2016

Regional Transportation Plan

for the Pioneer Valley Metropolitan Planning Organization

Prepared by:
Pioneer Valley Planning Commission

EXECUTIVE SUMMARY

2016 Executive Summary

to the

Regional Transportation Plan

Final Version – July, 2015

Prepared by the
Pioneer Valley Planning Commission

For the Pioneer Valley
Metropolitan Planning Organization

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Prepared in cooperation with the Massachusetts Department of Transportation, the U.S. Department of Transportation - Federal Highway Administration and Federal Transit Administration, and the Pioneer Valley Transit Authority. The views and opinions of the Pioneer Valley Planning Commission expressed herein do not necessarily state or reflect those of the U.S. Department of Transportation.

What is the RTP?

The Pioneer Valley Regional Transportation Plan (RTP) outlines the direction of transportation planning and improvements for the Pioneer Valley through the year 2040. It provides the basis for all state and federally funded transportation improvement projects and planning studies. This document is an update to the current RTP (last published in 2011) and is endorsed by the Pioneer Valley Metropolitan Planning Organization (MPO).

The long range plan concentrates on both existing needs and anticipated future deficiencies in our transportation infrastructure, presents the preferred strategies to alleviate transportation problems, and creates a schedule of regionally significant projects that are financially constrained - in concert with regional goals and objectives and the Moving Ahead for Progress in the 21st Century (MAP-21) legislation.

Although the RTP focuses on transportation, it is a comprehensive planning document that has been developed and coordinated with other non-transportation planning efforts in the region. The Pioneer Valley Plan for Progress presents a strong case for improving our transportation infrastructure to encourage growth and economic development. The plan also recognizes that the region's cities and towns are experiencing changes which will affect its people, landscape, economy, and governmental institutions for decades. Changes in land use and development patterns are transforming the traditional visual character and function of the region and there is an increased awareness of the role transportation plays in influencing regional growth and change.

Strategic planning is a continuing process that produces planning documents and agendas which decision-makers can use to prioritize local needs. A truly effective planning process relies upon the input of the chief elected official(s), city and town staff, and the general public. In addition, the strategic planning process is based on a realistic assessment of external forces - political, social, economic, and technological - that can affect Pioneer Valley communities and residents. All recommendations generated through the strategic planning process must have a real potential for implementation. By developing the RTP for the Pioneer Valley in such a manner, the region will be able to conduct successful transportation improvement programming through the year 2040.

2016 Pioneer Valley RTP Chapter Summary

Introductory Chapters

Chapter 1
2016 Update to the RTP
Defines the RTP Vision, Goals and Problem Statements. All of Chapter 1 is included in this Executive Summary

Chapter 2
Transportation Planning Process
Provides an overview of the federal and state transportation planning requirements, key participants, and major transportation products.

Public Participation Chapters

Chapter 3
Public Participation
Provides a summary of RTP public participation efforts and comments received on the draft RTP.

Chapter 4
Environmental Justice and Title VI Certification
Certifies compliance of the regional planning process with the above laws.

Existing Conditions Chapters

Chapter 5
Regional Profile
Summarizes the characteristics of the regional transportation system.

Chapters 6 – 11
Safety, Security, Congestion, Pavement, Sustainability, Livability and Climate Change
Provide an overview of ongoing transportation planning activities in each of the above areas to advance the goals of the RTP.

System Performance Chapters

Chapter 12
Performance Measures
Identifies the regional targets developed to track system performance.

Chapter 13
Future Forecasts
Summarizes future regional population, housing, and employment forecasts.

Chapter 14
Needs, Strategies, Projects
Prioritizes the transportation improvement projects included in the RTP.

Conformity Chapters

Chapter 15
Financial Element
Identifies the projects that can be funded using current revenue sources.

Chapter 16
Conformity
Addresses compliance with federal and state air quality requirements.

Chapter 17
Environmental Consultation
A summary of consultation efforts with environmental groups to develop the RTP.

RTP Vision and Goals

The Pioneer Valley region strives to create and maintain a safe, dependable, environmentally sound and equitable transportation system. We pledge to advance performance based strategies and projects that promote sustainable development, healthy and livable communities, provide for the efficient movement of people and goods and advance the economic vitality of the region.

Goals:

1. **Safety** - To provide and maintain a transportation system that is safe for all modes of travel users and their property.
2. **Operations and Maintenance** - To provide a transportation system that is dependable and adequately serves users of all modes. To give priority to the repair of existing streets, roads and bridges.
3. **Environmental** - To minimize the transportation related adverse impacts to air, land, and water quality and strive to improve environmental conditions at every opportunity and incorporate green infrastructure.
4. **Coordination** - To collaborate the efforts of the general public with local, state and federal planning activities.
5. **Energy Efficient** - To promote the reduction of energy consumption through demand management techniques and increase the use of energy efficient travel modes.
6. **Cost Effective** - To provide a transportation system that is cost effective to maintain, improve and operate.
7. **Intermodal** - To provide access between travel modes for people and goods while maintaining quality and affordability of service.
8. **Multimodal** - To provide a complete choice of adequate travel options that are accessible to all residents, visitors and businesses.
9. **Economically Productive** - To maintain a transportation system that promotes and supports economic stability and expansion.
10. **Quality of Life** - To provide and maintain a transportation system that enhances quality of life and improves the social and economic climate of the region.
11. **Environmental Justice** - To provide an equitably accessible transportation system that considers the needs of and impacts on low-income, minority, elderly and disabled persons.
12. **Land Use** - To incorporate the concepts of Sustainable Development in the regional transportation planning process and integrate the recommendations of the current Regional Land Use Plan into transportation improvements.
13. **Climate Change** - To promote and advance transportation projects that reduce the production of greenhouse gasses, such as CO2, and advance new energy technologies consistent with the Pioneer Valley Clean Energy Plan.

Emphasis Areas

A total of five emphasis areas were identified to assist in the development of regional transportation needs and strategies to assist in the achievement of the regional goals. These emphasis areas are not intended to be a replacement for the regional transportation goals. Instead, they were established with the recognition that many of the transportation improvement strategies included as part of the RTP Update can meet multiple regional transportation goals.

	Safety	Operations and Maintenance	Environmental	Coordination	Energy Efficient	Cost Effective	Intermodal	Multimodal	Economically Productive	Quality of Life	Environmental Justice	Land Use	Climate Change
Safety and Security	√			√		√	√	√		√	√		
The Movement of People	√	√	√	√	√	√	√	√	√	√	√	√	√
The Movement of Goods	√	√	√	√	√	√	√	√	√	√	√	√	√
The Movement of Information			√	√		√	√	√	√	√	√		√
Sustainability	√	√	√	√	√	√	√	√	√	√	√	√	√

1. **Safety and Security** - The safety and security of the regional transportation system are vital to the efficient movement of people and goods. It is important to ensure that the transportation system is safe for all users across all modes. The RTP will identify locations for additional study that may benefit from recommendations to improve safety. Similarly, the security of our transportation infrastructure and operations centers will rely on the development of sound planning for their safeguard. The RTP will be coordinated with ongoing Homeland Security efforts in disaster mitigation and evacuation for the region.
2. **The Movement of People** - The movement of people is generally what most people associate with the term “transportation.” This area consists of the identification of needs for all modes of transportation and how to increase their efficiency. Needs will be identified to assist in reducing existing and anticipated future congestion in the region as well as improving the connections between the various transportation modes.
3. **The Movement of Goods** - The Pioneer Valley Region is strategically located at a geographic crossroads in which more than one third of the total population of the United States can be reached by an overnight delivery. The availability of an efficient, multimodal transportation network to move goods through the region is essential to maintain economic vitality. Several modes of transportation are available in the region to facilitate the movement of goods. These modes include truck, rail, air, and pipeline.
4. **The Movement of Information** - The movement of information consists of the ability to utilize technology to maximize the efficiency of the existing transportation system and to convey information to the traveling public.

Intelligent Transportation Systems (ITS) technology can include devices that integrate with traffic signal systems, provide real-time schedule information, and electronic fare payment. In addition, information sharing between agencies can reduce duplicative data collection and assist in the completion of ongoing studies.

5. **Sustainability** - Sustainability considers both the environmental and social costs of the transportation system. A sustainable transportation system improves access and mobility while reducing environmental impacts such as the production of greenhouse gas emissions and increased air pollution. Sustainable transportation projects also have a positive impact on society through a reduction in single occupant vehicle use, the promotion of transportation modes that have lower impact on air quality, the promotion of fuel-efficiency, advancing healthy lifestyles, and supporting healthy walk able and livable communities. Sustainable transportation projects are also consistent with the principles of the Commonwealth's GreenDOT Initiative.

Problem Statements

In order to advance the vision and goals of the RTP, a series of problem statements were developed. Problem statements are concise descriptions of the overarching issues that must be addressed through the implementation of the RTP. Each problem statement was developed based on the input received during the public outreach process for the Draft RTP. The framework for the problem statements was developed early on in the update of the RTP through a series of five regional focus groups. Chapter 12 of the RTP identifies a series of transportation needs, strategies, and projects that also assist in advancing a solution to each problem statement. A total of seven problem statements were identified through RTP outreach efforts and are summarized below.

1. **There are insufficient resources to support the maintenance requirements of the regional transportation system.**

This update to the RTP identifies a number of critical transportation improvement projects for the Pioneer Valley region, but in short, there are not enough resources to fund all the necessary improvements to keep the transportation system in a state of good repair. Chapter 12 of the RTP documents several needs and strategies geared towards identifying additional sources of revenue.

Poor pavement condition on East Street in South Hadley, MA.

One obstacle is the disconnect between transportation revenue and the rising cost of transportation improvements. For the purpose of this RTP a 1.5% per year increase in transportation revenue is assumed versus a 4% per year increase in the cost of transportation projects. This is not sustainable. The rising cost of transportation improvement projects has resulted in many projects being pushed back into future years for construction. It also results in the development of several phased projects that can be constructed at a more manageable cost. Ultimately, this is a poor use of transportation funds as any cost savings in the short term are offset by inflated long term project cost.

Many communities have stated they no longer consider the TIP as a viable funding source for anything but the most expensive transportation improvement projects as the process from design to construct takes too long, the cost for project design is too expensive, and unforeseen project changes can create the need to reapply for necessary permits and acquire right-of-way.

On the national scale, the federal Highway Trust Fund is not able to keep pace with the current pace of transportation spending. The trust fund relies on federal gasoline taxes (18.4 cents per gallon of gasoline and 24.4 cents per gallon of diesel) yet the federal gasoline tax has not been adjusted in over 20 years. It is estimated that the federal government spends approximately $54 billion on highway and transit projects every year but only $35 billion is generated in revenue through the federal gasoline tax.[1]

Route 116 Bridge from Holyoke to Chicopee closed for repairs

[1] Ryan Alexander, "Bumps Ahead for the Highway Trust Fund," *US News and World Report*, 1 July 2014, http://www.usnews.com/opinion/economic-intelligence/2014/07/01/congress-needs-a-long-term-solution-for-the-highway-trust-fund, Web, 15 May 2015.

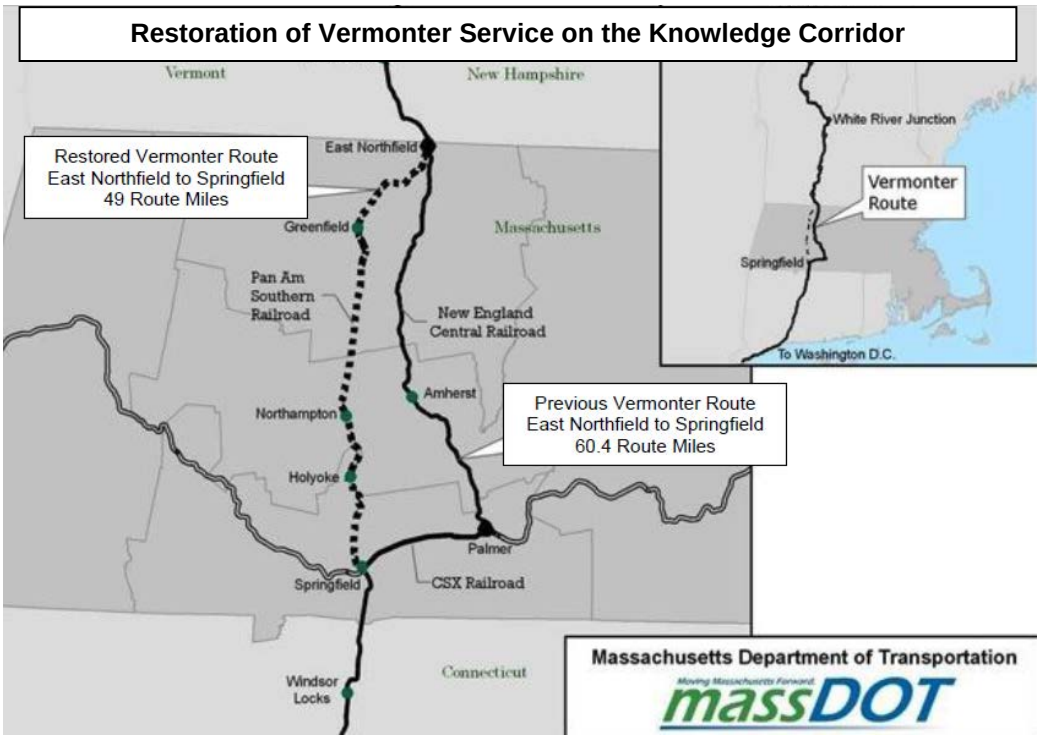
Recently, Massachusetts voters repealed a law that would have increased the state gas tax at a rate consistent with inflation. While this repeal does not mean the state gas tax cannot be increased, it does mean future increases will need to be tied to legislative action. As a result, future gas tax revenue cannot be considered for long range planning purposes.

At the local level, communities rely on Chapter 90 funding to advance necessary maintenance projects. Distributed on a formula basis, the Chapter 90 funding is tied to the passing of a Transportation Bond Bill by the state legislature. Massachusetts Governor Charlie Baker recently approved $300 million in Chapter 90 funds for local communities. This funding is critical to maintain local roads which are not eligible for federal transportation dollars. However a 2012 survey completed by the Massachusetts Municipal Association estimated that a total of $562 million/year would be required to keep roadways in a state of good repair. A complete breakdown of the need for additional transportation revenue is presented in Chapter 13 of the RTP.

2. Residents desire expanded regional passenger rail service.

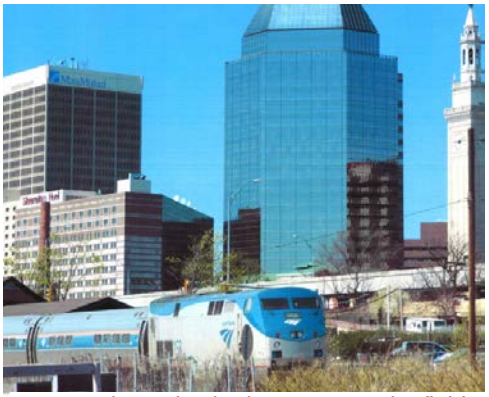
In 2014, construction was completed on the upgrade to the existing railroad track infrastructure for the Knowledge Corridor line. These improvements allowed passenger rail service via the “Vermonter” to return to this line and save nearly 40 minutes in travel time over the previous route alignment. The return and future expansion of this rail service is by far one of the most popular topics raised by local officials and residents during opportunities for public participation.

The Massachusetts State Legislature recently identified expansion of passenger rail in the Pioneer Valley region as a priority and secured $30 million in the Transportation Bond Bill to support this effort. These funds could be used to initiate service between Greenfield and Springfield. A 2015 Action Plan for enhanced passenger rail service examined three service options. The plan recognizes this is not just a transportation enhancement but an economic driver that requires collaboration between RPAs, Chambers of Commerce, Regional Tourism Councils, individual communities, and other stakeholders to develop and promote a marketing plan. Another important element will be the development of a mode shift plan in cooperation with major employers and other transportation stakeholders. Finally, enhanced service will require permanent rail platforms to access the trains at all rail stations.



In addition to enhanced passenger rail service along the Knowledge Corridor, there is a strong desire to expand passenger rail service in the east-west direction between Springfield and Boston. MassDOT and the Vermont Agency of Transportation, in collaboration with the Connecticut Department of Transportation, are conducting a study to examine the opportunities and impacts of more frequent and higher speed intercity passenger rail service on two major rail corridors known as the Inland Route and the Boston to Montreal Route. This Northern New England Intercity Rail Initiative is expected to be complete by 2015 and includes the following key elements:

- Service Levels and Service Development Plans
- Tier 1 Environmental Assessment and Documentation
- Infrastructure Provisions
- Ongoing Stakeholder Engagement and Public Meetings
- Methodology for Service and Infrastructure Provisions



Amtrak service in downtown Springfield

3. There is a need for innovative, cost-effective solutions independent of the regional transit authorities to provide services to rural areas.

The RTP focuses on a number of strategies to increase transit ridership however this can be difficult in rural areas that may not have the population density to support traditional fixed route transit service. Transportation for Massachusetts has identified the lack of public bus transportation in most rural communities as one of its top transportation challenges for Western Massachusetts.

Route 112 in Worthington

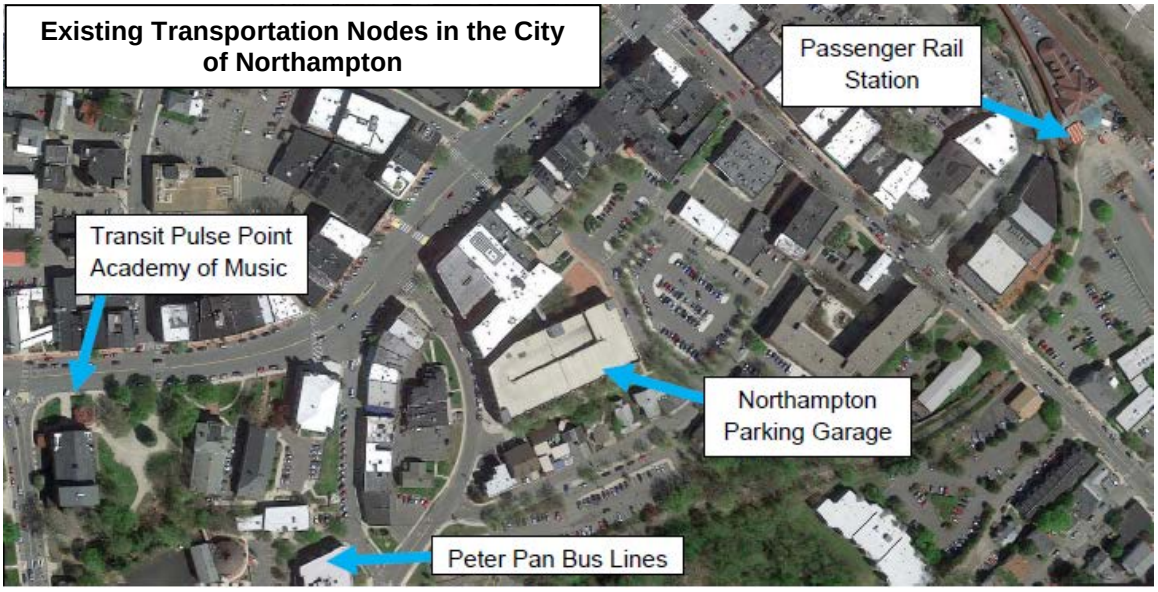
While enhanced services are desired, existing transit service models may not be cost effective. MassDOT has formed a series of Regional Coordinating Councils (RCC) to allow transit stakeholders to work together to identify and address transportation needs in their region. More information on the two RCCs in the Pioneer Valley region is provided in Chapter 3, section C. Innovation is the key in the development of new rural transit service. This can consist of the identification of overlapping duplicative services, adaptation of existing underutilized services, and the development of partnerships with local business to provide new services. It will be important to continue to work with the newly established RCCs, the existing transportation providers, and human service providers to identify opportunities to develop cost effective and replicable models to provide rural transit service in the Pioneer Valley.

4. A new intermodal facility is necessary to support and enhance ongoing transportation services in the City of Northampton.

Intermodal transportation facilities encourage the use of alternative transportation modes through the coordination of a variety of transportation modes at a strategic location. Amenities such as waiting areas, restrooms, and food service may also be provided. Larger facilities are often incorporated into developments that may include residential units as well as retail and office space. The Holyoke Transportation Center opened in 2010. Construction on the Union Station Intermodal Center in Springfield is scheduled to be completed in 2016. The Westfield Elm Street Urban Renewal Plan includes an intermodal center that could begin construction in the next few years.

Springfield Union Station Intermodal Center - Source: Springfield Redevelopment Authority

The City of Northampton is served by fixed route transit service that pulses out of a bus stop located in front of the Academy of Music. Passenger rail service returned to the City of Northampton in 2014 at their Union Station site. Intercity bus services are provided by Peter Pan Bus Lines near the city's Roundhouse parking lot. There is limited coordination between the passenger rail and transit service and all three modes are located in different sections of the downtown. These transportation nodes are shown on Figure 1-2.



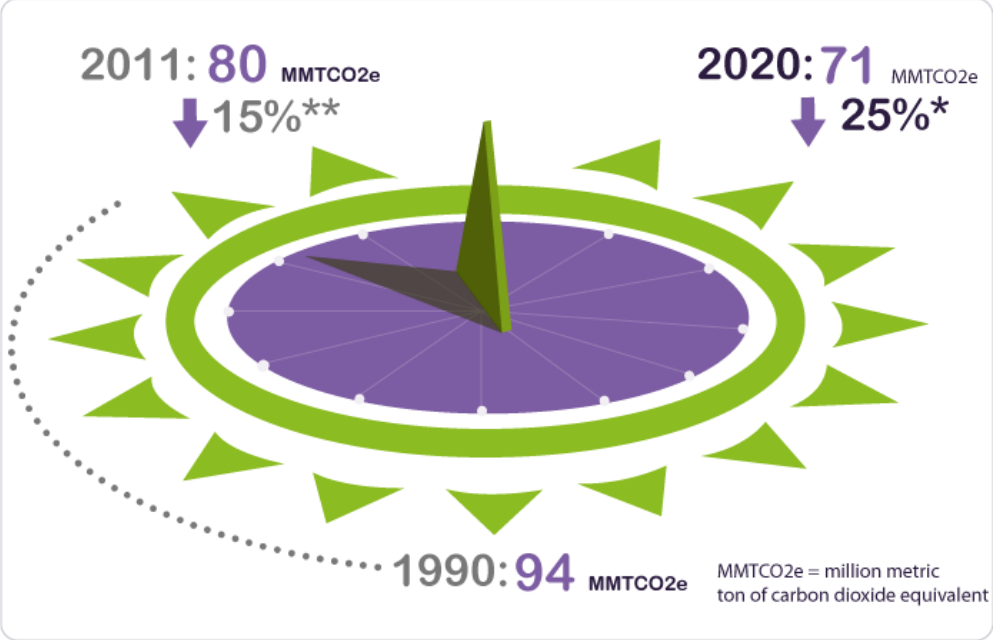
The city has discussed the need to move its existing transit pulse point at the Academy of Music further east along Main Street. The relocation of this pulse point or the creation of a secondary pulse point closer to the heart of the city could assist in enhancing transit ridership and future connections to passenger rail service at Union Station. As a long term downtown improvement, the City of Northampton has discussed the need to evaluate locations for a multi-modal facility near the railroad tracks which could include an indoor train station, bus connections, and commuter parking. Additional analysis is necessary prior to the advancement and implementation of changes to existing transportation service in downtown Northampton. The

identification of an appropriate site for an intermodal transportation center in the City of Northampton would improve the efficiency of existing transportation services and provide opportunities to enhance the local economy through transit oriented development.

5. **Increased and comprehensive resources and policies to improve sustainability in the transportation sector are necessary if the region is to meet its fair share of GHG reductions to comply with the Massachusetts Global Warming Solutions Act.**

The Massachusetts Global Warming Solutions Act (GWSA) identifies a number of measures to assist the Commonwealth in achieving Greenhouse Gas emissions reduction goals. The GWSA is summarized in Chapters 2 and 8 of the RTP.

The transportation sector is one of the largest contributors to greenhouse gas pollution. As of 2011, the Commonwealth has made measurable progress towards meeting its goal of a 25% reduction in GHG emissions by 2020.



** Percentage Reduction below 1990 baseline level*
*** Source: MassDEP (2014). Massachusetts Annual Greenhouse Gas Inventory*

While regional specific targets are not included as part of the GWSA, the PVPC has developed a series of specific planning initiatives to assist in the documentation and reduction of GHG emissions. “Our Next Future” was created to chart a course for a more vibrant, competitive, sustainable and equitable region. This is a regional plan, designed to achieve success through promoting collaboration between communities on a regional basis. With this

plan, we are seeking to build a sustainable prosperity in the Pioneer Valley. This includes a clean environment, safe and walkable neighborhoods, options for healthy exercise and play, and viable transportation alternatives. The plan ultimately seeks to promote the sustainability of the world at large, by reducing our reliance on foreign oil, increasing our energy efficiency, cutting our greenhouse gas emissions and preventing water and air pollution. Specific elements include:

PVPC GHG Monitor

- A Climate Action and Clean Energy Plan to move towards a carbon neutral future.
- An Environment Plan to grow vibrant communities in our watershed.
- A Green Infrastructure Plan to promote clean water and the greening of our streets and neighborhoods.
- A Sustainable Transportation Plan to improve mobility while promoting bicycling, transit and walking.
- The Pioneer Valley Land Use Plan - Valley Vision 4 to grow in a logical manner while advancing initiatives to revitalize our community centers.

PVPC also uses a mobile GHG monitor to collect emissions as part of on-going planning activities. The monitor is currently used as part of on-going regional travel time data collection to identify the level of GHG emissions produced at various locations in the region. GHG reduction has also been incorporated into transportation project evaluation criteria used to prioritize projects for funding as part of the TIP.

6. The regional transportation infrastructure does not sufficiently accommodate the needs of the trucking industry.

Trucking is the dominant mode for freight transportation in the Pioneer Valley due to its flexibility to provide both short and long haul connections to facilities that may lack convenient access to other freight modes. As a result, it is important to have appropriate design elements in the regional transportation system to safely and efficiently accommodate truck movements.

Truck movements are often hindered due to route restrictions as a result of poor bridge conditions, inadequate vertical clearance, oversize loads, hazardous cargo, and municipal regulations. Many intersections also lack the proper turning radii to safely accommodate truck movements.

Truck stuck under a low clearance underpass in West Springfield

Truck navigating a narrow intersection in Ware

Projects that include design elements to reduce freight congestion are awarded points under the region's Transportation Evaluation Criteria. Planning and safety studies completed as part of the UPWP identify measures to improve freight mobility through improvements to roadway geometry, clearance, and improved guide signs.

Truck stops and rest areas are also an important element of the highway system as drivers must comply with hours of service regulations set by the Federal Motor Carrier Safety Administration. MassDOT's 2010 Freight Plan identifies the need to develop safe and efficient truck stops along the Interstate system to reduce idling and provide for adequate locations for truck staging.

Truck Stop in Chicopee

7. The built environment for bicycling and walking is hampered by significant barriers that include; narrow road and bridge cross sections, disjointed off-road trail networks, a lack of sidewalks, and maintenance issues.

It is important to provide for the needs of bicycles and pedestrians as part of the regional transportation network. The region has greatly expanded its network of on and off-road bicycle and pedestrian facilities over the last 20 years. GreenDOT also requires that bicycles and pedestrians be

accommodated in all roadway improvement projects. The challenge lies in balancing the needs of the maintenance of the existing infrastructure while continuing to expand the bicycle and pedestrian system in a logical manner.

Non ADA compliant pedestrian crossing

Many existing roadways do not encourage bicycle and pedestrian activity. Wide travel lanes with narrow shoulders can encourage higher travel speeds and do not provide an adequate buffer between bicycles and vehicles. Many existing sidewalks are in need of repair, do not conform to current ADA standards for accessible design, and can abruptly end at inconvenient locations. It is critical to maintain the regional infrastructure to safely accommodate bicycles and pedestrians. This must be done in a manner that will also allow for additional connectivity to encourage more people to walk or bike instead of driving.

Complete Street Concept for Main Street in West Springfield

New pedestrian crossing in Brimfield

PVPC advocates for a “Complete Streets” approach as part of its transportation planning activities. Complete Streets is an approach to configure local roads to better balance the needs of all people who use a street: motor vehicle drivers, public transit riders, pedestrians, bicyclists, people with disabilities, shoppers, school children, and others. A “Complete Street” improves livability by improving public safety, increasing usable public space, and making it easier to share the street. It also creates a more welcoming environment for local businesses.

New bike lane on Route 5 in Holyoke

The identification of gaps in the bicycle and pedestrian network is a critical task to identify existing barriers and eliminate gaps that restrict travel options. Proper maintenance ensures the continued expansion of bicycle and pedestrian travel options in the future.

Regional Transportation Needs

A number of transportation needs have been identified for inclusion in the RTP. Each need has been prioritized as either "Immediate," "Future," or "Ongoing." Immediate needs are areas that are a high priority and must be addressed through the implementation of future planning studies and projects. Future needs are considered to be areas of a medium importance that should be addressed in the development of future projects. Ongoing needs are areas that require routine attention and that are typically already included as part of the regional transportation planning process.

Immediate Need	RTP Emphasis Area
Provide for the safety and security of hazardous material transportation in and through the region.	Safety and Security
Improve access to driver, bicycle, and pedestrian education.	Safety and Security
Identify deficiencies to make major routes more suitable for non-motorized traffic and transit users.	Safety and Security
Enhance Paratransit scheduling software to utilize vans more efficiently.	Movement of People
Secure adequate funding for a balanced regional transportation system.	Movement of People
Provide adequate curb space for dropoff/pickups when considering future construction projects.	Movement of People
Increase the number of riders using transit to commute to work and school.	Movement of People
Enhance opportunities for inter-city, inter-regional passenger trips.	Movement of People
Identify dependable and equitable funding sources for the Pioneer Valley transit system.	Movement of People
Improve connections between different modes and the highway network.	Movement of Goods
Improve coordination with class one carriers serving the Pioneer Valley Region.	Movement of Goods
Improve the availability of high speed internet and wireless communication access in the region.	Movement of Information
Develop and implement policies on automated vehicles.	Movement of Information
Promote Complete Streets.	Sustainability
Promote transit oriented development and pedestrian friendly development.	Sustainability
Reduce impervious surfaces, a major source of water pollution.	Sustainability
Reduce visual and light pollution.	Sustainability

Regional Transportation Strategies

Many different strategies have been developed to address the regional transportation needs. Again, each strategy has been prioritized as either Immediate, Future or Ongoing. Immediate strategies are considered a high priority and must be advanced in the short term. Future strategies are considered to be areas of a medium importance that should be considered during the development of future projects. Ongoing strategies are typically already included as part of the regional transportation planning process.

Immediate Strategy	RTP Emphasis Area
Identify and advocate for additional revenue sources to bring the regional transportation system into a state of good repair.	Safety and Security
Improve geometrics and upgrade traffic signal control equipment.	Safety and Security
Develop appropriate educational resources to promote safety for drivers, bicyclists, transit users, and pedestrians.	Safety and Security
Limit opportunities to access freight rail facilities and infrastructure.	Safety and Security
Develop a comprehensive Commuter Rail network.	Movement of People
Identify locations for park and ride lots and supporting express transit service.	Movement of People
Work with the State and local communities to implement the recommendations of regional transportation studies.	Movement of People
Identify sources of revenue for local transportation projects.	Movement of People
Improve the connections between the national highway network and air and rail intermodal terminals, transloading centers, freight yards, pipeline terminals and distribution centers.	Movement of Goods
Develop incentives to encourage businesses to utilize a mix of freight transportation alternatives.	Movement of Goods
Identify and mitigate vertical clearance issues at underpasses.	Movement of Goods
Expand real-time passenger and travel information systems.	Movement of Information
Pursue public/private partnerships to reduce costs and enhance information access.	Movement of Information
Identify necessary infrastructure upgrades to accommodate automated vehicles.	Movement of Information
Invest in the repair and maintenance of existing transportation infrastructure.	Sustainability
Advance and promote the use of alternatively fueled vehicles.	Sustainability
Work with major employers to develop incentives to decrease single occupant vehicle use.	Sustainability
Mitigate the impacts of roadway salt and chemical usage during snow season.	Sustainability
Refer new projects to the Pioneer Valley Sustainability Toolkit.	Sustainability
Support urban forestry initiatives.	Sustainability
Utilize energy efficient lighting and solar panels in new facilities.	Sustainability
Enforce idling reduction programs in major activity centers.	Sustainability
Identify hazardous locations due to drought under major roadways.	Sustainability
Identify potential flooding locations along major highways.	Sustainability

Regional Performance Measures

MAP-21 requires a performance based planning methodology to improve decision-making through better informed planning and programming. As part of this process, each state and MPO develops goals and objectives to track the performance of key areas of the transportation system. Performance measures are tracked over time to determine the progress in meeting these goals. This tracking occurs through ongoing data collection and planning activities already performed by the PVPC. The development and tracking of performance measures allows the region to identify the areas in which they would like to place additional emphasis through transportation improvement projects that may be necessary to ensure a safe and dependable regional transportation system for all modes of travel. The Pioneer Valley Joint Transportation Committee was designated by the MPO to develop a series of regional performance measures and goals which are summarized below.

1. Reduce the number of structurally deficient bridges below 2014 levels.
2. Increase the average Overall Condition Index (OCI) for federal aid eligible roadways by 5% by 2025.
3. Reduce motor vehicle fatalities by 20% over five years.
4. Reduce the number of roadway fatalities and serious injuries by 50% by 2030.
5. Complete at least one safety study per year as part of the UPWP.
6. Reduce the average regional travel time index to less than 1.5 by 2025.
7. Fund at least one congestion improvement project through the TIP every 5 years.
8. Complete one planning study to reduce congestion per year as part of the UPWP.
9. Increase the total mileage of on road bicycle facilities by 10% by 2025.
10. Meet the minimum number of Passengers per Trip and Passengers per Revenue Hour for fixed route transit service consistent with PVTA's established tiers of service.
11. Reduce green house gas from the transportation sector by 25% by 2020 and 80% by 2050.
12. Fund at least one air quality improvement project through the TIP each year.
13. Minimize the impact of weight restricted, height restricted, and closed bridges.
14. Increase average park and ride lot use by 5% by 2025.
15. Demonstrate an overall annual increase in the use of regional bike paths.
16. Demonstrate an overall annual increase in PVTA and FRTA ridership.
17. Increase the total mileage of all bicycle and pedestrian infrastructure by 10% by 2025.

High Priority Projects

Projects for the 2016 Update to the Regional Transportation Plan for the Pioneer Valley Metropolitan Planning Organization were selected in part based on the transportation needs and strategies that were previously identified in this chapter. Past versions of the RTP and the results from the public participation component of the plan development were also instrumental in the selection of future transportation improvement projects. Each of the projects have been categorized based on the five emphasis areas. In addition, all projects have been prioritized as being of "High," "Medium," or "Low" importance. Projects of "Low" importance are still considered to be important for the region, but are considered a lower priority in comparison to other necessary transportation improvements. The following provides additional information for a sampling of High priority transportation improvement projects included as part of the 2016 RTP.

1. Intersection Improvements Ware Center

   This project will improve vehicular, bicycle and pedestrian safety and reduce vehicular queues at the intersections of Main Street and West Street and Main Street and South Street. Work will include resurfacing of the intersection approaches, improved pedestrian and bicycle accommodations and access, new signage and pavement markings. A traffic signal will be installed at the Main Street and West Street intersection, which will be coordinated with the existing signals.

Main Street - Ware, MA

2. Westfield Transportation Center

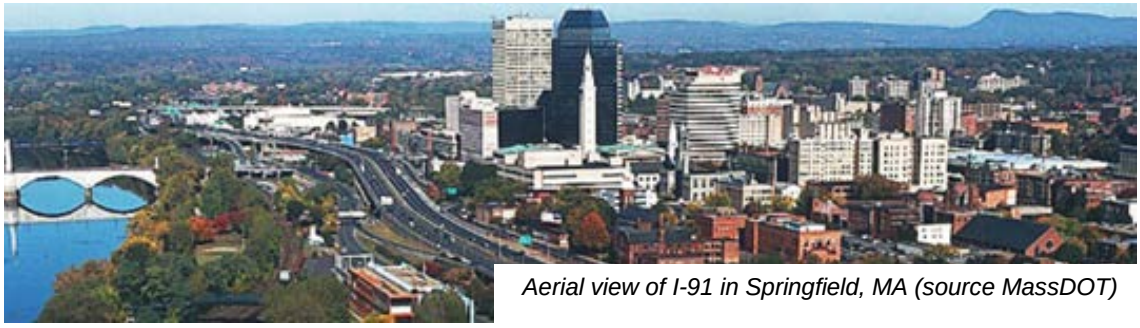
   PVTA and the City of Westfield are collaborating on the development of an intermodal transportation center to be located on Elm Street between Church and Arnold Streets in downtown Westfield. The facility will include bus berths for local and intercity buses, bicycle facilities and a connection to the Columbia Greenway Rail Trail, as well as space for shops and transit-related uses inside. The project will support additional transit ridership that is expected to accompany the growth of Westfield State University's

Conceptual Drawing of Westfield Transportation Center from the Westfield Urban Renewal Plan

downtown campus and student housing. It will also help anchor new urban and commercial redevelopment in the vicinity.

3. I-91 Viaduct Long Range Alternatives

   Currently under study, this project consists of the long range replacement of the viaduct or elevated portion of Interstate I-91 in downtown Springfield. The I-91 Viaduct deck replacement project began in 2015 to replace the existing deck of the bridge using accelerated bridge construction techniques from I-291 to just south of State Street. While this project is critical to reducing annual maintenance costs and increasing the safety and accessibility of this busy interstate, it is only estimated to have a useful service life of 20 years.



Aerial view of I-91 in Springfield, MA (source MassDOT)

   MassDOT initiated the I-91 Viaduct Study to identify existing issues and evaluate alternative alignments for the viaduct section. These may include examination of at-grade and below-grade alternatives, which may be less disruptive to the urban environment and provide a regional highway connection that is more environmentally and financially sustainable in the long-term than the existing configuration. The study will also identify ways to strengthen both the multi-modal accommodations within Springfield and the connections between downtown Springfield and the waterfront.

4. Pedestrian Bridge Springfield

   MassDOT has been working for some time with the City of Springfield to improve pedestrian connections between the Brightwood and North End neighborhoods, which are divided by existing railroad tracks and Interstate I-91. This project will construct a pedestrian route under the Pan-Am railroad in order to provide a safe pedestrian connection between the Brightwood and North End neighborhoods and provide a connection between the Chestnut Middle School area in Brightwood and the Birnie Avenue/Main Street area in the North End.

Aerial concept of pedestrian links (source Google Maps)

5. Interstate 91 Exit 19 Improvements Northampton

I-91 Exit 19 Concept 13A (source MassDOT June 2014 Functional Design Report)

This project evolved from the "Connecticut River Crossing Transportation Study," in which the transportation needs of a regional study area from Holyoke to Sunderland were determined, including the potential need for an additional bridge over the Connecticut River. One of the long-term recommendations from that study was to improve the traffic operations at the I-91 Interchange 19. A subsequent study was undertaken to refine the concept at the specific project location. The final recommendation of this study was the construction of a two lane roundabout at the Damon Road, I-91 northbound off ramp and Route 9 intersection, and the widening of the I-91 southbound on ramp to two lanes to allow for the installation of two left turn lanes from Route 9 onto I-91.

6. State Street Bus Rapid Transit

The PVTA is currently interested in implementing Bus Rapid Transit in the Pioneer Valley. AECOMM is performing a study on behalf of the PVTA along the State Street corridor in Springfield, Massachusetts. This project is in a data collection and analysis stage to determine what characteristics of a typical BRT would be best suited for the region. If implemented successfully, it will be the first true Bus Rapid Transit system in the state of Massachusetts and the first ever BRT operated in a Massachusetts Regional Transit Authority.

PVTA transit service on State Street in Springfield, MA (source PVTA)

7. Commuter Rail Capital Cost – Springfield to New Haven

   Since 1999, the Pioneer Valley Region and Connecticut have been working toward the implementation of passenger rail service between Springfield, Hartford, and New Haven. The project is included in the 2017 analysis year of the RTP. The service would operate on the existing 62 mile Amtrak owned Springfield Line connecting the three cities.

   Intercity Rail service is expected to have a significant impact on the 13 railroad station areas serving the 17 communities along the rail corridor. The service will connect the third, fourth and fifth largest metropolitan areas in New England and provide a connection to both Amtrak and Metro North Service into the New York Region. When the project is complete, service could expand from the existing six trips daily between New Haven and Springfield, to as many as 25 trips per day.

Current Passenger Rail Service in the vicinity of the Basketball Hall of Fame in Springfield, MA

8. Commuter Rail Capital Cost – Springfield to Greenfield

   The Vermont Department of Transportation provides one train a day service through Massachusetts. In order to increase the frequency of this service, Massachusetts would be responsible for funding their portion of the additional trips. PVPC anticipates an increase in the frequency of Passenger Rail Service from Northampton to Connecticut starting in 2016.

9. Springfield Operations and Maintenance Facility

   PVTA's existing Springfield area bus storage and maintenance facility at 2840 Main Street is nearly 100 years old and originally designed for Springfield's street railway system. The property is too small for PVTA's current fleet. The site lacks

sufficient storage areas for the 110 buses that are based there; does not have adequate employee parking; is not well configured for fleet maintenance; and cannot be expanded. PVTA is in the process of designing a new 308,840-square-foot facility storage and Level I maintenance facility at 665 Cottage Street in Springfield. The existing Main Street facility would be rehabilitated to provide an appropriately sized storage area and Level II maintenance facility.

10. Route 9 Roadway Reconstruction Hadley

    The widening of Route 9 in Hadley has been an ongoing effort for over a decade, starting with the reconstruction and widening of the Calvin Coolidge Bridge in the early 2000's. Several additional projects have been completed to widen Route 9 to accommodate current demand.

    MassDOT has recently re-scoped the 2 current Route 9 widening projects into 3 phases, which now include the Route 9 at South Maple Street intersection. A separate study will explore options to enhance bicycling, transit and walking and analyze the feasibility of different improvement alternatives. The 3 proposed project phases are:

    - Phase 1 – Route 9 from Middle Street to East Street.
    - Phase 2 – Route 9 from East Street to Lowe's Site Drive.
    - Phase 3 – Route 9 from east of Lowe's Site Drive to South Maple Street including the South Maple Street Intersection.

11. Intersection Improvements Agawam Route 187 at Route 57

    This intersection improvement project consists of the upgrade of existing traffic signal equipment and geometric improvements to improve safety and reduce congestion. Located in the Feeding Hills section of the Town of Agawam, this four-way signalized intersection experiences severe peak hour congestion as it serves two local schools, many retail establishments on the Springfield Street corridor, and provides access to the limited access portion of Route 57.

Intersection of Route 57 with Route 187 in Agawam, MA

12. Bridge Reconstruction Route 147 over Westfield River West Springfield/Agawam

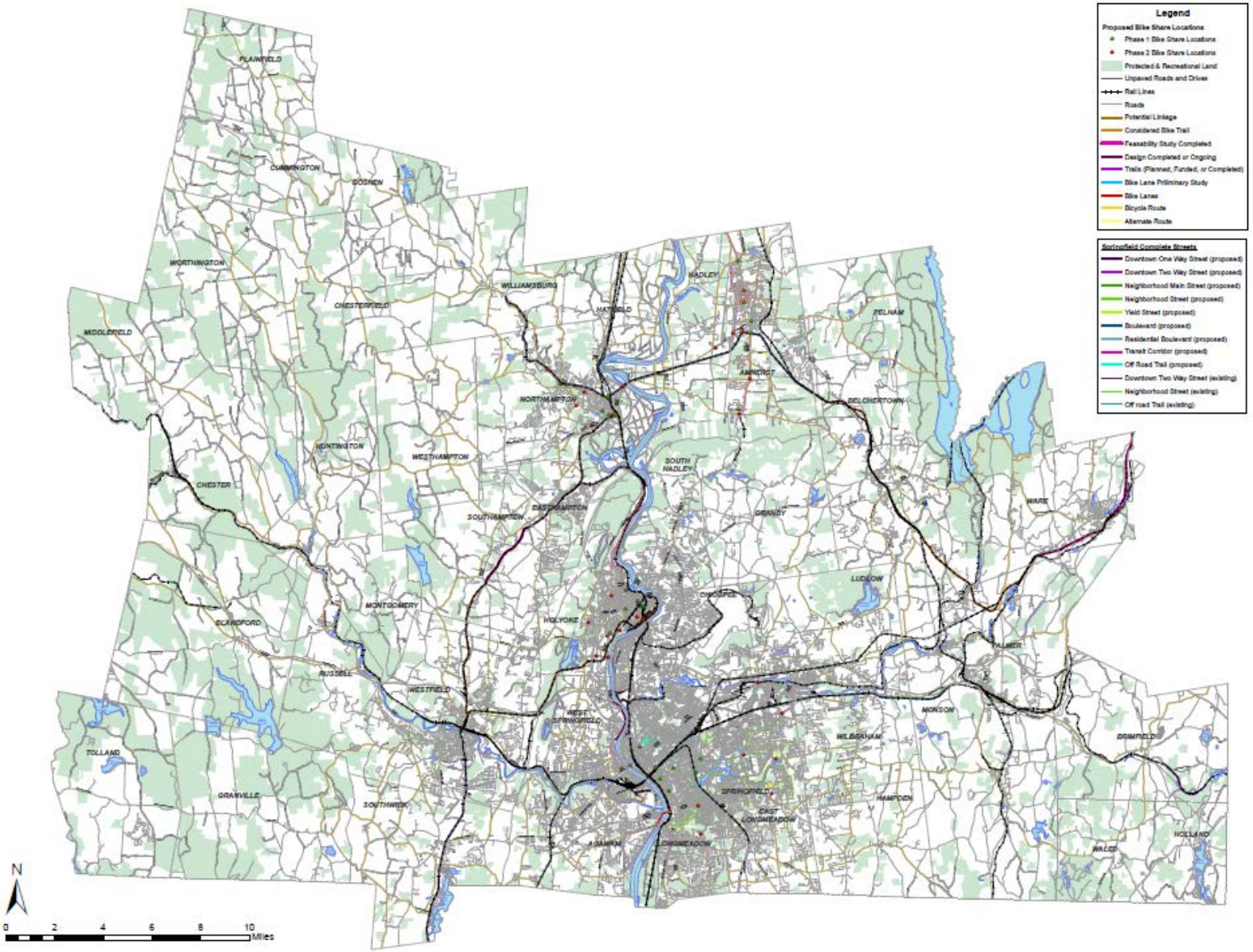
    A functional design report was completed in 2012 for this bridge over the Westfield River connecting West Springfield and Agawam. The purpose of this project is to reconstruct and widen the bridge and upgrade three intersections in its immediate vicinity. Traffic control equipment will be upgraded at the three signalized intersections: Route 147 (Springfield Street) at Walnut Street with Walnut Street Extension; Route 147 (Springfield Street / Memorial Avenue) at

Route 75 (Suffield Street) and Route 159 (Main Street); and, Route 147 (Memorial Avenue) at River Street. The bridge will be widened from four to five lanes to provide an exclusive left turn lane in both directions.

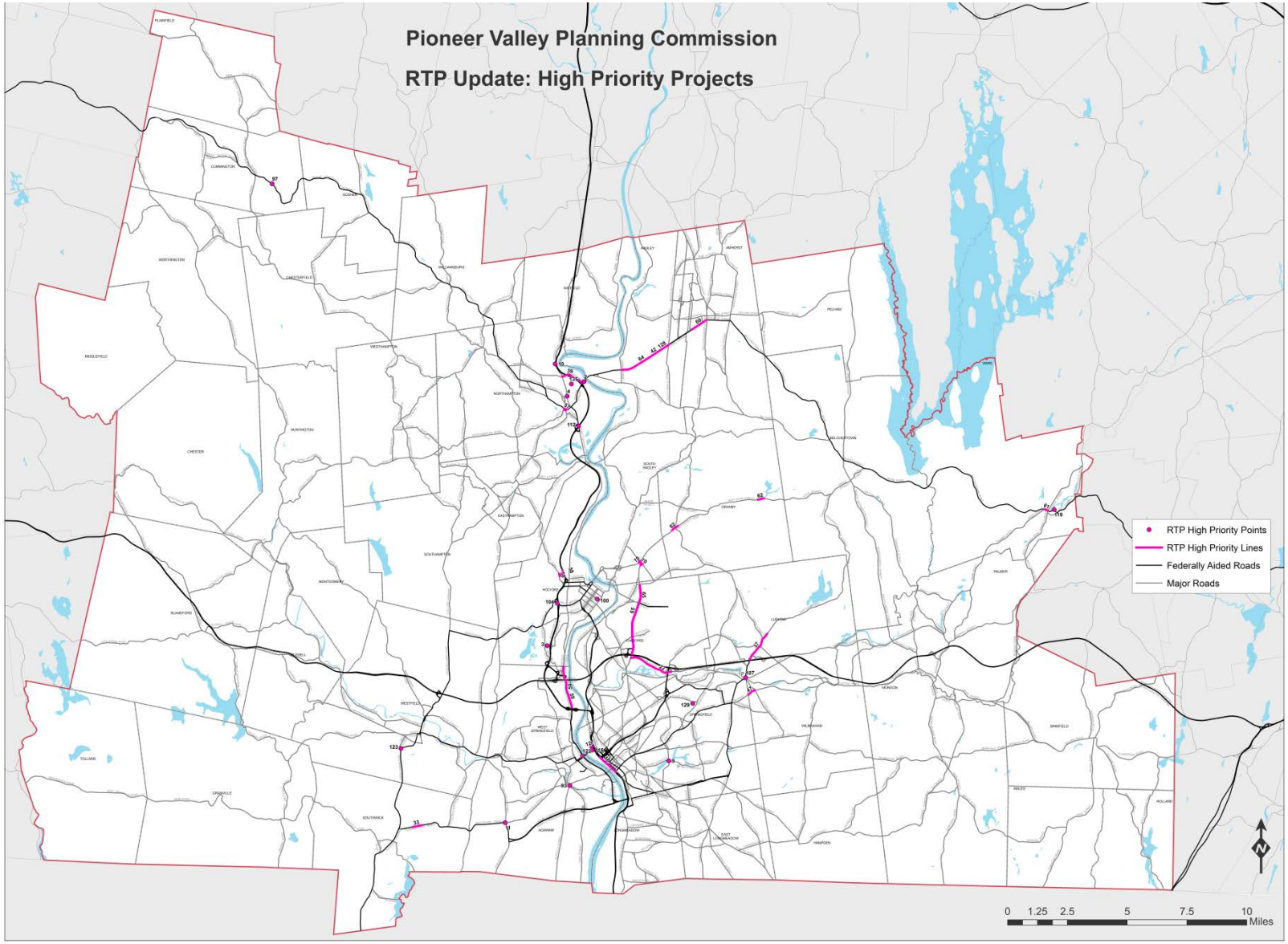
Morgan-Sullivan Bridge (Route 147) in Agawam/West Springfield, MA

The next two figures summarize the regional bicycle facilities and all of the high priority transportation improvement projects as identified in the RTP.

Pioneer Valley Bike Linkages Map



High Priority Transportation Projects



Financial Plan

Cost estimates for construction of transportation improvement projects included as part of the Regional Transportation Plan for the Pioneer Valley Metropolitan Planning Organization are developed in consultation with the local community, MassDOT and MassDOT Highway Divisions 1 and 2. Through this consultation process, the most up to date estimates are used in the development of the financial component of the RTP. Estimates for longer range projects that have not yet entered the design process are estimated based on the type of project and overall extent of proposed work. Estimates of future transportation revenue for the Pioneer Valley MPO were developed by MassDOT. This revenue was allocated towards various maintenance projects through consultation with MPO members.

The estimated available funds for the region must be greater than or equal to the financial needs of the region over the life of the plan in order to maintain financial constraint. As can be seen from the table, the Pioneer Valley Regional Transportation Plan is financially constrained over the life of the plan.

	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	2036 - 2040	GRAND TOTAL
Total Estimated Highway Revenue	$420,177,748	$426,618,217	$520,221,270	$582,504,200	$623,968,064	**$2,573,489,499**
Statewide Interstate Maintenance	$ 29,750,182	$ 28,157,124	$ 35,185,257	$ 39,841,190	$ 42,920,276	**$ 175,854,029**
Statewide NHS	$ 19,572,131	$ 18,955,373	$ 23,686,712	$ 26,821,085	$ 28,893,926	**$ 117,929,227**
Statewide Bridge	$ 105,433,448	$ 102,111,025	$ 127,598,354	$ 144,482,963	$ 155,649,185	**$ 635,274,975**
Statewide Infrastructure	$ 4,219,341	$ 4,086,381	$ 5,106,359	$ 5,782,064	$ 6,228,925	**$ 25,423,070**
Remaining Statewide Programs	$ 96,040,886	$ 101,493,887	$ 126,827,176	$ 143,609,738	$ 154,708,473	**$ 622,680,160**
NFA Bridge Preservation	$ 54,049,500	$ 54,860,243	$ 55,670,985	$ 56,481,728	$ 57,292,470	**$ 278,354,926**
Regional Discretionary Funding	$ 111,112,260	$ 116,954,184	$ 146,146,427	$ 165,485,432	$ 178,274,809	**$ 717,973,112**
Total Estimated Remaining Earmark Funds	$2,275,000	$0	$0	$0	$0	**$2,275,000**
Estimated Statewide CMAQ	$16,673,124	$0	$0	$0	$0	**$16,673,124**
Estimated Statewide HSIP	$7,082,895	$0	$0	$0	$0	**$7,082,895**
Estimated Safe Routes to School	$827,064	$0	$0	$0	$0	**$827,064**
Grand Total	$447,035,831	$426,618,217	$520,221,270	$582,504,200	$623,968,064	**$2,575,764,499**
Total of Programmed Highway Projects in the 2016 RTP	$447,035,831	$426,618,217	$520,221,270	$582,504,200	$623,968,064	**$2,575,764,499**
Difference	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	2036 - 2040	GRAND TOTAL
Total Estimated Transit Capitol Revenue	$84,841,908	$93,326,099	$102,658,709	$112,924,579	$124,217,037	**$517,968,332**
RTACAP	$ 20,285,825	$ 22,314,408	$ 24,545,848	$ 27,000,433	$ 29,700,476	**$123,846,990**
ITC Cap Program	$ 1,145,277	$ 1,259,805	$ 1,385,785	$ 1,524,364	$ 1,676,800	**$6,992,031**
Federal Matching grants	$ 63,410,806	$ 69,751,887	$ 76,727,075	$ 84,399,783	$ 92,839,761	**$387,129,311**
Springfield O+M Facility - NFA	$76,126,000	$ -	$ -	$ -	$ -	**$76,126,000**
Total Estimated Transit Operating Revenue	$272,869,054	$308,543,458	$348,314,834	$393,550,058	$445,034,819	**$1,768,312,223**
State Contract Assistance	$ 125,723,298	$ 145,747,760	$ 168,961,600	$ 195,872,803	$ 227,070,262	**$863,375,723**
Local Assessments	$ 43,637,997	$ 49,372,389	$ 55,860,326	$ 63,200,831	$ 71,505,940	**$283,577,483**
5307 Federal Urbanized Area Fron	$ 53,120,529	$ 57,917,522	$ 62,393,619	$ 67,215,646	$ 72,410,341	**$313,057,657**
*5339 Federal ***	$ 3,614,988	$ 3,937,914	$ 4,242,253	$ 4,570,110	$ 4,923,307	**$21,288,572**
5310 Federal Ederly & Disabled	$ 2,704,105	$ 2,913,090	$ 3,138,225	$ 3,380,759	$ 3,642,038	**$15,778,217**
Farebox	$ 41,119,964	$ 45,399,763	$ 50,125,006	$ 55,342,057	$ 61,102,103	**$253,088,893**
Advertising, other revenue	$ 2,948,172	$ 3,255,020	$ 3,593,805	$ 3,967,851	$ 4,380,829	**$18,145,677**
Grand Total	$433,836,962	$401,869,557	$450,973,543	$506,474,637	$569,251,856	**$2,362,406,555**
Total of Programmed Transit Projects in the 2016 RTP	$433,836,962	$401,869,557	$450,973,543	$506,474,637	$569,251,856	**$2,362,406,555**
Difference	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**