

Appendix A: Freight

Freight Planning Process

USDOT directs states and MPO regions to conduct freight planning in accordance with MAP-21. The Federal freight priorities are to:

- support improving the national freight network;
- strengthen rural communities' ability to access national and international trade markets, and
- support regional economic development.

The MVMPO is responsible for incorporating as-yet to be finalized federal and Commonwealth freight performance measures that support the above federal goals (to be developed). The MVMPO must also consider and may adopt additional region-specific freight goals, and must work with MassDOT to monitor and report on goal attainment.

MVMPO fulfills its freight planning responsibilities under MAP-21 and MassDOT planning directives by:

- monitoring industry reporting; infrastructure conditions and traffic operations
- conducting periodic surveys of truck owners and operators based in the MVMPO region,

and those owners/operators who use the region's roadways;

- working with MassDOT and the MVMPO municipalities to improve state of good repair, congestion, and safety on federal aid roadways under local control;
- working with MassDOT to program improvements on roadways under state jurisdiction that support freight movements;
- advocating with MassDOT for improvements to the region's interstates and ensuring that such projects appear in the region's TIPs, and
- advocating for certain rail projects that may be funded by Amtrak, the Commonwealth, the MBTA, or PanAm Railways.

In Massachusetts, MassDOT has the lead role in planning for projects that relate to freight movements and is responsible for the maintenance and improvement of all Interstate routes. And, through the MBTA, MassDOT also owns almost all of the rail rights-of-way in the MVMPO region, and grants operating rights to PanAm Railways on certain lines to provide freight rail service. Accordingly, the MassDOT Freight Rail and Transit Division and the MBTA are the lead agencies for most of the public sector's

freight policy-making, planning, and capital investment.

MassDOT 2010 Freight Plan

The MassDOT 2010 Statewide Freight Plan informed development of the 2012 MVMPO RTP and remains the most recent comprehensive freight planning effort available. This document recommended that the following transportation improvements be made to improve the movement of freight in the MVMPO region:

- addressing highway congestion;
- maintaining roadways and achieving a 'state of good repair';
- increasing rail track capacities to 286K, and track clearances to permit full-double-stack shipments, and
- continued ITS implementation on roadways functioning as freight corridors.

Data Collection and Trend Identification

Almost all freight flow data is collected and reported at the national and statewide level and little county or MPO region-specific freight data is available. However, CTPS did generate an analysis of freight movements in Massachusetts in 2013. The CTPS 2013 Freight Action Plan

memorandum offered significant background and issue identification information for future study and this resource has also been used in the development of the 2016 RTP freight discussion.

Using these two sources, the following conditions relative to the Merrimack Valley region have been identified and in the MVMPO's opinion, remain valid:

- The MVMPO region is a net consumer of freight, as its region's residents and businesses consume goods manufactured outside the region. Accordingly, freight movements of goods produced in the MVMPO region are comparatively modest.
- Significant quantities of freight move through the MVMPO region – from NY/NJ and Canadian points – and from international origins.
- Trucks transport most freight to and from the region. However, freight moves *through* the region by both truck and rail. Regional freight movements are also dependent upon air, rail, water and/or air transportation facilities in eastern Massachusetts, New Hampshire, Maine, and the Canadian Maritimes. Interstates 93, 95

and 495 and state-numbered routes provide access to most of the region's manufacturers, warehouse and distribution facilities, and consumers. PanAm Railways (PAR) is the region's sole freight rail operator, and many truck freight companies serve or travel through the region.

- Over 19 million tons of freight moved throughout Essex County in 2007, and that the major freight movements were inbound to the County
- The majority of outbound shipments from Essex County were destined for other Massachusetts locations, particularly Middlesex County.

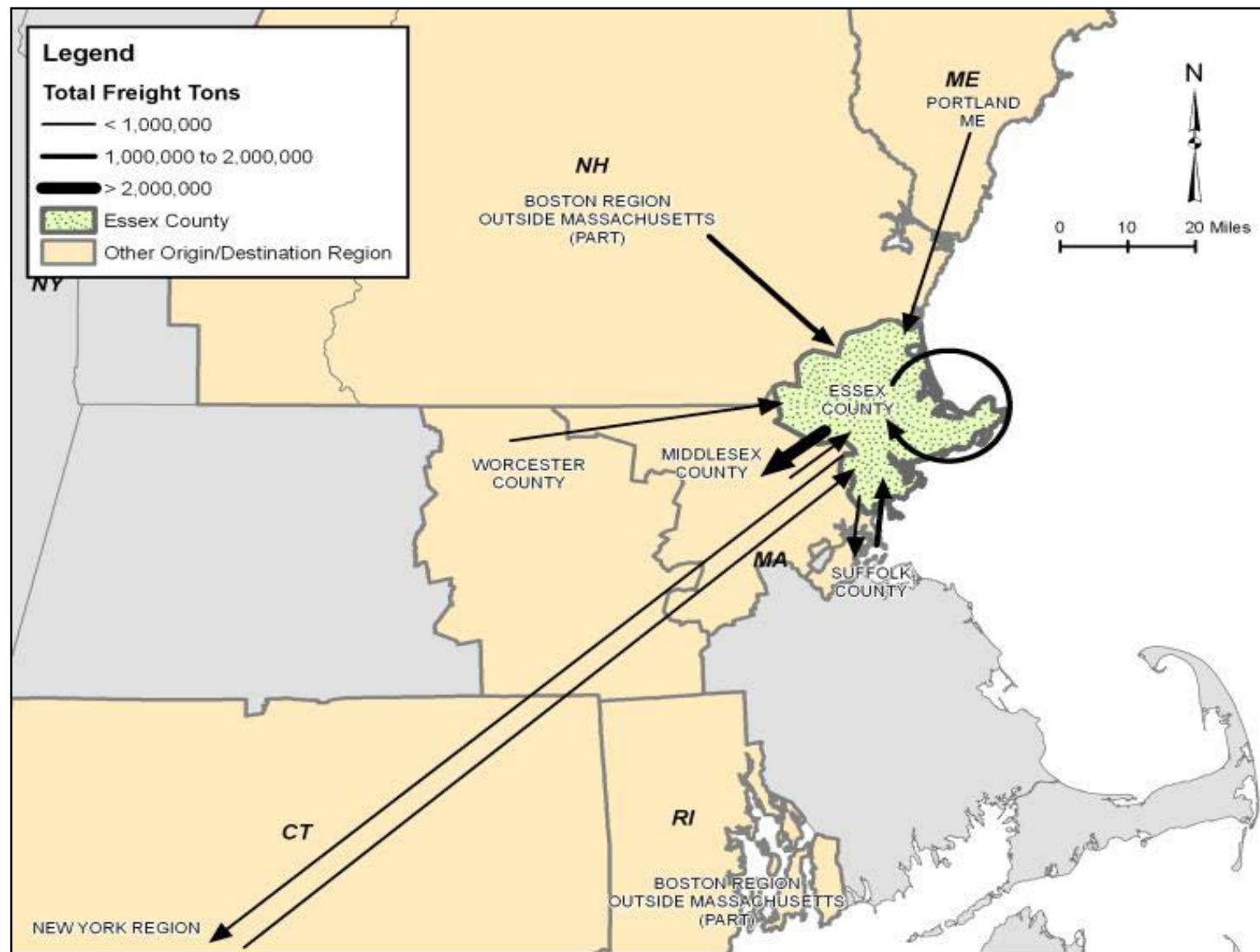
Figure 1 below shows freight movements particular to Essex County in 2008 Insert **Top Essex County Movements** (Figure 50) from MassDOT Freight and Rail Plan, p. 3-92.

CTPS reported in 2013 that trucks accounted for 87% of the freight tonnage with a Massachusetts origin or destination. A substantial portion of the remaining 13% of tonnage utilized a truck for a pickup or delivery. Carload freight volumes originating or destined for the MVMPO region have been in long-term decline.

A review of 2010-2014 MassDOT data from permanent count stations along I-495 in various MVMPO communities showed truck percentages of total annual vehicle volumes as high as 10% just west of I-95. However, higher percentages may be found during certain hours of the day and times of the year.

MassDOT, in its 2010 Statewide Freight and Rail Plan, projected that highway truck freight volumes throughout Massachusetts would increase by 70% by 2030. In the MVMPO region, MassDOT projects that by 2030 I-495 will handle the bulk of the region's truck freight, at volumes ranging between 30-60 million tons per year.

Figure 1



Appendix A Freight

Figure 2 below shows the location of major trucking, warehousing and distribution centers in the Commonwealth as identified in the State Freight and Rail Plan.

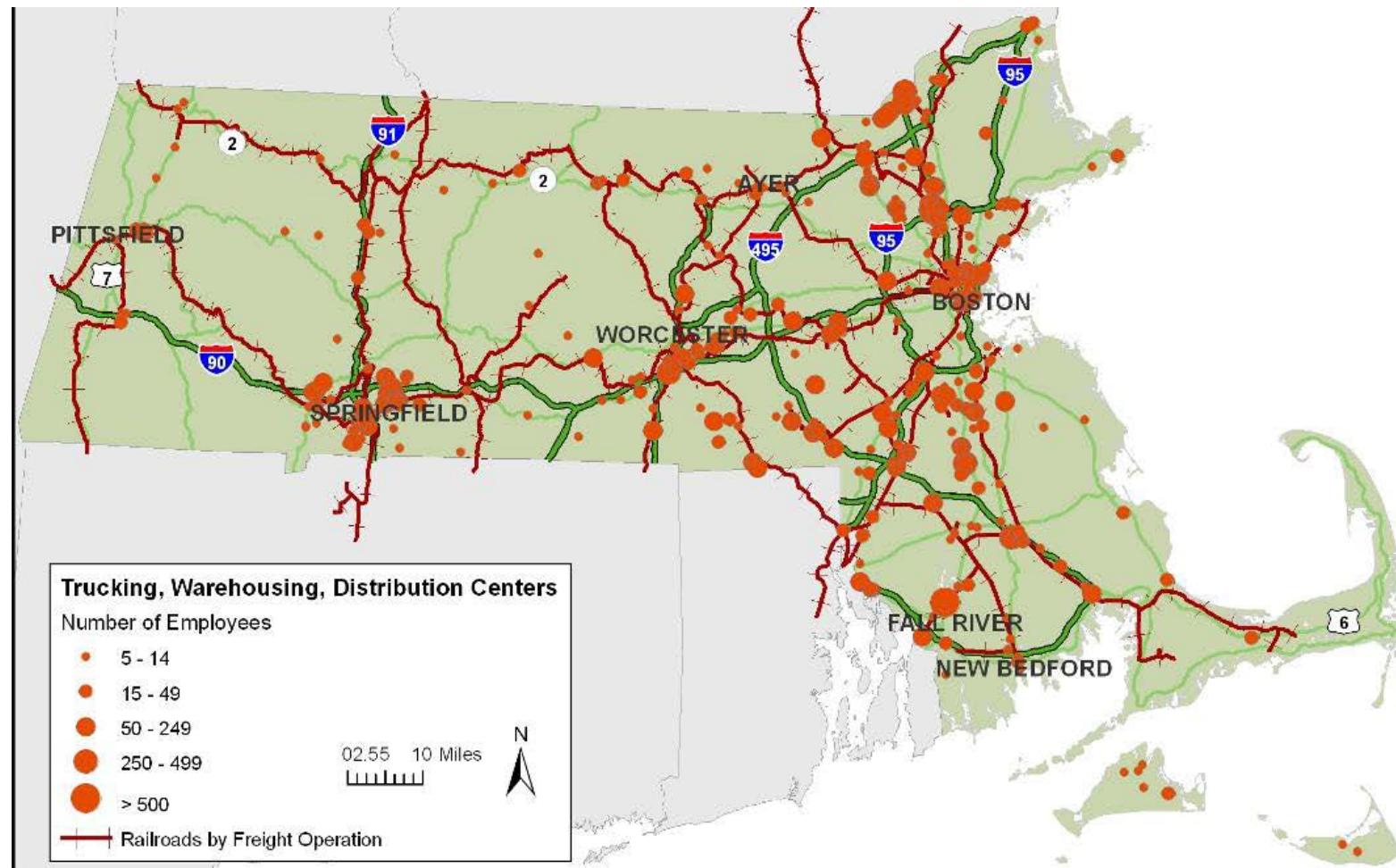


Figure 3 Freight Warehouse and Distribution Facilities (source: InfoUSA data and HDR calculations, from MassDOT State Freight and Rail Plan (2010), p. ES-13).

The MVMPO region's principal freight classification, warehousing and distribution clusters are truck-oriented and are located on sites proximate to Interstates 93, 95 and 495. They are located in:

- Amesbury/Salisbury, with local access to/from MA-110 and MA-286;
- Haverhill's Ward Hill Business Park and other clusters along MA-97 and MA-125/upper Hilldale Avenue;
- Lawrence's Industrial Park and Merrimack Street corridor;
- Methuen's Aegean and Griffin Brook Industrial Parks, and
- Newburyport's Lord Timothy Dexter Green Industrial Park.

The centers shown above are "intermodal" in the sense that they provide the opportunity to transfer goods from larger trucks to smaller trucks for regional distribution, and may be part of the larger intermodal network of plane, ship or

train to truck and warehouse/distribution facilities. As shown above, the largest warehouse/distribution facilities in the MVMPO region employ between 250 – 400 workers and are located on I-93 in Methuen and on I-95 at Salisbury.

Other freight classification, warehousing and distribution infrastructure is either rail-truck or dedicated solely to rail operations associated with PanAm Railways (PAR). PAR is serving a limited number of MVMPO region customers as of 2015. It utilizes MBTA-owned rail facilities to operate in most of the MVMPO region, excepting the following facilities:

- PAR-owned rights-of-way between Ayer and Lawrence via Lowell, and within the Lawrence Industrial Park;
- A PAR-owned Andover Street rail yard in Lawrence (the region's chief rail-oriented handling and distribution facility), and
- A privately-owned warehousing/distribution facility with direct PAR service, on Merrimack Street in Lawrence.

Figure 4 shows the PAR freight transportation network and its connections to other freight rail systems outside New England.

Appendix A Freight

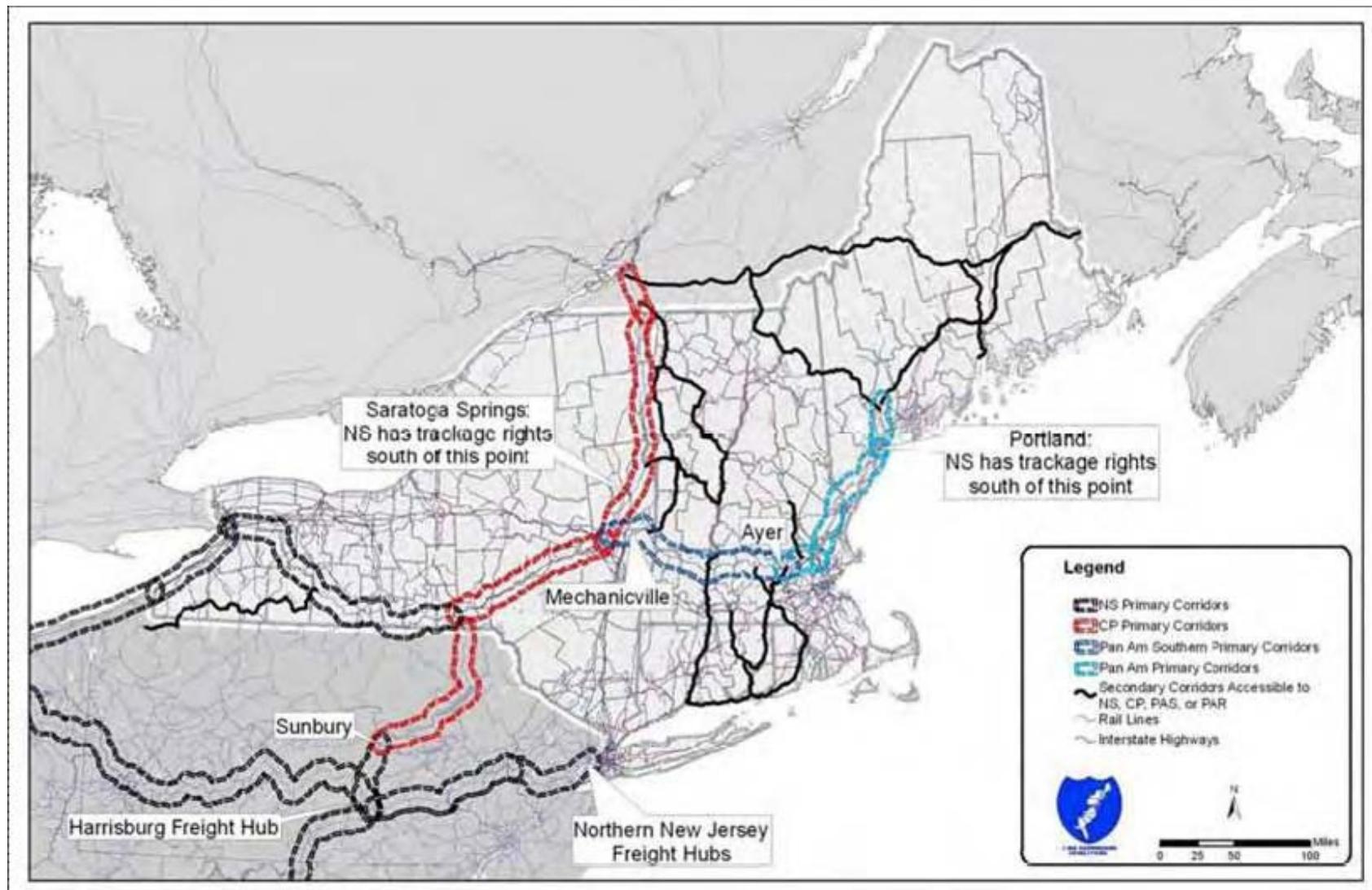


Figure 4

PAR's principal freight rail business consists of moving goods through the MVMPD region. It also moves some freight along the Haverhill and Lowell Lines into and out of metropolitan Boston, to serve local customers. It does not operate rail freight service on the MBTA's Eastern Division right-of-way (Newburyport Line) and PAR discontinued providing direct freight service to a sole remaining freight customer on the MBTA-owned Manchester and Lawrence Branch in Lawrence.

Truck Freight Industry Trends and Issues

The American Transportation Research Institute (ATRI) administers an annual survey in an effort to identify the top issues for the trucking industry. Congestion was cited in nine of the 10 years that the survey was conducted, ranking as high as Issue #4 in 2009. The trucking industry has consistently reported that truck freight transport is particularly vulnerable to roadway congestion, which increases travel times, undermines reliability, and drives up transportation costs. In 2013 ATRI estimated that congestion on the interstate system costs the trucking industry \$9.2 billion.

A table showing the results of ATRI surveys administered each year since 2005 may be found in the Appendix:

Significant Freight Bottlenecks in Massachusetts

ATRI, in cooperation with the Federal Highway Administration (FHWA) Office of Freight Management and Operations, has tracked congestion at 250 freight-significant locations nationwide and in 2012 identified two Massachusetts 'freight bottlenecks' of national significance: I-95/MA-128 interchange with US-3 and I-95/MA-128 interchange with I-93 in the Boston MPO region.

Truck Parking and Rest Areas

CTPS reported in its 2013 Technical Memorandum that the motor carrier industry is increasingly concerned about the following two challenges:

- truck parking and rest areas, and
- Overweight and oversized loads: routes and permitting

Increased demand for adequate truck parking and rest areas is largely the result of increased truck freight shipments and stricter federal regulations

governing truck driver hours of service that became effective in 2012. Most truck parking and rest areas in Massachusetts are located south of the Merrimack Valley and visual observations show that they often operate at or above capacity. CTPS commented that the northwest I-495 segment (outside the MVMPD region) might make sense as a location of a new truck facility, and recommended further study. The technical memorandum noted that any new truck parking/rest facility was likely to be a MassDOT policy issue rather than an MPO investment issue, but would likely require a host community's support.

ATRI recommended the following actions based upon responses to its most recent survey (2014) to address this issue:

- a) *Support and encourage investment in new truck parking facilities and work to reopen closed public rest facilities.*
- b) *Educate the public sector on the safety consequences resulting from closing public parking facilities.*
- c) *Research the role and value of real-time truck parking information availability and truck parking reservation systems.*

According to Overdrive Online (a truck industry newsletter) HNTB Corporation and Truck Smart Parking Services Inc. have developed a Truck Parking Information and Management System (TPIMS) that uses digital cameras and sensors to collect data at both public and private facilities to track parking availability in real-time. Parking availability can then be displayed on road signs, in a smart phone app, in-cab messaging systems and on TSPS' website. In addition to rest areas, HNTB has advised that it has agreements with truck stops to allow them to collect data via cameras and sensors there, too, and to make reservations for these spaces to ensure their availability upon arrival.

Oversize Loads/Combination Vehicles

Motor carrier industry representatives have long advocated for a timely and accurate overweight/oversized load permitting process for state highways. They argue that these changes would benefit the environment, as the newer vehicles would move more freight per truck, thereby reducing the number of drivers and trucks required per shipment.

MassDOT has issued these permits on a shipment-by-shipment basis, routing each permit

recipient to a specific route and requiring the permit holder to employ auxiliary vehicles.

As noted in the MVMPO's 2012 RTP, MassDOT and local communities are unlikely to permit larger, heavier trucks and/or tandem trailers due to legitimate roadway safety and maintenance issues. Such vehicles are also difficult to accommodate in densely developed urban settings common to the Northeastern U.S.

MVMPO Roadway Freight-Related Project Identification, Status, and Actions Taken

In recent years, MVPC staff has reached out to local and regional freight haulers and shippers in an effort to identify locations in the MVMPO region that are considered to restricting truck freight movement. Table 1 on the following page lists potential problems communicated to the MVMPO. These issues include comments received in MVMPO surveys (if any) and can be considered synonymous with FHWA's 'freight bottlenecks'

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Appendix A Freight

Table 1: Potential Freight-Related Roadway Infrastructure Problems				
#	City/Town	Route/Street & Issue	Description	Status
1	Amesbury/N bpr./Salis.	I-95 bridge over the Merrimack River	MassDOT is constructing replacement structure to be completed in 2017	Construction
2	Andover	MA-114/MA-125 Congestion	Recently approved MassDOT MA-114 project will likely reconfigure existing intersection and reduce congestion.	Design
3	Andover	I-93/I-495 Interchange Congestion	Interchange reconstruction will likely be part of project(s) to widen I-93 and/or I-495.	
4	Andover	MA-28 Congestion	Downtown area roadway improvements completed in 2010.	Complete
5	Andover	Osgood St. Congestion	MVMPO study of MA-133/Raytheon Driveway intersection.	
6	Andover/ Lawrence	I-93/ River Rd Interchange Congestion	Provides truck access to Andover River Road and Lawrence Industrial Park employment centers.	
7	Andover	River St. Ballardvale Truck Restrictions	Right turn lane to I-93 NB from MA-125 EB constructed. Proposal for new interchange at Lowell Junction in preliminary design.	Partial
8	Andover	Shawsheen Rd. Bridge Height	13' 6" bridge clearance is posted near Shawsheen Village on numbered highway just south of I-93/MA-28 interchange.	
9	Andover	Central St. Bridge Height	11' 6" bridge clearance is posted on roadway just west of downtown Andover.	
10	Andover	MA-28 Bridge Weight Restriction	Reconstruction of the bridge over the MBTA tracks to begin late 2015/early 2016. New structure will carry heavier truck loads.	Design
11	Andover/ Methuen	I-93Congestion	General purpose travel in breakdown lanes during AM & PM Peak periods, reducing congestion south of MA-110/113 Interchange.	Partial
12	Groveland	Salem St. Conditions	Roadway has been reconstructed.	Complete
13	Haverhill	MA-97:I-495 to Methuen Congestion	Signals added at Technology Dr. and I-495 SB ramps, Project to reconstruct segment from Computer Dr. to Lake St under design.	Design
14	Haverhill	MA-125 Congestion	Congestion in segment north of I-495 may be reduced through introduction of Adaptive Signal Control technology.	

Table 4. : MVMPO Region Freight-Related Roadway Infrastructure “Hot Spot Issues (cont.)				
#	City/Town	Route/Street & Issue	Description	Status
15	Lawrence	Merrimack St./ MA 28 Geometry	Intersection geometry makes right turn truck movements from Merrimack St EB and left turns from Broadway SB difficult. .	
16	Lawrence	Manchester St, Bridge Height	Structure will be reviewed as part of the City's proposal to construct a bicycle/ pedestrian trail in the former rail corridor.	Study
17	Lawrence	Merrimack St. Road Conditions	Design of project to reconstruct roadway from S. Union St. to I-495 complete; Section west of S. Union St. now being designed.	Design
18	Lawrence/ N. Andover	MA-114 Corridor Congestion	Project approved to improve section between Andover St.and Stop & Shop, . Application submitted to improve segment between S.Union St. and Andover St.	Design
19	Lawrence	MA-28 at Andover Street Congestion	Congestion largely due to proximity of intersection to Andover Street rail crossing and PAR Andover Street rail yard.	
20	Methuen	Methuen Square Congestion	MVMPO study showed no unusual congestion at this location; However, MassDOT has identified this area as a “crash cluster”.	Study
21	Methuen	Pelham St./Cross St./I-93 Congestion	New right turn lane from Pelham St. to I-93 SB on ramp has been installed and has reduced AM traffic queues.	Complete
22	Methuen	MA-213 Road Conditions	Road to be resurfaced in FFY 2017; MassDOT recently approved project to replace bridges over Spicket River and MBTA ROW.	Design
23	Newburyport	I-95 Guide Signs to Industrial Park	Temporary signage installed as part of the Whittier Bridge reconstruction project.	
24	Newburyport	-Various Sts.-.Truck Accessibility	Plummer Ave./ Ashland St./ Jefferson St.connect Merrimac and High streets, but each is narrow and runs through residential areas. Modifications are unlikely.	

Table 1: Potential Freight-Related Roadway Infrastructure Problems				
25	Newburyport	Low St. Truck Exclusion	City has asked MassDOT to install signage on Route 1 directing truckers to Hill Street in order to access Industrial Park.	Proposed
26	Newburyport	US-1 Rotary Safety	City investigating options for reconfiguring this intersection as part of proposed 40R District in area.	Study
27	Newburyport	MA-113 (Storey Ave.) Congestion	Proposal to reconstruct roadway from Park & Ride Lot to Low St. being reviewed by MassDOT..	Proposed
28	Newburyport	Chain Bridge Weight Limit	Improvements made in 2005 raised tractor trailer weight limit to 25 tons.	Complete
29	Newburyport	Industrial Park Drainage	Flooding on several streets impedes freight movement.	
30	North Andover	MA-114 @ Industrial Park Congestion	MVPC MA-114 Corridor Study identified improvements that would reduce congestion at this location.	Design
31	Salisbury	I-95 North to I-495 South Connection	MA-110 widening between I-95 and I-495 completed, 2012. New direct link between roadways not planned.	Complete
32	Salisbury	RR Bridge over Route 1- Alignment	Bridge deck and abutments removed; Design for US-1 reconstruction north of Salisbury Square is proceeding.	Complete
33	I-495 Andover to Haverhill	I-495 Corridor Congestion	MassDOT 2008 Study recommended widening roadway from Westford to Haverhill. . .	

Of a total 33 projects in the above table, 21 have been partially or fully addressed. The MVMPO commits to further reductions in the number of projects above that have not been addressed.

Rail Freight Trends and Issues

As was noted by CTPS in 2013, prospects for continued rail freight business moving through the MVMPO region have been negatively impacted by economic changes such as the decline of the paper industry, and gradual elimination of the use of coal in bulk shipments, which are particularly suited for rail transport. However, CTPS forecast that freight rail will remain attractive for transport of lumber and gravel. MVMPO staff has observed that tank car shipments are regularly part of freight train consists

Over several decades, smaller Class II and short line railroads have taken over freight operations on certain lower-volume branch lines in New England that were once served by larger railroads. Also, freight rail transportation has become increasingly dependent upon the truck industry for transport of freight to/from a growing, dispersed, landscape of warehousing/distribution facilities and end customers. Today, interchanges between Class I

and Class II railroads serve most freight customers from facilities in central and western Massachusetts that work best for rail/truck freight logistics based on intermodal container shipments. Accordingly, current freight movements to/from MVMPO region rail facilities such as Lawrence Yard are believed to be modest, and involve transfer from a railcar to a truck for direct delivery to local customers.

Track Weight Capacity Increases

Several rail weight capacity improvement project commitments dating from 2008-2009 remain active in 2015. PAR and Norfolk Southern agreed to increase the 263,000 pound per axle ('263K') track weight rating to 286,000 pound per axle ('286K') along their corridor in northern Massachusetts as far east as Ayer. PAR also agreed to make similar track upgrades from Ayer through Lowell to Lawrence. The MBTA is responsible for 286K track capacity on its MVMPO region rights-of-way from Lawrence through Haverhill. Track weight limit upgrades north of Haverhill have been funded in New Hampshire and Maine, leveraged by the Northern New England Passenger Rail Authority (NNEPRA) for operation of the Amtrak Downeaster.

Track Clearances for Double Stack Rail Freight

For many years, the rail freight industry has been upgrading bridge clearances to create or expand container handling/transfer to meet the growing demand for international freight movement. First-generation double-stack requires a 19'6" minimum clearance, and full double-stack intermodal rail requires a 20'8" minimum clearance.

Figure 4. below shows the location of track clearance improvement projects that the Commonwealth of Massachusetts and the Class I freight railroads have partnered to undertake between New York State and the major intermodal terminals in Worcester and Ayer. In the MVMPD region, data provided by the MBTA indicates that:

- Haverhill Line Corridor overhead clearances are 18' 0" from Boston to Wilmington Junction and 22' 6" from Wilmington Junction to the MA/NH Boundary in Haverhill. This includes the Merrimack River Bridge overhead clearance, which is and will

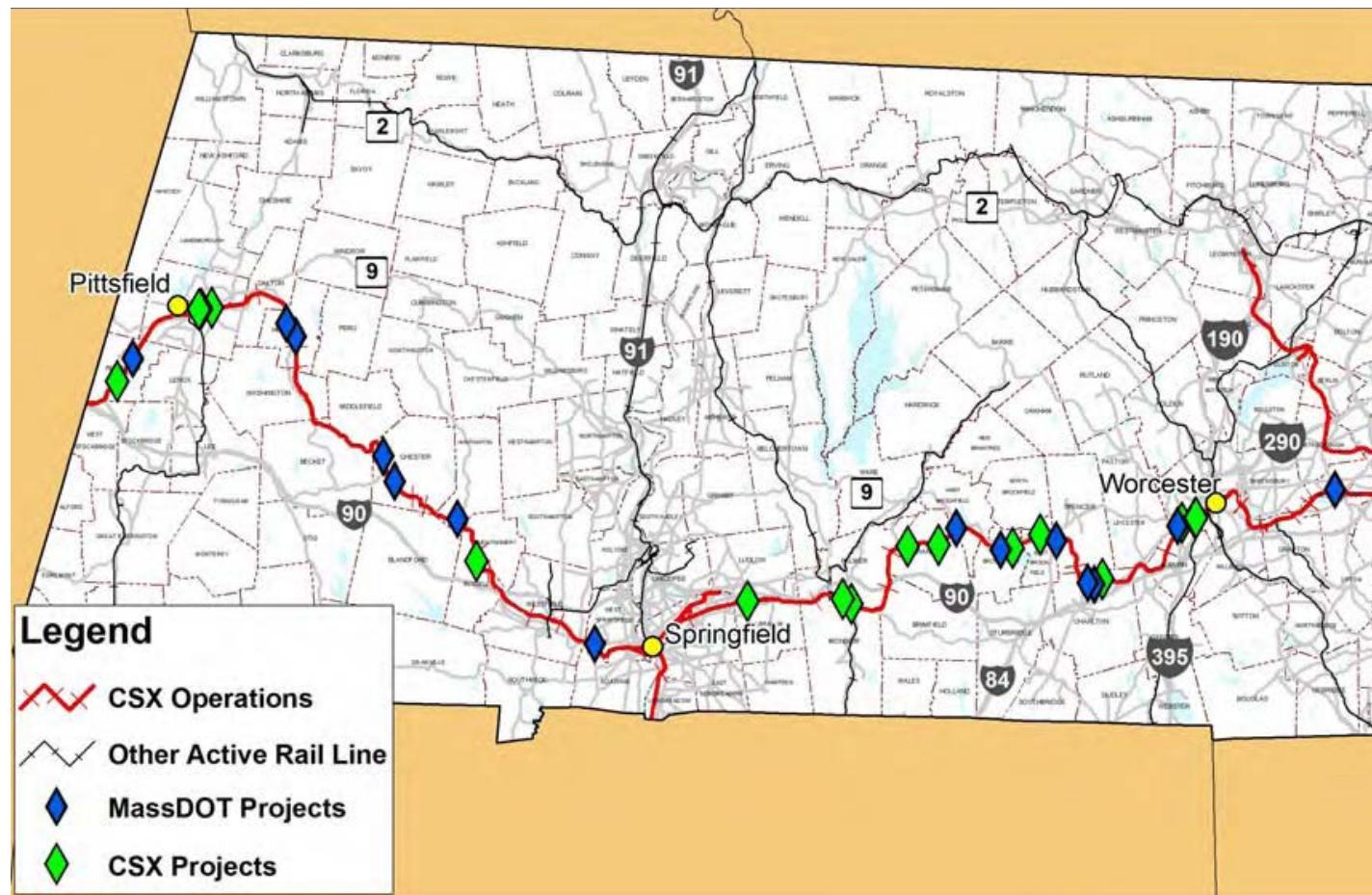
remain 22' 6" following its reconstruction, and

- The Wildcat Branch between Wilmington and Wilmington Junction has a 20' 8" overhead clearance.

However, track clearance information for specific bridges from MassDOT's Highways Division indicates that there are nine bridges over the Haverhill Main Line with clearances of less than 20 feet.

The MBTA is restoring two-track capacity between Andover St. Yard in Lawrence and Andover, including new interlockings, signals, and other equipment. This project will enable the MBTA, Amtrak and PAR to improve coordination of their commuter rail, Downeaster intercity rail and freight train movements, respectively. A significant tie replacement project is in process as of summer 2015 as well, and Phase I of the MBTA's Merrimack River Bridge Rehabilitation Project is well underway. Collectively, these projects will reduce running delays for freight rail.

Figure 5: Massachusetts Double-Stack Rail Capacity Project, CSX Line



Grade crossings

The improvement or elimination of railroad grade crossings is also an important rail safety issue. These improvements are usually implemented as highway projects and are warranted by the frequency and speed of a region's commuter rail service. Clearly, any rail freight operations in a corridor will benefit where grade crossings are eliminated, and grade crossing elimination should be considered a benefit to freight in any MVMPO project evaluation.

Freight Rail Sidings

As the MVMPO staff reported in its 2012 RTP, it had been working with PAR and the City of Lawrence for many years to improve service to/from the Lawrence Industrial Park. Park businesses required a new passing / storage siding along the existing rail spur from the Andover yard to the Park to reduce the number of train movements required to deliver full rail cars and pick-up empty rail cars. PAR and the MBTA were able to complete this improvement in 2014.

As the [Montachusett MPO](#) advised in its 2012 RTP, businesses along rail lines need to build or upgrade the rail sidings that serve them. This

infrastructure expense is generally far higher than most highway connections and thus limits opportunities to ship by rail. Development pressures on rail adjacent land have also reduced the potential pool of rail-served businesses and many new industrial sites do not have rail access. The cycle continues, contributing to a lower quality of freight rail service as well.

The MassDOT 2010 Freight and Rail Plan projected that rail freight transportation volumes statewide would increase from 1.7 billion tons to 3.2 billion tons annually, 2002-2035. Though freight rail is projected to capture less mode share when compared to truck freight, in the end the cost benefit of rail improvements far outweighs those of truck freight related improvements and the environmental impact would be far less than that of truck freight.

MassDOT's freight policy cites the following benefits of modal shifts from truck to rail (and marine):

- approximately 50% lower transportation costs than truck mode;
- 1.9 to 5.5 times greater fuel efficiency;
- fewer greenhouse gases per ton of freight moved;

- congestion relief of less truck VMT growth, and
- reduced highway pavement maintenance costs.

Regional Strategy

1. *Continue monitoring and project development activities.* Existing infrastructure may be adequate for current freight operations, but state of good repair, functional and/or structural limits, rights-of-way clearances, and total traffic volumes will require monitoring. The MVMPO is committed to tracking railroad rights-of-way information and consulting with freight rail stakeholders to monitor service bottlenecks (including inadequate clearances for full 'double stack' freight transportation) and will strive to partner with the Commonwealth, the MBTA, and PanAm Railways to obtain bond funding to address these issues. Other possible projects might include a public access rail freight terminal if market conditions warrant.
2. *Support ongoing regulation of truck freight dimension and weight.* Support MassDOT efforts to develop and administer a consistent statewide policy limiting increased truck freight vehicle dimensions and gross vehicle weights. Such increases would generate additional wear

on the region's roadways, as well as increased maintenance and selective asset replacement costs. The MVMPO staff is aware that community public works and law enforcement officials have long been opposed to the use of tandem trailers (a higher-capacity truck/trailer combination) on local roadways.

3. *Integrate Smart Growth principles and the freight industry.* The MVMPO staff expects that warehouse/distribution facilities in older urban neighborhoods will continue to downsize or relocate to less urbanized locations. Some vacant or underutilized freight facilities in suburban locations will be absorbed as the economy improves. The proliferation of warehouse-style retailers in the region's industrial or business parks, i.e. MA-125 in Ward Hill and MA-97 near Exit 50 on I-495 (both in Haverhill) will likely reduce truck trips to/from these urban areas while increasing total vehicle trips in the region. The MVMPO staff can work to better integrate Complete Streets principles and freight movements, an issue now being studied by the Volpe Center and a top priority for the Massachusetts Motor Transportation Association (MMTA).

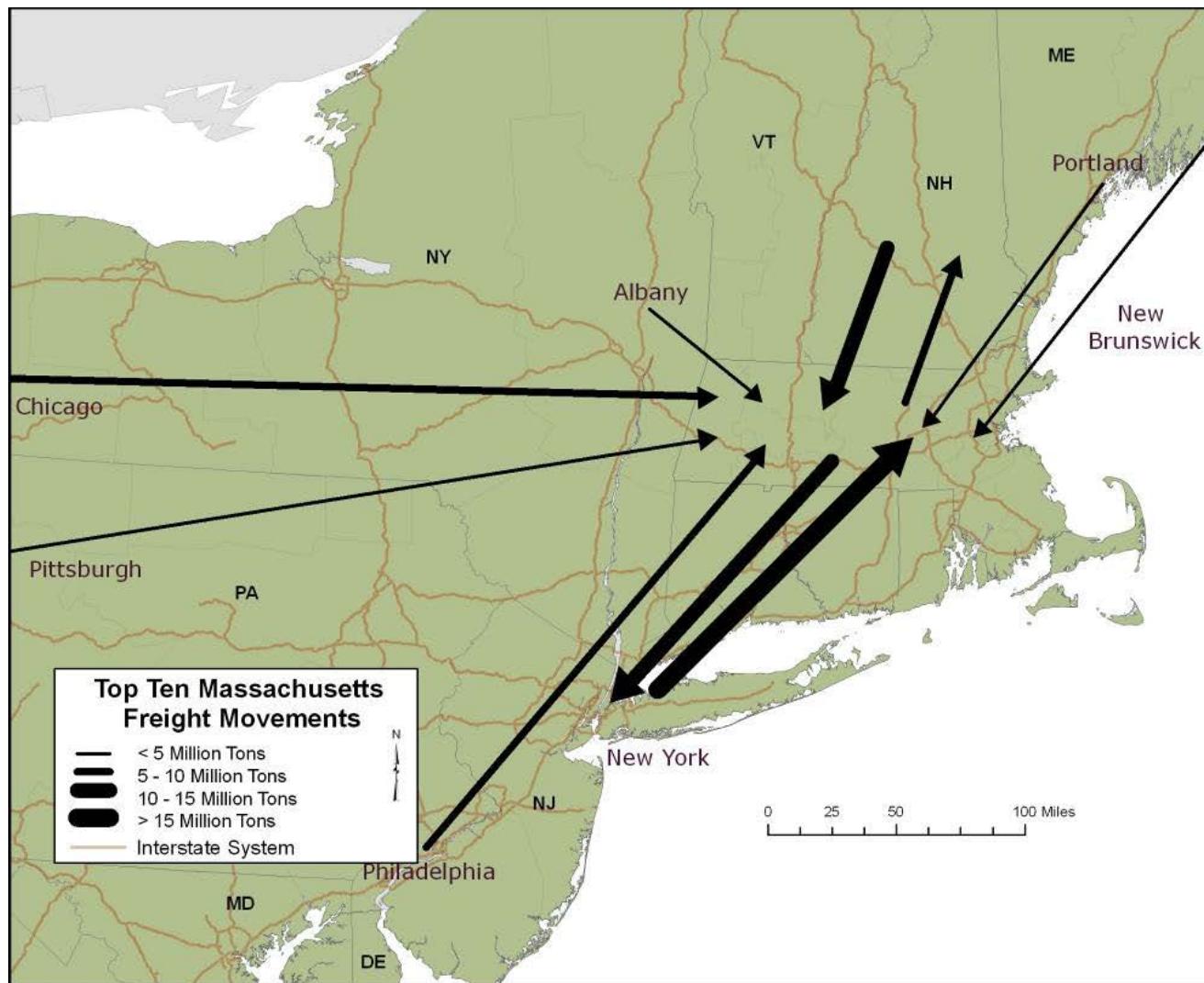
4. Support the advancement of projects benefiting regional freight movements that will require MVMPD programming actions during the RTP effective period, including:

- Georgetown/Groveland/Haverhill: MA-97 improvements, various segments
- Andover/North Andover/Lawrence: MA-114 Corridor improvements;
- North Andover/Haverhill: MA-125 improvements, various segments
- Salisbury: US-1 Reconstruction, Salisbury Square to MA-NH Boundary
- Lawrence: Reconstruction of Merrimack Street

Table 2 below is a table of [Freight Planning Approaches to Comply with MAP-21](#) (source: Cambridge Systematics)

Table 2 Freight Planning Approaches to Comply with MAP-21			
Freight Plan Element	MAP-21 Requirement	U.S. DOT Recommended	Task Responsibility
Describe how State Freight Plan supports national freight goals	✓	✓	MassDOT
Describe economic context (industries, supply chains)		✓	MassDOT
Describe freight policies, strategies, performance measures	✓	✓	MassDOT & MVMPO
Identify freight transportation assets		✓	MassDOT and MPOs
Report on conditions and performance		✓	MassDOT and MPOs; private railroads
Develop freight forecast		✓	MassDOT
Describe freight trends, needs, issues	✓	✓	MassDOT and MPOs
Identify strengths and weaknesses		✓	MassDOT and MPOs
Develop freight investment decision-making process		✓	MassDOT and MPOs
Inventory bottlenecks and develop freight improvement strategies	✓	✓	USDOT, MassDOT and MPOs
Develop implementation plan, including funding and revenue sources		✓	MassDOT and MPOs

Figure 6: Largest Inbound and Outbound Freight Flows for Massachusetts, 2008



Source: Global Insight TRANSEARCH 2008 Release (from MassDOT 2010 Statewide Freight Plan, p. ES-8)

Regional freight transport, handling, and distribution

Figure 7 shows the volumes of freight travel on national roadways including those in the MVMPO region (source: Federal Highway Administration, Freight Analysis Framework, from MassDOT 2010 Freight Plan)

Figure 7



(Table 3 below) indicates a need to increase vertical clearances on several MVMPO region bridges (including the MBTA Haverhill Line) in order to accommodate any form of double stack rail freight:

Table 3: Railroad Bridge Vertical Clearances			
Town	Over	RR or other Under	Vertical Clearance
Andover	I-495 NB	RR MBTA/PAR	22.5664
Andover	Tewksbury St	RR MBTA/PAR	23.2552
Andover	I-93 NB	RR PAR	18.8272
Andover	I-495 SB	RR MBTA/PAR	22.5664
Andover	Harding St	RR MBTA/PAR	18.4008
Andover	Route 28 (N. Main)	RR MBTA/PAR	17.7448
Andover	I-93 SB	RR PAR	18.9912
Haverhill	I-495 NB	COMB PAR & LITTLE RIVER	22.5008
Haverhill	Route 125 Connector EB	COMB FERRY RD&MBTA/PAR	15.744
Haverhill	I-495 SB	RR MBTA/PAR	22.5008
Haverhill	Ferry Road	RR MBTA/PAR	17.5808
Lawrence	S. Union St	RR MBTA/PAR	20.008
Lawrence	Salem St	RR MBTA/PAR	18.0072
Lawrence	S. Union St	COMB MERRIMACK ST & MBTA	18.4992
Lawrence	I-495	COMB MERRIMACK ST & MBTA	23.4848
Lawrence	I-495 Ramp L	COMB MERRIMACK ST & MBTA	23.2552
Lawrence	I-495	RR MBTA/PAR	23.4848
Unknown	Utility Line	COMB SUTTON ST & MBTA	Unknown
North Andover	I-495 Ramp N	RR MBTA/PAR	15.416

