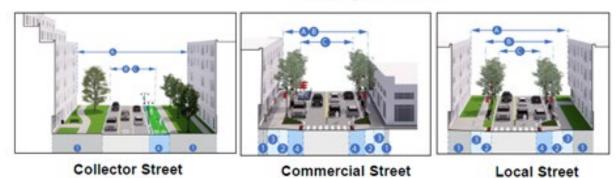
- 1. Complete Street Zones and Components.
- 2. Design Standards.

Complete Street Specification in the MIX Design Standards & Guidelines

COMPLETE STREET ZONES AND COMPONENTS



Gateway Boulevard



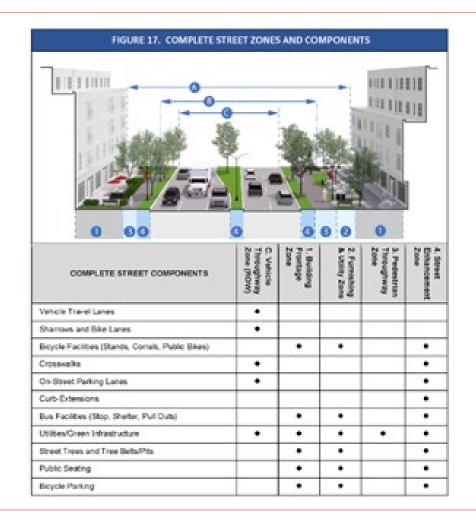
COMPLETE STREETS

Application.

- Applicability.
- 2. Public Infrastructure Projects.
- 3. Private Participation.
- 4. Waiver and Alternative Compliance.

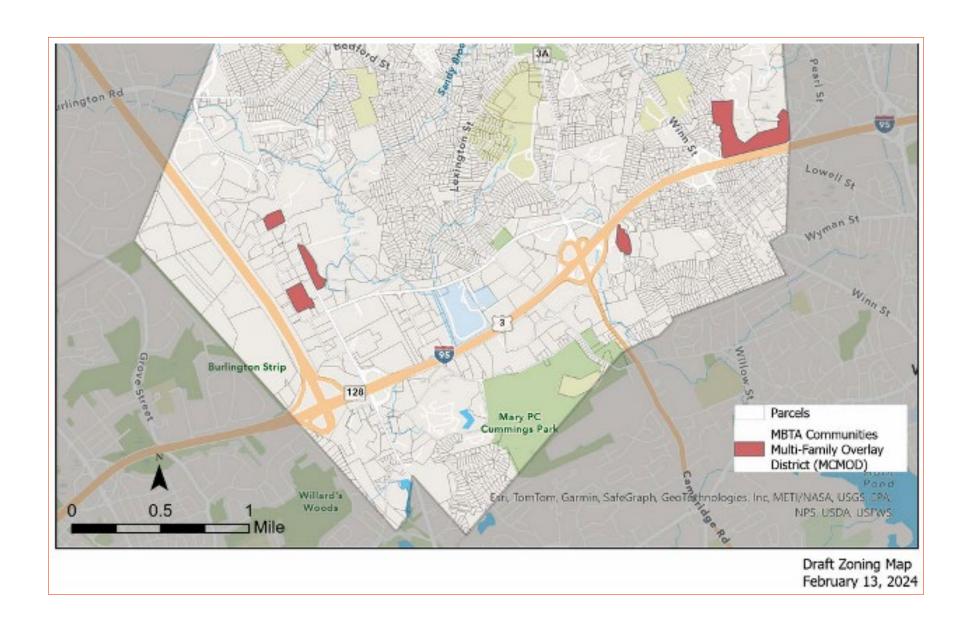
Complete Street Zones and Components.

- 1. Complete Street Zones and Components.
- 2. Design Standards.
 - · Vehicle Throughway Zone.
 - · Streets Enhancement Zone.
 - Furnishing & Utility Zone.
 - Pedestrian Throughway Zone.
 - Building Frontage Zone.
 - Public Realm Activation Standards



MBTA Communities Zoning (adopted January 2025)

Three of the five MBTA Communities districts in Burlington are located near or adjacent to the Middlesex Turnpike, north of Burlington Mall Road. The districts were passed at the May 2024 Town meeting, and are Planned Development areas that will allow multi-family housing.



Fiscal Impact Analysis, Burlington Mall Road Rezoning (2024)

This report found that the proposed MIX District zoning will be a net-positive for the Town, where revenue growth exceeds Town expenses under the mixed-use redevelopment. The authors note that the mixed-use developments in Boston have a lower vacancy rate (14%) than the overall Boston area office vacancy rate (17.4%). The report also notes that there is adequate utility supply and infrastructure capacity, but that more details are needed on the design of Complete Streets in the MIX District.

Mixed-Use Development Trip Generation

During most redevelopment or rezoning proposals, stakeholders often have questions on the impacts of the proposed changes on traffic. For the Burlington Mal Road Area, these factors should be considered in evaluating the traffic generated under different development scenarios.

- 1. Multi-family residential development generates fewer trips than single family residential and retail. According to the Institute of Transportation Engineering (ITE), average daily trips for housing/residential are 9.6 trips for single-family, 6.7 trips for multi-family, and 4.2 for high-rise condominiums. General retail generates 43 daily trips. 15
- 2. Traffic studies for developments often overestimate the amount of traffic generated. Various national studies have noted that the number of trips observed by a new development is often far less than projected or predicted. An analysis by the Boston MPO in 2022 found that in 9 developments in Massachusetts, pre-construction traffic projects overestimated the number of trips by 32%. For example, the mixed-use development in the Hingham Shipyard (residential, office, retail) had observed trips at one-third lower than projected, and the Upland Woods residential complex in Norwood had 30% fewer trips than projected.

15. Mixed-Use Generation Model, Environmental Protection Agency. https://www.epa.gov/smartgrowth/mixed-use-trip-generation-model

3. Mixed-use developments (MXDs) like those proposed in the Burlington Mall Road area rezoning have more "internal capture" trips, including many by walking. Mixed-use developments are more compact, denser, with multiple destinations in closer vicinity and a street grid that allows for easier connections. This design creates "internal capture", where trips occur within the development, with fewer trips using existing arterial streets (also called external trips). A study of 31 mixed-use developments in the US found that mixed-use developments on average had 23% of trips occurring internally, and on average nearly 70% of those internal capture trips were by walking. For these mixed-use districts, over a quarter of the external trips also were by non-automobile modes (walking, cycling, rolling, transit). The authors conclude that "these high percentages suggest the fallacy of applying [traditional] trip generation rates, without adjustment, to MXDs."16

Key Findings and Next Steps

- The area has a high concentration of employment, with around a third travelling fewer than 10 miles, and over 75% drive to work. Improved walking/rolling/cycling infrastructure could allow more people to use modes other than driving.
- Burlington Mall Road and South Beford Street are candidates for right-sizing and multimodal improvements.
- Rezoning and new form-based codes lay good groundwork for an improved mix of uses, and guidelines for multimodal streets.
- High amount of surface parking, and potential oversupply of parking, provides opportunity for infill development.
- Large number of jobs in the study area provides an opportunity for new housing to attract workers that want to live close to their place of employment.

^{16.} Traffic generated by mixed-use developments—A follow-up 31-region study. Guang Tian, Keunhyun Park, Reid Ewing, Mackenzie Watten, Jerry Walters' Transportation Research Part D, December 2019. https://doi.org/10.1016/j.trd.2019.102205

- Possible deficiencies and clarifications that the Mall Area Mobility Action Plan can address:
 - A more defined greenway and pathway network.
 - Possible new local and commercial street connections as the area redevelops.
 - Recommendations on right-sized streets, and crash areas that street improvements should address.
 - Greenway and pathway design standards.
 - Right-sized parking requirements.











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