

CHAPTER 14

NEEDS, STRATEGIES AND PROJECTS

The vision of the RTP focuses on the attainment of a safe and dependable transportation system. In a first step to achieve this vision and its associated goals, the system's present and future needs have been identified. The second step is to develop appropriate strategies to address these needs while adhering to the policies and objectives of the RTP. The third and final step is to advance planning studies and implement program improvement activities that will enhance the transportation system. This continual process will simultaneously alleviate problems in the regional transportation system and advance the goals of the RTP.

A total of five emphasis areas were identified to assist in the development of the regional transportation needs, strategies, and projects required to assist in the achievement of the RTP vision and 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. The five emphasis areas are:

- Safety and Security
- The Movement of People
- The Movement of Goods
- The Movement of Information
- Sustainability

The transportation emphasis areas consist of broad topics related to transportation planning that are related to each of the thirteen Regional Transportation Goals. Regional Transportation Needs, Strategies, and Projects were developed for each emphasis area in this RTP Update to advance each of the thirteen goals without the need for repetitiveness.

A. SAFETY AND SECURITY

Safety is a principal concern in most transportation plans and designs. Highway Safety focuses on the reduction of crashes and resulting deaths, injuries and property damage occurring on public roads. Passenger vehicle movements, truck conflicts, pedestrian and bicycle travel, and bridge conditions are all included as part of Highway Safety.

The security of the regional transportation system is an ever increasing priority. It is critical to ensure that the highest levels of security are provided for the users of our regional transportation system and that appropriate measures are taken to restrict access to our critical transportation infrastructure.

1. Needs

A number of needs in the areas of Safety and Security have been identified for inclusion in the RTP. These needs have been summarized in Table 14-1. 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.

Table 14-1 – Summary of Safety and Security Needs

Reduce the number of fatal and personal injury crashes for both pedestrians and vehicles in the region.	Ongoing
Improve coordination and information exchange between emergency service providers and transportation agencies.	Ongoing
Examine the safety of at-grade railroad crossings.	Ongoing
Improve the safety and security of existing freight railyards and facilities.	Ongoing
Reduce the number of roadway departure crashes.	Ongoing
Improve knowledge and compliance with existing Emergency Evacuation plans.	Ongoing
Protect regional transportation choke points such as bridges, airports, railyards, bus terminals, etc.	Ongoing
Ensure the safety and security of mass transit facilities and equipment.	Ongoing
Provide for the safety and security of hazardous material transportation in and through the region.	Immediate
Improve access to driver, bicycle, and pedestrian education.	Immediate
Identify deficiencies to make major routes more suitable for non-motorized traffic and transit users.	Immediate

a) Reduce the number of fatal and personal injury crashes for both pedestrians and vehicles in the region.

Chapter 6 of this document summarizes recent safety trends in the Pioneer Valley region. In order to assist in the reduction of personal injury and fatal crashes, MassDOT developed a Strategic Highway Safety Plan (SHSP). The goals of the SHSP have been integrated into the regional performance targets

included as part of Chapter 12. Information on the progress to date in meeting the goals of the SHSP is presented in Chapter 6.

b) Improve coordination and information exchange between emergency service providers and transportation agencies.

Emergency service providers rely on a safe and efficient transportation system in order to minimize their response time. It is important that advance notice be given to these agencies on ongoing construction projects and major incidents that could have negative impacts on their ability to serve the public. Similarly, it is also important to keep the emergency service providers closely involved in the transportation planning process to ensure that future transportation improvement projects can meet their needs.

c) Examine the safety of at-grade railroad crossings.

Many of the at-grade railroad crossings in the PVPC region do not have safety gates to separate motor vehicle traffic from railroad traffic. In addition, supplemental warning devices such as flashing lights, warning signs and pavement markings require routine maintenance in order to provide maximum effectiveness. It is important to maintain an inventory of these at-grade crossings in order to determine when increases in traffic and surrounding developments require the installation of safety gates and other appropriate devices.

d) Improve the safety and security of existing freight railyards and facilities.

Similar to air and bus transportation, rail transportation has several unique features that leave it vulnerable to attack. Passenger and freight rail serve dense urban areas with multiple points for access. Both also serve vast rural areas that can be difficult to secure. Additional security measures are required that do not result in increases to service time but improve the safety and security of both rail passengers and cargo in the region.

e) Reduce the number of roadway departure crashes.

More than half of the fatalities in the State during the calendar years of 2005, 2006, 2007, and 2009 involved roadway departure crashes. Roadway departure crashes were also responsible in causing nearly 60% of fatalities in the Pioneer Valley during the calendar years of 2006, 2007, and 2008. It is important to identify areas that have a history of roadway departure crashes and implement appropriate transportation improvement projects to improve safety in these areas.

f) Improve knowledge and compliance with existing Emergency Evacuation plans.

It is critical to educate residents about their community's emergency preparedness routine and resources. Residents should know who their municipalities' Emergency Management Director (EMD) is and where to find out:

- Emergency shelter locations
- Evacuation routes
- Sources for local emergency information

g) Protect regional transportation choke points such as bridges, airports, railyards, bus terminals, etc.

A key component of homeland security is the ability to work with federal, regional, local, and private partners to identify the critical infrastructure that is at the greatest risk and take the necessary steps to mitigate these risks. This begins through the identification of our critical links in the transportation infrastructure and the agencies responsible for the maintenance and security of these areas. This is an ongoing process that is defined in the State Homeland Security Strategy (SHSS) for the Commonwealth of Massachusetts. The following needs have been identified as part of the SHSS:

- Continue to establish a prioritized list of potential targets and potential methodologies of attack.
- Share target lists with key officials.
- Identify conditions that may facilitate the ability of a terrorist to carry out an attack.
- Disseminate important information to key entities, and support the development and implementation of risk mitigation efforts.
- Develop and track defined performance metrics that will allow for performance based management of risk mitigation efforts.

h) Ensure the safety and security of mass transit facilities and equipment.

There are several safety and security concerns related to the region's mass transit system. Foremost among these is personal safety of passengers and employees at the Springfield Bus Terminal, PVTA's major hub. In addition, PVTA's maintenance facility at 2840 Main Street in Springfield is increasingly overextended by the need to repair both buses and vans. This facility was initially constructed to service streetcars and, even with numerous expansions over the years, has limited space to service the large number of vehicles that

PVTA operates. PVTA is now developing plans for a Level I maintenance and storage facility to serve its Springfield and Holyoke area routes and alleviate the overcrowding and security concerns at the Main Street facility. It will be important to ensure the safety and security of all of PVTA's facilities and equipment in order to maintain a safe and dependable transit system.

i) Provide for the safety and security of hazardous material transportation in and through the region.

The Hazardous Materials Transportation Act of 1975 (HMTA), as amended, regulates and enforces the authority of the Secretary of Transportation to protect the nation against risks associated with the transportation of hazardous materials. In 1990 Congress enacted the Hazardous Materials Transportation Uniform Safety Act (HMTUSA) to clarify conflicting state, local, and federal regulations on the transport of hazardous materials. While it is clear that the transportation of hazardous materials is strictly regulated, it is also important to ensure that the roadways designated for the transportation of hazardous materials are appropriately designed and maintained to facilitate the movement of vehicles used for transport.

j) Improve access to driver, bicycle, and pedestrian education.

In order to improve safety for all modes, it will be important to provide comprehensive education for all users of the regional transportation system. Enhanced driver, bicycle, and pedestrian education programs can assist in improving safety by providing an overview of traffic laws and the responsibilities of each user.

k) Identify deficiencies to make major routes more suitable for non-motorized traffic and transit users.

The lack of connectivity of sidewalks and suitable shoulders for bicycle use reduce the safety of non-motorized traffic. Similarly, lack of bus shelters and adequate lighting can increase the perception that our transit system is unsafe. In order to improve these areas, a systematic inventory of the existing deficiencies is required. The PVPC routinely performs sidewalk inventories and bicycle Level of Service analyses that can help to identify these areas. A comprehensive inventory of all bus stops in the region was also completed by the PVPC. This information must be updated on a regular basis in order to have the most accurate information available for use in the development of future transportation improvement projects.

2. Strategies

Several different strategies have been developed to address the regional needs identified in the areas of Safety and Security. These strategies have been summarized in Table 14-2. 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.

a) Develop a regional list of high crash locations.

Based on this strategy in the 2007 RTP, the PVPC published its first list of the Top 100 High Crash Intersections in the Pioneer Valley Region in March of 2008. This data was based on MassDOT crash data from 2003 - 2005. The report has since been updated in May 2013 to include crash data from 2007 – 2009. The report is critical to advancing safety improvement projects that are eligible for funding under the Highway Safety Improvement Program (HSIP) as well as planning studies to identify potential future safety improvements. This report is currently scheduled to be updated as part of the Federal Fiscal Year 2016 Unified Planning Work Program.

Table 14-2 – Summary of Safety and Security Strategies

Develop a regional list of high crash locations.	Ongoing
Work with the State and local communities to standardize the way they archive their crash records.	Ongoing
Increase the deployment of cameras and other security devices and measures.	Ongoing
Provide accommodations for pedestrians, transit users, and bicyclists in roadway and bridge design and the maintenance of existing facilities.	Ongoing
Implement communications and ITS technologies to improve public transit safety, and security.	Ongoing
Develop an inventory of critical transportation choke points, haz-mat routes, and users.	Ongoing
Work with appropriate agencies to improve the transmittal of bike and pedestrian crashes to local police departments.	Ongoing
Promote the Safe Routes to School program.	Ongoing
Promote and advance the use of roadway safety audits in the Pioneer Valley.	Ongoing
Identify and advocate for additional revenue sources to bring the regional transportation system into a state of good repair.	Immediate
Improve geometrics and upgrade traffic signal control equipment to improve safety.	Immediate
Develop appropriate educational resources to promote safety for drivers, bicyclists, transit users, and pedestrians.	Immediate
Limit opportunities to access freight rail facilities and infrastructure.	Immediate

b) Work with the State and local communities to standardize the way they archive their crash records.

The new crash report forms implemented prior to 2003 greatly improved the amount of crash data included as part of the statewide database. In the Pioneer Valley region, however, select communities only recently began to submit their crash data to MassDOT on a consistent basis. The Pioneer Valley MPO should continue to work in consultation with the MassDOT, Governor’s Highway Safety Bureau and other appropriate agencies to improve the quality and consistency of local crash records for use in ongoing transportation planning activities. The development of a close relationship between the state, regional and local entities will greatly assist in the ability to continue to have access to the most up to date crash data to assist in ongoing safety planning efforts.

c) Increase the deployment of cameras and other security devices and measures.

The security of the critical elements of our regional transportation infrastructure is a daunting task. Monitoring of key locations such as bridges,

transit centers, and rail and freight yards can often be supplemented by the installation of video cameras and other ITS devices. It will be important to continue to identify sensitive areas in the region and develop appropriate plans to increase security.

d) Provide accommodations for pedestrians, transit users, and bicyclists in roadway and bridge design and the maintenance of existing facilities.

The Pioneer Valley RTP promotes a balanced transportation system. In order to achieve this system it will be important to invest in increasing the safety of bicyclists, pedestrians, and transit users. The Pioneer Valley MPO should continue to utilize the Transportation Evaluation Criteria to identify and prioritize transportation improvement projects that promote the safety of bicyclists, pedestrians, and transit riders.

e) Implement communications and ITS technologies to improve public transit safety and security.

PVTA has an ongoing ITS program which allows for vehicle monitoring and improved communications for both drivers and passengers. The Pioneer Valley MPO should continue to invest in the advancement of ITS equipment to improve operational efficiency, give passengers real time information about schedules, provide critical emergency information to first responders, and interface with other ITS infrastructure in the state and region.

f) Develop an inventory of critical transportation choke points, haz-mat routes, and users.

While it is clear that the transportation of hazardous materials is strictly regulated, it is also important to ensure that the roadways designated for the transportation of hazardous materials are inventoried on a regular basis to identify potential problem areas. This information can be collected as part of ongoing pavement management, bridge management, and congestion management programs conducted by the state and the region. It will also be important to share this information with transportation providers.

g) Work with appropriate agencies to improve the transmittal of bike and pedestrian crashes to local police departments.

The Pioneer Valley MPO in consultation with MassDOT, local police departments, and other interested agencies should develop a public awareness campaign to require bicyclist and pedestrians that are involved in crashes to fill out a crash report form. Currently, bicyclist and pedestrians that may be involved in a minor crash that did not involve an injury may not report the incident. In addition, crashes involving bicyclist and pedestrians along off-road facilities such as the Norwottuck Rail Trail are often not

reported. More outreach is required to emphasize the importance of this information in bicycle and pedestrian safety planning efforts.

h) Promote the Safe Routes to School Program

The Massachusetts Safe Routes to Schools Program is coordinated through MassRides. The Pioneer Valley MPO currently works in cooperation with MassRides to promote the Safe Routes to Schools Program and assist in identifying potential candidate communities and school districts for inclusion in the program. PVPC also seeks to include an analysis of safe routes to local schools as part of ongoing planning activities.

i) Promote and advance the use of roadway safety audits in the Pioneer Valley.

Roadway Safety Audits (RSA) are a proactive, low-cost method to improve safety. A RSA uses a large team of analysts representing a variety of interests to perform a field review of high hazard locations and identify factors that may contribute to crashes. The PVPC should continue to work with MassDOT to use the RSA process to identify and advance recommendations for high crash locations in the Pioneer Valley.

j) Identify and advocate for additional revenue sources to bring the regional transportation system into a state of good repair.

Chapter 9 of this document identifies the existing and projected future condition of the region's federal aid eligible roadways. Chapter 15 reviews a number of planning scenarios of the impact of varying funding on the regional pavement condition. Based on existing funding levels, it will be difficult to maintain the existing roadway system at acceptable levels. The PVPC should continue to work with MassDOT and other appropriate agencies to identify alternative sources of revenue to assist in the maintenance of the regional transportation system.

k) Improve geometrics and upgrade traffic signal control equipment to improve safety.

Traffic signals require routine maintenance in order to operate at maximum efficiency. Inefficient signal timing plans can lead to driver frustration which often contributes to aggressive driving, road rage, and the running of red lights. The Pioneer Valley MPO should consider developing a regional program to invest in the physical upgrade of key intersections throughout the region. Under this program, traffic signal improvements would be restricted to the installation of new equipment such as overhead mast arms and traffic signal heads to bring the intersection in compliance with the Manual on Uniform Traffic Control Devices (MUTCD) and the development of new signal timing and phasing plans. Restricting the improvements to just equipment

upgrades would allow more efficient use of funds. In addition, these improvements would be eligible to be funded as part of the Congestion Mitigation and Air Quality (CMAQ) program.

l) Develop appropriate educational resources to promote safety for drivers, bicyclists, transit users and pedestrians.

The PVPC should continue to work in coordination with MassDOT, MassBike, local schools, and other appropriate agencies to develop educational materials that promote safety for all transportation users. An emphasis should be placed on the development of new video materials that could be distributed to local schools to assist in promoting bicycle and pedestrian safety.

m) Limit opportunities to access freight rail facilities and infrastructure.

The security of the regional rail facilities and infrastructure is an important security need for the region. It will be critical to maintain a close relationship with the existing owners of active rail lines to identify their needs and assist in the development and implementation of security planning activities. Railroads already have existing relationships with local officials with regards to hazardous materials response. These relationships are the logical starting point of discussing homeland security concerns with the region's rail carriers. Locations should also be identified for the installation of security fencing to both promote security and increase safety by restricting areas in which pedestrians can access active rail lines.

B. THE MOVEMENT OF PEOPLE

Efficient movement of people remains a top priority of the regional transportation system. Congestion typically occurs when the demands on a system surpass the actual handling capacity. These types of conditions are prevalent in areas where a number of roadways converge onto a single segment, like major bridge crossings. Due to limitations in lane capacity and alternate travel routes, bridges have a tendency to bottleneck traffic. Feasible alternatives to congestion relief through increases in roadway capacity without actual lane expansion are strongly encouraged. This approach requires that vehicle users, commuters, and travelers change their travel patterns and opt for more congestion friendly alternatives such as public transportation, ridesharing, bicycling, and walking.

It is important to develop balance in the regional transportation system. Improvements in the regional transit system and provisions for pedestrians and bicyclists in transportation design can help achieve balance and reduce our reliance on the automobile. Similarly, the development of transportation

improvements that do not increase capacity will not induce more vehicle trips that can quickly develop into new areas of congestion.

The establishment and/or maintenance of adequate access to the natural, economic, social, historic, and cultural resources of the Pioneer Valley is also a key to economical vitality. The location of the crossroads of Interstates I-90 and I-91 within the Valley's boundaries makes inter-regional and interstate travel very accessible. Likewise, the region's proximity to Bradley International Airport, Northeast Corridor Amtrak service, the network of arterial and rural roads, transit systems, and bicycle and pedestrian ways ensure physical access to educational institutions, military installations, unique regional historic and cultural resources, beautiful recreational areas, and business and retail centers throughout the region.

1. Needs

A series of needs to enhance the movement of people in the Pioneer Valley region have been identified and are summarized in Table 14-3. These needs have been categorized as immediate, future and ongoing. Ongoing needs are areas that may already be considered as part of an existing program that will require to be updated as part of existing planning efforts or analyzed for inclusion as part of a transportation improvement project. Immediate needs will require attention in the short term to advance transportation planning studies and projects. Future needs are considered equally important but will be advanced over a slightly longer timeframe.

Table 14-3 – Summary of Needs to Enhance the Movement of People

Increase opportunities for non-motorized transportation use.	Ongoing
Monitor peak hour congestion in the region.	Ongoing
Incorporate traffic calming measures where appropriate.	Ongoing
Maintain and expand the regional bike network connectivity.	Ongoing
Maintain equity in providing transportation services and access throughout the region.	Ongoing
Maintain and increase access to national passenger rail service in the Pioneer Valley.	Ongoing
Increase opportunities for enhanced air passenger service in the Pioneer Valley.	Ongoing
Provide opportunities for bicycle access to other modes of transport.	Ongoing
Incorporate ITS technologies to improve traffic flow on major regional roadways.	Ongoing
Enhance Paratransit scheduling software to utilize vans more efficiently.	Immediate
Secure adequate funding for a balanced regional transportation system.	Immediate
Provide adequate curb space for dropoff/pickups when considering future construction projects.	Immediate
Increase the number of riders using transit to commute to work and school.	Immediate
Enhance opportunities for inter-city, inter-regional passenger trips.	Immediate
Identify dependable and equitable funding sources for the Pioneer Valley transit system.	Immediate
Improve coordination and notification of the review of roadway improvement projects.	Future

a) Increase opportunities for non-motorized transportation use.

All roadway improvement projects in Massachusetts are required to provide access to bicycles and pedestrians. Incorporating bicycle and pedestrian features into road reconstruction projects create environments that support bicycling and walking, increasing bicycle and pedestrian safety, and promoting bicycling and pedestrian activities as alternative transportation choices.

Community interest in the Pioneer Valley Region has strongly supported the creation of off road, multi-use trails, bike lanes, and wide curb lanes for bicyclists. These off-road and on-street projects allow for easy access into residential neighborhoods and central business districts; are suitable for making short, local trips; and promote healthy lifestyles.

Complete Streets is an approach to configuring 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. By expanding and improving the regional transportation system to accommodate all travel modes, more people can be encouraged to consider bicycling, transit and walking in the Pioneer Valley region.

b) Monitor peak hour congestion in the region.

The Pioneer Valley Congestion Management Process (CMP) is an ongoing, systematic process designed to improve transportation in the region by providing up to date information on the location, severity and extent of congested corridors and intersections. A complete summary of the CMP for the Pioneer Valley region is provided in Chapter 8.

c) Incorporate traffic calming measures where appropriate.

Traffic calming utilizes engineering devices to force traffic to both reduce speeds and physically prevent certain traffic movements. Traffic calming is typically implemented for residential streets to assist in increasing compliance with posted speed limits. In downtown and urban areas, traffic calming devices can be used to reduce the crossing distance and increase safety for pedestrians. It is important to conduct an engineering study prior to the installation of traffic calming devices. This study should document the extent of the existing problem and develop an extensive public participation process with local officials, residents and emergency service personnel prior to the installation of traffic calming devices.

d) Maintain and expand the regional bike network connectivity.

Creating a network of safe roads and shared use paths has been a central goal of the bicycle planning effort. The concept that you can bicycle “from here to just about anywhere” has universal appeal, and residents certainly want to be able to bike or walk to their favorite destinations. The Regional Bicycle and Pedestrian Plan identifies proposed bikepaths or shared use trails, road and bridge improvements that would enhance bicycle connectivity. PVPC continues to work with MassDOT and local communities to advance projects to enhance the connectivity of the bicycle network.

e) Maintain equity in providing transportation services and access throughout the region.

It is important to provide and maintain equitable transportation services throughout the region. This requires that a thorough public participation process be developed and maintained in order to allow adequate opportunity for all parties to identify their unique needs and/or communicate any issues they may have with transportation planning and improvement projects. The

Pioneer Valley MPO has developed a process for the identification of the locations of socio-economic groups, including low-income and minority populations as covered by the Executive Order on Environmental Justice and Title VI provisions. The MPO continues to work with MassDOT and federal agencies to engage minority and low-income populations in the transportation decision making process. It also developed methods to routinely evaluate this strategy to ensure its continued effectiveness. It is the responsibility of the MPO to institutionalize a planning process for assessing the regional benefits and burdens of transportation system investments for different socio-economic groups and to develop an on-going data collection process to support the effort and identify specific actions to correct imbalances.

f) Maintain and increase access to national passenger rail service in the Pioneer Valley.

The Pioneer Valley has quite a stake in the future of national passenger rail service because of the significant service that it provides in the region and the potential opportunities for future partnerships that are being actively considered. Continued regional and state support for passenger rail services provided in the region is necessary to both retain the existing service and advance opportunities to expand service in the future.

g) Increase opportunities for enhanced air passenger service in the Pioneer Valley.

The Connecticut Department of Transportation (ConnDOT) completed a Master Plan for Bradley International Airport. This plan projected growth in operations over a 20 year horizon and developed a long range strategy to leverage the strength of the airport and the Hartford/Springfield region to satisfy the air passenger needs of the region. It will be important to support the implementation of this master plan in order to maintain safe, efficient air passenger transportation opportunities for the Pioneer Valley region.

It is also important to support the expanding needs of other regional airports such as Westfield-Barnes Municipal Airport, Westover Metropolitan Airport, and the Northampton Airport. Improvements to both existing airport infrastructure and access to the airports must be maintained in order to realize continued growth in air transportation opportunities.

h) Provide opportunities for bicycle access to other modes of transport.

The PVPC has successfully managed a regional bicycle rack program for many years. This program purchases bicycle racks via a competitive grant process and then assists in the distribution and installation of the racks at key locations in local communities. The bicycle rack program supplements other ongoing efforts, such as the Rack N' Roll (bikes on bus) program on all PVTA

routes, that link bicycles to other modes of transportation. It will be important to continue to expand upon these efforts to ensure that sufficient links exist to allow bicyclists to easily shift to other modes of transportation in the region.

i) Incorporate ITS technologies to improve traffic flow on major regional roadways.

It will be important for the MPO to advocate for additional ITS applications that could benefit local communities on major regional roadways. In addition, it will be important to identify future transportation improvement projects that could benefit from the integration of ITS technology to improve traffic flow without adding additional capacity.

j) Enhance Paratransit scheduling software to utilize van more efficiently.

Currently PVTA often has only 1 person riding in an 18 passenger van. Also there are times when more than one van is in a given area with one or two riders. With scheduling improvements these trips can be consolidated to more efficiently utilize available resources.

k) Secure adequate funding for a balanced regional transportation system.

Travel in the Pioneer Valley region is dominated by automobile travel. Work trips are characterized by a high percentage of people that choose to drive alone to work, which contributes to both congestion and air quality issues. Lack of sufficient funding for public transit and a viable regional ridesharing program contribute to people choosing to rely on the automobile. Lack of connectivity for bicycles and pedestrians require people to use their car for shorter trips that could otherwise be made by bike or on foot.

l) Provide adequate curb space for dropoff/pickups when considering future construction projects.

When considering future roadway improvement projects plan for bus cutouts to allow buses room to pull off roadway to pick up/drop off passengers without blocking traffic.

m) Increase the number of riders using transit to commute to work and school.

As living and employment patterns have changed over the past 25 years, transit systems have had difficulty reacting to the evolving needs of their passengers. The PVTA recently commissioned a comprehensive service analysis and has integrated a number of the recommend changes to existing service. A study of the feasibility of integrating bus rapid transit (BRT) along State Street in Springfield is also currently underway. The PVTA will need to

continue introduce innovative new services that complement existing service and provide competitive travel options across their service area.

n) Enhance opportunities for inter-city, inter-regional passenger trips.

It is important to maintain efficient transportation options from the Pioneer Valley region to the Boston area. Similarly, there are gaps in service options from the Springfield area to both Bradley International Airport and the City of Hartford.

o) Identify dependable and equitable funding sources for the Pioneer Valley transit system.

PVTA operating funds are provided from six sources. State Contract Assistance accounts for 51% of the operating budget. Farebox and municipal assessments each make up 17% of the budget, followed by Federal Grants that represent 12% of the budget. The final 3% is derived from advertising and from interest and insurance. Nearly all of these sources of funding are declining or capped making any service expansions challenging. PVTA recently completed a Comprehensive Service Analysis that recommended elimination of some routes and corresponding expansion of other routes. PVTA is constantly reassessing the productivity of the system and reallocating the finite available funds accordingly.

In areas like the Pioneer Valley, transit is deemed more of a public service for the transportation dependant than an actual comer option. A greater commitment must be made to transit as a commute option if our goals of fewer vehicle miles traveled, lower emissions and improved environmental quality of our transportation system are to be realized.

p) Improve coordination and notification of the review of roadway improvement projects.

As roadway improvement projects advance through the MassDOT design process, it is important to coordinate all review comments with both the local design consultant and the chief locally elected official. While this process can work quite well with some communities, it will be important to expand these coordination efforts to ensure that projects advance towards design in a timely and cost-effective manner.

2. Strategies

A series of strategies were developed to address the needs that restrict the efficient movement of people in the region. These strategies are summarized in Table 14-4. A summary of each strategy follows.

Table 14-4 – Strategies to Assist in the Movement of People

Seek innovative methods to increase transit ridership, including express routes and flex vans.	Ongoing
Monitor congested areas using the regional Congestion Management Process (CMP).	Ongoing
Develop a regional list of top congested locations.	Ongoing
Promote the implementation of bicycle lanes where practical.	Ongoing
Advance and promote the principles of pavement management.	Ongoing
Conduct parking studies for downtown areas.	Ongoing
Enhance directional and guide signs to/from the regional highway system.	Ongoing
Seed to develop a TOD Investment Fund	Ongoing
Maintain equity in providing transportation services and access throughout the region.	Ongoing
Develop a comprehensive Commuter Rail network.	Immediate
Identify locations for park and ride lots and supporting express transit service.	Immediate
Work with the State and local communities to implement the recommendations of regional transportation studies.	Immediate
Identify sources of revenue for local transportation projects.	Immediate
Encourage private connections to the regional bikeway network.	Future

a) Seek innovative methods to increase transit ridership, including express routes and flex vans.

The Pioneer Valley MPO should work in consultation with local communities and the PVRTA to identify future transit studies to include as part of the UPWP. These studies should identify areas that could benefit from additional or improved transit service. A combination of transit surveys, existing ridership data, the regional transportation model, and other appropriate analysis techniques should be utilized to develop recommendations to increase transit ridership.

b) Monitor congested areas using the regional Congestion Management Process (CMP).

Areas of congestion or travel conditions in the Pioneer Valley region that are no longer acceptable to the public must be identified as target areas for improvement. Improvement strategies must first consider maximizing the

efficient use of existing facilities through travel demand management, traffic operation improvements, growth management, and alternate modes of travel prior to the recommendation of expansion of the existing transportation system.

Areas of congestion will be identified through the Congestion Management Process, the regional travel demand model, and local input. Performance measures are utilized to indicate the level of severity of congestion for each area. Routine monitoring of these areas will be conducted to determine if the conditions are “re-occurring” or “intermittent”. For those areas that are “re-occurring” they will be designated as a congested area or corridor. Priority attention will be given to the relief of those corridors designated as congested. Under the current TEC project priority process, projects that are designed to alleviate congested areas receive higher priority than other projects.

Regional congestion mitigation actions that improve travel flow efficiency or reduce single-occupant vehicle travel without adding new travel lanes are given priority in the TEC process. These projects include traffic signal coordination projects, high occupancy vehicle lanes, car and van pool service, and intelligent transportation systems. The objective of these activities is to reduce congestion and in turn improve air quality throughout the region.

c) Develop a regional list of top congested locations.

Continue to rank the top congested locations and bottlenecks in the Pioneer Valley Region as part of regular updates to the Regional Congestion Management Process (CMP). Utilize peak hour travel time information to identify congested corridors and intersections and develop a public participation process to assist in the prioritization of congested areas. Update the current status of ongoing studies and potential transportation improvement projects for each location. Advance new transportation planning studies as appropriate for locations with no pending improvements.

d) Promote the implementation of bicycle lanes where practical.

MassDOT’s GreenDOT initiative requires that bicycle and pedestrian accommodations be included as part of all transportation improvement projects. Recommendations developed as part of transportation studies completed as part of the UPWP also seek to identify areas that could benefit from bicycle lanes. As more communities begin to develop local “Complete Streets” policies this could result in more bicycle lanes being included as part of locally fund transportation improvement projects.

e) Advance and promote the principles of pavement management.

The primary goal of any pavement management system is to provide decision-makers with a list of improvement projects that maximize the benefit

of limited maintenance dollars. PVPC staff, under the direction of the Pioneer Valley MPO, should continue to refine the maintenance project prioritization process. This process will assist in the prioritization of roadway maintenance projects that are evaluated using the regional project prioritization system.

All federal-aid eligible roadways in the region will continue to be evaluated on a regular basis. This evaluation will consist of a pavement condition survey and a future benefit-cost analysis of various maintenance scenarios. A summary report will be generated for each community in the region. The ability to view various budget and scheduling scenarios will allow the local officials to forecast the needs and conditions of their federal-aid roadway system.

f) Conduct parking studies for downtown areas.

Work with local communities to identify areas for future parking studies for inclusion in the UPWP. Identify the existing parking supply and quantify existing demand through a weekday occupancy and turnover survey. Utilize the information collected in the parking survey to develop recommendations to efficiently manage the existing parking supply and address the need for potential future parking demands.

g) Enhance directional and guide signs to/from the regional highway system.

Incorporate appropriate tasks into future transportation planning studies to inventory and analyze the effectiveness of existing directional guide signs from/to the regional highway system. Develop recommendations and maps of preferred improvements to upgrade existing signage as appropriate.

h) Seek to develop a TOD Investment fund

Participate in the development of a framework for a TOD investment Fund to provide for infrastructure and catalytic funding of TOD projects, and identify potential funding sources to capitalize the fund.

i) Maintain equity in providing transportation services and access throughout the region.

Incorporate an assessment of transportation equity as part of transportation planning studies as appropriate. Work with local communities to identify neighborhood groups and local organizations to include in ongoing public participation activities.

j) Develop a comprehensive Commuter Rail network.

Interstate 91 in Connecticut faces daily congestion backups despite significant investments in new capacity such as a dedicated High Occupancy Vehicle (HOV) lane. The Pioneer Valley MPO should continue to work with

officials from the Commonwealth of Massachusetts, the State of Connecticut, the State of Vermont, local communities, and other interested parties to advance the development of a viable Passenger Rail network. This network would provide a viable alternative to the single occupant vehicle for both commuting and trips to Bradley International Airport.

A series of studies have been completed to assess the operational and economic challenges associated with the dual use of the existing rail corridor by freight and passenger trains along the Knowledge Corridor. Additional support is necessary to continue to advance opportunities to implement incremental improvements to service and develop innovative funding strategies for continued service.

Similarly, an ongoing study to assess infrastructure (capital) needs and operating costs for passenger rail service connections between Springfield and Boston, MA must continue to be advanced. Expanded east-west service is complicated due to the ownership of railroad tracks between Springfield and Worcester by CSX and existing MBTA commuter rail service between Worcester and Boston. Studies have identified the potential for one daily run between Boston and Montreal and eight daily runs between Boston and New Haven, Connecticut that would have a stop in Springfield. Expanded passenger rail service would allow existing residents to continue to live in the Pioneer Valley and connect to job markets to the east and south of the region.

k) Identify locations for park and ride lots and supporting express transit service.

The Pioneer Valley MPO should continue to monitor usage at existing park and ride lots in the region. In addition, feasibility studies for potential new park and ride lot locations should be advanced through the UPWP. Locations for new park and ride lots should be identified through consultation with MassDOT and local officials. In addition, supporting amenities and transit service should also be studied and implemented as appropriate to promote usage of these facilities.

l) Work with the State and local communities to implement the recommendations of regional transportation studies.

Continue to transmit copies of all transportation planning studies to the members of the Pioneer Valley MPO. Utilize the comments of MPO members and local communities to finalize all studies. Provide technical assistance as appropriate to advance the preferred recommendations and alternatives of regional transportation planning studies. Assist local communities in completing Project Needs Forms and Project Initiation Forms to advance project development as detailed in the MassDOT Project Development and Design Guide.

m) Identify sources of revenue for local transportation projects.

Many local communities are dependent on the Chapter 90 Program to fund transportation improvement projects on locally maintained roadways. As demonstrated in Chapter 15 of this document, this funding is not adequate to keep locally maintained roadways operating at acceptable levels. The Pioneer Valley MPO should continue to work with MassDOT and local communities to identify an equitable source of revenue for transportation improvements projects that address local needs.

n) Encourage private connections to the regional bikeway network.

Work with local communities and interested private developers to develop incentives to enhance connections to the regional bikeway network. Review Environmental Notification Forms and Environmental Impact Reports completed as part of the Massachusetts Environmental Policy Act (MEPA) to identify areas that could benefit from enhanced bicycle connections. Provide local assistance with communities to identify incentives and potential funding sources to encourage private bikeway connections.

C. 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. As a result, the goods movement network provides vital connections between producers and consumers within the state, nationally and internationally.

A large portion of the freight transportation system is privately owned and operated. As a result, it is critical to develop partnerships between state, regional and local agencies with the private sector to coordinate and maintain efficient freight planning and implementation.

1. Needs

A series of needs to enhance the movement of goods in the Pioneer Valley region have been identified and are summarized in Table 14-5. These needs have been categorized as immediate, future and ongoing. Ongoing needs are areas that may already be considered as part of an existing program that will require updating as part of existing planning efforts or analyzed for inclusion as part of a transportation improvement project. Immediate needs will require attention in the short term to advance transportation planning

studies and projects. Future needs are considered equally important, but will be advanced over a slightly longer timeframe.

Table 14-5 – Summary of Needs to Enhance the Movement of Goods

Support the development and maintenance of short line and regional railroads in the Pioneer Valley.	Ongoing
Improve the communication between private carriers and state and local officials.	Ongoing
Increase opportunities for air cargo in the region.	Ongoing
Improve connections between different modes and the highway network.	Immediate
Improve coordination with class one carriers serving the Pioneer Valley Region.	Immediate
Improve and coordinate the logistics of freight movement in the Pioneer Valley. including upgrades of the NECR track from Vermont to Connecticut for 286,000 pound weight capacity.	Future
Reduce the regional reliance on trucking for the primary transportation of goods.	Future
Promote the efficient use of the highway network by freight carriers.	Future

a) Support the development and maintenance of short line and regional railroads in the Pioneer Valley.

The Pioneer Valley is served by five rail carriers. The short line and regional railroads often provide the pick up and delivery of cars from the national rail system on lines that the larger carriers could not compete with efficiently. In this role these carriers are often innovative and customer focused providing businesses with what they need for transportation services. These railroads are also aggressive in developing new customers to build their business. The Pioneer Valley MPO should support the growth, development, and maintenance of the shortline and regional railroads through programs intended to promote economic development as well as reduce congestion.

Currently Massachusetts has a Rail Freight Capital Funding Program for funding the implementation of rail improvements pursuant to the general provisions of Chapter 161C of the Massachusetts General Laws. The program will fund projects that demonstrate that the proposed freight rail project will provide a sustained public benefit warranting the use of public funds. Examples of eligible projects include new construction; reactivation and/or rehabilitation of public intermodal freight facilities, safety improvements, and rights-of-way provided there is a clear public benefit to any proposal. However, the current program is limited to projects on publicly owned property rather than any rail property that meets the public benefit. As almost all of the entire national and Massachusetts rail system is owned by

private freight carriers, the number of opportunities for using the program is very limited. The Pioneer Valley MPO shall seek to expand the program to any rail improvement with a clear public benefit which would model similar programs in other states.

b) Improve the communication between private carriers and state and local officials.

There is often miscommunication between freight carriers and local and state officials charged with maintaining the road and transportation systems that the carriers depend on. The Pioneer Valley MPO and Pioneer Valley Planning Commission should seek to open a useful dialogue between freight carriers and officials on areas of common concern.

c) Increase opportunities for air cargo in the region.

Air cargo entering the Pioneer Valley travels through the nearby Bradley International Airport in Windsor Locks, Connecticut. Bradley is the primary airport for the Pioneer Valley as well as for Connecticut. Efficient air cargo operations are critical for the region's businesses as they compete in an increasingly global economy. The region should support the improvements of air cargo operations if market forces and conditions warrant it at Bradley as well as Westover and Barnes Airports in Massachusetts.

d) Improve connections between different modes and the highway network.

Often called "the last mile," the link between freight, intermodal terminals, and the regional transportation system is a very important part of the multimodal transportation supply chain. In older cities such as those in Massachusetts, this last mile is often surrounded by conflicting land uses and competing travel demands. For this reason, the Pioneer Valley Region has been working to create dedicated haul roads and multimodal freight corridors. These facilities are special, limited-use connections created to ensure a stable connection between the intermodal terminals, freight facilities, and the regional transportation network and to buffer residential neighborhoods from truck traffic.

e) Improve coordination with class one carriers serving the Pioneer Valley Region.

Class 1 carriers take their designation from revenue standards set by the Association of American Railroads. Currently there are five U.S. and two Canadian Class 1 railroads. Class 1 carriers are the only railroad that can truly provide comprehensive, competitive, and integrated services on a national and international basis. The presence of a Class 1 carrier in the Pioneer Valley is critical to providing efficient transportation services. The

Pioneer Valley should remain engaged with CSX, Pan Am Southern, and the Commonwealth to ensure the coordination of transportation improvement projects.

f) Improve and coordinate the logistics of freight movement in the Pioneer Valley. including upgrades of the NECR track from Vermont to Connecticut for 286,000 pound weight capacity.

The Pioneer Valley needs to work with businesses, state governments, and freight carriers to both improve and coordinate the logistics of freight movement. New and existing businesses need to be able to efficiently serve their markets from the Pioneer Valley. This may require investments in all types of infrastructure located both in and outside the region. Upgrades to the NECR track from 263,000 pound to 286,000 pound capacity will greatly improve movement of freight in and out of the region.

g) Reduce the regional reliance on trucking for the primary transportation of goods.

As much as 98 percent of the region's freight moves via trucks in the Knowledge Corridor which includes the Pioneer Valley. Increasing transportation alternatives for business will provide more market choices for freight as well as reduce the impacts of trucking on the region's infrastructure.

h) Promote the efficient use of the highway network by freight carriers.

As 98% of the region's freight movements take place via truck, the efficient use of the road and highway system is critical. The Pioneer Valley Region should consider the impacts to freight and trucking in making transportation investment decisions.

2. Strategies

A series of strategies were developed to address the needs that restrict the efficient movement of goods in the region. These strategies are summarized in Table 14-6. A summary of each strategy follows.

a) Improve directional signage from the national highway network to major freight centers and destinations.

The directional signage between the National Highway System and major freight hubs should be improved through increased communication with local communities and MassDOT. Often this signage is obsolete or missing entirely which can cause freight traffic to get lost on local streets as well as caught by low clearance bridges.

Table 14-6 – Strategies to Enhance the Movement of Goods

Improve directional signage from the national highway network to major freight centers and destinations.	Ongoing
Meet with class one carriers on a regular basis to enhance the regional freight rail network.	Ongoing
Incorporate appropriate design measures in roadway improvement projects to accommodate freight movements.	Ongoing
Improve the connections between the national highway network and air and rail intermodal terminals, transloading centers, freight yards, pipeline terminals and distribution centers.	Immediate
Develop incentives to encourage businesses to utilize a mix of freight transportation alternatives.	Immediate
Identify and mitigate vertical clearance issues at underpasses.	Immediate
Use the regional CMP to identify areas of freight congestion.	Future

b) Meet with class one carriers on a regular basis to enhance the regional freight rail network.

The Pioneer Valley MPO shall maintain an active relationship at all levels with the Region’s Class 1 rail carriers; CSX and Pan Am Southern, where issues of singular and mutual concern are discussed and acted upon. This engagement shall include the Chair of the MPO, the Secretary of Transportation, other members, and the staff of the MPO.

c) Incorporate appropriate design measures in roadway improvement projects to accommodate freight movements.

Ensure that the unique concerns and challenges presented by freight movement are included in the design of roadway projects.

d) Improve the connections between the national highway network and air and rail intermodal terminals, transloading centers, freight yards, pipeline terminals and distribution centers.

The Pioneer Valley, through its central location in New England and with its extensive transportation infrastructure hosts a number of Intermodal hubs where goods are transferred from one mode to another. These facilities which include rail intermodal terminals, transloading centers, freight yards, and pipeline terminals need good access to national highway network. Often, it is this connection which provides the greatest challenge for these facilities. Antiquated roadways, bridges, and routes through neighborhoods negatively affect the efficiency and burden their host communities. The Pioneer Valley MPO shall seek to improve the connectivity between these intermodal hubs and the National Highway System.

e) Develop incentives to encourage businesses to utilize a mix of freight transportation alternatives.

The movement of goods in the Pioneer Valley Region is dominated by trucking, which has 98 percent of the market. In order to develop a more balanced transportation system, the Pioneer Valley MPO shall seek measures to encourage a wider mix of freight transportation by businesses.

f) Identify and mitigate vertical clearance issues at underpasses.

Low clearance underpasses restrict the efficient movement of freight in the Pioneer Valley region. The Pioneer Valley MPO should continue to identify locations with vertical clearance issues, identify appropriate truck travel routes and advance transportation improvements that enhance freight movement.

g) Use the regional CMP to identify areas of freight congestion.

The Pioneer Valley MPO shall use the regional CMP to identify specific areas which may have freight congestion. Over time, the movement of goods shall be incorporated into the CMP as a separate element to reflect the different challenges that create choke points for freight.

D. 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.

1. Needs

A series of needs to enhance the movement of information in the Pioneer Valley region have been identified and are summarized in Table 14-7. These needs have been categorized as immediate, future and ongoing. Ongoing needs are areas that may already be considered as part of an existing program that will require to be updated as part of existing planning efforts or analyzed for inclusion as part of a transportation improvement project. Immediate needs will require attention in the short term to advance transportation planning studies and projects. Future needs are considered equally important but will be advanced over a slightly longer timeframe.

Table 14-7 – Summary of Needs to Enhance the Movement of Information

Expansion of the existing ITS infrastructure in the region.	Ongoing
Improve distribution and access of real-time highway and transit information.	Ongoing
Coordinate efficient use of existing rights of way to house communication infrastructure.	Ongoing
Educate communities on the advantages of ITS and improve the use of ITS in the region.	Ongoing
Improve Incident Management on Major Routes.	Ongoing
Increase public and community involvement in the transportation planning process.	Ongoing
Improve the availability of high speed internet and wireless communication access in the region.	Immediate
Develop and implement policies on automated vehicles.	Immediate

a) Expansion of the existing ITS infrastructure in the region.

The Regional ITS Architecture for Western Massachusetts includes an Implementation Plan that addresses the planned components of the architecture and identifies key initiatives that are required to implement the expansion of the existing ITS infrastructure in the region. The region has realized improvements to ITS technology through the integration of PVTAs ITS improvements for all buses, the 511 Traveler Information System, and MassDOT’s Event Reporting System. Improvements have also been made to allow the access of archival data such as volume and speed for use in planning studies for areas where appropriate technology exists. It will be important to continue to expand the ITS infrastructure to allow for additional archival data and real-time video feeds for the regional transportation system.

b) Improve distribution and access of real-time highway and transit information.

Modern technology continues to expand and become more affordable. As a result, the use of cell phone and in-vehicle navigation systems is becoming much more commonplace. On July 21, 2000 the Federal Communications Commission (FCC) designated 511 as the single travel information telephone number to be used across the United States. In addition, Mass511.com allows users to develop their own custom travel alerts. PVTA now provides real time passenger on the status of existing transit routes is at both the Springfield Bus Terminal and Holyoke Transportation Center. PVTA also provides real time information on each bus route through the following website: <http://bustracker.pvta.com/infopoint/>.

MassDOT is currently developing an Implementation Plan for Safe Work Zones which includes the opportunity for real-time data collection by portable

ITS equipment to optimize work zone safety and mobility. As technology continues to advance, information will become much more readily available. As a result, it will be extremely important to improve the exchange of information exchange between ITS users, stakeholders and providers.

c) Coordinate efficient use of existing rights of way to house communication infrastructure.

It is important to efficiently use existing rights of way along regional infrastructure such as major highways and bridges. The provision of additional conduit can facilitate the expansion of existing technology and foster the development of public/private partnerships to expand opportunities for economic development and data exchange.

d) Educate communities on the advantages of ITS and improve the use of ITS in the region.

ITS is not just the installation of cameras and message signs. The impacts of intelligent transportation system technology has a wide range of applications beyond data collection and the provision of real-time traffic information for the regional highway system. Local communities can benefit from ITS applications such as over-height vehicle detection systems to prevent large vehicles from striking low-clearance bridges and underpasses. Parking management systems can assist in the advance notification of the capacity of an existing garage. Remote weather sensing equipment can improve the efficiency of local roadway maintenance operations.

It will be important for the MPO to assist in the education on the types of ITS applications that could benefit local communities. In addition, it will be important to identify future transportation improvement projects that could benefit from the integration of ITS technology to improve the use of ITS in the region.

e) Improve Incident Management on Major Routes.

Incident management is the process of the response of multiple agencies to highway-related traffic disruptions. The development of an efficient and coordinated response to incidents reduces their adverse impacts on safety, congestion, and the regional economy. As a result of the wide range of agencies involved in emergency services, an incident management program can assist in identifying regional stakeholders, coordinating joint operations efforts and reducing overall response time to incidents. As incident response time is decreased, the likelihood of secondary incidents can also be decreased. It is not uncommon for MPO's to coordinate incident management programs as a method to assist in reducing congestion along major routes. Development and advancement of incident management in the

Pioneer Valley supports the vision and goals of the RTP to reduce congestion and increase safety.

f) Increase public and community involvement in the transportation planning process.

Public participation is critical to the advancement of transportation studies and improvement projects that meets the needs of the Pioneer Valley Region. The Pioneer Valley MPO needs to continue to refine the regional public participation process to provide ample opportunity for all to provide input.

g) Improve the availability of high speed internet and wireless communication access in the region.

High speed internet is an important tool for expanding educational and economic opportunities for consumers in remote locations as it can help to efficiently access many resources, such as library and museum data bases and collections. High speed internet may also be required to best take advantage of many distance learning opportunities, like online college or university courses and continuing or senior education programs. High speed internet is also important for small business to allow for expansion of existing services through e-commerce opportunities. More information on Western MA Connect and Last Mile Grant Program is included in Chapter 5 of the RTP.

h) Develop and implement policies on automated vehicles

Autonomous vehicle technology that automates functions in vehicles that would be typically performed by the driver are becoming more common place in our vehicles. Technology such as assisted parking technology, rear view camera systems, blind spot warning systems, and active braking systems are offered as optional accessories on many vehicles. The Google Self-driving Car began in 2009 and as of June 3, 2015 is currently averaging 10,000 autonomous miles per week on public streets¹² as part of ongoing prototype testing.

The advancement of new automated vehicle technology also raised questions on the need for additional infrastructure improvements, driver education, licensing, and regulations. While the technology has promise to improve safety and increase mobility, it will be important for the MPO to be involved in state and federal policy making to define how the integration of automated vehicle technology will occur.

¹² Google Self-Driving Car Project Monthly Report, May 2015

2. Strategies

A series of strategies were developed to address the needs that restrict the efficient movement of information in the region. These strategies are summarized in Table 14-8. A summary of each strategy follows.

Table 14-8 – Strategies to Enhance the Movement of Information

Include ITS equipment as part of transit and roadway improvement projects.	Ongoing
Support ITS projects to foster deployment of ITS technology.	Ongoing
Provide training for local communities and stakeholders to increase their understanding of various ITS technologies and equipment.	Ongoing
Ensure consistency with the ITS Regional Architecture for Western Massachusetts.	Ongoing
Monitor emerging information and communications technologies to stay current with state-of-the-art information systems.	Ongoing
Expand efforts to incorporate more feedback into the regional transportation planning process.	Ongoing
Continue to refine and improve the regional TEC project prioritization system as necessary.	Ongoing
Educate local communities on the project development process.	Ongoing
Encourage and promote telecommuting and video conferencing.	Ongoing
Expand real-time passenger and travel information systems.	Immediate
Pursue public/private partnerships to reduce costs and enhance information access.	Immediate
Identify necessary infrastructure upgrades to accommodate automated vehicles.	Immediate

a) **Include ITS equipment as part of transit and roadway improvement projects.**

The Pioneer Valley MPO should work in cooperation with MassDOT and local communities to identify opportunities to include ITS equipment as part of future roadway and bridge improvement projects. Opportunities to enhance potential projects could be identified when a Project Needs Form (PNF) is submitted for review. The PNF should be compared to the recommendations of the Western Massachusetts ITS Architecture to identify potential ITS equipment that could compliment the project.

b) **Support ITS projects to foster deployment of ITS technology.**

The Pioneer Valley MPO should encourage the development of pilot projects to identify new and innovative uses of ITS equipment. Through partnerships with local colleges and universities additional research can be conducted on the benefits of new technologies. In addition, new technology can enhance

the way data is currently collected in the region, which in turn could develop new methods to analyze and improve existing transportation problems.

c) Provide training for local communities and stakeholders to increase their understanding of various ITS technologies and equipment.

The Pioneer Valley MPO should work in cooperation with the MassDOT and other interested agencies to develop educational products and workshops to increase local awareness of the benefits of ITS technology. It will be important to identify potential local uses for ITS technology as part of recommendations developed for studies included in the UPWP. In addition, local assistance should be provided after implementation of ITS equipment to perform case studies on the effectiveness of the equipment in improving the local transportation system.

d) Ensure consistency with the ITS Regional Architecture for Western Massachusetts.

It is a federal requirement for all ITS projects to be consistent with the regional architecture. As a result, it will be critical to identify if proposed projects do in fact demonstrate consistency early in the planning and design process. This will ensure compatibility with existing and future equipment and improve the efficiency of the design process.

e) Monitor emerging information and communications technologies to stay current with state-of-the-art information systems.

Technology is constantly changing and improving. It will be important to stay current with changes in ITS technology that could be beneficial to the regional transportation system. In addition, it is also important to identify new uses for existing technology that could benefit the regional transportation system.

f) Expand efforts to incorporate more feedback into the regional transportation planning process.

Utilize and enhance the existing public participation plan to expand efforts to increase the opportunity for public participation in ongoing transportation planning efforts. Identify existing regional and local groups of interest to consult with on a regular basis to identify potential transportation issues that may require further study. Develop surveys on current planning activities to solicit public comments and feedback.

g) Continue to refine and improve the regional TEC project prioritization system as necessary.

Work with the Pioneer Valley MPO to identify enhancements to the TEC criteria adopted in 2015. Specifically, work with the JTC and MPO to evaluate the new criteria, project scoring and applicability to the various types of transportation improvements funded as part of the TIP. Utilize the information

included as part of TEC scoring to track newly defined regional performance measures to assist in meeting regional performance targets.

h) Educate local communities on the project development process.

Develop a series of educational products, particularly for newly elected local officials, to provide information on how to properly advance transportation needs into viable transportation improvement projects. Utilize input from the Pioneer Valley MPO and Joint Transportation Committee to coordinate the development and distribution of this material. Attend local meetings and convene workshops as necessary to support these products.

i) Encourage and promote tele-commuting and video conferencing.

Develop initiatives to encourage major employers to offer options for tele-commuting either via a satellite office or their home. Improvements to technology also make video conferencing much more practical and reliable. The increase in use of both tele-commuting and video conferencing could greatly reduce the rise in vehicle miles traveled in the region.

j) Expand real-time passenger and travel information systems.

As the ITS infrastructure continues to expand in the Pioneer Valley, it will be important to expand on the distribution of real-time passenger information for all modes. The Pioneer Valley MPO should assist in the coordination of future efforts to enhance the distribution of real-time travel information in the PVPC region.

k) Pursue public/private partnerships to reduce costs and enhance information access.

The development of public/private partnerships is an excellent way to expand existing ITS infrastructure in a cost-effective manner. It will be important to identify and increase opportunities to utilize public rights of way to run conduit necessary for new communication links. It is also important to identify potential partnerships in the preliminary design stages of transportation improvement projects to help reduce construction costs and avoid the need to perform repetitive and costly maintenance work at a later date.

l) Identify necessary infrastructure upgrades to accommodate automated vehicles.

Automated vehicles and automated vehicle technology rely on sophisticated sensing technology to correctly identify travel lanes and the edge of the pavement. It will be important to identify the necessary upgrades to the transportation system that will be required to support the use of automated vehicles in the future. This can include an inventory of local roadways that would not currently support existing technology; identification of areas that are prone to icing, flooding, and other extreme weather conditions that could

inhibit automated vehicles; and, protocol for the change back to manual driving when conditions such as severe weather or active construction zones are not adaptable to autonomous driving.

E. SUSTAINABILITY

By definition, sustainability is the ability to be sustained and used without being destroyed or completely consumed. Sustainable transportation considers both 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 fuel-efficiency, advancing healthy lifestyles, and supporting livable communities.

A transportation system is sustainable when it meets the current needs of people while using resources efficiently to make it more likely that future transportation systems will meet future generation's needs. The goal of PVPC's sustainable transportation system is to consistently reduce the vehicle miles traveled (VMT) per population. Efficient transportation options, especially public transportation, can maximize social equity, increase social connectivity, maximize safety, and maximize resource efficiency. Public transit and ridesharing reduce the number of vehicles on the road. Efficient transportation benefits society and reduces its impacts on the environment.

1. Needs

The RTP is a multimodal plan and thus it has to address the needs for all modes of travel. A series of needs to enhance the advancement of sustainable transportation in the Pioneer Valley region have been identified and are summarized in Table 14-9. These needs have been categorized as immediate, future and ongoing. Ongoing needs are areas that may already be considered as part of an existing program that will require to be updated as part of existing planning efforts or analyzed for inclusion as part of a transportation improvement project. Immediate needs will require attention in the short term to advance transportation planning studies and projects. Future needs are considered equally important but will be advanced over a slightly longer timeframe.

Table 14-9 – Summary of Needs to Enhance Sustainability

Improve air quality and mitigate traffic congestion in densely populated areas.	Ongoing
Protect existing natural, historical, and cultural resources.	Ongoing
Improve the efficiency of the existing transportation system.	Ongoing
Reduce vehicle miles traveled in the region to minimize impacts on air quality, greenhouse gas emissions and energy consumption.	Ongoing
Improve opportunities for bicycle and vehicle parking.	Ongoing
Raise the average vehicle occupancy rate for the region.	Ongoing
Consider the impacts of large scale development on surrounding communities.	Ongoing
Look for opportunities to integrate enhancements into transportation improvement projects.	Ongoing
Reduce stormwater runoff from roads and highways.	Ongoing
Reduce land use/development impacts of new roads and transportation facilities.	Ongoing
Promote Complete Streets.	Immediate
Promote transit oriented development and pedestrian friendly development.	Immediate
Reduce impervious surfaces, a major source of water pollution.	Immediate
Reduce visual and light pollution.	Immediate
Incorporate renewable energy.	Future
Reduce sprawl and foster investment in existing urban areas.	Future
Provide for fish and wildlife migration and passage in transportation projects.	Future
Reduce energy use of transportation facilities.	Future
Improve greenways.	Future

a) Improve air quality and mitigate traffic congestion in densely populated areas.

The quality of the air we breathe is directly affected by individuals’ personal transportation choices and by the kind of transportation infrastructure we plan, design, and build. Cars - especially SUVs pollute a lot more than do bicycles, buses, or people on foot. Ozone and carbon monoxide (CO) are harmful byproducts of automobile and other motorized transportation options. The pollutants, Volatile Organic Compounds (VOC), Nitrogen Oxides (NOx), and Carbon Monoxide (CO), react together in conjunction with warm temperatures, humidity, wind speed and sunlight to produce ozone (O₃). Ozone is bad for the environment. The City of Springfield is a CO maintenance area. Air quality non-attainment classifications require Massachusetts to conduct transportation planning activities that consider air quality pollution levels and target the reduction of vehicle emissions throughout the state.

VOC emissions originate from various sources such as fuel combustion processes, on and off road mobile sources, biogenic sources, and various solvent processes. CO and nitrogen dioxide (NO₂) emissions, key components of NO_x, originate from fuel combustion by on and off road mobile sources as well as stationary sources. Emissions such as VOC are transferable depending on weather conditions and geography of the land. In Western Massachusetts, emissions generated in areas to the south, such as New York City and New Jersey, are transmitted via prevailing winds. This type of emissions displacement can intensify adverse conditions within a region of relatively low emission levels. Similarly, areas to the north of Massachusetts experience the displacement of emissions generated in the Commonwealth.

It has been proven that traffic based air pollution is one of the main causes of asthma. There is a need to reduce vehicle idling and congestion as well as promote bicycling, transit and walking so as to reduce Green House Gas (GHG) emissions which cause air pollution that triggers asthma. There is an environmental justice concern that traffic based GHG air pollution has a greater burden and impact on minorities, the elderly and children. Schools, day care, and senior centers should not be located next to highly travelled roads. Efforts to mitigate traffic congestion in densely populated areas will help improve air quality by reducing air pollution.

b) Protect existing natural, historical, and cultural resources.

Sustainable development can be defined as the maintenance of development at a rate to meet existing needs while protecting the natural resources required for future generations to meet their development needs. It is important to incorporate the principles of sustainable development in regional planning to ensure that a wide range of improvement alternatives are considered prior to the construction of new roadways or the expansion of existing facilities.

The PVPC incorporates the tenets of sustainable development as part of its transportation planning process. The PVPC recently completed a Sustainable Transportation Plan improve regional mobility while promoting bicycling, transit and walking.

c) Improve the efficiency of the existing transportation system.

The current regional transportation system provides travelers with several options to choose from to meet their mobility needs. However, large differences in travel time and reliability of service may deter the majority of travelers from opting to bicycle, use transit or walk instead of driving their private automobile. An example is a trip from Chicopee to West Springfield which usually takes 8 minutes by car takes an average of one and half hours

by bus due to bus connection layovers along the way. Many of our rural communities have no access to transit.

Improving the efficiency of the current system increases connectivity between various transportation modes and enhances current service. This includes coordination between the local, intercity, and interstate bus schedules to connect people with locations beyond their hometown. Consideration should be made to connect the new passenger rail service to existing bus service. A review of local bus arrival times at or near train stations would allow travelers enough time to board departing trains. There is a need to improve connectivity to foster linking people with their activity needs. Connectivity can also be enhanced by taking advantage of additional park and ride facilities.

Development of an integrated trip planning tool would be useful to identify connection opportunities between all modes of transport. A shared payment method such as a smart travel card could also facilitate efficient mobility. All transportation facilities need to provide amenities for users arriving by bicycle or foot such as bike racks, bike lockers, bus shelters, and sidewalks. A heavily traveled corridor between major activity centers may also benefit from enhanced bus service using Bus Rapid Transit or express buses.

d) Reduce vehicle miles traveled in the region to minimize impacts on air quality, greenhouse gas emissions and energy consumption.

Vehicle Miles Traveled (VMT) was chosen in the Clean Air Act Amendments (CAAA) as the principal travel measure for air quality planning in high ozone and carbon monoxide areas. While the region is in compliance with the requirements of the CAAA, this is mostly as a result of improvements to vehicle emissions and an advanced vehicle inspection and maintenance procedure implemented in the Commonwealth. VMT in the region has steadily increased each year and is projected to continue to increase into the future. The Pioneer Valley should commit to working to a target of having VMT grow no faster than the population. This will require the development of regional strategies to encourage VMT reduction in the PVPC region.

e) Improve opportunities for bicycle and vehicle parking.

Lack of sufficient parking for both bicycles and vehicles can contribute to congestion and poor air quality as a result of illegal parking and idling. It is important to provide safe, efficient parking that is easily accessed. Parking spaces should be well marked and routinely enforced. A system should also be established to direct vehicles to designated overflow parking areas.

The region also requires more park and ride lots to encourage ridesharing and transit use. There are currently official park and ride lots in Springfield, Ludlow and Northampton. A well utilized park and ride lot in Palmer was

closed several years ago and never replaced. Identifying additional locations for park and ride lots to replace closed lots and support new transit projects such as bus rapid transit and commuter rail would be beneficial for the whole region. This could be coordinated with enhancements to existing transit service.

f) Raise the average vehicle occupancy rate for the region.

The region is becoming increasingly auto-dependent because of the sprawling land use pattern. This in turn increases the likelihood that a person will drive alone to get to work. In addition, workers are commuting longer distances to work and increasing their time of commute. It will be important to identify incentives to entice drivers to shift from single occupant vehicles to bicycling, transit and walking.

g) Consider the impacts of large scale development on surrounding communities.

Disruption to community character and loss of open space are some of the potential adverse effects of large scale development. Such development may pose additional demands on the existing water, sewer, and roadway network while increasing air pollution. It will be important to mitigate development impacts that adversely affect the region.

Form based zoning regulations could be considered to maintain community character. Traffic impact studies that incorporate the needs of pedestrians and cyclists should be required for new development. Communities are also encouraged to adopt flexible codes with regards to parking to help preserve the community character and reduce the impacts of large scale development.

h) Look for opportunities to integrate enhancements into transportation improvement projects.

Transportation improvement projects should include elements that enhance the travel experiences of all modes of transport. When space permits, standard roadway design should include bike lanes and sidewalks. Cross walks at major intersections and along business districts not only help pedestrians but also drivers who become pedestrians once they park. Street furniture and shade trees enhance the roadway for all users.

i) Reduce stormwater runoff from roads and highways.

Human activities related to the development and use of land can pollute water supplies through the intentional or accidental release or discharge of potential pollutants. Pollutants can run off the surface of the land and enter surface water supplies, lakes, streams, ponds, and rivers. Pollutants can also leach into the ground and contaminate ground water supplies. Transportation related land uses such as airports, highways, rail yards, and truck terminals

take up a large portion of the region and have a significant impact on water quality. Natural Green Infrastructure should be used whenever possible to soak up water and reduce flooding. Five concern areas related to water systems are identified and discussed in detail below.

(i) Major Roads Cross Water Supply Recharge Areas

Major roads and highways cross much of the Pioneer Valley's public water supply areas, placing these resources at risk of contamination from the salts, petroleum hydrocarbons, asbestos, solids and metals contained in highway stormwater run-off.

(ii) Transportation Support Facilities Can be a Major Source of Pollutants

Transportation facilities, including bus terminals, and government and private fleet service areas, are a potential contributor of non-point source pollution since they are similar to general service gas stations or vehicle repair service shops. Routine engine and body maintenance activities produce solid and liquid wastes, which are carried off of the paved surfaces by stormwater run-off. Leaking underground storage tanks can also cause groundwater contamination and create a safety hazard. Stormwater can be contaminated by any of these wastes that are not stored properly.

(iii) Urban Run-off and Combined Sewer Overflows

Combined sewer overflows (CSO) are stormwater discharges to bodies of water containing raw sewage from sanitary sewer lines. They are a serious problem in the lower Pioneer Valley, preventing the stretch of the Connecticut River south of the Holyoke Dam from reaching fishable/swimmable standards. They are caused when stormwater run-off from roads, parking lots, and buildings is greater than the capacity of the combined sanitary and stormwater sewer lines. Rather than have the waste water treatment plant overwhelmed and create flooding in basements and streets, combined systems have been designed to discharge this additional volume into the river.

(iv) Road Salt and Sanding Practice

Highway maintenance requires numerous operations that can impact water quality. These include salting and sanding roads, inspecting and maintaining stormwater facilities, and other "housekeeping" practices. Proper maintenance of public and private stormwater facilities (catch basins, detention basins, swales, culverts, outfalls, etc.) is necessary to insure they serve their intended function. Without adequate maintenance, sediment and other debris can quickly clog these stormwater management structures, making them essentially useless. Non-structural management options that can significantly improve water quality are street sweeping and routine maintenance and cleaning of stormwater catch basins.

(v) Gravel Roads Require Proper Design, Maintenance and Repair to Prevent Erosion and Sedimentation

Heavy storms produce rapid water velocities which increase the potential for soil erosion especially on and around gravel roads. Pollutants such as oil and grease can also be washed from gravel roads along with exposed soil, and fine sands and silts. These roads, by nature of their topography and design, can, if not properly managed, contribute heavily to this significant water pollution problem. These sediments and pollutants are then carried away into nearby streams and ponds. Sediment loading is a major cause of water quality problems in both lakes and streams.

j) Reduce land use/development impacts of new roads and transportation facilities.

Minimizing curb cuts is an important part of new development to reduce disruption to traffic flow and increase safety. Preserving existing trees and replanting those removed during the construction process is desired as a strategy to protect, preserve and enhance woodland and urban tree coverage. Transportation projects should use trees and vegetation to assist in filtering out particulates and provide a buffer between sidewalks and existing buildings to reduce visual, noise and air pollution. The use green walls in the vicinity of highways can also reduce the impacts of vehicular emissions.

k) Promote Complete Streets.

Complete streets are those designed to accommodate every mode of transport and cater to the needs of users of all ages and physical abilities. Complete streets provide amenities needed for all modes of travel to facilitate the movement of people regardless of their age, ability, or travel mode choice. Active transportation modes such as walking and biking offer people the added benefit of reducing the spread of chronic diseases related to inactivity and help those with chronic illnesses manage their illness by becoming more active. To successfully change people's behavior youth programs which promote healthy behaviors and active travel modes need to be funded. Examples are programs that help elementary school students walk and bike to school. Roadway improvement projects need to incorporate elements that improve safety, accessibility, and ease of use to enhance livability in the Pioneer Valley region. The adoption of local complete street policies will also require the integration of bicycle, pedestrian, and transit amenities as part of ongoing transportation improvement projects.

l) Promote transit oriented development and pedestrian friendly development.

Transit oriented and pedestrian friendly development is defined as a mixed use development with convenient access to public transit and non-motorized transportation to promote reduced automobile use and encourage transit ridership. The neighborhood has a center with a transit station surrounded by high-density development that transitions to lower-density uses. These neighborhoods are located with one-half mile of the nearest transit station. The following features are also commonly included as part of a transit and pedestrian friendly development project.

- Bicycle and pedestrian amenities should be included in the design of the neighborhood.
- Streets are well connected to the regional transportation system and can include traffic calming features to control vehicle traffic speeds.
- Neighborhood development consists of a mix of housing types and prices and should be combined with appropriate retail uses and other public services.
- An emphasis should be placed on reducing the amount of land devoted to parking to promote decreased automobile use.

m) Reduce impervious surfaces, which are a major source of water pollution.

Motor vehicles are the most widespread and difficult to manage non-point sources of pollution. The emissions from the internal combustion engine, at first absorbed into the atmosphere, are released through atmospheric deposition onto land and water surfaces. Fluids, used to lubricate and cool moving parts, leak out during the lifetime of a vehicle and are deposited on land surfaces. Other vehicle components such as brakes and tires wear away through friction, scattering hydrocarbon and metal elements across our region's highways and parking lots. The parking lot, road, and highway infrastructure required for automobiles increases the amount of impervious surface in a watershed, and contributes to increased storm water run-off. All of these vehicle related pollutants deposited on impervious surfaces may be deposited into the region's streams, lakes and rivers during storm events. Therefore, reducing concrete and asphalt surfaces by using permeable materials where possible would help reduce water pollution.

n) Reduce visual and light pollution.

Light pollution is an adverse effect of artificial light. It includes sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste. It damages the environment by disrupting ecosystems and health such as

impacting visibility at night and changing natural sleep cycles. Care should be taken to identify opportunities to reduce the use of high power lighting, utilize less polluting sources of light, and buffer existing lighting when practical.

o) Incorporate renewable energy.

It is important to identify renewable energy sources to reduce the existing demand on fossil fuels. Solar powered street lights and alternatively fueled vehicles for transit, school, and local government fleets should be considered when practical.

p) Reduce sprawl and foster investment in existing urban areas.

The relationship between transportation and land use is one that shapes both the visual character and the function of communities and regions. The development and use of land is linked to its accessibility and resources. In general, better access increases the desirability of the land and enhances its development potential. Likewise, the use of land affects the transportation system. Land use and transportation planners in the Pioneer Valley and throughout the Commonwealth have accepted the interconnection of land use and transportation planning. MassDOT has also supported this perspective with transportation funds to implement projects designed to facilitate smart growth and encourage a diverse transportation system in the Pioneer Valley. This regional transportation plan update must be in sync with the region's land use plan, Valley Vision 4, which when updated must be in sync with this and subsequent versions of the region's RTP.

Just as transportation facilities can encourage and perhaps even create land uses of varying efficiencies, so can land uses create or require different kinds of transportation facilities. Compact land uses encourage pedestrian, bicycling and transit traffic, thereby stimulating a need for different kinds of transportation facilities such as bike paths, sidewalks, bus stops.

q) Provide for fish and wildlife migration and passage in transportation projects.

The design and location of a transportation improvement project can impact people, wildlife, water, and habitat. Inadequate river crossings can cause washouts of the road during flood conditions, as well as impede the movement of wildlife. Well-designed crossings can provide safe passage for water and wildlife including large mammals, keeping all safely off the road.

r) Reduce energy use of transportation facilities.

Transportation facilities use a significant amount of energy. The region should identify opportunities to include alternative and clean energy options in the redesign and construction of transportation facilities.

s) Improve greenways.

Identify gaps in urban forest connectivity and establish local tree stewardship programs and shade tree committees. Separate sewage from grey water collection to be reused in watering green buffers along roadways.

2. Strategies

A series of strategies were developed to address the needs that restrict the advancement of sustainable transportation in the region. These strategies are summarized in Table 14-10. A summary of each strategy follows.

a) Properly mitigate the adverse impact of sprawl by promoting development through the use of permitting and zoning measures.

The following strategies were developed to promote development while reducing sprawl in the region.

- Control sprawl outside existing town centers and growth centers by creating disincentives for development beyond centers. Establish lower land use zoning intensities and restrict uses which are not appropriate for rural areas. Commercial development should be located in centers, not in auto-dependent, stand-alone buildings. Establish policies restricting extensions of public sewer, water and other infrastructure.
- Adopt commercial center zoning regulations to provide for intimate Main Street shopping districts, with stores lined up along sidewalks and parking to the rear and along the curb.
- Encourage mixed-use projects, which combine residential, retail, office, and public institutional uses in compact, pedestrian-friendly villages or clusters. Mixed-use projects provide opportunities for people to live in close proximity to work, and to walk from the office to shops or restaurants.
- Create use-based zoning incentives to encourage uses such as institutions, museums, schools, public buildings, and elderly and handicapped congregate housing to locate in growth centers rather than in outlying areas.
- Facilitate the redevelopment of Brownfield sites, and other underutilized urban lands, throughout the region. Brownfields are formerly useful industrial lands, which sit neglected out of the industrial land market because of contamination and high clean-up costs, liability concerns, and lack of site information.
- Market Brownfield sites and other underutilized urban lands suitable for redevelopment, by making an inventory of sites available to potential developers.
- Consider reduced parking requirements to encourage business to locate in downtown areas.

Table 14-10 – Strategies that Enhance Sustainability

Properly mitigate the adverse impact of sprawl by promoting development through the use of permitting and zoning measures.	Ongoing
Create incentives for downtown revitalization.	Ongoing
Divert highway runoff to stormwater Best Management Practices, such as rain gardens and dry swales.	Ongoing
Restore or maintain connected habitats that allow for movement of fish, water, and wildlife.	Ongoing
Expand use of permeable pavements on sidewalks, paths, car-parks, and minor roads.	Ongoing
Encourage use of materials such as pervious concrete, porous asphalt, paving stone, brick, tile, and gravel where appropriate and reduce use of concrete and other impervious pavement materials.	Ongoing
Utilize narrower road widths for local roads where appropriate.	Ongoing
Develop transportation facilities to support and promote smart growth in and around existing city and town centers.	Ongoing
Designate wild and scenic corridors along highways and streams of historic and natural significance.	Ongoing
Implement the Regional Clean Energy Plan.	Ongoing
Encourage local fleets to use clean fuel alternatives.	Ongoing
Promote energy efficient travel modes.	Ongoing
Implement the Hazard Mitigation Plan.	Ongoing
Invest in the repair and maintenance of existing transportation infrastructure.	Immediate
Advance and promote the use of alternatively fueled vehicles.	Immediate
Work with major employers to develop incentives to decrease single occupant vehicle use.	Immediate
Mitigate the impacts of roadway salt and chemical usage during snow season.	Immediate
Refer new projects to the Pioneer Valley Sustainability Toolkit.	Immediate
Support urban forestry initiatives.	Immediate
Utilize energy efficient lighting and solar panels in new facilities.	Immediate
Enforce idling reduction programs in major activity centers.	Immediate
Identify hazardous locations due to drought under major roadways.	Immediate
Identify potential flooding locations along major highways and rerouting alternatives.	Immediate
Develop ordinances and bylaws that encourage mixed use and high density forms of development where appropriate.	Future
Construct roads without curbing where practical to enable sheet flow.	Future
Screen lighting on highways.	Future
Prohibit billboards along highways.	Future
Explore energy generation through solar paving slabs for new sidewalk projects.	Future

b) Create incentives for downtown revitalization.

The following strategies were developed to assist communities in the revitalization of downtown areas.

- Streamline or update antiquated zoning regulations to promote mixed uses and infill development in downtown areas. Allow greater density downtown compared to density in surrounding areas.
- Revise zoning to promote downtown residential uses. Permit residential use of upper floors above street-level commercial uses. Provide density bonuses for downtown residential uses, or set aside downtown land for residential use only.
- Create public-private partnerships of civic leaders and property owners, such as Business Improvement Districts and downtown associations, to manage and market downtowns and to maintain or provide amenities. Identify businesses and industries that would make a good fit with the community and actively market the downtown to these companies.
- Work to restore downtowns through Economic Target Areas or Main Street programs or other public-private community development organizations which can obtain seed money from banks and corporations to make loans, provide gap financing, purchase properties for resale and development, and finance predevelopment market studies.
- Revise zoning to incorporate design, landscape, and streetscape standards to maintain community identity and historic character.
- Exploit opportunities for specialty retail and service businesses targeted toward underserved urban markets by providing grant assistance and tax incentives to businesses.
- Invest in upgrading physical infrastructure (i.e. transit shelters and stations, parking, sewer, water) and improving downtown access.
- Invest in creating and improving urban greenspace, such as parks, pedestrian walkways, plazas and commons, and amenities.
- Create zoning and tax incentives to rehabilitate and recycle all previously-developed, available, vacant or underutilized city land before promoting use of greenfields (undeveloped open land).
- Restructure zoning to channel commercial growth, especially offices, into downtowns, rather than into highway strip developments, by allowing certain uses only in downtowns. Require retail use of ground level floors of downtown buildings, including parking garages.
- Encourage government and private institutions, such as colleges, post offices, and museums, to retain or expand downtown offices and facilities.
- Promote revitalization of and public access to urban riverfronts. Promote sensitively designed riverfront development that is focused

toward the river. Develop a network of riverfront walkways, trails and promenades.

c) Divert highway runoff to stormwater Best Management Practices, such as rain gardens and dry swales.

Rain gardens and dry swales help filter pollutants before water reaches underground aquifer. A multi-level filtration system can be applied with use of pebbles, aggregate, soil, and vegetation. Planters with dense, grassy vegetation that help absorb water can be placed near water collection areas to buffer crosswalks and sop up areas that tend to flood. An example of roadway design that facilitates water drainage includes no curb sidewalks bordered by green space.

d) Restore or maintain connected habitats that allow for movement of fish, water, and wildlife.

In an effort to determine where transportation projects can have the biggest positive or negative impact on the movement of wildlife and connectivity of habitat, the University of Massachusetts, The Nature Conservancy, and other partners have developed maps and data that may be useful for transportation planners. Three resources are identified below:

- Points where roads cross a river using the Stream Continuity Database are available at: <http://streamcontinuity.org/> A number of road-stream crossings have been surveyed for this database. In parts of the PVPC geography, there are assessments of what types of wildlife, if any, can pass through each road-stream crossing.
- Stream crossings standards and where to go for technical assistance listing by the Army Corps of Engineers. <http://www.nae.usace.army.mil/Missions/Regulatory/StreamandRiverContinuity.aspx>
- Locations where road improvements that allow for wildlife passage would provide the maximum benefits is available from the UMass Critical Linkages analysis. The Conservation Assessment and Prioritization System (CAPS) offers GIS data, maps, and other data available at: <http://www.umasscaps.org/index.html>. The Critical Linkages Project Phase I identifies road-stream crossings that should be upgraded and Phase II identifies opportunities to promote landscape connectivity for terrestrial wildlife. Descriptions and project reports are available via the web links below.
- <http://umasscaps.org/applications/critical-linkages.html>
- <http://umasscaps.org/pdf/Critical-Linkages-Phase-1-Report-Final.pdf>

A recent scientific journal article and technical report quantify the multiple benefits to communities, especially the economic benefits, of right-sized

stream crossings. The interconnectedness of different parts of a stream or watershed is essential to animals. The combined effects of dams and poorly designed bridges and culvers impact wildlife by limiting access to coldwater habitat, access to feeding areas, access to breeding and spawning areas, and natural dispersal. It is important to identify and remediate locations that currently pose barriers to the movement of fish and riparian animals such as amphibians and reptiles. Replacement of culverts may be necessary to meet current stream crossing guidelines in core habitat areas. Permitting assistance and potential funding assistance is available from a range of groups working to re-connect stretches of river and other habitat.

Examples of effective crossings include bridges, open bottom arches, and culverts that are sunk into the stream bed. Optimum standards provide for fish passage, stream continuity, and wildlife passage using large enough culverts to allow deer and moose crossings. A good crossing spans the stream and banks, does not change water velocity, has a natural stream bed, and creates no noticeable change in the river. In many cases, transportation improvements that benefit wildlife also benefit people by reducing road washouts and animal-vehicle collisions. It is also important to design sustainable culverts and underpasses in light of rising storm water and floods.

The Pioneer Valley Regional Greenways Plan seeks to create a linked network of protected open spaces across the region to preserve special places such as the Upper Westfield River, the Upper Connecticut River Valley, the Holyoke Range, the Metacomet-Monadnock Trail, the Manhan River, the Mount Hitchcock area and the Scantic River. The plan establishes regional agreement on land conservation priorities, provides an analysis tool, fosters cooperative land protection efforts, preserves viable habitat areas and corridors for wildlife, provides recreational opportunity and spiritual sustenance for people, and maintains healthy waterways and water resources.

e) Expand use of permeable pavements on sidewalks, paths, car-parks, minor roads.

To help replenish the underground water reserves, surface material that allows precipitation to percolate through the surface and infiltrate storm water into the soil below is an important link in the life cycle of local clean water supplies. In addition, permeable pavements help reduce water volume carried through the sewage system making them more efficient. Although they should not replace existing storm water management techniques, they play a viable part in an overall storm water site management design. Using permeable paving materials on roadways decreases incidents of flooding and overflow often caused by sudden high volume of water from storms. On

sidewalks, they reduce the occurrence of tree root damage that often happens when trees seek access to water and air.

f) Encourage use of materials such as pervious concrete, porous asphalt, paving stone, brick, tile, and gravel where appropriate and reduce use of concrete and other impervious pavement materials.

Using a variety of materials is useful to both users and the environment as it provides visual interest, creates a distinguished character, and reduces the heat island effect generated by large asphalt surfaces. Parking lot design that incorporates landscaping with shade trees reduces the heat island effect that can raise the atmospheric temperature by as much as 9 degrees Fahrenheit.

g) Utilize narrower road widths for local roads where appropriate.

A road diet can have a calming effect that encourages reduced vehicular speeds. This in turn can also reduce noise and air pollution while improving safety and livability. Reducing the crossing distance, also makes walking safer for pedestrians of all ages and abilities.

h) Develop transportation facilities to support and promote smart growth in and around existing city and town centers.

Transportation hubs and multimodal centers that provide services such as showers, lockers, bike shelters, and information centers attract both residents and customers of surrounding neighborhoods. They can assist in increasing the viability of high density development initiatives for town centers.

i) Designate wild and scenic corridors along highways and streams of historic and natural significance.

Designation serves to protect significant corridors from development and signage encroachment and preserve their natural beauty and historic character. As a regional resource, it attracts visitors and supports the local economy through tourism. It also protects wildlife by maintaining habitat connectivity. An example is the Connecticut River national designation as an American Heritage River. It is the Pioneer Valley's most prominent natural asset and a source of regional identity and pride.

j) Implement the Regional Clean Energy Plan.

The Pioneer Valley Clean Energy Plan, first produced in 2008 and updated in 2014, sets the following goals:

- Reduce regional energy use 15% by 2020 (over the 2000 baseline year) through improved energy efficiency.
- Replace non-renewable energy with clean and renewable energy that is generated locally, including sources such as wind, solar, landfill gas co-generation, hydropower, solar electric photovoltaic, solar hot water, biomass and biofuels.

- Increase the installed capacity of renewable energy production in the region to a total 754 million kWh/year by 2020; as of 2012, installed renewable capacity in the region was 281 million kWh per year, or 28% of the way toward the goal).
- Create local jobs in the clean and renewable energy sector.

The Massachusetts Global Warming Solutions Act of 2008 created statewide green house gas (GHG) emission reduction requirements of 25% by 2020 and 80% by 2050 from the 1990 baseline year. To achieve its “fair share” proportional GHG reductions to be consistent with this statewide goal, the Pioneer Valley plan identifies reductions in various sectors of energy use. In our region, transportation sources account for 31.8% of all GHG emissions (total 9.2 million tons of carbon dioxide equivalent). This means that reductions to come from the transportation sector through reduced driving, use of lighter-weight vehicles with improved aerodynamics and more energy efficient propulsion systems, as well as greater use of public transit.

k) Encourage local fleets to use clean fuel alternatives.

Fleets of local government, schools, businesses, transit, and the service industry would benefit from converting fleets to use clean energy and become less dependent on petro chemicals. Several benefits result from conversion such as fuel cost benefits, reduction in maintenance needs, and health improvements to operators with reduced exposure to volatile organic compounds associated with the use of gas and diesel.

l) Promote energy efficient travel modes.

In addition to walking, biking and transit, promoting energy efficient travel modes such as the use of hybrid electric vehicles, carpooling, and car sharing would help in reducing fuel consumption in the region.

m) Implement the Hazard Mitigation Plan.

The Pioneer Valley Regional Natural Hazard Mitigation Plan assesses risk and vulnerability and creates an action plan for adoption, implementation, and monitoring. Among the hazards identified are dam failures, flooding, severe snow/ice storms, tornado, hurricane, wildfires, drought, and earthquakes. Vulnerable sites include transportation networks, regional economy, and critical resources such as emergency operations centers, emergency shelters, hospitals, and hazardous materials sites. The main goal of the plan is to reduce the loss of or damage to life, property, infrastructure, and natural, cultural, and economic resources from natural disasters. The action plan objectives include improving communications between the State, the region, and the local governments in pre-disaster planning and continuous hazard mitigation implementation.

n) Invest in the repair and maintenance of existing transportation infrastructure.

Utilize the pavement management plan to identify roads in need of repair before reaching critical conditions that would require full reconstruction that is much more costly and disruptive to users. Maintaining a state of good repair on our roadways and bridges will result in more cost effective transportation improvement projects while enhancing the safety and efficiency of all transportation modes.

o) Advance and promote the use of alternatively fueled vehicles.

It will be important to reduce the reliance of the region on vehicles fueled with fossil fuels. The Pioneer Valley MPO should advance measures to promote alternatively fueled vehicles when appropriate as part of studies developed in the UPWP. Assistance should also be provided to local communities and other interested parties in the conversion of vehicle fleets to alternative fuel sources. Promote alternatively fueled vehicles with efforts such as identifying electric vehicle charging locations throughout the region and providing incentives for hybrid vehicles, such as free designated parking at major activity centers.

p) Work with major employers to develop incentives to decrease single occupant vehicle use.

Ridesharing services are provided in the Commonwealth of Massachusetts through MassRides. The University of Massachusetts Amherst also employs a ride share coordinator. The Pioneer Valley MPO should continue to work with MassRides to reduce the percentage of single occupant vehicles that commute to work. These strategies should also be incorporated into ongoing transportation planning studies completed as part of the UPWP.

q) Mitigate the impacts of roadway salt and chemical usage during snow season.

Road salt contaminates drinking water supplies as a result of poor storage, highway runoff, and snow removal. In turn this has adverse effects on human health. It also adversely impacts aquatic life in our rivers and streams by changing the ecosystem and survival potential for native species.

Remediation measures have included highway drainage changes, reduction of salt use near water supplies, delivery of bottled water, and the connection of existing well users to public water systems. The use of salt substitutes such as sand and deicer premix may introduce other harmful chemicals to humans and the environment. High levels of salt also impacts food production in the region and the availability of local produce that may not tolerate high levels of salt in the soil.

r) Refer new projects to the Pioneer Valley Sustainability Toolkit.

The Pioneer Valley Sustainability Toolkit has several goals:

- To assist communities, by providing technical assistance and resources, to help them in adopting strategies to take action on climate change, promote use of clean energy sources, grow smarter, protect their environments, promote food security, and encourage use of green infrastructure.
- To promote the implementation of the region's key plan: Our Next Future: An Action Plan for Building a Smart, Sustainable and Resilient Pioneer Valley;
- To encourage sustainability in all aspects of life in the Pioneer Valley region.

The Pioneer Valley Sustainability Toolkit includes a total of 130 fact sheets, plus 52 model bylaws and strategies. It can be downloaded at:

<http://www.pvpc.org/sustainability-toolkit>.

s) Support urban forestry initiatives.

Promote a larger, healthier urban forest as part of the urban ecosystem through community planting, maintenance, and education. Encourage planting of shade trees in the urban center and along pedestrian paths to improve air quality and modulate extreme weather conditions. An urban forestry initiative would help protect existing trees and open space. It can work to reclaim abandoned space for use as community gardens and recreational space. An example of a local urban forestry initiative is the Amherst Public Shade Tree Committee that has created an inventory of existing trees for the town center. A map records trees removed due to disease or construction and identifies locations for replanting to recover lost shade trees.

t) Utilize energy efficient lighting and solar panels in new facilities.

Energy efficient lighting can be installed both in indoor and outdoor facilities along roadways and in parking lots using solar panels for electricity. Motion activated lights are useful along sidewalks in urban residential neighborhoods.

u) Enforce idling reduction programs in major activity centers.

Enforcement of idling reduction programs are most beneficial at transportation hubs and bus terminals as well as in any facility that operates a fleet of vehicles. It may be more difficult to enforce in the business district when users do not have regular travel patterns. Nevertheless an educational campaign about the adverse effects of idling to air quality is important for changing traveler behavior.

v) Identify hazardous locations due to drought under major roadways.

A deficiency in precipitation over an extended period of time causes drought. An inventory of soil conditions and the water table under major highways is a first step to identifying potential hazards caused by drought under major roadways. It is not unheard of to experience sinking holes and surface cracking during severe cases of drought. Severe drought occurred in Massachusetts in 1999. During this period the Massachusetts Emergency Management Agency developed the Massachusetts Drought Management Plan. The plan includes data on ground water, surface water, reservoir, precipitation, stream flow conditions and a report on fire danger and agricultural conditions.

w) Identify potential flooding locations along major highways and rerouting alternatives.

The 100 and 500 year flood zone maps help identify locations of potential impact to major highways during a flood incident. Local flood evacuation studies can be conducted to identify potential hazard sites, vulnerable receptors, impacted roads, and traffic flow patterns when certain roads become impassable. An example of such a study is the recent Springfield Flood Evacuation Study that also included a suggested sign message plan for traffic rerouting during an evacuation. Three flood scenarios were identified by the local emergency preparedness team as priority locations for analysis.

x) Develop ordinances and bylaws that encourage mixed use and high density forms of development where appropriate.

The following strategies were developed to assist communities in promoting mixed-use and high density development.

- Develop zoning regulations to promote cluster development, such as major residential development ordinances or open space community development ordinances, as an alternative to standard large-lot subdivisions.
- Incorporate limited mixed use development options into open space community bylaws, such as limited business or office uses.
- Seek state legislation to allow by-right cluster development.
- Provide incentives for urban infill, clustered residential and mixed-use villages within or immediately surrounding town centers or designated community growth areas.
- Create density-based zoning incentives to encourage development in growth centers, such as smaller lot sizes and setbacks (or no minimum lot size or frontage requirements), and increased heights.
- Retrofit suburban shopping centers to become community centers, by adopting zoning which requires new buildings at the street line.

- Adopt inclusionary zoning regulations to provide opportunities for development of a mix of housing types, including affordable housing, within neighborhoods. Typically, inclusionary housing bylaws promote private market development of affordable housing by offering developers residential density bonuses in return for some affordable dwelling units. The developer must set aside a percentage of affordable housing units, usually 10-25%, in the development for low and moderate-income residents.
- Adopt zoning for elderly and handicapped congregate housing. Congregate housing provides a range of housing opportunities for elderly and handicapped persons, including senior apartments for independent living, life care facilities allowing the progression from independent living to nursing home care, and congregate dwellings with support services for residents.
- Improve the quality of compact neighborhoods with the strategic placement of public amenities. Community centers, recreation facilities, schools, and libraries can all generate shared civic life, provide neighborhood meeting areas, and spur neighborhood investment.
- Provide accessible open space close to homes in compact neighborhoods. Open space, such as bikepaths, parks, play spaces, and commons, enhances the quality of life in neighborhoods, provides recreational opportunities, and improves community safety and desirability.
- Take advantage of existing state and federal programs which provide incentives for Brownfields redevelopment.
- Create Transit Oriented Development (TOD) zones within walking distance, about 2,000 feet, of major bus transit lines in urbanized areas, which allow for higher density and mixed use. Each TOD should have a mixed use core commercial area located adjacent to the transit stop. Surrounding the core commercial area should be a mix of residential housing types, including small lot single-family, townhouse, condominiums, and apartments at a density of 10-26 dwelling units per acre. TODs should also include public uses, such as parks, plazas, greens, public buildings and public services.

y) Construct roads without curbing where practical to enable sheet flow.

On low-traffic speed streets without curbs pedestrians are given equal importance to drivers, providing for a pedestrian friendly environment by forcing drivers to become more conscious of other users of the roadway facility. This design is also inviting to cyclists as it reduces the potential of losing balance from a tire accidentally striking the curb and reduces the accumulation of debris that often pose a safety hazard to cyclists driving on

the right side of the road. It aids roadway drainage and eliminates puddles at curb's edge by allowing sheet flow of rain water onto a green buffer or permeable sidewalk.

z) Screen lighting on highways.

Light pollution from highway lighting impacts both humans and wildlife. Screening of highway lighting helps protect all species living within its proximity. Screening can be accomplished using indirect lighting fixtures or standard barriers such as fencing or dense foliage from trees. Use of *full cutoff* lighting fixtures when practical and appropriate spacing exists can assist in maximizing the efficiency of street lights.

aa) Prohibit billboards along highways.

Eliminating billboards on highways would reduce driving distraction as well as light pollution and visual clutter. It preserves community character and protects the natural scenery of our region. Visual clutter and the overpowering scale of billboards add to a driver's stress level.

bb) Explore energy generation through solar paving slabs for new sidewalk projects.

Identify prototype projects and partner with local communities to implement new strategies to save energy and power public spaces through solar paving slabs on sidewalks. The stones are made from renewable, durable materials (e.g., recycled glass or recycled rubber), in which are embedded high-efficiency solar panels.

F. 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. Do to the need for fiscal constraint, the 2016 RTP programmed only MassDOT approved projects or those “High” priority projects that are highly likely to be built in the next 4 years and have an identified source of funding. Each of the projects has 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.

All projects included as part of the FY2015 – FY2018 Transportation Improvement Program (TIP) were prioritized based on the evaluation criteria developed by PVPC in coordination with MassDOT. Each project was jointly evaluated by a committee comprised of members of the MassDOT, MassDOT Highway Division District 1 and 2 offices, and the Pioneer Valley Planning Commission. Projects are given numerical scores ranging from 0 to 100 and include a variety of categories. Longer range projects and strategies included as part of this RTP update were initially developed and evaluated by the transportation staff of the Pioneer Valley Planning Commission. After the initial evaluation and ranking by PVPC staff, the list of projects was distributed to the MassDOT, MassDOT Highway Division District 1 and 2 offices, Pioneer Valley Joint Transportation Committee members. Input received from all of these sources was used to update the priority of each project.

The effects of future transportation improvement projects have been analyzed using the Pioneer Valley regional transportation model where applicable. Improvement alternatives with the proposed project in place were compared to existing conditions to identify the impact of the improvement on existing traffic volumes and travel times. Increases in traffic on the regional transportation model are often an indication of improved traffic flow and reduced travel times.

Information is provided for all High Priority projects included as part of the RTP. Additional information is provided for all regionally significant or “Non-Exempt” projects regardless of their priority. “Non-Exempt” projects add capacity to the existing transportation system and must be included as part of the air quality conformity determination for the RTP. These transportation

projects are on facilities which serve regional transportation needs. Examples of “Non-Exempt” projects include the construction of new principal roadways, fixed guideway transit facilities that offer an alternative to regional highway travel, and projects that are expected to widen roadways for the purpose of providing additional travel lanes.

1. FY2015 – FY2018 TIP

Transportation improvement projects included as part of the FY2015 – FY2018 TIP for the Pioneer Valley Metropolitan Planning Organization must come from a conforming regional transportation plan. Projects included in the FY2015 – FY2018 TIP conform to the 2012 Update the RTP and are presented in this plan for informational purposes. A summary of these projects is presented in Table 14-11 and Figure 14-1. Each project has been given a number for cross reference between the table and figure.

Table 14-11 – FY2015 – FY2018 Transportation Improvement Program

Map Key	Project ID	Municipality Project Description	Funding	Total Funds	TIP Year
1	607207	PELHAM- RECONSTRUCTION OF AMHERST ROAD, FROM 800 FEET EAST OF ENFIELD ROAD TO ROUTE 202 (2.5 MILES - PHASE II)	STP	\$ 4,200,000	2015
2	605222	SPRINGFIELD- NORTH END & BRIGHTWOOD INFRASTRUCTURE IMPROVEMENTS, FROM OSGOOD STREET TO THE CHICOPEE CITY LINE (NORTHERLY SEGMENT)	STP	\$ 3,827,589	2015
3	607869	WILBRAHAM- RECONSTRUCTION OF BOSTON ROAD (ROUTE 20) FROM DUDLEY STREET TO 400FT. EAST OF DUMAINE STREET (0.28MILES)	STP	\$ 1,903,482	2015
4	606417	CUMMINGTON- RETAINING WALL REPLACEMENT ON ROUTE 9 ADJACENT TO C-21-023 OVER WESTFIELD BROOK	STP	\$ 1,500,000	2015
6	604035	HADLEY- SIGNAL & INTERSECTION IMPROVEMENTS AT ROUTE 9 (RUSSELL STREET) & ROUTE 47 (MIDDLE STREET)	STP	\$ 1,201,102	2015
6	604035	HADLEY- SIGNAL & INTERSECTION IMPROVEMENTS AT ROUTE 9 (RUSSELL STREET) & ROUTE 47 (MIDDLE STREET)	CMAQ	\$ 1,836,958	2015
2	605222	SPRINGFIELD- NORTH END & BRIGHTWOOD INFRASTRUCTURE IMPROVEMENTS, FROM OSGOOD STREET TO THE CHICOPEE CITY LINE (NORTHERLY SEGMENT)	CMAQ	\$ 1,900,792	2015
7		SPRINGFIELD - UNION STATION REDEVELOPMENT	CMAQ	\$ 315,970	2015
2	605222	SPRINGFIELD- NORTH END & BRIGHTWOOD INFRASTRUCTURE IMPROVEMENTS, FROM OSGOOD STREET TO THE CHICOPEE CITY LINE (NORTHERLY SEGMENT)	TAP	\$ 473,939	2015
8	607515	DISTRICT 2- SYSTEMATIC BRIDGE MAINTENANCE AT VARIOUS LOCATIONS	BR-SP	\$ 1,849,536	2015
9	607731	SPRINGFIELD- VIADUCT DECK REPLACEMENT OF S-24-061 ON I-91 (EARLY ACTION)	NHPP	\$ 149,006,250	2015
10	607453	SOUTHAMPTON - SOUTHAMPTON SAFE ROUTES TO SCHOOL - NORRIS ELEMENTARY SCHOOL	Statewide TAP	\$800,000	2015
11	605066	NORTHAMPTON- INTERSECTION IMPROVEMENTS AT ROUTE 5 (PLEASANT STREET) AND CONZ STREET - Roundabout	Statewide CMAQ	\$ 1,592,248	2015
12	605833	BERNARDSTON - WEST SPRINGFIELD - TRAFFIC SIGN REPLACEMENT ON INTERSTATE 91	A/C	\$4,064,580	2015
13	603730	WEST SPRINGFIELD- CONNECTICUT RIVERWALK & BIKEWAY EXTENSION, FROM ELM STREET TO DOTY CIRCLE, INCLUDES PEDESTRIAN BRIDGE W-21-020	Statewide TAP	\$ 1,640,736	2015
14	605011	LUDLOW- RECONSTRUCTION OF CENTER STREET (ROUTE 21) - FROM 35' WEST OF BEACHSIDE DRIVE WESTERLY TO GAS LINE BESIDE MTA OVERPASS (3,500 FEET)	STP	\$ 4,918,051	2016
15	180525	NORTHAMPTON- RECONSTRUCTION OF DAMON ROAD, FROM ROUTE 9 INTERSECTION TO ROUTE 5 INTERSECTION (1.1 MILES)	STP	\$ 2,273,050	2016
16	604446	WESTFIELD- RECONSTRUCTION OF ROUTE 187 (LITTLE RIVER ROAD) AND SHAKER ROAD	STP	\$ 5,724,561	2016
17	605385	SPRINGFIELD- SIGNAL & INTERSECTION IMPROVEMENTS @ ROOSEVELT AVENUE & ISLAND POND ROAD, ROOSEVELT AVENUE & ALDEN STREET	STP	\$ 686,921	2016
15	180525	NORTHAMPTON- RECONSTRUCTION OF DAMON ROAD, FROM ROUTE 9 INTERSECTION TO ROUTE 5 INTERSECTION (1.1 MILES)	HSIP	\$ 1,080,992	2016
15	180525	NORTHAMPTON- RECONSTRUCTION OF DAMON ROAD, FROM ROUTE 9 INTERSECTION TO ROUTE 5 INTERSECTION (1.1 MILES)	CMAQ	\$ 1,036,217	2016
17	605385	SPRINGFIELD- SIGNAL & INTERSECTION IMPROVEMENTS @ ROOSEVELT AVENUE & ISLAND POND ROAD, ROOSEVELT AVENUE & ALDEN STREET	CMAQ	\$ 1,289,079	2016
18	604968	WESTFIELD- COLUMBIA GREENWAY RAIL TRAIL CONSTRUCTION, NORTH SECTION - FROM COWLES COURT ACCESS RAMPS TO THE WESTFIELD RIVER BRIDGE INCLUDES REHAB OF W-25-036 (WESTFIELD RIVER CROSSING)	CMAQ	\$ 300,000	2016
7		SPRINGFIELD - UNION STATION REDEVELOPMENT	CMAQ	\$ 750,873	2016
15	180525	NORTHAMPTON- RECONSTRUCTION OF DAMON ROAD, FROM ROUTE 9 INTERSECTION TO ROUTE 5 INTERSECTION (1.1 MILES)	TAP	\$ 809,741	2016

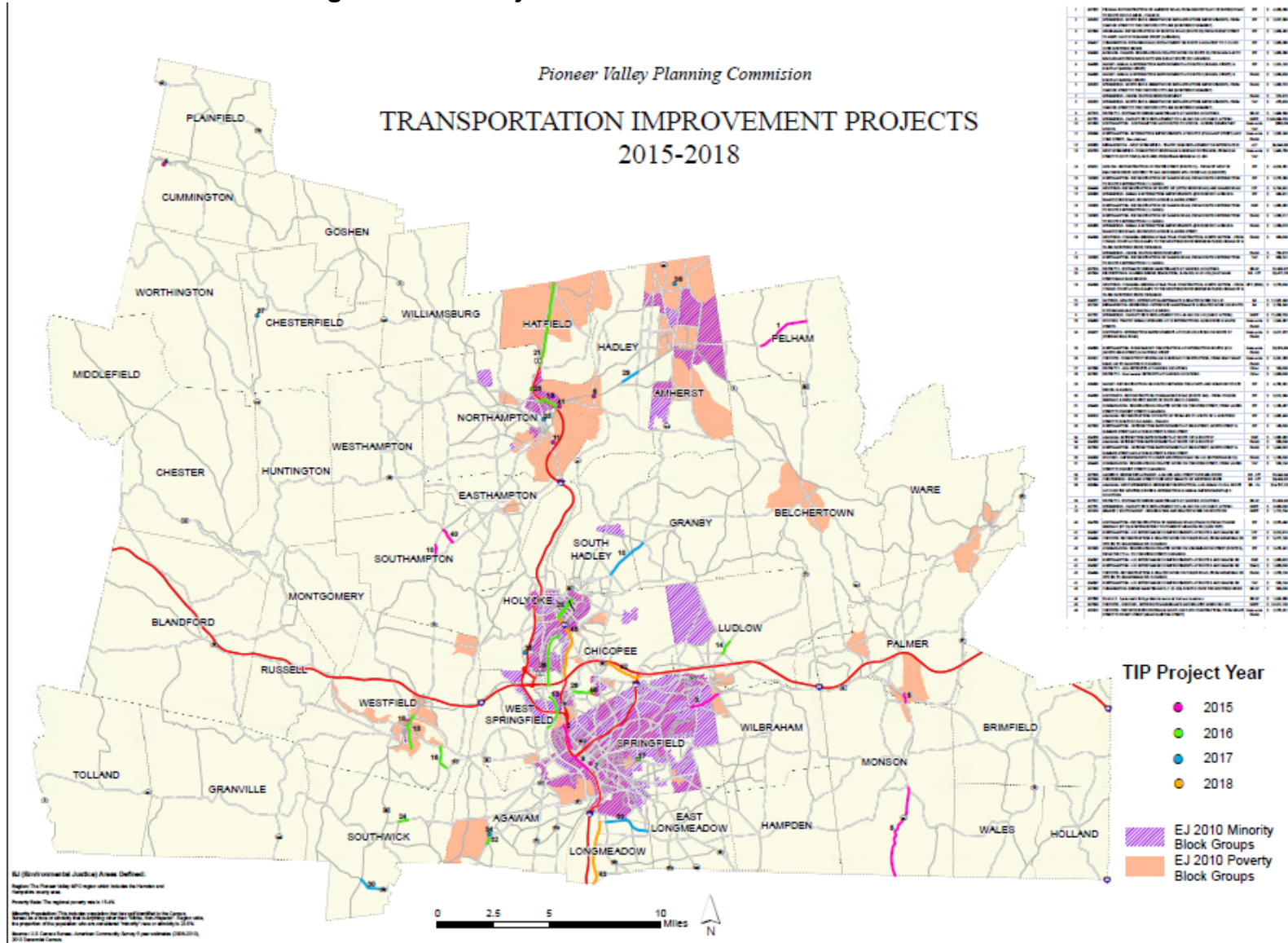
Table 14-11 – FY2015 – FY2018 Transportation Improvement Program (Continued)

Map Key	Project ID	Municipality	Project Description	Funding	Total Funds	TIP Year
19	607516	DISTRICT 2-	SYSTEMATIC BRIDGE MAINTENANCE AT VARIOUS LOCATIONS	BR-SP	\$1,849,978	2016
20	607524	BELCHERTOWN-	WARREN BRIDGE DEMOLITION, B-05-023, W-07-012,(EAST MAIN STREET/NAULTAUG BROOK)	BR - Off	\$2,477,738	2016
18	604968	WESTFIELD-	COLUMBIA GREENWAY RAIL TRAIL CONSTRUCTION, NORTH SECTION - FROM COWLES COURT ACCESS RAMP TO THE WESTFIELD RIVER BRIDGE INCLUDES REHAB OF W-25-036 (WESTFIELD RIVER CROSSING)	HPP (2005)	\$ 2,275,000	2016
21	606577	HATFIELD-	WHATELY- INTERSTATE MAINTENANCE & RELATED WORK ON I-91	IM	\$ 11,597,040	2016
22	607182	BERNARDSTON-	GREENFIELD- INTERSTATE MAINTENANCE & RELATED WORK ON ROUTE I-91 FROM MM 48.6 TO MM 50.4 (1.8 MILES)	IM	\$ 2,796,543	2016
9	607731	SPRINGFIELD-	VIADUCT DECK REPLACEMENT OF S-24-061 ON I-91 (EARLY ACTION)	NHPP	\$ 71,993,750	2016
23	606450	HOLYOKE-	TRAFFIC SIGNAL UPGRADES AT 15 INTERSECTIONS ALONG HIGH & MAPLE STREETS	Statewide CMAQ	\$ 1,564,867	2016
24	603477	SOUTHWICK-	INTERSECTION IMPROVEMENTS AT FOUR LOCATIONS ON ROUTE 57 (FEEDING HILLS ROAD)	Statewide CMAQ	\$ 3,617,872	2016
25	606555	NORTHAMPTON-	ROUNDBOUT CONSTRUCTION AT INTERSECTION ROUTES 5/10 (NORTH KING STREET) & HATFIELD STREET	Statewide CMAQ	\$2,874,896	2016
26	602911	CHICOPEE-	CONNECTICUT RIVERWALK & BIKEWAY CONSTRUCTION, FROM BOAT RAMP NEAR I-90 TO NASH FIELD (2.5 MILES)	Statewide CMAQ	\$ 3,261,288	2016
27	607036	DISTRICT 2 -	ADA RETROFITS AT VARIOUS LOCATIONS	Other	\$ 740,000	2016
28	607001	DISTRICT 2 -	Stormwater RETROFITS AT VARIOUS LOCATIONS	Other	\$ 1,500,000	2016
29	605032	HADLEY-	RECONSTRUCTION ON ROUTE 9 BETWEEN THE LOWE'S AND HOME DEPOT SITE DRIVES (0.6 MILES)	STP	\$ 4,782,361	2017
30	604033	SOUTHWICK-	RECONSTRUCTION CONGAMOND ROAD (ROUTE 168) - FROM COLLEGE HIGHWAY & ENDS 250 FEET SHORT OF STATE LINE (1.2 MILES)	STP	\$ 5,512,964	2017
31	606445	LONGMEADOW-	RESURFACING & RELATED WORK ON CONVERSE STREET, FROM LAUREL STREET TO DWIGHT STREET (2.04 MILES)	STP	\$ 1,186,487	2017
32	600513	AGAWAM-	RECONSTRUCTION OF ROUTE 187 FROM 425 FT. SOUTH OF S. WESTFIELD STREET TO ROUTE 57 (0.3 MILES - PHASE I)	STP	\$ 1,682,640	2017
33	607502	NORTHAMPTON -	INTERSECTION IMPROVEMENTS AT KING STREET, NORTH STREET & SUMMER STREET AND AT KING STREET & FINN STREET	STP	\$ 145,036	2017
34	604203	AGAWAM-	INTERSECTION IMPROVEMENTS AT ROUTE 187 & ROUTE 57	HSIP	\$ 1,080,992	2017
34	604203	AGAWAM-	INTERSECTION IMPROVEMENTS AT ROUTE 187 & ROUTE 57	CMAQ	\$ 539,008	2017
33	607502	NORTHAMPTON -	INTERSECTION IMPROVEMENTS AT KING STREET, NORTH STREET & SUMMER STREET AND AT KING STREET & FINN STREET	CMAQ	\$ 1,684,092	2017
35	606903	HOLYOKE -	IMPROVEMENTS TO LOWER WESTFIELD ROAD ON I-91 (INTERCHANGE 15)	CMAQ	\$ 1,155,000	2017
31	606445	LONGMEADOW-	RESURFACING & RELATED WORK ON CONVERSE STREET, FROM LAUREL STREET TO DWIGHT STREET (2.04 MILES)	TAP	\$ 526,134	2017
36	607528	AMHERST-	BRIDGE REPLACEMENT, A-08-008, MILL STREET OVER MILL RIVER	BR - Off	\$2,644,040	2017
37	607549	CHESTERFIELD -	IRELAND STREET OVER WEST BRANCH OF WESTFIELD RIVER	BR - Off	\$3,649,520	2017
38	605384	AGAWAM-	WEST SPRINGFIELD- BRIDGE RECONSTRUCTION, A-05-002=W-21-014, ROUTE 147 OVER THE WESTFIELD RIVER & INTERSECTION & SIGNAL IMPROVEMENTS @ 3 LOCATIONS	BR - On	\$14,757,120	2017
39	607517	DISTRICT 2-	SYSTEMATIC BRIDGE MAINTENANCE AT VARIOUS LOCATIONS	BR-SP	\$1,849,693	2017
9	607731	SPRINGFIELD-	VIADUCT DECK REPLACEMENT OF S-24-061 ON I-91 (EARLY ACTION)	NHPP	\$ 9,000,000	2017
10	607474	GRANBY / SOUTH HADLEY -	RESURFACING AND RELATED WORK ON ROUTE 202	NHPP	\$ 1,712,794	2017

Table 14-11 – FY2015 – FY2018 Transportation Improvement Program (Continued)

Map Key	Project ID	Municipality	Project Description	Funding	Total Funds	TIP Year
40	604738	SOUTHAMPTON-	RECONSTRUCTION OF GLENDALE ROAD (PHASE II) FROM COLLEGE HIGHWAY (RT 10) NORTHWESTERLY TO POMEROY MEADOW RD (3,801 FEET)	STP	\$ 2,570,400	2018
41	604597	NORTHAMPTON-	I-91 INTERCHANGE 19 IMPROVEMENTS AT ROUTE 9 AND DAMON RD	STP	\$ 3,312,874	2018
42	604434	CHICOPEE-	RECONSTRUCTION & RELATED WORK ON FULLER ROAD, FROM MEMORIAL DR (RTE 33) TO SHAWINIGAN DR (2.0 MILES)	STP	\$ 5,377,100	2018
43	607430	LONGMEADOW-	RESURFACING & RELATED WORK ON LONGMEADOW STREET (ROUTE 5), FROM THE CT S.L. TO CONVERSE STREET (2.88 MILES)	STP	\$ 2,478,941	2018
41	604597	NORTHAMPTON-	I-91 INTERCHANGE 19 IMPROVEMENTS AT ROUTE 9 AND DAMON RD	HSIP	\$ 1,080,992	2018
41	604597	NORTHAMPTON-	I-91 INTERCHANGE 19 IMPROVEMENTS AT ROUTE 9 AND DAMON RD	CMAQ	\$ 1,800,000	2018
42	604434	CHICOPEE-	RECONSTRUCTION & RELATED WORK ON FULLER ROAD, FROM MEMORIAL DR (RTE 33) TO SHAWINIGAN DR (2.0 MILES)	CMAQ	\$ 1,578,100	2018
41	604597	NORTHAMPTON-	I-91 INTERCHANGE 19 IMPROVEMENTS AT ROUTE 9 AND DAMON RD	TAP	\$ 526,134	2018
43	607939	CUMMINGTON-	BRIDGE MAINTENANCE, C-21-025, ROUTE 9 OVER THE WESTFIELD RIVER	BR-SP	\$ 300,000	2018
44	607959	District 2 -	Systematic Bridge Maintenance at Various Locations	BR-SP	\$ 1,624,800	2018
45	607560	CHICOPEE -	HOLYOKE - INTERSTATE MAINTENANCE AND RELATED WORK ON I-391	NHPP	\$ 10,911,130	2018
46	602912	CHICOPEE-	CHICOPEE RIVER RIVERWALK MULTI-USE PATH CONSTRUCTION, FROM GRAPE STREET TO FRONT STREET (NEAR ELLERTON STREET)	Statewide CMAQ	\$ 2,273,911	2018
Total All years					\$ 387,273,901	

Figure 14-1 – Projects Included in the FY2015 – FY2018 TIP



2. High Priority Projects

A summary of the high priority transportation improvement projects is presented in Table 14-12 and Figure 14-2. Projects have been cross referenced between the Table and Figure via a numbering system when applicable. Projects designated as being “regionwide” in scope are often not able to be clearly mapped. As a result this information may not appear as part of Figure 14-2. A description of each of the high priority projects is also included as part of this section.

Table 14-12 – High Priority Projects

Map Key	Project Name	Project Description	Community	SID	Area of Emphasis	Air Quality Conformity	Total Cost
11	Route 187/ 57 Intersection Improvements	Route 187/ 57 Intersection Improvements	Agawam	604203	Safety and Security	Exempt	\$1,664,000
93	Bridge Reconstruction	Route 147 over Westfield River and intersection improvements at 3 locations	Agawam / West Springfield	605384	Safety and Security	Exempt	\$13,869,440
60	Resurfacing and Related work	Improvements and Related Work on Route 9 and 116 from University Drive to South Pleasant Street (0.8 miles)	Amherst	608084	The Movement of People	Exempt	\$1,412,447
22	Fuller Rd. Corridor Improvements	Reconstruction: From Rte. 33 to Shawinigan Drive	Chicopee	604434	The Movement of People	Exempt	\$6,716,736
65	Signal Upgrades on Route 33	SIGNAL & INTERSECTION IMPROVEMENTS AT 11 INTERSECTIONS ALONG ROUTE 33 (MEMORIAL DRIVE), FROM FULLER ROAD TO BRITTON STREET	Chicopee	607736	The Movement of People	Exempt	\$4,518,556
97	Bridge Betterment	Route 9 and Route 112 over the Westfield River	Cummington	605452	Safety and Security	Exempt	\$4,094,505
62	Route 202 Intersection Improvements - 2 locations	Route 202 Intersection Improvements 2 Locations @ 5 Corners and @ School Street	Granby	606895	Safety and Security	Exempt	\$1,068,621
42	Route 9 Roadway Reconstruction Phase 1	RECONSTRUCTION ON ROUTE 9 Phase 1 Middle Street to East Street	Hadley	605032	The Movement of People	Non Exempt	\$5,697,211
64	Route 9 reconstruction Phase 2	RECONSTRUCTION ON ROUTE 9 Phase 2 East Street to Lowe's Site Drive	Hadley	605881	The Movement of People	Non Exempt	\$12,790,857
128	Route 9 reconstruction Phase 3	Reconstruction from East of Lowe's Site Drive to South Maple Street, including the South Maple Street intersection	Hadley	XXXXX	The Movement of People	Non Exempt	\$19,391,200
100	Bridge Replacement	BRIDGE REPLACEMENTS, H-21-014, ROUTE 141 (APPLETON STREET) OVER SECOND LEVEL CANAL & H-21-020 OVER FIRST LEVEL CANAL	Holyoke	600935	Safety and Security	Exempt	\$11,612,952
58	I-91 exit 17 at Route 141 intersection improvements	I-91 exit 17 at Route 141 intersection improvements	Holyoke	606156	Safety and Security	Exempt	\$2,924,646
3	Intersection Improvements I-91 Exit 15	IMPROVEMENTS TO LOWER WESTFIELD ROAD ON I-91 (INTERCHANGE 15)	Holyoke	606903	The Movement of People	Non Exempt	\$1,072,500
104	Bridge Reconstruction/Rehab	HOLYOKE- WEST SPRINGFIELD- SUPERSTRUCTURE REPLACEMENT ON I-91: H-21-058=W-21-039 (SB), W-21-037 (NB), W-21-038 (SB) & W-21-042 & BRIDGE PRESERVATION OF W-21-040	Holyoke / West Springfield	606467	Safety and Security	Exempt	\$43,916,998
59	Route 5 Reconstruction from Ashley Ave.	REHABILITATION OF ROUTE 5 (RIVERDALE ROAD), FROM I-91 (INTERCHANGE 13) TO MAIN STREET IN HOLYOKE & FROM ELM STREET TO NORTH ELM STREET IN WEST SPRINGFIELD (3.2 MILES)	Holyoke/West Springfield	604209	The Movement of People	Non Exempt	\$3,239,608
37	Center Street (Route 21) reconstruction	Center street reconstruction	Ludlow	605011	The Movement of People	Exempt	\$5,114,773
107	Bridge Rehabilitation	Route 21 (Center Street) over Chicopee River (Putts Bridge)	Ludlow/Springfield	601156	Safety and Security	Non Exempt	\$30,128,664
39	Damon Rd. Safety Improvement	Reconstruction: Rte. 9 to King St. (Rte. 5)	Northampton	180525	The Movement of People	Exempt	\$5,200,000
2	I-91 Ramps at Exit 19	This study is reviewing alternatives to relieve congestion and improve safety in the transportation network near Interchange 19	Northampton	604597	The Movement of People	Exempt	\$5,972,015
112	Bridge Reconstruction/Rehab	NORTHAMPTON- BRIDGE RECONSTRUCTION, N-19-059, I-91 OVER US 5/BMRR & N-19-060, I-91 OVER HOCKANUM ROAD	Northampton	606552	Safety and Security	Exempt	\$58,494,084

Table 14-12 – High Priority Projects (Cont.)

Map Key	Project Name	Project Description	Community	SID	Area of Emphasis	Air Quality Conformity	Total Cost
10	Hatfield Street @ Route 5 and 10	Intersection Improvements (Round about or Signalization)	Northampton	606555	The Movement of People	Exempt	\$3,033,680
4	King Street Intersection Improvements	INTERSECTION IMPROVEMENTS AT KING STREET, NORTH STREET & SUMMER STREET AND AT KING STREET & FINN STREET	Northampton	607502	The Movement of People	Exempt	\$1,766,415
57	Main Street (Route 9) New South (Route 10), State, and West Street (Route 66)	NORTHAMPTON- INTERSECTION IMPROVEMENTS @ ELM STREET, MAIN STREET, WEST STREET, STATE STREET & NEW SOUTH STREET	Northampton	607893	The Movement of People	Exempt	\$1,574,810
129	Springfield Bus Maintenance and Storage facility	Multi-phase, multi-facility project to upgrade outdated Springfield area bus facility	Regionwide		Movement of People	Exempt	\$74,000,000
Not Mapped	PVTA Fleet Renewal	Replacement of buses, vans and support vehicles that have reached the end of their rated lifespan	Regionwide		Movement of People	Exempt	\$271,780,466
Not Mapped	Vehicle maintenance	Necessary on-going maintenance of all PVTA-owned vehicles	Regionwide		Movement of People	Exempt	\$253,686,861
Not Mapped	PVTA Facility maintenance	Necessary on-going maintenance and rehabilitation of PVTA-owned facilities	Regionwide		Movement of People	Exempt	\$75,408,864
Not Mapped	Bus shelters	Replacement, maintenance and new installations of bus shelters	Regionwide		Movement of People	Exempt	\$7,867,754
Not Mapped	Intelligent fareboxes	Replace outdated fareboxes with industry standard 'smart card' fare system	Regionwide		Movement of People	Exempt	\$6,320,547
135	Northampton garage rehabilitation	Rehabilitate 1970s-era bus garage, add space for transit-related uses, add parking for paratransit	Regionwide		Movement of People	Exempt	\$5,000,000
Not Mapped	Community Transit Grant Program	Assistance to area councils on aging and other community transportation providers for vans	Regionwide		Movement of People	Exempt	Further Study
16	I-91 Viaduct Deck Replacement, S-24-061 (Early Action) (funding 2014 to 2017) \$231,625,000	Replacement of deteriorated deck sections of the I-91 Viaduct through Springfield. Minor associated steel superstructure repairs and painting is also proposed.	Regionwide	607731	The Movement of People	Exempt	222,625,000
Not Mapped	Freight Congestion	Freight congestion improvements	Regionwide		The Movement of Goods	Exempt	Further Study
Not Mapped	Commuter Rail	Commuter Rail - Springfield to New Haven - Capital	Regionwide		The Movement of People	Exempt	\$30,000,000
Not Mapped	Commuter Rail	Commuter Rail - Springfield to Greenfield - Capital	Regionwide		The Movement of People	Exempt	\$10,000,000
70	Intersection Improvements	SOUTH HADLEY- SIGNAL & INTERSECTION IMPROVEMENTS AT ROUTE 202 (GRANBY ROAD) & ROUTE 33 (LYMAN STREET)	South Hadley	607735	Movement of People	Exempt	\$584,929
33	Route 57 Reconstruction	Reconstruction Rt. 57 (Feeding Hills Road) from Route 10/202 to Powder Mill Road	Southwick	603477	Safety and Security	Exempt	\$4,366,128
9	Roosevelt Ave. @ Island Pond Rd and Roosevelt Ave @ Alden Street	Realign Island Pond Road and Roosevelt Avenue to create a three way signalized intersection signal upgrade	Springfield	605385	The Movement of People	Exempt	\$2,389,267
127	Pedestrian Bridge	SPRINGFIELD- NORTH END PEDESTRIAN PATH CONSTRUCTION (UNDER PAN-AM RAILROAD), BETWEEN PLAINFIELD STREET AND BIRNIE AVENUE	Springfield	607589	The Movement of People	Exempt	\$438,697
Not Mapped	State Street Bus Rapid Transit	State Street Bus Rapid Transit	Springfield		Movement of People	Exempt	Further Study
116	Bridge Reconstruction/Rehab	SPRINGFIELD- WEST SPRINGFIELD- BRIDGE PRESERVATION ON I-91 CORRIDOR: S-24-042, S-24-079, S-24-085, S-24-087, W-21-037, W-21-042	Springfield / West Springfield	605417	Sustainability	Exempt	\$11,558,385
119	Bridge Replacement	Route 9 (East Street) over the Ware River	Ware	604212	Safety and Security	Exempt	\$2,098,726

Table 14-12 – High Priority Projects (Cont.)

Map Key	Project Name	Project Description	Community	SID	Area of Emphasis	Air Quality Conformity	Total Cost
61	Intersection Improvements Ware Center	WARE- INTERSECTION IMPROVEMENTS @ MAIN STREET, WEST STREET, NORTH STREET, SOUTH STREET & CHURCH STREET	Ware	607987	Movement of People	Exempt	\$2,193,485
112	Bridge Reconstruction/Rehab	WEST SPRINGFIELD- BRIDGE REHABILITATION, BRIDGE W-21 - 27, ROUTE 20 (PARK AVENUE) OVER ROUTE 5	West Springfield	607443	Safety and Security	Exempt	\$4,706,025
Not Mapped	Memorial Avenue - Complete Streets	Memorial Avenue Complete Streets Project from River Street to Route 5 Rotary	West Springfield		The Movement of People	Exempt	\$17,547,878
123	Bridge Replacement	Route 10/202 Southwick Street over Little River	Westfield	400103	Safety and Security	Non Exempt	\$10,528,727
Not Mapped	Westfield Intermodal Center	Design and construct intermodal facility in downtown Westfield	Westfield		Movement of People	Exempt	\$8,000,000
47	Boston Rd Reconstruction (Route 20)	Reconstruction of Boston Rd and other infrastructure improvements	Wilbraham	607869	Safety and Security	Non Exempt	\$1,292,428
48 High Priority Projects							\$1,267,668,886

a) 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

b) 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.



c) Resurfacing and Related Work Amherst on Route 9 and Route 116

This is a complete streets project that will improve accommodations for all users. The roadway will be resurfaced and widened for improved bicycle use with marked bicycle lanes. New and reconstructed sidewalks with new wheelchair ramps and crosswalks for improved pedestrian access will be installed.

d) Fuller Road Corridor Improvements Chicopee

The Fuller Road corridor will be improved from Memorial Drive (Route 33) to Shawinigan Drive, for a distance of 2.0 miles. The project consists of pavement rehabilitation with traffic operations improvements at the existing signals at Sheridan Street and I-291. Signals are proposed to have closed loop coordination, and will need to be reviewed as part of the Western MA ITS Architecture. Bicycle and pedestrian accommodation will also be improved.

e) Memorial Ave (Route 33) signal upgrades Chicopee/South Hadley

Memorial Drive experiences heavy traffic, especially during peak hours travel periods. Under this improvement project 11 existing traffic signals along Route 33 from Abbey Street to Fuller Road will be upgraded. These upgrades are anticipated to reduce congestion while increasing safety along the corridor.

f) Bridge Betterment Cummington Route 9 and 112 over Westfield River

The work for the bridge carrying Routes 9 & 112 over the Westfield River in Cummington shall consist of reconstructing the bridge sidewalk; replacing the reinforced concrete deck slab; and reconstructing the approach wearing surface. Additional refurbishments will be made to the bridge railings and the structural steel will be stripped and repainted.

g) Route 202 Intersection Improvements at 2 Locations Granby

The proposed work consists of intersection improvements at 2 separate intersections in Granby. The first intersection is Route 202 with Pleasant Street and Amherst Street, commonly referred to as the “Five Corners.” The second location is the intersection of Route 202 with School Street. The work at the Five Corners intersection will include the re-aligning of Amherst Street, signal upgrades, new lane configurations and sidewalks. New left turn lanes will be installed on Route 202 at the School Street intersection. Both improvements will improve the safety at the existing intersections.

h) 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.

i) Bridge Replacement Route 141 Holyoke

This project involves replacing two bridges on Route 141 (Appleton Street) where the bridges cross over the First Level and Second Level Canals. The new bridges will be two-span concrete bridges supported by abutments that will be constructed behind the existing canal walls. The existing roadway and sidewalk widths will be maintained. A decorative bridge rail will be installed that is compatible with the proposed Holyoke Canalwalk and the historic character of the area.

j) I-91 Exit 17 at Route 141 Intersection Improvements

Work will consist of traffic circulation modifications achieved through minor geometric alterations, traffic signal modifications and new pavement markings. The project will also eliminate left turns from Easthampton Road onto Interstate Route I-91 southbound.

k) I-91 Exit 15 Intersection Improvements

A roadway safety audit for this location proposed roadway widening to accommodate additional left turn lanes from Lower Westfield Road to I-91 in both

the northbound and southbound directions. Other improvements may include new pavement markings and signage, signal timing and equipment upgrades and a new sidewalk connection.

l) Bridge Reconstruction/Rehabilitation I-91 West Springfield and Holyoke

The work to be done under this project consists of superstructure replacements, along with other incidental items of the work, at five Interstate 91 bridges in West Springfield and Holyoke. The work will be between I-91 Mile Markers 10.8 and 15.0 and will include the following bridges:

- I-91 northbound over I-90 (W-21-037)
- I-91 southbound over Prospect Avenue (W-21-038)
- I-90 & I-91 connector ramps over ramp F to I-90 (W-21-042)
- I-91 southbound over ramp A to I-90 (H-21-058=W-21-039)
- I-91 southbound over Route 202 Cherry Street (H-21-049)

m) Rehabilitation of Route 5 (Riverdale Road) in Holyoke and West Springfield

The project consists of rehabilitating a section of concrete pavement on Route 5 in Holyoke and West Springfield. The current project limit begins in West Springfield immediately to the north of the I-91 Exit 13 Interchange and extends northerly to the intersection with Main Street in Holyoke. The project also includes modification to the intersection with Ashley Avenue to add a dedicated left turn lane. Other work includes traffic signal updates at several locations, drainage system improvements, guardrail improvements, and sidewalk improvements.

n) Reconstruction of Center Street in Ludlow

The Center Street (Route 21) project consists of roadway reconstruction from Sewall Street to Beachside Drive. The project addresses traffic congestion, circulation and safety for vehicles, bicycles and pedestrians. Road improvements consist of the creation of a center left turn lane, road widening, and geometry modifications at intersections to improve turning radii and right and left turn lanes.

o) Bridge Rehabilitation Route 21 over Chicopee River Ludlow and Springfield

The existing Putts Bridge on Route 21 Center Street over the Chicopee River between Ludlow and Springfield will be rehabilitated to improve traffic flow and reduce congestion. The work consists of replacing of the deck, new bridge rails/ approach rails, replacement of the existing bearings, and other miscellaneous work that is required. Construction of a temporary bridge will be necessary to decrease the impacts of construction on existing traffic.

p) Damon Road Safety Improvements Northampton

Damon Road in Northampton connects traffic from Route 9 to King Street. The King Street intersection with Damon Road serves as access to traffic from downtown

Northampton to points north of the city, retail uses along King Street, and residential neighborhoods to the west. Traffic queues with significant delays occur in all directions. At the I-91/Route 9 interchange with Damon Road recent improvements include the construction of additional exclusive turn lanes and upgrades to the existing traffic signals.

The project consists of safety and transportation improvements along 1.1 miles of Damon Road, between Route 9 and Routes 5 & 10 intersections in Northampton. Widening and resurfacing is proposed for Damon Road to accommodate additional dedicated turning lanes along the roadway and at the intersection with King Street. The signal at this intersection would be re-timed to reduce congestion on all approaches. This project will also include full depth pavement widening, new sidewalks, a multi-use path, and restoration of an eroded bank of the Connecticut River west of the Norwottuck Rail Trail.

q) Interstate 91 Exit 19 Improvements Northampton



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.

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

r) Bridge Reconstruction / Rehabilitation I-91 over US Route 5, BMRR, and Hockanum Road Northampton

The proposed project will include complete removal and replacement of the existing bridge structures. The new superstructures will accommodate two lanes of traffic in their respective directions but will not include sidewalks.

s) Hatfield Street at Route 5 and 10 Northampton

The proposed project will improve safety and operations at the intersection of Routes 5&10 and Hatfield Street by constructing a modern roundabout. This will enhance existing intersection geometry and reduce excessive delays currently experienced on Hatfield Street.

t) King Street Intersection Improvements Northampton

This project will include intersection improvements at the intersections of King Street and North/Summer Streets and King Street and Finn Street. Improvements will include additional turn lanes on North Street and Finn Street to King Street, reduction of King Street from 4 lanes to 2 lanes with turn pockets, on street parking improvements, and traffic signal upgrades. Work will also include improvements to provide bicycle and pedestrian accommodations, new signage and pavement markings.

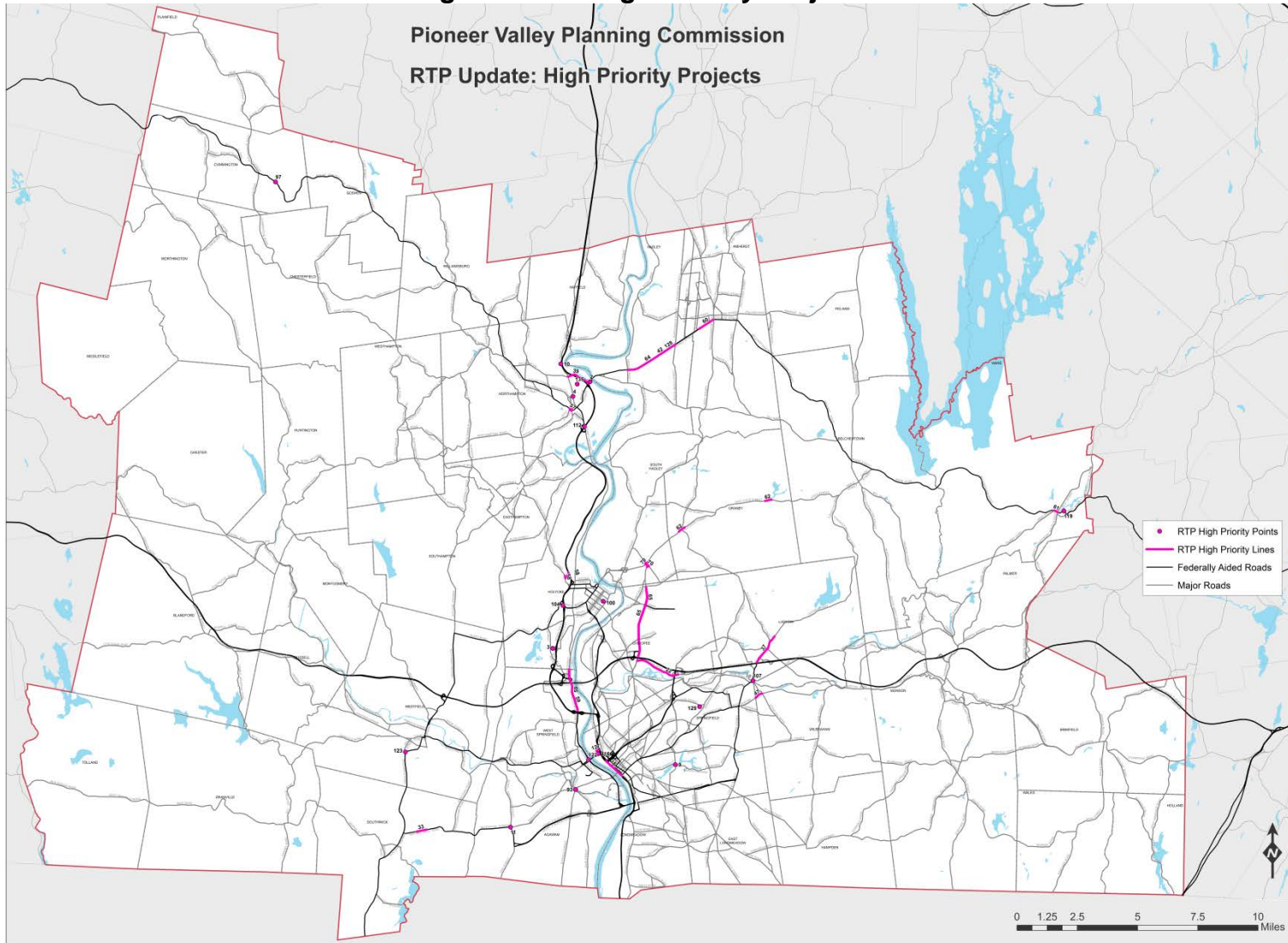
u) Main Street (Route 9), New South Street (Route 10), State Street, and West Street (Route 66) Northampton

This proposed project will improve safety and operations at this compound isolated intersection. Poor geometry and excessive delays in all directions will be addressed by realigning lanes within the curb line of the existing streets, adding and modifying existing traffic islands, and reducing the number of through travel lanes.

v) 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.

Figure 14-2 – High Priority Projects



w) PVTA Fleet Replacement Program

PVTA's Fleet Replacement Program is an ongoing effort to ensure that the authority's vehicles are safe, in good repair, and using the most energy-efficient and GHG-limiting propulsion technologies. PVTA recently purchased four diesel/electric 60-foot articulated buses with higher passenger capacity for heavily used routes. PVTA is currently exploring the possibility of adding electric-powered buses to its fleets. PVTA also owns 12 mini-buses with 18-passenger capacity that are operated on shuttle routes; these are replaced at the rate of 2 vehicles per year. PVTA has 144 vans for paratransit service, replaced at the rate of 12-15 vehicle per year. PVTA's support vehicles include maintenance vehicles and supervisor cruisers are replaced at the rate of 3 vehicles per year.

x) Vehicle Maintenance

This is PVTA's program to maintain all vehicles in its fleet, from routine preventative maintenance to major overhauls and vehicle repairs from accidents and unplanned events.

y) PVTA Facility Maintenance

This is PVTA's program to maintain the buildings owned by the authority, which include the Springfield and Northampton garages and Administration Building.

z) Bus Shelter

PVTA owns 135 bus shelters systemwide. This program provides funds to maintain and replace these shelters as vandalism and routine wear-and-tear require. PVTA is also prioritizing installation locations for new shelters on high passenger volume routes, pending available funds.

aa) Intelligent Fare boxes

PVTA is now replacing fare boxes on all Springfield and Northampton buses with more reliable equipment that will be able to read the newer generation of "smart cards" that are now typically being used for fare payment on larger transit systems. This will eventually allow interoperability with other regional transit systems. Greater customer convenience will be achieved with online fare purchase and card re-loading. Additional revenue options may be realized through related marketing.

bb) Northampton Garage Rehabilitation

Built in 1978, PVTA's Northampton Garage will soon be in need of major rehabilitation. The facility is not able to accommodate all standard buses, mini-buses and paratransit vans that must be based there. Some maintenance facilities at the garage are inadequate. The facility also include a

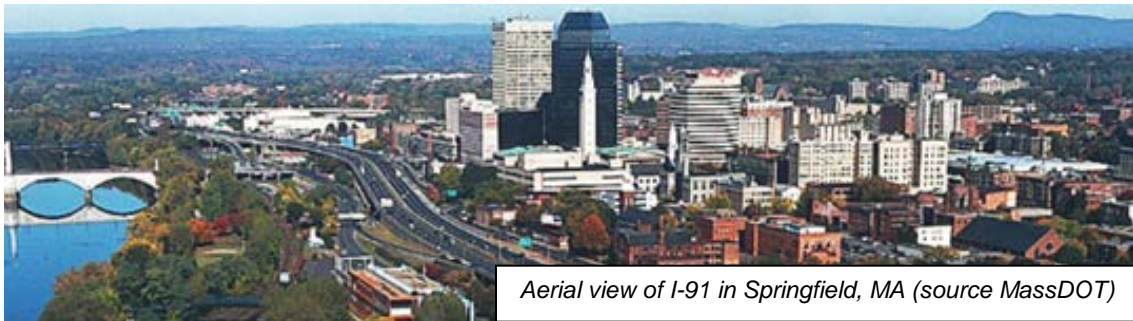
transit-related use (day care) that needs to expand. PVTA is now developing a plan to rehabilitate the garage to meet the expected needs of the future.

cc) Community Transit Grant Program

The Community Transit Grant Program provides capital assistance for purchase of vehicles for transportation for the elderly, persons with disabilities, and families transitioning from public assistance to employment. Funds are distributed on a competitive grant basis regional transit authorities serving the region (PVTA and FRTA) as well as municipal councils on aging.

dd) 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.

ee) Freight Congestion

Additional data collection is necessary to incorporate freight congestion into the regional CMP. The Pioneer Valley MPO will continue to work with local freight providers to identify specific areas that may have freight congestion. Appropriate improvements should be incorporated into the design on ongoing transportation improvement projects to address the specific needs surrounding freight congestion in the region.

ff) 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

gg) 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.

hh) Intersection Improvements South Hadley

This project will upgrade the existing signal equipment and improve traffic signal timing and phasing at the intersection to allow for better traffic flow. Other improvements will include new pavement markings, signage and improved pedestrian access.

ii) Route 57 Reconstruction Southwick

The project involves roadway rehabilitation of town-owned portion of Feeding Hills Road (Route 57) in the Town of Southwick. The work will include full-depth roadway reconstruction, drainage improvements, box widening for turning and bike lanes, ADA-compliant sidewalks, traffic signals (as warranted), hot mix asphalt paving, and other incidental work. The length of the project is approximately 0.5 miles, beginning at the intersection of Powder Mill Road and extending east to Hudson Drive (Industrial Park). The project also includes the intersection of Route 57 with North Longyard Road and Foster Road.

jj) Roosevelt Ave at Island Pond Road and Roosevelt Ave at Alden Street Springfield

Roosevelt Avenue serves as a major commuter route that provides a connection from a primarily residential portion of Springfield to other major commuter routes and retail districts within the City. Roosevelt Avenue also serves as the only crossing of Watershops Pond, which extends approximately 2.5 miles from east to west, via the three lane General Edwards Bridge. The Island Pond Road and Alden Street intersections, located on opposite sides of Watershops Pond, both experience high traffic volumes and congestion during peak conditions. The pedestrian facilities in this area are inadequate with poor connectivity and no protected crossings. The improvement plan realigns Island Pond Road with Roosevelt Avenue to create a three way signalized intersection consolidating all vehicle conflicts at one intersection. The plan also provides signal timing adjustments and new signal equipment at the intersection of Roosevelt Avenue with Alden Street.

kk) 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.

II) 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.



mm) Bridge Preservation I-91 Springfield and West Springfield

Project consists of the preservation of 6 bridges (S-24-042, S-24-079, S-24-085, S-24-087, W-21-037, and W-21-042) on I-91 in Springfield and West Springfield.

nn) Bridge Replacement Ware

The proposed project consists of the rehabilitation of the Route 9 over the Ware River bridge to improve the existing stone masonry arch with possible replacement of the arch spandrel walls. Repair and replacement options are to be evaluated for the approach spans before proceeding with a final design.

oo) 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.

pp) Bridge Reconstruction / Rehabilitation West Springfield

The scope of the project includes a feasibility study of possible rehabilitation options for the existing Route 5 tunnel (Bridge No. W-21-027) carrying Route 20 (Park Avenue) over Route 5. The existing structure was built in 1952.

qq) Memorial Avenue Complete Streets West Springfield

This project entails the rehabilitation of the Memorial Avenue (Route 147) corridor from the Route 5/Memorial Avenue Rotary to the Route 147 Bridge over the Westfield River connecting with the Town of Agawam. “Complete Streets” elements of the project will help to tie together regional projects such as the Memorial Avenue Rotary Replacement project, the Route 147 Bridge between Agawam and West Springfield, the replacement of the CSX Railroad Bridge over Union Street and the rehabilitation of Union Street Extension.

rr) Bridge Replacement Westfield

The proposed project consists of the bridge replacement of Routes 10 and Route 202 over the Little River. Sidewalks will be constructed on each side of the bridge. New traffic signals will be installed at the Southwick Road/Mill Street Intersection.

ss) 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



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

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

tt) Boston Road Reconstruction Wilbraham

Route 20 will be reconstructed from the Springfield City Line to Dumaine Street in Wilbraham for a total of 0.28 miles. The Project was originally part of a large 1.3 mile Springfield Project which extended west to Pasco Road. Springfield identified separate funding for their portion of the project. The remaining section of the project will consist of full depth reconstruction and the widening of the roadway to provide two lanes in each direction. New bus bays and shelters will be constructed where needed.

3. Medium Priority Projects

This section provides a summary of the “Medium” priority projects included in the RTP. A complete summary of all “Medium” priority projects is included in Table 14-13 and Figure 14-3. Where applicable, projects have been cross referenced between the table and figure through a numbering system. Description of all regionally significant “Non-Exempt” projects are also included as part of this section.

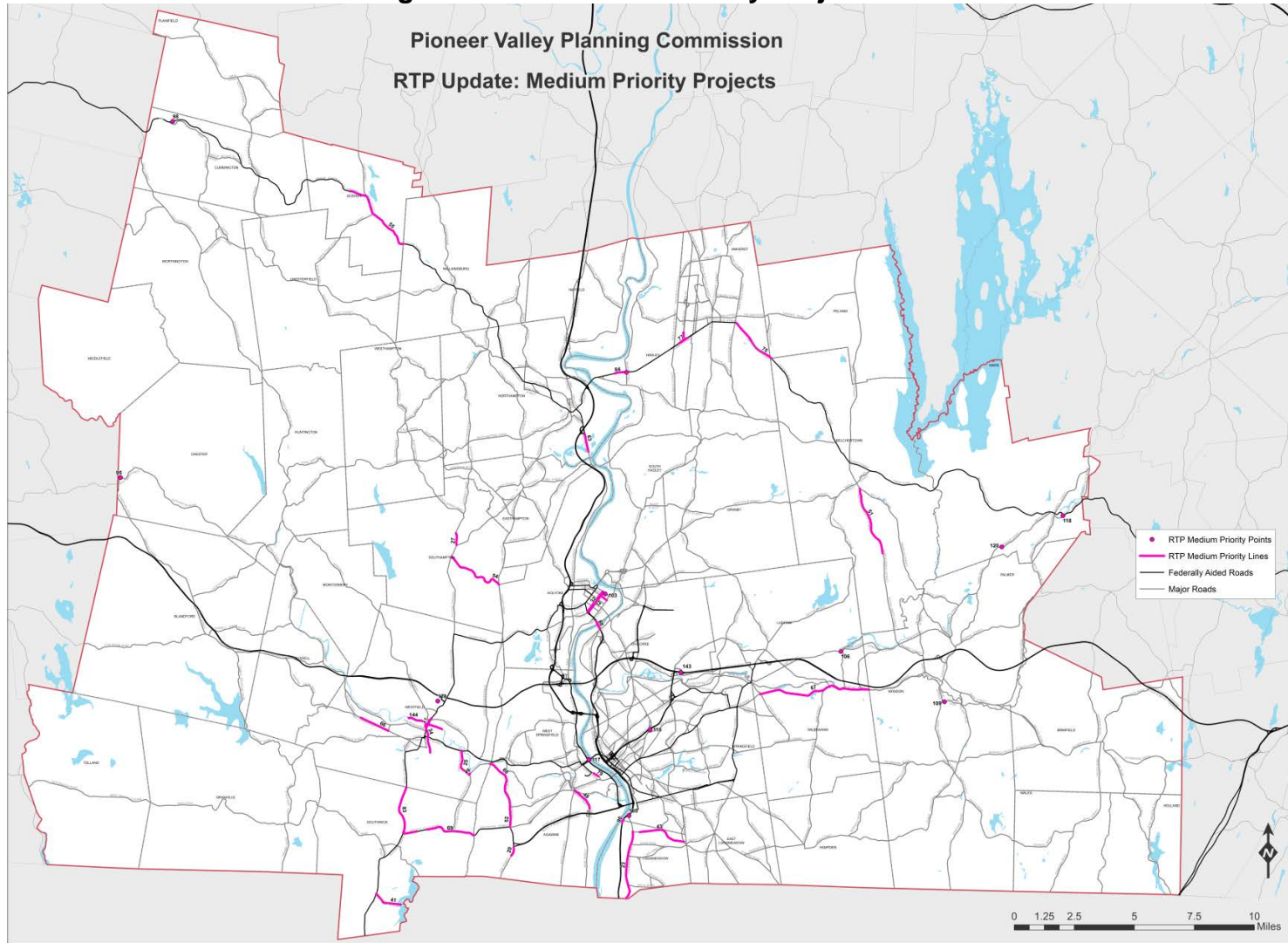
Table 14-13 – Medium Priority Projects

Map Key	Project Name	Project Description	Community	SID	Area of Emphasis	Air Quality Conformity	Total Cost
20	N. Westfield St. / S. Westfield St. (Rte. 187)	Reconstruction: Pine Street to Westfield TL	Agawam	600513	The Movement of People	Exempt	\$1,752,628
52	Roadway Reconstruction	RECONSTRUCTION OF ROUTE 187, FROM SOUTHWICK/SPRINGFIELD STREET TO ALLISON LANE (1.29 MILES - PHASE II)	Agawam	607316	The Movement of People	Exempt	\$7,320,015
68	Roadway Reconstruction	Route 187 Reconstruction from Allison Ln to Westfield City Line, 1.69 miles(Phase III)	Agawam	607317	The Movement of People	Exempt	\$10,802,464
48	Resurfacing and Related work	AGAWAM- RESURFACING & RELATED WORK ON ROUTE 159, FROM MEADOW STREET TO 150 FT. SOUTH OF SUFFIELD STREET (1.1 MILES)	Agawam	607626	The Movement of People	Exempt	\$1,696,295
75	Resurfacing Route 9	RESURFACING & RELATED WORK ON ROUTE 9 FROM SOUTHEAST ST IN AMHERST THROUGH PELHAM TO THE BELCHERTOWN T.L. (2.2 MILES)	Amherst / Pelham	606230	The Movement of People	Exempt	\$2,368,677
Not Mapped	Route 9 BRT additional enhancements	Add selected features of bus rapid transit to complement signal priority capability	Amherst-Hadley-Northampton		The Movement of People	Exempt	\$20,000,000
51	N. Washington Street Reconstruction	Reconstruction: S. Main St. to North Liberty Street	Belchertown	604692	The Movement of People	Exempt	\$4,550,805
95	Bridge Reconstruction/Rehab	CHESTER- BRIDGE BETTERMENT, C-11-033, ROUTE 20 OVER WALKER BROOK,	Chester	605207	Safety and Security	Exempt	\$326,975
143	Traffic Signals I-90 @ Exit 6	CHICOPEE- TRAFFIC SIGNAL IMPROVEMENTS & RAMP RESURFACING @ I-90 (INTERCHANGE 6)	Chicopee	606599	The Movement of people	Exempt	\$2,917,060
88	I-391 Slope Protection	SLOPE PROTECTION IMPROVEMENTS AT I-391 BRIDGE OVER THE CONNECTICUT RIVER	Chicopee	606892	Safety and Security	Exempt	330,661
98	Structures Maintenance	CUMMINGTON- BRIDGE MAINTENANCE, C-21-025, ROUTE 9 OVER THE WESTFIELD RIVER	Cummington	607939	Sustainability	Exempt	\$324,480
55	Route 9 reconstruction	Resurface: Rte. 112 to Williamsburg TL	Goshen	602888	The Movement of People	Exempt	\$9,489,893
84	Route 9 Pedestrian Signals	PEDESTRIAN SIGNAL INSTALLATION AT 2 LOCATIONS ALONG ROUTE 9 NEAR WEST ST	Hadley	606547	The Movement of People	Exempt	\$157,463
77	Route 9 @ Route 116 Pedestrian and Bicycle Improvements	INTERSECTION, BICYCLE AND PEDESTRIAN IMPROVEMENTS @ ROUTES 9, 116 & WESTGATE CENTER DRIVE	Hadley	608089	Safety and Security	Exempt	\$1,807,104
103	Bridge Replacement	Lyman Street over First Level Canal	Holyoke	600936	Safety and Security	Exempt	\$3,132,881
32	High and Maple Street Intersection Improvements	TRAFFIC SIGNAL UPGRADES AT 15 INTERSECTIONS ALONG HIGH & MAPLE STREETS	Holyoke	606450	The Movement of People	Exempt	\$1,627,462
49	Resurfacing Dwight, Front, and Heritage Street	RESURFACING & RELATED WORK ON HERITAGE STREET, FRONT STREET & DWIGHT STREET FROM MAPLE ST TO THE 1ST LEVEL CANAL (.54 MILES)	Holyoke	607256	The Movement of People	Exempt	\$3,213,317
43	Resurfacing Converse Street	RESURFACING & RELATED WORK ON CONVERSE STREET, FROM LAUREL STREET TO DWIGHT STREET (2.04 MILES)	Longmeadow	606445	The Movement of People	Exempt	\$2,851,730
23	Resurfacing Longmeadow Street (Route 5)	RESURFACING & RELATED WORK ON LONGMEADOW STREET (ROUTE 5), FROM THE CT S.L. TO CONVERSE STREET (2.88 MILES)	Longmeadow	607430	The Movement of People	Exempt	\$2,961,204
90	I-91 Retaining wall	RETAINING WALL REPLACEMENT/REHABILITATION ON I-91 (SB)	Longmeadow / Springfield	606469	Safety and Security	Exempt	\$7,474,811
105	Painting - Structural	LONGMEADOW-SPRINGFIELD- STRUCTURAL STEEL GIRDER PAINTING, S-24-042, S-24-043, A-05-001=S-24-005 & L-14-001, US 5 OVER I-91, RAMP C OVER RAMP A & I-91, US 5 OVER CONNECTICUT RIVER & AMTRAK & I-91 OVER EMERSON ROAD	Longmeadow / Springfield	607644	Sustainability	Exempt	\$3,115,373
106	Bridge Rehabilitation	East Street over Chicopee River	Ludlow / Wilbraham	605618	The Movement of People	Exempt	\$1,000,000
109	Bridge Replacement	Hospital Hill Road over Quaboag Street	Monson	602178	The Movement of People	Exempt	\$1,760,403
108	Bridge Reconstruction/Rehab	MONSON- BRIDGE REHABILITATION, M-27-022, BRIMFIELD ROAD (US 20) OVER THE QUABOAG RIVER	Monson	607688	Sustainability	Exempt	\$4,132,392

Table 14-13 – Medium Priority Projects (Cont.)

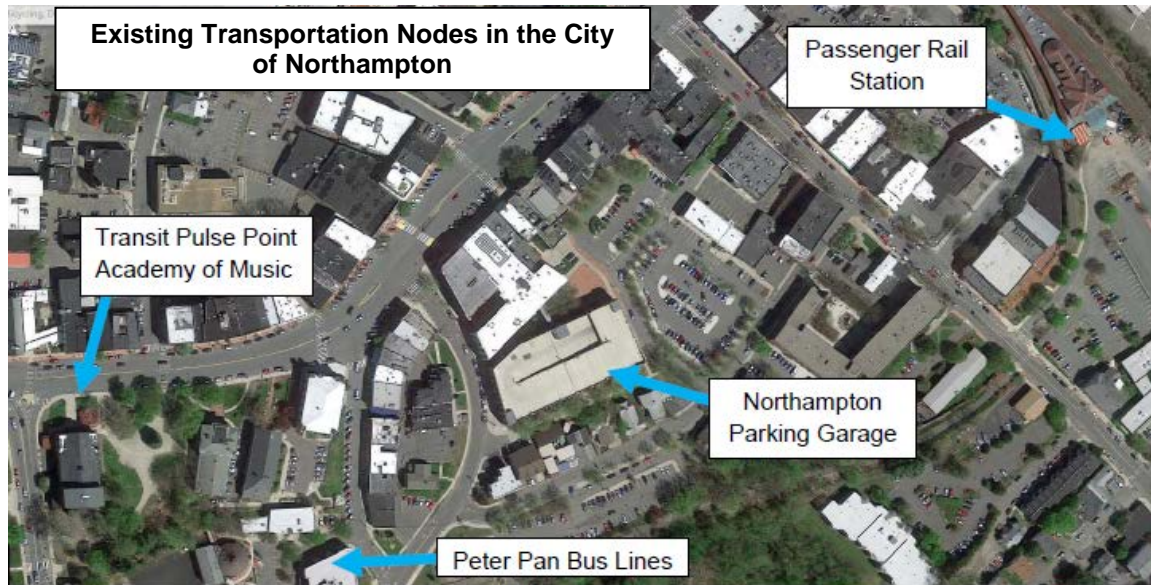
Map Key	Project Name	Project Description	Community	SID	Area of Emphasis	Air Quality Conformity	Total Cost
63	Mountain Rd (Route 5) Improvements	Improvements to Mt. Tom Rd	Northampton	605048	The Movement of People	Exempt	\$1,460,120
Not Mapped	Northampton Intermodal Center	Downtown bus, rail, intermodal station	Northampton		The Movement of People		\$14,000,000
Not Mapped	Pioneer Valley Regional Bike Share	Pioneer Valley Regional Bike Share	Northampton, Amherst, Holyoke, Springfield		The Movement of People	Exempt	\$584,929
Not Mapped	Track Expansion	Track Expansion Palmer Ind Park	Palmer		The Movement of Goods	Exempt	\$570,000
Not Mapped	Other BRT routes/enhancements	Add selected features of bus rapid transit on selected high-volume PVTa bus routes	Regionwide		The Movement of People	Exempt	\$20,000,000
Not Mapped	Transfer facilities and canopies	Improve waiting areas at high-volume transfer points with shelters and customer information services	Regionwide		The Movement of People	Exempt	\$5,000,000
Not Mapped	High Speed Rail	East/West high speed rail Capital entire system - Boston to Springfield to Vermont/Canada Line	Regionwide		The Movement of People	Exempt	\$785,000,000
54	East St. Roadway Rehabilitation	Reconstruction: Rte. 10 to Holyoke TL	Southampton	604653	The Movement of People	Exempt	\$6,873,227
27	Safe Routes to School	SOUTHAMPTON- SAFE ROUTES TO SCHOOL (WILLIAM E. NORRIS ELEMENTARY)	Southampton	607453	The Movement of People	Exempt	\$827,064
41	Congamond Rd. (Rte. 168) Reconstruction	Roadway reconstruction: From Route 202 to 250 ft before state line (before culvert)	Southwick	604033	The Movement of People	Exempt	\$5,798,520
81	Routes 10/202 resurfacing (southerly)	Routes 10/202 resurfacing (southerly)	Southwick	604153	Safety and Security	Exempt	\$3,848,635
83	Routes 10/202 resurfacing (northerly)	Routes 10/202 resurfacing (northerly)	Southwick	604155	Safety and Security	Exempt	\$1,894,942
69	Highway Reconstruction	FEEDING HILLS ROAD (ROUTE 57) FROM COLLEGE HIGHWAY TO THE AGAWAM TOWN LINE	Southwick	606141	The Movement of People	Exempt	\$5,807,112
115	Painting - Structural	SPRINGFIELD- STRUCTURAL STEEL GIRDER PAINTING, PAINT REMOVAL & REPAIR ON S-24-070, S-24-071 & S-24-072, TAPLEY STREET, ST. JAMES AVENUE & RAMP P OVER I-291	Springfield	607643	Sustainability	Exempt	\$6,106,065
117	Bridge Betterment/Structures Maintenance	SCOUR COUNTERMEASURES, S-24-003-W-21-002, ROUTE 20 (PARK AVENUE) OVER CT RIVER	Springfield / West Springfield	603278	Safety and Security	Exempt	\$9,574,173
118	Bridge Replacement	Mass Central RR over Route 9/32 East Main Street	Ware	601701	Safety and Security	Exempt	\$12,813,788
120	Deck Replacement	Route 32 (Palmer Road) over the Ware River	Ware	605126	Safety and Security	Exempt	\$4,679,529
79	Union Street Underpass	BRIDGE REPLACEMENT, W-21-006, CSX RAILROAD OVER UNION STREET	West Springfield	604746	The Movement of People	Non Exempt	\$21,800,061
66	Improvements Court Street and Western Ave (Phase II)	ROUTE 20 ACCESS IMPROVEMENTS ON COURT STREET & WESTERN AVENUE, FROM LLEWELLYN DRIVE EASTERLY TO LLOYDS HILL ROAD (PHASE I) HPP \$2,503,688	Westfield	603449	The Movement of People	Exempt	\$3,040,359
34	Columbia Greenway Rail trail and River Walk Phase I (Middle)	1.25 miles in length and extends from the Columbia Manufacturing Company to the Cowles Court and Sibley Ave access paths in the north and includes replacement of 5 bridges, rehab of a 6th	Westfield	603783	The Movement of People	Exempt	\$5,091,077
46	Route 187 - Sherman's Mill Bridge reconstruction	Reconstruct Route 187 from 260ft north of Bridge to 800ft east of Pontoosic rd.	Westfield	604445	Safety and Security	Exempt	\$10,252,483
25	Route 187 - Little River Road reconstruction	Reconstruct Route 187 from 300 ft south of Route 20 to 260 ft North of Sherman Bridge	Westfield	604446	Safety and Security	Exempt	\$6,206,561
17	Columbia Greenway Rail Trail Phase III (North)	Construction of the North Section - Cowles Court to Westfield River Bridge TFPC for project is \$2,696,193	Westfield	604968	The Movement of People	Exempt	\$300,000
124	Bridge Reconstruction/Rehab	WESTFIELD- SUPERSTRUCTURE REPLACEMENT, W-25-021, LOCKHOUSE ROAD OVER PVR	Westfield	607646	The Movement of Goods	Exempt	\$2,182,675
50	Improvements Court Street and Western Ave (Phase II)	WESTFIELD- IMPROVEMENTS & RELATED WORK ON ROUTE 20, COURT STREET & WESTERN AVENUE, LLOYDS HILL ROAD TO HIGH STREET/MILL STREET INTERSECTION (PHASE II) Eastern Section	Westfield	607773	The Movement of People	Exempt	\$5,723,234
144	Westfield River Levee Multi use Path	WESTFIELD RIVER LEVEE MULTI-USE PATH CONSTRUCTION, FROM CONGRESS ST TO WILLIAMS RIDING WAY (NEAR MEADOW ST) (2MILES)	Westfield	608073	The Movement of People	Exempt	\$7,107,733
Not Mapped	Westfield Industrial Park Track Expansion	Track Expansion Westfield Ind Park	Westfield		The Movement of Goods	Exempt	\$3,025,070
67	Resurfacing Route 20	RESURFACING & RELATED WORK ON ROUTE 20, FROM STONY HILL ROAD TO THE PALMER TOWN LINE (4.8 MILES)	Wilbraham	607990	The Movement of People	Exempt	\$8,111,938
53 Total Medium Priority Projects							\$1,052,793,390

Figure 14-3 – Medium Priority Projects



a) Northampton Intermodal Center

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.



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.

b) Route 9 Bus Rapid Transit Enhancements

Transit stakeholders in the Northampton/Hadley/Amherst corridor have regularly expressed support for higher capacity bus service between downtown Northampton and Amherst/UMass. Implementing some or all the

elements of a bus rapid transit (BRT) system have frequently been mentioned as a long range goal. In 2011, MassDOT activated signal priority equipment at 10 intersections on Route 9 between University Drive and Exit 19, which PVRTA buses are able to use to reduce waiting times at traffic signals. Additional BRT enhancements that could be added include queue jump lanes, simplified routing, and level boarding platforms.

c) Additional Bus Rapid Transit

As a long term goal in addition to BRT in the Route 9 corridor discussed above, PVRTA is interested in improving passenger carrying capacity in other high-volume corridors in the region. These could include routes between Holyoke and Springfield on which existing express bus services are popular.

d) Improvements to the Union Street Railroad Underpass

The CSX railroad tracks currently restrict truck traffic from travelling through West Springfield in the north/south direction due to low bridge clearances. There are three bridges located on Main Street, Union Street and River Street that can only accommodate vehicles measuring less than 12 feet in height. This requires all truck traffic to travel on Route 5 and exit at either the North End rotary or the Memorial Avenue rotary to reach a final destination. The existing Union Street underpass will be improved to provide adequate vertical clearance for large vehicles. The City of West Springfield has worked in cooperation with MassDOT and CSX to identify a possible design alternative for increasing the vertical clearance at this location. While several possible design alternatives have been developed, a final design has not yet been accepted by all parties. Recently, CSX responded to MassDOT's latest design proposal with two suggested alternatives that may provide a solution that is agreeable to all parties. The proposed alternatives are currently under review by MassDOT.

e) Transfer Facilities

As part of its shelter improvement program, PVRTA is seeking to improve conditions for customers waiting at high-volume bus transfer locations in the region. This would include higher quality and larger shelters, electronic customer information displays, and canopies for shelter.

f) East/West Rail

In a 2005 transportation appropriation Congress designated the Boston – Springfield to New Haven, CT as well as the Springfield to Albany, NY corridors as part of the Northern New England High Speed Rail Corridor. Congress further provided funds to study the feasibility of High Speed Rail Service in the Boston – Springfield - New Haven Corridor.

This ongoing study to assess infrastructure (capital) needs and operating costs for passenger rail service connections between Springfield and Boston, MA must continue to be advanced. Expanded east-west service is complicated due to the ownership of railroad tracks between Springfield and Worcester by CSX and existing MBTA commuter rail service between Worcester and Boston. Studies have identified the potential for one daily run between Boston and Montreal and eight daily runs between Boston and New Haven, Connecticut that would have a stop in Springfield. Expanded passenger rail service would allow existing residents to continue to live in the Pioneer Valley and connect to job markets to the east and south of the region.

4. Low Priority Projects

This section provides a summary of the “Low” priority projects included in the RTP. A complete summary of all “Low” priority projects is included in Table 14-14 and Figure 14-4. Where applicable, projects have been cross referenced between the table and figure through a numbering system. Description of all regionally significant “Non-Exempt” projects are also included as part of this section.

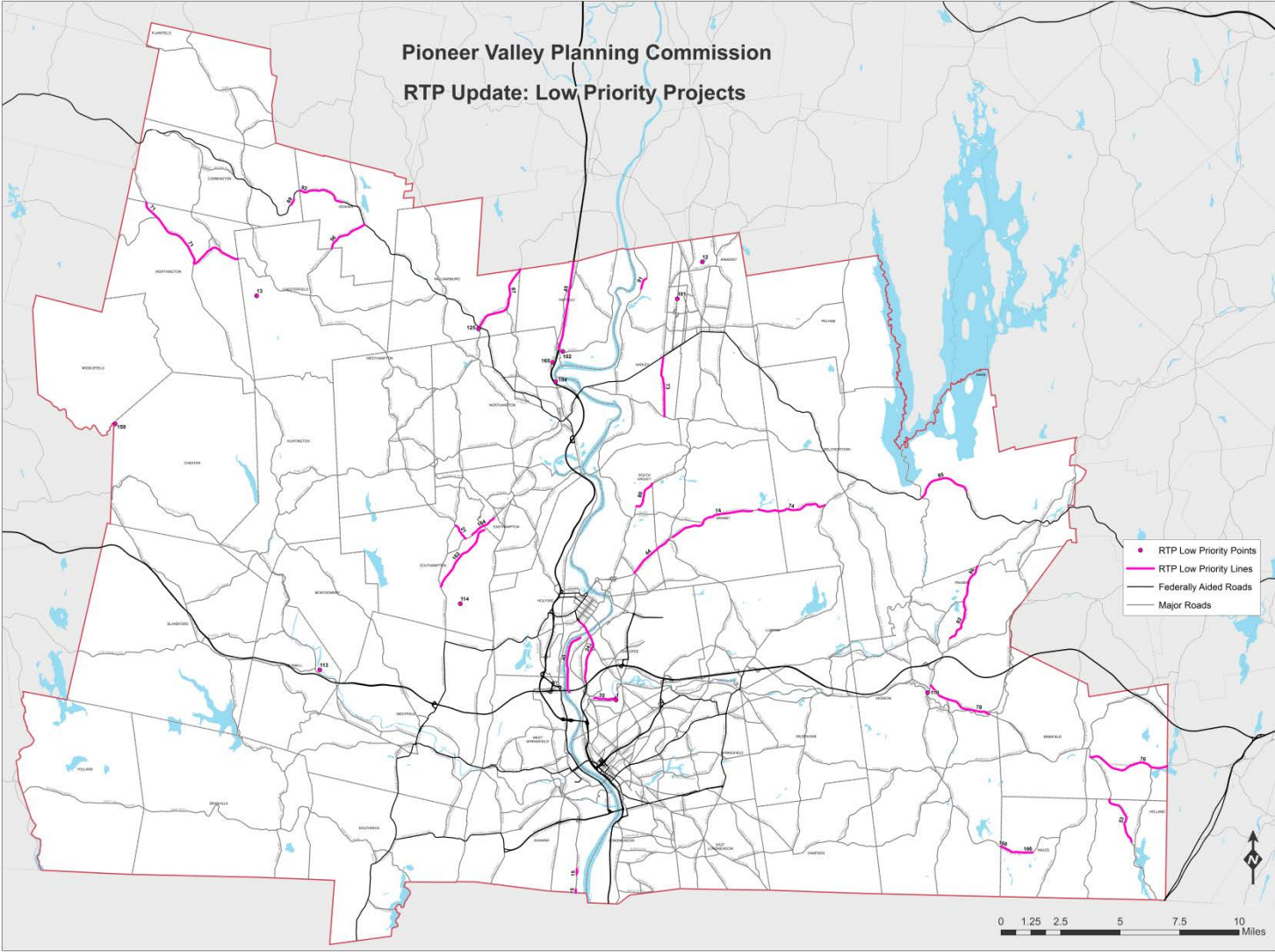
Table 14-14 – Low Priority Projects

Map Key	Project Name	Project Description	Community	SID	Area of Emphasis	Air Quality Conformity	Total Cost
15	Sidewalk Construction	Sidewalk Construction on Route 159 From CT Line to Woodcliff Ave and From South St to River Road	Agawam	607876	The Movement of People	Exempt	\$592,518
2	Bridge Reconstruction/Rehab	AMHERST- BRIDGE REPLACEMENT, A-08-008, MILL STREET OVER MILL RIVER	Amherst	607528	The Movement of People	Exempt	\$2,158,416
Not Mapped	Bridge Demolition	BELCHERTOWN- WARREN BRIDGE DEMOLITION, B-05-023, W-07-012,(EAST MAIN STREET/NAULTAUG BROOK)	Belchertown	607524	Sustainability	Exempt	\$2,477,738
74	Route 202 Resurfacing	Resurfacing and related work on Route 202	Belchertown / Granby	604819	The Movement of People	Exempt	\$6,415,167
76	Resurfacing and Related work	Resurfacing and Related work on Route 20 from W. Old Sturbridge Road (MM 88.3) to Old Streeter Road (MM92.1)	Brimfield / Sturbridge	608022	The Movement of People	Exempt	\$4,094,505
158	Keystone Arch Bridge Project	Restoration of two historic Keystone Arch Bridges to a condition for public access	Chester	607210	The Movement of People	Exempt	\$1,762,579
3	Bridge Replacement	CHESTERFIELD- BRIDGE REPLACEMENT, C-12-009, IRELAND STREET OVER WEST BRANCH BRONSON BROOK	Chesterfield	607549	The Movement of People	Exempt	\$3,474,682
40	Connecticut Riverwalk	Construction: Plainfield St. to Nash fld.	Chicopee	602911	The Movement of People	Exempt	\$3,743,004
35	Chicopee Riverwalk	Construction: From Chicopee Center, 2.5 mi.	Chicopee	602912	The Movement of People	Exempt	\$3,902,850
24	INTERSTATE MAINTENANCE & RELATED WORK ON I-390	INTERSTATE MAINTENANCE & RELATED WORK ON I-391	Chicopee/Holyoke	607560	The Movement of People	Exempt	12,273,537
89	Route 9 Retaining Wall	Route 9 Retaining Wall	Cummington	606797	The Movement of People	Exempt	\$1,941,965
Not Mapped	Structures Maintenance	DISTRICT 2- SCOUR COUNTERMEASURES & SUBSTRUCTURE MAINTENANCE OF D-06-002=G-12-003, M-27-022=P-01-033, P-01-013, W-19-005, W-39-007	District 2	603935	Sustainability	Exempt	\$5,027,687
Not Mapped	Structures Maintenance	SYSTEMATIC BRIDGE MAINTENANCE AT VARIOUS LOCATIONS (2016) Project consists of systematic maintenance on various bridges in District Two.	District 2	607516	Sustainability	Exempt	\$1,712,942
Not Mapped	Structures Maintenance	SYSTEMATIC BRIDGE MAINTENANCE AT VARIOUS LOCATIONS (2017) Project consists of systematic maintenance on various bridges in District Two.	District 2	607517	Sustainability	Exempt	\$1,923,977
Not Mapped	Structures Maintenance	SYSTEMATIC BRIDGE MAINTENANCE AT VARIOUS LOCATIONS (2018) Project consists of systematic maintenance on various bridges in District Two.	District 2	607959	Sustainability	Exempt	\$1,776,852
164	Sidewalks on Route 10	SIDEWALK CONSTRUCTION & RELATED WORK ON ROUTE 10, FROM MM 19.9 NORTHERLY TO MM 20.9 (60' SOUTH OF SOUTH STREET)	Easthampton / Southampton	608026	The Movement of People	Exempt	\$676,444
56	West Street Reclamation	Resurfacing and related work on West Street from South Maple Street to Chesterfield TL 1.8 miles	Goshen	605150	The Movement of People	Exempt	\$3,542,893
92	Route 9 Resurfacing	GOSHEN- RESURFACING AND RELATED WORK ON ROUTE 9 FROM CUMMINGTON T.L. TO ROUTE 112 (CAPE STREET)	Goshen	608126	The Movement of People	Exempt	\$4,094,505
44	Resurfacing Route 202	GRANBY- SOUTH HADLEY- RESURFACING & RELATED WORK ON ROUTE 202, FROM LYMAN STREET SOUTH HADLEY TO PLEASANT STREET GRANBY (2 MILES)	Granby / South Hadley	607474	The Movement of People	Exempt	1,466,400
73	South Maple Street	Reconstruction: South of Rte. 9 to Bay Rd.	Hadley	602796	The Movement of People	Exempt	\$7,401,221
101	Bridge Preservation	BRIDGE REPLACEMENT, H-01-017, NORTH HADLEY	Hadley	604049	The Movement of People	Exempt	\$4,701,147
91	Route 47 Resurfacing and Culvert	RESURFACING AND RELATED WORK ON ROUTE 47 FROM COMINS DRIVE TO OLD RIVER DRIVE, INCLUDES CULVERT REPLACEMENT AT RUSSELVILLE BROOK	Hadley	607886	Sustainability	Exempt	\$1,094,988
102	Bridge Replacement	BRIDGE REPLACEMENT, H-11-025, ELM STREET OVER THE B&M R.R.	Hatfield	603608	The Movement of People	Exempt	\$766,075

Table 14-14 – Low Priority Projects (Cont.)

Map Key	Project Name	Project Description	Community	SID	Area of Emphasis	Air Quality Conformity	Total Cost
45	Resurfacing I-91	HATFIELD- NORTHAMPTON- WHATELY- INTERSTATE MAINTENANCE & RELATED WORK ON I-91, FROM MM 26.9 TO MM 34.4 (7.5 MILES)	Hatfield	606577	The Movement of People	Exempt	\$10,335,146
53	Brimfield Road improvements	Resurfacing and related work from Brimfield Town Line to Stafford Road	Holland	604962	The Movement of People	Exempt	\$1,824,979
Not Mapped	Resurfacing I-90	LUDLOW- PALMER- WILBRAHAM- RESURFACING, GUARDRAIL & RELATED WORK ON I-90 (MM 55 TO MM 60)	Ludlow / Palmer	606595	The Movement of People	Exempt	\$6,716,736
110	Bridge Replacement	State Avenue over the Quaboag River	Monson / Palmer	604136	The Movement of People	Exempt	\$6,427,779
154	Structures Maintenance	NORTHAMPTON- CULVERT REPAIR UNDER I-91, ROUTE 5 AND BMRR AT STA 245	Northampton	605617	The Movement of People	Exempt	\$1,879,729
165	Retaining Wall Replacement North King Street	NORTHAMPTON- RETAINING WALL REPLACEMENT AT CULVERT UNDER NORTH KING STREET (ROUTE 5&10), 300 FEET SOUTH OF COLES MEADOW ROAD (MM 25.4)	Northampton	608161	Sustainability	Exempt	\$1,751,980
82	Rte. 32 (Ware Road) Reconstruction Phase I	RECONSTRUCTION OF ROUTE 32, FROM 765 FT. SOUTH OF STIMSON STREET TO 1/2 MILES SOUTH OF RIVER STREET (PHASE I) (1.63 MILES)	Palmer	601504	Safety and Security	Exempt	\$8,394,912
78	Route 20 improvements	RESURFACING & RELATED WORK ON ROUTE 20 - FROM EAST OF RTE 32 INTERSECTION EASTERLY TO MM 81.7 (2.0 MILES)	Palmer	603873	The Movement of People	Exempt	\$1,642,283
Not Mapped	Resurfacing	PALMER- RESURFACING & RELATED WORK ON I-90 (MM 60 TO MM 66)	Palmer	606610	The Movement of People	Exempt	\$7,722,754
86	Rte. 32 (Ware Road) Reconstruction Phase II	PALMER- RECONSTRUCTION OF ROUTE 32, FROM 1/2 MILE SOUTH OF RIVER STREET TO THE WARE T.L. (PHASE II) (2.1 MILES)	Palmer	607372	The Movement of People	Exempt	\$14,114,445
113	Bridge Rehabilitation	Bridge Street over Westfield River	Russell	606499	The Movement of People	Exempt	\$15,200,840
80	Route 116 Resurfacing	RESURFACING & RELATED WORK ON ROUTE 116 (AMHERST ROAD), FROM WOODBRIDGE STREET TO PEARL STREET	South Hadley	606452	The Movement of People	Exempt	\$2,062,559
114	Bridge Replacement	Valley Road over Moose Brook	Southampton	603024	The Movement of People	Exempt	\$2,251,845
21	Glendale Rd. (Phase II)	Reconstruction: Pomeroy Meadow Road to Route 10.	Southampton	604738	The Movement of People	Exempt	\$2,764,702
162	Rail Trail Construction	GREENWAY RAIL TRAIL CONSTRUCTION, FROM COLEMAN RD TO ROUTE 10 (3.5 MILES)	Southampton	607823	The Movement of People	Exempt	\$7,694,053
Not Mapped	Sidewalk improvements	Sidewalk reconstruction and resurfacing at various locations on Route 119	Wales	605669	The Movement of People	Exempt	\$500,323
166	Reconstruction Monson Road	WALES- RECONSTRUCTION & IMPROVEMENTS ON MONSON ROAD, FROM THE MONSON T.L. TO REED HILL ROAD (1.5 MILES)	Wales	608163	The Movement of People	Exempt	\$5,314,811
85	Resurfacing Route 9	RESURFACING & RELATED WORK ON ROUTE 9, FROM .1 MILE WEST OF THE WARE T.L. EASTERLY TO MM 64.7 IN WARE (2.1 MILES)	Ware	603874	The Movement of People	Exempt	\$1,742,387
121	Bridge Reconstruction/Rehab	WEST SPRINGFIELD- BRIDGE RECONSTRUCTION, W-21-011, PROSPECT AVENUE OVER PVRR	West Springfield	607526	The Movement of People	Exempt	\$1,143,989
87	Resurfacing High and Mountain	Reconstruction of High Street and Mountain Street	Williamsburg	607231	The Movement of People	Exempt	\$5,542,035
125	Bridge Replacement	WILLIAMSBURG- BRIDGE REPLACEMENT, W-36-011, BRIDGE STREET OVER THE MILL RIVER	Williamsburg	607675	The Movement of People	Exempt	\$9,371,261
71	Reconstruction Route 143	Route 143 Reconstruction and Related Work	Worthington	606912	The Movement of People	Exempt	\$19,243,176
45 Total Low Priority Prjcts							\$210,664,816

Figure 14-4 – Low Priority Projects



5. Project Status

The 2012 RTP included 168 highway projects with a combined estimated cost of \$824,816,026 (including inflation). As can be seen in Table 14-15, the 2016 RTP has reduced the total number of project by 44 projects, but the total estimated cost has gone up by approximately \$100,000,000 (including inflation). The project reduction was due mostly to the results of MassDOT deactivating projects that had not advanced beyond pre 25% design for a number of years, and PVPC staff removing any project that was never issued a MassDOT approved State Identification Number (SID). The removal of unapproved projects (no SID) was done by PVPC staff to ensure that the 2016 RTP could be fiscally constrained. Table 14-15 also shows that 53 project were constructed since the 2012 RTP, while 52 new projects where added to the 2016 RTP.

Table 14-15 – Project Status

2016 RTP Project Status	# Projects	Cost
Project Proposed to be Removed from RTP	60	\$205,397,568
Project Constructed	52	\$181,677,481
Projects to be Added	51	\$228,304,798
All Projects in RTP	124	\$923,919,653

6. Visionary Projects

Visionary Projects are defined as projects that would likely result in an improvement to the regional transportation system but do not have an identified source of construction funding. Visionary projects are not included as part of the Financial or Air Quality Conformity components of the RTP. The RTP will need to be amended to include any identified visionary projects as funding becomes available in order to demonstrate financial constraint and conformance with the requirements of the Clean Air Act Amendments.

a) **South End Bridge Improvements, Connector, Route 5 to Route 57 (over Route 5/57 rotary), South End Bridge Pedestrian Link**

The South End Bridge (Julia Buxton Bridge) connects the communities of Agawam and Springfield and serves as the fundamental link between Route 5, Route 57 and I-91. The traffic along these main corridors has increased dramatically, causing congestion along the bridge and highway. In the vicinity of the bridge, Interstate 91 reduces from three lanes of travel in each direction to two. A number of difficult weaving movements also exist in this area, which when combined with the high traffic volumes contribute to congestion and safety problems in this area. MassDOT installed new pavement markings and warning signs along the approaches and weaving section of the Agawam Route 5/Route 57 rotary in August 2012.

Previous studies conducted and commissioned by MassDOT recommended the elimination of the rotary and construction of a new slip ramp off of the bridge to create direct access from the bridge to Route 57 westbound. Additional improvement alternatives to the slip ramp were studied in an attempt to reduce construction costs. One alternative considered the conversion of the existing rotary to a diverging diamond interchange.

Improvements for this location are currently on hold pending the outcome of MassDOT's ongoing I-91 Viaduct study. An important component of this study will be to identify the need for additional capacity on I-91, the South End Bridge, and the ability to provide a pedestrian connection between the existing Agawam and Springfield Riverwalks.

b) Expanded Passenger Rail Service on the Vermonter Line to Springfield.

The Massachusetts State Rail Plan identifies expanded passenger rail service along the Connecticut River line as a cost-effective improvement. Seven additional daily round-trips are forecast for the newly realigned Vermonter service in the Knowledge Corridor, one additional round-trip between St. Albans, Vermont, and Springfield, Massachusetts, and six round trips between Greenfield and Springfield are recommended.

Expanded passenger rail service results in increased ridership, a travel time savings for existing users based recently completed infrastructure improvements, a reduction in emissions, the potential for reduced highway maintenance costs, and improved highway safety. The Pioneer Valley MPO will continue to work with MassDOT to identify operational funding to provide expanded passenger rail service along this line.

c) East/West Rail

Studies have identified the potential for one daily run between Boston and Montreal and eight daily runs between Boston and New Haven, Connecticut that would have a stop in Springfield. Expanded east/west passenger rail service would allow existing residents to continue to live in the Pioneer Valley and connect to job markets to the east and south of the region.

d) Upgrade Track on the New England Central Rail Line to 286,000 pound capacity

The Massachusetts State Rail Plan identifies this upgrade of the NECR track from the Vermont state line to the Connecticut state line as a high priority. Increasing the capacity of the track from 263,000 pounds to 286,000 pounds will bring the line up to modern rail industry standards. New heavier continuous welded rail will allow for increased train speeds which will benefit both shippers and receivers of freight commodities.

e) Passenger Rail Service on the Central Corridor

The Central Corridor has the potential to link state universities in Vermont, Massachusetts, and Connecticut. Further study of this line would address the feasibility of advancing improvements to accommodate passenger rail service in the future. Any study should include an estimate of the cost to upgrade and operate the line to meet passenger rail service requirements, identify the location of potential stations, and determine the feasibility of expanding passenger rail service to this line.

7. Projects Removed from the RTP.

The following projects were included as part of the 2012 Regional Transportation Plan but have not been included in the 2016 RTP. The following sections provide a table of all removed projects (not including projects that were removed due to construction) as well as more information on major project.

a) Route 57 Phase II - Route 187 to Southwick Town Line

Route 57 currently runs from the South End Bridge in Springfield to the west, providing access to and from Springfield for many southwestern communities. The roadway is a limited access highway from the Route 5/57 rotary to its interchange with Route 187 in Agawam. Originally proposed to be constructed in two phases, phase one of the project included the relocation of Route 57 from Mill Street to Route 187 (South Westfield Street) and was completed in 1996. The second phase proposed the extension of the new Route 57 from Route 187 west to the Agawam/Southwick line reconnecting to the original roadway. Phase two is no longer actively under design and has been removed from the RTP as the estimated cost of construction cannot be accommodated as part of the RTP Financial Plan.

Table 14-16 – Projects Removed from the 2016 RTP

Removed by	Project Name	Project Description	Community	SID	Base Cost
PVPC	Bikeway Loop	Main Street to Robinson State Park Via Water works ROW	Agawam	X00003	\$635,000
PVPC	Route 57 Phase II	Extension of Route 57 from Route 187 to Southwick Town Line	Agawam/Springfield	600586	\$80,000,000
PVPC	Truck Access Improvements	Rt 5 to Merrick Neighborhood Access improvements	Agawam/West Springfield		
PVPC	Truck Access Improvements	Rt 5 to Merrick Neighborhood Access improvements	Agawam/West Springfield		
MassDOT	Bridge Replacement	Route 20 over Cushman Brook and Walker Brook	Becket / Chester	605440	\$2,555,300
MassDOT	Bay Road Improvements	Resurfacing and related work on section of Bay Rd	Belchertown	605676	\$700,000
MassDOT	Landscape/Roadside Development	Wildflower Bed Establishment	Bernardston/Deerfield/Hatfield/Northampton/Holyoke	604491	\$1,064,437
MassDOT	Resurfacing and Related Work	I-90 (MM 60 to MM 69.6)	Brimfield/Palmer/Warren	606013	\$24,930,148
MassDOT	Resurfacing and Related Work	I-90 (MM 50 to MM 60)	Chicopee/Ludlow/Palmer/Wilbraham	606012	\$15,000,000
MassDOT	Rte. 112	Rehabilitation: Worthington TL north 1.5 miles	Cummington	600301	\$600,000
MassDOT	Elm Street Reconstruction	Reconstruction: Springfield CL to Center Sq.	East Longmeadow	601350	\$3,500,000
PVPC	Bridge Replacment	Glendale Street over Manhan River BR#E-05-005	Easthampton	X00045	\$750,000
PVPC	Intersection Improvements	Reconstruct and signalized intersection of Main and South Street	Easthampton	X00046	\$250,000
PVPC	Roadway Reconstruction	Pomeroy Meadow Road Southampton TL to Loudville Road	Easthampton	X00050	\$1,010,291
PVPC	Mountain Rd (Route 141)	Automated closure of Mountain Rd - Easthampton	Easthampton		\$540,800
PVPC	Intersection Improvements	Reconstruct intersection of Northampton Street and O'Neill Street	Easthampton 2011??	X00047	\$250,000
MassDOT	Amherst Street improvements	Resurfacing and related work	Granby	605682	\$1,300,000
PVPC	Resurfacing Route 57	Resurface 8 miles from Sodem Street to Tolland TL	Granville	X00006	\$1,600,000
MassDOT	Bikeway/Bike path Construction	Canalwalk, Phase 3 (from Dwight St to Lyman St)	Holyoke	603264	\$2,800,000
MassDOT	Superstructure Replacement	Cabot Street/2nd Level Canal	Holyoke	606257	\$5,000,000
PVPC	Intersection Improvements	Linden Street improvements to 5 intersections signal coordination	Holyoke	X00072	\$400,000
PVPC	Cabot Street Reconstruction	Reconstruct from Main Street to South Canal Street	Holyoke	X00073	\$320,000
PVPC	Northampton Street Rehabilitation	Northampton Street Rehabilitation	Holyoke	X00075	\$2,000,000
PVPC	Route 5 Traffic Improvements	Route 5 Traffic Signal Improvements	Longmeadow		\$4,605,761
MassDOT	Lower Hampden Rd Phase 2	Reconstruction from 3/4 miles south of Ely Road easterly to the intersection of Elm Street and Bridge Street	Monson	605687	\$4,750,000
MassDOT	Bridge Rehabilitation	Clement Street over Mill River	Northampton	15350	\$0
MassDOT	Route 66 (West St.) at Earle Street intersection improvements	Intersection improvement: installation of Signal to mitigate peak hour congestion	Northampton	604452	\$150,000
MassDOT	Landscape/Roadside Development	Drainage Repairs & Slope Stabilization at Old Water Street	Northampton	605143	\$515,000
MassDOT	Bridge	WATER ST OVER ROBERTS MEADOW BRK	Northampton	605320	\$763,948
PVPC	Glendale Raod Reconstruction	From Route 66 to Easthampton TL	Northampton	X00088	\$1,000,000
PVPC	Ryan Road Reconstruction	From West Farms Road to Brookside Circle	Northampton	X00089	\$1,100,000
PVPC	Route 9 @ Old Ferry Road and Day Ave	Intersection Improvements and Signalization	Northampton		\$1,800,000
PVPC	King Street Reconstruction and Related Improvements	Improvements: Damond At King, King at Summer and North, and North and King at Finn	Northampton		\$9,000,000

Table 14-16 – Projects Removed from the 2016 RTP (Continued)

Removed by	Project Name	Project Description	Community	SID	Base Cost
PVPC	Traffic Signal Coordination	Traffic signal coordination projects	Regionwide		Further Study
PVPC	At Grade Rail Crossing Improvements	Regional Railroad Grade crossing improvements	Regionwide		Further Study
PVPC	Park and Ride	Regional Park and Ride Lot improvements	Regionwide		\$1,124,864
PVPC	Massachusetts Turnpike Off Ramp Congestion Project	Massachusetts Turnpike off ramp congestion improvements	Regionwide		
PVPC	I&M Projects	Other Interstate Maintenance Projects	Regionwide		
PVPC	I-291 congestion improvements	I-291 congestion improvements	Regionwide		Further Study
MassDOT	Main St, Front, Route 141 Improvements (Indian Orchard)	Traffic signal and related work Main Street, Front Street., Myrtle Street (Route 141) Indian Orchard	Springfield	604448	\$785,000
MassDOT	Bridge	S-24-016, HWY ARMORY ST OVER RR CSX	Springfield	605339	\$2,709,592
MassDOT	Bridge	S-24-028, HWY ST JAMES AVE OVER RR CONRAIL (ABANDNED)	Springfield	605340	\$3,681,260
MassDOT	Bridge	S-24-043, I 91 RAMP C OVER I 91 & RMP A TO US 5 NB	Springfield	605341	\$9,206,612
MassDOT	Plumtree Rd improvements	Resurfacing and related work from Allen St to Wilbraham Rd	Springfield	605683	\$2,000,000
PVPC	Intersection Improvements	Allen Street and Cooley Street intersection improvements	Springfield		\$1,081,600
PVPC	Connecticut Riverwalk	CT Riverwalk pedestrian access improvements	Springfield		\$1,912,269
PVPC	Intersection Improvements	Bay St @ Berkshire Ave intersection improvements	Springfield		\$912,490
PVPC	Intersection Improvements	Central Street at Hancock Street intersection improvements	Springfield		\$584,929
PVPC	Intersection Improvements	St James @ St James blvd intersection improvements	Springfield		\$1,423,312
PVPC	Resurfacing Route 57	From Granville TL to Sandisfield TL	Tolland	X00005	\$0
MassDOT	Ware River Valley Preservation Project	Ware River Valley Greenway Trail & Covered Bridge Preservation Project	Ware	603454	\$1,400,000
MassDOT	Full Deck Replacement/Full Steel Painting	Route 32 (Palmer Road) over the Ware River	Ware	606256	\$2,000,000
PVPC	Intersection Improvements	Morgan Road at Piper Cross Intersection Improvements	West Springfield		\$657,966
PVPC	Intersection Improvements	Intersection improvements - Amostown Road at Dewey Street	West Springfield		\$912,490
PVPC	At Grade Rail Crossing Improvements	Improvements to 1st and 2nd St/Bridge St Railroad crossing	West Springfield		\$416,000
MassDOT	Safe Routes to School	Paper Mill School	Westfield	606046	\$375,500
MassDOT	Southampton Rd.	Reconstruction: Rte. 66 to Stage Rd	Westhampton	602386	\$1,400,000
MassDOT	Chesterfield Rd.	Reconstruction: Northampton TL to Chesterfield TL	Westhampton	602387	\$2,400,000
MassDOT	Kings Highway and Reservoir Rd	Reconstruction: Kings Highway from Perryhill Road to Reservoir Rd, and Reservoir Rd from Kings Highway to Pine Island Lake Dam	Westhampton	602822	\$1,360,000
MassDOT	Bridge Replacement	Geer Hill Road over Meekin Brook	Williamsburg	602176	\$163,000
Project Proposed to be Removed from RTP				60	\$205,397,568
Roadway/Bikepaths				51	\$104,331,804
Bridge/Walls				9	\$101,065,764