CHAPTER 14

Photo: Columbia River Greenway, Westfield, MA

NEEDS, STRATEGIES AND PROJECTS

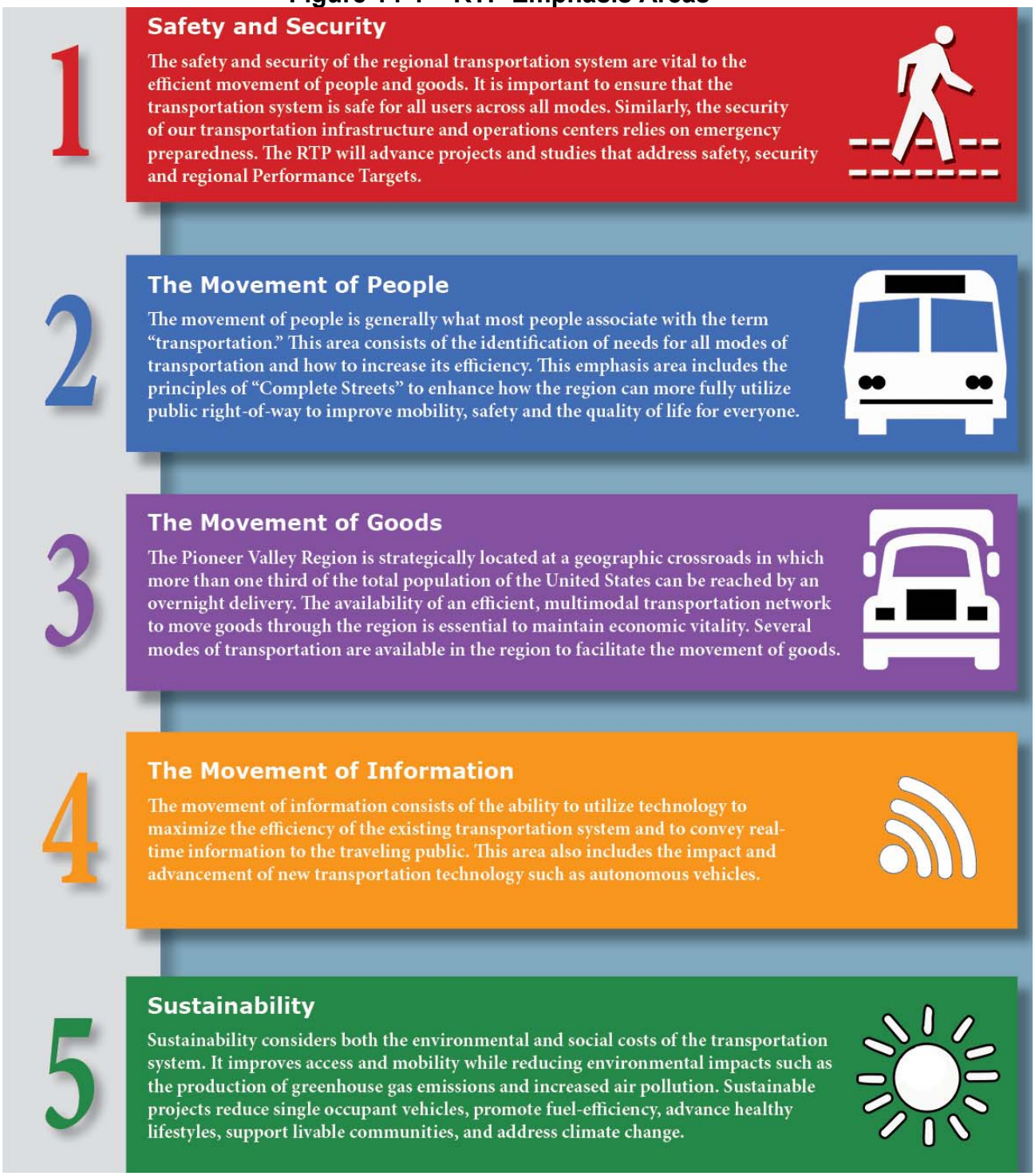
The vision of the RTP focuses on the attainment of a safe and dependable transportation system. To achieve this vision and its associated goals, regional transportation needs have been identified. The second step is to develop appropriate strategies to address these needs while adhering to the policies and objectives of the RTP. The third and final step is to advance planning studies and implement improvement projects that will enhance the transportation system in a manner consistent with our vision.

Emphasis areas were identified 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 (S&S)
- The Movement of People (MoP)
- The Movement of Goods (MoG)
- The Movement of Information (MoI)
- Sustainability (S)

The transportation emphasis areas are related to each of the thirteen Regional Transportation Goals. Needs and Strategies were developed for each emphasis area to advance each of the thirteen goals without the need for repetitiveness. More information on the five RTP Emphasis Areas is presented in Figure 14-1.

Figure 14-1 – RTP Emphasis Areas



A. NEEDS

Regional transportation needs have been identified and summarized by emphasis area in Tables 14-1 – 14-5. 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 – Safety and Security Needs (S&S)

1	Reduce the number of fatal and incapacitating injury crashes for bicyclists, pedestrians and vehicles in the region.	Ongoing
2	Address ongoing construction activities, special events and major incidents that can negatively impact emergency responders.	Ongoing
3	Improve safety at freight facilities and at-grade railroad crossings.	Ongoing
4	Improve knowledge and compliance with existing Emergency Evacuation plans.	Ongoing
5	Protect critical/at-risk regional transportation infrastructure.	Ongoing
6	Ensure the safety and security of mass transit facilities and equipment.	Ongoing
7	Provide for the safety and security of hazardous materials while in transportation and in storage.	Immediate
8	Improve access to driver, bicycle, and pedestrian education.	Immediate
9	Mitigate roadways that are unsuitable for bicycles, pedestrians and transit users.	Immediate
10	Identify proper resources for communities to maintain bridges and culverts under their jurisdiction.	Immediate

Table 14-2 – Needs to Enhance the Movement of People (MoP)

1	Proper integration of complete streets, traffic calming, parking and connectivity into transportation improvements.	Ongoing
2	Monitor peak hour congestion in the region.	Ongoing
3	Expand the existing bicycle and pedestrian network.	Ongoing
4	Maintain equity in providing transportation services and access throughout the region.	Ongoing
5	Maintain and increase access to national passenger rail service in the Pioneer Valley.	Ongoing
6	Address the requirements of an aging population in the regional transportation system.	Ongoing
7	Improve coordination and notification of the review of roadway improvement projects.	Ongoing
8	Secure adequate, dependable and equitable funding for a balanced regional transportation system that serves both urban and rural areas in the region.	Immediate
9	Increase the number of riders using transit to commute to work and school.	Immediate
10	Expand transit options for inter-city, inter-regional passenger trips.	Immediate
11	Identify transportation options for underserved populations to access designated heating and cooling centers.	Immediate
12	Expand opportunities for tourism along designated Scenic Byways.	Future

Table 14-3 – Needs to Enhance the Movement of Goods (MoG)

1	Support the development and maintenance of short line and regional railroads.	Ongoing
2	Improve the communication between private carriers and state and local officials.	Ongoing
3	Increase opportunities for air cargo in the region.	Ongoing
4	Improve coordination with class one carriers serving the region.	Immediate
5	Consider impacts on freight when making future transportation investments.	Future

Table 14-4 – Needs to Enhance the Movement of Information (MoI)

1	Improve distribution and access of real-time highway and transit information.	Ongoing
2	Coordinate efficient use of existing rights of way to house communication infrastructure.	Ongoing
3	Educate communities on the advantages of ITS and expand the use of ITS in the region.	Ongoing
4	Consider the impacts of outdated navigation applications that provide incorrect travel directions.	Ongoing
5	Increase public and community involvement in the transportation planning process.	Ongoing
6	Improve the availability of high speed internet and wireless communication access in the region.	Immediate
7	Develop and implement policies on autonomous vehicles.	Immediate
8	Improve access to on demand services as smart phones and cellular service are not easily available to low income households and rural areas.	Immediate

Table 14-5 – Summary of Needs to Enhance Sustainability (S)

1	Protect existing natural, historical, and cultural resources.	Ongoing
2	Reduce vehicle miles traveled in the region to minimize impacts on air quality, greenhouse gas emissions and energy consumption.	Ongoing
3	Raise the average vehicle occupancy rate for the region.	Ongoing
4	Consider the impacts of large scale development on surrounding communities.	Ongoing
5	Reduce impervious surfaces and stormwater runoff from roads and highways.	Ongoing
6	Promote transit oriented development and pedestrian friendly development.	Immediate
7	Reduce visual and light pollution while ensuring pedestrian and bicycle visibility.	Immediate
8	Incorporate renewable energy into transportation improvement projects and transportation facilities.	Future
9	Reduce sprawl and foster investment in existing urban areas.	Future
10	Provide for fish and wildlife migration and passage in transportation projects.	Future

B. STRATEGIES

Strategies were developed to address the regional needs identified for each emphasis area. These strategies are summarized in Table 14-6 – 14-10. 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.

Recognizing that regional strategies can address more than one need, a third column has been added to each strategy table to identify the corresponding regional need(s). This column is abbreviated for space considerations and includes the Emphasis Area abbreviation followed by the corresponding need number(s) from Tables 14-1 – 14-5. Each table has also been color coded by Emphasis Area to match Figure 14-1.

Table 14-6 – Safety and Security Strategies

		Priority	Need(s) Addressed
1	Develop a regional list of high crash locations. Incorporate "Vision Zero" strategies in safety planning.	Ongoing	S&S 1,9 S 7
2	Work with appropriate agencies to improve the consistency of crash records and reporting to assist in identifying the contributing factors to crashes, fatalities, and incapacitating injuries.	Ongoing	S&S 1
3	Provide accommodations for pedestrians, transit users, and bicyclists in roadway and bridge design and the maintenance of existing facilities. Promote connectivity as part of all transportation improvement projects.	Ongoing	S&S 1,9
4	Implement communications and ITS technologies to improve public transit safety, and security.	Ongoing	S&S 2,6
5	Develop an inventory of critical transportation choke points, haz-mat routes, and users.	Ongoing	S&S 5,7
6	Promote the Safe Routes to School program.	Ongoing	S&S 1,8
7	Promote and advance the use of roadway safety audits in the Pioneer Valley.	Ongoing	S&S 1
8	Work with emergency responders to update regional evacuation plans.	Ongoing	S&S 4
9	Identify and advocate for additional revenue sources to bring the regional transportation system into a state of good repair.	Immediate	S&S 10, MoP 8
10	Improve intersection geometry and upgrade traffic signal control equipment to improve safety. Consider roundabouts as alternatives to new traffic signals.	Immediate	S&S 1
11	Develop appropriate educational resources to promote safety for drivers, bicyclists, transit users, and pedestrians.	Immediate	S&S 8
12	Limit opportunities to access freight rail facilities and infrastructure.	Immediate	S&S 3

Table 14-7 – Strategies to Assist in the Movement of People

		Priority	Need(s) Addressed
1	Seek innovative methods to increase transit ridership, including express routes and flex vans.	Ongoing	MoP 6,8,9 S 2,3,6
2	Monitor congested areas using the regional Congestion Management Process (CMP).	Ongoing	MoP 2
3	Develop a regional list of top congested locations.	Ongoing	MoP 2
4	Promote the implementation of cycle tracks.	Ongoing	MoP 3
5	Advance and promote the principles of pavement management. Invest in the repair and maintenance of existing transportation infrastructure.	Ongoing	MoP 8
6	Conduct parking studies for downtown areas and village centers for all modes of transportation. Identify locations for park and ride lots and supporting express transit service.	Ongoing	MoP 9,10 S&S 9
7	Work with local communities to incorporate the concepts of Complete Streets and Traffic Calming into transportation improvement projects.	Ongoing	MoP 1,3 S&S 9
8	Maintain equity in providing transportation services and access throughout the region.	Ongoing	MoP 4 MoI 8
9	Incorporate TAP eligible components into transportation improvement projects.	Ongoing	MoP 12
10	Develop a comprehensive Commuter Rail network.	Immediate	MoP 5 S 2,3,6
11	Work with the State and local communities to enhance education and use of GeoDOT and the MaPIT tool.	Immediate	MoP 7
12	Advocate for better collaboration and coordination between all transportation service providers to allow for more opportunities to provide connections between existing services.	Immediate	MoP 5,10,11
13	Identify sources of revenue for local transportation projects.	Immediate	MoP 8
14	Promote compact “Village Center” development to include senior and low-income housing, access to healthy food and medical services via a variety of modes of transportation.	Future	MoP 3,6
15	Encourage private connections to the regional bikeway network.	Future	MoP 3

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

		Priority	Need(s) Addressed
1	Enhance directional and guide signs to/from the regional highway system and major destinations.	Ongoing	MoG 1,3
2	Meet with class one carriers on a regular basis to enhance the regional freight rail network.	Ongoing	MoG 4
3	Incorporate appropriate design measures in roadway improvement projects to accommodate freight movements.	Ongoing	MoG 2,5
4	Improve the connections between the national highway network and air and rail intermodal terminals, freight yards, and distribution centers.	Immediate	MoG 1,3
5	Develop incentives to encourage businesses to utilize a mix of freight transportation alternatives.	Immediate	MoG 1,3
6	Identify and mitigate vertical clearance issues at underpasses.	Immediate	MoG 5
7	Use the regional CMP to identify areas of freight congestion.	Immediate	MoG 1,2,3 MoP 2

Table 14-9 – Strategies to Enhance the Movement of Information

		Priority	Need(s) Addressed
1	Encourage the integration of cameras, security devices and other ITS equipment as part of transit and roadway improvement projects.	Ongoing	MoI 1
2	Provide training for local communities and stakeholders to increase their understanding of various ITS technologies and equipment.	Ongoing	MoI 3
3	Ensure consistency with the ITS Regional Architecture for Western Massachusetts.	Ongoing	MoI 1,2,3,6,7
4	Monitor emerging information and communications technologies to stay current with state-of-the-art information systems and identify opportunities for expansion of existing service.	Ongoing	MoI 1,7,8
5	Expand efforts to incorporate more feedback into the regional transportation planning process.	Ongoing	MoI 5 MoP 7
6	Continue to refine and improve the regional TEC project prioritization system as necessary.	Ongoing	MoI 5 MoP 7
7	Educate local communities on the project development process.	Ongoing	MoI 5 MoP 7
8	Encourage and promote telecommuting and video conferencing.	Ongoing	MoI 5 S 2
9	Expand real-time passenger and travel information systems.	Immediate	MoI 1,3
10	Pursue public/private partnerships to reduce costs and enhance information access.	Immediate	MoI 2,6
11	Pursue relationships with application developers to ensure they have access to the latest transportation network.	Future	MoI 4
12	Incorporate best practices to accommodate autonomous vehicles in infrastructure projects.	Future	MoI 7

Table 14-10 – Strategies that Enhance Sustainability

		Priority	Need(s) Addressed
1	Mitigate the adverse impact of sprawl by creating incentives for downtown revitalization, promoting smart growth and mixed use development.	Ongoing	S 2,3,4,9
2	Divert highway runoff through stormwater Best Management Practices, such as rain gardens.	Ongoing	S 5
3	Restore or maintain connected habitats that allow for movement of fish, water, and wildlife.	Ongoing	S 1,10
4	Encourage the use of permeable materials and reduce the use of concrete.	Ongoing	S 5
5	Assist local communities with their sub division needs.	Ongoing	S 4,6
6	Designate wild and scenic corridors along highways and streams of historic and natural significance to promote tourism.	Ongoing	S 1
7	Implement the Regional Clean Energy Plan to promote energy efficient travel modes and encourage local fleets to use clean fuels.	Ongoing	S 2,3
8	Implement transportation based strategies identified in local Hazard Mitigation Plans.	Ongoing	S 1
9	Encourage the planting of shade trees in urban areas and along shared use paths to improve air quality and modulate extreme weather conditions.	Ongoing	S 6,8
10	Work with major employers to develop incentives to decrease single occupant vehicle use.	Immediate	S 2,3,4 MoI 6
11	Mitigate the impacts of roadway salt and chemical usage during snow season.	Immediate	S 1
12	Refer new TIP projects to the Pioneer Valley Sustainability Toolkit.	Immediate	S 5,7,8,10
13	Incorporate energy efficient lighting, solar power, and electric vehicle charging stations as part of transportation improvement projects.	Immediate	S 7,8
14	Improve education and enforcement of idling reduction programs to reduce greenhouse gas emissions.	Immediate	S 2
15	Identify hazardous locations susceptible to drought and flooding along major roadways.	Immediate	S 1
16	Prohibit billboards and screen lighting on highways.	Future	S 7

C. PROJECTS

The projects section of the 2020 Regional Transportation Plan was reorganized to provide greater clarity. In previous versions of this document, every approved project as well as any future project believed to be ready for construction within the life of the plan was identified in this section. Instead, PVPC has identified three types of projects to be included in this section:

- Projects included in the 2020-2024Transportation Improvement Program (TIP) (Table 14-12)
- Major Regional projects (Table 14-13)
- Visionary projects (Table 14-14)

Major regional projects are defined as projects with an inflated cost greater than $20 million. Visionary projects include any project that either does not fit into financial constraint due to cost and/or a priority project that may not be ready to construct during the lifetime of this plan. A listing of all approved projects, major projects and visionary projects can be found in the appendix to the RTP. Chapter 15 of the RTP provides additional information on the anticipated transportation revenue over the life of the plan and the regional scenario for how transportation funding can be allocated by the type of project.

The impacts 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. This information is summarized in Chapter 13.

1. PROJECT PRIORITY CRITERIA AND SELECTION

In 2014 PVPC with the assistance of the JTC completed a comprehensive update to the Transportation Evaluation Criteria (TEC) for the PVMPO. The purpose of the update was to bring the TEC up to the latest federal requirements. In 2018, PVPC staff with the assistance of the JTC reviewed the effectiveness of the TEC to ensure the criteria were working as anticipated and met the requirements of the FAST Act. All projects included in the TIP have been evaluated and assigned a priority rating using the TEC scoring as adopted by the MPO. This process is used as a management tool to identify projects of regional priority and program them in the TIP. Table 14-11 provides a summary of the TEC scoring.

Table 14-11 – TEC Scoring Summary

System Preservation, Modernization and Efficiency	Livability	Mobility	Smart Growth and Economic Development	Safety and Security	Environment and Climate Change	Quality of Life	Environmental Justice and Title VI
Improves Substandard Pavement	Design is consistent with Complete Streets policies	Improves efficiency, reliability and attractiveness of public transit	Encourages development around existing infrastructure	Reduces number and severity of collisions	Preserves floodplains and wetlands	Enhances or preserves greenways and blueways	Reduces and limits disproportionate impacts on an EJ community
8	3	4	2	7	1	1	0.5
Improves Intersection Operations	Provides multi-modal access to a downtown, village center, or employment center	Improves existing peak hour LOS	Prioritizes transportation investments that support land use and economic development goals	Promotes safe and accessible pedestrian and bike environment	Promotes green infrastructure and low impact development to reduce stormwater impacts	Improves access to parks, open lands and open space	Reduces and limits disproportionate impacts on a Title VI community
6	2	6	1	5	2	1	0.5
In a Congestion Management Process Area	Reduces auto-dependency	Reduces traffic congestion	Provides services to a TOD, TND or cluster development district	Improves emergency response	Reduced impervious surfaces	Improves access to jobs	Improves transit for EJ populations
5	2	7	0.5	4	0.5	2	1
	Project serves a targeted development site		Supports mixed-use downtowns and village centers		Protects or enhances environmental assets	Preserves historical and cultural resources	Improves transit for Title VI populations
	2		0.5		0.5	0.5	1
	Completes off-road bike and ped network		Improves Intermodal Connections		Supports Brownfield redevelopment	Preserves prime agricultural land	Creates an EJ Burden
	3		4		0.5	0.5	-5
			Reduces congestion on freight routes		Improves air quality	Provides safe and reliable access to education	Creates a Title VI Burden
			2		1	0.5	-5
					Reduces CO2 emissions	Supports designated scenic byways	
					1	0.5	
					Promotes mode shift	Implements ITS Strategies	
					1	2	
					Improves fish and wildlife passage	Improves Network Wayfinding	
					1	1	
					Supports Green Communities	Health Impact Assessment	
					0.5	1	
					Improves storm resilience	Length of Time Project has been in queue for TIP funding	
					3	1	
Maximum Score							
19	**12**	**17**	**10**	**16**	**12**	**11**	**3**

2. Development of the FY2020 – FY2024 TIP

As the lead planning agency for the MPO, PVPC accepts the responsibility for developing the TIP in a cooperative process with members of the MPO and the general public. The final TIP is voted on for endorsement at a formal meeting of the MPO. The endorsed TIP project listing is included in the State Transportation Improvement Program (STIP) and requires endorsement by the Governor.

The MPO relies on a transportation advisory committee, the Joint Transportation Committee (JTC) to carry out the cooperative process during TIP development. The JTC is a group of community appointed officials, MPO member representatives, public and private transportation providers, citizens, and special interest groups and agencies. The JTC establishes and recommends to the MPO procedures for submitting, prioritizing and selecting projects for the TIP. PVPC staff provides the technical support to conduct the TIP development activities for the JTC.

Transportation improvement projects included as part of the FY2020 – FY2024 TIP for the Pioneer Valley Metropolitan Planning Organization must come from a conforming regional transportation plan. Projects included in the FY2020 – FY2024 TIP conform to the 2016 Update the RTP and are presented in this plan for informational purposes. A summary of these projects is presented in Table 14-12.

Table 14-12 – 2020-2024 Transportation Improvement Program (TIP)

TIP Year	Project ID	Municipality	Project	Funding	Total Funds			Additional Information
2020	607502	Northampton	NORTHAMPTON- INTERSECTION IMPROVEMENTS AT KING STREET, NORTH STREET & SUMMER STREET AND AT KING STREET & FINN STREET	STBG	$ 2,460,910	$ 1,968,728	$ 492,182	Construction / (YOE $3,384,309) / 65 TEC / 25% STBG, CMAQ
2020	607502	Northampton	NORTHAMPTON- INTERSECTION IMPROVEMENTS AT KING STREET, NORTH STREET & SUMMER STREET AND AT KING STREET & FINN STREET	CMAQ	$ 923,399	$ 738,719	$ 184,680	Construction / (YOE $3,384,309) / 65 TEC / 25% STBG, CMAQ
2020	604434	Chicopee	CHICOPEE- RECONSTRUCTION & RELATED WORK ON FULLER ROAD, FROM MEMORIAL DR (RTE 33) TO SHAWINIGAN DR (2.0 MILES)	STBG	$ 6,025,658	$ 4,820,526	$ 1,205,132	Construction / (YOE $8,034,211) / 49.5 TEC / 75% STBG, HSIP
2020	604434	Chicopee	CHICOPEE- RECONSTRUCTION & RELATED WORK ON FULLER ROAD, FROM MEMORIAL DR (RTE 33) TO SHAWINIGAN DR (2.0 MILES)	HSIP	$ 2,008,553	$ 1,807,698	$ 200,855	Construction / (YOE $8,034,211) / 49.5 TEC / 75% STBG, HSIP
2020	608236	Northampton	NORTHAMPTON- RECONSTRUCTION OF DAMON ROAD, FROM ROUTE 9 TO ROUTE 5, INCLUDES DRAINAGE SYSTEM REPAIRS & SLOPE STABILIZATION AT THE NORWOTTUCK	STBG	$10,043,653	$ 8,034,922	$ 2,008,731	Construction / (YOE $10,043,653) / 66.5 TEC / PS&E STBG
2020	608718	Springfield	SPRINGFIELD- INTERSECTION IMPROVEMENTS AT BERKSHIRE AVENUE, COTTAGE AND HARVEY STREETS	STBG	$ 1,254,413	$ 1,003,530	$ 250,883	Construction / (YOE $2,280,751) / 41.5 TEC Score 25% STBG, HSIP
2020	608718	Springfield	SPRINGFIELD- INTERSECTION IMPROVEMENTS AT BERKSHIRE AVENUE, COTTAGE AND HARVEY STREETS	HSIP	$ 1,026,338	$ 923,704	$ 102,634	Construction / (YOE $2,280,751) / 41.5 TEC Score 25% STBG, HSIP
2020	PV0001	Multiple	NORTHAMPTON, AMHERST, CHICOPPE, EASTHAMPTON, HADLEY, HOLYOKE, SOUTH HADLEY, SPRINGFIELD, and WEST SPRINGFIELD: ValleyBike share (phase II)	STBG	$ 1,200,000	$ 960,000	$ 240,000	Construction / YOE $1,200,000 / 35.5 TEC STBG
2020	PV0002	Multiple	P 21 Express Year 3	CMAQ	$ 500,000	$ 400,000	$ 100,000	Funding Year 3 / STBG
2020	608631	Westhampton	WESTHAMPTON- BRIDGE REPLACEMENT, W-27-005, KINGS HIGHWAY OVER N BRANCH MANHAN RIVER	STBG-BR-OFF	$ 1,937,318	$ 1,549,854	$ 387,464	
2020	400103	Westfield	WESTFIELD- BRIDGE REPLACEMENT, W-25-006, ROUTE 10/202 (SOUTHWICK ROAD) OVER THE LITTLE RIVER	NHPP-On	$13,276,980	$10,621,584	$ 2,655,396	
2020	606552	Northampton	NORTHAMPTON- BRIDGE RECONSTRUCTION, N-19-059, I-91 OVER US 5/BMRR & N-19-060, I-91 OVER HOCKANUM ROAD	NHPP-On	$ 4,671,793	$ 3,737,434	$ 934,359	AC Year 1 of 5, Total Cost $56,891,767
2020	608473	South Hadley	SOUTH HADLEY - RESURFACING AND RELATED WORK ON ROUTE 116	NHPP	$ 4,987,500	$ 3,990,000	$ 997,500	
2020	608575	Multiple	CHICOPEE TO HOLYOKE- GUIDE AND TRAFFIC SIGN REPLACEMENT ON I-391	HSIP	$ 1,861,310	$ 1,675,179	$ 186,131	
2020	602911	Chicopee	CHICOPEE- CONNECTICUT RIVERWALK & BIKEWAY CONSTRUCTION, FROM BOAT RAMP NEAR I-90 TO NASH FIELD (2.5 MILES), INCLUDES NEW BRIDGE C-13-060 OVER OVERFLOW CHANNEL	CMAQ	$ 3,041,445	$ 2,433,156	$ 608,289	
				2020 Total	$55,219,269	$44,665,036	$10,554,234	

Table 14-12 – 2020-2024 Transportation Improvement Program (TIP) Continued

TIP Year	Project ID	Municipality	Project	Funding	Total Funds			Additional Information
2021	607773	Westfield	WESTFIELD- IMPROVEMENTS & RELATED WORK ON ROUTE 20, COURT STEET & WESTERN AVENUE, LLOYDS HILL ROAD TO HIGH STREET/MILL STREET INTERSECTION (PHASE II)	STBG	$ 6,136,732	$ 4,909,386	$ 1,227,346	Construction / (YOE $8,479,708) / 52.5 TEC / 25% STBG,CMAQ,HSIP,TAP
2021	607773	Westfield	WESTFIELD- IMPROVEMENTS & RELATED WORK ON ROUTE 20, COURT STEET & WESTERN AVENUE, LLOYDS HILL ROAD TO HIGH STREET/MILL STREET INTERSECTION (PHASE II)	CMAQ	$ 669,323	$ 535,458	$ 133,865	Construction / (YOE $8,479,708) / 52.5 TEC / 25% STBG,CMAQ,HSIP,TAP
2021	607773	Westfield	WESTFIELD- IMPROVEMENTS & RELATED WORK ON ROUTE 20, COURT STEET & WESTERN AVENUE, LLOYDS HILL ROAD TO HIGH STREET/MILL STREET INTERSECTION (PHASE II)	HSIP	$ 1,115,769	$ 1,004,192	$ 111,577	Construction / (YOE $8,479,708) / 52.5 TEC / 25% STBG,CMAQ,HSIP,TAP
2021	607773	Westfield	WESTFIELD- IMPROVEMENTS & RELATED WORK ON ROUTE 20, COURT STEET & WESTERN AVENUE, LLOYDS HILL ROAD TO HIGH STREET/MILL STREET INTERSECTION (PHASE II)	TAP	$ 557,884	$ 446,307	$ 111,577	Construction / (YOE $8,479,708) / 52.5 TEC / 25% STBG,CMAQ,HSIP,TAP
2021	608782	Springfield	SPRINGFIELD- INTERSECTION IMPROVEMENTS AT COTTAGE STREET, INDUSTRY AVENUE AND ROBBINS ROAD	CMAQ	$ 2,858,325	$ 2,286,660	$ 571,665	Construction / (YOE $2,858,325) / 46.5 TEC Score 25% CMAQ
2021	608084	Amherst	AMHERST- IMPROVEMENTS & RELATED WORK ON ROUTES 9 & 116, FROM UNIVERSITY DRIVE TO SOUTH PLEASANT STREET (0.8 MILES)	STBG	$ 3,489,558	$ 2,791,646	$ 697,912	Construction / (YOE $4,048,448) / 53.5 TEC / 25% STBG, TAP
2021	608084	Amherst	AMHERST- IMPROVEMENTS & RELATED WORK ON ROUTES 9 & 116, FROM UNIVERSITY DRIVE TO SOUTH PLEASANT STREET (0.8 MILES)	TAP	$ 558,890	$ 447,112	$ 111,778	Construction / (YOE $4,048,448) / 53.5 TEC / 25% STBG, TAP
2021	605032	Hadley	HADLEY- RECONSTRUCTION ON ROUTE 9, FROM MIDDLE STREET TO MAPLE/SOUTH MAPLE STREET	STBG	$10,917,509	$ 8,734,007	$ 2,183,502	Construction / (YOE $24,849,741) A/C Year 1 of 2 FFY 2021 $10,917,509, FFY 2022 $13,932,231 /61 TEC / 25% / STBG
2021	608460	Hadley	HADLEY- BRIDGE REPLACEMENT, H-01-005, BAY ROAD (ROUTE 47) OVER THE FORT RIVER	NHPP-On	$ 5,714,160	$ 4,571,328	$ 1,142,832	
2021	606552	Northampton	NORTHAMPTON- BRIDGE RECONSTRUCTION, N-19-059, I-91 OVER US 5/BMRR & N-19-060, I-91 OVER HOCKANUM ROAD	NHPP-On	$ 9,539,115	$ 7,631,292	$ 1,907,823	AC Year 2 of 5, Total Cost $56,891,767
2021	608487	Westfield	WESTFIELD - RESURFACING AND RELATED WORK ON ROUTES 10 AND 202	NHPP	$ 2,730,000	$ 2,184,000	$ 546,000	
2021	608489	Wilbraham	WILBRAHAM - RESURFACING AND RELATED WORK ON ROUTE 20	NHPP	$ 8,283,600	$ 6,626,880	$ 1,656,720	
2021	608413	Northampton	NORTHAMPTON- ROCKY HILL GREENWAY MULTI-USE TRAIL, FROM THE MANHAN RAIL TRAIL TO ROCKY HILL ROAD (0.4 MILES)	CMAQ	$ 812,026	$ 649,621	$ 162,405	
				2021 Total	$53,382,891			

Table 14-12 – 2020-2024 Transportation Improvement Program (TIP) Continued

TIP Year	Project ID	Municipality	Project	Funding	Total Funds			Additional Information
2022	608374	West Springfield	WEST SPRINGFIELD- RECONSTRUCTION OF MEMORIAL AVENUE (ROUTE 147), FROM COLONY ROAD TO THE MEMORIAL AVENUE ROTARY (1.4 MILES)	STBG	$ 4,251,369	$ 3,401,095	$ 850,274	Construction / (YOE $24,348,731) AC Year 1 of 2 FFY 2022 $4,251,369 FFY2023 $20,097,362 / 70 TEC / 25% / STBG
2022	608577	Easthampton	EASTHAMPTON- IMPROVEMENTS AND RELATED WORK ON UNION STREET (ROUTE 141) FROM PAYSON AVENUE TO HIGH STREET (0.36 MILES)	STBG	$ 3,560,664	$ 2,848,531	$ 712,133	Construction / (YOE $3,560,664) / 60 TEC / Pre 25% STBG
2022	605032	Hadley	HADLEY- RECONSTRUCTION ON ROUTE 9, FROM MIDDLE STREET TO MAPLE/SOUTH MAPLE STREET	STBG	$ 11,284,113	$ 9,027,290	$ 2,256,823	Construction / (YOE $24,849,741) A/C Year 2 of 2 FFY 2021 $10,917,509, FFY 2022 $13,932,231 /61 TEC / 25% STBG, HSIP, TAP
2022	605032	Hadley	HADLEY- RECONSTRUCTION ON ROUTE 9, FROM MIDDLE STREET TO MAPLE/SOUTH MAPLE STREET	HSIP	$ 2,118,494	$ 1,906,645	$ 211,849	Construction / (YOE $24,849,741) A/C Year 2 of 2 FFY 2021 $10,917,509, FFY 2022 $13,932,231 /61 TEC / 25% STBG, HSIP, TAP
2022	605032	Hadley	HADLEY- RECONSTRUCTION ON ROUTE 9, FROM MIDDLE STREET TO MAPLE/SOUTH MAPLE STREET	TAP	$ 529,624	$ 423,699	$ 105,925	Construction / (YOE $24,849,741) A/C Year 2 of 2 FFY 2021 $10,917,509, FFY 2022 $13,932,231 /61 TEC / 25% STBG, HSIP, TAP
2022	606450	Holyoke	HOLYOKE-TRAFFIC SIGNAL UPGRADES AT 15 INTERSECTIONS ALONG HIGH & MAPLE STREETS	STBG	$ 5,095,339	$ 4,076,271	$ 1,019,068	Construction / (YOE $9,884,646 ($4,789,307 in statewide funding) = $5,095,339) / 63 TEC / 25 / STBG
2022	608869	Northampton	NORTHAMPTON- BRIDGE REPLACEMENT, N-19-068, OLD SPRINGFIELD ROAD OVER THE MILL RIVER	STBG-BR-OFF	$ 3,981,000	$ 3,184,800	$ 796,200	
2022	608847	Wales	WALES- BRIDGE REPLACEMENT, W-02-002, HOLLAND ROAD OVER WALES BROOK	STBG-BR-OFF	$ 540,096	$ 432,077	$ 108,019	
2022	608846	Monson	MONSON- BRIDGE REPLACEMENT, M-27-015, OLD WALES ROAD OVER CONANT BROOK	STBG-BR-OFF	$ 1,742,784	$ 1,394,227	$ 348,557	
2022	606552	Northampton	NORTHAMPTON- BRIDGE RECONSTRUCTION, N-19-059, I-91 OVER US 5/BMRR & N-19-060, I-91 OVER HOCKANUM ROAD	NHPP-On	$ 11,128,545	$ 8,902,836	$ 2,225,709	AC Year 3 of 5, Total Cost $56,891,767
2022	608466	Multiple	BELCHERTOWN-GRANBY RESURFACING AND RELATED WORK ON ROUTE 202	NHPP	$ 3,372,062	$ 2,697,650	$ 674,412	
2022	604209	Multiple	HOLYOKE-WEST SPRINGFIELD- REHABILITATION OF ROUTE 5	NHPP	$ 14,489,928	$ 11,591,942	$ 2,897,986	
2022	606450	Holyoke	HOLYOKE- TRAFFIC SIGNAL UPGRADES AT 15 INTERSECTIONS ALONG HIGH & MAPLE STREETS	CMAQ	$ 4,789,307	$ 3,831,446	$ 957,861	
2022	608565	Springfield	SPRINGFIELD- IMPROVEMENTS ON ST. JAMES AVENUE AT ST. JAMES BOULEVARD AND CAREW STREET	HSIP	$ 2,592,000	$ 2,332,800	$ 259,200	
2022	608560	Springfield	SPRINGFIELD- IMPROVEMENTS ON ST. JAMES AVENUE AT TAPLEY STREET	HSIP	$ 1,716,574	$ 1,544,916	$ 171,657	
2022	608719	Multiple	AMHERST- BELCHERTOWN- NORWOTTUCK RAIL TRAIL RESURFACING, FROM STATION ROAD IN AMHERST TO WARREN WRIGHT ROAD IN BELCHERTOWN (1.5 MILES)	CMAQ	$ 1,620,000	$ 1,296,000	$ 324,000	
2022	608157	Springfield	SPRINGFIELD- MCKNIGHT COMMUNITY TRAIL CONSTRUCTION, FROM ARMORY STREET TO HAYDEN AVENUE (1.5 MILES)	CMAQ	$ 3,694,624	$ 2,955,699	$ 738,925	
				2022 Total	$ 76,506,523			

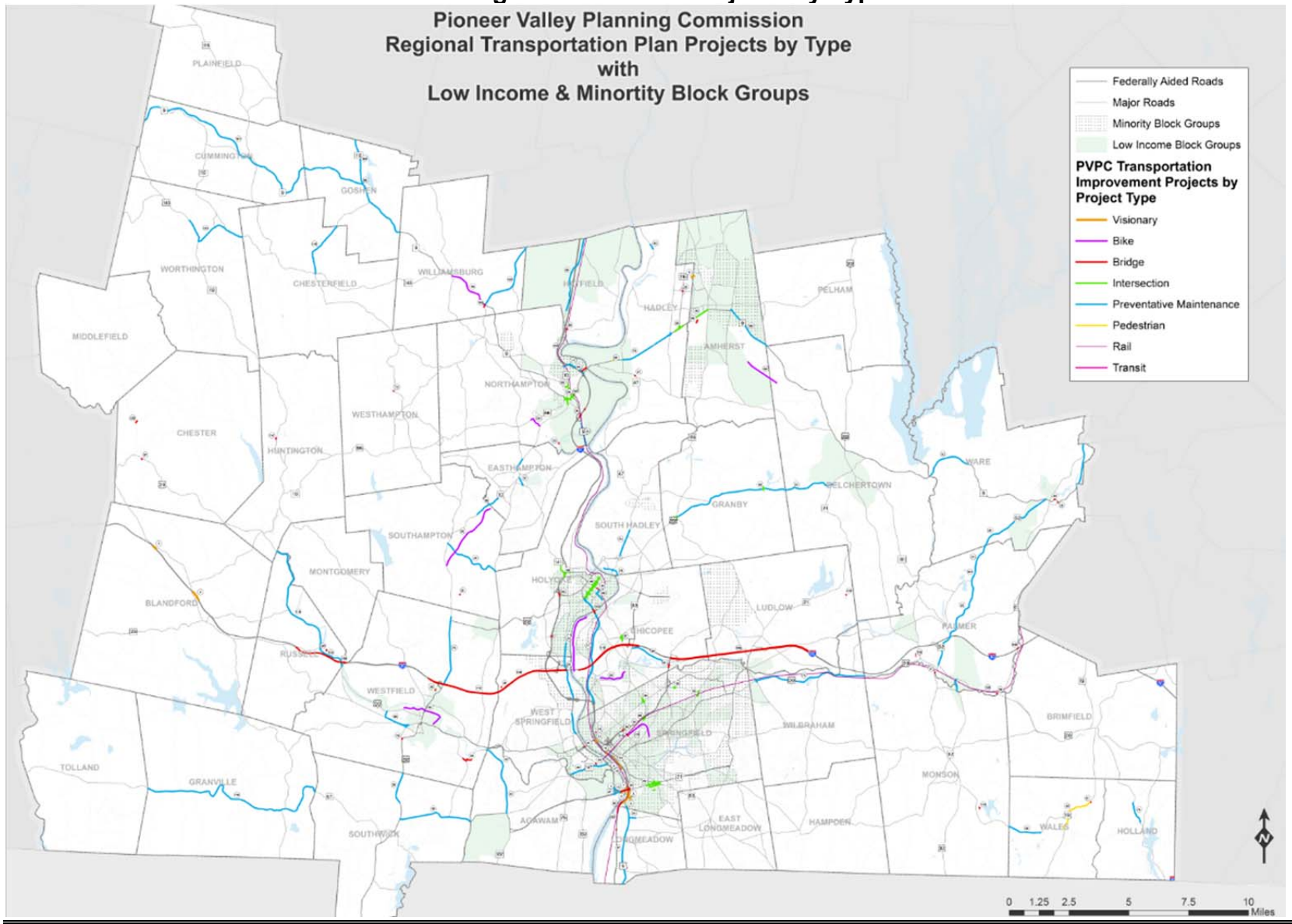
Table 14-12 – 2020-2024 Transportation Improvement Program (TIP) Continued

TIP Year	Project ID	Municipality	Project	Funding	Total Funds			Additional Information
2023	608374	West Springfield	WEST SPRINGFIELD- RECONSTRUCTION OF MEMORIAL AVENUE (ROUTE 147), FROM COLONY ROAD TO THE MEMORIAL AVENUE ROTARY (1.4 MILES)	STBG	$14,427,945	$11,542,356	$ 2,885,589	Construction / (YOE $24,348,731) AC Year 2 of 2 FFY 2022 $4,251,369 FFY2023 $20,097,362 / 70 TEC / 25% / STBG, CMAQ, TAP
2023	608374	West Springfield	WEST SPRINGFIELD- RECONSTRUCTION OF MEMORIAL AVENUE (ROUTE 147), FROM COLONY ROAD TO THE MEMORIAL AVENUE ROTARY (1.4 MILES)	CMAQ	$ 3,239,667	$ 2,591,734	$ 647,933	Construction / (YOE $24,348,731) AC Year 2 of 2 FFY 2022 $4,251,369 FFY2023 $20,097,362 / 70 TEC / 25% / STBG, CMAQ, TAP
2023	608374	West Springfield	WEST SPRINGFIELD- RECONSTRUCTION OF MEMORIAL AVENUE (ROUTE 147), FROM COLONY ROAD TO THE MEMORIAL AVENUE ROTARY (1.4 MILES)	TAP	$ 809,917	$ 647,934	$ 161,983	Construction / (YOE $24,348,731) AC Year 2 of 2 FFY 2022 $4,251,369 FFY2023 $20,097,362 / 70 TEC / 25% / STBG, CMAQ, TAP
2023	608374	West Springfield	WEST SPRINGFIELD- RECONSTRUCTION OF MEMORIAL AVENUE (ROUTE 147), FROM COLONY ROAD TO THE MEMORIAL AVENUE ROTARY (1.4 MILES)	HSIP	$ 1,619,833	$ 1,457,850	$ 161,983	Construction / (YOE $24,348,731) AC Year 2 of 2 FFY 2022 $4,251,369 FFY2023 $20,097,362 / 70 TEC / 25% / STBG, CMAQ, TAP
2023	606895	Granby	GRANBY- IMPROVEMENTS @ 2 LOCATIONS ON ROUTE 202: SCHOOL STREET & FIVE CORNERS	STBG	$ 1,866,279	$ 1,493,023	$ 373,256	Construction / (YOE $2,865,964) / 42 TEC / 25% STBG, HSIP
2023	606895	Granby	GRANBY- IMPROVEMENTS @ 2 LOCATIONS ON ROUTE 202: SCHOOL STREET & FIVE CORNERS	HSIP	$ 999,685	$ 899,717	$ 99,969	Construction / (YOE $2,865,964) / 42 TEC / 25% STBG, HSIP
2023	608163	Wales	WALES- RECONSTRUCTION & IMPROVEMENTS ON MONSON ROAD, FROM THE MONSON T.L. TO REED HILL ROAD (1.5 MILES)	STBG	$ 4,185,828	$ 3,348,662	$ 837,166	Construction / YOE $4,158,828 / 39.5 TEC / 25% STBG
2023	609120	Ludlow	LUDLOW- BRIDGE REPLACEMENT, L-16-026, PINEY LANE OVER BROAD BROOK	STP-BR-OFF	$ 577,920	$ 462,336	$ 115,584	
2023	608848	Springfield	SPRINGFIELD- BRIDGE REPLACEMENT, S-24-016, ARMORY STREET OVER CSX MAINLINE	NHPP-On	$ 5,723,440	$ 4,578,752	$ 1,144,688	
2023	608853	Springfield	SPRINGFIELD- BRIDGE REPLACEMENT, S-24-026, ARMORY STREET OVER CSX	NHPP-On	$ 3,948,640	$ 3,158,912	$ 789,728	
2023	606552	Northampton	NORTHAMPTON- BRIDGE RECONSTRUCTION, N-19-059, I-91 OVER US 5/BMRR & N-19-060, I-91 OVER HOCKANUM ROAD	NHPP-On	$11,378,353	$ 9,102,682	$ 2,275,671	AC Year 4 of 5, Total Cost $56,891,767
2023	606156	Holyoke	HOLYOKE- RECONSTRUCTION OF I-91 INTERCHANGE 17 & ROUTE 141	HSIP	$ 6,735,389	$ 6,061,850	$ 673,539	
2023	607823	Southampton	SOUTHAMPTON- GREENWAY RAIL TRAIL CONSTRUCTION, FROM COLEMAN ROAD TO ROUTE 10 (3.5 MILES)	CMAQ	$ 6,810,409	$ 5,448,327	$ 1,362,082	
				2023 Total	$62,323,305			

Table 14-12 – 2020-2024 Transportation Improvement Program (TIP) Continued

TIP Year	Project ID	Municipality	Project	Funding	Total Funds			Additional Information
2024	608881	Longmeadow	LONGMEADOW- SPRINGFIELD- RESURFACING AND INTERSECTION IMPROVEMENTS ON LONGMEADOW STREET (ROUTE 5) AND CONVERSE STREET (0.84 MILES)	STBG	$ 6,064,675	$ 4,851,740	$ 1,212,935	Construction (YOE $6,064,675 / 57.5 TEC / Pre 25% / STBG
2024	609287	Worthington	WORTHINGTON- RECONSTRUCTION & RELATED WORK ON ROUTE 143 (PHASE II) FROM PERU T.L. TO COLD STREET	STBG	$ 9,957,440	$ 7,965,952	$ 1,991,488	Construction / (YOE $9,957,440) / 41 TEC / 75% Project Phase I funded in FFY 2019 Total project cost was $16,300,000 / STBG
2024	608717	Springfield	SPRINGFIELD- RECONSTRUCTION OF SUMNER AVENUE AT DICKINSON STREET AND BELMONT AVENUE (THE "X")	STBG	$ 6,972,689	$ 5,578,151	$ 1,394,538	Construction / YOE $11,672,689) 70.5 TEC / 25% STBG, CMAQ, HSIP, TAP
2024	608717	Springfield	SPRINGFIELD- RECONSTRUCTION OF SUMNER AVENUE AT DICKINSON STREET AND BELMONT AVENUE (THE "X")	CMAQ	$ 3,000,000	$ 2,400,000	$ 600,000	Construction / YOE $11,672,689) 70.5 TEC / 25% STBG, CMAQ, HSIP, TAP
2024	608717	Springfield	SPRINGFIELD- RECONSTRUCTION OF SUMNER AVENUE AT DICKINSON STREET AND BELMONT AVENUE (THE "X")	HSIP	$ 1,100,000	$ 990,000	$ 110,000	Construction / YOE $11,672,689) 70.5 TEC / 25% STBG, CMAQ, HSIP, TAP
2024	608717	Springfield	SPRINGFIELD- RECONSTRUCTION OF SUMNER AVENUE AT DICKINSON STREET AND BELMONT AVENUE (THE "X")	TAP	$ 600,000	$ 480,000	$ 120,000	Construction / YOE $11,672,689) 70.5 TEC / 25% STBG, CMAQ, HSIP, TAP
2024	606552	Northampton	NORTHAMPTON- BRIDGE RECONSTRUCTION, N-19-059, I-91 OVER US 5/BMRR & N-19-060, I-91 OVER HOCKANUM ROAD	NHPP-On	$ 20,173,960	$ 16,139,168	$ 4,034,792	AC Year 5 of 5, Total Cost $56,891,767
2024	609395	Multiple	BELCHERTOWN-WARE - PAVEMENT PRESERVATION AND RELATED WORK ON ROUTE 9	NHPP	$ 8,298,350	$ 6,638,680	$ 1,659,670	
				2024 Total	$ 56,167,114			

Figure 14-2 – RTP Projects by Type



3. Major Regional Projects

Major regional projects are defined as a project with an inflated project cost that exceeds $20,000,000. Over the next 5 years, there are several projects in the $20,000,000 range at various stages of design. These projects are competing with the complete backlog of projects for regional target funds. The PVMPO programs approximately $26,000,000 in regional target funds per federal fiscal year. On average the PVMPO funds 5 to 6 roadway project per fiscal year. It is difficult to commit 75% of regional target funds in a given year to a single project as less projects advance through the TIP process. As a result, it may take high scoring projects much longer to navigate the TIP process. The Major Regional Projects are listed in Table 14-13 and shown in Figure 14-2.

Table 14-13 – Major Regional Projects

Municipality	SID	Project Name and Description	Design	TEC Score	Programmed	4% Inflation
Agawam	603372	RECONSTRUCTION ON ROUTE 5 CONNECTOR TO ROUTE 57, INCLUDES A-05-013 & A-05-014	0	53.0	2020 RTP	$25,572,465
Hadley	605032	HADLEY- RECONSTRUCTION ON ROUTE 9, FROM MIDDLE STREET TO MAPLE/SOUTH MAPLE STREET	25	50.0	FFY 2020-2024 TIP	$24,849,741
Northampton	606552	NORTHAMPTON– BRIDGE REPLACEMENT, N-19-059, I-91 OVER US ROUTE 5 AND B&MRR, BRIDGE REPLACEMENT, N-19-060, I-91 OVER HOCKANUM ROAD AND IMPROVEMENTS TO I-91/INTERCHANGE 19			FFY 2020-2024 TIP	$61,534,135
West Springfield	608374	RECONSTRUCTION OF MEMORIAL AVENUE (ROUTE 147), FROM COLONY ROAD TO THE MEMORIAL AVENUE ROTARY (1.4 MILES)	25	70.0	FFY 2020-2024 TIP	$24,384,803
Williamsburg	608787	CONSTRUCTION OF THE "MILL RIVER GREENWAY" SHARED USE PATH	0	29.0	2020 RTP	$21,315,518
						$157,656,662

D. 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.

Table 14-14 – Visionary Projects

Project Type	Project Description	Estimated Cost
Region wide - Transit	UMass Maintenance Facility- Expansion for Articulated buses	$19,600,000
Region wide - High Speed Rail	East/West high speed rail Capital entire system -Boston to Springfield to Vermont/Canada Line	$785,000,000
New I-90 Interchange (currently under study)	Alternative 2 Blandford Maintenance Facility	$29,500,000.00
New I-90 Interchange (currently under study)	Alternative 3 Blandford Service Plaza	$34,000,000.00
Northampton Intermodal Facility	Northampton Intermodal Facility	$14,000,000.00
I-91 Viaduct Improvements - Pref. Alt (No Build)	All recommendations except near term bicycle and pedestrian improvements	$827,350,000.00

* These estimated costs assume some level of inflation but not at the federally required 4%/year.

1. I-91 Viaduct - Springfield

The Interstate 91 Viaduct Study was initiated by MassDOT to study alternatives for the future replacement of the elevated portion of the Interstate 91 in the city of Springfield. This study, completed in 2018, developed a series of conceptual alternatives that focus on potential structural changes to the I-91 Viaduct as well as improvements to improve safety and efficiency along the I-91 corridor. A copy of the full study is available at: https://www.mass.gov/lists/i-91-viaduct-study-documents#final-report-. All total, four alternatives, including a "no-build" alternative, were presented for consideration.

- Alternative 1 – Depressed Section of I-91 with Same Alignment
- Alternative 2 – Depressed Section of I-91 with New Alignment
- Alternative 3 – Elevated Viaduct
- No Build

At the conclusion of the study, the "No Build" alternative was viewed as the most beneficial long term improvement option for the I-91 Viaduct. The No Build alternative still had several near and mid-term improvement recommendations to improve safety and enhance the efficiency of the I-91 Corridor. Most near term improvement recommendations consisted of enhancements to the bicycle and pedestrian network and are included as part of the financially constrained section of the RTP. Proposed near and mid-term improvements for the southern section of I-91 are shown in Figure 14-3. Near-term improvements are summarized on pages 13 – 15 in Chapter 5 of the I-91 Viaduct Study. These lower cost bicycle and pedestrian improvements have been included as part of the financially constrained portion of the RTP.

Mid-term improvements consist of projects to improve safety along the existing curve on I-91 through Longmeadow, improvements to the existing ramps to Route 5 in Longmeadow, enhancements to the South End Bridge between Springfield and Agawam, and elimination of the existing Route 5/57 rotary in Agawam. All of the above projects are extremely beneficial but are not included in the financially constrained portion of the RTP due to their projected cost. Additional resources will need to be identified by MassDOT to advance these projects to construction. A summary of the mid-term I-91 improvement projects is provided in Table 14-15.

Figure 14-3 – Near and Mid-Term Improvements I-91 South Section

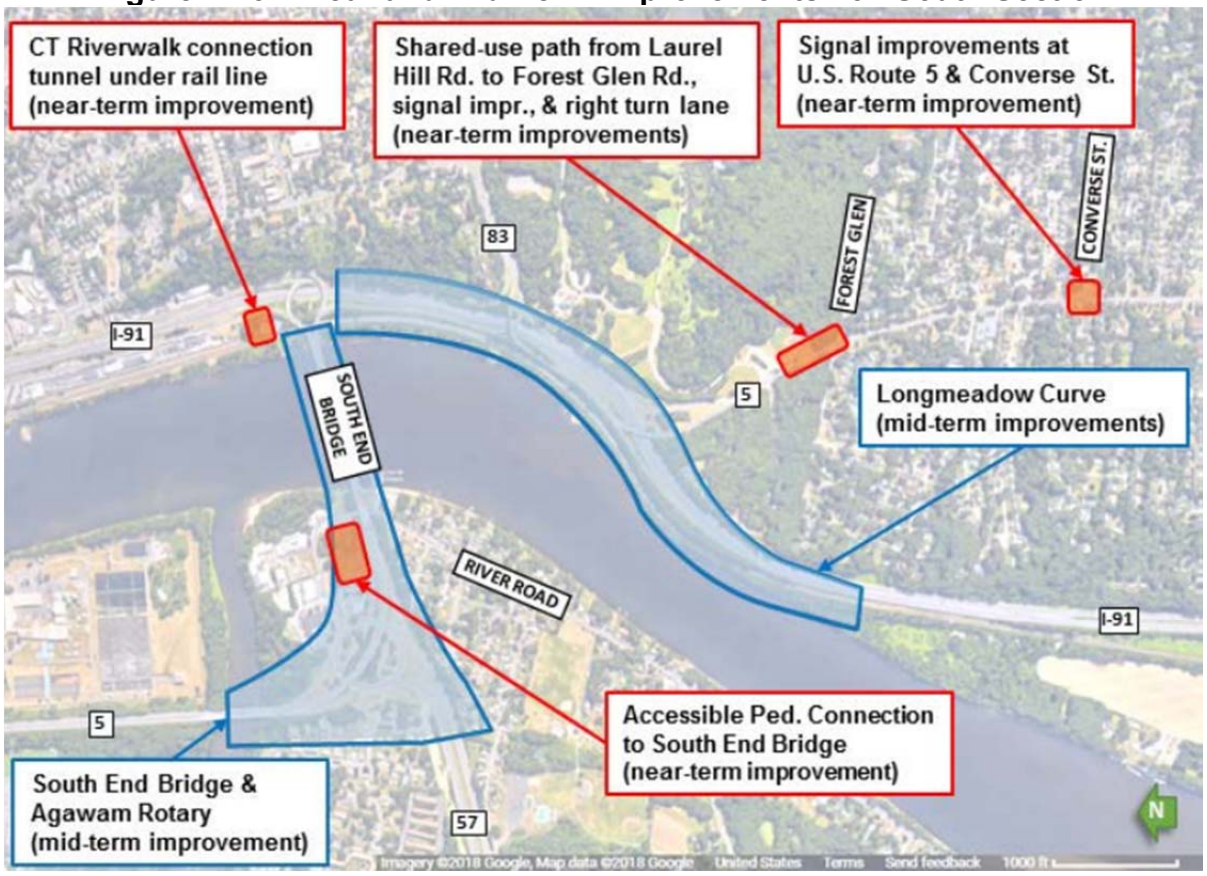


Table 14-15 – Mid-Term I-91 Improvements

Proposed Improvement Project	Estimated Cost
I-91 Longmeadow Curve Improvements	$212,750,000
Forest Park Bikeway to Springfield Riverwalk*	$19,750,000
South End Bridge Upgrades	$206,250,000
Agawam Rotary Elimination and Improvements	$156,600,000
I-291 to I-91 SB Ramp Relocation	$152,000,000
Plainfield Street (Springfield) Improvements	$76,000,000

* Estimate assumes construction concurrently with the Longmeadow curve.

2. I-90 Interchange Study

MassDOT is currently conducting a study to evaluate the feasibility of constructing a new interchange on the Massachusetts Turnpike (Interstate 90 (I-90), between Exits 2 and 3. More information on the study can be found on the project website: https://www.mass.gov/i-90-interchange-study. To date, the study has narrowed the alternatives down to three potential locations:

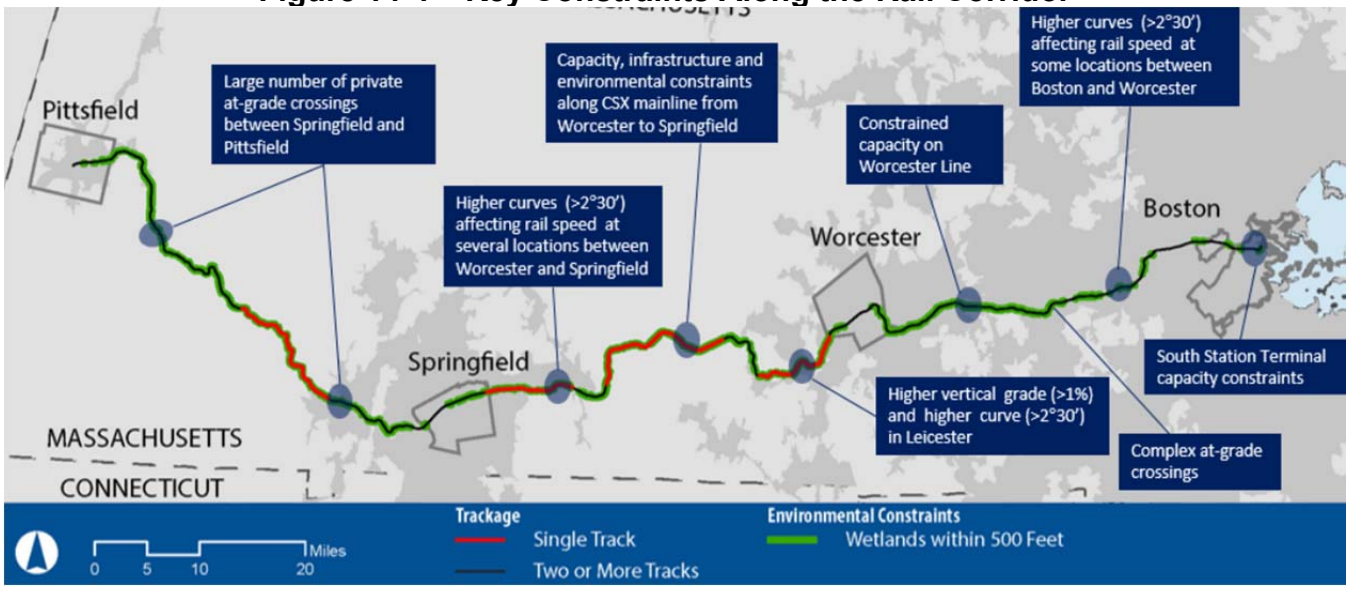
- Alternative 1 – Algerie Road in Otis, MA - $37.8 million
- Alternative 2 – Blandford Maintenance Facility in Blandford, MA - $29.5 million
- Alternative 3 – Blandford Service Plaza in Blandford, MA - $34.0 million

The Algerie Road location is located outside of the Pioneer Valley region but would serve residents of the region living in the western hilltowns. None of the three alternatives are included as part of the financially constrained portion of the RTP. An amendment to include the project in the RTP will be considered based on the recommendations of the MassDOT study.

3. East-West Passenger Rail Study

Passenger rail service from Boston to Springfield and Pittsfield is currently under study by MassDOT. The study will examine the costs, benefits, and investments necessary to implement passenger rail service at a speed and frequency to be a competitive travel option along this corridor. More information can be found on the study website: https://www.mass.gov/east-west-passenger-rail-study.

Figure 14-4 – Key Constraints Along the Rail Corridor



To date, there have been two meetings for the study. While we believe it is important to advance east/west passenger rail service for the region to Boston, the project cannot be included as part of the financially constrained portion of the RTP until a formal recommendation is made through the study.

E. RTP PROBLEM STATEMENTS

Problem statements were originally developed as part of the 2016 RTP to identify the potential obstacles to achieve the region's Vision for the transportation system. The problem statements were revisited and updated as part of the 2020 RTP in relation to the updated vision and goals. Problem statements are concise descriptions of the overarching issues that must be addressed through the implementation of the RTP. A total of 10 problem statement was developed based on the input received during the RTP public outreach process and are summarized below.

1. There are seriously insufficient resources to support the state of good repair of the regional transportation system.
2. Existing passenger rail and transit service does not meet the needs of residents of the Pioneer Valley. Expanded regional passenger rail and transit service is integral to education, economic development and workforce development.
3. There is a need for innovative, cost-effective solutions independent of the regional transit authorities to provide services to rural areas.
4. There are a lack of intermodal connections that support and enhance transportation options for downtown areas and village centers.
5. Increased and comprehensive resources and policies to improve sustainability in the transportation sector are necessary if the region is to meet its fair share of GHG reductions to comply with the Massachusetts Global Warming Solutions Act.
6. The regional transportation infrastructure does not sufficiently accommodate the movement and distribution of freight.
7. The built environment for walking, bicycling and transit is hampered by significant barriers that include: narrow road and bridge cross sections, disjointed/unconnected off-road trail networks, a lack of sidewalks, uniformity in signs/markings, transit access points and maintenance issues.
8. The regional transportation system is not prepared to adequately support changes in future transportation technology. The system must be prepared for the safe and seamless integration of innovations in technology which includes autonomous vehicles.
9. People use the regional transportation system differently based on their age, residence and occupation. The regional transportation system must continue to evolve to safely meet the needs of an aging population, young adults and children.
10. There are inconsistencies in how cities and towns regulate development and their requirements to encourage alternative forms of transportation through development.

1. **There are seriously insufficient resources to support the state of good repair of the regional transportation system.**

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

   On the national scale, the federal Highway Trust Fund is not able to keep pace with the current pace of transportation spending. The trust fund relies on federal gasoline taxes yet the federal gasoline tax has not been adjusted in over 20 years. At the local level, communities rely on Chapter 90 funding to advance necessary maintenance projects. This funding is critical to maintain local roads which are not eligible for federal transportation dollars. A 2018 analysis by the Massachusetts Municipal Association estimated that a total of $685 million/year would be required to keep roadways in a state of good repair. This is significantly higher than the $200 million allocated for the Chapter 90 program in 2018.

2. **Existing passenger rail and transit service does not meet the needs of residents of the Pioneer Valley. Expanded regional passenger rail and transit service is integral to education, economic development and workforce development.**

   There is a strong desire to expand passenger rail service in the region. Most trains in Springfield operate south to New Haven as either Amtrak or CTRail trains. There are 11 departures and 11 arrivals on weekdays on this route. The Vermonter travels once a day in each direction between Washington D.C. and St. Albans Vermont. Northbound trains from Springfield stop at Holyoke, Northampton and Greenfield. Four additional trips per day are planned as a pilot program between Greenfield and Springfield in the summer of 2019. East-West rail service consists of one train per day, the *Lake Shore Limited,* providing service between Chicago and Boston. In December of 2018, MassDOT began a study to examine the costs, benefits, and investments necessary to implement passenger rail service from Boston to Springfield and Pittsfield, with the speed, frequency, and reliability necessary to be a competitive option for travel along this corridor.

   The expansion of intercity passenger rail has the potential to be a major component in producing economic revitalization, spurring job creation, improving air quality, increasing overall mobility and reducing vehicular traffic congestion.

This requires an investment in the development and maintenance of rail infrastructure, modern stations and pricing that encourages ridership.

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

   Transit service can be difficult in rural areas that may not have the population density to support traditional fixed route transit services. Innovation is the key in the development of new rural transit service. This can consist of the identification of overlapping duplicative services, adaptation of existing underutilized services, and the development of partnerships with local business to provide new services. It will be important to continue to work with the Regional Coordinating Councils, the existing transportation providers, and human service providers to identify opportunities to develop cost effective and replicable models to provide rural transit service in the Pioneer Valley.

   The Quaboag Connector (www.rideconnector.com) serves 4 rural communities in the eastern part of the PVPC region and 5 in the neighboring Central Massachusetts region. This service is coordinated with existing RTA transit service. This may be a potential model to provide transit service for other rural areas.

4. **There are a lack of intermodal connections that support and enhance transportation options for downtown areas and village centers.**

   Intermodal transportation facilities encourage the use of alternative transportation modes through the coordination of a variety of transportation modes at a strategic location. Amenities such as waiting areas, restrooms, and food service may also be provided. Larger facilities are often incorporated into developments that may include residential units as well as retail and office space. A strong multimodal transportation system must be developed in coordination with complementary land uses at a level that is appropriate for the community.

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

   The transportation sector is one of the largest contributors to greenhouse gas pollution accounting for nearly 40 percent of all GHG emissions in Massachusetts. One way to assist in the reduction of GHG emissions is the electrification of vehicles. While Massachusetts is committed to the International Zero-Emission Vehicle Alliance, other strategies such as market-based incentives to manage GHG emissions will be required. One such strategy is the multi-state Transportation Climate Initiative to explore potential regional policies to improve transportation systems and reduce pollution.

PVPC will continue to assist regional communities in municipal vulnerability preparedness, advocate for certified “Green Communities” and implement the region’s smart growth plan, Valley Vision. This work is vital to foster change and promote energy efficient modes of transportation such as walking, biking and using the bus.

6. **The regional transportation infrastructure does not sufficiently accommodate the movement and distribution of freight.**

   Trucking is the dominant mode for freight transportation in the Pioneer Valley due to its flexibility to provide both short and long haul connections to facilities that may lack convenient access to other freight modes. Truck movements are often hindered due to route restrictions as a result of poor bridge conditions, inadequate vertical clearance, oversize loads, hazardous cargo, and municipal regulations. Many intersections also lack the proper turning radii to safely accommodate truck movements. As a result, it is important to have appropriate design elements in the regional transportation system to safely and efficiently accommodate the movement of freight.

7. **The built environment for walking, bicycling and transit is hampered by significant barriers that include: narrow road and bridge cross sections, disjointed/unconnected off-road trail networks, a lack of sidewalks, uniformity in signs/markings, transit access points and maintenance issues.**

   It is important to provide for the needs of pedestrians, bicycles and transit riders as part of the regional transportation network. The challenge lies in balancing the needs of the maintenance of the existing infrastructure while continuing to expand connections to the pedestrian, bicycle and transit network in a logical manner.

   PVPC advocates for a “Complete Streets” approach as part of its transportation planning activities. 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.

   The identification of gaps in transportation system for all users is a critical task to identify and eliminate existing barriers that restrict travel options. Proper maintenance ensures the continued expansion of a complete transportation system that enhances options for all travel modes in the future.

8. **The regional transportation system is not prepared to adequately support changes in future transportation technology. The system must be prepared for the safe and seamless integration of innovations in technology which includes autonomous vehicles.**

   Changes in technology have the ability to greatly improve the safety and efficiency in which vehicles operate. This, however, requires the appropriate physical and informational infrastructure to fully support the new technology. It will be important to continue to incorporate the appropriate infrastructure in future transportation improvement projects to support autonomous vehicles, electric vehicles, broadband communications including 5G networks, and ITS infrastructure. Similarly, it will be important to review existing bylaws, ordinances, and motor vehicle laws to ensure they fully and appropriately address new transportation technology.

9. **People use the regional transportation system differently based on their age, residence and occupation. The regional transportation system must continue to evolve to safely meet the needs of an aging population, young adults and children.**

   Our regional transportation system is not intended to be a “one size fits all” model. It is important to recognize that people will have different transportation needs based on their age, income, place of residence and place of employment. As a result it will be important to seek balance in the transportation system to provide modes that support all of our residents. The “Age Friendly” movement is a way to design a transportation system to allow all people to have access regardless of their age or ability.

10. **There are inconsistencies in how cities and towns regulate development and their requirements to encourage alternative forms of transportation through development.**

    The Pioneer Valley has been a leader with respect to promoting and encouraging smart growth, or development that is targeted where there is existing infrastructure to support it, versus development far away from roads, power lines, water and sewer lines etc. As a result, it will be important to continue to work closely with our member municipalities to adopt and revise as needed their existing bylaws and ordinances to promote development while encouraging the use of alternate forms of transportation.