Executive Summary

Introduction

The Interstate 495/Route 9 interchange is a critical transportation node for regional mobility and for local access. The interchange provides connections between major highways under state jurisdiction, and also provides access to a regional employment center along the Route 9 corridor that contains a number of office/industrial parks and significant areas of industrially zoned land with potential for future development. This area has been designated as a Priority Development Area (PDA) by the MetroWest Compact Plan, and plays an important role in the economic development plans for the MetroWest region. The ability of the transportation infrastructure to support this desired development is a key element in achieving these economic development objectives.

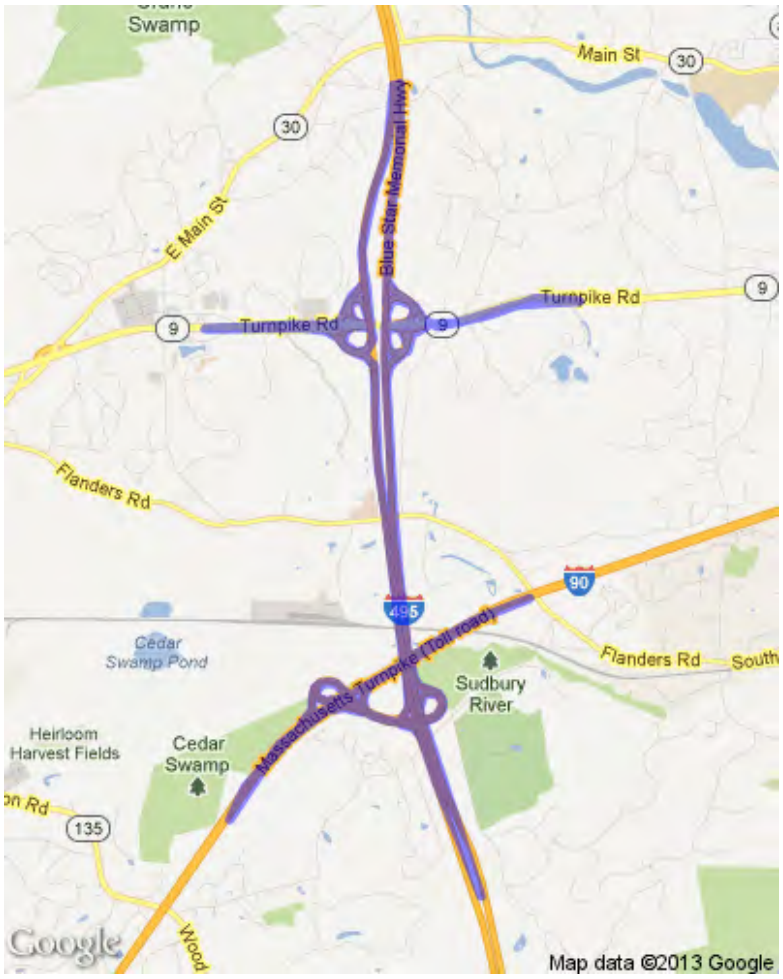
This *Interstate 495 & Route 9 Interchange Improvement Study* was initiated by MassDOT to provide a forum for state and regional agencies, municipal officials, area partnerships, legislators, transportation service providers, and other stakeholders to collaboratively develop reasonable solutions to existing and anticipated future transportation issues in the study area. I-495 has been a major influence on development within the multiple communities it passes through. Over time, I-495's role in connecting MetroWest corridor communities to a wider transportation system has contributed to their growth and economic well-being. The Towns of Westborough and Southborough have experienced significant growth in population and employment and increased traffic volume and congestion over the past 20-25 years. Westborough has grown into an employment center with more jobs (26,300) than residents (18,300) and Southborough has a population of 9,800 with 6,000 jobs. Collectively, both communities are expected to experience population and employment increases by approximately 14 percent and 20 percent, respectively by the year 2035.

Traffic volumes on I-495, I-90, and Route 9 have increased over the years as a result of employment and population growth in the surrounding communities. I-495 and I-90 each now carries approximately 100,000 vehicles per day, and Route 9 volumes are approximately 50,000 vehicles per day. As a result of these high volumes, commuters experience congestion and delay on the mainline highway as well as at the I-495/Route 9 and I-495/I-90 interchanges. The expected growth in population and employment in the area will generate additional traffic, exacerbating already congested conditions.

Study Approach

The purpose of the study is to identify improvements to address the traffic congestion and safety issues surrounding the interchange of I-495 and Route 9 in the Towns of Westborough and Southborough. The study area covers the I-495/Route 9 and I-495/I-90 interchanges, I-495 between I-90 and Route 9, and approximately one mile of contiguous roadway in each direction from the interchanges. The I-495/I-90 interchange was included as part of this study due to its proximity and potential interactions with the I-495/Route 9 interchange, and because several of the improvement alternatives considered in the study would encompass both interchanges.

Project Study Area



The development of alternatives was guided by key stakeholders in the study area, including MassDOT, the Central Massachusetts Regional Planning Commission (CMRPC) and the Metropolitan Area Planning Council (MAPC), the towns of Westborough and Southborough, the Worcester and MetroWest Regional Transit Authorities, the Massachusetts Bay Transportation Authority (MBTA), members of the business community, and elected officials. These stakeholders served as the Study Advisory Group (SAG) and provided input and comment on alternatives for consideration based on their local understanding of study area conditions.

Key Issues

The study has identified a number of issues associated with peak period travel, including high volumes of commuter traffic, congestion at the interchanges, geometric and safety deficiencies, limited public transit options, poor pedestrian and bicycle access, and a lack of capacity to accommodate future growth.

High volumes of commuter traffic lead to highway and interchange congestion during peak hours **-** I-495 and Route 9 carry high peak period commuter traffic volumes, with the worst traffic conditions occurring in the peak travel direction. Today, I-495 northbound between Route 9 and I-90 and Route 9

westbound west of I-495 operate at deficient conditions (Level of Service[1] (LOS) E) in the morning peak. LOS E represents congested traffic conditions, meaning the highway is nearing capacity, which results in slow travel speeds. In the evening, the pattern is reversed, with I-495 southbound between Route 9 and I-90 as well as Route 9 eastbound west of I-495 operating at deficient levels (LOS E). The interchange ramps with the worst traffic problems are the Route 9 westbound on ramp from I-495 southbound (LOS E) and the I-495 northbound off-ramp to I-90 (LOS F), due to high peak period traffic volumes and substandard geometry. The I-495/I-90 toll plaza also experiences congestion, queuing, and slow travel speed for all vehicle directions during the peak hours, due to a combination of high traffic volume, roadway geometry, weaving patterns at the toll plaza, and variations in speed at the toll plaza. Traffic operations on the highway mainline, ramps and toll plaza are all expected to get worse by 2035 based on the projected growth in traffic.

Vehicle delay and queuing at intersections will increase in the future - Today, each of the signalized intersections west of I-495 currently operate at acceptable conditions overall in both peak hours. However, there are individual movements that operate deficiently. During the morning peak hour, the northbound left turn onto Computer Drive from the Route 9 off-ramp and the southbound left turn from Connector Road onto Research Drive experience long queues of over 500 feet. The northbound Friberg Parkway approach to Research Drive operates at a deficient level with long queues in the evening peak hour. On Route 9 east of I-495, long vehicle queues are experienced on the Route 9 eastbound and westbound approaches to Crystal Pond Road for both the morning and evening peak hours. Future traffic volumes will generally increase vehicle delay and queuing at most study intersections.

Highways and ramps do not meet current design standards - None of the I-495/Route 9 and I-495/I-90 ramps, nor the four weaving areas on I-495 at the Route 9 interchange, meet current highway design standards. The acceleration lane distance for the I-90 on-ramp to I-495 northbound is also substandard. There are weaving, queuing, and signage issues at the I-90 toll plaza. On Route 9, there are sight distance issues for Route 9 eastbound approaching Crystal Pond Road and sub-standard driveway spacing for businesses on Route 9 westbound east of I-495.

There are safety concerns at these locations based on the crash history - The I-495 off ramps to I-90 are an historic Top 60 Crash Location, with 208 recorded between 2007-2009. About half were rear-end crashes. During that same time period, the I-495/Route 9 interchange had 106 crashes, with most on I-495 southbound to Route 9 westbound. Route 9 Eastbound at Crystal Pond road had 28 crashes, 90 percent of which were rear- end crashes.

There are few attractive alternatives to travelling by automobile in the study area today - The existing land use pattern of auto-oriented office and industrial land uses with large parking lots creates challenges for pedestrians, bicyclists, and public transit service providers. There is currently no fixed route transit service in the area, which is located on the boundary of the Worcester Regional Transit Authority (WRTA) and the MetroWest Regional Transit Authority (MWRTA). The MBTA provides commuter rail service on the Framingham/Worcester Line, with existing station stops in Westborough and Southborough, which are located several miles from the study area employment centers and provide a limited train schedule, especially for reverse commuters. The MetroWest/495 Transportation

[1] Level of Service (LOS) – A letter grade designation used to describe given roadway conditions, with "A" representing at or close to free-flow conditions with minimal delay, and "F" representing demand at or over capacity of the roadway. B, C, D and E refer to intermediate conditions. In light of the study area and its access needs, LOS E and F are considered to represent deficient conditions in the context of this study.

Management Association (TMA), which covers this area, promotes carpooling, vanpooling, taking public transit, biking, and walking to work for employees of their member companies in MetroWest.

Recommendations

A broad range of alternatives were developed to improve safety, reduce congestion, provide options to travel by single-occupancy vehicle and support future commercial and industrial growth in the area consistent with its designation as a Priority Development Area. The alternatives were evaluated and reviewed by MassDOT, the Study Advisory Group, and community and public stakeholders through a series of meetings to identify feasible solutions. Based on this review, it was determined that no single alternative alone addressed all of the study area issues; rather, a multi-modal solution, consisting of highway, transit, pedestrian and bicycle improvement strategies, was recommended. Taken as a whole, the recommended actions comprise a "Master Plan" of transportation improvements and policies to meet the needs of the study area.

The implementation steps for each of the recommended actions will vary depending on the cost and complexity of the recommended improvement and the responsible parties. Lower cost actions that are the responsibility of a single entity, such as new signage, could be implemented quickly; complex actions that have high capital costs and require coordination and decision-making by multiple agencies, such as the proposed interchange improvements, would take a much longer time to move from concept to construction.

The recommendations have been grouped into the following categories according to the responsible entity, complexity and cost considerations:

- Major infrastructure investments
- Roadway and intersection congestion and safety improvements
- Highway maintenance
- Highway operations improvements
- Multimodal improvements – public transit, pedestrians, and bicycles

Major Infrastructure Investments – The following projects have significant capital cost, design and environmental review requirements. Their implementation will be directed by MassDOT in close coordination with the Federal Highway Administration, the Boston Region Metropolitan Planning Organization (MPO), and the Central Massachusetts MPO.

- Construction of a braided ramp system at the I-495/Route 9 Interchange that removes the weaving movement along I-495 northbound and southbound.
- Ramp modifications at the I-495/I-90 Interchange to remove weaving movements

Major Infrastructure Investment: I-495/Route 9 Braided Ramps

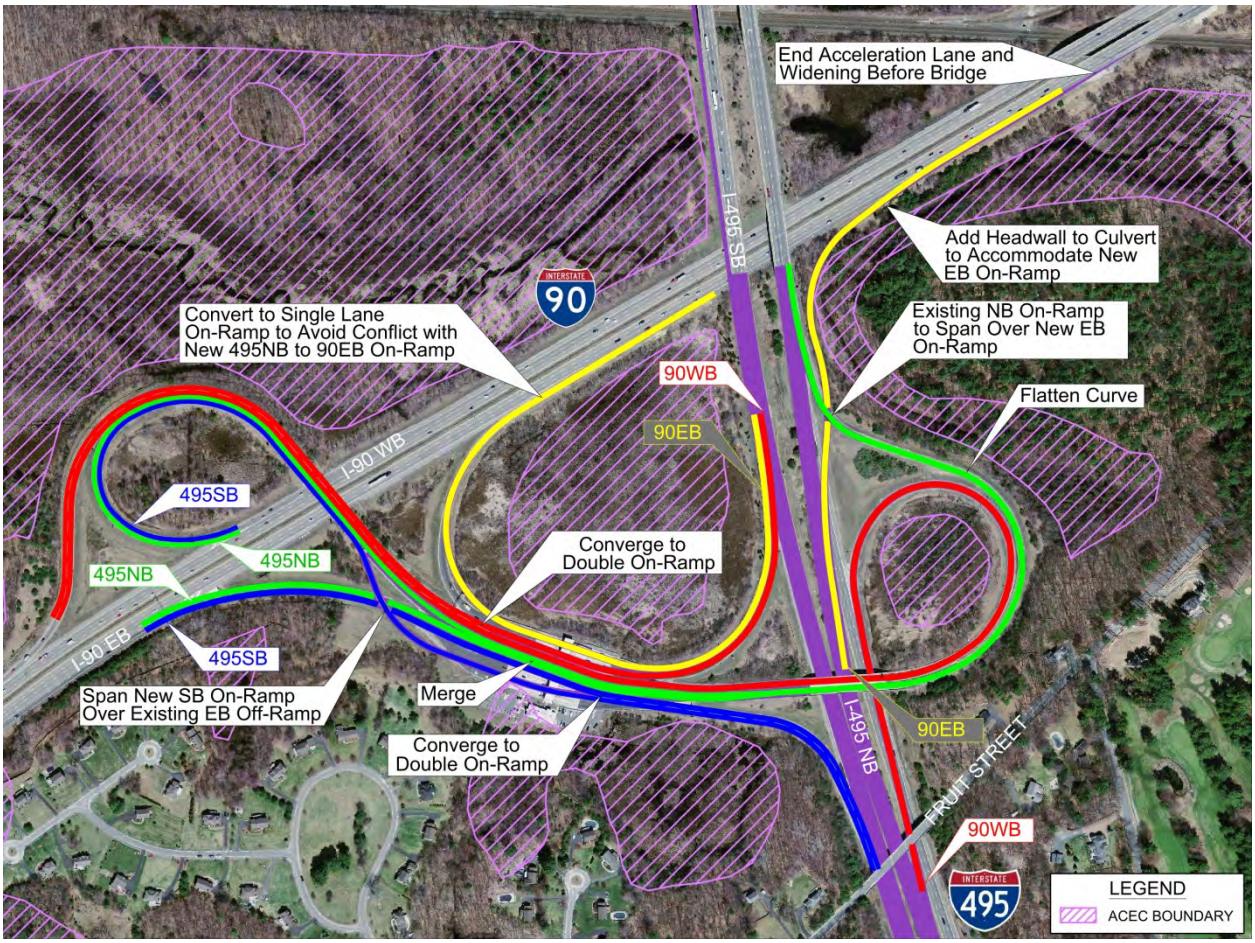
A braided ramp separates merging and diverging traffic by creating a bridge to elevate one ramp over the other. This would eliminate the northbound and southbound weaves on I-495 and improve safety. Traffic operations on all ramps would improve during the morning peak hour, except for the northbound off-ramp from I-495, which would continue to operate at LOS F. This is due to the high volume of traffic exiting from I-495. During the afternoon peak period, traffic operations on all ramps improve to LOS C or better.

The braided ramps would be constructed within the existing highway right-of-way (ROW). No environmental impacts were identified at this level of analysis.

As discussed in detail in Chapter 3, the study process entailed a comprehensive review and analysis of all feasible interchange options at I-495/Route 9. The recommended braided ramps scheme is the option with the greatest benefit relative to its cost, it effectively addresses many of the most serious issues at this location, and is a clear recommendation of the study at this location.

Estimated construction cost: $25 million (2012$).

Major Infrastructure Investment: I-495/I-90 Interchange Ramp Modifications

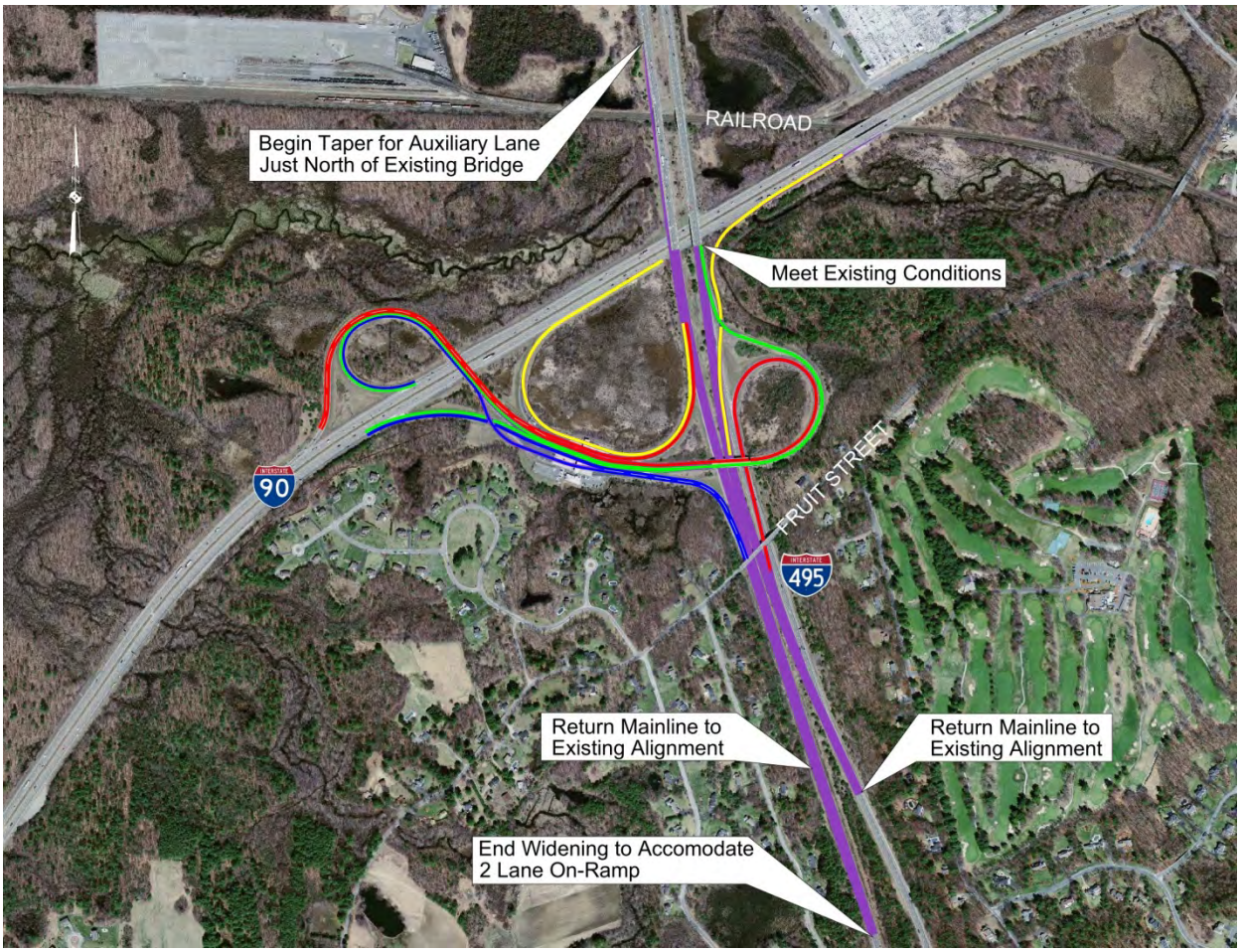


This preliminary recommendation would improve safety and traffic operations at the interchange. It includes the following elements:

- Constructing a new I-495 northbound off-ramp to I-90 eastbound,
- Widening of the I-495 southbound on-ramp to two lanes,
- Extending the I-495 southbound on-ramp,
- Creating an auxiliary lane for the I-495 southbound off-ramp to I-90,
- Separating movements on the toll plaza to eliminate weaves by giving each move its own lane, and
- Modifying the I-495 southbound on-ramp from I-90 westbound so that it crosses over the I-495 on-ramp from I-90 eastbound on a bridge. These two ramps would then converge at the two-lane on-ramp to I-495 southbound.

This alternative requires adjustments to the I-495 mainline (shown in purple in the figure on the following page) to accommodate the ramp modifications.

I-495/I-90 Interchange Ramp Modifications (continued)



This preliminary recommendation would:

- Eliminate the weaves from the I-90 off-ramps to the toll plaza and improve safety.
- Provide additional ramp capacity for the I-495 southbound off-ramp to I-90, thereby improving the Level of Service (LOS) for traffic to A in the morning peak and B in the evening peak.
- Provide additional ramp capacity for the I-90 off-ramp to I-495 southbound, thereby improving the LOS for traffic to B in the morning and evening peaks. and
- Improve the LOS for traffic from I-495 northbound to I-90 eastbound to LOS E in the morning peak by providing a new off-ramp.

The I-495/I-90 Interchange is located adjacent to the Cedar Swamp Area of Critical Environmental Concern that contains protected species habitat, wetlands and water supply resources, and archeological sites that pose constraints on potential improvement alternatives. The recommended concept minimizes potential impact to environmental resources by keeping the modifications within the existing highway right-of–way to the greatest extent possible. However, there is a potential for wetland impacts from the new I-495 northbound ramp to I-90 eastbound, and a potential for noise impacts to residences in Hopkinton south of the toll plaza from the elevated I-90 westbound ramp to I-495 southbound. Additional environmental studies would be required for this alternative.

As discussed in Chapter 3, the study process that reviewed the I-495/Route 9 interchange developed several alternatives that interacted with the I-495/I-90 interchange. As a result, the study analysis reviewed the latter interchange as well. Although none of the alternatives that spanned the two interchanges are recommended, the study analysis of the I-495/I-90 interchange ended up producing a few preliminary improvement concepts for the that interchange, although it was not the primary focus of the study. This alternative in particular seems to hold significant promise. However, the I-495/I-90 interchange is a major highway facility, and any long-term, major investments merit a significant study and analysis effort. While this alternative should be retained as a strong option, a major study of the interchange should be undertaken to consider all issues and options.

Estimated construction cost: $100+ million (2012$).

Roadway and Intersection Congestion and Safety Improvements – The recommended actions within this category are expected to have a lower capital cost and require less environmental review. These projects may be implemented by MassDOT, private developers, or a public/private partnership. They include a number of projects to reduce congestion and improve safety in the Route 9 corridor. The recommended actions include:

- I-495/ I-90 Safety Improvements - Flatten the I-495 Northbound On-Ramp from I-90 to reduce the potential for truck roll-overs
- Widen Route 9 to provide three lanes in each direction between Computer Drive, Westborough and Deerfoot Road, Southborough
- Improve the intersection of Research Drive/Connector Road by adding a new northbound right turn lane, upgrading the traffic signal by installing detection equipment, optimizing signal timing and phasing patterns, and adding signage and pavement markings.
- Improve the intersection of Research Drive/Route 9 Eastbound Ramps by installing a second westbound right turn lane, upgrading the traffic signal by installing detection equipment, optimizing signal timing and phasing patterns, and adding signage and pavement markings.
- Improve the Route 9/ Crystal Pond Road intersection by providing three through lanes in both directions on Route 9 and re-aligning the former Verizon site driveway to form a 4-way intersection, adding a second westbound left turn lane to Route 9, and adding an eastbound jug-handle to eliminate the existing Route 9 eastbound-to-westbound u-turn.
- Eliminate the egress from Park Central Drive to Route 9 westbound and create a new connector road to relocate the egress to Flagg Road.
- Consolidate driveways on Route 9 east of I-495, where possible, in order to reduce conflicts with traffic entering or exiting the commercial properties

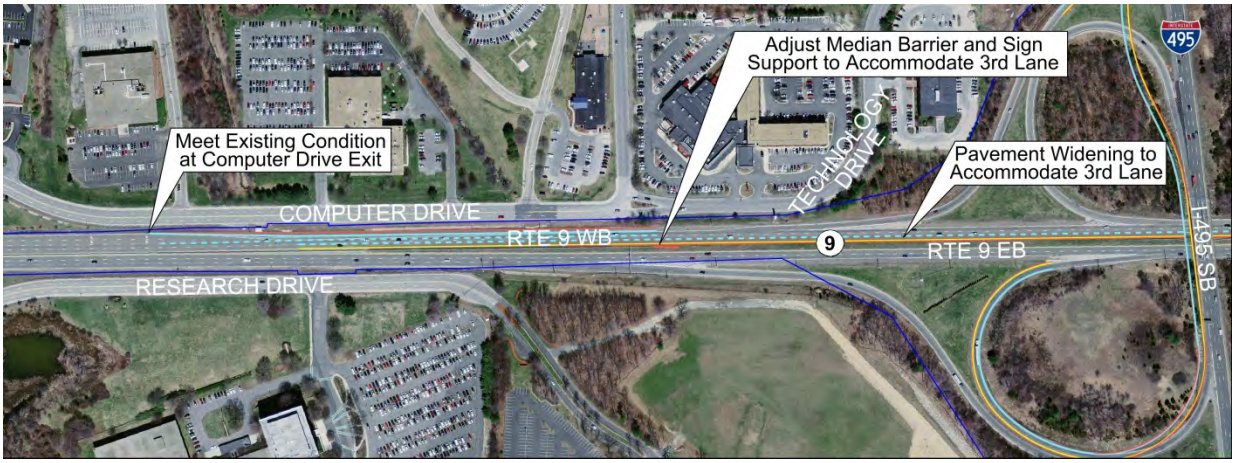
Roadway and Intersection Congestion and Safety Improvements: Flatten the I-495 Northbound On-Ramp from I-90

MassDOT would be responsible for flattening the curve on the I-90 ramp to I-495 northbound, which is susceptible to truck roll-overs. This would improve safety at the I-495/I-90 Interchange, and could be constructed within the existing right-of-way, independently of other proposed interchange ramp improvements. While no direct environmental impacts are anticipated for the ramp improvement, the I-495 northbound on-ramp is in close proximity to wetlands. Further environmental studies would be required.

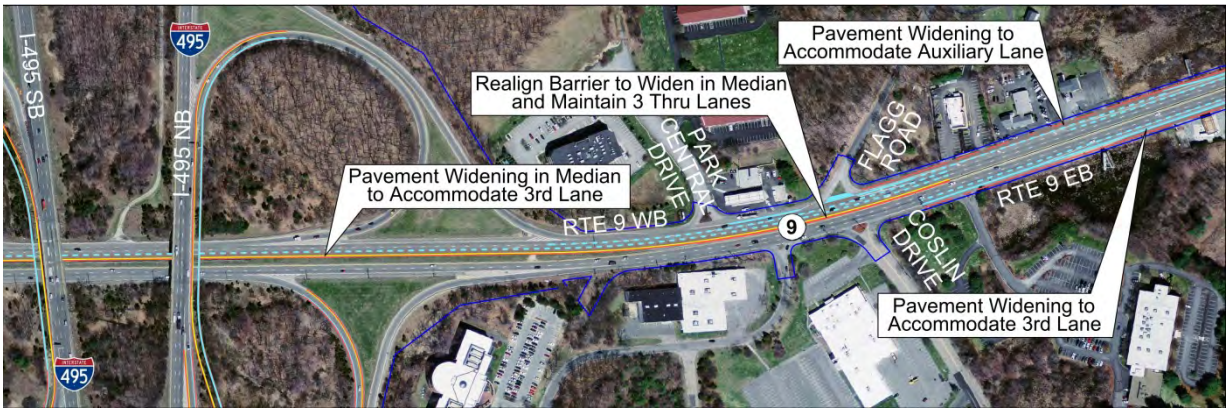
Estimated construction cost: $3 million (2012$).

Roadway and Intersection Congestion and Safety Improvements: Widen Route 9

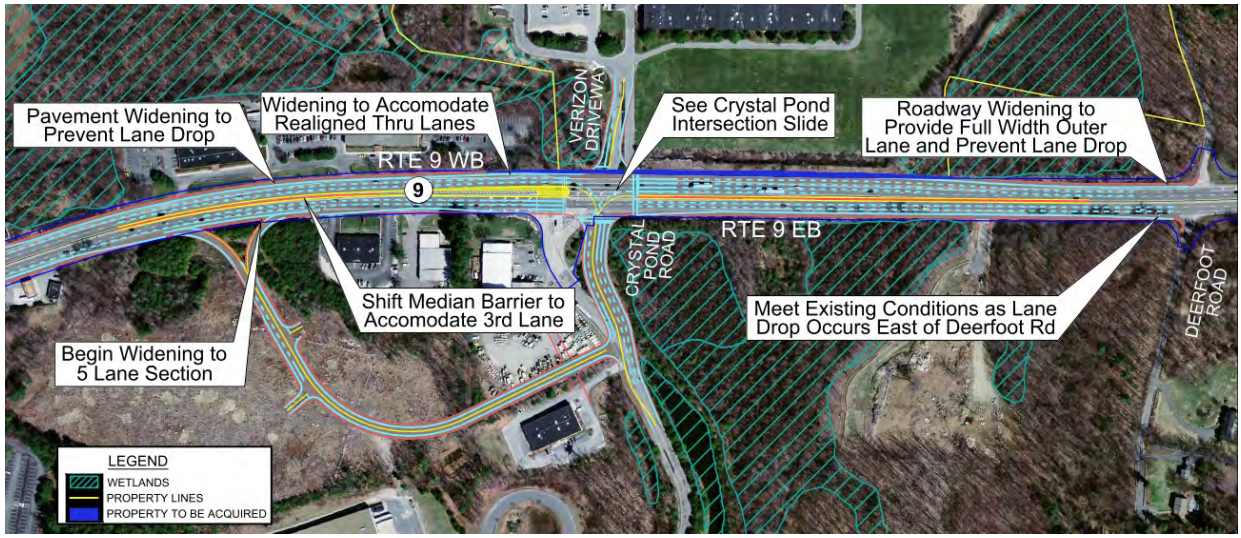
Route 9 Westbound Widening West of I-495



Route 9 Westbound Widening East of I-495 and Eastbound Widening East of Coslin Drive



Route 9 Widening East of I-495 (continued)



This project would widen Route 9 to three lanes westbound from Computer Drive in Westborough to Deerfoot Road in Southborough. It retains the merge of the I-495 southbound off-ramp with Route 9 westbound. Route 9 eastbound would be widened from Coslin Drive (Southborough) to Deerfoot Road. Most of the widening would occur within the existing right-of-way by widening in the median to accommodate the third travel lane in each direction. Additional right-of way will be required along the north side of Route 9 at the former Verizon property in Southborough. The Route 9 widening can be constructed separately but would be designed to tie into the proposed Route 9/Crystal Pond Road intersection improvements.

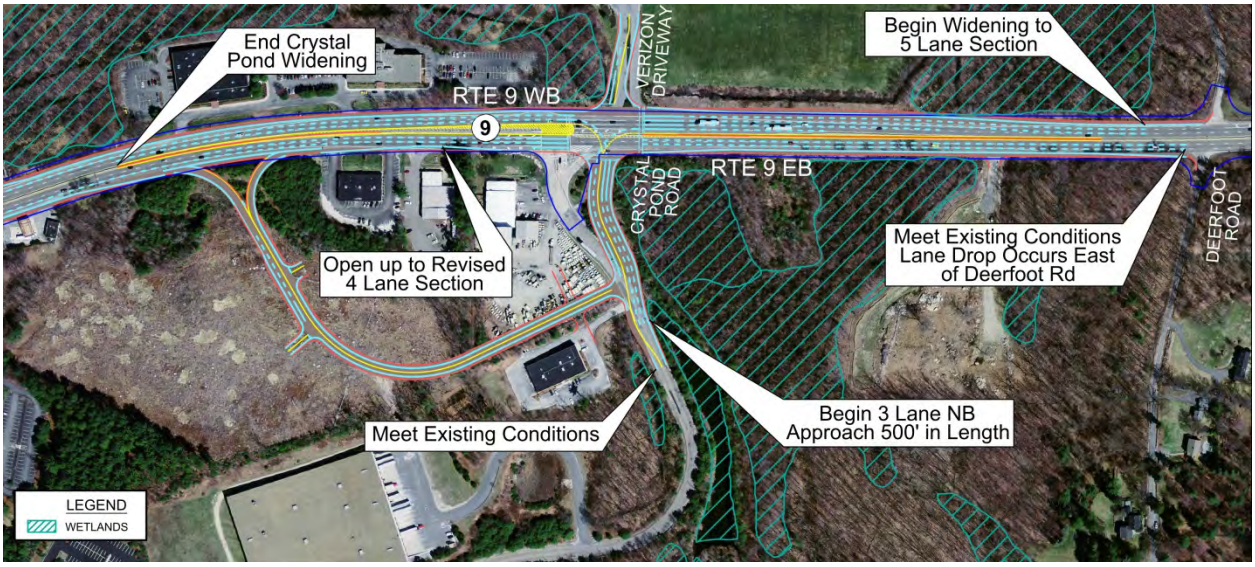
This recommended project would have the following benefits:

- The Route 9 westbound mainline west of I-495 will improve to LOS D in AM and LOS C in PM with Route 9 widening;
- Route 9 westbound mainline weave between the I-495 ramps will improve to LOS B in both AM and PM;
- The additional westbound lane on Route 9 will improve operations east of I-495 by balancing through traffic more evenly in three lanes which will provide more gaps for side street traffic. This will reduce delay for side street traffic waiting to turn onto Route 9 westbound;
- The Route 9 westbound on-ramp merge from I-495 southbound will improve to LOS D in AM and LOS C in PM;
- Route 9 westbound off-ramp to Computer Drive improves to LOS B in AM and LOS A in PM;
- The Route 9 westbound off-ramp to I-495 northbound will operate at LOS C in both AM and PM; and
- East of I-495, the added lane on Route 9 provides additional weaving capacity and increases the vehicle gaps for exiting side street traffic to enter Route 9, reducing their delay.

Most of the widening in this alternative can be accommodated within the existing right- of-way and avoids environmental impacts by widening toward the median. However, the area needed for additional right-of-way for the westbound widening at the former Verizon site (approximately ¼ acre) is predominantly wetlands, and construction of the additional lane in this area will result in direct impacts to wetlands resources. Additional environmental studies are required.

The estimated cost of this alternative is approximately $9.2 million (2012$).

Roadway and Intersection Congestion and Safety Improvements: Route 9 at Crystal Pond Road Intersection Improvements



This recommended project would realign and reconstruct the Crystal Pond Road intersection with Route 9 in Southborough to accommodate the added traffic anticipated from proposed development, and re-align the Verizon site driveway to form a 4-way intersection. An eastbound jug-handle would be added to eliminate the existing Route 9 eastbound-to-westbound u-turn.

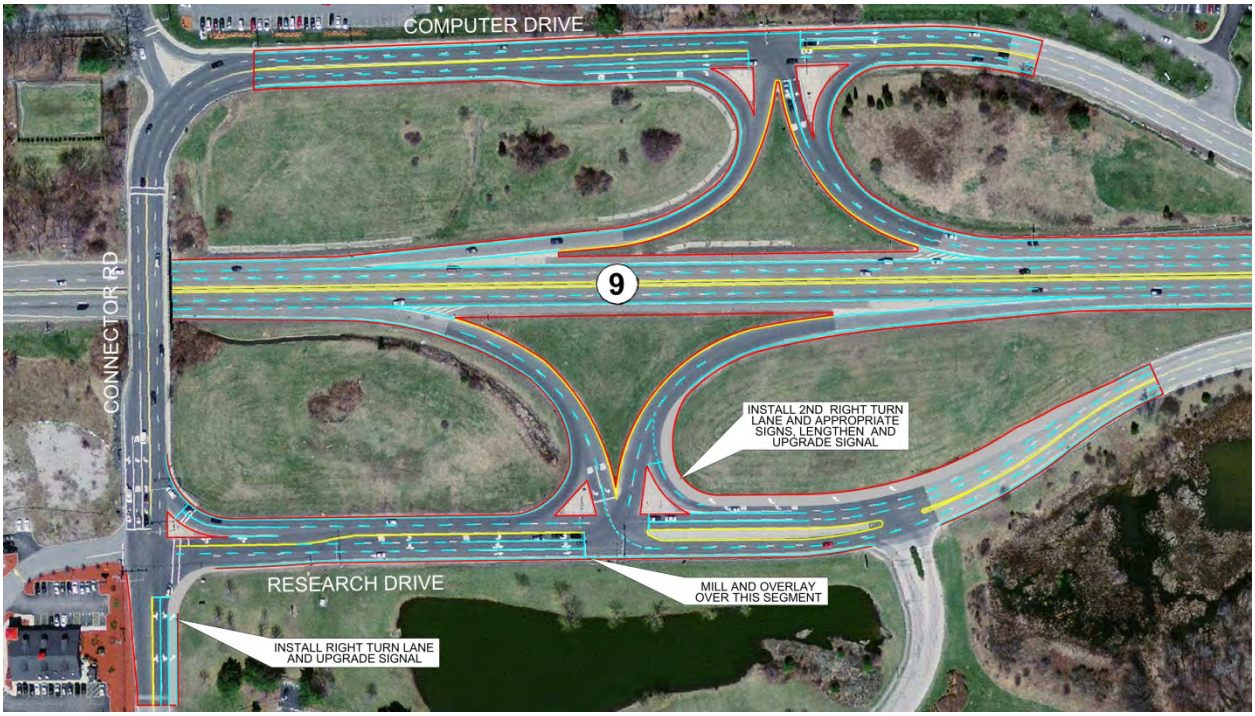
The improvements identified for this alternative would be able to accommodate an additional 500,000 square feet of new development, as well as replacement or modification of existing buildings as originally contemplated in the EMC proposal.[2] Accommodating any additional growth would require extensive additional improvements such as grade-separation of the intersection, with the potential to affect access for existing businesses on Route 9 in the vicinity of Crystal Pond Road. These measures should be considered if and when full build-out of the EMC property south of Route 9 is imminent.

This alternative would require acquisition of new right-of-way for the realignment of Crystal Pond Road and the jug handle as well as new right-of-way for widening Route 9 westbound to accommodate additional turn lanes at the intersection. The right-of-way required for the intersection improvements includes areas of wetlands adjacent to Crystal Pond Road and Route 9, resulting in direct impact to wetland resources. Additional environmental studies would be required.

Estimated construction cost: $2.1 million (2012$).

[2] Supplemental Final Environmental Impact Report, EMC Southborough/Westborough Campus, 2007

Roadway and Intersection Congestion and Safety Improvements: Research Drive/Connector Road Improvements



This recommended project includes improvements to Research Drive in Westborough at Connector Road and at the Route 9 Eastbound Ramps.

Connector Road/Research Drive

- This element will add a new northbound right turn lane and upgrade the traffic signal equipment as necessary and optimize signal timing and phasing, and
- Traffic operation improves to LOS D in AM and remains at LOS F in PM, although with lower delay and queue lengths.

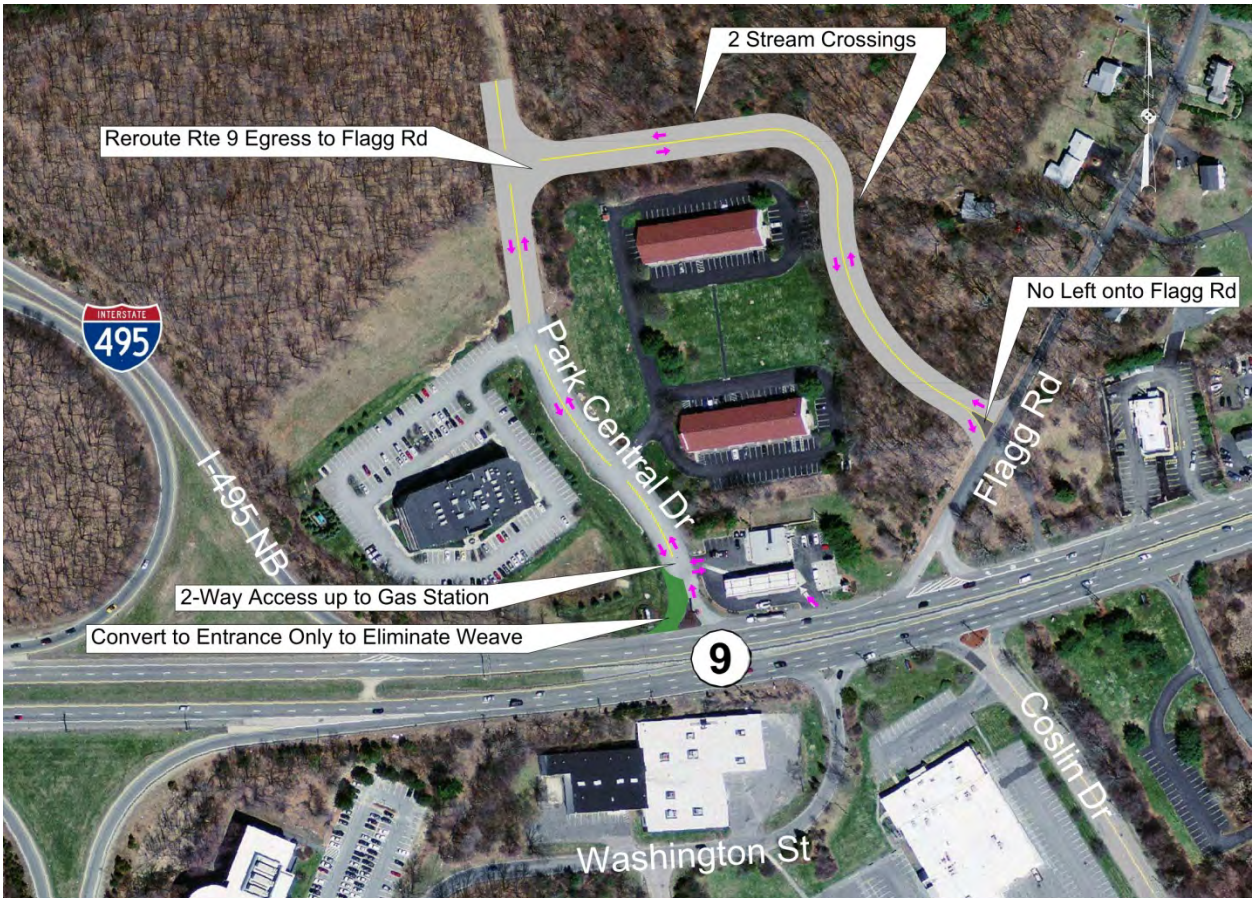
Research Drive and Route 9 Eastbound Ramps

- This element will install a second westbound right turn lane and upgrade signal equipment as necessary and optimize signal timing and phasing, and
- Traffic operation improves to LOS B in AM and LOS D in PM.

Extending the eastbound right turn lane on Computer Drive at the Route 9 Westbound ramps was originally considered as part of this alternative. However, the traffic analysis showed that this had no effect on intersection operations, and this element was eliminated. A small amount of additional right-of-way is required for the new right turn lane at Connector Road/Research Drive. The improvements at the Route 9 eastbound ramps are within the existing right-of-way. No environmental impacts are anticipated for either of the Research Drive improvements.

The estimated cost of the Research Drive improvements is $685,000 (2012$).

Roadway and Intersection Congestion and Safety Improvements: Route 9 Improvements at Park Central Drive and Flagg Road



This recommended project would likely be implemented by a private developer in response to further development of land accessed from Park Central Drive. The southbound right turn from Park Central Drive to Route 9 would be eliminated to improve safety by eliminating a very short, high-speed weave for vehicles exiting Park Central Drive onto Route 9 westbound with vehicles entering the I-495 northbound on-ramp. A new connector road between Park Central Drive and Flagg Road would be provided to allow egress to Route 9 westbound.

The connector road will require the purchase of new right-of-way and would cross an unnamed stream at two locations. Additional environmental studies would be required to determine the extent of impact associated with the stream crossings.

Estimated construction cost: $1.5 million (2012$).

Highway Maintenance – Actions in this category are generally low-cost signage and striping safety improvements that can be implemented by MassDOT in the short term using state-funded Maintenance contracts. The recommended action is:

- I-495/ I-90 Safety Improvements - Provide additional advance E-ZPass/Cash Only Lane signs on the I-495 Southbound Off-Ramp to I-90

Estimated construction cost: $60,000 (2012$)

Highway Operations Improvements – Actions within this implementation category include Intelligent Transportation Systems (ITS) and electronic toll collection technologies that would be implemented by MassDOT as part of system-wide improvements beyond the immediate I-495/Route 9 Interchange Study area. They include:

- Add ITS Signage on I-495 - MassDOT is implementing an ITS system on I-495 between Hopkinton and Andover as part of the Interstate 495 Transportation Management (ATMS) project though a design-build contract that will include:
  - 27 closed circuit television cameras
  - Two Variable Message Signs (VMS)
  - Two Dual Use Traffic Counting Stations
  - Two Weigh-In Motion Counting Stations
  - Fiber optic lines

  The exact location of these elements has yet to be determined. Construction is anticipated to begin in the late winter/spring of 2014.

- Add ITS Signage on Route 9 - One of the goals of the MassDOT ITS Program is to integrate arterial management with freeway management. As part of the I-495 ITS project, new ITS infrastructure would be provided at/near the Route 9 interchange. Variable message signs to serve Route 9 could be located near Route 30 in Westborough west of I-495 and near Route 85 in Southborough east if I-495. Both of these locations are outside of the study area. As MassDOT continues work on the ITS Program and Strategic Plan, the Route 9 arterial could be considered for ITS communications infrastructure.

- Consider Alternate Tolling Technologies - Subsequent to the development of alternatives for the *I-495/Route 9 Interchange Study,* MassDOT began work to implement statewide All-Electronic Tolling (AET) to replace the existing toll plazas on the Massachusetts Turnpike, Tobin Bridge, and Harbor Tunnels with overhead gantries to be installed along the highways. Cash will be eliminated from the system entirely, as all transactions will be conducted using either the current E-ZPass system or through video tolling (in which invoices are sent to customers whose license plates are recorded by the AET camera system). This concept will lessen congestion, improve air quality, and reduce operating costs.

Multimodal Improvements – Public Transit, Pedestrians, and Bicycles – This group of recommendations includes actions to provide alternatives to travel by single-occupancy vehicle (SOV) to and within the study area, consistent with MassDOT's GreenDOT sustainability initiative. The recommended actions include:

Transit – Each of the following transit recommendations provides an opportunity to reduce the use of single occupancy vehicles and enhance mobility options, particularly for those without an automobile. Implementation of these actions will require continued coordination with the Worcester and

MetroWest Regional Transit Authorities, the towns of Westborough and Southborough, the MBTA, the Metro/West 495 Transportation Management Association (TMA), MassDOT Rail and Transit Division, and the businesses within the study area.

- The Worcester Regional Transit Authority and the MetroWest Regional Transit Authority should evaluate the feasibility of providing connecting bus service along Route 9 within the study area. This service could serve the dual purpose of providing transit access to the job centers of the study area and providing inter-regional transit mobility.

- The Metro/West 495 TMA should work with the regional transit authorities and businesses to implement bus shuttle service from the Westborough Commuter Rail Station to job centers in the I-495/ Route 9 area.

- The Metro/West 495 TMA should work with the regional transit authorities and businesses to implement bus shuttle service from the Southborough Commuter Rail Station to job centers in the I-495/ Route 9 area.
- MassDOT should support the development of a park-and-ride lot in the vicinity of Connector Road and Research Drive in Westborough to encourage carpooling and to provide a location for passengers to access WRTA and MWRTA bus service, or other bus shuttles.

- Consider the use of employer-sponsored or TMA-sponsored shuttles to provide access from the park-and-ride facility to locations within the business and office parks in the I-495/Route 9 area, and/or to and from the commuter rail stations.

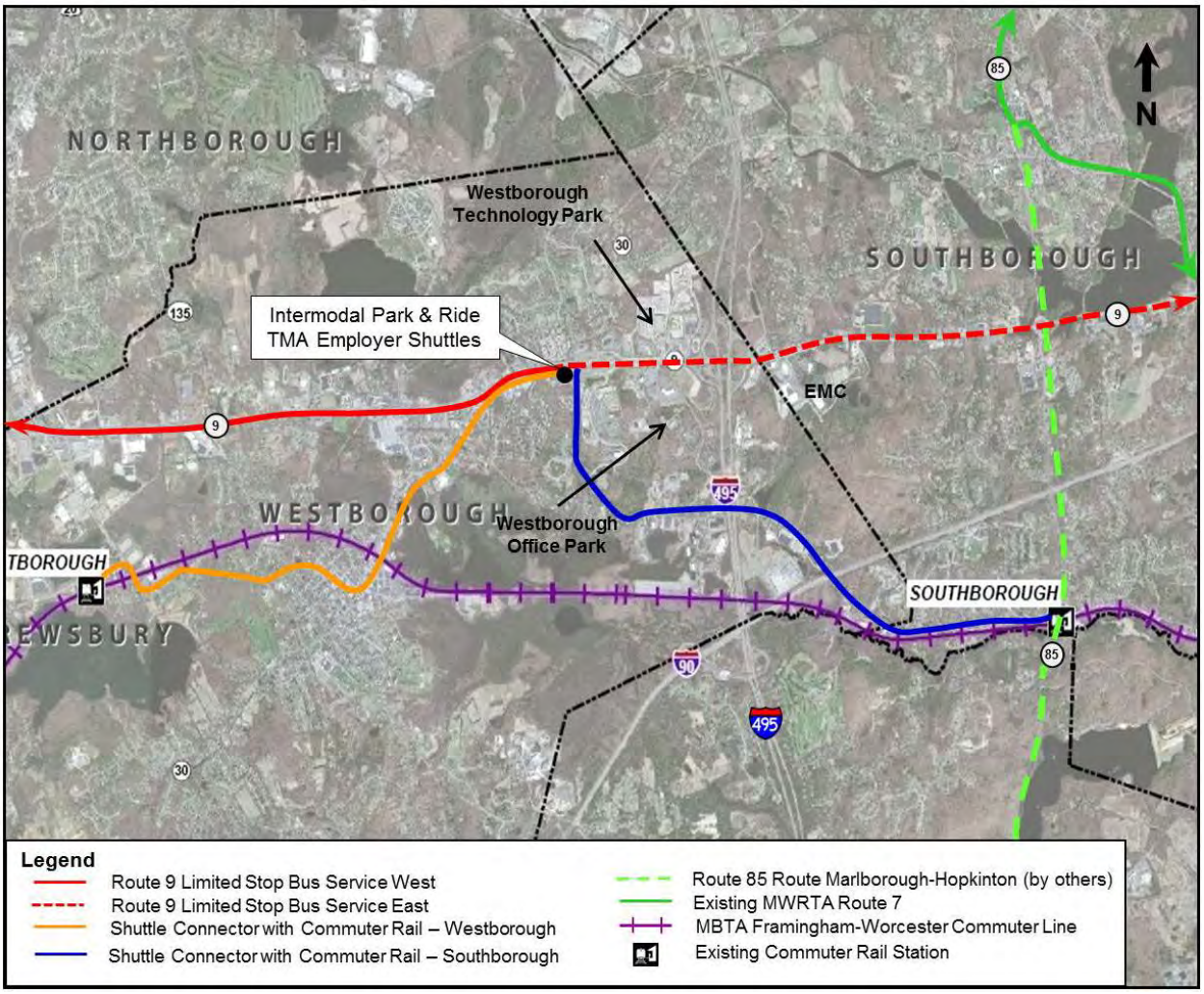
- Evaluate the feasibility of increasing the frequency of MBTA Framingham/Worcester Line commuter rail reverse-peak-direction trips (Boston to Worcester), especially during peak hours to support reverse commuting.

- Encourage increased employer participation in the MetroWest 495 Transportation Management Association.

- Encourage Westborough and Southborough to revise zoning codes to provide for more mixed-use, transit supportive mixed use development.

Subsequent to the development of the recommendations for the *I-495/Route 9 Interchange Study*, the WRTA announced plans to start shuttle service between the Westborough MBTA Commuter Rail Station and business parks at Computer and Technology Drives along Route 9 in Westborough. This service is planned to start in the fall of 2013. The MWRTA also received a Job Access and Reverse Commute (JARC) grant from the MassDOT Community Transit Grant Program to fund an extension of their Route 1 Green Line Shuttle to the Westborough Technology Park, which is within the WRTA service area. This service will connect to the WRTA commuter rail shuttle service, and will begin operations in the fall of 2013 once the WRTA service is operating. Route 9 connector service will be provided when these two services are in operation. The MWRTA will also include a stop at the Southborough commuter rail station on their extended Route 1 Green Line Shuttle to provide commuter rail shuttle service.

Multimodal Enhancements: Transit



Pedestrians – The actions in this category are intended to enhance pedestrian accommodations and encourage walking trips within the study area. Implementation of these actions is primarily the responsibility of the Towns of Southborough and Westborough, working in coordination with private developers. MassDOT will be responsible for incorporating pedestrian accommodations in their projects where appropriate.

- Install sidewalks and improve on-site pedestrian amenities within private developments as they are constructed or reconstructed.
- Provide better sidewalk connections from business parks north and south of Route 9 to public sidewalks on Computer Drive and Research Drive.
- Upgrade/install handicap ramps as intersections and driveways are reconstructed as part of redevelopment projects.
- Provide pedestrian connections between transit stops and the surrounding land uses.
- Upgrade pedestrian facilities by adding pedestrian countdown signals at Route 9/Crystal Pond Road in conjunction with the intersection improvements

- Upgrade pedestrian facilities by adding pedestrian countdown signals and an additional crosswalk on Connector Road in conjunction with improvements to the Research Drive/Connector Road intersection.

- Encourage Westborough and Southborough to revise zoning codes to provide for smaller-scale retail/service development within walking distance to support the needs of employees within the office/industrial parks in the study area.

Bicycles – The recommended actions in this category include actions to enhance bicycle accommodations and encourage biking as an alternative mode of travel. Recommendations are directed toward local streets serving the study area such as Flanders Road and Connector Road, as Route 9 is a limited access highway from the I-495 interchange west within the study area. Implementation of these actions will require continued coordination with the Towns of Southborough and Westborough, private developers, the MetroWest/495 TMA, and MassDOT. The recommended actions include:

- Undertake a bicycle study to include an inventory of existing facilities and an identification of gaps, to be done by the Central Massachusetts and Boston Region MPOs.

- Require that developers provide improved options for bicycling commuting at business parks and park-and-ride lots through such features as dedicated all-weather parking, secure bicycle storage, and changing facilities with showers.

- Work with the MetroWest/495 TMA to advocate for improved bicycle infrastructure, encourage adoption of improved bicycle accommodation requirements for development, provide information on bicycle routes and bicycle safety, and promote bicycling as a viable transportation option in the study area.

- Investigate the feasibility of a bike path proposed by the Town of Westborough Bicycle and Pedestrian Advisory Committee along the former Boston and Worcester Street Railway alignment. A section of this former trolley line is located within the Walkup Robinson Memorial Reservation Park abutting Friberg Parkway.

- Incorporate bicycle route connections as development/redevelopment occurs.

- Provide bike accommodations (lanes, shoulders) where appropriate on local roadways connecting with the study area, including Flanders Road, Connector Road, and Washington Street in Westborough, and Southville Road in Southborough.

- Coordinate with the MetroWest/495 TMA and encourage participation in their Bike Group.

Next Steps

The *I-495 & Route 9 Interchange Improvement Study* has identified a broad range of alternatives to address the congestion and safety issues within the study area, and to support future commercial and industrial growth in the area. There is general consensus on the recommended plan, but implementation will nevertheless be challenging. While the primary responsibilities for implementation are distributed among MassDOT, private developers, municipalities, and the Regional Transit Authorities (RTA),

implementation of the components of this "master plan" will require close coordination between these groups.

Implementation could also be complicated by fact that the area is split between two Regional Transit Authorities (Worcester and MetroWest RTAs) and two Metropolitan Planning Organizations (MPOs) (Central Massachusetts and Boston Region MPOs). Given the constraints on transportation funding, particularly for major infrastructure projects with high capital costs, there will need to be additional discussions and decisions regarding regional priorities for transportation investment. While this study has identified a series of recommendations to address the needs of the study area, there are also other projects within the broader 495/MetroWest region, such as improvements to the I-495/I-290 interchange, that are also needed to address highway congestion and safety issues. The transportation agencies, planning organizations, municipalities and stakeholders that will be collaborating to make these decisions have successfully worked together as the Study Advisory Group to develop the recommended plan and will need to continue to do so to implement the recommendations of this study.

An important next step will be to determine which recommendations should receive priority within the context of the broader regional needs, and to identify funding to implement the projects. MassDOT has initiated *The Way Forward: A 21st Century Transportation Plan*, which presents a case for additional investment in the Commonwealth's transportation system and identifies potential funding sources to support that investment, a critical step for moving the recommendations in this study on the on road to implementation.

For more information visit the project website at:

http://www.massdot.state.ma.us/planning/Main/CurrentStudies/I495Route9InterchangeStudy.aspx