Main Street Corridor Study

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I. EXECUTIVE SUMMARY

Project Description

The Metropolitan Area Planning Council (MAPC), a regional planning agency serving more than 100 communities in Metro Boston, collaborated with Reading, Wakefield and Melrose to develop a coherent, forward-looking transportation plan. The Main Street Corridor Study looks at ways to improve upon the existing transportation network by reducing automobile traffic while promoting walking, bicycling, and commuter rail and bus transportation.

This study addresses a full range of transit options and focuses on achieving sustainable development and land use objectives. Opportunities to implement compact growth and transit-oriented development strategies that can elevate Main Street to a greener, more accessible multi-modal transit corridor were explored. The Main Street Corridor Study's goals and strategies will improve accessibility, coordinate transportation systems, promote healthy life-style choices, as well as conserve natural resources benefitting Reading, Wakefield and Melrose, and the region as a whole.

Three interactive community forums were held, one in each community, during the course of the planning study. The feedback received from the community forums was central to developing the Main Street Corridor Study's goals, recommendations, and strategies. To develop the Main Street Corridor Study, MAPC worked extensively with the planners of the three communities, conducted numerous site visits and referred to existing Master Plans, Open Space Plans in addition to key regional plans and studies.

Study Area Description

The contiguous suburban communities of Reading, Wakefield, and Melrose share both a Main Street (with two MBTA bus lines, #136 and #137) and a rail transit system, the Haverhill MBTA Commuter Rail Line. The project study area is generally defined as a quarter mile walking distance from Main Street and the adjacent commuter rail line and extends slightly over nine miles through Reading, Wakefield and Melrose. Six commuter rail stations are located within the corridor, three in Melrose, two in Wakefield and one in Reading. The project limits are Reading Depot in the north to the Melrose/Malden line in the south.

Combined, Reading, Wakefield, and Melrose have approximately 77,000 residents. An estimated 26,000 employees work in Reading, Wakefield, and Melrose. At slightly over 50 percent or 14,000, the vast majority of employees are located in Wakefield. Both population and employment is highly concentrated in the downtown areas of all three communities.

Community Forums

Three interactive community forums were held, one in each community, to target the individual needs of each community and to gather input and suggestions from area residents, employees and business owners. A presentation was made at each forum detailing existing conditions and observations pertaining to each community. Employment and residential density maps were provided, as well as a series of photos detailing a variety of conditions in the community, ranging from sidewalk and bicycle accommodations to parking and bus service. After the presentation, keypads were distributed to the forum participants and a series of questions were asked of the meeting attendees themselves. In turn, the forum participants responded to each question by using their keypads. Answers were tallied and immediately displayed on screen for the audience. Following the keypad questions, the meeting attendees organized into breakout groups to discuss local needs and opportunities. There were approximately 25 attendees at each community forum.

Recommendations

Nine goals were developed based on feedback from the three interactive community forums, meetings with the Planners of Reading, Wakefield and Melrose, conducting site visits, and research. Focusing on the needs of those who live, shop and travel along Main Street, the goals and strategies address improving accessibility between places, promoting walking and safety for pedestrians and bicyclists, compatibility with public transit, and less reliance on cars. The nine goals are listed below and are further explained in detail within the report:

- Improve Pedestrian Access and Amenities

- Improve Bicycle Access and Amenities

- Increase Transit Use and Improve Connections

- Advance Environmentally Friendly and Efficient Transportation Alternatives

- Improve Access and Accessibility for Senior Transportation Services

- Increase Signage between Downtowns and Commuter Rail Stations

- Improve Access to Local and Regional Open Spaces and Recreation Destinations

- Ensure Zoning and Development Regulations Coordinate with and Support Alternative Modes of Transportation

- Ensure Transportation Infrastructure Compliance with State and Federal Accessibility Regulations

II. EXISTING CONDITIONS

The three communities have different strengths, priorities, and places of interest. A summary of some of the important transportation-related traits unique to Reading, Wakefield, and Melrose are depicted and described below.

<u>Walking</u>

Sidewalks and access are important to encouraging walking as a form of transportation around communities. Increased pedestrian use encourages vibrant downtown areas, healthy living, and sustainable transportation.

Newly Installed Sidewalk in Downtown Reading Source: MAPC

Reading's Main Street and Downtown area was recently reconstructed in 2009 at a cost of $6.1 million. Downtown Reading provides ample sidewalk space, new brick crosswalks, street and sidewalk lighting, bollards, benches, pedestrian push buttons, and pedestrian walk indications. Generous shade is provided from local trees and landscaping.

Wakefield's Main Street provides ample sidewalk width for pedestrian activity. Due to the significant width of Main Street, pedestrian crossings are wider than in the other communities, and take longer to cross. Main Street provides a few small areas with seating, but the downtown area is lacking in shade and recreational areas. However, nearby Lake Quannapowitt provides plentiful recreational space.

Wide Sidewalk in Downtown Wakefield Source: MAPC

According to recent data, Lake Quannapowitt is frequented by approximately 24,000 visitors daily. Sidewalk width around the Lake perimeter is minimal (approximately 5 feet wide), resulting in some runners and joggers utilizing the roadway in order to pass walkers.

The sidewalk along Main Street in Melrose provides adequate width for a dense area. Generally, the sidewalk width along Main Street in downtown Melrose is narrower than the sidewalk along Main Street in downtown Wakefield and Reading, resulting in a dense urban feel. Pedestrian crossings are well marked and mid-block crossings are provided downtown. Due to a narrower sidewalk width, benches are not provided along Main Street. However, benches can be found near Ell Pond (north of downtown) and at Milano Park at the intersection of Main Street and Grove Street (south of downtown). Shade is well-provided by trees which evenly line Main Street.

Sidewalk in Downtown Melrose Source: MAPC

<u>Bicycling</u>

Bicycle use is quickly becoming a popular alternative to driving. Health benefits, potential for avoiding traffic, ability to travel longer distances than on foot, and its low cost make bicycling a growing trend for commuters, students, and those who cannot afford or choose not to own a car. Encouraging bicycle use through improved access and providing amenities will make for greener communities, increase roadway life spans, decrease repair costs, and minimize vehicular congestion.

Bicycle racks and signal accommodations for bicyclists are well provided in Reading.   In addition to Reading Depot, racks are available at multiple locations in the downtown area, such as at Town Hall. The traffic signals have been designed with bicycle detection, meaning that bicyclists can trigger a green light when no vehicles are present. Bicycle detection encourages bicyclists not to run red lights. Bicycle lanes or sharrows[1] are not provided in Reading.

Bicycle Facilities in Downtown Reading
Source: MAPC

Bicycle Facilities in Downtown Reading
Source: MAPC

A minimal amount of bicycle racks or accommodations for bicyclists are provided in Wakefield. However, Wakefield "Share the Road" signs are present around Lake Quannapowitt, where cyclists and runners often utilize the roadway. Angled parking in the downtown area creates a risk for bicyclists, as visibility for drivers while backing out of the spaces is reduced. Bicycle lanes or sharrows are not provided in Wakefield.

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[1] Sharrows are pavement markings to show the lane should be shared by both cars and bicycles. The word is a combination of both 'share' and 'arrow'. Images of sharrows are shown on page 31 of this report.

Bicycles near Angled Parking in Wakefield
Source: MAPC

"Share the Road Sign" in Wakefield
Source: MAPC

Melrose is lacking in bicycle racks and accommodations for bicyclists. The narrow width of Main Street in downtown Melrose, combined with on-street parallel parking and buses, creates a difficult environment for bicyclists to navigate. The areas north and south of downtown Melrose, however, have adequate width for bicycle accommodations. Bicycle lanes or sharrows are not provided in Melrose.

Bicycles in Melrose
Source: MAPC

Commuter Rail

Reading, Wakefield, and Melrose are located on the Massachusetts Bay Transportation Authority (MBTA) Haverhill commuter rail line, which runs between North Station in Boston and Haverhill Station in Haverhill. The commuter rail provides daily service to approximately 2,700 commuters in the study area. Commuter rail ridership at the stations tends to incrementally increase moving north of the MBTA Oak Grove Station. Oak Grove Station, a rapid transit station, is the northern terminous for the Orange Line service. Table 1 summarizes information about the six commuter rail stations in the study area.

Table 1. Commuter Rail Stations in the Study Area						
	Reading Station	*Wakefield Station*	*Greenwood Station*	*Melrose Highlands Station*	*Melrose Cedar Park Station*	*Wyoming Hill Station*
Community	Reading	Wakefield	Wakefield	Melrose	Melrose	Melrose
Approximate Distance from North Station (miles)[1]	12.0	9.9	8.5	7.5	6.7	6.2
Weekday Boardings[1]	927	773	193	380	230	184
Parking Spaces[2]	113	117	76	77	87	28
Parking Cost[2]	$4	$4	$2	$2	$2	$2
Bicycle Spaces[2]	10	6	6	N/A	N/A	N/A
Approximate Distance from Main Street (miles)[3]	0.21	0.32	0.03	0.45	0.37	0.13
Estimated Walking Time to Main Street (minutes)[4]	5	7	1	9	8	3

N/A – Not Available

Notes
[1] *Ridership and Service Statistics - 2010* (MBTA Blue Book)
[2] MBTA website
[3] Distances measured from station overhang to closest intersection on Main Street. Walking times rounded up to nearest minute.
[4] Assumes 1 mile = 20 minute walk time

Reading has one commuter rail station, referred to as either Reading Station or Reading Depot. At 927 weekday boardings, this commuter rail station carries the highest number of daily commuters in the study area.

Reading Station
Source: MAPC

Wakefield has two commuter rail stations, Wakefield and Greenwood Station. Wakefield Station is located along a busy corridor on North Avenue and carries the second highest number of daily boardings, 773, in the study area. Greenwood Station is located in a residential area along Main Street. At 193 boardings, Greenwood Station has a significantly lower ridership compared to Wakefield Station.

Wakefield Station
Source: MAPC

Greenwood Station
Source: MAPC

Melrose has three commuter rail stations, Melrose Highlands, Melrose Cedar Park, and Wyoming Hill. Ridership at these three stations incrementally increases the further the station is from Oak Grove Station. Melrose Highlands and Melrose Cedar Park Stations have 380 and 230 daily riders, respectively. At 184 daily riders, Wyoming Hill services the fewest number of daily commuters in the study area, most likely due to its close proximity to Oak Grove station.

Melrose Highlands Station
Source: MAPC

Melrose Cedar Park Station
Source: MAPC

Wyoming Hill Station
Source: MAPC

<u>Parking</u>

Ample on-street and off-street public parking is available in Reading, Wakefield and Melrose for existing uses. On-street parallel parking is provided along Main Street in Reading and Melrose. Off-street parking spaces in downtown Melrose are not visible from Main Street as they are located behind buildings.

There are no fees and resident permits are not necessary to park in downtown Reading and Melrose. In Reading, an annual sticker can be obtained for $25 allowing residents to park at Reading Depot. Reading and Wakefield also offer multiple off-street public parking lots in the downtown areas.

Parallel Parking in Reading
Source: MAPC

Parallel Parking in Melrose
Source: MAPC

Both on-street parallel and angle parking are provided along Main Street in Wakefield. There are no fees and resident permits are not necessary to park in downtown Wakefield. An off-street public parking facility is also located near the downtown area.

Angled Parking in Wakefield
Source: MAPC

It is important that the efficient management of both on-street and off street parking resources continues in Reading, Wakefield, and Melrose.

Bus Service

The MBTA bus routes 136 and 137 traverse Main Street through the entire study area, from Oak Grove station to Reading station. Bicycle racks are provided on the buses. Bus stops in the study area do not provide shelter from weather. In 2010, MBTA bus route 136 had 1,072 weekday boardings and route 137 had 975 weekday boardings. Table 2 details the most frequently used stops along the corridor.

Table 2. Most Frequently Used Bus Stops within the Main Street Corridor			
Community	Location	Bus Route	Daily Ridership
Reading	Lincoln Street at Reading Depot	137	65
Wakefield	Main Street at Water Street	136	145
		137	145
	Main Street at Galvin Middle School	136	65
Melrose	Main Street at East/West Wyoming Avenue	131	110
		136	80
		137	90
	Main Street at Grove Street	131	45

Source: MBTA –Total Weekday Trips Inbound and Outbound
Data collected Winter 2009 and Spring 2010.

Reading Station Bus Stop
Source: MAPC

Population and Employment

According to 2010 census data, there are approximately 77,000 residents in Reading, Wakefield, and Melrose. As shown in Appendix A, the population distribution is nearly equal among the three communities. In the study corridor, residential populations are most highly concentrated near the communities' downtowns.

An estimated 26,000 employees work in Reading, Wakefield, and Melrose[2]. At slightly over 50 percent or 14,000, the vast majority of employees are located in Wakefield. Reading and Melrose each have approximately 6,000 employees. As shown in Appendix B, as with population density, employment density is highly concentrated in the downtown areas. It is important to note that employees both come from destinations outside the corridor and reside within the corridor.

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[2] Source: 2009 data from Infogroup.

Crash Data

Between 2007-2009, there were approximately 1,780 reported crashes in the study area. Appendix C depicts the corridor crash locations and concentrations. Approximately 40 percent of the crashes were in Wakefield, 35 percent in Melrose, and 25 percent in Reading. There were a total of seven fatalities. Of the total number of crashes, 29 involved pedestrians and 21 involved bicyclists. While there are many crashes in the study area, no locations have been identified by the Massachusetts Department of Transportation in their Top High Crash Locations Report. This report includes the state-wide top 200 high crash intersection locations using crash data from 2007-2009.

Sidewalk Coverage

The majority of the study area corridor has sidewalks along both sides of the street. However some locations have sidewalks along only one side of the street, or no sidewalks at all. For example, sidewalk coverage could be improved in the residential areas east of downtown Reading and in a few scattered locations in Wakefield and Melrose. The maps in Appendix D, illustrate the corridor's comprehensive sidewalk coverage.

III. PUBLIC PROCESS

Three interactive community forums were held, one in each community, to target the individual needs of each community and to gather input and suggestions from area residents and employees. A presentation was made at each forum detailing existing conditions and observations pertaining to each community. Employment and residential density maps were provided, as well as a series of photos detailing a variety of conditions in the community, ranging from sidewalk and bicycle accommodations to parking and bus service.

After the presentation, keypads were distributed to the forum participants and a series of questions were asked of the meeting attendees themselves. In turn, the forum participants responded to each question by using their keypads. Answers were tallied and immediately displayed on screen for the audience. A summary of the keypad results is described below and the complete results are in Appendix E. Following the keypad questions, the meeting attendees organized into breakout groups to discuss local needs and opportunities. There were approximately 25 attendees at each community forum.

The forums were held on the following dates and locations:

Reading
Tuesday, October 4, 2011 7:00-9:00 pm
Reading Senior Center, 49 Pleasant Street

Wakefield
Monday, September 19, 2011 7:00-9:00 pm
Americal Civic Center, 467 Main Street

Melrose
Wednesday, September 21, 2011 7:00-9:00 pm
Melrose City Hall, 562 Main Street

Keypad used during Community Forums

Key Pad Results

In general, the vast majority of the community forum participants were local residents, with some additional local employees and business owners present. While the community forum participants generally utilize the MBTA commuter rail and bus service less than one time per month, the majority of forum participants responded that they frequent Main Street almost daily. While 85 percent of forum participants live within a 20 minute walk (one mile) from Main Street, the most popular mode of transportation to access Main Street is a personal vehicle. With a response of almost 80 percent, forum participants expressed a strong interest in owning an electric or hybrid vehicle and nine percent reported that they already own one. The forum participants also prioritized improvements to sidewalk access and conditions, pedestrian amenities, and bicycle amenities by responding to keypad questions.

<u>Breakout Sessions</u>

The breakout sessions allowed all forum participants the opportunity to discuss local needs and to prioritize locations for improvements. The breakout sessions were small groups of approximately four to six participants. MAPC staff and the city/town planners facilitated the breakout group discussions. Each breakout group was asked to discuss the following three topics:

1. *Opportunities to Expand & Link Services with Bus, Rail, Walking and Bicycling*
2. *Where to Improve Pedestrian & Bicycle Connections*
3. *Where to Locate New Technologies and Ideas (car sharing, electric vehicles)*

At the Reading Community Forum, forum participants raised the following key issues:

- Increase off-peak bus and commuter rail service.
- Lower parking rates at commuter rail stations during off-peak times.
- Improved bus and pedestrian access at Walkers Brook Road, especially access to Lake Quannapowitt.

Town Planner Jean Delios (standing, center) at Reading Forum
Source: MAPC

At the Wakefield Community Forum, forum participants raised the following key issues:

- Enhance the connection from Lake Quannapowitt to downtown Wakefield.
- Promote new programs such as car sharing, bicycle sharing, and electric charging stations.
- Provide bicycle facilities to access Oak Grove Station.

Town Planner Paul Reavis (left) at Wakefield Forum
Source: MAPC

At the Melrose Community Forum, forum participants raised the following key issues:

- Improve lighting and provide more bicycle parking at Oak Grove Station since many Melrose residents utilize Oak Grove Station more frequently than the commuter rail.
- Improve pedestrian connections in the vicinity of Ell Pond and at the nearby Melrose-Wakefield Hospital.
- Improve bicycle accommodations on Main Street and on adjacent roadways, such as Lebanon Street, near the downtown area where Main Street is too narrow to accommodate cyclists.

City Planner Denise Gaffey (standing) at Melrose Forum
Source: MAPC

<u>Goals and Strategies</u>

Goals and strategies were developed based on feedback from the three interactive community forums, meetings with the planners of Reading, Wakefield and Melrose, site visits, and research. Focusing on the needs of those who live, shop and travel along Main Street, the goals and strategies were developed to improve accessibility between places, promote walking and safety for pedestrians and bicyclists, encourage the use of public transit, and decrease reliance on cars.

The Main Street Corridor Study's nine goals are:

- Improve Pedestrian Access and Amenities

- Improve Bicycle Access and Amenities

- Increase Transit Use and Improve Connections

- Advance Environmentally Friendly and Efficient Transportation Alternatives

- Improve Access and Accessibility for Senior Transportation Services

- Increase Signage between Downtowns and Commuter Rail Stations

- Improve Access to Local and Regional Open Spaces and Recreation Destinations

- Ensure Zoning and Development Regulations Coordinate with and Support Alternative Modes of Transportation

- Ensure Transportation Infrastructure Compliance with State and Federal Accessibility Regulations

Strategies and recommended steps to achieve the goals were also developed and are described in detail in the following section and outlined in Appendix F. The recommended strategies for Reading, Wakefield and Melrose to implement jointly are:

o Increase visibility of pedestrian roadway crossings

o Establish Community Committees to Advocate for Healthy Communities and Pedestrian/Bicycle Infrastructure

o Create a bicycle network for the corridor

o Promote the addition of multi-use recreational bicycle paths and rail trails

o Explore a railroad right-of-way for bicyclists along the Haverhill Line

o Promote a safe environment for bicyclists

o Provide shelter for transit users

o Form or become part of a local Transportation Management Association (TMA)

o Encourage seniors to use public transportation more frequently

o Improve directional signage between Main Street and the commuter rail

o Install signage that is informative and welcoming

IV. GOALS AND STRATEGIES

The Main Street Corridor Study's nine goals are:

- Improve Pedestrian Access and Amenities

- Improve Bicycle Access and Amenities

- Increase Transit Use and Improve Connections

- Advance Environmentally Friendly and Efficient Transportation Alternatives

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- Ensure Zoning and Development Regulations Coordinate with and Support Alternative Modes of Transportation

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The goals, and strategies to implement these goals, are discussed in detail in this section.

Goal: Improve Pedestrian Access and Amenities

Objective - Increasing pedestrian activity will increase mobility while decreasing single occupancy vehicle use.

Increased pedestrian use encourages vibrant downtown areas, healthy living, and sustainable transportation. The majority of residents along the corridor currently prefer to utilize personal vehicles to access Main Street, even though many are within a short walk. Providing an environment that accommodates pedestrian access and amenities will encourage the reduction of single occupancy vehicle use and promote healthier lifestyles. Obstacles to increasing pedestrian use are often high vehicle speeds, a lack of pedestrian accommodations, perceived safety, and comfort on sidewalks and in crosswalks.

Strategy: Increase visibility of pedestrian roadway crossings

Implement roadway and lighting improvements in order to promote pedestrian safety.

Install raised crosswalks (also known as "speed tables") to improve pedestrian accessibility and reduce traffic speeds. Raised crosswalks provide pedestrians with an elevated roadway crossing, making the pedestrian more visible than in a standard crosswalk. Working as a traffic calming device, the elevation change requires the driver to drive more slowly. When raised crosswalks are provided, accessibility is improved, particularly for people in wheelchairs and with baby carriages. Raised crosswalks are especially advantageous in locations where there are high volumes of small children and are recommended near schools, libraries, and playgrounds. As raised crosswalks slow

A Raised Crosswalk or "Speed Table"
Location: Seattle, Washington
Source: Seattle Department of Transportation

vehicles to a near stop, they are generally not recommended for downtown areas or major collector roads unless vehicular speed and pedestrian crashes are a major issue. Special care needs to be taken when using snow plows on raised crosswalks, as plows can damage the elevated pavement.

Maintain crosswalk pavement markings. To inform pedestrians where to cross safely and to alert drivers where to reduce speeds, highly visible pavement markings are important for pedestrian safety. The U.S. Department of Transportation, Federal Highway Administration recommends the continental or ladder design for crosswalks as research indicates that it is most visible to drivers. In addition to being highly visible, crosswalk markings can also be creative, multicolored, and emulate textured paving.

A Crosswalk with a Continental or Ladder Design
Location: Melrose
Source: MAPC

Faux Cobbled Pedestrian Crossing
Location: Downtown Boston, MA
Source: MAPC

Consider installing lighted crosswalk signage and/or flashing lights in crosswalks. A variety of treatments are available to increase crosswalk visibility. One strategy is to install flashing lights on crosswalk signage. The flashing lights are activated by a pedestrian push button, or can flash for a specific period of time. For a more enhanced lighting alternative, flashing lights can be embedded in a crosswalk. The crosswalk lighting is activated by sensors in the crosswalk and flashes only when pedestrians are using the crosswalk. Visible day and night, flashing signage can be used in a variety of locations, although it is best used sparingly along corridors to increase its effectiveness. Crosswalk lighting can be effectively used along corridors to decrease vehicle speeds and provide safer crossings for pedestrians. Locations such as schools, colleges, sports facilities (especially those with evening games), and senior housing benefit greatly from crosswalk lighting.

Flashing LED Crossing Sign
Source: Traffic Safety Corp.

Pedestrian Activated Flashing Crosswalk and Signage
Location: Medford Square, MA
Source: Paul Reavis, Wakefield Town Planner

Pedestrian Activated Flashing Crosswalk and Signage
Location: Medford Square, MA
Source: Paul Reavis, Wakefield Town Planner

Ensure street lighting is functioning and effective. According to the Federal Highway Administration, effective street lighting can decrease pedestrian crashes by approximately 50 percent. Street lighting, necessary for all modes of transportation, provides visibility and safety during non-daylight hours. The height of street lights and spacing between street lights needs to both clearly illuminate pedestrians and the roadway.

Lighting must be maintained along with all other transportation infrastructure. Appropriate maintenance includes replacing bulbs, upgrading to energy-efficient LED (light-emitting diode) street light technology, and removing obstructions to light by pruning trees and eliminating low hanging wires.

Street and Sidewalk Lighting
Location: Jamaica Plain, MA
Source: MAPC

<u>Strategy: Narrow roadway widths for shorter pedestrian crossings and reduced vehicular speeds</u>
Wider roadways encourage higher vehicular speeds[3]. The likelihood of a pedestrian crash resulting in a fatality increases exponentially with higher vehicular speeds. According to the United States Department of Transportation, if a vehicle is traveling at 20 miles per hour (MPH), the chance of a collision resulting in a pedestrian fatality is five percent but when vehicular speeds reach 50 MPH, pedestrian fatality rates increase to 100 percent[4].
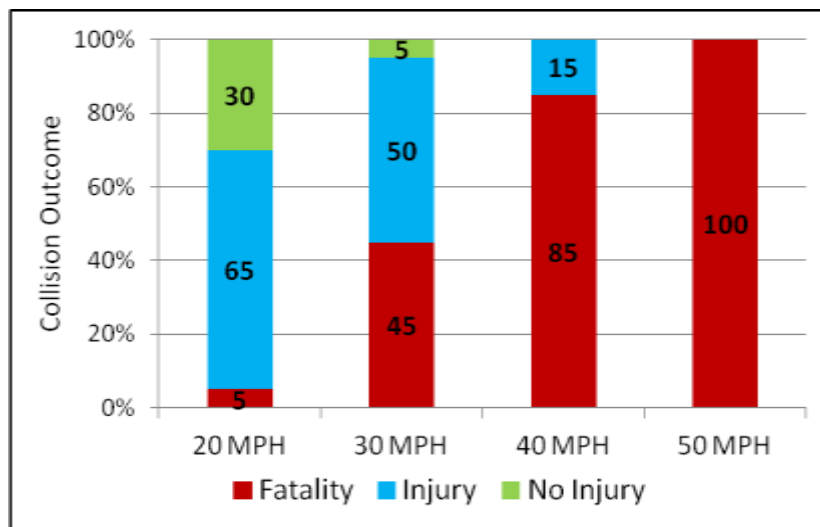
Impact Speeds, Pedestrian Fatality and Injury
Source: Effect of Impact Speed on Pedestrian Fatality and Injury (U.S. DOT, Leaf WA, Preusser DF, 1999).

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[3] *Design Factors that Affect Driver Speed on Suburban Arterials* (Texas Transportation Institute, 2000) states that a 1 foot reduction in roadway width equates to a 3 mile per hour decrease in vehicle speed.
[4] *Effect of Impact Speed on Pedestrian Fatality and Injury* (U.S. DOT, Leaf WA, Preusser DF, 1999).

Where appropriate, lane widths along Main Street and adjacent roadways should be narrowed to reduce vehicle speeds and make roadway crossings shorter and safer for pedestrians. Assuming a walking speed of 3.5 feet per second[5], if a pedestrian crossing was narrowed by 10 feet, the time a pedestrian is exposed in a crosswalk will decrease by nearly three seconds.

Install curb extensions (also known as "bump outs") where appropriate to slow traffic. Curb extensions narrow pedestrian crossing distances by extending the sidewalk into the vehicular parking lane. Since pedestrians are crossing from an elevated location on an extended sidewalk, rather than on the street level, curb extensions also provide enhanced visibility. Additional benefits of curb extensions include preventing drivers from parking in crosswalks, minimizing pedestrian crossing times at signalized intersections (which can be reallocated as green time for vehicles), and providing additional space for bicycle parking or landscaped areas. Curb extensions should be placed in areas with high volumes of pedestrian crossings and where pedestrian visibility is an issue. It should be noted that snow removal in areas with curb extensions can be more difficult as additional maneuvering of the plowing equipment is required.

A Real Time Speed Indicator Sign
Location: Melrose
Source: MAPC
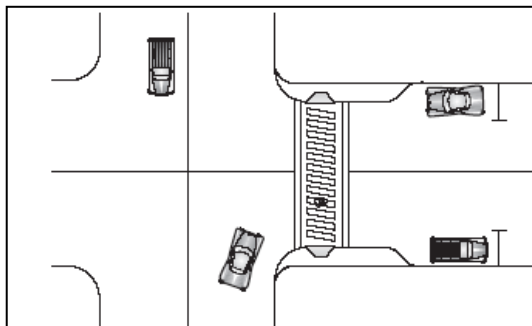
Curb Extensions or "Bump Outs" Shorten the Pedestrian Crossing Distance
Source: Cambridge Pedestrian Plan, 2000

Curb Extension
Location: West Roxbury, MA
Source: MAPC

Install pedestrian medians where appropriate. In areas with wide curb-to-curb widths, medians can be installed in the roadway to create a protected refuge for pedestrians. *The Project Development and Design Guide* published by the Massachusetts Department of Transportation (2006) specifies that roadway widths generally should not exceed 11 feet. Therefore, in areas with wider vehicular travel lanes, space can be reallocated from the roadway to provide a pedestrian median.

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[5] The 2009 *Manual on Uniform Traffic Control Devices* (MUTCD) assumes a walking speed of 3.5 feet per second.

Medians are installed between opposing lanes of traffic and break pedestrian crossings into two segments. With a median, pedestrians do not need to wait for gaps in both directions of traffic to cross the entire street, as the refuge area provides the opportunity to cross one direction of traffic at a time. Medians are generally designed as raised islands with curbing to separate vehicular traffic from pedestrian refuge areas. Medians can be fenced or landscaped along a corridor to require pedestrians to cross at crosswalks, rather than at unmarked crossings. Most appropriate for wide roadways with long pedestrian crossings, medians are generally located at unsignalized intersections or mid-block crossings.

Wide Street Width Increases Pedestrian Crossing Times and Encourages Higher Vehicular Speeds
Location: Downtown Wakefield
Source: MAPC

New pedestrian medians would be most appropriate in Wakefield, as the curb-to-curb width in some areas is over 80 feet, whereas street widths in Melrose and Reading measure 42 feet and 59 feet, respectively. Specifically, a landscaped median could be installed from Lake Quannapowitt extending into Downtown Wakefield. This median will serve the dual purpose of beautifying the downtown area as well as encouraging people who visit the Lake to explore Wakefield's downtown.

Fenced Medians Guide Pedestrians to Designated Crossing Locations
Location: Downtown Boston, MA
Source: MAPC

Landscaped Medians Guide Pedestrians to Designated Crossing Locations
Location: New York, New York
Source: Street Design Manual, New York Department of Transportation, 2009

Strategy: Improve access and pedestrian conditions at Lake Quannapowitt

Lake Quannapowitt is a regional destination and is the center point of recreation in Wakefield. Measuring approximately three miles in circumference, the Lake offers a variety of activities such as walking, running, bicycling, rollerblading, boating and fishing. According to Wakefield's Open Space Plan, a survey conducted in August, 1998 found that the Lake had 24,000 daily visitors. Due to narrow sidewalk widths, visitors utilize the roadway and vehicle lanes to run or jog around the Lake, an extremely unsafe practice that should be discouraged. Many local residents opt to drive to the Lake rather than walk due to poor sidewalk connections and elevation changes. Improving pedestrian access and conditions at the Lake will encourage additional pedestrian activity.

Provide consistent and wider sidewalks around the perimeter of Lake Quannapowitt to discourage pedestrian use of the roadway. On Main Street to the east of the Lake, existing sidewalks measure 5 feet, with a 3-foot adjacent grass strip plus curbing. The grass strip is well-worn from pedestrian use, as the sidewalk is not wide enough to accommodate the high volumes of pedestrian traffic. Due to the narrow sidewalk width, pedestrians and runners utilize the vehicle travel lanes and parking lanes for recreational use – a practice that can be discouraged by providing wider sidewalk accommodations.

Excess Parking Lane Width Can be Reallocated for Pedestrian Space
Location: Lake Quannapowitt, Wakefield
Source: MAPC

The existing roadway width (curb to curb) measures 34 feet – including two 12.5-foot vehicular travel lanes and a 9-foot parking lane. No bicycle lanes are provided, although some bicyclists utilize the parking lane when it is not occupied by vehicles. Reallocating the roadway width to provide two 11-foot vehicular travel lanes with bicycle sharrows, and an 8-foot parking lane would allow for an additional 4 feet of sidewalk width. The sidewalk could be widened to form a consistent 9-foot (5 feet existing width plus 4 feet of new width due to reallocation of roadway) pedestrian path. The worn 3-foot grass strip should be redesigned as a brick buffer between the parked vehicles and sidewalk (to provide space for passenger doors to open). The 9-foot sidewalk space plus the 3-foot brick buffer provides 12-feet of pedestrian width, more than double the existing pedestrian walking space.


Well-Worn Desire Line Adjacent to Sidewalk
Location: Lake Quannapowitt, Wakefield
Source: MAPC

Joggers Utilizing Roadway Due to Inadequate Sidewalk Width
Location: Lake Quannapowitt, Wakefield
Source: MAPC

Sidewalks around the remaining perimeter of the Lake (Church Street, North Avenue, and the Quannapowitt Parkway) generally measure 5 feet and should be widened where possible to a 9-foot minimum sidewalk. The existing and potential cross sections are shown below.
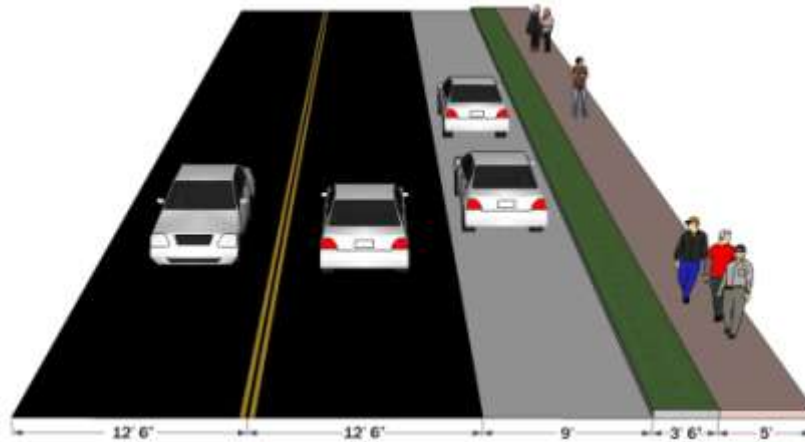
Existing Cross Section: Wide Travel and Parking Lanes, Grass Buffer, 5' Sidewalk
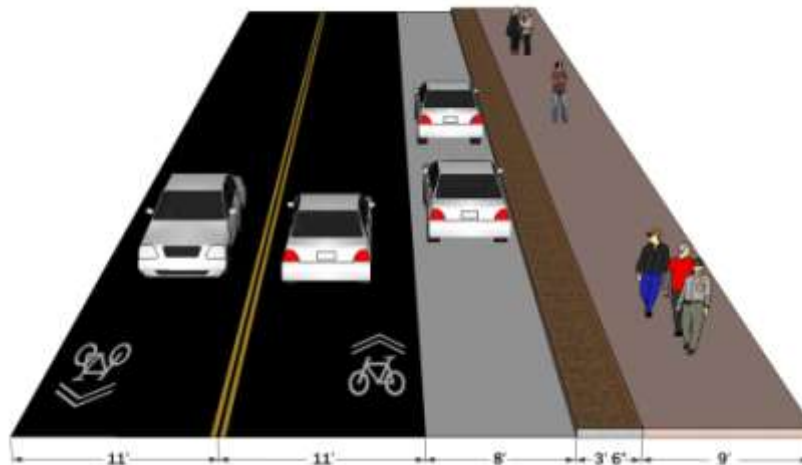
Potential Alternative Cross Section:
Narrower Travel Lanes with Sharrows, Parking Lane, Brick Buffer, 9' Sidewalk
Source: MAPC

Provide an improved and/or safer pedestrian and bicycle connection to Lake Quannapowitt from Downtown Wakefield and Reading Center. As the Lake is a popular destination for the residents of Wakefield, Reading and Melrose as well as surrounding communities, safe pedestrian access to the Lake from all directions is essential. Access from the north and south is primarily through dense residential and commercial areas along connector and arterial roadways, while access from the east and west is mainly through quiet residential areas on local roads. Special attention should be given to connections from Wakefield's downtown (south of the Lake) and Reading Center (north of the Lake). Wakefield's downtown area is a short distance from the Lake (approximately ½ mile, or a ten minute walk), but the visual connection is lost due to the wide roadway and lack of landscaping connecting the downtown to the Lake and adjacent parks. Reading Center is located approximately one mile (or a 20 minute walk) from the Lake, but the two are separated by Route 128. Pedestrian access from Reading is along Walkers Brook Drive and North Avenue,

roadways with high vehicular speeds, inconsistent sidewalks, dangerous pedestrian crossings, and a poorly-lit and maintained pedestrian route under Route 128.

Pedestrian Access between Downtown Reading and Lake Quannapowitt (under I-95)
Location: Reading
Source: MAPC

Challenging Pedestrian and Bus Access on North Avenue
Location: Reading
Source: MAPC

Prioritize Pedestrian and Bicycle Activity along Main Street, Walkers Brook Road and North Avenue. Reducing lane widths, adding bicycle lanes, providing wide and well-maintained sidewalks and crosswalks will all encourage pedestrian and bicycle access from both Downtown Wakefield and Reading Center. In addition, installing signage, maintaining well-lit roadways and underpasses, and providing functioning pedestrian push buttons for protected signalized crossings along the corridor will all contribute to increased pedestrian and bicycle access.

Create walking routes extending from the Lake that will draw people to Downtown Wakefield and Reading Center. As mentioned earlier, many users of the Lake walk, jog or run around the Lake's three-mile perimeter. Providing an alternative longer path, such as a 4- to 5-mile route extending into downtown Wakefield and/or Reading Center could help invigorate both downtowns with new visitors. This path, similar to Boston's "Freedom Trail", could showcase Wakefield's downtown and/or its history as a wicker manufacturer (the Town of Wakefield was named after Cyrus Wakefield, who established Wakefield's wicker furniture company) and history of Reading including how it was first established as a settlement on the south shore of Lake Quannapowitt (now Wakefield) in the mid 1600's. Distance markers and directional plaques would be provided along the path which could be named "Wakefield Walks" or "Wicker Walk."

Freedom Trail and Directional Plaque
Location: Downtown Boston, MA
Source: MAPC

Trail Marker at Horn Pond
Location: Woburn, MA
Source: MAPC

Replace Lake Quannapowitt's Metal Guard Rails with Wooden Guard Rails.
Metal guard rails are sharp and can be hazardous to pedestrians and bicyclists. Additionally, wooden guard rails are a more attractive alternative. The natural appearance of wooden guard rails would be more compatible with the surrounding area.

A Wooden Guard Rail
Location: Sudbury, MA
Source: MAPC

Mark distances around the Lake for runners and walkers to track their progress. As the Lake is often used for exercise, providing distance markers would assist runners and walkers to track their progress.

As visitors to the Lake generally start at different access points, providing general distance information, such as a marker every half mile, will be beneficial. Due to the Lake's narrow sidewalk width, the majority of users travel in the same clockwise direction around the Lake to minimize the need for passing. For that reason, distance markers could be displayed to encourage this trend and minimize pedestrian conflicts. Signage or a pattern on the ground detailing the route around the Lake (especially in the multiple-path area to the south of Lake Quannapowitt along Church Street) would be beneficial for infrequent or first-time visitors.

Trail Distance Marker
Location: Peterson Air Force Base, Colorado
Source: Peterson Air Force Base

Close Main Street to vehicular traffic (on a trial basis) for recreational use on a weekend or during a fair. Closing Main Street on a trial basis, on Sunday mornings for example, could further increase activity at the Lake by providing a safe location for recreation and exercise.

Extend Wakefield's landscaping further into downtown. Lake Quannapowitt and surrounding parks are well-maintained and beautifully landscaped. However, the landscaping terminates in downtown Wakefield. As a result, awareness of the Lake's close proximity to downtown Wakefield is minimized. If landscaping were extended into the downtown, the connection to the Lake will be promoted and pedestrian and bicycle access will increase.

Northbound View Showing a Well-Landscaped Area South of Lake Quannapowitt
Location: Downtown Wakefield
Source: MAPC

Opposite Southbound View Showing Excessive Roadway Width and Narrow Landscape Median
Location: Downtown Wakefield
Source: MAPC

<u>*Strategy: Provide functioning and accurately timed traffic signals*</u>

In addition to controlling vehicular travel, traffic signals also designate when pedestrians are able to safely cross signalized intersections. When equipment is aging and/or has not been regularly updated with appropriate signal timings, pedestrian crossing times can be incorrect, or crossing indications may not appear at all. Providing pedestrians with functioning equipment and accurate signal timings will increase pedestrian use and safety.

Pedestrian Countdown Timer
Source: MAPC

> *Update pedestrian signal indications where needed.* Signal indications inform pedestrians when it is safe to cross the roadway. The timing of walk indications are determined by the crosswalk length and should be timed to allow for pedestrians to safely cross roadways. Traffic signal timings should be updated with the 2009 Manual on Uniform Traffic Control Devices (MUTCD) walking rate of 3.5 feet per second. Pedestrian countdown timers, indicating the amount of time remaining for pedestrian crossings, should be installed where appropriate. Pedestrian signal indications should be prioritized in Wakefield's and Melrose's downtown areas.

> *Install pedestrian pushbuttons where appropriate.* Signal cycles should always include time for pedestrian crossings in areas with high levels of pedestrian activity, whether it is an exclusive pedestrian phase where all crosswalks can be used at once or a concurrent pedestrian phase that allows pedestrians to walk in certain crosswalks while vehicles are moving. However, in areas with less pedestrian activity, pedestrian push buttons should be provided to activate the pedestrian crossing phase.

Pedestrian Pushbutton
Location: Downtown Reading
Source: MAPC

Coordinate traffic signals for the competing interests of vehicles, pedestrians and bicyclists.
The signal must serve the needs of pedestrians, bicyclists, automobiles, and buses. Signals along Main Street need to be coordinated to manage the competing interests of providing continuous flow of traffic on Main Street, including adequate time for pedestrians to cross the street, and to meet the needs of bicyclists.

<u>Strategy: Maintain sidewalk connectivity</u>

The most important concept for sidewalks is connectivity. For people to want to use a sidewalk, it must conveniently connect them to their intended destination and be accessible. There have been landscaping and sidewalk improvement projects in the study area – such as landscaping and sidewalk improvements at Wyoming Hill and Melrose Cedar Park Stations using Federal Transit Administration (FTA) funds. However, connectivity can be challenging in sections along the Main Street Corridor.

Example of Abruptly Ending Sidewalk Across from Lake Quannapowitt
Location: Wakefield
Source: MAPC

<u>Strategy: Maintain sidewalk accessibility</u>

Maintaining sidewalk access year-round is essential to sustain pedestrian activity. Clearing obstructions that include weeds, tree overgrowth, snow, and ice encourages pedestrian activity and provides safety for all seasons.

Clear sidewalks and bus stops of obstructions, especially after snow storms. Snow, slush, and ice hinder winter travel in the northeast region. When sidewalks are not cleared of snow, pedestrians are forced to walk in roadways putting them at high risk of being struck by a vehicle. Communities should enforce snow removal laws in order to provide clear and safe sidewalk paths for pedestrians. In addition, communities should work with the MBTA to develop a snow-removal plan so that bus stops are cleared after snow storms. It is important to not only clear sidewalks, but to create a path from the sidewalks to the streets at bus stops for passenger loading and unloading. For reference, <u>MAPC's Snow Removal Policy Toolkit</u> provides cities and towns with necessary information to increase snow removal compliance and safety.

Pedestrians Walking in a Cleared Sidewalk
Location: Downtown Boston, MA
Source: MAPC

Pedestrian Forced to Stand in Street to Wait for Bus due to Snow Banks
Location: West Roxbury, MA
Source: West Roxbury Transcript

A Snowed-In Bus Stop
Location: Boston, MA
Source: West Roxbury Patch

Strategy: Analyze intersection crash rates to propose specific pedestrian safety improvements

Crash data is a critical tool to identify problem intersections. Areas with high crash rates can often be made safer by engineering modifications that include improved signal timings, shortened pedestrian crossings, and traffic calming. By utilizing crash data to prioritize planning and engineering work, communities will reduce the crash potential at high-risk intersections.

> *Identify intersection crash rates and prioritize improvements for those in the top 5 percent.*
> Intersection crash rates identify the number of crashes in relation to the number of vehicles that utilize the intersection. High-crash locations (identified only by the number of crashes at an intersection) do not always correlate to the leading problem intersections in a community. For instance, a residential street with two crashes might be more dangerous than a major road with eight crashes, as the number of crashes per vehicle utilizing the roadway could be higher on the residential street even though there are a lower number of vehicles. In order to prioritize intersection improvements, it is important for communities to identify intersection crash rates in their communities. By prioritizing improvements at the intersections with the highest 5 percent crash rates, communities will drastically increase safety for pedestrians and bicyclists.

Strategy: Establish Community Committees to Advocate for Healthy Communities and Pedestrian/Bicycle Infrastructure

Pedestrian and bicycle committees are important to advance non-vehicular opportunities within communities. These committees should consist of local residents and stakeholders with in-depth knowledge and a vested interest in the community. Cities and towns often rely on the expertise of pedestrian and bicycle committees to assist in the prioritization and phasing of new infrastructure and development. A variety of municipal departments have an interest in pedestrian and bicycle issues, including Public Works and Engineering Departments, as well as Planning Boards. It is important that the committees establish methods of collaborating between these various entities.

Input from pedestrian and bicycle committees would shape capital improvement programs and help implement successful initiatives.

Additionally, Reading, Wakefield, and Melrose should form a Healthy Community Committee. This Committee would promote healthy living and exercise and work with the pedestrian and bicycle committees. Since Reading, Wakefield, and Melrose currently share the same Health Director, forming a Healthy Community Committee would be simplified. Examples of successful initiatives that advocate for healthy communities and pedestrian/bicycle infrastructure include:

Green Streets Initiative
The *Green Streets Initiative* is a grassroots organization that celebrates, promotes, and advocates for the use of alternative transportation. The organization's aim is to create safer, quieter, and healthier streets for all commuters and citizens. The vision of the Green Streets Initiative is to celebrate alternative transportation, give people an opportunity to make community connections, and promote a festive local atmosphere.

The Green Streets Initiative began in Cambridge and has expanded to the neighboring cities of Boston, Newton, Somerville, and Stoneham. Through educational efforts, and the opportunity to experience and practice alternative transportation, the Green Streets Initiative helps individual citizens, children, and families discover how alternative modes of transportation can enhance their lives by creating safe, healthy, and friendly communities for everyone.

This initiative is best known for monthly Walk/Ride Days that occur on the last Friday of every month. On these days everyone is invited to participate and wear green. On a Walk/Ride Day, participants are eligible to partake in a host of rewards offered by local businesses or sponsors. These rewards range from discounts at local retailers to an on-line raffle.

Shape Up Somerville
Shape Up Somerville is a city wide campaign to increase daily physical activity and healthy eating through programming, physical infrastructure improvements, and policy work. The campaign targets all segments of our community, including schools, city government, civic organizations, community groups, businesses, and other people who live, work, and play in Somerville.

Cambridge Walks
Coordinated by the Cambridge Public Health Department, *CambridgeWalks* is a campaign designed to encourage people of all ages to walk for their health, for the environment, and for the benefits of less traffic. City departments, university, state, local health providers, educators, advocates, and community groups have all been involved. CambridgeWalks also includes individuals who are physically challenged.

CambridgeWalks initiated the Hunt for the Golden Shoes, which is now a project of the Cambridge Pedestrian Committee. Once a year, shoes - spray-painted gold - are hidden through the city in places where people walk. People who find the shoes turn them in for prizes donated by local merchants to encourage people to walk and shop in the city. This event inspires people to be active and explore the city.

Goal: Improve Bicycle Access and Amenities

Objective – Increasing bicycle activity will increase mobility while decreasing single occupancy vehicle use.

Bicycle use is quickly becoming a popular alternative to driving. Health benefits, potential for avoiding traffic, ability to travel longer distances than on foot, and its low cost make bicycling a growing trend for commuters, students, and those who cannot afford or choose not to own a car. Encouraging bicycle use through improved access and providing amenities will make for greener communities, increase roadway life spans, decrease repair costs, and minimize vehicular congestion.

Strategy: Increase bicycle parking

Secure bicycle parking is a necessity in dense areas such as downtowns, commuter rail stations, as well as large residential and commercial areas.

Provide bicycle parking in dense areas. Bicycle parking is scarce in some areas along the corridor forcing residents to chain their bicycles to sign and signal posts. This practice is not only unsightly, but it is also dangerous as it creates a cluttered, narrow sidewalk that can cause problems for handicapped users. Bicycle parking can be generic, or designed as street art. Bicycle parking should be provided in downtown Melrose and Wakefield, large commercial and residential areas, City/Town Halls, grocery stores, schools, parks, and playgrounds. Where appropriate, covered bicycle parking should be installed. For example, the MBTA recently added a covered bike port at Wyoming Hill Station in Melrose using American Recovery and Reinvestment (ARRA) funds.

A Lack of Bicycle Parking Forces Bicyclists to Utilize Local Street Furniture
Location: Downtown Wakefield
Source: MAPC

► *Refer to Proposed Improvements maps for suggested bicycle rack locations*

Bicycles Parked in Pedestrian Path
Location: Downtown Wakefield
Source: MAPC

Covered Bicycle Rack (background) and Uncovered Bicycle Rack (foreground)
Location: Wyoming Hill Station, Melrose
Source: MAPC

Artistic Bicycle Rack
Location: Newton, MA
Source: Newton Center
Intersection Summary Report,
Traffic Solutions

Artistic Bicycle Rack (rack is to the right)
Location: Brookline, MA
Source: MAPC

Artistic Bicycle Rack
Location: Portland, Oregon
Source: Paul Reavis,
Wakefield Town Planner

Provide caged bicycle parking in areas used for long-term (all day) bicycle parking. Caged bicycle parking is secure and encourages bicycle use throughout the year, as protection is provided in all weather conditions. Priority locations for installation of caged bicycle parking include Reading Depot, parking garages in downtowns, and commercial areas. Caged bicycle parking should add to the existing capacity, and not be seen as a replacement.

To be fully effective, caged bicycle parking should always be locked, requiring a pass code to gain access. In general, on-street bicycle parking is provided at no cost, but caged bicycle parking sometimes requires a small fee in order to cover infrastructure and security costs. In order to access an MBTA Pedal & Park bicycle cage, bicyclists must have a Bicycle Charlie Card, which is free at all stations with bicycle cages. The Oak Grove MBTA Station is heavily utilized by bicyclists and is scheduled to have a Pedal and Park bicycle cage installed by May 2012, with room for 100 bicycles.

Pedal & Park Bicycle Cage
Location: Forest Hills MBTA Station, Boston MA
Source: MAPC

Install bicycle parking in an on-street vehicle space. On-street bicycle parking is an alternative to the more common bike racks that are generally installed on sidewalks or private land. Locating bicycle parking on streets frees up the sidewalk for pedestrian activity. An on-street parking corral in one vehicular parking space can provide between 12-14 bicycle parking spaces. On-street bicycle corrals are structurally designed to protect parked bicycles against any contact from motor vehicles and are mobile, giving them the flexibility to be relocated and removed in winter weather to enable snow plowing. Since on-street bicycle corrals are not permanent structures, they can be installed on a trial basis.

On-Street Bicycle Parking Corral
Location: Somerville, MA
Source: City of Somerville

On-street bicycle parking is recommended in downtown Melrose, as sidewalk width is minimal and high pedestrian volumes decrease the feasibility of sidewalk bicycle parking.

Strategy: Create a bicycle network for the corridor

Bicycle lanes have been shown to increase bicycle use. Providing a clearly designated, vehicle-free area along the road for bicyclists increases safety and decreases vehicular speeds. Bicycle 'sharrows' indicating that the roadway is meant to be shared by vehicles and bicyclists can be installed in areas which are not wide enough to accommodate a standard 5-foot (one-way) bicycle lane. Providing connections to local regional bicycle trails, such as Bike to the Sea, should be prioritized.

Install bicycle lanes where feasible. Bicycle lanes provide a designated area on the roadway for bicycle use. Bicycles are not required to use the bicycle lane (by law bicycles can use vehicular travel lanes), but bicycle lanes have been shown to encourage bicycle use, and slow vehicle speeds.

Bicycle lanes should be installed on roadways where existing curb to curb width would allow for 11-foot vehicular travel lanes, and a 5-foot (minimum) bicycle lane. Bicycle lanes are one-way and should be provided on both sides of the roadway. On major bicycle routes, removing one side of on-street parking in order to accommodate the extra space needed for bicycle lanes should be considered.

Designated Bicycle Lane
Location: Boston, MA
Source: MAPC

Install sharrows where bicycle lanes are considered infeasible. Bicycle lanes should not be installed along roadways that do not have adequate width for bicycle lanes (minimum 5-foot width for each direction of travel), at locations where bus routes and short-term parking make bicycle lanes potentially dangerous, and where removing on-street parking to accommodate bicycle lanes is not a preferred alternative. However, 'sharrows' can be installed in these areas. Sharrows are pavement markings that serve to remind drivers and bicyclists to use caution and share the road. As sharrows are a relatively new pavement marking, there should be local education programs to inform drivers and bicyclists of their purpose and meaning.

Sharrow Adjacent to Parking Lane
Location: Boston, MA
Source: MAPC

Sharrow Indicating Bicyclists can Ride in Center of Lane
Location: Brookline, MA
Source: MAPC

Where appropriate, install bicycle lanes and sharrows on roads that parallel Main Street. While Main Street is a primary destination in Reading, Wakefield and Melrose, there are many trips to destinations that may not require utilizing Main Street and can instead be accommodated on adjacent roadways. Providing alternative bicycle routes to Main Street will allow cyclists to access less-congested paths to reach their destinations. In addition, consider installing bike route signage where appropriate.

Prioritize bicycle connections to Oak Grove Station. Numerous residents along and in close proximity to the corridor opt to travel to Oak Grove Station by bicycle to access the Orange Line. Creating safe bicycle connections and signage directing bicyclists to Oak Grove Station should be a priority. As Main Street is near capacity in the morning and evening peak hours, alternative routes paralleling Main Street should be explored.

Bike Route Sign
Location: Portland, Oregon
Source: Paul Reavis, Wakefield Town Planner

Strategy: Promote the addition of multi-use recreational bicycle paths and rail trails

A way to promote bicycle activity is to provide off-road bicycle paths and rail trails. Since off-road bicycle paths and rail trails do not require bicyclists to navigate between vehicular traffic and parking lanes, an increasing number of residents will be encouraged to try this less-congested form of bicycling.

Develop a rail trail (shared-use path) along the former Boston & Maine Railroad corridor in the towns of Wakefield and Lynnfield to connect with the regional Border to Boston Trail. The 4.4-mile Wakefield/Lynnfield Rail Trail begins at the Galvin Middle School on Main Street in Wakefield and extends to the Lynnfield/Peabody Town line. Approximately 1.9 miles of the trail is located in Wakefield and 2.5 miles in Lynnfield. This corridor is the southern section of the former Newburyport Railroad and, by connecting to Peabody, is planned to be part of the regional Border to Boston Trail, a proposed 30-mile trail linking eight Essex County communities – Danvers, Wenham, Topsfield, Boxford, Georgetown, Newbury, Newburyport and Salisbury.

Abandoned Rail Line and Potential Site for Future Rail Trail
Location: Downtown Wakefield
Source: MAPC

Create connections to existing or planned multi-use trails. Examples of these multi-use trails include Bike to the Sea and the Tri-Community Bikeway. Providing connections between the hiking trails in Breakheart Reservation in Wakefield and Middlesex Fells Reservation in Melrose are also recommended.

Strategy: Explore a railroad right-of-way for bicyclists along the Haverhill Line

Railroad rights-of-way need not exclusively be for railroad tracks and related equipment. Adding a bicycle path along the Haverhill commuter rail line would provide better connectivity along the corridor and could potentially provide a direct connection to North Station in Boston. By removing bicyclists from roads, the potential for conflicts with vehicles decreases.

Evaluate the Haverhill Line commuter rail right-of-way to determine if there is enough width to accommodate a bicycle path. A railroad right-of-way, the area designated for transportation along a rail corridor, allows for railway maintenance and can be utilized to accommodate a bicycle path.

Railroad Right-of-Way
Location: Reading
Source: MAPC

Bicycle safety requires a partnership between vehicles, pedestrians, and the bicyclists themselves. Communities should focus on creating roadways that maximize the safety of cyclists.

Install clearly demarcated lane markings on roadways. Lane markings distribute the roadway into its various uses – parking, bicycle, bus, vehicle lanes, etc. In order to reduce vehicle speeds and minimize confusion for roadway users, lane markings should be well maintained and clearly marked. Clear lane markings also discourage unsafe passing and lane drifting that are dangers to bicyclists. The entire Main Street corridor should have clearly demarcated lane markings. Locations in particular need of lane markings include the Melrose-Wakefield Hospital and Main Street in the vicinity of Oak Grove station.

Intersection in Need of Clearly Demarcated Pav't Markings
Location: Main and Lebanon Streets (Melrose-Wakefield Hospital), Melrose
Source: MAPC

Lane Markings Make a Significant Difference - Before (top) and After (bottom)
Location: Anderson Bridge, Cambridge, MA
Source: MassDOT

Remove or reconfigure pull-in angled parking along Main Street in Wakefield. Pull-in angled parking located to the right of a travel lane is dangerous for cyclists as visibility is limited while backing out of the space. Generally, angled parking is removed in favor of parallel parking but results in a loss of parking spaces. There are two types of angled parking alternatives that can be implemented, as depicted in the cross sections on page 35.

One alternative is to relocate angled spaces to the opposite side of the vehicle lane, along a median. This alternative requires the construction of a median and necessitates drivers to cross to the street in order to access the sidewalk and businesses. By placing parking on the left side of the vehicle travel lane, conflicts with bicycles are negated as bicycle traffic is on the right side of the lane. The second alternative reverses the angle of the parking, requiring drivers to back-in rather than pull-in. The rear of the vehicle is adjacent to the sidewalk rather than facing the vehicle lane. Since back-in angled parking increases driver visibility, there are fewer conflicts with pedestrians and bicyclists. This parking configuration also allows for safer loading and unloading of passengers and goods. Both of the potential parking alternatives would retain the existing number of parking spaces on Main Street.

Pull-in Angled Parking
Location: Main Street, Wakefield
Source: MAPC

Angled Parking along a Median (left side) with a Bicycle Lane (right side)
Location: Brookline, MA
Source: MAPC

Reverse Angled Parking
Location: Akron, Ohio
Source: Downtown Akron Partnership

Existing and Potential Alternatives for Main Street in Wakefield
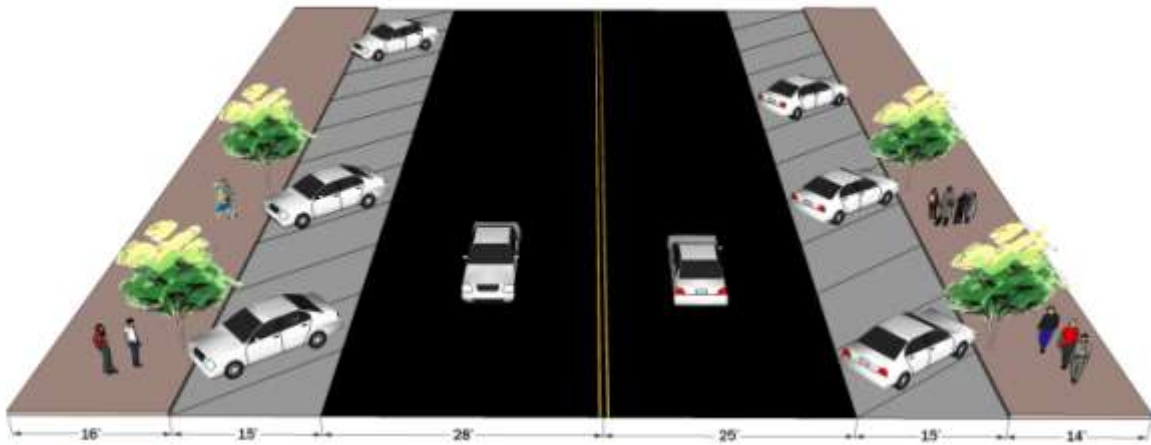
Existing Condition: Angle Parking, Wide Vehicle Travel Lane, No Bicycle Lanes
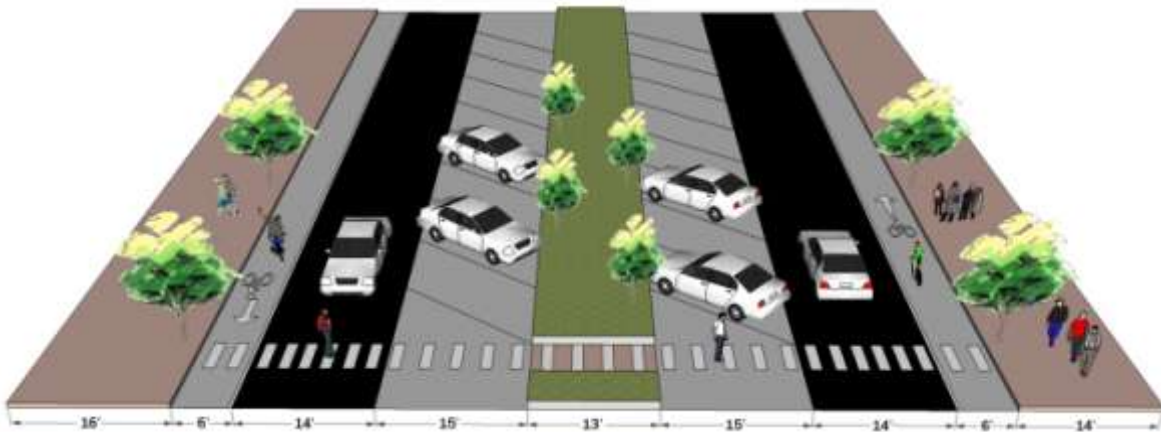
Potential Alternative 1: Angle Parking at Median, Bike Lanes, and Landscaped Median
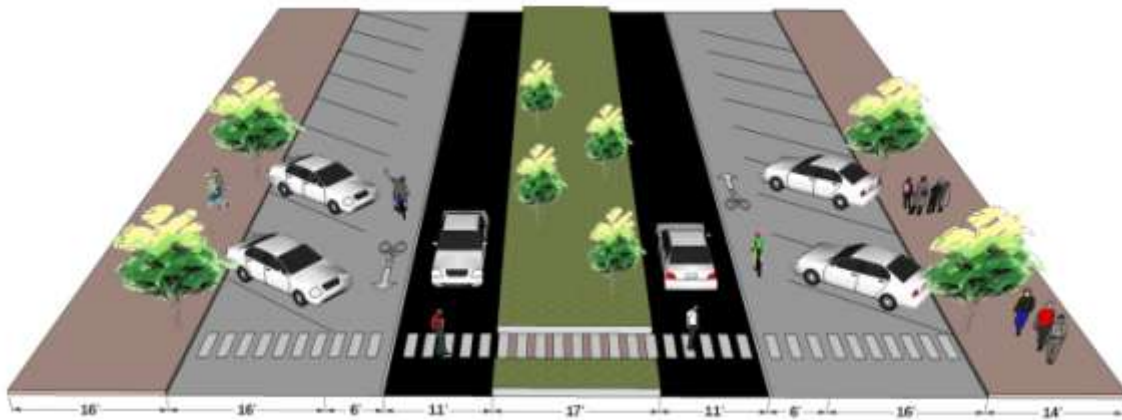
Potential Alternative 2: Reverse Angle Parking, Bike Lanes, and Landscaped Median
Source: MAPC

Provide low cost helmets in downtown stores. According to the Insurance Institute for Highway Safety, 91 percent of bicyclist fatalities in 2009 were not wearing a helmet. In addition, helmet use has been estimated to reduce head injuries by 85 percent. Massachusetts law dictates that youths 16 and under are required to wear helmets. In order to improve bicycle safety, it is important to make helmets available to all bicyclists. The Melrose Health Department provides bicycle helmets to local residents in all sizes (toddler through adult) at a discounted rate of $10, with no limit on the number of helmets that can be purchased. Discounted helmets could also be made available in Wakefield and Reading and in stores along the Main Street corridor. Communities should encourage residents to purchase helmets for themselves and their families.


Bicyclist Wearing a Helmet
Source: MAPC

Establish a bicycle education program. Promote bicycle education so that the rules of the road are clear for bicyclists and drivers.

Strategy: Provide bicycle maintenance and repair workshops

Bicycles, like cars, need regular tune ups. Many residents own bicycles but they may not all be in working order. Providing local bicycle repair services and workshops on how to repair flats, secure bicycles in public areas, bicycle to work, and winterize bicycles are popular methods to increase bicycle use.

Make repair services available at public events such as farmers markets and festivals. Farmers markets have been a popular location in Boston to offer bicycle repair services. In 2010, the Boston Cyclists Union fixed over 620 bikes during 27 visits to nine different farmer's markets as part of their Bike to Market program. Since farmers markets provide products to healthy and environmentally conscious residents, they are a great platform for promoting bicycle use and safety.

"Bike to Market" Bicycle Repair Program at a Local Farmers Market
Location: Boston, MA
Source: Boston Cyclists Union (Josh Campbell Photography)

Provide education to local residents and students. Provide free regular workshops and seminars on bicycling and educate local students on bicycle safety, maintenance and care.

Create a program for people to donate used bicycles to underprivileged youth. For example, Recycle-A-Bicycle (RAB) is a volunteer-based community organization based in New York City that connects people with refurbished bikes, provides practical bike knowledge, and advocates for bicycle use. RAB's Earn-A-Bike program is a youth training program that takes donated and discarded bicycles and teaches teens, mostly from underprivileged families, the basics of bicycle maintenance. At the end of the training program, the participating youths get to keep the bicycles they worked on.

Goal: Increase Transit Use and Improve Connections

Objective – Promote transit access along the corridor.

Main Street offers multiple transit opportunities – the commuter rail, bus service, access to the Orange Line, and senior shuttles. Many residents travel during commuter peak hours by transit but this service is often considered unreliable and slow. By enhancing the available transit service with new technologies and amenities, transit use can increase.

Strategy: Improve transit reliability and service

Commuter rail service is available along the corridor, but many local residents choose to travel to Oak Grove Station to access the MBTA's rapid transit Orange Line as commuter rail service is less frequent. Additionally, bus lines are considered by many to be unreliable and slow. Given the MBTA's current financial situation, service expansions may not be possible (and service cutbacks may be likely) therefore communities should focus on prioritizing efficient service in order to maximize ridership.

> *Review existing bus and commuter rail schedules.* If limitations in the existing bus and commuter rail service are identified, the three communities should work with the MBTA to re-examine current service and propose service revisions where appropriate. Changes can be made to routes and schedules to improve access and designate potential rerouting options that can enhance connections as well as increase ridership. There should be a particular focus to ensure that schedules provide efficient access when switching between bus and commuter rail service and vice versa.

> *Work with the MBTA to provide improved access at Oak Grove Station for vehicles, bicyclists, and pedestrians.* Existing limitations at Oak Grove Station include vehicle parking and secure and protected parking for bicyclists. As Oak Grove Station is a major transportation hub, the adjacent communities should work with the MBTA to highlight issues and provide input and ideas regarding improved access.

> *Enhance lighting at Oak Grove Station and at commuter rail stations to improve nighttime safety.* Lighting at Oak Grove is minimal, and does not provide a safe environment in the evening hours. Encouraging the MBTA to improve existing lighting, or provide additional lighting at the station could help improve this situation. Lighting improvements should be identified at the station platform, bus area, bicycle parking locations, and parking lots.

Oak Grove Station at Night
Source: MAPC

> The Department of Energy Resources (DOER), in partnership with the Massachusetts Clean Energy Center (MassCEC), recently launched a new stimulus funded lighting program at the MBTA Alewife Garage. This federally funded energy efficiency lighting program replaced more than 1,900 lighting fixtures. By making lighting improvements to over 85 percent of the total fixtures at the garage, the estimated repayment through energy savings is less than 2.5 years for this project. This energy efficient program will reduce greenhouse gases and enable both the MBTA and taxpayers to save money. Wakefield, Reading and Melrose should work together to pursue similar types of lighting programs.

<u>*Strategy: Utilize new technology for real-time bus and train data*</u>

The MBTA features an App Showcase on its website and provides about 40 free or low-cost applications for cell phones, smart phones and/or computers. These applications have been developed by independent programmers and entrepreneurs since the MBTA began making raw data available about two years ago. Most of the applications tell riders where a bus or train is and when it will arrive. The use of applications for cell phones, smart phones and/or computers is an important tool so public transit users can obtain real time data to efficiently plan their trips and reduce the amount of time waiting at stops. Some of the names of these applications include, Catch the Bus, Next Bus, Smart Ride, and Just Hop On.

> *Work with the MBTA to enable bus and train routes in the Main Street corridor to be tracked in real time using cell phones, smart phones and/or computers to facilitate ridership.*

Real Time Smart Phone Applications for Tracking MBTA Buses and Trains
Source: MBTA.com

> *Add bus LED displays at major bus stops that depict real-time arrival information to alert passengers of schedules and encourage ridership.* In addition to LED displays at major bus stops, investigate in-window display technology for local businesses located at the bus stops. This technology could depict schedules and routes of buses with the benefit of promoting customer frequency of the business.

Real Time Bus LED Display
Location: Temple Place, Downtown Boston
Source: MAPC

Strategy: Provide better schedule information at train stations and bus stops

By making schedule information more available and easy to understand, the probability of utilizing public transportation increases.

> *Investigate coordinating bus and train schedules to facilitate increased mode options for transit riders.* For example, in the evening peak hour, schedule local bus departures at commuter rail stations shortly after scheduled train arrivals.

> *Install bus schedule information at frequently used bus stops.* The most frequently utilized bus stops along the Main Street Corridor are identified in Table 2 on page 9.

Schedule at a Bus Stop
Location: Portland, Oregon
Source: urbanplacesandspaces.blogspot.com

Strategy: Provide shelter for transit users

Providing attractively designed shelters at frequently used transit stations and bus stops encourages local residents to utilize public transportation year-round. The commuter rail stations in the corridor have various amounts of protection from the weather, but bus stops within the corridor do not offer shelter from harsh weather. Shelters should be prioritized for the most frequently used bus stops along the corridor.

Commuter Rail Enclosed Shelter
Location: Wyoming Hill Station, Melrose
Source: MAPC

Unsheltered Bus Stop
Location: Main Street and West Wyoming Avenue, Melrose
Source: MAPC

Strategy: Provide non-commuter peak transit options

Students and the elderly generally do not travel during commuter peak periods. If buses provided consolidated and efficient service during off-peak service hours, especially during the weekends, these population groups may utilize public transportation more frequently.

Strategy: Improve availability and accessibility of commuter parking at transit stations

Informing commuters of parking space availability at transit stations will increase transit ridership and encourage drive-alone commuters to use the commuter rail.

Implement components of "smart parking" such as installing signs that provide real time information to drivers of parking space availability and schedule information. This information can also be available by using cell phones, smart phones and/or computers to facilitate decision-making about using a commuter rail parking lot before arriving at the site.

Real Time Sign Displaying Parking Availability
Location: Waterford, Ireland
Source: Datadisplay.uk.com

Install clear signage at commuter parking lots to direct drivers to appropriate locations.

The Multiple Parking Signs at the Reading Station Parking Lot can be Confusing
Location: Reading
Source: MAPC

Strategy: Implement consistent parking pricing and payment programs at commuter rail stations and Oak Grove Station

Providing a consistent payment method, such as a Pay and Display parking machine that allows for credit card payments will increase efficiency and potentially encourage new users. It is recommended that a consistent rate structure be provided and adhered to by all commuter rail station parking lots in the study area to discourage commuters from traveling longer distances to less expensive lots.

Additionally, implementing a variable pricing strategy that allows different prices to be charged at different times should be considered. For example, a variable pricing strategy that charges lower rates on evenings and weekends may encourage commuter rail use during off-peak hours. Charging reduced parking rates during the weekends at Oak Grove Station to encourage the use of the Orange Line should also be taken into account.

Pay and Display Parking Machine
Location: Greenwood Station, Wakefield
Source: MAPC

Goal: Advance Environmentally Friendly and Efficient Transportation Alternatives

Objective – Because of dependence on the automobile, transportation has been a significant contributor of air pollution and greenhouse gas emissions. Environmentally friendly and efficient transportation alternatives provide more sustainable opportunities for the future and allow people to take more active roles in being energy efficient in regards to their travel.

Strategy: Install electric vehicle charging stations

A well-planned charging network will facilitate the widespread adoption of electric vehicles. Charging an electric vehicle can take several hours and most vehicles have a limited range before it is necessary to recharge. Usually owners charge their vehicles overnight at home and have a charge that is sufficient for normal everyday usage. However, owners should have the opportunity to charge their cars while at work or during the day and away from their homes, extending the range of their commutes. By investing in an infrastructure that supports electric vehicle charging stations, the use of an environmentally friendly transportation option is promoted and sustainability increased. Providing electric vehicle charging stations in convenient locations will encourage more drivers to opt for electric vehicles.

Install electric vehicle charging stations. Widespread public charging infrastructure will help facilitate the usage of all-electric vehicles and plug-in hybrid electric vehicles as well as help address consumer "range anxiety" for those vehicles with limited range. Charging stations should be located where electric vehicles are located for long periods of time throughout the day. These locations include commuter rail stations, Oak Grove Station, downtown areas and other prominent locations such as municipal parking lots, garages, large employment centers, shopping centers, and major residential complexes. There are various methods to install a charging station, such as mounting them on pedestals in parking lots or on sidewalks, or attaching them to a wall. Electric vehicle stations can also be installed to require credit card payments.

An Electric Vehicle being Charged at a Charging Station
Source: Electric Vehicle Infrastructure, Department of Commerce and Puget Sound Regional Council, 2011

►*Refer to Proposed Improvements maps for suggested Electric Vehicle Charging Stations*

Ensure supply of electricity that supports the installation of electric vehicle charging stations. General public charging will use Level 2 or DC fast charging to enable faster charging. Level 2 supplies 240V, similar to what an electric dryer or oven uses. Level 2 allows for a wide range of charging speeds, all the way up to 19.2 kilowatts (kW). DC fast charging, the fastest type of charging currently available can provide up to 40 miles of range for every 10 minutes of charging. With DC fast charging, a driver can get back up to 80 percent of a full charge in under an hour[6].

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[6] Plug In America

Ensure availability of required infrastructure that supports the installation of electric vehicle charging stations. Public charging infrastructure will require hard-wired dedicated electrical circuits.

Develop a plan that would encourage local residents to use electric vehicle charging stations. Implementation of the plan could promote shopping and dining in the communities' downtowns.

Require new large developments to provide infrastructure for electric vehicle charging stations. Specific requirements can be adopted in zoning regulations and in site plan reviews. For example, Vancouver, British Columbia has a zoning provision requiring developers to provide plug-ins for electric cars in at least 20 percent of parking stalls at new condominium and apartment buildings. The City of Boston has not yet started to require large numbers of electric vehicle charging stations in new developments, but the City has required large developments to install the infrastructure necessary for electric vehicle charging stations in garages. This infrastructure will allow for a seamless transfer in the future from a "regular" parking space, to an electric vehicle charging station.

Advance the electric vehicle industry. An all electric car dealership, Ecars, recently opened in Reading. With a sound infrastructure in place and available charging stations, support for businesses to sell and residents to purchase electric vehicles will be advanced.

Electric Car Dealership, Ecars
Location: Reading
Source: MAPC

Strategy: Invest in an electrically powered shuttle bus

Investing in an electrically powered shuttle bus that would provide service along Main Street will promote environmentally friendly and affordable transportation. With easy on/off access, the shuttle bus would contribute to reducing traffic by discouraging single occupancy vehicular travel for short trips. The route could run north-south along Main Street for short distances or service popular locations in close proximity to Main Street. The electrically powered shuttle bus could be jointly owned and operated by Reading, Wakefield and Melrose. The shuttle bus schedule would link up with the MBTA bus and commuter rail station stops. Examples include the Ecolobus, an all electric shuttle bus that operates in Quebec, and the nearby City of Montreal has plans to have its 1,300-plus bus fleet go all-electric by 2025.

Quebec City's Electrically Powered Écolobus
Source: Réseau de transport de la Capitale (RTC), Quebec, Canada

Strategy: Promote development sponsored shuttle service

Advance affordable transportation by requiring large scale commercial and residential developments to provide shuttle service. These shuttles can provide access to and from commuter rail stations and the communities' downtowns. For example, Pulte Homes in Reading will provide a shuttle service for its residents. Shuttle services provided by commercial developments reduces the number of single occupancy vehicle trips employees may make during the day such as attending meetings at nearby buildings or running errands. Senior homes should also consider implementing shuttles for their residents.

Private Shuttle Bus
Location: Framingham, MA
Source: MAPC

Strategy: Promote car sharing programs

Promoting car sharing programs, such as ZipCar, contributes towards less dependence on personally-owned vehicles and in some cases discourages households from purchasing a second vehicle. Decreasing private vehicular ownership contributes to reducing congestion, air pollution, and oil dependence. There are currently four ZipCars in the southern end of the Main Street Corridor, two at Oak Grove Station and two at Oak Grove Village.

Car Sharing Vehicles
Source: Zipcar

Provide additional car sharing opportunities in appropriate locations. Locations for car sharing should be in downtowns, at high density residential or office locations, and at commuter rail stations. Additional car sharing should be considered at Oak Grove Station where there are currently two vehicles available.
►*Refer to Proposed Improvements maps for suggested Car Share Locations*

Require new large developments, especially those located close to downtowns or public transit, to provide car sharing. Specific requirements can be adopted in zoning regulations to provide car sharing vehicles in large apartment or office developments. As a benefit, this requirement can limit the number of required parking spaces at the site and result in a more attractive environment.

Provide preferential parking spaces for car sharing.

Car Sharing Vehicles
Location: Oak Grove Village, Melrose
Source: MAPC

Strategy: Implement a bicycle sharing program

An alternative to private vehicles, bicycles provide a healthy and environmentally friendly way to reduce vehicular traffic and can provide access to locations that are too far to walk. Bicycle sharing provides the opportunity to access bicycles for short term trips for a small cost or no fee, removing the barrier of purchasing a bicycle which is prohibitive for some. Bicycle sharing in the Main Street Corridor could be modeled after local programs including Boston's Hubway, Salem's Salem Spins, and UMass Lowell's Freewheelers bike share programs. While these programs all have 'hub' station locations where riders can quickly and easily access bicycles, Hubway's bicycle sharing program is more comprehensive and requires users to pay a fee based on the time they use the bicycle. A user of the Hubway program can pick up a bicycle at one 'hub' station and return it at a different 'hub' station. Smaller in scale, Salem's and UMass Lowell's bicycle sharing programs do not require a usage fee.

> *Install bicycle sharing at central locations such as in the downtowns, at commuter rail stations, or at Lake Quannapowitt in Wakefield.* Before making a decision to implement a bicycle sharing program, consulting with the project managers of existing programs in Massachusetts to hear about successes and lessons learned is recommended. Bicycles should initially be made available on a small scale and, if successful, gradually phased in. Bicycle sharing stations should be initially installed at Oak Grove Station, Lake Quannapowitt, and in the communities' downtowns.
> ►*Refer to Proposed Improvements maps for suggested Bicycle Share Stations*

Hubway Bike Share
Downtown Boston, MA
Source: MAPC

Salem Spins Bike Share Program
Location: Salem, MA
Source: Hawthorne Hotel

Strategy: Form or become part of a local Transportation Management Association (TMA)

Transportation Management Associations (TMAs) are private, non-profit associations formed for the purpose of reducing traffic congestion and pollution by improving commuting options. TMAs increase public awareness of key transportation issues and promote a wide range of Transportation Demand Management (TDM) measures such as guaranteed ride home services, car sharing, shuttle services and other commuting alternatives.

In addition to advocating for public transit as well as pedestrian and bicycle planning, TMAs operate in specific geographic areas to influence transportation policies and create programs that:

- Improve commutes for employees;
- Decrease traffic congestion and improve mobility for people, goods, and services;
- Facilitate local economic development;
- Develop local transportation infrastructure, services, and programs; and
- Reduce vehicular emissions to improve air quality and the environment.

TMA members include employers, institutions, government organizations, and commercial property owners. There are currently 11 TMAs in Massachusetts, six of which serve suburban areas. Three of the suburban TMAs are in proximity to Reading, Wakefield, and Melrose. The North Shore TMA comprises Beverly, Danvers, Lynn, Peabody, and Salem. The Junction TMO (Transportation Management Organization) comprises Wilmington, Tewksbury and the I-93 Junction Area of Andover. The 128 Business Council serves the widest geographic area and comprises Burlington, Lexington, Needham, Newton, Waltham, Wellesley, Weston and Woburn.

Goal: Improve Access and Accessibility for Senior Transportation Services

Objective - With the number of seniors expected to rise dramatically over the next several decades, viable transportation alternatives should be provided for the local senior population.

Strategy: Encourage seniors to use public transportation more frequently

Encourage seniors to use all available public transportation services as private transportation services are provided at much higher costs and can be more limiting. In fiscal year 2008, there were almost 30,000 The RIDE trips originating in Reading, Wakefield and Melrose, a 61 percent increase from three years earlier. Slightly over 40 percent of these trips originated in Melrose. While this number is an indication that the percentage of senior ridership is increasing, ridership is low on MBTA bus service. Based on a sample weekday, senior ridership utilizing MBTA bus routes 136 and 137 within the three communities are 90 and 30 riders respectively[7,8].

MBTA's The RIDE
Source: MAPC

Provide resources to seniors. Include presentations about planning for one's current and future transportation needs in conjunction with information sessions about retirement, pension payments, Social Security, and Medicare.

Increase ridership with radio advertisements and brochure distribution. These simple tools have the ability to increase ridership in the short term at a relatively low cost.

Host local events quarterly or biannually to encourage seniors to use public transportation.

Develop a travel training program which educates seniors to utilize the public transportation system safely and independently. To minimize costs, the travel training program can run on a volunteer basis. Using persons of a similar age as travel trainers can be effective when conducting travel training programs for seniors. A travel training program has been put into service in Fairfax County, Virginia as well as a pilot program in Vancouver, Canada.

Participants in 'Travel Smart for Seniors' in Vancouver, Canada in which Seniors Train other Seniors to use Public Transportation
Source: TransLink

Disseminate public transportation information at local elderly homes.

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[7] Week of April 11-15, 2011.
[8] The MBTA defines a senior as an individual 65 years of age or older.

Strategy: Coordinate with the MBTA to implement programs that encourage seniors to use public transportation

> *Encourage seniors to ride with friends.* Develop a program which will allow seniors to bring a guest or travel companion onboard a bus or commuter rail for free. In addition to increasing rider comfort levels, traveling with a guest or travel companion will help ensure new riders learn how to arrive at their desired destinations.
>
> *Provide accessible bus amenities and features.* For example, buses can be made more senior friendly by adding padded features to reduce the risk of injury and installing mechanisms that can accommodate small shopping carts.
>
> *Enforce senior priority seating.* To help ensure enforcement, priority seating would be prominently signed and in a different color so that the seats can be easily identified.

Strategy: Work with the MBTA to reevaluate procedures for obtaining senior ridership discounts

Currently, seniors who are 65 and older can ride local MBTA buses for $0.40, inner express buses for $1.40, and outer express buses for $2.00. Seniors can also ride MBTA subway service for $0.60 and commuter rail or boat services for 50 percent off the regular full fare. In addition, seniors can purchase a monthly pass (good for unlimited travel on local bus and subway) for $20. No discounts apply to express bus passes, commuter rail passes, or boat passes.

> *Develop incentives by creating further ridership discounts for seniors as they continue to age.* For example, allow seniors over the age of 70 to ride for free or allow seniors to ride free during non-peak hours. These types of policies are technically simple to adopt and create considerable motivation for seniors to switch to and continue using public transportation.

Advertisement Stating Low Income Seniors are Eligible to Ride Free on Public Transit
Location: Chicago, Illinois
Source: The Associated Press

Strategy: Work regionally with the Councils on Aging to develop regional transportation across municipal boundaries to effectively use local transportation dollars and achieve economies of scale.

Seniors 65 years and over comprise 15 percent of each community's population. Accordingly, Reading, Wakefield and Melrose have numerous transportation services for seniors. However, understanding the differences among these services can be confusing. The senior transportation services are offered by a combination of independent providers or by the MBTA. Combined, these transportation services provide about 5,100 monthly rides or 61,200 annual rides for seniors in Wakefield, Reading and Melrose. The higher usage of shuttle services over public transit may be attributed to the fact that the majority of shuttles provide door to door service thereby giving seniors a greater level of comfort. For the most part, ridership is evenly distributed among the three communities, with a slightly higher number of riders in Melrose.

There are varying requirements based on age, residency, and medical condition in order to qualify to utilize these services. Days and hours of service differ among each provider as well as destination restrictions. For example, some services operate only during weekdays and provide services within the community. Several of these services require that ride requests be made well in advance, between 24 and 48 hours, and sometimes as far ahead as two weeks. The majority of senior transportation services are for medical and shopping purposes.

There is an opportunity to streamline existing senior transportation services. Tables 3-5 on the following pages summarize the numerous senior transportation services available in Reading, Wakefield and Melrose and portray the complexity of their varying service times, ridership qualifications and scheduling requirements. A streamlined senior transportation service which would consolidate existing transportation services is recommended. To provide such a service will require looking at the option of flexible routes as well as collaborating with senior citizen organizations. While evaluating and streamlining the existing transportation services may be a complex undertaking, the long term benefits will be substantive. The opportunity to connect with MBTA bus and commuter rail station stops should also be included as part of this strategy.

Table 3: Senior Transportation Services in Reading					
Transportation Option	*Trips Served*	*Age and Restrictions*	*Service Days/Hours*	*Destination Limits*	*Rides per Month*
Elder/ Human Services Van (REHS)	Shopping, Senior Center, Local Errands	60+ or residents with disabilities or who meet low income criteria.	Monday-Thursday (9am-3pm), Friday (9am-1pm)	Reading and very limited out-of-town.	660[3] Includes the 70 listed below.
Reading Response Medical Transportation (RRMT)	Medical	Resident of any age meeting income criteria. Limited to 8 one-way rides per month.	Monday-Friday (9am-4pm)	Any	70[3, 4]
Medical Escorts[1]	Medical	60+ or residents who are able to get to and from the car with minimal assistance.	Monday-Friday (9am-5pm)	Any	60[3, 5]
Mystic Valley Elder Services	Chemotherapy, Radiation, or Dialysis Treatments	60+ and live in MVES catchment area. Any income level.	Anytime	Any	140[6]
Peter Sanborn Place – Elder Housing	Shopping, Medical	60+ and a Reading Resident	Monday, Wednesday, and Friday, 10am-2pm.		20[3]
Shopping –Escort Volunteers[1]	Shopping, Pharmacy	Reading residents unable to shop unescorted.	Anytime	Reading	10 [3]
Longwood Assisted Living – Elder Housing	Shopping, Medical	Residents of housing facility.	Monday-Friday	Reading and limited out-of-town.	44[7]
THE RIDE[2]		Must be a person with disabilities.	7 days a week, 6am-1am, 365 days/year.	Where MBTA provides service, except North Reading	477[8]

Notes:
1   Program is a volunteer service.
2   The Greater Lynn Senior Services (GLSS) operates the MBTA's THE RIDE program.
3   2008 Mystic Valley Elder Services Transportation Study.
4   Service is provided by REHS and is considered to be the most successful volunteer transportation program in the MVES region. As of 2008, there were 12 volunteers. Data is from August 2007 to March 2008.
5   Serving 28 clients. Between August 2007 to September 2007.
6   Reading - 2008 Description of transportation services. This service was provided to 12 Reading seniors. Data is from 2007.
7   Conversation with Frank Petras, Executive Director on July 12, 2011.
8   Based on one sample weekday of THE RIDE paratransit trips (5/19/2011). 18 trips were senior trips (65+). Assumed 396 weekday trips and 81 weekend trips. Data provided by MBTA.

Table 4: Senior Transportation Services in Wakefield					
Transportation Option	*Trips Served*	*Age and Restrictions*	*Service Days/Hours*	*Destination Limits*	*Rides Per Month*
Council on Aging	Medical, Shopping, Errands	60+ and Wakefield Resident	Medical: Mon, Tues, Thurs Local Medical: Weds, Fri Shopping: Mon-Fri	Wakefield and Area Hospitals and Medical Centers	480[2]
Mystic Valley Elder Services	Chemotherapy, Radiation, or Dialysis Treatments	60+ and live in MVES catchment area. Any income level	Anytime	Any	78[2,3]
American Red Cross		60+	Weekdays		6[2,4]
THE RIDE[1]		Must be a person with disabilities	7 days a week, 6am-1am, 365 days/year	Where MBTA provides service, except North Reading	750[5]

Notes:
1   The Greater Lynn Senior Services (GLSS) operates the MBTA's THE RIDE program.
2   2008 Mystic Valley Elder Services Transportation Study.
3   2007 data.
4   March 2008 data.
5   Based on one sample weekday of THE RIDE paratransit trips (5/19/2011). 23 trips were senior trips (65+). Assumed 506 weekday trips and 108 weekend trips. Data provided by MBTA.

Table 5: Senior Transportation Services in Melrose					
Transportation Option	*Trips Served*	*Age and Restrictions*	*Service Days/Hours*	*Destination Limits*	*Rides per Month*
Council on Aging[1]	Medical and Other Appointments	60+	Monday-Thursday (8:30am-3:45pm) and Friday (8:30am-1pm)	Melrose[4]	708[4]
Mystic Valley Elder Services	Chemotherapy, Radiation, or Dialysis Treatments	60+ and live in MVES catchment area. Any income level.	Anytime	Any	118[5]
FISH[2] (Friends in Service to Humanity)	Medical Appointments	Must be a Melrose resident.	Monday-Friday		80[6]
MVES – Senior Travel Friends[2]		60+ and a resident in the MVES region.		Primarily to Malden, Melrose and Stoneham. Occasionally to Medford.	18[5]
THE RIDE[3]		Must be a person with disabilities.	7 days a week, 6am-1am, 365 days/year.	Where MBTA provides service, except North Reading	1,060[7]

Notes:
1   The COA cannot make trips to Chem Center, Montvale Avenue, Stoneham/Hallmark Health medical MD   offices at Lake Quannapowitt in Wakefield, any of the Lahey Clinics (Burlington, Peabody), Boston hospitals, Hallmark Health Facilities (3 Woodland Road in Stoneham and New Crossing Road in Reading).
2   Program is a volunteer service. Between July 2007 to May 2007.
3   The Greater Lynn Senior Services (GLSS) operates the MBTA's THE RIDE program.
4   Key destinations are the Melrose COA and the Dutton Center. The COA van is used less now than three years ago when there were regular trips to the Dutton Center. Trips are still made to the Dutton Center 2-3 times per week. Trips are made to malls three Mondays each month. Pickups are made either at elder housing or City Hall and then the van goes to Square One in Saugus or Meadow Glen in Medford (September 2010, Council on Aging meeting notes).
5   2008 Mystic Valley Elder Services Transportation Study.
6   September 2010, Council on Aging meeting notes.
7   Based on one sample weekday of THE RIDE paratransit trips (5/19/2011). 40 trips were senior trips (65+). Assumed 880 weekday trips and 180 weekend trips. Data provided by MBTA.

Strategy: Understand the special needs of seniors

Provide large print materials. Clearly legible and larger font-sized public transportation information, such as online and printed schedules and maps, will more effectively market transit to seniors.

> _Obtain regular feedback from seniors, both driving and non-driving._ Hearing directly from seniors can help the communities respond to their current and future mobility needs with appropriate programs and services. Effective mechanisms for understanding senior issues and concerns include personal interviews, focus groups and surveys. Each community should obtain regular feedback from seniors on a quarterly or biannual basis. In turn, the communities would coordinate and share this information.

Strategy: Develop a circulator service

A circulator service is similar to a fixed route, but has a shorter route distance. Circulator services are beneficial to the elderly because they are designed to travel close to residences and popular destinations. It is critical that a circulator service be reliable and accessible. Essentially, the route design for these services attempts to minimize walking distances. A circulator service should be developed by evaluating the routes and destinations of existing senior transportation services. Access to senior housing, senior centers, the communities' downtowns, commercial areas, grocery stores, medical centers and commuter rail stations should be provided. To be fully effective, a circulator service also needs to connect with MBTA bus routes 136 and 137, fixed route transit services. A circulator service can also be expanded to provide access to businesses and schools, serving additional population groups.

Table 6 below summarizes the key destinations, not listed in order of priority, for senior services by community based on the services identified in Tables 3-5. While there are numerous destinations, the primary trip types are for medical and shopping purposes. Destinations in italics indicate a popular destination for more than one community. The information in this table is a good basis from which to determine consolidating key destinations among the three communities if a circulator service were to be further pursued.

Table 6: Key Destinations for Senior Services		
Reading	**Wakefield**	**Melrose**
Dutton Adult Day Health Center	_Lahey Clinic in Burlington and Peabody_	_Dutton Adult Day Health Center_
Lahey Clinic in Burlington and Peabody	_Market Basket_	_Shaw's_
Market Basket	_Shaw's_	Cefalo Memorial Complex
Walmart	Danvers MGH	Meadow Glen in Medford
CVS	Harvard Medical in Peabody	Melrose City Hall
Dollar Tree	Oak Grove	Melrose Council on Aging
Reading Food Pantry	Target in Saugus	Melrose/Wakefield Hospital
Reading Senior Center	Winchester Hospital	Square One in Saugus
Stop & Shop	Woburn 128 area medical buildings	
Walgreens		

Goal: Increase Signage between Downtowns and Commuter Rail Stations

Objective – Well-placed and appropriately designed signage is critical to maintaining safety and efficiency along roadways for drivers, pedestrians and bicyclists.

Strategy: Improve directional signage between Main Street and the commuter rail

> *Directional signage could include the distance (in time or feet) to the downtowns and/or commuter rail stations.*

> *Signs at commuter rail stations could highlight commercial destinations on Main Street.*

Strategy: Consistent signage should be installed among the three communities

> *Melrose and Wakefield could borrow elements from Reading's Community Wayfinding Program and downtown bulletin board to facilitate wayfinding and highlight community activities.*

*Images of Reading's proposed Community Wayfinding Program
Source: Town of Reading*

*Reading's Downtown Bulletin Board
Source: MAPC*

Strategy: Install signage that is informative and welcoming

> *Provide signage for pedestrians from Lake Quannapowitt to Reading and Wakefield Centers.*

*"Share the Road" Sign at Lake Quannapowitt
Source: MAPC*

Install signage informing drivers of parking lots behind Main Street retail facilities that front Main Street.

Add "Welcome To" signs and banners to help differentiate between the communities.

"Welcome to Wakefield" Sign
Source: MAPC

"Welcome to Reading" Banner
Source: MAPC

Goal: Improve Access to Local and Regional Open Spaces and Recreation Destinations

Objective – Open spaces and recreational areas are a key component of the quality of life in a community and provide many environmental benefits such as reducing flooding and cooling the atmosphere. Communities should promote strategies geared towards improving access for bicyclists, pedestrians and transit to open spaces and recreation destinations.

Lake Quannapowitt is by far the main recreational resource in Wakefield as well as a regional resource used by residents of other communities. In Melrose, Ell Pond was the most frequently mentioned open space area that residents want to access but currently it is not possible to walk all the way around the Pond due to privately owned residential property along the Pond. In order to create a walking path around the Pond, an extensive legal process would be necessary.

Ell Pond
Location: Melrose
Source: MAPC

Ell Pond
Location: Melrose
Source: MAPC

Strategy: Coordinate updates to open space and recreation plans to include access to recreational resources along and in close proximity to the Main Street corridor

The state Division of Conservation Services (DCS) issues guidelines for the preparation of municipal open space and recreation plans and approves these documents. Communities with approved plans are then eligible to apply for certain grants. Melrose and Reading have current Open Space and Recreation Plans (expiring in November 2012 and September 2012, respectively). Wakefield's plan expired in August 2011. While the guidelines focus on open space and recreation planning at the municipal level, MAPC recommends that the three communities work together to develop a regional Main Street access plan that can be included in the individual plans of each community. Linkages to Breakheart Reservation, Spot Pond, and Middlesex Fells Reservation could be developed in such a unified plan.

Birch Meadow Park
Location: Reading
Source: MAPC

While this approach is not standard procedure it will provide the three communities with a coordinated approach and could serve as a model for other regional open space planning efforts. MAPC would like to see the state guidelines encourage this type of approach. Each community would need to determine how they intend to update their plan (in-house, with a consultant, volunteer committee) and then meet with the other two communities to develop a regional action plan.

Strategy: Establish wayfinding for open space and parks at local transit stations

In order to improve accessibility by transit, the communities should develop signs indicating the distance to major parks and open spaces and at a minimum, post them at heavily utilized bus stops and commuter rail stations. The signs should include the distance, average walking time and possibly a map showing how to get to the park. This will require coordination with the MBTA.
This action item could be initiated under the local open space and recreation plans. If a unified plan for signage were to be developed it would make it easier to coordinate with the MBTA.
In light of the fact that Lake Quannapowitt is a regional resource, communities in the area may want to install signs that direct residents to the Lake. In addition, communities may want to provide signage to Ell Pond, Pine Banks Park, and the Middlesex Fells Reservation.

Pine Banks Park
Location: Melrose
Source: MAPC

Pine Banks Park
Location: Melrose
Source: MAPC

Goal: Ensure Zoning and Development Regulations Coordinate with and Support Alternative Modes of Transportation

Objective – Encourage development densities to support alternative forms of transportation and developments that can easily accommodate connections to the existing and future transportation system.

The existing development patterns in the corridor are based in large part on the zoning and development regulations of the individual communities that have been in place for many years. Some development pre-dates existing zoning, resulting in non-conforming development. Because municipal zoning and development regulations are essentially the 'rule of the game' by which developers must play, it is essential that each community understands how their zoning and development regulations affect aspects of development that either support or hinder the use of alternative transportation. Because a review of zoning and development regulations was not part of the existing conditions phase of this study, these recommendations will be more general in nature rather than based on an analysis of current conditions. Many examples of smart growth development can be found at MetroFuture's *Smart Growth Campaign website*. These case studies provide a general overview of the development process but do not include specifics on zoning because each community is unique and zoning would need to be tailored to each community on an individual basis.

Strategy: Review local zoning guidelines and update as needed

It is necessary to perform a comprehensive analysis of the major components of zoning in order to understand whether or not development can currently be served by alternative forms of transportation. If the local guidelines are outdated, communities should work to discuss how to achieve new goals through the basic building blocks of zoning. Some of the key elements to be reviewed would be:

- Do site plan review/special permit procedures require analysis of transportation alternatives? How comprehensive are those requirements?
- Does zoning allow mixed-use development and what mix of uses is allowed in the various districts?
- Does the community have design guidelines for certain types of developments? How do these guidelines address location and siting of parking, street furniture, pedestrian paths, alleys, etc.
- Are the densities appropriate to allow a critical mass for transit and new transportation models such as car sharing?

For example, Oak Grove Village in Melrose incorporates many elements that support alternative transportation. Located a five minute walk from Oak Grove Station and at the edge of Pine Banks Park, one third of this 13-acre residential development is comprised of landscaping, including walking paths and courtyards. Two car share vehicles are available on-site and bicycle racks are provided in the garage. Completed about two years ago, this residential facility has a total of 550 apartments and seven retail spaces.

Oak Grove Village
Location: Melrose
Source: MAPC

Because every community is different, the starting point for the analysis will be at the local level. The most important part of this action item will be for the three communities to review how their zoning relates to the other communities.

Strategy: Review the parking requirements of existing zoning regulations and update as needed

Appropriate parking regulations can encourage development and redevelopment of property in a way that fosters smart growth and levels the playing field between automotive focused development and alternative transportation. The three communities should review their existing parking requirements in relation to the maximum and minimum number of parking spaces required, if parking requirements differ for developments in close proximity to transit, where parking can be located, and whether shared parking is allowed. In order to reach a balance between automotive focused development and alternative transportation, the following ideas should be considered:

- Zoning regulations that reduce vehicular parking in close proximity to public transit
- Shared parking strategies
- Parking Maximums that establish an upper limit on parking supply, and
- Allocating spaces for car share vehicles

If the three communities share information for these two strategies in the form of a matrix it will be easier to identify significant differences and whether specific community regulations may serve as a model.

Goal: Ensure Transportation Infrastructure Compliance with State and Federal Accessibility Regulations

Objective – Provide full accessibility for physically challenged individuals. Full accessibility for physically challenged individuals is the law but full compliance continues to be a challenge for most cities and towns. Improvements that are required for handicapped accessibility also benefit a wide range of people. For example, curb cuts and ramps that are required under the Americans with Disabilities Act (ADA) for wheelchairs make travel easier for people pushing baby carriages or carting wheeled luggage. Accessibility improvements may also help make travel and shopping easier for the growing elderly population and for those with temporary disabilities due to surgery or injury.

Strategy: Review accessibility guidelines for pedestrian facilities in the public right-of-way

The Architectural and Transportation Barriers Compliance Board is currently proposing accessibility guidelines for the design, construction, and alteration of pedestrian facilities in the public right-of-way. The guidelines ensure that sidewalks, street crossings, signals, and other facilities for pedestrian circulation and use are accessible to and usable by pedestrians with disabilities. Once the guidelines are adopted as accessibility standards in regulations issued by other federal agencies implementing the Americans with Disabilities Act, Section 504 of the Rehabilitation Act, and the Architectural Barriers Act, compliance is mandatory.

Because these regulations will be far-reaching and applicable to every community, it is recommended that the three communities work with MAPC to obtain training on the application of these new regulations. This training would involve planners, local highway departments, building inspectors and departments of public works. Because this training will be useful to all communities, it lends itself to being done on a regional basis rather than on a community by community basis.

Strategy: Prepare an inventory of non-compliant facilities within the Main Street corridor and prioritize these for correction

An inventory of accessibility in local facilities would provide the level of detail necessary to understand each community's compliance with federal and state access regulations. As a follow up to the inventory, a priority list of improvements would be developed. The priority list of improvements should include sidewalk accessibility, crosswalks, and audible signals.

VI. RESOURCES

AARP. *The Getting Around Guide, AARP Housing and Mobility Options*.

AARP Public Policy Institute. *Planning Complete Streets for an Aging America*. May 2009.

Advisory Committee on Cities for Climate Protection. *Application for Boston Region MPO Suburban Mobility Funding Program*. April 2008.

Central Transportation Planning Staff, Boston MPO (Robert Guptill). *Technical Report: Analysis of the Potential for Demand-Responsive Service in the Town of Reading.* January 2008.

Department of Commerce and Puget Sound Regional Council. *Electric Vehicle Infrastructure, A Guide for Local Governments in Washington State*. July 2010.

Fay, Spofford & Thorndike. *Wakefield/Lynnfield Rail Trail Feasibility Study*. September 2007.

Florida International University Lehman Center for Transportation Research (Fabian Cevallos, Ann Joslin, and Tekisha Ivy and Jon Skinner). *Attracting Senior Drivers to Public Transportation: Issues and Concerns, US Department of Transportation, Federal Transit Administration*. January 2010.

Fort Point Associates, LLC. *Downtown Reading Market Assessment and Business District Composition Analysis*. June 2007.

Massachusetts Bay Transportation Authority. *Ridership and Service Statistics, 13th Edition*. 2010.

Melrose Conservation Commission, City of Melrose. *Open Space and Trails Pocket Guide*. Guide Volume 3. September 2009.

Metropolitan Area Planning Council. *The Boston Region's Pedestrian Transportation Plan*. 2010.

Metropolitan Area Planning Council. *Town of Wakefield, Open Space and Recreation Plan FY 2005-2010*. June 2004.

Office of Planning and Community Development, City of Melrose. *Master Plan*. June 2004.

Office of Planning and Community Development, City of Melrose. *Open Space and Recreation Plan*. Fall 2007.

Open Space and Recreation Task Force, Town of Reading. *Open Space and Recreation Plan*. March 2001.

Town of Reading. *Downtown Smart Growth District, Design Standards and Guidelines*. October 2009.

Town of Reading. *Master Plan*. 2005.

Town of Wakefield. *Economic Component of the Wakefield Master Plan*. March 2004.

Town of Wakefield. *Housing Component of the Wakefield Master Plan*. May 2003.

Websites

Central Transportation Planning Staff   http://www.ctps.org

Massachusetts Bay Transportation Authority   http://www.mbta.com

Massachusetts Department of Transportation http://www.massdot.state.ma.us