Pioneer Valley Regional Freight Transportation Plan

February 2020 Draft

Catalyst for Regional Progress
PVPC

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

.

1. INTRODUCTION

Freight is the movement of goods and services from point of origin to destination using one or more of the various modes of transport including water, air, rail, and truck. Often, the volume, weight, and urgency of the shipped materials determine the most appropriate mode or modes of shipment, however cost is the most influential factor in mode choice. In general, the fastest form of transport is often the most expensive. As a result, bulk material is often transported by ship over continental and intercontinental long distances. For the remainder of its journey, the shipment is often made by rail, when available, until it reaches a regional rail yard where it can be loaded onto trucks for its final leg of the trip, the "Last Mile". Where time is of the essence, air freight can replace water freight as its primary mode of transport at high cost. First and Last Mile is an industry term for the small trucks, vans, bicycles, and people that move cargo from distribution centers to consumers in the urban and suburban core and from manufacturers to gateways (Figure 1).

Figure 1 - Trucks Fulfill the First and Last Mile Leg of the Journey of Goods

In the Pioneer Valley region, the main freight modes of transportation are by rail and truck. The economic development spurred by the movement of goods and services is a major driver for long range studies and planning activities that ensure the viability and vitality of the freight network serving the region and accessing its local markets. Some of the local civic airports have the potential of serving the freight industry at a limited scale via air cargo. There are three air cargo capable airports in the Pioneer Valley region. They are located in the cities of Northampton, Chicopee and Westfield .

1.1 VISION AND PURPOSE

The purpose of a freight plan for the Pioneer Valley region is to identify freight needs, review existing conditions of the current freight network, and assess future potential for expansion and improved efficiency and safety of freight in coordination with the Massachusetts Freight Plan. The plan aims for enhanced access to intermodal facilities and increased collaboration between various stakeholders to spur economic development within the region by facilitating inter-regional service connections (Figure 2 and Figure 3). Improvements to the freight network ultimately benefits end users, serviced business industries and the freight service providers (Figure 4).

Figure 2 - Westover Industrial Park and Metropolitan Airport In Chicopee

Source: Google Maps, 2019 Imagery.

Figure 3 - Major Regional Intermodal Freight Facility In West Springfield

1.2 MASSACHUSETTS FREIGHT PLAN

The most recent Massachusetts Freight Plan identifies immediate and long-range freight activities, critical urban and rural freight corridors, and e-freight investments for the fiscal years 2018 through 2022. It pursues an innovative and efficient freight system to support a thriving economy. In 2015, the Massachusetts freight system transported goods valued at nearly $500 billion and is expected to double in value over 30 years. The value of goods in Massachusetts was estimated using the FHWA Freight Analysis Framework Version 4, as referenced by the Massachusetts Freight Plan dated November 2017.

The state plan aims at maintaining and operating a safe, secure, and resilient freight system while improving key freight assets and Massachusetts's economic competiveness. In addition, the plan aims at providing efficient and reliable mobility within the state and across its borders to neighboring states as well as supporting healthy and sustainable communities.

Figure 4 - Truck Deliveries from Damon to Industrial Park Drive In Northampton

1.2.1 Vision and Guiding Principles:

The state freight plan **envisions** that those who maintain and operate the Massachusetts Freight System will:

- Be safe, secure, and resilient.
- Improve the condition of key freight assets.
- Improve the economic competitiveness of Massachusetts.
- Provide efficient and reliable mobility within Massachusetts and to/from neighboring states.
- Support healthy and sustainable communities.

The state freight plan has five guiding principles in implementing its vision:

- Consider the experience of all customers.
- Provide reliable, efficient service within budget constraints.
- Take advantage of innovations and technology.
- Support a well-trained workforce with good-paying jobs.
- Be responsive to trends as they unfold.

MassDOT has set five overarching transportation **performance goals**. As with the economic development strategic goals, each of these can be applied to the freight system, though budget and capital performance is somewhat more loosely related. For each goal, they have described how the freight system can impact MassDOT's ability to achieve it. These performance goals are listed below:

Customer Experience. The freight system should work for all its customers: shippers, carriers, consumers, workforce, and communities.

System Condition. The condition of the freight system should be improved to ensure an efficient and reliable supply chain.

Budget and Capital Performance. Capital budgets should be set in part using freight performance metrics, to ensure that the benefits of projects for freight uses are properly considered in decision-making.

Safety. Freight movement should be safe for operators, motorists and passengers, bicyclists, and pedestrians, in urban, suburban, and rural areas.

Healthy and Sustainable Transportation. The freight system should not adversely impact the health and livability of the communities it touches, and it should contribute to the achievement a 25% statewide reduction in GHG emissions from utilities, industry, transportation, and other sources by 2020 (Global Warming Solutions Act of 2008).

1.2.2 Massachusetts Requirements and Policy Goals

The statewide freight plan interacts with the statewide economic development plan's seven priority policy areas. These seven priority policy areas are included below as described in the statewide freight plan.

Transportation access. The freight system touches every region, including both urbanized and rural area in Massachusetts. This plan discusses how to serve the entire Commonwealth using both public and private infrastructure.

Housing policies that support economic growth. A significant degree of freight activity is required to support mixed-use and residential districts. This plan discusses how the Commonwealth and its communities can better plan for these needs and serve residents.

Balanced regulatory and business cost environment. The freight system is impacted by both Federal and State regulation on topics such as driver rest and vehicle emissions. This plan discusses both the societal imperatives that drive these regulations and opportunities for collaborative refinements to serve the common good.

Supporting key industries and clusters. Logistics and distribution is itself a key industry cluster, but it also is critical to maintaining the Commonwealth’s strength in industries as disparate as fishing and biopharmaceuticals. This plan discusses key industry clusters, their needs, and how the freight system can evolve to support them better.

Workforce development and talent retention. Truck driving is currently in a talent recruiting and retention crisis. This plan discusses this crisis and the opportunities for the Commonwealth to better support its logistics professionals.

Fostering a culture of innovation and entrepreneurship. Easy access to supply chains and markets enables the innovation economy to exist in Massachusetts. This plan discusses opportunities to expand upon that support and identifies

innovations and technologies that can be applied to the freight system itself to improve safety, efficiency, and reliability.

Preparing communities for success. The freight system exists in close proximity to Massachusetts communities, some of which see adverse impacts (such as noise and fumes). It is therefore critical to communicate with and listen to community leaders and residents about their concerns. This plan discusses the necessity that State agencies and communities educate themselves and each other about needs, challenges, and opportunities associated with freight.

1.2.3 Massachusetts Performance Goals:

The Massachusetts Department of Transportation, MassDOT has set five overarching performance goals for the statewide freight plan which can be applied to the freight system. The performance goals are described below as listed in the state freight plan.

Customer Experience. The freight system should work for all its customers: shippers, carriers, consumers, workforce, and communities.

System Condition. The condition of the freight system should be improved to ensure an efficient and reliable supply chain.

Budget and Capital Performance. Capital budgets should be set in part using freight performance metrics, to ensure that the benefits of projects for freight uses are properly considered in decision-making.

Safety. Freight movement should be safe for operators, motorists and passengers, bicyclists, and pedestrians, in urban, suburban, and rural areas.

Healthy and Sustainable Transportation. The freight system should not adversely impact the health and livability of the communities it touches, and it should contribute to the achievement a 25% statewide reduction in GHG emissions from utilities, industry, transportation, and other sources by 2020 (Global Warming Solutions Act of 2008).

1.3 REGIONAL LONG RANGE GOALS AND EMPHASIS AREAS

The Pioneer Valley's 2020 update for the Regional Transportation Plan (RTP) included thirteen regional goals and specified regional needs and strategies among which are those that directly link to the goals of the statewide freight plan. The following is a description of each of the regional goals.

1.3.1 Regional Transportation Plan Goals:

Safety - To provide and maintain a transportation system that is safe for users of all travel modes and their property.

Operations and Maintenance - To provide a transportation system that is dependable, resilient, and adequately serves users of all modes. To give priority to adaptable repair of existing infrastructure.

Environmental - To minimize the transportation related adverse impacts to air, land, wildlife and water quality and strive to improve environmental conditions at every opportunity and incorporate green infrastructure.

Coordination - - To facilitate collaborative efforts between the general public and local, state and federal planning and project implementation activities.

Energy Efficient - To promote the reduction of energy consumption through demand management techniques and increasing the use of energy efficient travel modes.

Cost Effective - To provide a transportation system that is cost effective to maintain, improve and operate.

Intermodal - To provide access between travel modes for people and goods while maintaining quality and affordability of service.

Multimodal - To provide a complete choice of adequate travel options that are accessible to all residents, students, visitors and businesses.

Economically Productive - To maintain a transportation system that promotes and supports economic stability and expansion.

Quality of Life - To provide and maintain a transportation system that enhances quality of life and improves the social and economic climate of the region.

Environmental Justice - To provide an equitably accessible transportation system that considers the needs of and impacts on low-income, people of color, elderly and disabled persons.

Land Use - To incorporate the concepts of Sustainable Development in the regional transportation planning process and integrate the recommendations of the current Regional Land Use Plan into transportation improvements.

Climate Change - To promote and advance transportation projects that reduce the production of greenhouse gasses, such as CO2, and advance new energy technologies consistent with the Pioneer Valley Clean Energy Plan.

Each of the thirteen regional goals of the Regional Transportation Plan intersect with one or more of the five state goals: Customer Experience, System Condition, Budget and Capital Performance, Safety, and Healthy and Sustainable Transportation. The following table lists the state and regional goals in a matrix format displaying the intersection between state and regional goals (Table 1).

1.3.2 Regional Long Range Plan Emphasis Areas, Needs, and Strategies

The current 2020 update to the Regional Transportation Plan (RTP) complies with the State Freight Plan as demonstrated by matching long range plan emphasis areas, and their related needs, and strategies identified by the plan and reviewed in this section. The regional transportation plan identified five emphasis areas, two of which address the needs of regional freight. The first of the emphasis areas is safety and security, and second is movement of goods. The regional plan identified specific needs and

strategies for each of these emphasis areas. Needs and strategies related to regional freight are listed in the following tables (Table 2 and Table 3).

Table 1 - Statewide and Regional Long Range Transportation Goals

	MassDOT Goals > ---------- PVPC Goals:	Customer Experience	System Condition	Budget and Capital Performance	Safety	Healthy and Sustainable Transportation
1	**Safety**				**X**	
2	**Operations and Maintenance**	**X**	**X**			
3	**Environment**				**X**	**X**
4	**Coordination**	**X**	**X**			
5	**Energy Efficiency**					**X**
6	**Cost Effectiveness**			**X**		
7	**Intermodal Access**	**X**	**X**			**X**
8	**Multimodal Choices**	**X**				**X**
9	**Economic Productivity**			**X**		
10	**Quality of Life**	**X**				**X**
11	**Environmental Justice**	**X**				**X**
12	**Land Use**					**X**
13	**Climate Change**					**X**

Table 2 - Regional Freight Needs

NEED	PRIORITY
Improve safety at freight facilities and at-grade railroad crossings.	**Ongoing**
Improve knowledge and compliance with existing Emergency Evacuation plans.	**Ongoing**
Protection of critical/at-risk regional transportation infrastructure.	**Ongoing**
Ensure the safety and security of railway facilities and equipment.	**Ongoing**
Provide for the safety and security of hazardous materials while in transportation and in storage.	**Immediate**
Communities lack the proper resources to maintain bridges and culverts under their jurisdiction.	**Immediate**
Support the development and maintenance of short line and regional railroads.	**Ongoing**
Improve the communication between private carriers and state and local officials.	**Ongoing**
Increase opportunities for air cargo in the region.	**Ongoing**
Improve coordination with class one carriers serving the region.	**Immediate**
Consider impacts on freight when making future transportation investments.	**Future**

Table 3 - Regional Freight Strategies

STRATEGY
Develop a regional list of high crash locations. Incorporate "Vision Zero" strategies in safety planning.
Develop an inventory of critical transportation choke points, haz-mat routes, and users.
Identify and advocate for additional revenue sources to bring the regional transportation system into a state of good repair.
Limit opportunities to access freight rail facilities and infrastructure.
Enhance directional and guide signs to/from the regional highway system and major destinations.
Meet with class one carriers on a regular basis to enhance the regional freight rail network.
Incorporate appropriate design measures in roadway improvement projects to accommodate freight movements.
Improve the connections between the national highway network and air and rail intermodal terminals, freight yards, and distribution centers.
Develop incentives to encourage businesses to utilize a mix of freight transportation alternatives.
Identify and mitigate vertical clearance issues at underpasses.
Use the regional CMP to identify areas of freight congestion.

1.4 STATEWIDE STRATEGIES

The Pioneer Valley regional strategies fit within the three categories of strategies defined by the state freight plan to be: infrastructure improvements, operational innovations, and policies and people. The statewide freight plan groups its strategies by priority status. The following is a listing of the state freight plan's four categories of priority: immediate, robust, deferred, and hedging and shaping statewide strategies.

1.4.1 State Freight Plan Immediate Strategies:

Infrastructure:

- Improve the condition of freight network assets
- Build or expand truck stops on primary truck routes
- Upgrade rail lines to the 286K standard
- Resolve key bottlenecks on highways
- Maintain uncongested freight access to airports, seaport, and rail terminals in mixed-use urban settings
- Modernize container terminal facilities

Policies and People:

- Develop a workforce strategy for freight professions
- Support policies to reduce CO2 emissions for all freight vehicles

- Harmonize oversize/overweight permitting across New England
- Coordinate with freight planning in neighboring states

1.4.2 State Freight Plan Robust Strategies:

Infrastructure:

- Protect freight facilities from climate change impacts.

Operations:

- Develop Intelligent Transportation Systems (ITS) and Active Transportation and Demand Management (ATDM)

1.4.3 State Freight Plan Deferred Strategies:

Infrastructure:

- Build standardized small package drops

1.4.4 State Freight Plan Hedging and Shaping Strategies:

Infrastructure:

- Build right sized distribution centers inside of Route 128
- Electrify truck stops
- Explore the electrification of railyards
- Identify and preserve existing rural and industrial sited for warehousing and distribution development
- Develop delivery areas in urban districts and town centers
- Encourage increased use of underutilized gateway infrastructure (ports and airports)

Operations:

- Improve the efficiency of air cargo processing at Logan Airport and un the surrounding area
- Better integrate supply chain information to reduce administrative and regulatory delays
- Review state regulations and practices that impact security clearance and chain-of-custody for imports and exports
- Leverage connected vehicle technology to maximize en-route efficiency
- Encourage side guards on trucks to protect cyclists

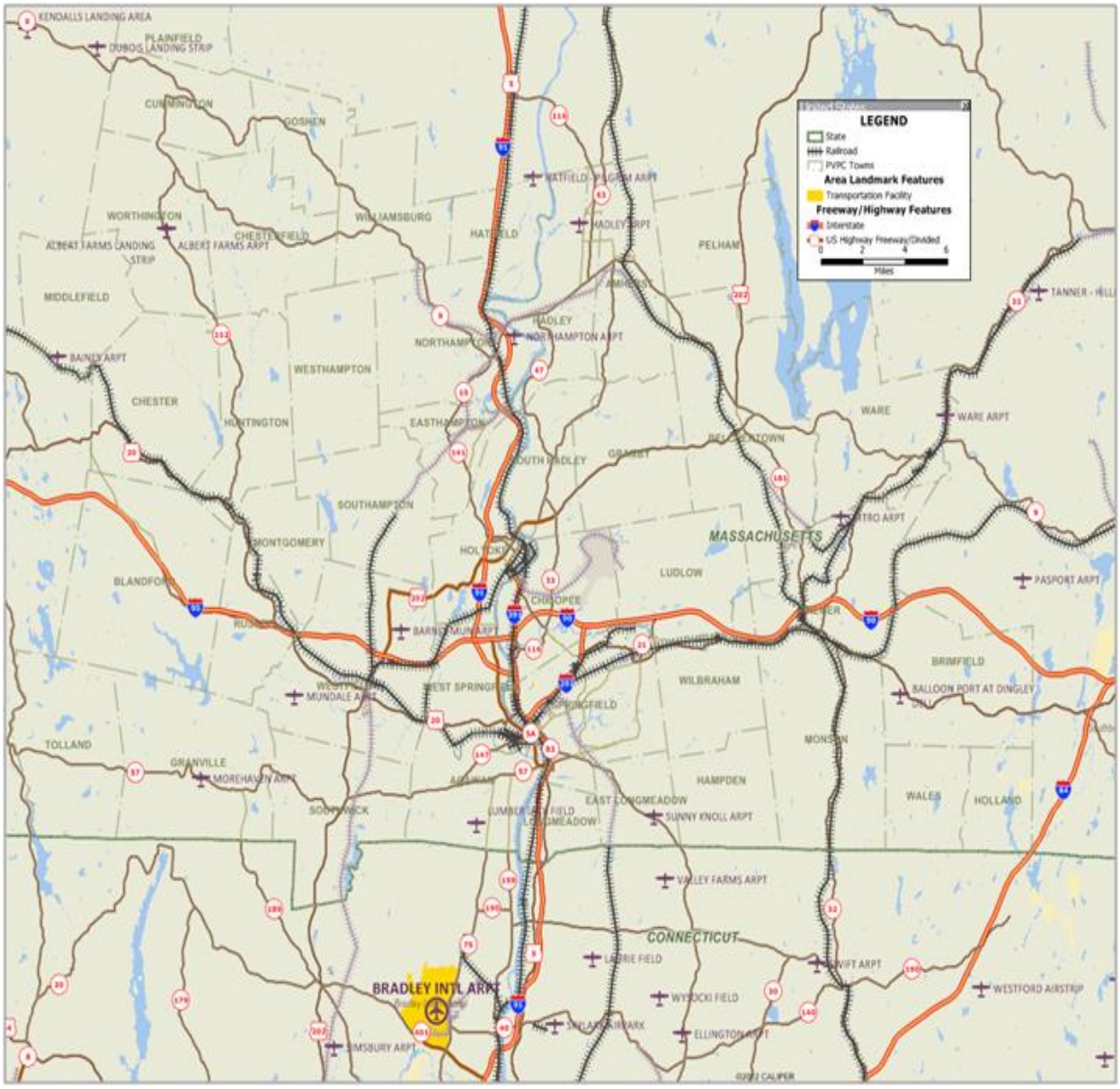
Policies and People:

- Provide collaborative guidance and support to MPOs and local governments in integrating freight, distribution, and land use decision making processes
- Encourage private industry to adopt short-sea shipping.

2. REGIONAL FREIGHT NETWORK

In the Pioneer Valley region the freight network consists of two main modes. These are truck and rail freight. The trucking industry uses predominantly state and local highways and other numbered routes for its fleet of vehicles for most its journey before reaching a local destination or distribution center. Two Interstates intersect in the center of Pioneer Valley, thus providing access (Figure 5).

Figure 5 - Pioneer Valley Region Airports, Regional Highways, and Railways



The north-south I-91 interstate highway serves eleven communities directly as it runs through them via several interchanges that allow access to industrial parks, manufacturing and material industries. The Massachusetts Turnpike (I-90) runs through

the lower section of the Pioneer Valley region and services communities with direct interchanges in Westfield, West Springfield, Chicopee, Ludlow, and Palmer. Other numbered routes serving the freight industry within Pioneer Valley include I-291, I-391, Route 5, Route 9, Route 10, Route 20, Route 21, Route 33, Route 47, Route 57, Route 63, Route 83, Route 112, Route 116, Route 141, Route 147, Route 181, and Route 202 (Figure 6).

Figure 6 - Trucking Along Route 147 in West Springfield

The rail network has several rail corridors running through the region. The main North-South line runs along the Connecticut river and connects to the East-West line at the Springfield Union station. The North-South line continues north of Massachusetts to serve Vermont and serves south of Massachusetts to connect to Connecticut and New York. The East-West line extends all the way to Boston in the east and to Albany and beyond in the west. These two lines provide access to shipping at ports in Boston, Albany and New Haven. They share railway tracks with passenger rail, currently running on a limited frequency. There is one other North-South line connecting to Union Station and proceeding north via Amherst, MA. This track was previously used by the North-South passenger rail lines before they were relocated along the Connecticut river following much needed track upgrades.

There are freight related activity centers within the vicinity of the Pioneer Valley. In addition to the two regional rail yards mentioned earlier, the Amazon Distribution Center is located less than 10 miles south of the Connecticut state line. Such regional centers serve the Pioneer Valley with their delivery fleet to bring local, national and international products to our region.

2.1 TRANSPORTATION OF GOODS

The major interstates and rail lines in the Pioneer Valley Region enable the quick delivery of goods to some of the world's largest economies of New York, Boston, and Philadelphia (Figure 7). The regions economics are also influenced by the surrounding mid sized cities such as Albany, Hartford, Worcester, and New Haven. The proximity of these major and middle sized cities allows goods from the Pioneer Valley to be quickly transported to competitive markets.

Figure 7 - The Main-East-West Rail Line Crosses the Connecticut River in Springfield

Freight is moved in and out of the Pioneer Valley primarily by truck while rail, air and pipeline carry remaining goods. Freight shipments within, from, and to Massachusetts were analyzed by domestic mode share for the years 2007, 2012 and 2015 (Table 4). The data shows that trucking continues to be the dominant mode for transporting freight. Further information on the transportation of goods within the state of Massachusetts is available in the Massachusetts Freight Plan: https://www.mass.gov/lists/massachusetts-freight-plan-documents

Table 4 - Shipments by Domestic Mode Share (Within, From, and To) Massachusetts

TRADE	MODE	WITHIN			FROM			TO		
		2007	2012	2015	2007	2012	2015	2007	2012	2015
Domestic	Truck	98.98%	98.98%	99.61%	79.84%	79.58%	91.24%	72.20%	71.39%	74.29%
	Rail	0.09%	0.09%	0.27%	4.90%	4.31%	0.67%	6.99%	7.06%	0.00%
	Water	0.00%	0.00%	0.00%	0.05%	0.05%	0.00%	0.23%	0.24%	7.71%
	Air & Truck-Air	0.00%	0.00%	0.00%	0.08%	0.09%	0.31%	0.13%	0.13%	0.42%
	Multiple Modes & Mail	0.12%	0.12%	0.11%	2.30%	2.23%	2.49%	2.55%	2.44%	3.77%
	Pipeline	0.00%	0.00%	0.01%	11.65%	12.58%	5.29%	16.99%	17.86%	13.81%
	Other and Unknown	0.81%	0.81%	0.00%	1.18%	1.16%	0.00%	0.91%	0.89%	0.00%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Import	Truck	70.08%	69.79%	83.43%	95.60%	94.91%	55.45%	70.24%	71.58%	56.11%
	Rail	0.00%	0.01%	6.17%	0.13%	0.14%	19.72%	23.25%	20.90%	30.32%
	Water	0.00%	0.00%	6.21%	0.01%	0.01%	22.29%	0.00%	0.00%	5.47%
	Air & Truck-Air	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%	0.07%	0.04%	0.78%
	Multiple Modes & Mail	0.10%	0.14%	0.74%	4.00%	4.60%	1.75%	5.25%	6.13%	7.33%
	Pipeline	29.01%	29.15%	3.40%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%
	Other and Unknown	0.81%	0.92%	0.04%	0.26%	0.34%	0.03%	1.19%	1.36%	0.01%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Export	Truck	66.82%	67.48%	80.28%	80.15%	80.40%	74.51%	68.07%	68.28%	79.62%
	Rail	0.06%	0.06%	1.43%	5.83%	6.10%	6.00%	2.31%	2.23%	8.51%
	Water	0.00%	0.00%	0.47%	0.03%	0.04%	10.87%	0.00%	0.00%	6.50%
	Air & Truck-Air	0.00%	0.00%	0.00%	0.26%	0.22%	1.40%	0.02%	0.02%	0.90%
	Multiple Modes & Mail	3.45%	3.51%	2.07%	8.35%	8.76%	7.10%	23.37%	23.45%	4.48%
	Pipeline	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Other and Unknown	29.68%	28.95%	15.75%	5.37%	4.49%	0.12%	6.23%	6.02%	0.00%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: FAF Version 3.5

2.1.1 Trucking

Trucking is the dominant mode for moving freight in the Pioneer Valley. The majority of private carriers in the region are small, short haul carriers handling feeder and distribution traffic (Figure 8). They provide both full truckload and less than truckload deliveries. This mode has the ability to transport goods to the northeastern United States and southeastern parts of Canada by overnight service. These freight companies carry goods for a variety of industries outside Hampden and Hampshire County. The future competitiveness of the industry hinges on the investment in the maintenance and development of interstate, state and local roadways, multimodal facilities and all related infrastructure.

Figure 8 - Trailer Truck Transports Construction Materials through Agawam

Trucks typically provide the final trip from and to freight terminals, manufacturers or distributors. Major trucking routes tend to follow Interstate 91 and Interstate 90 in the region. While the interstate routes carry the highest amount of truck traffic, state numbered routes such as Route 20, Route 5, and Route 147, typically get them close to their final destination. As a result it is important to maintain efficient freight corridors to assist in the transportation of goods in the Pioneer Valley.

2.1.2 Rail

Five rail carriers provide freight service in the Pioneer Valley Region: CSX Transportation, Pan Am Southern, New England Central, Pioneer Valley Railroad, and MassCentral Railroad. The following is a description of these five carriers.

CSX Transportation

In June 1999 the assets of Conrail were split between CSX and Norfolk Southern. CSX took over Conrail's operation in Massachusetts and now owns and operates

the east-west mainline between Selkirk, New York and Boston. CSX also owns and operates a spur line between Springfield and Ludlow.

Pan Am Southern Railways

In 2008, the Surface Transportation Board approved the merger between Pan Am Railways and Norfolk Southern Railway creating a new joint venture railroad consisting of a portion of Pan Am Railways in New York, Vermont, Massachusetts, and New Hampshire. Pan Am Southern Railways now owns the Boston & Maine Railroad (B&M) and its subsidiary Springfield Terminal Railway Company (STRC). B&M is the region's second largest rail carrier, operating a north-south mainline along the Connecticut River from Springfield, to East Deerfield. Pan Am Southern also owns secondary lines that run from Chicopee to Chicopee Falls and from Holyoke to Westover Industrial Airpark in Chicopee. Lying north of the region, but also important to the region's rail system is the B&M east-west mainline. This Pan Am Southern line is now known as the Patriot Corridor and provides Norfolk Southern the opportunity to compete with CSX for New England Traffic.

New England Central

The New England Central Railroad (NECR) is owned by Genesee and Wyoming Railroad Services, Inc. and offers freight service between St. Albans, Vermont and New London, Connecticut via the eastern portion of the Pioneer Valley region. Although the line is not heavily traveled, it has been rehabilitated and operates profitably. In December of 2018 it was announced that NECR would be receiving $10.8 million in Better Utilizing Investments to Leverage Development (BUILD) funding along with $9.6 million from MassDOT. NECR will be investing $9.6 million as well for a total of $30 million to upgrade the 60 miles of track in Massachusetts to accommodate 286,000 lb. freight car standards.

Pioneer Valley Railroad

The Pioneer Valley Railroad (PVRR) is owned by the Pinsly Company and provides short line service on tracks formerly owned by Conrail. The PVRR took over two lines in 1982, each approximately 15 miles long, connecting Westfield with Holyoke and Northampton. The PVRR can accommodate intermodal transfers at the ends of each route, has 48-state motor carrier authority, and directly connects to both CSX and the B&M railroads.

MassCentral Railroad

MassCentral (Massachusetts Central Railroad Corporation) is an independent firm based in Palmer, Massachusetts. The operation of the railroad is managed by the Finger Lakes Railroad. Like PVRR, MassCentral Railroad provides short line service on a former Conrail line. Since 1979 this railroad has operated the former Ware River secondary line, which runs 24 miles from Palmer, through Ware, to North Barre, Massachusetts. MassCentral connects with CSX in Palmer. After abandonment by Conrail, the line was purchased and rehabilitated by the

Commonwealth of Massachusetts. The Commonwealth maintains ownership of the majority of the line and leases the tracks to MassCentral.

2.1.3 Yards Terminals

The region's major freight and intermodal yard is located in West Springfield (Figure 9) and is owned by CSX, who has made significant infrastructure improvements to the facility. Another major freight and switching yard important to the region but located outside the region, is B&M's East Deerfield Yard in Franklin County. Within the Pioneer Valley other smaller freight yards are located in Holyoke, Palmer, and Westfield.

Figure 9- Intermodal Freight Yard in West Springfield

2.1.4 Services

Much of the freight moved in Massachusetts is interstate traffic with either Selkirk, New York (CSX) or Mechanicville, New York (Pan Am Southern) providing connections to long haul lines. In addition to traditional general freight (boxcar) service, all of the region's railroads offer contract rates for volume shipments, consultation services for custom-designed transportation packages, and intermodal freight facilities allowing the transfer of goods from rail to truck and vice versa. The geographic location of the Pioneer Valley at the crossroads of interstate highways (I-90 and I-91) and long-haul rail lines (CSX and B&M) creates a strategic and attractive location for businesses and industry participating in the local or international marketplace.

2.2 AIR FREIGHT

Air freight can be sent in two different methods. The first option would be to transport air freight by companies which own and maintain their own all-cargo aircraft fleet, such as AirNet or DB Schekner. The second option is via scheduled passenger aircraft for which the shipper places the cargo with a freight forwarding (pooling) company. The forwarder contracts for blocks of space on commercial airlines for specific routes. According to the U.S. Department of Transportation, for identification purposes, air freight services are categorized into whether goods are time sensitive, or less time sensitive; whether they are sent by integrated or nonintegrated providers; or by the major type of cargo carrier, which are identified as being one of the following: express carrier, scheduled, mail or chartered air service providers.

Currently there are no major air freight facilities in the region. This lack of this particular regional shipment method does not limit the air freight and package services options for Pioneer Valley residents. Air freight inbound or outbound of the region typically travels through these airports: Bradley International Airport in Windsor Locks, Connecticut, Logan Airport in Boston, or New York City's metropolitan airports. Westover Metropolitan Airport in Chicopee, MA seldom has automotive or large machine parts shipments. This limited amount of freight is not tracked or reported by the airport.

Bradley International Airport is a medium-hub airport located 15 miles southwest of Springfield, MA, in Windsor Locks, CT. Bradley's convenient location near Interstate 91, and air cargo facilities, make it the primary choice for the region's shippers. It is the main hub of regional operations for Federal Express. In 2012, more than 122,000 tons of air cargo enplaned or deplaned at Bradley International. Airport choice for air cargo transport is dependent on a number of factors, including destination coverage/schedule factors, tariff structure, logistical and contractual considerations, and access time and distance of individual airports. Therefore, some of the region's shippers may choose Boston's Logan airport, or one of New York City's metropolitan airports for air cargo services.

2.3 CRITICAL FREIGHT CORRIDORS

The National Highway Freight Network (NHFN) is defined by FHWA to prioritize routes critical to interstate commerce. Critical Urban and Rural Freight Corridors (CRFCs and CUFCs) provide connectivity to the NHFN for manufacturers and consumers. The Pioneer Valley MPO is responsible for designating public roads for the CRFCs and CUFCs in accordance with the FAST Act. The longest Critical Urban Freight corridor in the Pioneer Valley is Route 10/202 in Westfield, north of the I-90 Interchange 3 (Figure 10). The Pioneer Valley has 23 miles of rural critical freight corridors and about 10 miles of urban critical fright corridors (Table 5 and Table 6). The CRFCs and CUFCs for the Pioneer Valley were designated by the MPO on May 23, 2017 (Figure 11).

Figure 10 - Critical Urban Freight Corridor Along Route 10/202 in Westfield

Figure 11 - Pioneer Valley Regional Freight Network

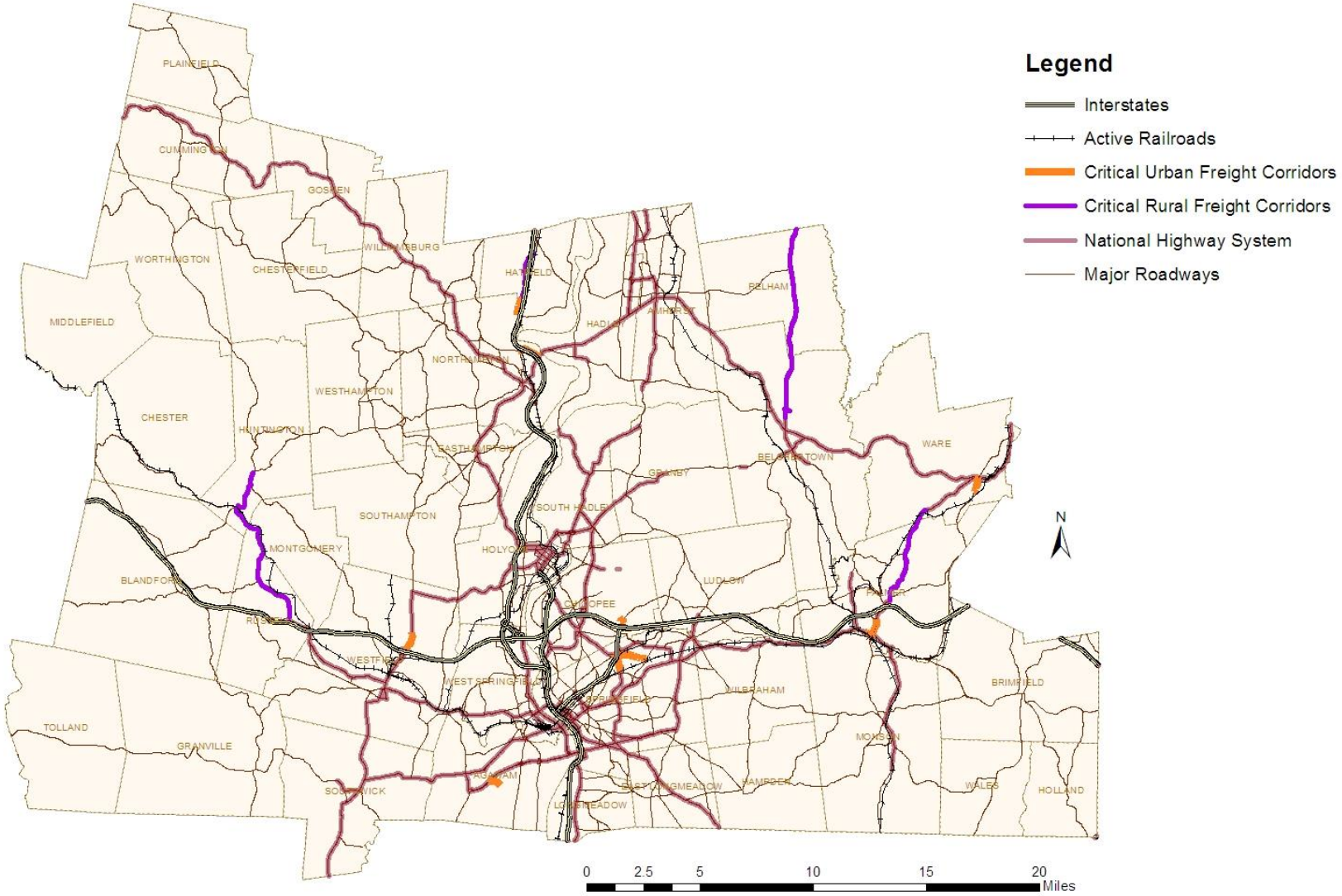


Table 5 - Rural Critical Freight Corridors in Pioneer Valley

RURAL CRITICAL FREIGHT CORRIDORS					
Town	**Route Number**	**Street Name**	**Start**	**End**	**Length**
Belchertown	**Route 202**	Daniel Shays Highway	Allen Road	Shutesbury Town Line	8.12
Hatfield	**Route 5**	West Street	Church Avenue	Plain Road	2.25
Huntington	**Route 112**	Worthington Road	County Road	Route 20	2.02
Palmer	**Route 32**	Ware Road	Old Warren Road	Old Belchertown Road	4.41
Russell/ Huntington	**Route 20**	Huntington Road/Russell Road	Route 112	Route 23	6.12
				Total	**22.92**

Table 6 - Urban Critical Freight Corridors in Pioneer Valley

URBAN CRITICAL FREIGHT CORRIDORS					
Town	**Route Number**	**Street Name**	**Start**	**End**	**Length**
Agawam		Garden Street	Bowles Road	Route 57	0.55
Chicopee		Burnett Road	New Lombard Road	I-90 Exit 6	0.29
Hatfield/ Northampton	**Route 5**	West Street/ North King Street	Elm Street	Linseed Road/ Church Avenue	0.71
Northampton		Damon Road	King Street	Interstate I-91 Exit 19/Route 9	0.98
Palmer	**Route 20/32/181**	N. Main/ Thorndike Streets	Holbrook Street	I-90 Exit 8	1.20
Springfield		Cottage Street	Roosevelt Avenue	Berkshire Avenue	1.53
Springfield		Roosevelt Avenue	Bay Street	Page Boulevard	0.89
Ware		South Street	Benham Avenue	Route 9/ 32	0.62
Westfield	**Route 10/202**	Southampton Road	Route 202 North Apremont Way	I-90 Exit 3	2.93
				Total	**9.70**

3. EXISTING CONDITIONS

The existing conditions chapter describes how goods flow within the Pioneer Valley Region. Freight data collection efforts include traffic counts to assess truck volume along interstates and critical freight corridors. The location of major industrial areas within the Pioneer Valley region are common origin and destination points for trucking. This chapter explains various impacts on freight transportation such as bottlenecks, restricted roads and deficient bridges. Safety data, in the form of commercial motor crashes, helps identify challenges faced by the trucking industry. Finally, a survey of trucking parking and rest area assesses usage and demand.

3.1 DATA COLLECTION

Several types of traffic counts are conducted on a regular basis by the state and regional agencies. Most Interstates and Expressways have permanent count locations that collect daily traffic counts. Occasionally, basic counts are expanded to include speed and classification of vehicle types. Until last year the vehicle classifications categories were identified based on vehicle type to include the following 13 categories as ordered by traffic count codes:

1. Motorcycle
2. Car
3. Pick up
4. Bus
5. 2 Axle Single Unit
6. 3 Axle Single Unit
7. 3 Axle Single Unit
8. <5 Axle Double Units
9. 5 Axle Double Units
10. >5 Axle Double Units
11. <6 Axle >Double Units
12. 6 Axle >Double Units
13. >6 Axle >Double Units

3.1.1 Trucking Routes

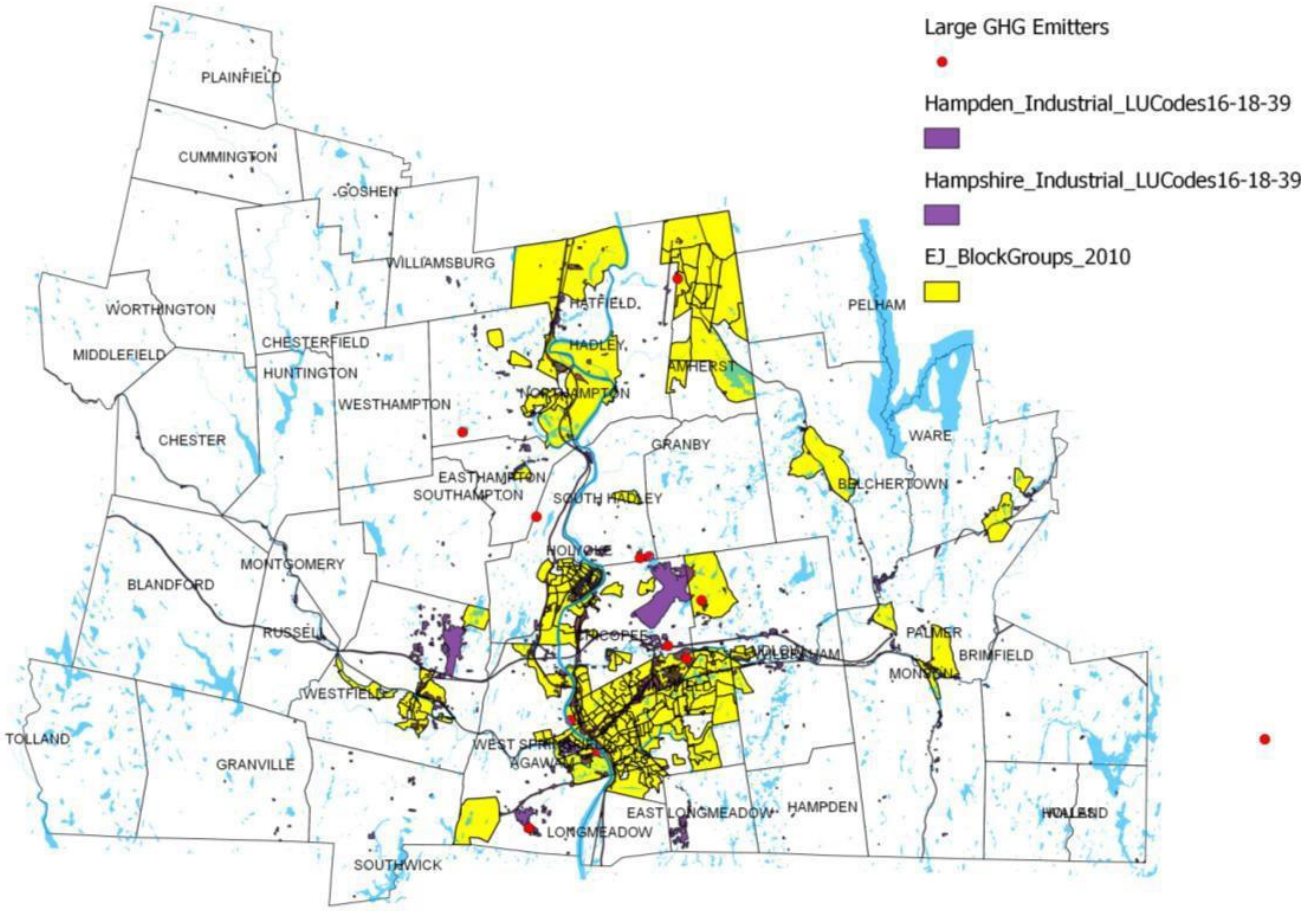
The trucking industry uses specific routes due to width, height and weight restrictions on the roadway system. In general, major roadways used by the trucking industry within the transportation network include interstate, freeway and expressway, as well as principle arterial roadways.

3.1.2 Major Industrial Areas in the Pioneer Valley Region

The regional land use plan included a regional spatial analysis of industrial land uses and environmental justice neighborhoods (Figure 12). It found that 6.4% of environmental justice 2010 census block groups contained land that is classified industrial, compared to 1.8% for the region as a whole. Environmental justice areas constitute 9.3% of the region's total land area. The yellow color on the map reflects the

spatial distribution of environmental justice areas. However, it is important to note that large portions of the Town of Amherst were classified as environmental justice areas due to the relatively low incomes of the large number of students at the University of Massachusetts and other academic institutions in that municipality.

Figure 12 - Industrial and Environmental Justice Census Block Group Areas



The top four communities with block group areas classified as industrial were Chicopee, Westfield, Springfield, and West Springfield. The purple color on the map reflects the spatial distribution of factories and industrials parks with the Pioneer Valley region. Chicopee's Westover Industrial Park occupies the largest area.

The industrial classification was based on the following three MassGIS 2005 Land Use codes: 16, 18, and 39. The following list is a description of land use types that each code represented in this analysis.

- 16 “Light and heavy industry, including buildings, equipment and parking areas”
- 18 “Transportation: Airports (including landing strips, hangars, parking areas and related facilities), railroads and rail stations, and divided highways (related facilities would include rest areas, highway maintenance areas”
- 39 “Junkyard”

3.1.2 Truck Counts

The traffic count website, provided by MassDOT, is a repository for statewide historic traffic counts and their forecasted projections into future years. In 2019, some of the traffic counts used a classification of vehicles based upon vehicle length to categorize vehicle types. The second category using this method grouped vehicles of 13-34 feet. Such a grouping would include large cars, vans, buses, and trucks. Therefore, for the purposes of our analysis the volume of trucks was obtained from traffic counts with traditional vehicle classification as opposed to the new class scheme. These truck counts were based upon actual counts conducted in 2018 or projected from the most recent count in a prior year.

The percentage of trucks was calculated by adding all truck categories and dividing the total number of trucks by the total number of vehicles. The traditional vehicle size categorization method identified trucks by number of axles and number of units. The MassDOT online analysis tool automatically grouped all truck sizes to calculate the percentage of trucks out of all vehicles at each location. The Traffic Count website can be accessed via the following website link: *https://mhd.ms2soft.com/tcds/tsearch.asp?loc=Mhd&mod=*. Truck percentages along the Interstate roadways within the Pioneer Valley ranged from 4% to 21% (Table 7). The Massachusetts Turnpike was reported to carry between 9% to 21% trucks. The highest percentages occurred in Blandford between Exit 2 and 3, while the lowest occurred in Chicopee East of I-291.

Not all MassDOT locations provided directional counts. When available, a variance in truck percentages in the order of 1-2% was observed. Overall, most traffic count locations displayed relatively comparable values between opposing directions of a roadway. The variance was most apparent at major interchanges connecting two of more major corridors. For example, I-90 between Exits 4 and 5 had a total average of 9% trucks that was the result of 11% trucks in the eastbound directions and 7% in the westbound direction. In Wilbraham, along I-90 between exists 7 and 8, 13% of trucks were reported in the eastbound direction and 10% in the westbound direction.

Recently, additional traffic counts were collected by the PVPC for locations along the regional critical freight corridors (Table 8 and Table 9). Truck percentages ranged from 6% to 16% along the critical regional freight corridors. Directional differences varied between 1 to 24 percent. One example occurs on Route 112 in Huntington, where 4% trucks were recorded in the northbound direction and 27.5% in the southbound direction. A traffic count on Route 202 in Belchertown showed 10% trucks in the northbound direction and 20% in the southbound direction. Route 5 in Hatfield, north of Interchange 21 on I-91, recorded 14% trucks in the northbound direction and 7% in the southbound direction. Ware recorded 10^ trucks along South Street in the northbound direction and 4% in the southbound direction (Figure 13)

Figure 13 - Critical Urban Freight Corridor along South Street in Ware

Reviewing truck percentages calculated from traffic counts and vehicular classification data showed that wherever there was a major distributor located in close vicinity of a traffic count location, there was a marked difference in directional truck percentages. This reflects the traffic flow of trucks generated by one or more activity centers within the vicinity of the corridor. Such insight is useful in addressing congestion or safety concerns that may arise from a higher percentages of traffic or in the design of transportation improvement projects.

3.1.3 Bottlenecks to Large Vehicles.

The Federal Highway Administration (FHWA) defines a congestion bottleneck as “A localized section of highway that experiences reduced speeds and inherent delays due to a recurring operational influence or a nonrecurring impacting event”. If congestion occurs along an entire corridor, then the corridor is considered congested. Likewise, if the corridor is experiencing congestion only at a specific location, then the corridor is considered a congestion bottleneck (Figure 14). Thus major areas of congestion could create bottlenecks. Structurally deficient and functionally obsolete bridges occasionally require vehicles to travel alternate routes, create bottlenecks due to lane elimination or lack of exclusive turning lanes, and influence driver confidence resulting in deceleration.

Several factors could lead to traffic flow bottlenecks for large vehicles. These include major areas of congestion, unusable and outdated geometric design especially at intersections, vehicle height clearance restrictions and bridge structure dimensions and deficiencies. This section attempts to identify the factors negatively affecting the traffic flow of large vehicles within the Pioneer Valley. The purpose is to identify points that are difficult to transport goods. The major congestion bottlenecks within the Pioneer Valley were scored and the top 15 locations identified below (Table 9).

Table 7 - Percentage of Trucks on Interstates within the Pioneer Valley

COMMUNITY	ROUTE	AT	LOCATION	AADT*	TRUCK AADT**	% TRUCKS
Blandford	**90**	East of Old Chester Road	I-90 Between Exits 2 & 3	29,499	6,148	**21**
Blandford	**90**	South of Chester Road	I-90 Between Exits 2 & 3	30,066	5,199	**17**
Westfield	**90**	East of Elm Street	I-90 East of Exit 3	46,799	7,553	**16**
West Springfield	**90**	West of Morgan Road	I-90 Between Exits 3 & 4	50,718	5,607	**11**
Chicopee	**90**	East of I-291	I-90 Between Exits 4 & 5	49,478	4,598	**9**
Chicopee	**90**	East of Sheridan Street	I-90 Between Exits 5 & 6	59,321	7,665	**13**
Ludlow	**90**	East of West Street	I-90 Between Exits 6 & 7	57,721	6,383	**11**
Ludlow	**90**	East of Miller Street	I-90 Between Exits 7 & 8	55,437	7,854	**14**
Wilbraham	**90**	East of Three Rivers Road	I-90 Between Exits 7 & 8	57,390	6,635	**12**
Springfield	**91**	North of Route 20	I-91 South of Exit 10	107,542	5,318	**5**
Chicopee	**91**	Springfield Town Line	I-91 South of Exit 12	116,001	4,718	**4**
West Springfield	**91**	North of Ramp Route 5 SB to I-91 NB	I-91 North of Exit 13B	73,550	11,621	**16**
Holyoke	**91**	South of Route 202	I-91 South of Exit 16	69,331	10,954	**16**
Holyoke	**91**	North of Route 202	I-91 North of Exit 16	58,465	3,419	**6**
Easthampton	**91**	North of Holyoke Town Line	I-91 South of Exit 18	54,776	2,959	**5**
Northampton	**91**	Between Routes 5 & 9	I-91 South of Exit 19	48,928	7,731	**16**
Northampton	**91**	Between Route 9 & Damon Road	I-91 North of Exit 19	31,699	1,673	**5**
Northampton	**91**	North of Ramp - Route 5 NB to I-91 NB	I-91 Near Exit 20	30,978	4,896	**16**
Hatfield	**91**	North of Chestnut Street	I-91 South of Exit 22	36,498	6,134	**17**
Chicopee	**391**	North of Route I-90	I-391 North of Exit 3	33,242	5,253	**16**
Springfield	**291**	South of Chestnut Street	I-291 South of Exit 2A	103,165	16,299	**16**
Springfield	**291**	Saint James Avenue	I-291 Between Exits 3 & 4	77,664	12,271	**16**
Springfield	**291**	South of Roosevelt Avenue	I-291 Between Exits 4 & 5A	59,482	9,397	**16**
Springfield	**291**	South of Chicopee Town Line	I-291 Between Exits 5 & 6	48,213	7,618	**16**

* AADT is the Average Annual Daily Traffic. ** Truck AADT is the Total Number of All Truck Categories. Source: MassDOT
SB = Southbound, NB= Northbound.

Table 8 - Percentage of Trucks on Critical Rural Freight Corridors within the Pioneer Valley

RURAL CRITICAL FREIGHT CORRIDORS								
Community	**Route**	**Street Name**	**Location**	**ADT***	**Truck ADT****	**% Trucks**	**% Trucks NB/EB**	**% Trucks SB / WB**
Belchertown	**Route 202**	Daniel Shays Highway	North of Amherst Road	4,851	733	**15**	10	20
Hatfield	**Route 5**	West Street	South of Plain Street	7,993	1,197	**15**	11	19
Huntington	**Route 112**	Worthington Road	North of Montgomery Road	3,567	554	**16**	4	28
Palmer	**Route 32**	Ware Road	North of Old Warren Road	9,869	780	**8**	8	7
Russell/Huntington	**Route 20**	Huntington Road/Russell Road	North of Route 23	5,024	683	**14**	7	20

* AADT is the Average Annual Daily Traffic. ** Truck AADT is the Total Number of All Truck Categories. Source: PVPC

Table 9 - Percentage of Trucks on Critical Urban Freight Corridors within the Pioneer Valley

URBAN CRITICAL FREIGHT CORRIDORS								
Community	**Route**	**Street Name**	**Location**	**ADT***	**Truck ADT****	**% Trucks**	**% Trucks NB / EB**	**% Trucks SB / WB**
Agawam		Garden Street	South of Route 57	5,444	658	**12**	14	10
Chicopee		Burnett Road***	East of New Lombard Road	24,090	-	**-**	-	-
Hatfield	**Route 5**	West Street/ North King Street	South of Linseed Road	7,538	782	**11**	14	7
Northampton		Damon Road	East of King Street	18,697	1,158	**6**	7	5
Palmer	**Route 20/32/181**	North Main/Thorndike Streets	South of Forest Hill Drive	13,567	1,623	**12**	16	8
Springfield		Roosevelt Avenue	North of Cottage Street	25,921	1,795	**7**	9	5
Springfield		Roosevelt Avenue	East of Robbins Road	17,162	1,525	**9**	11	7
Ware		South Street	North of Maple Street Annex	5,151	335	**7**	10	4
Westfield	**Route 10/202**	Southampton Road	North of Klondike Avenue	16,353	2,223	**14**	15	12

* AADT is the Average Annual Daily Traffic. ** Truck AADT is the Total Number of All Truck Categories. *** Source: MassDOT
Source: PVPC

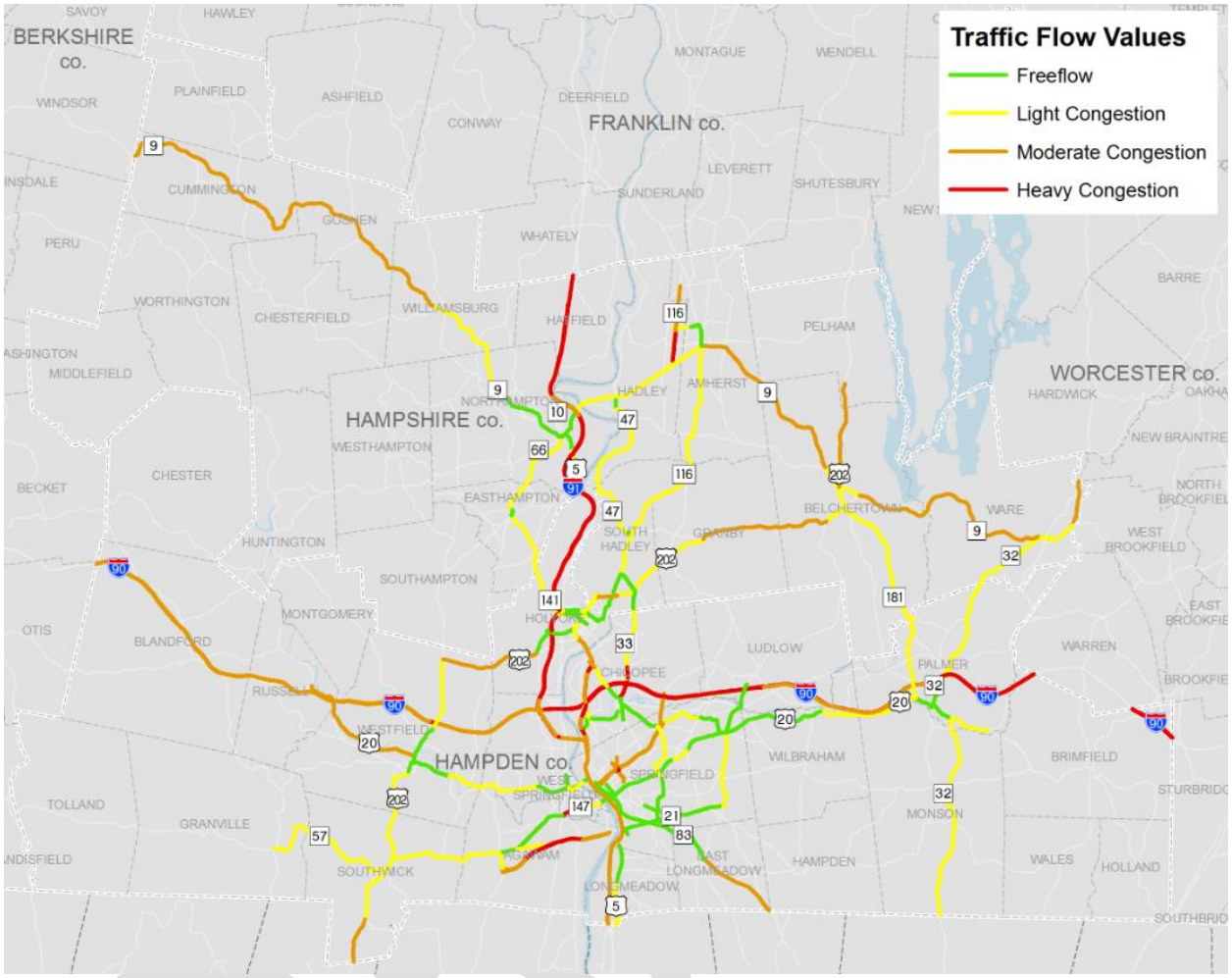
Table 9 - Congestion Bottlenecks in the Pioneer Valley Region

RANK	MUNICIPALITY	BOTTLENECK LOCATION	SCORE
1	**Chicopee**	Grove Ave/Front Street @ Grove Street - Chicopee	**452**
2	**Springfield**	Carew Street @ Saint James Avenue - Springfield	**450**
3	**Holyoke**	Dwight @ Race Street to Dwight at Maple Street- Holyoke	**448**
4	**Ware**	Main Street @ South Street/Church Street to Main Street @ North Street- Ware	**447**
5	**Springfield**	Main Street @ Boland Way/Harrison Ave - Springfield	**444**
6	**Springfield**	Sumner Ave @ The "X" - Springfield	**444**
7	**Granby**	West State Street @ Pleasant Street (5 Corners) - Granby	**443**
8	**Agawam / West Springfield**	Memorial Ave @ River Street to Suffield Street @ Main / Springfield Street including Walnut Street - Agawam / West Springfield	**441**
9	**Longmeadow**	Dwight @ Maple/Williams - Longmeadow	**439**
10	**Wilbraham**	Main Street @ Boston Road - Wilbraham	**438**
11	**Holyoke**	Hampden Street (141) @ Nonotuck Street - Holyoke	**438**
12	**Northampton**	Main Street (Route 9) @ Pleasant /King Street - Northampton	**436**
13	**Hadley/ Amherst (UMass)**	Massachusetts @ Commonwealth Ave - UMass	**432**
14	**Chicopee**	I-291 @ Exit 6 - Chicopee	**430**
15	**Chicopee**	Westover Road @ Bernice Street - Chicopee	**428**

Figure 14 - Traffic Congestion on Route 147 from Agawam to West Springfield

A mix of urban and rural communities experienced congestion bottlenecks. Travel delays were experienced along the interstates within the larger urbanized communities such as Chicopee and Holyoke (Figure 15). Congestion often occurs along corridors that travel between industrial areas and higher density communities (Figure 16).

Figure 15 - Traffic Flow Conditions Using the 2017 Travel Time Index



To identify bottlenecks for large vehicles, the PVPC staff mapped out known problem locations throughout the regional roadway network (Figure 17). Locations with issues regarding lane width or clearance restrictions were also identified. Feedback was solicited from member communities via representatives serving on the Joint Transportation Committee (JTC). PVPC also contacted major commercial vehicle operators in the Pioneer Valley to identify additional problem areas for freight. Issues such as steep slopes that are difficult to climb by large heavy vehicles could supplement the data gathered on freight problem areas.

Figure 16 - Congested Corridors in the Pioneer Valley (2014)

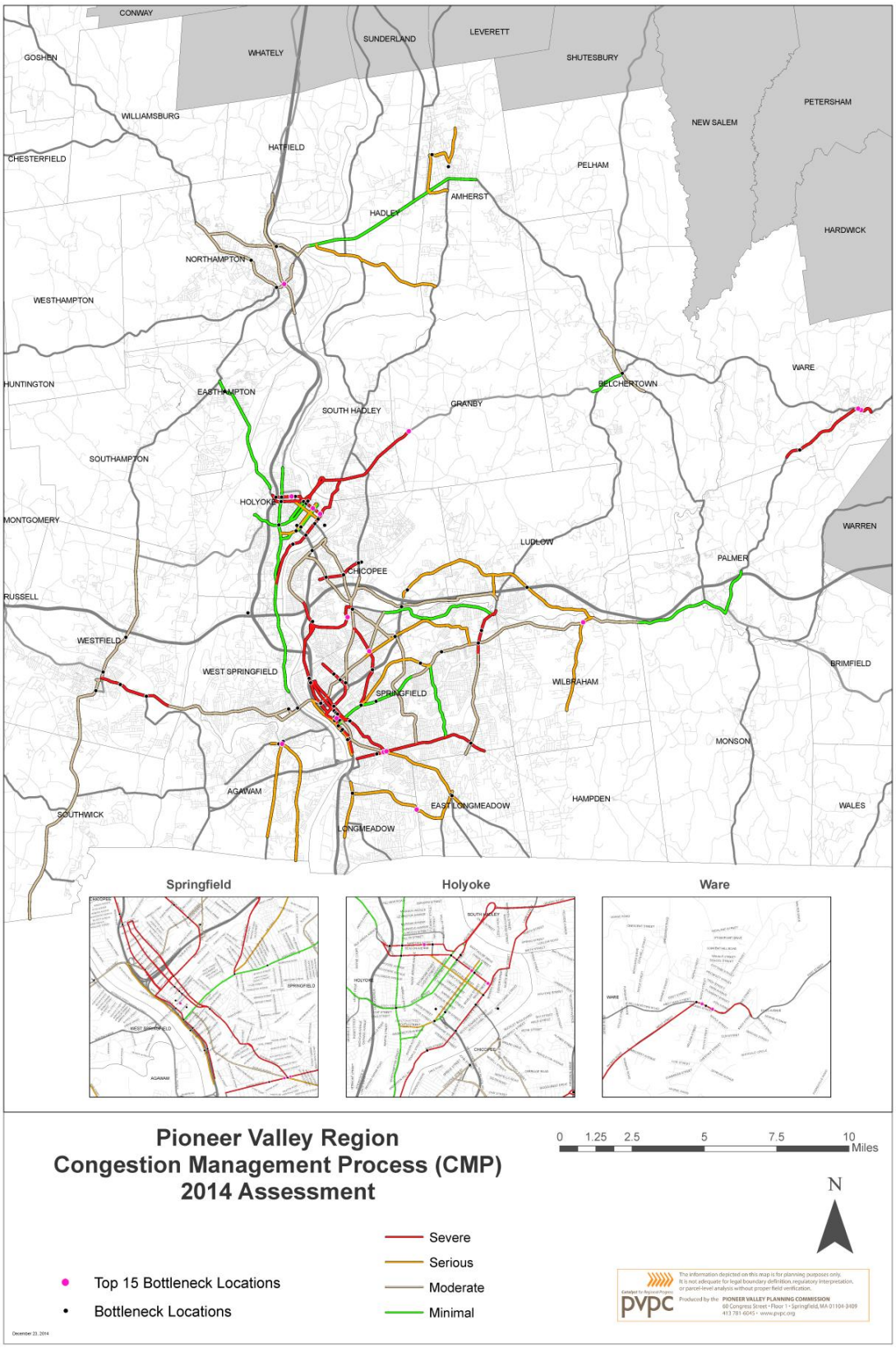
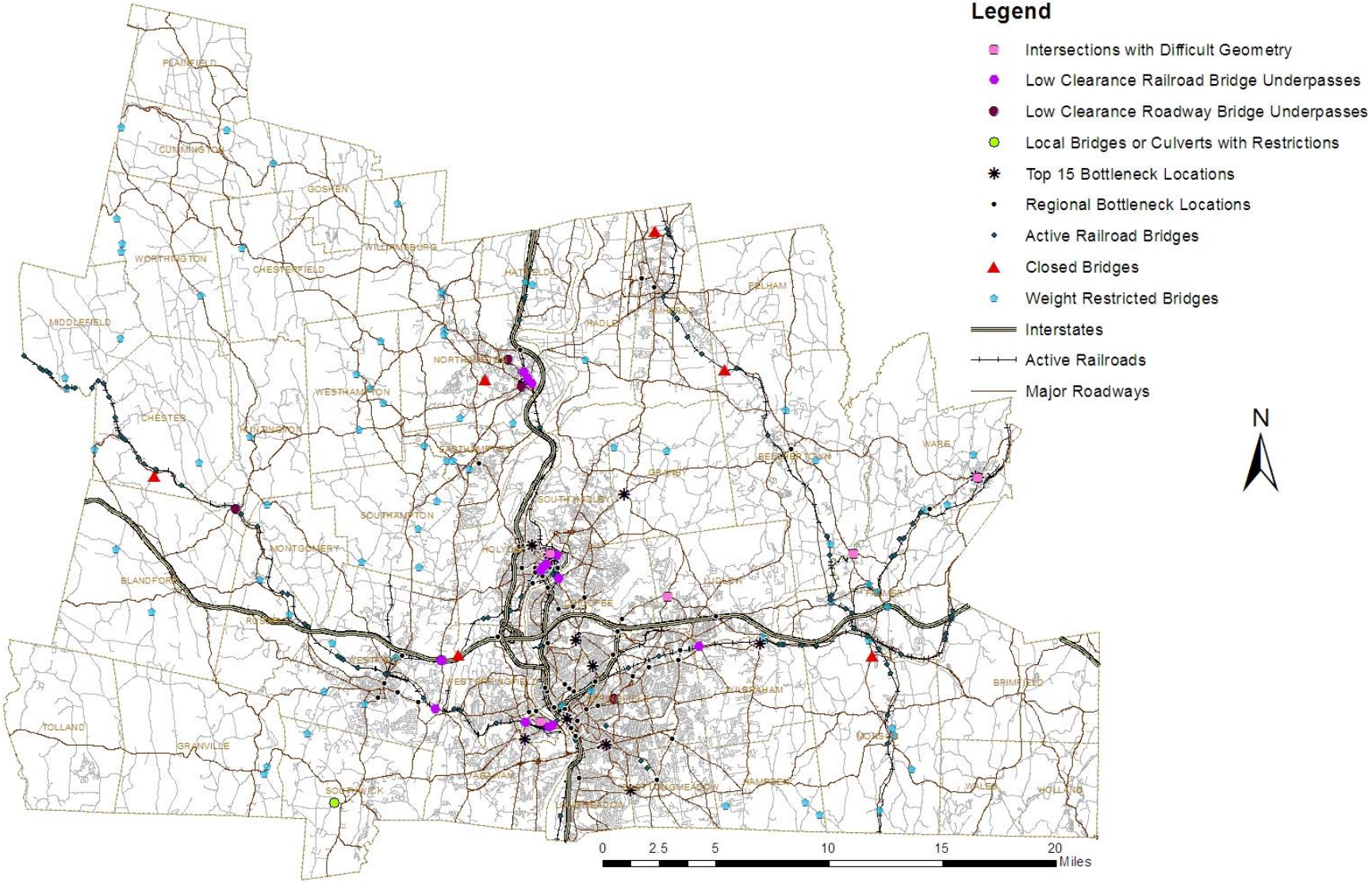


Figure 17 - Freight Bottlenecks in the Pioneer Valley



3.2 SAFETY DATA

MassDOT (Massachusetts Department of Transportation) compiles the crash data for all the crashes that occur in the Commonwealth. This information is analyzed and edited before being made available to public. PVPC utilized the IMPACT online database maintained by MassDOT (https://apps.impact.dot.state.ma.us/fdl/) to identify commercial vehicle crashes in the PVPC region that occurred between the calendar years of 2016 – 2018.

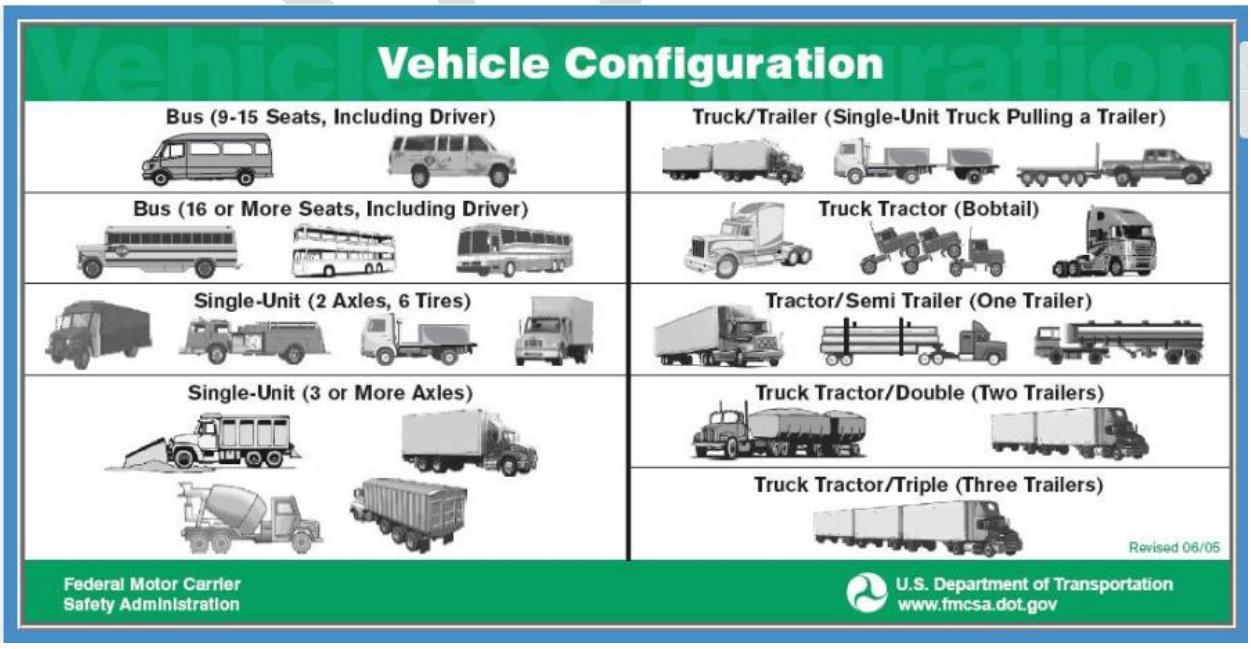
Based on the vehicle definitions outlined in the Massachusetts Crash Report Manual (MCRM) (https://masscrashreportmanual.com/vehicle/vehicle-configuration-code/), the following categories of vehicle classification were selected as commercial vehicle types:

Categories of Vehicle Classification for Trucks:

- Single-unit truck (2-axle, 6-tires)
- Single-unit truck (3-or-more axles)
- Truck/trailer
- Truck tractor (bobtail)
- Tractor/semi-trailer
- Tractor/doubles
- Tractor/triples
- Unknown heavy truck, cannot classify

A visual representation of vehicle configuration is shown in Figure 8.

Figure 18 - Vehicle Configuration Classification



3.2.1 Commercial Vehicle Crashes

A total of 2,777 crashes where at least one commercial vehicle was involved were reported in the Pioneer Valley region from 2016 to 2018. A vast majority of the commercial vehicle crashes occurred within the urban core (Figure 19). Further, a total of 639 of those crashes occurred along the National Highway System and 190 along Interstate Highways. Twenty three crashes were reported along the Urban Freight Corridors and three crashes were reported along Rural Freight Corridors.

The largest number of commercial vehicle crashes, approximately one third, involved a tractor with a semi-trailer (Table 10). This was followed by crashes involving a single unit truck pulling a trailer, and crashes involving a single unit truck with 2 axles and 6 tires.

Table 10 - Commercial Vehicles Crashes by Type of Vehicle

TYPE OF COMMERCIAL VEHICLE	NUMBER OF CRASHES
Tractor / Semi Trailer (One Trailer)	936
Truck / Trailer (Single - Unit Truck Pulling a Trailer)	692
Single-Unit Truck (2 Axles, 6 Tires)	689
Single-Unit Truck (3 or More Axles)	197
Unknown Heavy Truck	172
Truck Tractor (Bobtail)	66
Truck Tractor Double (Two Trailers)	18
Truck Tractor Triple (Three Trailers)	7
Total	**2,777**

Table 11 summarizes the characteristics of the commercial vehicle crashes by year. A total of 11 fatal crashes occurred from 2016 to 2018, and 17 crashes involved non-motorists.

Most crashes occurred during the daytime in clear weather with dry pavement conditions. Figures 20-22 show the breakdown of crashes by weather, light, and manner of collision. The predominant crash type consisted of sideswipe collisions. However, a significant number of angle, rear-end, and single vehicle crashes were also reported. Single vehicle crashes accounted for over 21% of all crashes. These crashes are explored in greater detail in section 3.2.2.

Commercial vehicles require wider lanes compared to passenger cars. Heavy trucks and trailers often have difficulty maneuvering through narrow lanes. They also utilize wider turning radii. These factors could have contributed to higher percentage of sideswipe crashes in the region.

Figure 19 - Commercial Vehicle Crashes

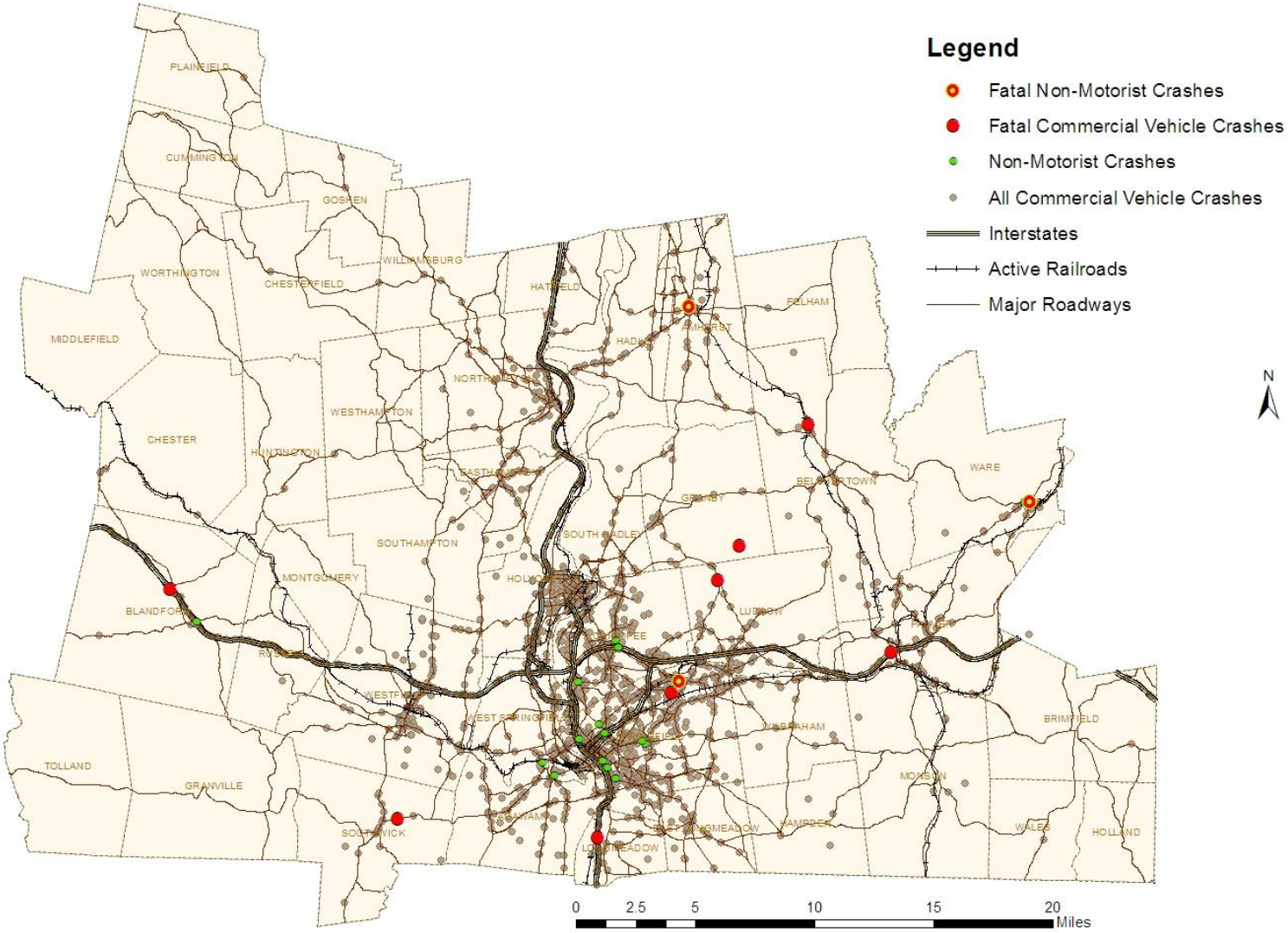


Table 11 - Commercial Vehicle Crash Types in the Pioneer Valley from 2016 to 2018

Year	Total Crashes	Severity		Manner of Collision		Weather Condition		Pavement Condition		Light Condition	
2016	849	Fatal Injury	2	Angle	209	Clear	642	Dry	698	Dark - lighted roadway	95
		Non-fatal Injury	131	Head-on	13	Cloudy	131	Ice	12	Dark - roadway not lighted	33
		Property Damage	701	Rear-end	217	Rain	27	Sand	3	Dark - unknown lighting	4
		Not Reported	15	Sideswipe	215	Sleet	3	Slush	2	Dawn	14
				Single Vehicle	177	Snow	39	Snow	45	Daylight	690
				Not Reported	18	Not Reported	7	Wet	87	Dusk	12
								Not Reported	2	Not Reported	1
2017	1,017	Fatal Injury	4	Angle	252	Clear	686	Dry	766	Dark - lighted roadway	119
		Non-fatal Injury	174	Head-on	15	Cloudy	200	Ice	11	Dark - roadway not lighted	40
		Property Damage	819	Rear-end	225	Rain	71	Sand	1	Dark - unknown lighting	4
		Not Reported	20	Sideswipe	309	Sleet	8	Slush	11	Dawn	21
				Single Vehicle	197	Snow	42	Snow	57	Daylight	812
				Not Reported	19	Fog	3	Wet	169	Dusk	20
						Not Reported	7	Not Reported	2	Not Reported	1
2018	911	Fatal Injury	5	Angle	198	Clear	573	Dry	658	Dark - lighted roadway	112
		Non-fatal Injury	147	Head-on	15	Cloudy	200	Ice	16	Dark - roadway not lighted	45
		Property Damage	727	Rear-end	198	Rain	80	Sand	2	Dark - unknown lighting	2
		Not Reported	32	Sideswipe	270	Sleet	2	Slush	3	Dawn	24
				Single Vehicle	215	Snow	48	Snow	50	Daylight	713
				Not Reported	15	Fog	4	Wet	182	Dusk	14
						Not Reported	4			Not Reported	1

Figure 20 - Weather Conditions during Crashes of Commercial Vehicles

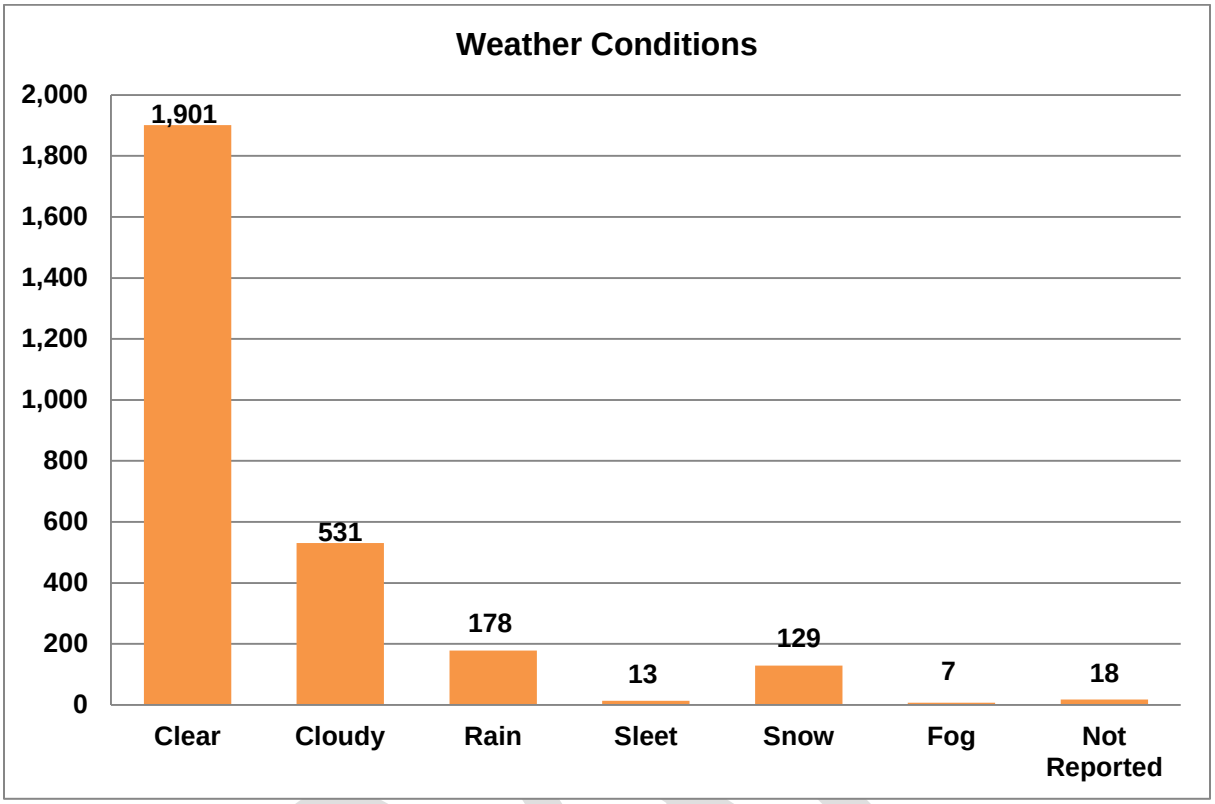


Figure 21 - Light Condition during Crashes of Commercial Vehicles

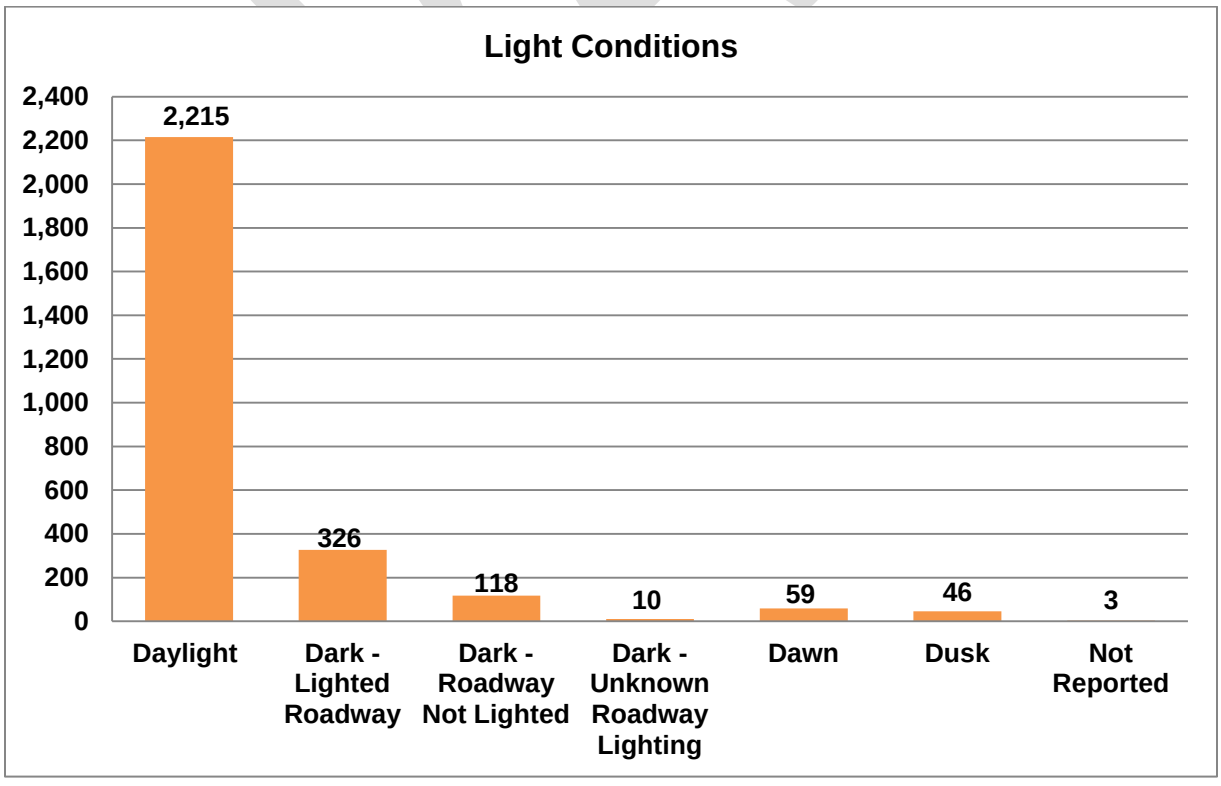
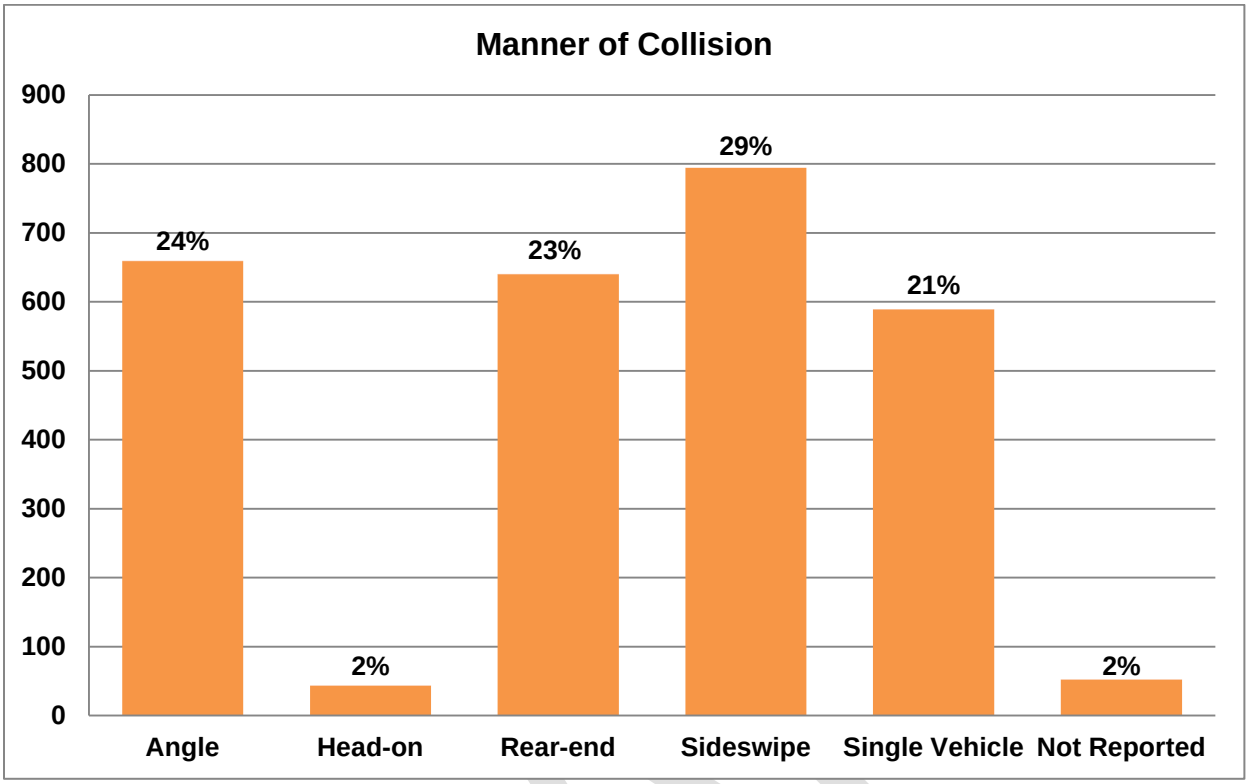


Figure 22 - Manner of Collision for Commercial Vehicle Crashes



3.2.1 Commercial Vehicle Crashes by Community

Commercial vehicle crashes are summarized by community in Table 12. A ratio of total crashes per total roadway miles was also developed to identify potential safety issues in areas with lower crash totals.

A majority of the commercial vehicle crashes occurred within the urban core of the region. The City of Springfield had both the highest total number of crashes (814) and number of crashes per roadway mile (1.64). The cities of Chicopee (357, 1.38) and Holyoke (266, 1.53) had the next highest totals. The Town of Palmer experienced more crashes per roadway mile (1.03) despite of having a lower number of total crashes (118) than many other communities. This crash rate will need to be examined over time to determine if it is a trend specific to the town.

Almost 60% of the reported crashes were non-junction crashes (Table 13). Traditionally it is believed that intersections, junctions, and driveways have a greater probability of conflicts, however crash data analysis of commercial vehicle crashes shows more roadway segment crashes than all other types of intersection crashes combined.

Table 12 - Commercial Vehicle Crashes by Community from 2016 to 2018

COMMUNITY	2016	2017	2018	Commercial Crashes Total	Roadway Miles Total	Crashes per Mile
Agawam	23	27	39	89	152.0	**0.59**
Amherst	13	13	16	42	136.4	**0.31**
Belchertown	12	16	10	38	163.1	**0.23**
Blandford	13	10	21	44	87.8	**0.50**
Brimfield	11	3	4	18	79.5	**0.23**
Chester	1	1	1	3	66.1	**0.05**
Chesterfield	1			1	58.2	**0.02**
Chicopee	95	142	120	357	258.9	**1.38**
East Longmeadow	13	14	11	38	100.3	**0.38**
Easthampton	13	15	18	46	92.1	**0.50**
Goshen		1	3	4	42.6	**0.09**
Granby	15	16	3	34	68.9	**0.49**
Hadley	12	12	10	34	81.5	**0.42**
Hampden	1	1	2	4	54.7	**0.07**
Hatfield	2	9	10	21	59.0	**0.36**
Holyoke	89	76	101	266	174.3	**1.53**
Huntington			1	1	54.3	**0.02**
Longmeadow	15	23	23	61	99.2	**0.61**
Ludlow	27	41	33	101	136.6	**0.74**
Monson	6		1	7	110.3	**0.06**
Montgomery	1		1	2	30.7	**0.07**
Northampton	35	58	26	119	178.9	**0.67**
Palmer	42	47	29	118	114.8	**1.03**
Pelham		1		1	46.0	**0.02**
Plainfield		1	1	2	48.8	**0.04**
Russell	9	9	10	28	36.3	**0.77**
South Hadley	5	9	10	24	104.7	**0.23**
Southampton	1	4	3	8	78.5	**0.10**
Southwick	6	7	10	23	85.1	**0.27**
Springfield	254	297	263	814	496.8	**1.64**
Wales			1	1	28.8	**0.03**
Ware	13	11	7	31	117.5	**0.26**
West Springfield	42	50	41	133	143.7	**0.93**
Westfield	58	83	67	208	248.0	**0.84**
Westhampton	1			1	47.6	**0.02**
Wilbraham	19	18	13	50	114.7	**0.44**
Williamsburg	1	2	2	5	51.1	**0.10**
Total	**849**	**1,017**	**911**	**2,777**	**4,365.1**	**0.64**

Table 13 - Commercial Vehicles Crash Location

LOCATION OF CRASH	NUMBER OF CRASHES
Not at Junction	1,630
Four-Way Intersection	413
T-Intersection	399
Driveway	103
On-Ramp	51
Traffic Circle	49
Y-Intersection	49
Off-Ramp	48
Five-Point or More	16
Not Reported	16
Railway Grade Crossing	3
Total	**2,777**

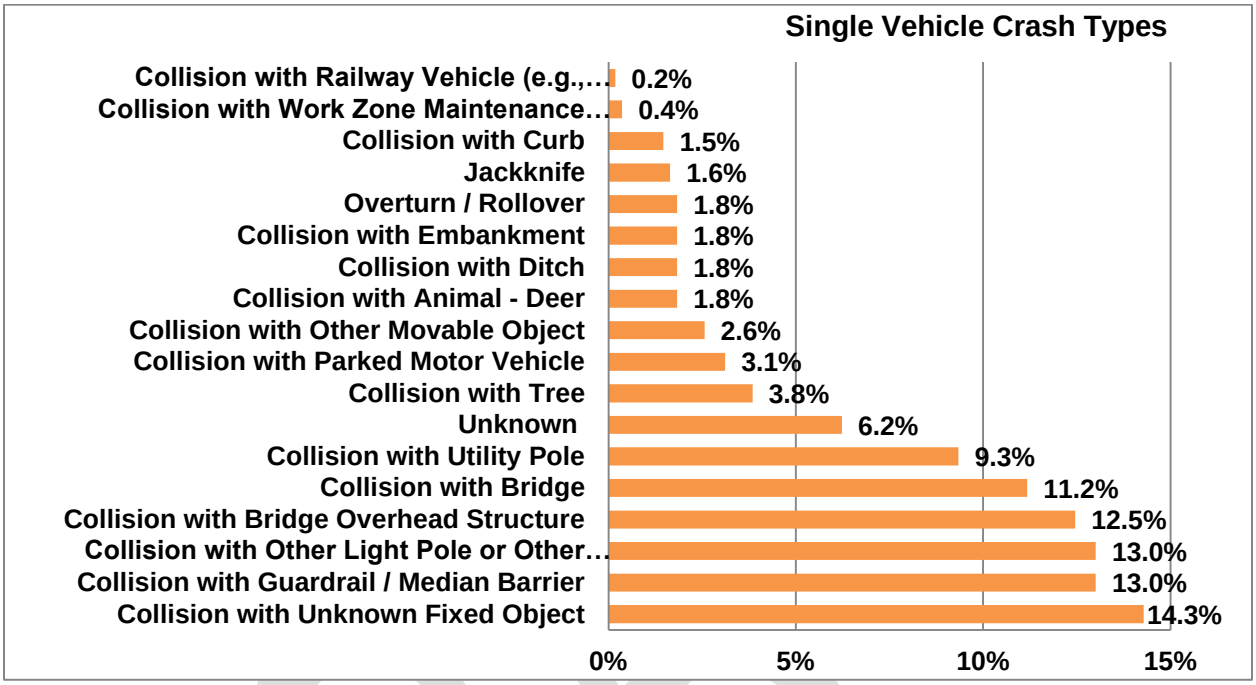
3.2.2 Single Commercial Vehicle Crashes

As stated previously, more than 21% of the total crashes reported were single vehicle crashes. The 'First Harmful Event' category in the MassDOT crash data provides a brief description of the collision object and pattern of collision. Using IMPACT data, the first harmful event for single vehicle crashes were classified into the following 18 types:

- Collision with railway vehicle (e.g., train, engine)
- Collision with work zone maintenance equipment
- Collision with curb
- Jackknife (a large truck folds at an acute angle swinging out the trailer)
- Overturn/rollover
- Collision with embankment
- Collision with ditch
- Collision with animal - deer
- Collision with other movable object
- Collision with parked motor vehicle
- Collision with tree
- Unknown
- Collision with utility pole
- Collision with bridge
- Collision with bridge overhead structure
- Collision with other light pole or other post/support
- Collision with guardrail / median barrier
- Collision with unknown fixed object

More than 13% of these crashes occurred when the commercial vehicle collided with a guardrail or a median barrier (Figure 23). These crashes need further analysis to identify the reason for the crash and to rule out driver contributions such as inattention or fatigue.

Figure 23 - Single Vehicle Crash Types for Commercial Vehicles

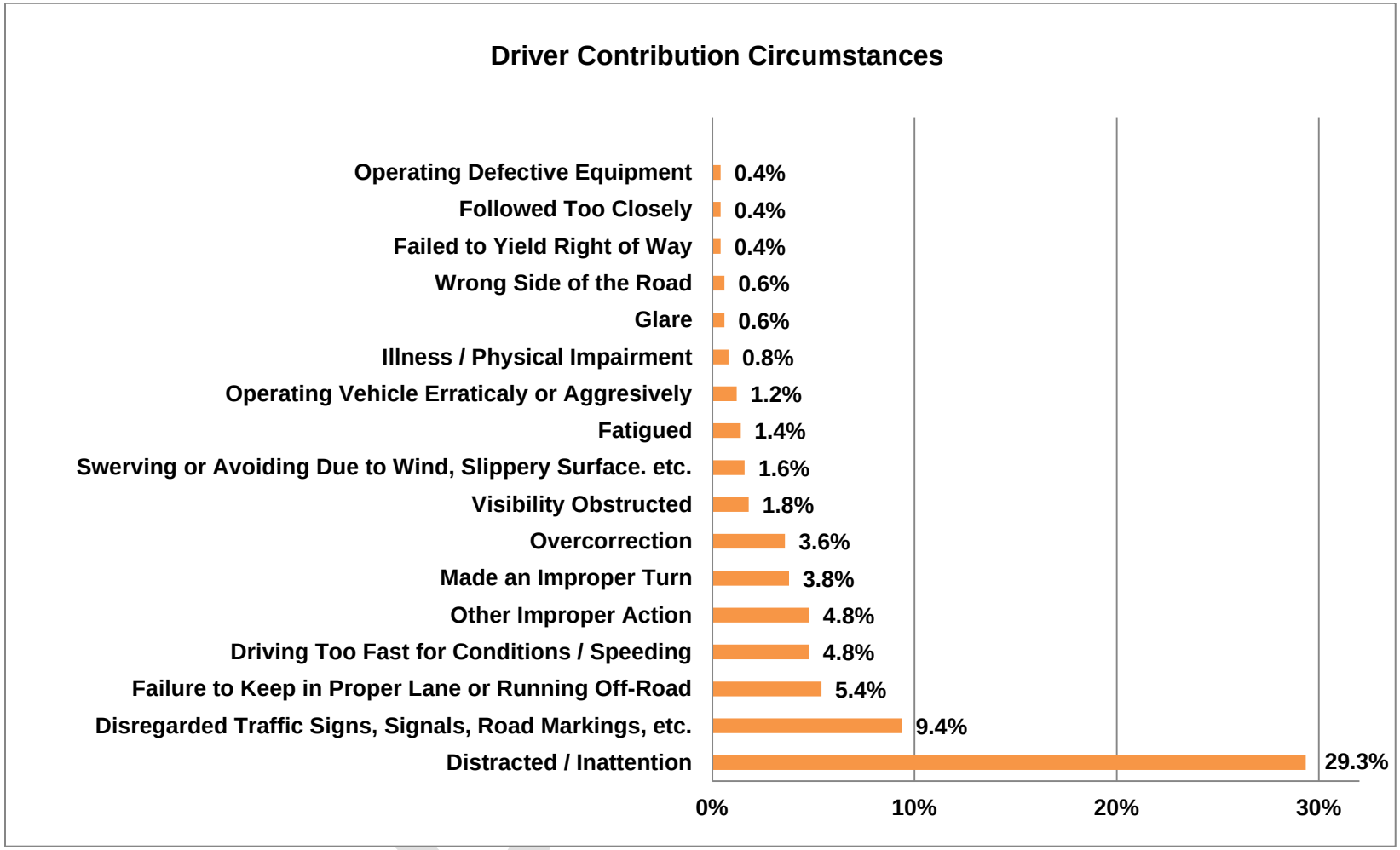


Collisions with overhead structures accounted for more than 12% of the single vehicle crashes. This Regional Freight Plan aims to develop an inventory of low clearance underpasses to help MassDOT, local communities and railroad companies identify and address low clearance underpasses to reduce such crashes.

3.2.3 Driver Contribution

Distracted driving is a major contributing factor to crashes nationwide. Almost 30% of the single commercial vehicle crashes within the Pioneer Valley region occurred due to driver inattention (Figure 24). The second greatest factor contributing to single vehicle crashes was due to a driver disregarding traffic signals or signs, which could also be related to distraction or inattention.

Figure 24 - Driver Contribution Circumstances for Commercial Vehicle Crashes



3.2.4 Non-Motorized Crashes

A total of 17 commercial vehicle crashes were reported that also involved a non-motorist. Three of these crashes resulted in a fatality (Table 14). Seven of these crashes occurred in the roadway, while four crashes occurred at marked crosswalks (Table15). A total of eleven crashes involved a pedestrian, five involved a bicyclist and one involved an "other non-motorist", which indicates either a user of a skateboard, wheelchair, roller skates, or any other type of non-motorized transportation.

Table 14 - Non-Motorized Commercial Vehicles Crashes by Severity

NON-MOTORIST CRASHES SEVERITY	NUMBER OF CRASHES
Fatal	3
Non-Fatal Injury	11
Property Damage Only	3
Total	**17**

Table 15 - Non-Motorized Commercial Vehicles Crashes by Location

LOCATION OF NON-MOTORIST CRASHES	NUMBER OF CRASHES
In Roadway	7
Marked Crosswalk at an Intersection	3
Mid-block Crosswalk	1
At an Intersection without a Crosswalk	2
Along the Shoulder	2
Along the Sidewalk	2
Total	**17**

3.3 BRIDGES

Bridges have a significant impact on the flow of freight throughout the Pioneer Valley. Opportunities to cross large bodies of water such as the Connecticut River are limited and dictate the travel route to reach certain destinations. Restrictions such as low vertical clearance, weight limits, narrow travels lanes, and closures all impact how freight flows through the region. The FHWA defines a bridge as “A public vehicular structure more than 6.1 meters (20 feet) in length that spans an obstruction or depression.” Massachusetts General Laws recognize structures having a span greater than 10 feet as a bridge. Structures with a span greater than 10 feet but not greater than 20 feet qualify as a Small Bridge or “BRI” in the Commonwealth of Massachusetts.

All bridges throughout the state undergo routine structural inspection. Previously the State utilized a generally accepted rating system developed by the American Association of State Highway and Transportation Officials (AASHTO) to ascertain the

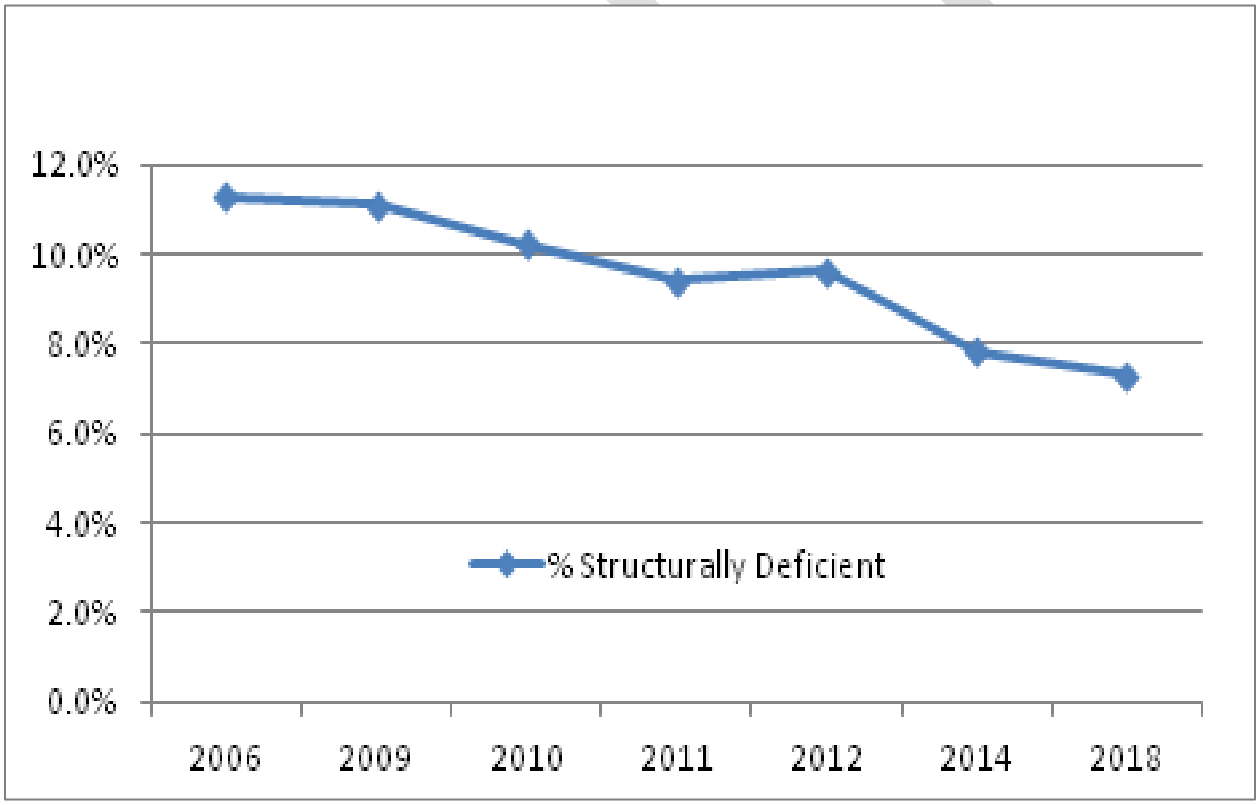
condition of the bridges. Beginning in 2018, that system was updated to a new 100 point scale system which measures the Bridge Health Index (BHI).

BHI is a weighted average of the health indices of all bridge elements (e.g. trusses, decks, bridge rails, etc.) to provide a comprehensive overview of bridge condition. A value of zero indicates that all of the bridge elements are in the worst condition, and a score of 85 or greater indicates that the bridge elements are in good condition.

Under this new system, a 'structurally deficient bridge' is defined as a bridge with a deck, substructure, or superstructure that requires attention. The status of bridge conditions within the Pioneer Valley Region by community is listed below in Table 16.

The percentage of structurally deficient bridges in the region has steadily declined over the past decade by almost 4% (Figure 25). There is a gap in data from 2014 to 2018 as a result of the transition to the new bridge classification system and scoring method.

Figure 25 - Structurally Deficient Bridges in the Pioneer Valley



Rail bridge overpasses with adequate clearance heights are critical to unrestricted flows of large vehicles in the Pioneer Valley (Figure 26).

Table 16 - Bridge Condition in the PVPC Region

Community	Total Number of Bridges	Average Bridge Health Index	Jurisdiction				Structurally Deficient	
			Municipal		State			
			Number	Average BHI	Number	Average BHI	Number	Average BHI
Agawam*	18	85.51	1	64.30	17	86.76	1	48.80
Amherst	15	76.47	10	71.13	5	87.16	1	11.40
Belchertown	12	87.68	8	92.45	4	78.15	1	43.90
Blandford	12	88.16	6	92.22	6	84.10		
Brimfield	27	86.63	17	89.32	10	82.05		
Chester	25	86.83	16	85.68	9	88.88	1	53.50
Chesterfield	10	76.17	7	75.01	3	78.87	2	58.00
Chicopee	50	77.68	5	86.12	45	76.74	2	53.20
Cummington	13	74.91	6	76.80	7	73.29		
Easthampton	19	83.00	10	83.53	9	82.41	1	67.50
Goshen	4	95.48	2	97.15	2	93.80		
Granby	8	84.13	7	83.21	1	90.50		
Granville	7	85.44	4	83.78	3	87.67		
Hadley	10	87.09	4	91.40	6	84.22		
Hampden	8	86.16	8	86.16			1	100.00
Hatfield	15	81.43	5	79.82	10	82.24	2	74.05
Holland	2	0.00	2	0.00				
Holyoke	49	77.48	9	81.97	40	76.47	4	33.23
Huntington	8	84.83	2	77.00	6	87.43	1	92.10
Longmeadow	4	73.98			4	73.98		
Ludlow	23	67.26	8	55.48	15	73.54	2	66.05
Middlefield	9	72.54	9	72.54			1	51.50
Monson	23	77.71	13	77.82	10	79.63	4	56.53
Montgomery	5	81.54	4	87.08	1	59.40		
Northampton	44	80.27	21	85.52	23	75.47	8	67.09
Palmer	30	76.92	8	83.38	22	74.58	3	78.33
Pelham	3	97.57	3	97.57				
Plainfield	2	87.50	2	87.50				
Russell	15	83.07	4	80.30	11	84.08	1	99.70
South Hadley	11	84.21	4	80.30	7	86.44		
Southampton	11	76.14	9	71.42	2	97.35		
Southwick	3	84.20	1	55.90	2	98.35		
Springfield	61	75.75	13	67.40	48	78.00	5	50.70
Wales	1	93.20	1	93.20			1	93.20
Ware	16	84.62	9	80.57	7	89.83	3	74.37
West Springfield	26	73.40			26	73.40	1	12.10
Westfield	36	80.68	13	73.43	25	81.03	1	60.30
Westhampton	14	73.76	11	79.89	1	78.10	1	31.50
Wilbraham	4	83.23	2	84.00	2	82.45		
Williamsburg	17	87.50	10	84.02	7	92.47	1	51.80
Worthington	15	77.85	10	74.06	5	85.44	1	90.30
Grand Total	685	79.67	284	79.81	401	79.55	50	60.35

(**BHI**): Bridge Health Index , * The Veterans Bridge over the Westfield River is under joint jurisdiction of the Town of Agawam and Town of West Springfield.

Figure 26 - Rail Bridge Overpass

MassDOT bridge Inventory data was utilized to identify bridges within the Pioneer valley that are closed, weight restricted, or have a low clearance roadway underpass (Figure 27). PVPC staff utilized the "Bridges" shapefile obtained from the GeoDOT online portal to locate bridges that could impact commercial vehicle flow and identify their spatial attributes. It reflects the status of MassDOT bridges according to a 2017-2018 survey. The data indicated whether or not the bridge is posted for weight restriction, but did not specify the type of weight restriction.

There are currently six closed bridges in the region (Table 17). The closed bridges are located in Amherst, Belchertown, Chester, Monson, Northampton, and West Springfield. Two of the closed bridges were over a railroad and the rest span water bodies.

Low height clearance underpasses below bridges were identified by identifying underpasses with vertical heights below 13.5 ft. This is the threshold defined by the Massachusetts Highway Trucking Permits Office (see Appendix). There are six low clearance underpasses below roadway bridges within the Pioneer Valley region (Table 18). The low clearance underpasses are located in Huntington, Northampton, Springfield, and Westfield. Locations of low clearance railroad bridge underpasses were shown on the map in Figure 17 in section 3.1.3.

Figure 27 - Bridges Impacting Commercial Vehicle Flow

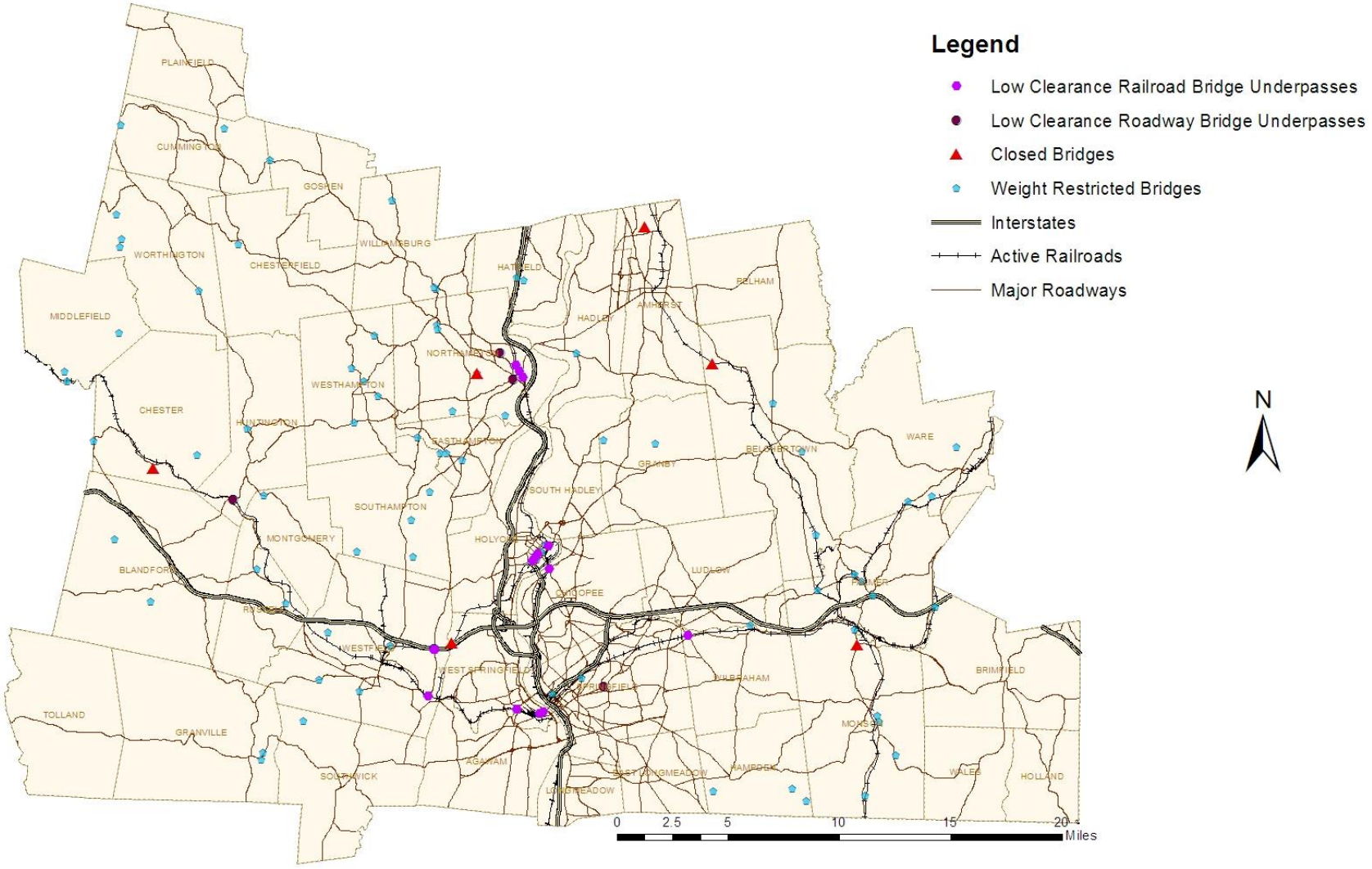


Table 17 - Closed Bridges in the Pioneer Valley Region

Community	Bridge Roadway Name	Over	Jurisdiction	Roadway Classification
Chester	Sanderson Brook Road	Water - Sanderson Brook	State	Rural Local
Monson	Hospital Road	Water - Quaboag Stream	Town	Urban Minor Arterial
Amherst	Mill Street	Water - Mill River	Town	Urban Local
Belchertown	Wilson Street	Railroad - NECR	State	Urban Local
West Springfield	Prospect Avenue	Railroad - PVRR	State	Urban Collector
Northampton	Clement Street	Water - Mill River	City/Municipal	Urban Collector

Table 18 - Low Height Clearance below Bridge

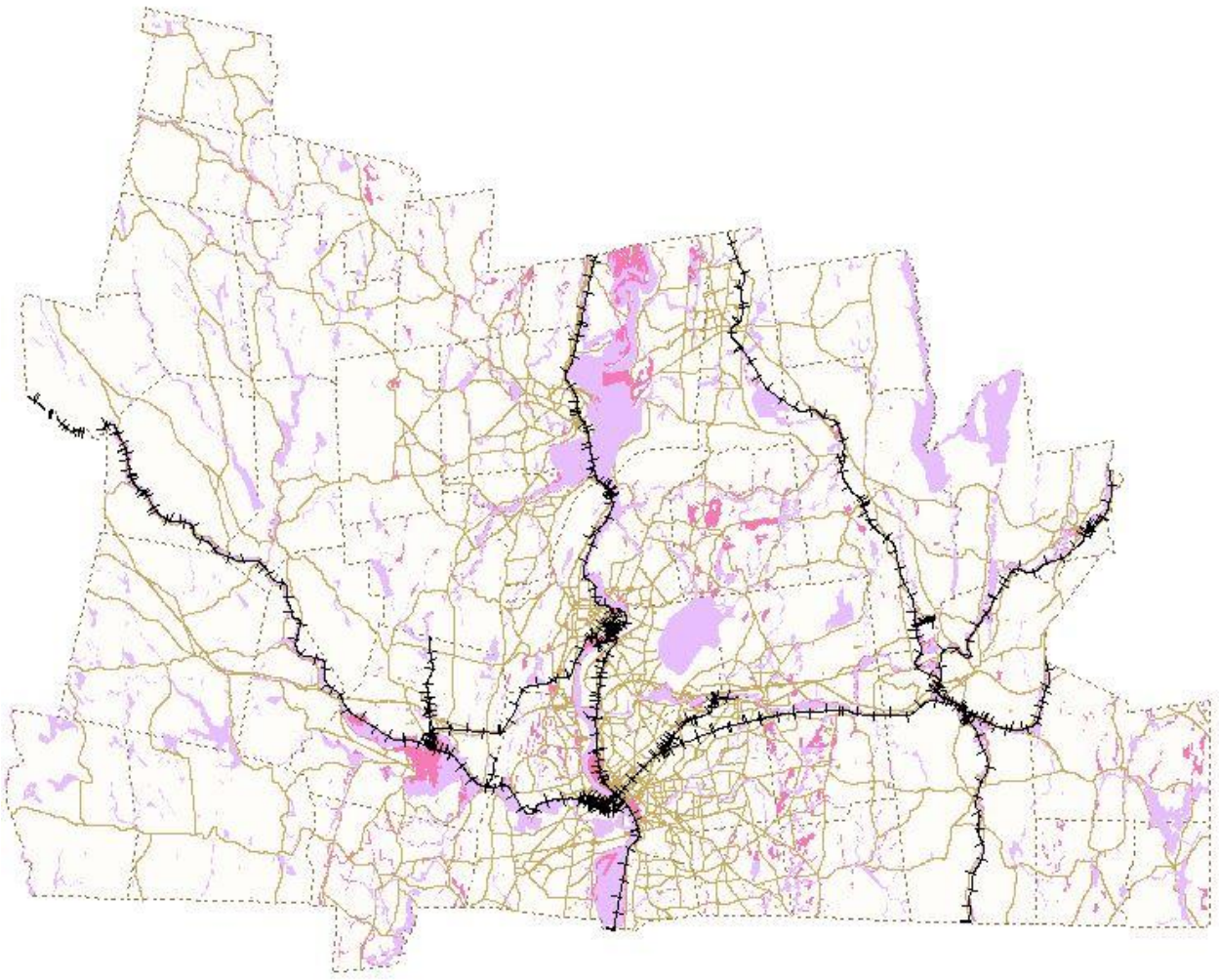
Community	Roadway Name	Bridge above Roadway	Bridge Jurisdiction	Bridge Roadway Classification
Northampton	Northampton Bikeway	Jackson Street	City/Municipal	Urban Collector
Westfield	East Mountain Road	I-90 EB	State	Urban Interstate
Westfield	East Mountain Road	I-90 WB	State	Urban Interstate
Springfield	Roosevelt Avenue	State Street	City/Municipal	Urban Arterial
Northampton	Clark Avenue	New South Street	State	Urban Arterial
Huntington	MassDOT Depot	Freight Yard	State Highway	Rural Local

Note: Tables 17 and 18 only reflect roadway bridges over another roadway.
Low clearance railroad bridges over regional roadways are identified in Figure 17

3.4 FLOODING HAZARDS IMPACTING THE FREIGHT NETWORK

The potential disruption to the regional freight network as a result of flooding could have a significant impact on the transportation of goods within and through the region. In general areas abutting major water bodies such as major rivers and lakes within the Pioneer Valley are subject to various levels of flooding. The most hazardous levels of flooding could be associated with the 500 year flood zone and to a lesser extent to the 100 year flood zone (Figure 28). Such hazards could occur due an extreme weather event in combination with a failure in the structures of protective barriers such as dikes and dams. Major roadways, once inundated with water could become impassable or collapse. Railways inundated with flood waters could also impact freight movement. The main north/south rail line along the Connecticut river is an example of a vulnerable asset within the Pioneer Valley during a potential extreme weather event. It is extremely important for the regional freight network to be maintained to a high standard to continue to provide for the reliable transportation of goods in the Pioneer Valley.

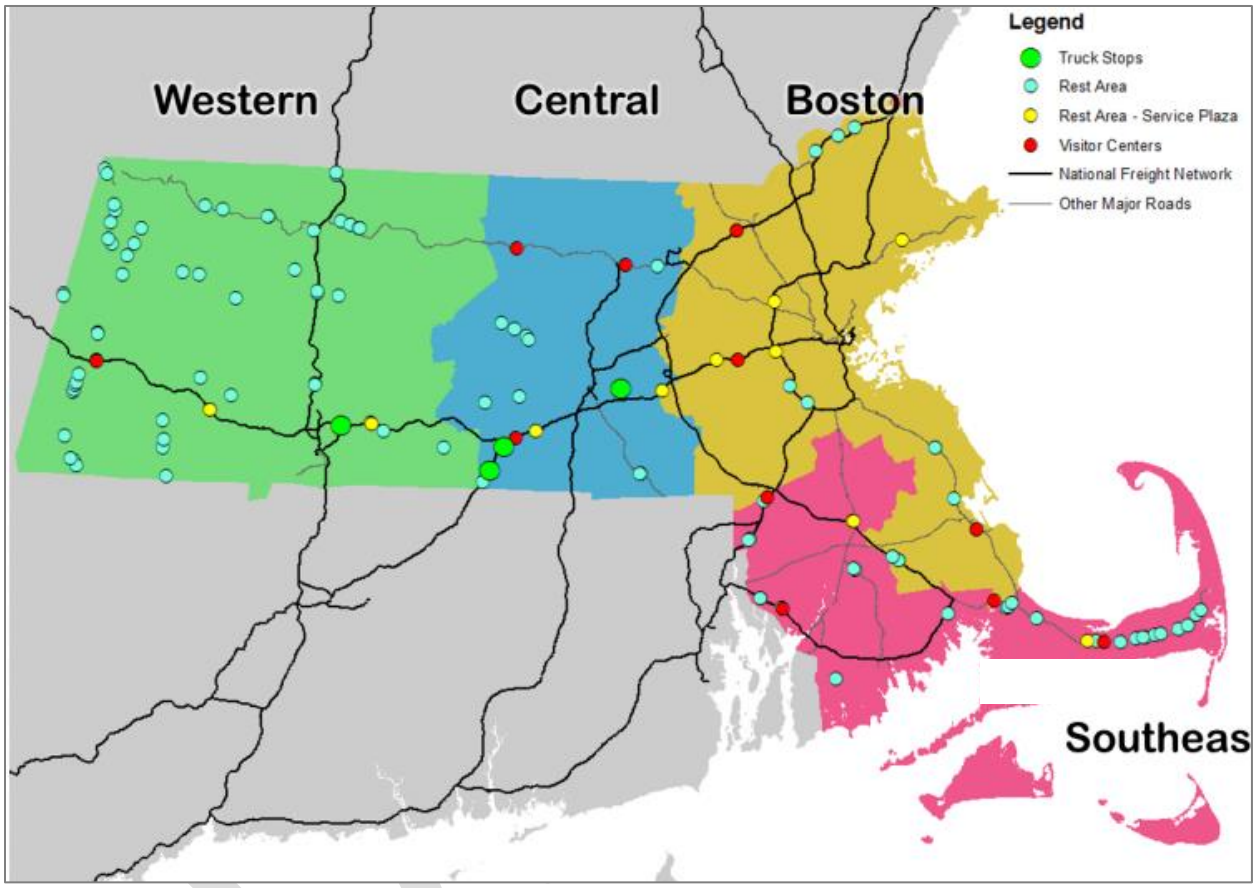
Figure 28 - Freight Network Potentially Impacted by the 100 and 500 Year Flood Zones



3.5 PARKING AND REST AREAS

Drivers of commercial motor vehicles must follow strict hours of service regulations established by the Federal Motor Carrier Safety Administration (FMCSA). As a result, safe, convenient rest areas are important for long-haul drivers to meet hours of service regulations. MassDOT provides a variety of truck stops and rest areas throughout Massachusetts including the Pioneer Valley region (Figure 29).

Figure 29 - MassDOT Rest Areas



Source: MassDOT

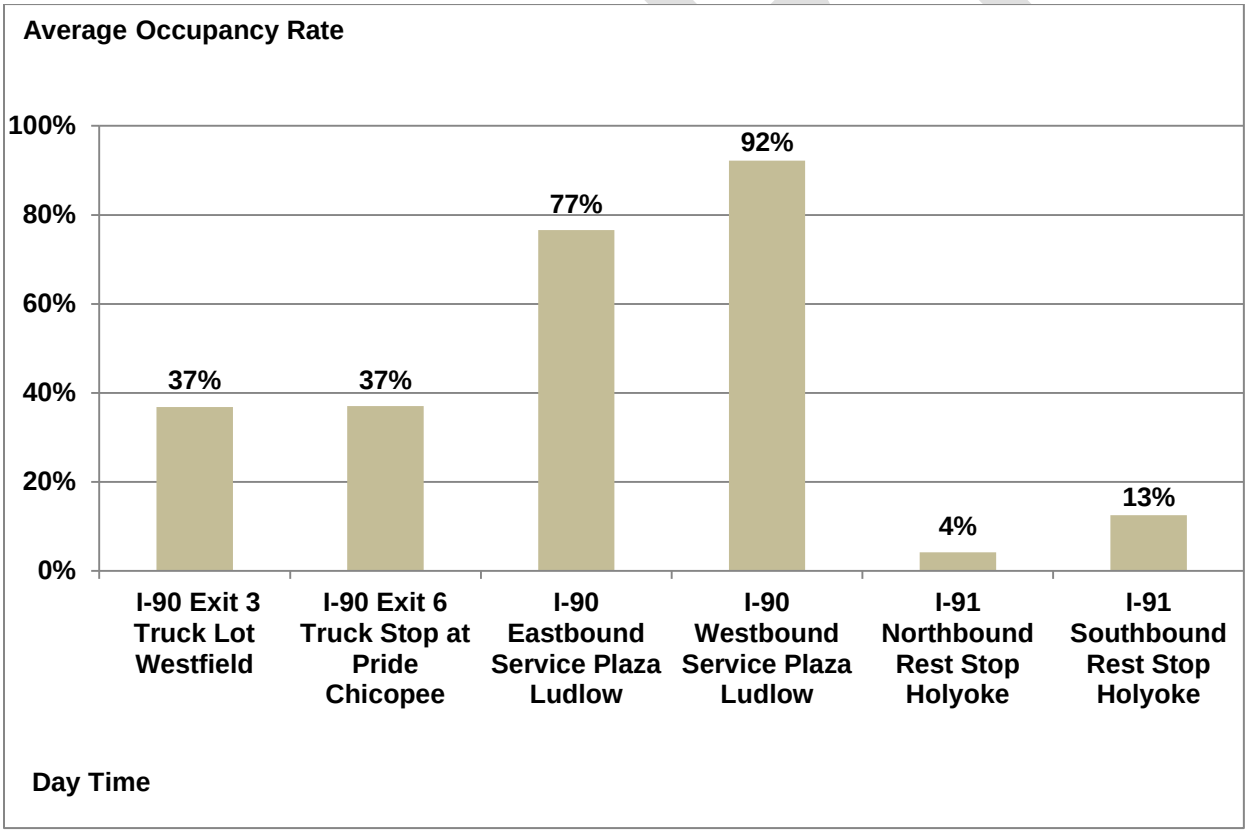
In addition to the MassDOT rest areas, there are several private rest stops such as the Pride Traveler Center located on Burnett Road in the City of Chicopee near the Massachusetts Turnpike Exit 6. Another private truck stop with an associated rest area is located in the City of Westfield near the Massachusetts Turnpike Exit 3. PVPC staff has started to document usage of regional truck rest stops (Figure 30). These truck rest stops are described below:

- **Pride Truck Stop in Chicopee**: Located directly off of Exit 6 for the Massachusetts Turnpike, this privately operated facility features a gas station, restaurant, and weigh station. There are a total of 157 parking spaces. There is a fee for parking after 3 hours (Figure 31).

- **Truck Parking Lot in Westfield**: Located directly off of Exit 3 for the Massachusetts Turnpike, this lot has a total of 38 parking spaces. Parking is free but signs restrict overnight parking to no more than 3 consecutive nights.
- **Pride Truck Stop in Springfield**: Located directly off of Interstate 91 Exit 9B on Route 20, this privately operated facility features a gas station, convenience store, and weigh station.
- **Massachusetts Turnpike Service Plazas in Ludlow**—A total of 8 truck parking spaces are provided at both Massachusetts Turnpike Service Plaza in Ludlow, MA. Many trucks also park in unmarked spaces along the guardrail in these areas.
- **I-91 Rest Stops in Holyoke**: Trucks are allowed to parking in both of these small rest stops but there are no formally marked spaces. No other services are provided.

There are also numerous "informal" lots, often large retail parking areas near major highway access points. A summary of average weekday usage of known truck rest areas in the Pioneer Valley is presented below. No trucks were observed to park in the I-91 Northbound Rest Area in Holyoke.

Figure 30 – Truck Stop Average Day Time Occupancy Rate (2017-2018)



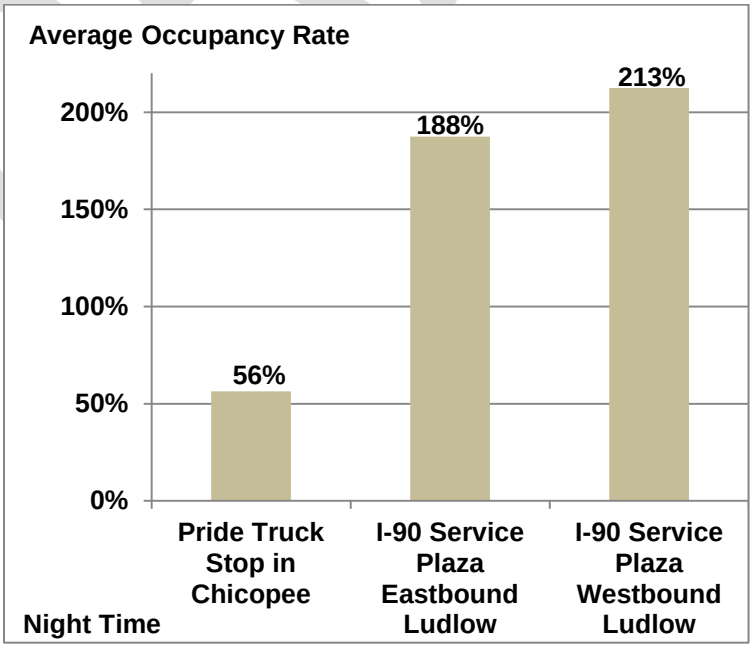
A night time count at three regional rest stops was conducted after 10 pm during the month of May in 2019 (Figure 32). This data collection was initiated to assess the need for continued future counts during the night time period in addition to the regular monthly counts customary between the hours of 10am to 3pm on an average weekday. The three locations showed a demand that exceeded the day use by large magnitudes.

In Chicopee, the occupancy ratio during the day was 37% but increased to 56% at night. Night truck use in Ludlow at the rest stop near Exit 7 along I-90 was double the day time use and greatly exceeded the capacity of marked spaces for both rest areas. Reviewing the nightly truck occupancy data at truck stops and rest areas showed a need for continued data collection efforts to establish and average annual daily occupancy night counts.

Figure 31 - Pride Truck Stop in Chicopee North of I-90 and I-291 Interchange 6

Source: Pictometry EFS

Figure 32 - Truck Stop Night Time Occupancy Rate (2019)



This preliminary data clearly shows a need for more truck parking at the I-90 service plaza in Ludlow in both directions. It is recommended that MassDOT review the existing layout of the Ludlow rest areas to identify options to accommodate trucks during hours of darkness. PVPC will continue to monitor these rest areas and expand data collection to other regional rest areas during night time hours.

To assess the usage of all truck parking locations in the region, PVPC staff reached out to MassDOT to compare state data regarding truck stops that was submitted as part of the most recent FHWA Jason's Law survey. After reviewing the most recent survey data provided, staff were able to identify additional truck stops to be added to the above areas described. Those are highlighted in bold in Table 19 below. PVPC staff plans to add them to the regional inventory of truck stops and looks to begin to periodically count truck usage at these rest areas in the future.

Table 19 - Rest Stops within the Pioneer Valley

	Rest Stop Name	Route Number	Miles Post or Exit	Municipality
1	**Service Plaza EB**	**I-90**	**29**	**Blandford**
2	**Service Plaza WB**	**I-90**	**29.2**	**Blandford**
3	Service Plaza EB	I-90	55.2	Ludlow
4	Service Plaza WB	I-90	56.1	Ludlow
5	Rest Area NB	I-91	18	Holyoke
6	Rest Area SB	I-91	18.4	Holyoke
7	**Rest Area EB**	**US 20**		**Brimfield**
8	**Rest Area EB**	**US 20**		**Chester**
9	**Pullout EB**	**US 20**		**Wilbraham**
10	**Rest Area EB**	**SR 9**	**24.5**	**Cummington**
11	**Pullout EB**	**SR 9**		**Cummington**
12	**Rest Area EB**	**SR 9**		**Cummington**
13	**Rest Area EB**	**US 20**		**Huntington**

Source: MassDOT Jason's Law Survey 2018.

4. ECONOMIC DEVELOPMENT

There is a strong link between a thriving economy and the efficient transport of goods and services. Improvements in a freight network facilitate the exchange of goods. It is expected that as the demand for goods increases, the demand for freight services will increase as well. The result is enhanced opportunities for economic development spurred by this increased demand exchange. As a result, the consideration of the impacts on economic development at the local, regional, and state level is important to discuss as part of the regional freight plan.

To plan for future changes, planners forecast population growth, predict changes in the built environment, and estimate economic growth. The study of future scenarios help planners draft strategies to address and accommodate potential impacts. In this regard, the 2018 Massachusetts State Freight Plan identified three scenarios called “Plausible Futures”. The first state scenario is called "Commonwealth Quo", in which urbanization accelerates causing city centers to grow rapidly in population and employment while suburbs plateau or grow more slowly. It predicts a plateau in globalization that potentially recedes with a gradual move of manufacturing back to the United States. Massachusetts, with its top institutes of higher education, realizes an inward flow of expertise that fuels innovation and entrepreneurship. This scenario does not seem to have a measurable impact on our region at this time.

The second Massachusetts scenario is called "Innovative Acceleration." Under this scenario, cities with sufficient infrastructure experience an economic boom driven by technology, globalization and knowledge economy, which again accounts for the many institutes of higher education in Massachusetts fostering opportunities for innovation. An increase in freight demand is predicted to create congestion along the urban road network. This scenario appears to be more Boston centric and implies there could be struggles in gateway cities such as the City of Springfield.

The third scenario is called "Picket Fences", in which urbanization and globalization plateaus while technology and knowledge based economy continue to grow steadily. This scenario sees a migration of growth to suburban and exurban areas. This in turn could trigger an increase in e-commerce and automated vehicles. It is assumed that large distribution centers would continue to develop in rural and exurban communities leading to significant traffic increases. The Picket Fences scenario would likely have the largest impact on the Pioneer Valley region.

4.1 REGIONAL IMPACT OF “PICKET FENCES” SCENARIO

The "Picket Fences" future scenario described above would have potential impacts on the Pioneer Region. Under this scenario, the Pioneer Valley region could see population spread out into its rural communities and closer to major employment areas. The region is already seeing the development of distribution centers for companies such as Amazon in Holyoke, C&S Wholesale Grocers in Hatfield, and Federal Express in Hatfield.

This trend is expected to continue with an increased demand for e-commerce and the expansion of population into suburban and exurban areas. The resulting increase in delivery vehicles would pose challenges to the regional transportation system. As a result, proposed new high traffic generating development may require enhanced review to identify potential mitigation measures. Communities should consider adopting policies that require enhanced site plan review and traffic impact studies for proposed new development. Under this scenario, it would be extremely important to identify regional infrastructure improvements that meet the future demands of freight, particularly in the vicinity of intermodal freight yards.

4.2 COMMODITY FLOW

According to the office of the United States Trade Representative, the City of Springfield realized $785 million through the export of goods in the 2017 calendar year. Both the Freight Analysis Framework by the Federal Highway Administration and Cluster Mapping by Harvard University were utilized for this section to help establish existing commodity and employment flows in the Pioneer Valley.

Data from the FHWA Freight Analysis Framework v4 presents past and future commodity flow value and weights from air freight. In 2015, the total value of commodity flows by air in and out of the Hartford CT area was $2,538.75 million. Air freight outside of the Metro Boston/Logan Airport, which includes Pioneer Valley local airports such as Westover, generated a total of $1,483.44 million in commodity flow value. Air freight commodity flow for the Hartford area is forecast to continue to increase at a greater rate than the rest of Massachusetts.

4.2.1 Traded Regional Industry Clusters

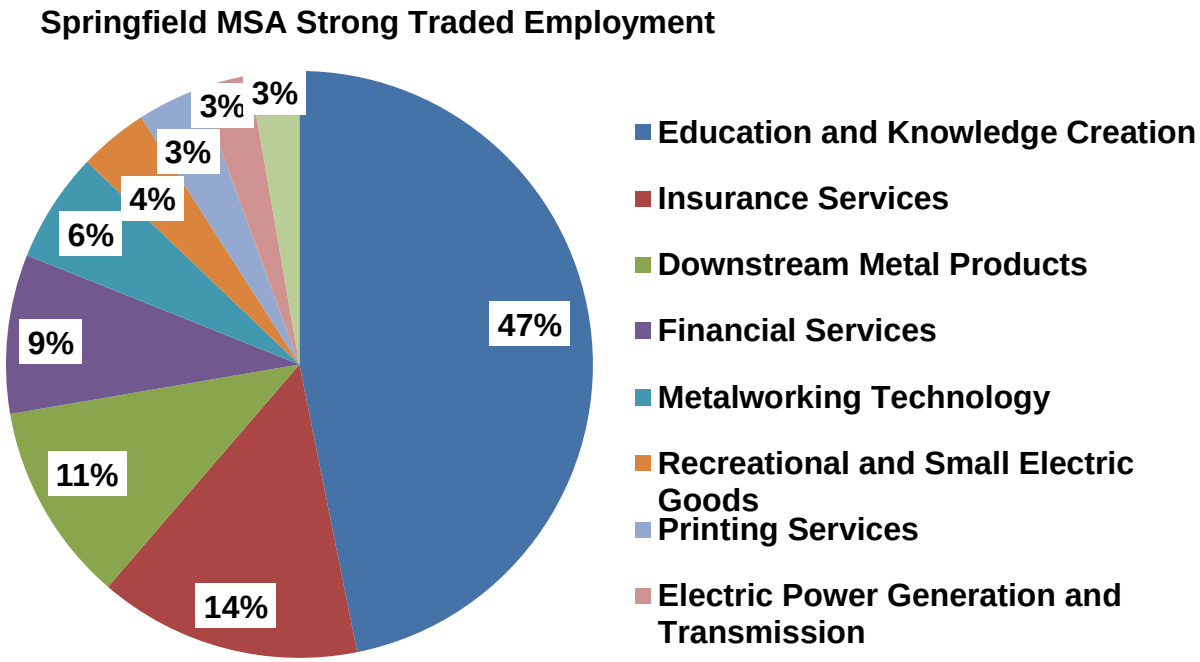
The top industry sectors driving the Pioneer Valley regional economy were health care and education, followed by manufacturing according to the most recent regional economic development plan for the Pioneer Valley region. In this section, indicators from the Harvard University Cluster Mapping project were used to analyze the flow of business between regions through the lens of employment data grouped by industry. In this project, a "cluster" is defined as the regional concentration of related industries in a particular location. Clusters also increase the competitiveness of a region for jobs and private investment. A cluster may help improve productivity and encourage innovation when technology, information, specialized talent, competing companies, academic institutions, and other organizations are brought together. It helps increase regional economic competitiveness by encouraging higher rates of job growth, wage growth, new business formation, and innovative ideas that add value upon implementation.

Regional economies are made up of two types of clusters: traded and local. The two differ in patterns of geographic presence and competitive dynamics. A traded cluster is a group of related industries which serve regions beyond that in which they are located. Because these clusters do business in inter-regional markets, they are exposed to competition from other regions. Such clusters are highly concentrated in only a few regions. They tend to appear in places that afford specific competitive advantages. In contrast, a **local cluster** consists of industries that primarily serve local markets.

Therefore, they do not directly compete with like clusters in other regions. Local clusters tend to be prevalent in every region in the country, and employment is usually proportional to the population of that region.

The data charted below summarizes rankings of **traded clusters** in the Springfield Metropolitan Statistical Area (MSA) and within Hampden and Hampshire counties (Figures 33, 34 and 35). A MSA is a geographic representation of a core area containing a substantial population nucleus, together with adjacent communities that have a high degree of economic and social integration with that core. The Springfield MSA includes both Hampden and Hampshire counties which constitute the whole of the Pioneer Valley region. All three figures show the percentages of actual 2016 employment in each traded cluster. Education dominated the strong traded employment clusters in all three geographic areas. In both Hampden county and the Springfield MSA, Insurance Services represented the second traded employment. These two industry types may not link to freight related industries, but the third strongly traded employment was in Downstream Metal products which include sawblades, hand tools, small arms and ornamental metalwork. This could indicate a potential for commodity flows into and out of Hampden County.

Figure 33 - Strong Traded Employment Clusters in Springfield MSA 2016



Source: U.S. Cluster Mapping Project (http://clustermapping.us/), Institute for Strategy and Competitiveness, Harvard Business School. Data Sources

Those identified as “Strong” traded clusters fall within the top 25% of regions in the U.S. in terms of employment specialization in that cluster category. These clusters represent the most regionally specialized industry groups which are doing business beyond the Pioneer Valley. http://www.clustermapping.us/content/cluster-mapping-methodology

Figure 34 - Strong Traded Employment Clusters in Hampden County 2016

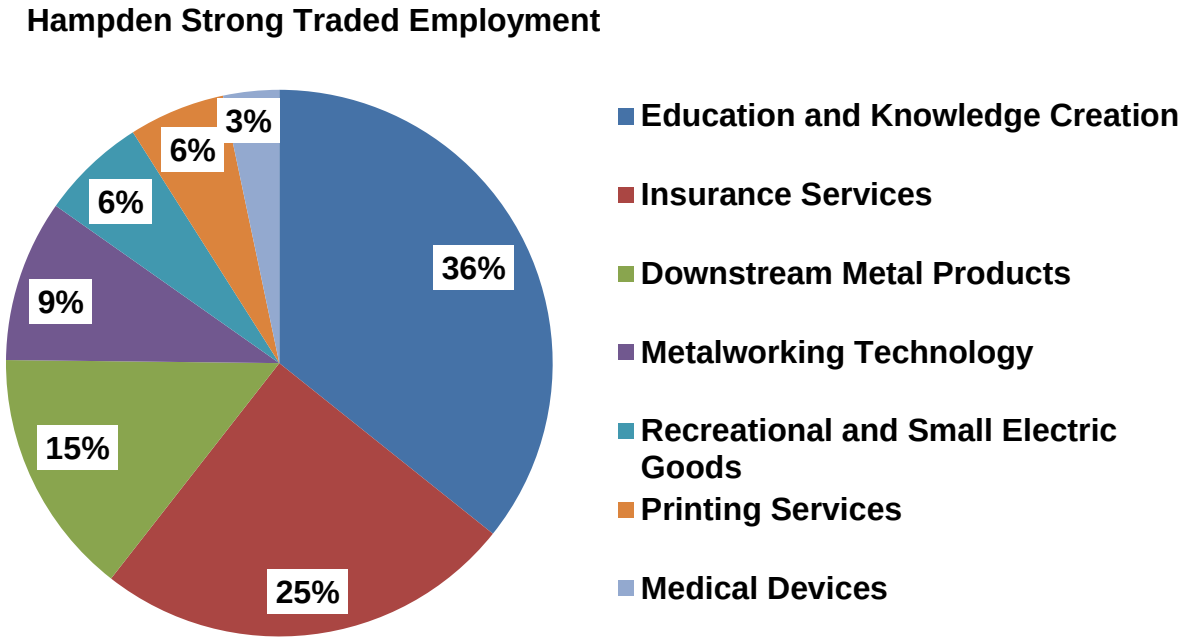
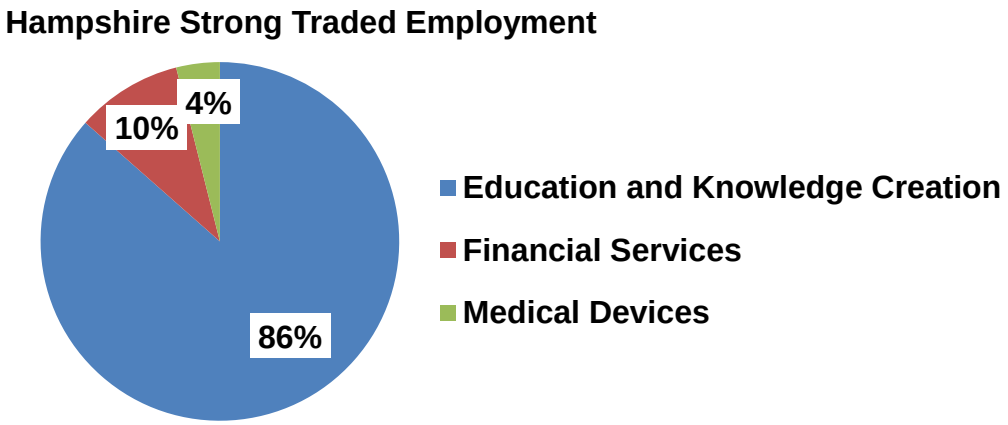


Figure 35 - Strong Traded Employment Clusters in Hampshire County 2016



4.3 COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY

The Pioneer Valley's 2019 Comprehensive Economic Development Strategy (CEDS) serves both as a guiding vision and “blueprint” for the economic growth of the region and as a benchmark with which to measure growth and success. One of the goals of the CEDS is to "Implement and Enhance the Infrastructure that Connects, Sustains and Ensures the Safety and Resiliency of the Region and its Economy". This goal points to the importance of the proper maintenance of the regional transportation system.

Freight is dependent on the demand for service which is spurred by a thriving economy. Current economic development trends in the Pioneer Valley include an interest in urban development particularly in the City of Springfield. In addition, several local companies such as U.S. Tsubaki and J. Polep in Chicopee, HP Hood in Agawam, and Agri-Mark in West Springfield.

There is also an increased demand for both residential and commercial solar photovoltaic installations region wide. The need to haul recycling and refuse materials out of the region add to the demand for freight service as local landfills are being closed and capped. Current landfills are over capacity and the region will face an increased needing to transport trash to alternate locations outside of the region. In such scenarios, a robust freight rail service is key to meeting increased future demand. To this effect, recent improvements to the North-South rail tracks and a need for future improvement to the East-West rail tracks would be key for success in the Pioneer Valley region.

Potential changes in the way business will be conducted in the future around the region include automation. Automation of traffic controls at the Westover airport would allow 24 hours of service without the need for control tower staff. Such expansion of service hours could improve access to air freight in civil aviation for the region.

4.3.1 Projects Spurring Regional Economic Development

The Pioneer Valley Region is maintaining steady economic growth. The region’s cities, particularly Springfield, are seeing significant new investment from large new employers such as MGM Springfield and CRRC MA. New development is also happening through the revitalization of old mill buildings or former brownfield sites. Other parts of the region are also experiencing a strong period of growth and business confidence not seen since before the 2008 recession, including downtown revitalization in several of the region’s smaller population centers. A list of major projects currently under way in the region can be found In Table 20. These investments are spurring workforce and training efforts (such as Holyoke’s recently completed HCC MGM Culinary Institute and the Springfield based Gaming Training Institute) as well as requiring greater quantities of local products and services.

Table 20 - Projects Spurring Regional Economic Development

Project	Key Implementer(s)	Sector	Cost (Millions)
North Square at the Mill District, Amherst	Beacon Communities; W.D. Cowls	Private	$47.5
Ludlow Mills Clock Tower Building – Mixed Use	Winn Development	Private	$40
One Ferry Street Mill Mixed Use Redevelopment, Easthampton	Michael Michon	Private	$43
31 Elm Street Mixed Use Redevelopment, Springfield	OPAL Development, Winn Development, MGM Springfield	Private	$56
Big Y Foods Distribution Center Expansion, Springfield	Big Y Foods	Private	$35
Cabotville Mills Mixed Use Development, Chicopee	Silverbrick Group	Private	$45
Colvest Group Bank and Retail Development, Holyoke	Colvest Group	Private	$8
Educare Springfield	Davis Foundation; Holyoke-Chicopee-Springfield Head Start	Public/ Private	$14
Hotel and Indoor Climbing/Skydiving	Pioneer Valley Hotel Group	Private	$37
J. Polep Expansion, Chicopee	J. Polep	Private	$8
Burnett Road Hotel and Restaurant Complex, Chicopee	Dinesh Patel	Private	$45
Springfield YMCA Housing Renovation	Home City Development	Non-Profit	$12
River Valley Co-op – Easthampton location	River Valley Co-op	Private	TBD
CRRC Warehouse, Springfield	CRRC	Private	$4
Way Finders Headquarters	Way Finders	Public/ Private	$16
River Mills Assisted Living, Chicopee	DS Development	Private	$25
MassMutual, Springfield	Headquarters Improvements	Private	$50
Springfield Innovation Center	DevelopSpringfield; MassDevelopment	Public/ Private	$7
Naismith Memorial Basketball Hall of Fame Renovations	Naismith Memorial Basketball Hall of Fame	Private	$30
Paramount Theater and Massasoit Building, Springfield	New England Farm Workers Council	Public/ Private	$41
Check Writers Corporate Headquarters - former Clarke School	Check Writers Payroll, Inc.	Private	$4
Lyman Mills Redevelopment	Mount Holyoke Development	Private	$7
TOTAL COMMITTED FUNDS			**$574.5+**

Source: (CEDS) 2019 Appendix C: p106-107.

Regional economic development can have direct or indirect impacts on freight demand. Direct impact occurs when a project provides a home for an activity that uses freight to conduct its business on a regular basis such as manufacturing. Whereas, projects such as new construction and expansion of current facilities pose a temporarily demand for shipping of construction materials and building furniture. The development of business and housing projects would potentially increase freight demand indirectly through office supply and consumer merchandise orders due to the rise in use of e-commerce and the convenient shipping it currently provides.

4.3.2 Major Industries

The 2018 Pioneer Valley Labor Market Blueprint report found that the top three industries most important to the region's economic success are:

1) Health Care and Social Assistance
2) Educational Services
3) Advanced Manufacturing (manufacturing that uses innovative technology)

Other critical industry sectors are:

- Finance and Insurance
- Professional, Scientific, and Technical Services
- Accommodation and Food Services
- Agriculture and Sustainable Food Systems

These industry sectors have dominated for nearly two decades. Agriculture and Sustainable Food Systems are re-emerging and growing with value-added manufacturing processing, distribution, serving and selling, as well as managing food waste, animal care, and farm and nursery management. Gaming-related occupations are new to the region and expected to remain steady. The casino and associated hotel and other activities have increased demand for workers in food preparation and service.

Cross-industry occupations include:

- IT-related
- Professional Services
- Back Office Administrative Support
- Logistics and Transportation (management of the movements of goods from manufacturer to user and their transport by various modes)
- Trades (hands-on-work)

4.4 FREIGHT AND LOGISTICS OVERVIEW

This section presents an overview of freight and logistics in the Pioneer Valley region and the state of Massachusetts based on the most recent available data (Figure 21). The U.S. Census Bureau has named the Pioneer Valley geographic region the Springfield Metropolitan Statistical Area (MSA). All regional data presented in this section has been compiled for the Springfield MSA and represents Franklin, Hampshire, and Hampden counties. This reflects the interconnectedness of communities within the

Pioneer Valley especially those in proximity to Interstate 91 and the Connecticut River rail line.

Table 21 - Three Levels of Geography for Analysis: City, Region, State

Level	Geography	Area (Square Miles)	2010 Population	Population Growth Rate (2000-2010)
Largest City	Springfield	32	153,060	0.6%
Region	Pioneer Valley	1,903	694,734	2.2%
State	Massachusetts	7,800	6,349,097	3.1%

Source: U.S. Census 2010.

To assess the viability of the economic environment in the Pioneer Valley as a region, a series of data tabulations have been performed using data from a variety of sources. Staff reviewed the most recent data available from the Bureau of Economic Analysis, the Massachusetts Executive Office of Labor and Workforce Development, and the FHWA Freight Analysis Framework. The top growing industry in the Pioneer Valley was Transportation and Warehousing, growing by 68% over eight years between 2010 and 2018 (Table 22). While the Healthcare and Social Assistance category had the largest increase in the number of jobs created (Table 23), increases in the Retail Trade and Food Services categories could indicate a higher demand for freight in the future.

Table 22 - Top Five Growing Industries in the Pioneer Valley

Rank	Industry	% Change (2010-2018)	Net Job Creation (2010-2018)
1	Healthcare & Social Assistance	36%	19,923
2	Transportation & Warehousing	68%	6,221
3	Real Estate	20%	2,501
4	Administrative and Support	17%	2,475
5	Arts, Entertainment, and Recreation	16%	1,585

Source: Bureau of Economic Analysis, Table CAEMP25N.

Table 23 - Largest Industry Sectors by Employment in Pioneer Valley

Rank	Industry Sector	% of Workforce
1	Health Care and Social assistance	21%
2	Retail Trade	10%
3	Accommodation and Food Services	8%

Source: Bureau of Economic Analysis, Table CAEMP25N.

The major private sector employers within the Pioneer Valley are those who had from one to five thousand employees in 2018 (Table 24). Information on the largest employers comes from the Labor Market Information provided by Infogroup and

accessed online at http://lmi2.detma.org/lmi/Largest_employer_index.asp. A number of these major employers including American Outdoor Brands, C&S Wholesale Grocers and Yankee Candle depend on a reliable regional freight network.

Table 24 - Major Private Sector Employers in the Pioneer Valley

Employer	NAICS Code - Business Line
American Outdoor Brands Corp.	3329 - Other Fabricated Metal Product Manufacturing
Baystate Health Inc.	5416 - Management, Scientific, and Technical Consulting Services
C&S Wholesale Grocers Inc	4244 - Grocery and Related Product Merchant Wholesalers
General Dynamics Techsight	9999 - Non-classifiable Establishments
Massachusetts Mutual Life Insurance	5242 - Agencies, Brokerages, and Other Insurance Related Activities
MGM Springfield	7132 - Gambling Industries
OMG Inc	2381 - Foundation, Structure, and Building Exterior Contractors
Valet Park of America	8129 - Other Personal Services
Weldon Outpatient Rehab	6214 - Outpatient Care Centers
Yankee Candle Inc.	3399- Other Miscellaneous Manufacturing

Source: MA Executive Office of Labor and Workforce Development (EOLWD).

The region's top six employment sectors of non-agricultural business groups by industry included retail at third place and manufacturing at fifth place (Table 25). These sectors rely heavily on trucking and rail to distribute and receive goods.

Table 25 - Top Non-Agricultural Employment Sectors in the Pioneer Valley

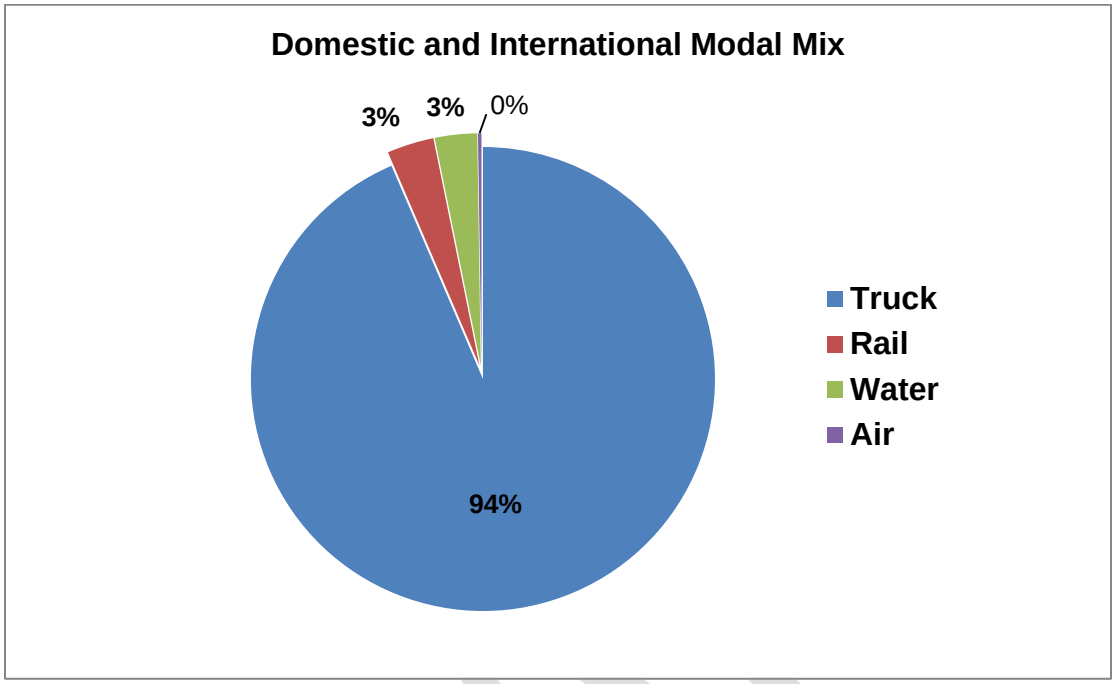
Rank	Sector	Employment (2018)	% of Workforce
1	Health Care & Social Assistance	74,653	18.2%
2	Government & Government Enterprises	60,027	14.6%
3	Retail Trade	36,430	8.9%
4	Accommodation & Food Services	27,201	6.6%
5	Manufacturing	26,620	6.5%
6	Educational Services	23,424	5.7%

Source: Bureau of Economic Analysis, Table CAEMP25N.

A combination of transport modes are used to move goods between domestic and international origins and destinations. In the state of Massachusetts, trucks are the preferred freight mode of choice (Figure 36). In 2018, 197 Million Tons of goods transported were transported by truck within the state (Table 26). Over half of the freight flows in 2018 occurred entirely within the state (Table 27). Freight flow data was

accessed from an online tool using the Freight Analysis Framework Version 4 (FAFA4): https://faf.ornl.gov/fafweb/Extraction1.aspx.

Figure 36 - Massachusetts Domestic and International Freight Modes in 2018



Source: FHWA Freight Analysis Framework (FAF4).

Table 26 - Massachusetts Freight Transportation Modes by Weight in 2018

Mode	Million Tons
Truck	197
Rail	7
Water	6
Air	1
Total	**210**

Table 27 - Massachusetts Freight Flows in 2018

Freight	Million Tons
Within State	117
Imports	59
Exports	35
Total	**211**

5. RECOMMENDED STRATEGIES

An efficient and resilient freight network that meets the current and future needs of the Pioneer Valley is key to the region's economic vitality and future sustainability. This chapter of the regional freight plan presents the recommended strategies for preservation and improvement of the regional freight network. The strategies identified in this plan are divided into infrastructure improvements and policy changes that could facilitate freight movement. Finally, a list of potential transportation projects supportive to freight is discussed.

5.1 INFRASTRUCTURE IMPROVEMENTS

The infrastructure challenges for larger vehicles such as commercial truck and rail cars identified earlier allude to the need for several improvements throughout the regional freight network. Improvements recommended range from short-term fixes to long term construction projects. Better signage on roads would benefit all users. A comprehensive upgraded signage of restricted routes would help reduce crashes experienced by trucks in the Pioneer Valley. Detour and rerouting schemes could be revaluated and adequate signage installed at known problem locations. At grade crossing treatments and advance warning systems could be installed at locations with a history of railroad crashes. Geometric improvements, including the elimination of low vertical clearance underpasses should be included as part of future transportation improvement projects when feasible. There should also be a priority on the expansion and enhancement of truck rest areas for the region.

5.2 OPERATION INNOVATIONS

The availability of real-time traffic information allows freight operators to reroute their fleet to avoid congestion created due to major roadway construction projects and vehicle crashes. It will be important to continue to monitor advances in technology such as 5G wireless networks to identify potential uses for the freight community. This could further enhance coordination between operators to improve the efficiency of freight movement and facilitate multimodal transfers of goods between modes (Figure 37).

5.3 POLICIES

Every few years, local communities are encouraged to review truck restricted routes and assess the need for modifications spurred by changes from recent land and business development along paths leading to shipping activity centers. The region could also benefit from additional freight detail in transportation planning studies such as the reporting of truck volumes and the development of preferred truck routes for high generating land uses. The FHWA recently encouraged the Pioneer Valley MPO to invite members from the freight community to participate in the Joint Transportation Committee (JTC) process. The JTC concurs with this recommendation as it could add new perspectives when developing documents such as the RTP and TIP.

Figure 37 - Freight Cars Approaching Union Station in Springfield.

5.4 FUTURE ANALYSIS

During the process of developing the regional freight plan, a need for further data gathering and analysis was assessed by PVPC staff. A wide range of potential future analysis tasks were identified. Some of the recommended subsequent activities could be included as part of a future Unified Planning Work Program. These potential regional freight planning tasks were categorized by urgency for the region and assessed as either an immediate or future need (Table 28). Immediate needs are recommended for advancement in the next 1-2 years while future needs could require more than 2 years to advance.

Table 28 - Potential Regional Freight Planning Tasks

POTENTIAL REGIONAL FREIGHT PLANNING TASKS	Immediate Need	Future Need
Work with the PVPC data section to obtain detailed employment sector data for each community to assist in estimating truck trip generation. Incorporate data into the regional transportation model.		X
Work with existing MassDOT traffic count data to: verify year of count, confirm estimated vs. actual counts, update count descriptions, verify duplicate traffic counts, analyze directional freight flows, and confirm freight traffic volumes on state numbered routes.	X	
Identify a method to more accurately classify vehicles 13-34 feet by type.		X
Consult the Federal Motor Carrier Administration (FMCA) on network safety related issues and availability of scheduling data.	X	
Conduct a sign inventory on regional critical freight corridors.	X	
Identify trucks that are equipped with side guards as part of future safety analysis		X
Analyze and weight freight crashes by population and employment.		X
Use MassDOT data to map accessibility based on type of employment. Identify freight based type of employment and use as an overlay. Add priority Industrial area layer.		
Access and analyze freight travel time data including truck travel time reliability through MassDOT INRIX data.	X	
Add a freight component to the regional congestion management process (CMP).		X
Review and update the Performance Measures chapter in the RTP to incorporate freight related measures.		X
Develop model freight bylaws/ordinances including anti-idling and excessive noise recommendations.		X
Perform evening truck counts at regional rest stops and truck parking lots. Explore the use of video to identify peak hours of use and assess parking occupancy and turnover. Identify areas for potential new rest areas or opportunities for expansion.	X	
Identify the location of all low clearance (< 13' 5") shared use path underpasses over local roadways.	X	
Work with MassDOT to collect data on the volume of trucks that enter and exit rest areas on the Massachusetts Turnpike.	X	
Incorporate the regional freight plan into future RTP updates to better accommodate freight planning needs in a timely manner.		X

5.5 FREIGHT IMPACTS OF FUTURE TRANSPORTATION PROJECTS

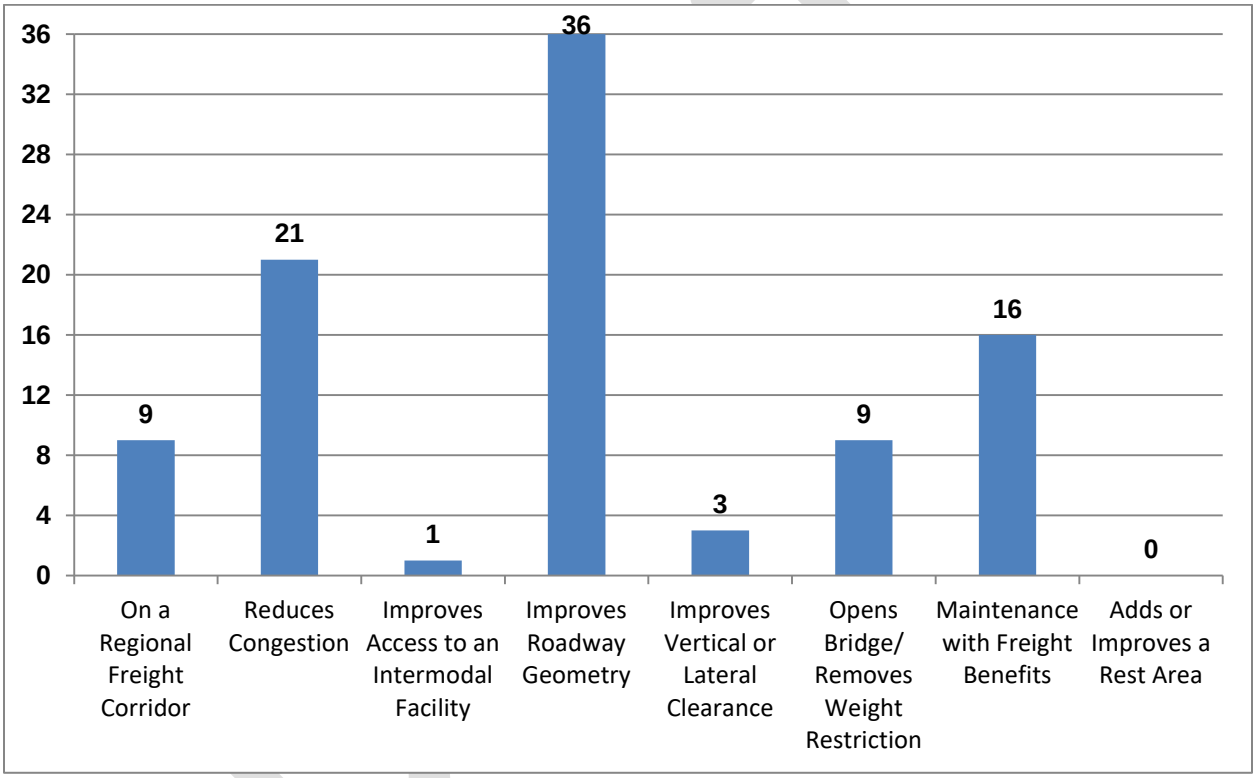
PVPC reviewed all projects included in the current TIP and RTP to identify the potential freight benefits of each project. To assist in this effort a total of eight regional freight benefits were identified. These freight benefits are summarized below:

- The project is located on a designated critical freight corridor.
- The project is expected to reduce roadway congestion.
- The project improves access to an intermodal facility.
- The project improves existing roadway geometry.

- The project improves vertical or lateral clearance.
- The project opens an existing closed bridge or removes an existing weight restriction.
- The project includes roadway maintenance improvements that will benefit freight.
- The project adds or improves a rest area.

All total, 134 projects were reviewed and 60 unique projects were found to have at least one element that could benefit the movement of freight. Figure 38 summarizes the number of each defined freight benefit associated with the proposed regional transportation improvement projects. A complete listing of this analysis is included in the Appendix to this document.

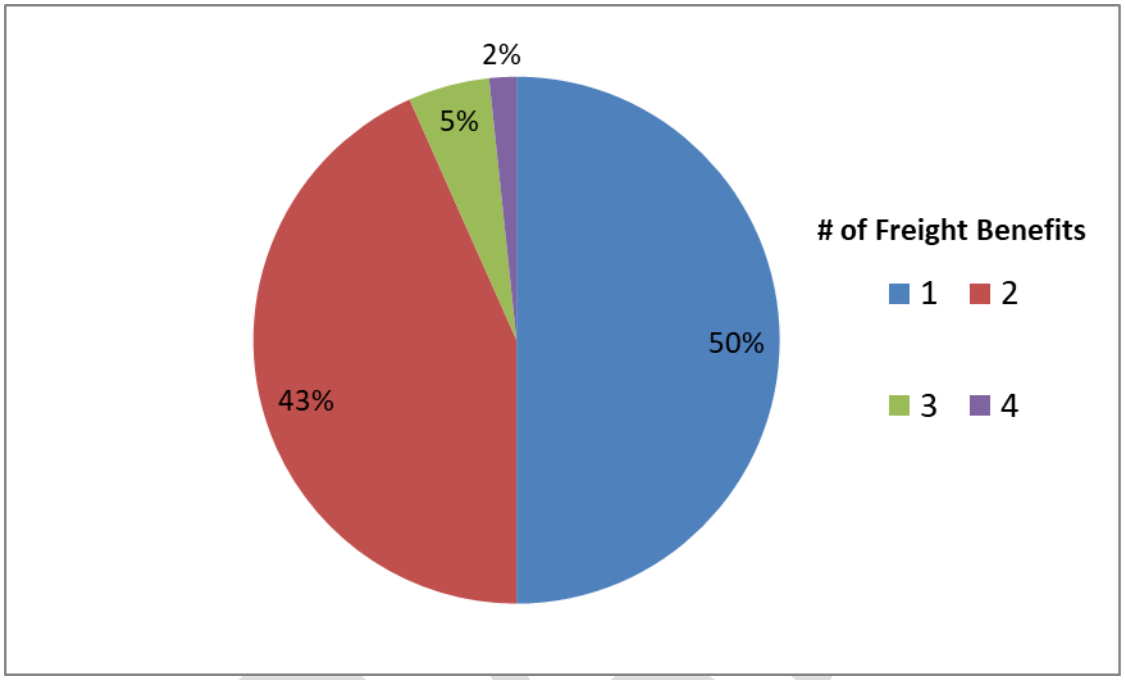
Figure 38 – Freight Benefits of Proposed Transportation Improvement Projects



A total of thirty six projects are expected to result in improvements to existing roadway geometry that would be beneficial for freight movements. Twenty one projects are expected to reduce existing congestion while sixteen consist of maintenance improvements such as roadway reconstruction that would have a positive impact for freight. Only 9 projects identified are located on an existing critical freight corridor or improve a bridge with weight restrictions. In addition, very few projects are expected to improve access to an intermodal center or address vertical clearance issues. No projects are currently proposed to improve rest areas in the region.

Since a proposed transportation improvement project can have multiple freight benefits, another analysis was made to identify the number of freight benefits addressed by each project. This information is presented in Figure 39.

Figure 39 – Number of Freight Benefits/Project



Most projects were identified as having one or two freight benefits. Only one project was identified with a total of four freight benefits.

5.6 VISIONARY FREIGHT 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. PVPC reviewed the current RTP to identify the Visionary projects that could have benefits for the movement of goods. In addition, new visionary freight projects were also identified to assist in future planning efforts. While one of the goals of the regional freight plan is to assess the potential for future expansion, improved efficiency and safety of freight, any project included as part of the regional Transportation Improvement Program (TIP) must come from a conforming RTP. As a result, 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 federal funding requirements.

5.6.1 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-.

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 improvement recommendations to improve safety and enhance the efficiency of the I-91 Corridor. Many recommendations would also have positive impacts on the movement of freight by addressing existing traffic flow challenges along corridors that provide direct access to major freight facilities within our region. Additional resources will need to be identified by MassDOT to advance these projects to construction. These recommendations are summarized below:

- The construction of 3 consistent and travel lanes along I-91 in the vicinity of Exit 3. Currently, the interstate drops to 2 lanes of travel in this area creating peak hour bottlenecks.
- Improvements to the Julia Buxton (South End) Bridge and elimination of the Route 5/57 rotary. The study recommended a number of improvements in this area. It recommends constructing collector/distributor roads alongside I-91, a peanut shaped roundabout in the vicinity of the Longmeadow curve and replacement of the Route 5/57 rotary with a modified diamond interchange. These improvements will facilitate truck movement through the elimination of confusing weaving movements, the realignment of I-91, new acceleration and deceleration lanes and the construction of new shoulders.
- Relocation of the existing left side on ramp from I-291 to I-91 SB to a more traditional right side on ramp. This will facilitate a safer more traditional merge for all vehicles.

5.6.2 Low Vertical Clearance Railroad Underpasses

A number of low vertical clearance railroad underpasses were identified in the Pioneer Valley region (Figure 17). These underpasses contribute to both congestion and safety problems, particularly when struck by an over-height vehicle. Increasing the vertical clearance of these underpasses is costly and can have negative impacts on railroad operations. It will be important to continue to work with local communities, MassDOT and the railroad operators to identify future opportunities to improve vertical clearance of these underpasses.

Communities should consider the periodic review and upgrade of existing low clearance advance warning signs in the vicinity of low vertical clearance railroad underpasses. Advance warning signs are important to alert over-height vehicles well in advance of the underpasses to provide ample time for them to seek a detour. Signs should be reviewed

for any defects, placed for maximum visibility, clear of encroaching vegetation and meet current retroreflectivity standards. The use of ITS Over-height Vehicle Detection Systems reduces collisions between vehicles and overhead structures by warning drivers through audible or visual alarms. ITS technology should be considered at low clearance railroad underpasses with a history of crashes.

5.6.3 Maintain Rail Access to Industrial Sites in the Pioneer Valley Region

A number of industrial sites in the Pioneer Valley region are not actively using existing rail spurs for shipping and receiving. It is important to continue to provide options for multiple modes of delivery to and from these industrial areas into the future. The MPO, MassDOT, railroad shippers, and local communities should continue to work with industrial business owners and industrial developers to both maintain and utilize these rail spurs to the extent possible.

5.6.4 Industrial Rail Access Program

The MassDOT Industrial Rail Access Program (IRAP) is a competitive grant program to fund freight rail infrastructure improvement projects. The program focuses on increasing or improving rail transportation to Massachusetts shippers and receivers. All total $3 million dollars was made in 2020 MassDOT IRAP grants, however, grant awards cannot exceed $500,000, nor can requested funding represent more than 60% of the total project cost. It will be important to continue to advance opportunities to restore freight rail access to industrial sites in the future through the MassDOT IRAP. It will also be important to explore alternative funding scenarios to provide greater assistance to local business for necessary rail infrastructure improvements to help offset the high construction costs.

5.6.5 Continued Maintenance of Rail Infrastructure

MassDOT has recently made many improvements to upgrade and maintain the railroad infrastructure in the Pioneer Valley region. It will be important to continue to invest in the future maintenance of the regional rail infrastructure to provide an acceptable level of service for operations.

6. PUBLIC PARTICIPATION

During the preparation of this report, staff at PVPC followed the public involvement process put in place by the MPO. This process provides complete information, timely public notice, and full public access to MPO activities at all key stages in the decision making process. PVPC actively sought out the involvement of communities and stakeholders in the regional freight plan.

The Draft Regional Freight Transportation Plan (RFTP) for the Pioneer Valley underwent a public review and comment period consistent with the Pioneer Valley Region Public Participation Process. Staff presented the various components of the draft plan as they were being developed and became ready for sharing. Feedback was sought from members of the Joint Transportation Committee (JTC) representing the communities of the Pioneer Valley region throughout the development of the RFTP.

A series of products were developed to begin outreach efforts and education on the RFTP process. These milestone products are summarized below:

October 9, 2019

Presentation:	Plan Overview (Power Point Presentation)
Display:	Regional Bottlenecks Map (Poster for Markups)
Emailed:	Regional Bottlneck Map

November 13, 2019

Presentation:	Freight Plan Progress Update
Handouts:	Chapter 1: Introduction
	Maps: Freight Corridors, Crashes, Bridges, Bottlenecks
	Comments Received on Draft Regional Bottlenecks Map

December 13, 2019

Emailed:	Chapter 2: Regional Freight Network
	Chapter 3: Existing Conditions

January 8, 2020

Presentation:	Freight Plan Progress Update
Handouts:	Chapter 2: Regional Freight Network
	Chapter 3: Existing Conditions
	List of Regional Freight Provider

February 19, 2020

Presentation:	Freight Plan Progress Update
Handouts:	Chapter 4: Economic Development
	Chapter 5: Recommended Strategies
Emailed:	Draft Report

Comments received to date, from members of the JTC, were addressed and incorporated into the freight plan in a timely fashion.This draft version was distributed to the JTC, MPO, Regional Freight Providers, and posted on the PVPC website to continue to solicit comments in February 2020. Comments received on the Regional Freight Plan Draft Report are summarized in Table 29.

The PVPC utilized existing committees such as the Joint Transportation Committee, Pioneer Valley Executive Committee, and Pioneer Valley Metropolitan Planning Organization to provide routine status updates in the development of the Draft RFTP. A brief presentation on the RFTP was given, and comments received as part of the meeting were incorporated into the Draft RTP. Paper and electronic copies of the Draft RFTP were made available during the public participation process. The Draft RFTP was also available for download from PVPC's web page.

Table 29 - Comments Received on the Regional Freight Plan Draft Report

	Report Location	Comment	From	Response
1	Regional Freight Bottlenecks Map	What kind of Commercial Vehicles are involved in the crashes? Breakdown of type and number of crashes.	Joint Transportation Committee	Write up and table added to the report.
2	Commercial Vehicle Crashes Map	Do you have information about non-motorists' crashes with commercial vehicles	Joint Transportation Committee	Write up and table added to the report. Locations of 17 non-motorist crashes added to map
3	Commercial Vehicle Crashes Map	Do you show locations of non-motorist fatalities resulting from commercial vehicle crashes	Joint Transportation Committee	3 Locations added to map
4	Commercial Vehicle Crashes Map	Is there information about whether or not the Trucks are equipped with Side Guards.	Joint Transportation Committee	This information is not available at this point. We will include it when data becomes available.
5	Regional Freight Bottlenecks Map	There is a weight restricted culvert along Klaus Ander Road.	Randy Brown/ Southwick DPW	Location added to the new layer of Restricted Local Bridges and Culverts
6	Regional Freight Bottlenecks Map	Request for a larger scale map with better resolution to get more information.	Bob Peirent / Holyoke DPW	A large scale map of Holyoke with labeled major streets and bottleneck locations was sent by email.
7	Regional Freight Bottlenecks Map	Sent an annotated map of restricted bridges and a list of locations along local roads that have truck restrictions.	Bob Peirent / Holyoke DPW	Bridges were added into the map. Local Truck Restrictions comment was noted.
8	Page 15 - 2.1.1 Trucking	State Numbered Routes typically get the close to their final destination. Such as Route 20, 5 and 147.	Jim Czach / West Springfield DPW	Change has been made.
9	Page 17 - 2.1.3 Terminals	has made ? or is there more going on now?	Jim Czach / West Springfield DPW	Additional text has been edited to clarify.
10	Page 18 - 2.2 Air Freight	Add FED EX hub	Jim Czach / West Springfield DPW	Additional text has been added to clarify..
11	Page 19 - 2.3 Critical Freight Corridors	Route 20 and 5, those are just other State numbered routes that lead to the interstate systems. State numbered routes are the connectors to I-90 and I-91, I-291 etc. I believe on State numbered routes, you can't have a truck restriction, so I didn't know if it was part of the freight network.	Jim Czach / West Springfield DPW	Comment noted.

Table 29 - Comments Received on the Regional Freight Plan Draft Report (continued)

	Report Location	Comment	From	Response
12	Page 27 - 3.1.3 Bottlenecks to Large Vehicles	Add Union Street in West Springfield to Table 9 Congestion Bottlenecks in the Pioneer Valley Region	Jim Czach / West Springfield DPW	Union Street cannot be added to Table 9 because this table lists bottlenecks as defined by regional travel times
13	Page 29 - 3.1.3 Bottlenecks to Large Vehicles	Add Union Street, Park Avenue, and Park Street in West Springfield to Congested Corridors in the Pioneer Valley, Figure 16	Jim Czach / West Springfield DPW	These locations are not part of the 2014 CMP assessment so they do not belong in Figure 16 on page 29. However, Route 20 at Route 5 and Union Street at Day Avenue, and Union Street at Park Avenue will be added to the regional freight bottlenecks in Figure 17 on page 30
14	Page 43 - 3.3 Bridges: Table 16	Add the Veterans Bridge over the Westfield River, which is owned by West Springfield and Agawam	Jim Czach / West Springfield DPW	We will search for the appropriate score for this bridge. If the information is not readily available, we will include it in a future update of this table
15	Page 46 - 3.3 Bridges: Table 18 - Low Height Clearance Below Bridges	Northampton: 1. The bike path crosses UNDER Jackson Street and gets no freight, so I don't think low clearance is an issue. 2. Main Street/Route 9 at the railroad tracks should be added. There are a large number of trucks striking the bridge each year and better early warning showed up both in the work you did for us and the recent RSA. 2. North Street under the railroad tracks has less issues, but we did have a truck striking the bridge recently so perhaps it should be added.	Wayne Feiden / Northampton Planning & Sustainability	• These bridges are highlighted in Figure 17 on page 31. We had to keep the railroad bridge overpasses separate from the roadway bridge overpasses as the MassDOT dataset only includes roadway bridges. • Additional language on pages 45 and 47 has been added to clarify that the RR bridges appear in a different location in the report. • Staff will add the RR bridges to Figure 27. • We have not addressed any of the low clearance bike path bridges yet, but we plan do it as part of a future freight planning task.
16	Pages 49 to 52 - 3.5 Parking and Rest Areas	Nice effort on creating an inventory of available truck parking. Recommend you also consider coordinating with MassDOT to compare data that was submitted last year for the FHWA Jason's Law survey. There is opportunity to assess the usage of all truck parking locations in the region.	Brandon Wilcox/ FHWA	We will coordinate with MassDOT as you recommended. We anticipate to have a complete draft sometime in February. We have developed quite a few draft recommendations and one in fact is to make more truck parking assessments.
17	3.5 Parking and Rest Areas	Please see attached for the data I have relative to the Jason's Law survey. And thank you for sharing these chapters. I look forward to reading about this important effort PVPC is undertaking.	Makaela Niles/ MassDOT	State Data has been reviewed, additional parking and rest areas were listed and incorporated into the report.